



21st European Conference on General Thoracic Surgery



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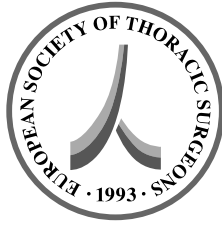
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Birmingham - United Kingdom

26 - 29 May 2013

ABSTRACTS





21st European Conference on General Thoracic Surgery

**26 – 29 May 2013
The International Convention Centre, Birmingham, UK**



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MONDAY, 27 MAY 2013

08:30 - 10:30

Session I/Brompton

B-001

PROPENSITY SCORE-MATCHED ANALYSIS OF STAGE I-II NON-SMALL CELL LUNG CANCER TREATED BY VATS LOBECTOMY OR STEREOTACTIC ABLATIVE RADIOTHERAPY

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Objectives:

Video-assisted thoracoscopic surgery (VATS) lobectomy is often used to treat operable patients with stage 1-2 NSCLC, but stereotactic ablative radiotherapy is not infrequently employed. We performed a propensity score-matched analysis to compare treatment-related complications

VATS lobectomy data from 6 hospitals was retrospectively accessed; stereotactic ablative radiotherapy data was obtained from a single institution database. Patients were matched using propensity scores based on cTNM-stage, age, gender, Charlson comorbidity score, pulmonary function tests and performance score. Clinical staging was done according to national guidelines and included 18FDG-PET and surgical and/or endoscopic mediastinal staging. Eighty-six VATS and 527 stereotactic ablative radiotherapy patients were matched blinded to outcome (1:1-ratio, caliper distance 0.025). Treatment-related complications were scored according to Common Terminology Criteria for Adverse Events. Loco-regional failure was defined as recurrence in/adjacent to the planning target volume/surgical margins, ipsilateral hilum or mediastinum. Recurrences were either biopsy-confirmed or had to be PET-positive and reviewed by a tumour board.

Results:

The matched cohort consisted of 64 patients treated by stereotactic ablative radiotherapy and 64 patients treated by VATS lobectomy, with median follow-up of 30 and 16 months, respectively. Unforeseen N1 and/or N2 disease was detected in 12 operated patients (19%), 8 of these received adjuvant treatment. Treatment-related complications \geq grade 3 developed in 23% of VATS patients and 6% of stereotactic ablative radiotherapy patients. Locoregional control rates with stereotactic ablative radiotherapy were superior compared to VATS lobectomy at 1- and

3-years (96.8% and 93.3% versus 86.9% and 82.6%, respectively, $p=0.04$). Distant recurrences and overall survival were not significantly different.

Conclusions:

This retrospective analysis found a superior loco-regional control after stereotactic ablative radiotherapy compared to VATS lobectomy, but overall survival did not differ. Our findings support the need to compare both treatments in a randomized controlled trial.

Disclosure: All authors have declared no conflicts of interest.

B-002

EXTENDED RECIPIENTS BUT NOT EXTENDED DONORS ARE ASSOCIATED WITH POOR OUTCOMES FOLLOWING LUNG TRANSPLANTATION

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Objectives:

Extended donors are safely used to increase the donor pool in lung transplantation (LT), but their influence in critically ill patients (extended recipients) remains controversial. We compared LT outcomes matching optimal or extended donors (OD or ED) with optimal or extended recipients (OR or ER).

Methods:

365 LT were reviewed. ED criteria: age > 55, PaO₂/FiO₂ < 350 mmHg, pulmonary infiltrates/purulent secretions, ischemic times > 6h (single LT) and > 9h (double LT). ER criteria: Pulmonary fibrosis or pulmonary hypertension, pre-transplant intubation, age > 65 years, bypass > 2 h. Four groups were created: Group 1 (OD/OR), Group 2 (OD/ER), Group 3 (ED/OR), and Group 4 (ED/ER). Thirty-day mortality, primary graft dysfunction (PGD), long-term survival and other transplant outcomes were compared between OD and ED, OR and ER, and among the four groups of study.

Results:

There were 151 single- and 214 double-LT. Donors: OD (n=229) vs. ED (n=136); PGD 8% vs. 10% (p=0.43); 30-day mortality 19% vs. 20% (p=0.53); survival (1, 5, 10, 15 years) 67%, 47%, 34%, 26% vs. 69%, 53%, 46%, 29% (p= 0.33). Recipients: OR (n=182) vs. ER (n=183); PGD 7% vs. 10% (p=0.10); 30-day mortality 15% vs. 23% (p=0.04); survival (1, 5, 10, 15 years): 73%, 57%, 46%, 30% vs. 61%, 42%, 29%, 23% (p=0.002). Four D/R groups: Group 1 (n=122), Group 2 (n=106), Group 3 (n=61), Group 4 (n=76); PGD 10%, 6%, 3%, 16% (p=0.05); 30-day mortality 13%, 26%, 19%, 20%, respectively (p=0.13); survival (1, 5, 10, 15 years) 74%, 55%, 44%, 35% (Group 1), 55%, 39%, 22%, 16% (Group 2), 70%, 59%, 48%, 26% (Group 3), and 68%, 47%, 37%, 22% (Group 4) (p=0.004).

Conclusions:

Lung transplantation in critically ill recipients is associated with poor early and long-term outcomes, irrespective of the quality of the donor and length of ischemic times.

Disclosure: All authors have declared no conflicts of interest.

B-003**NATIONAL PERIOPERATIVE OUTCOMES OF PULMONARY LOBECTOMY FOR CANCER: THE INFLUENCE OF THE NUTRITIONAL STATUS**

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Objectives:

Nutritional assessment is not included yet as a major recommendation in lung cancer guidelines. The purpose of this study was to assess the influence on surgical outcome of the nutritional status of patients with primary lung cancer undergoing lobectomy.

Methods:

We queried Epithor, the national clinical database of the French Society of Thoracic and Cardiovascular Surgery, and identified a retrospective cohort of 19,635 patients having undergone lobectomy for a primary lung cancer for the years 2005 to 2011. Their nutritional status was categorized according to the WHO definition: underweight (BMI < 18.5): 857 patients (4.4%), normal (18.5 ≤ BMI < 25): 9,391 patients (47.8%), pre-obesity (25 ≤ BMI < 30): 6,721 patients (34.2%), obesity (BMI ≥ 30): 2,666 patients (13.6%). In-hospital mortality, pulmonary, cardiovascular, infectious and surgical complications rates were collected and analyzed for these various BMI groups.

Results:

In the normal weight category, in-hospital rate, pulmonary, cardiovascular, infectious and surgical complications rates were: 2.6%, 14.6%, 5.5%, 1.2%, and 13.8% respectively. These outcome figures were similar for patients of the pre-obesity category. In-hospital mortality was significantly lower in obese patients (1.9%, P=0.025), and significantly higher in underweight patients (4.1%, P=0.025). Obese patients experienced less surgical complications (7%, P<0.0001), equal pulmonary and infectious complications (15.1% and 1.8%), but more cardiovascular complications (7.2%, P=0.008). Underweight patients experienced more pulmonary (21.1%) and surgical (23.2%) complications (P<0.0001), equal infectious complications (1.9%, P=0.15), and less cardiovascular complications (3.5%, P=0.025).



Conclusions:

Despite having an increased risk for postoperative cardiovascular complications, obese patients should undergo surgical standard of care therapy for appropriately stage-specific lung cancer. In underweight patients, in addition to preoperative rehabilitation including a nutritional program, attention should be given to aggressive prophylactic respiratory therapy in the perioperative period, and specific intraoperative actions such as the routine coverage of the bronchial stump.

Disclosure: All authors have declared no conflicts of interest.

B-004**CAN MAXIMAL INSPIRATORY AND EXPIRATORY PRESSURES DURING EXERCISE PREDICT COMPLICATIONS IN PATIENTS SUBMITTED TO MAJOR LUNG RESECTIONS? A PROSPECTIVE COHORT STUDY**

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Objectives:

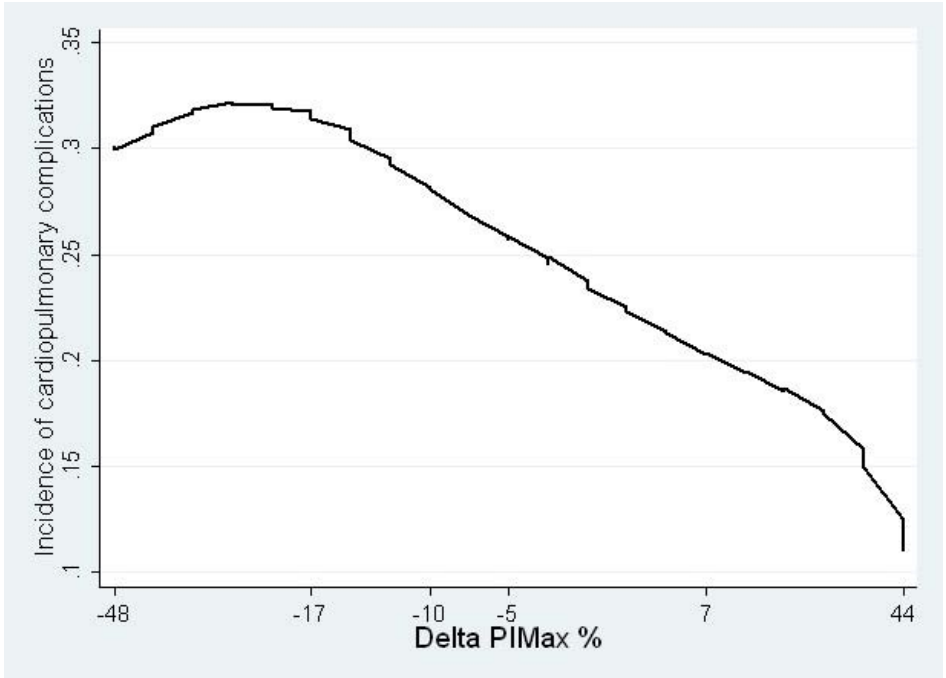
The measurement of Maximal Inspiratory Pressure (PIMax) and Maximal Expiratory Pressure (PEMax) generated at mouth is an accepted noninvasive clinical method for evaluating the strength of respiratory muscles. The aim of our study was to verify whether PIMax and PEmax measured before and after symptom-limited stair-climbing test are associated with complications in patients submitted to major lung resections.

Methods:

Prospective cohort study on 283 consecutive patients submitted to lobectomy (231) or pneumonectomy (52) with preoperative symptom-limited stair-climbing test. PIMax and PEmax were measured before and immediately after the exercise. PIMax and PEmax values were expressed as percentages of predicted. Delta-PIMax and PEmax were defined as the percentage difference between the pre- and post-exercise values. Logistic regression analysis and bootstrap resampling technique were performed to identify predictors of cardiopulmonary complications

Results:

On average PIMax dropped by 3.6% and PEmax increased by 0.8% after the exercise. 173 (61%) patients experienced a reduction of their PIMax after exercise, whilst 150 (53%) had their PEmax reduced. Postoperative cardiopulmonary complications occurred in 74 patients (26%). Complicated patients had a greater reduction of their PIMax compared to non-complicated patients (8.7% vs. 2.1%, $p=0.03$), whereas delta-PEmax was similar in complicated and non-complicated patients (0.7% vs. 1.3%, $p=0.5$). ROC analysis indicated that the best cut off for predicting complications was a delta-PIMax of 10%. Stepwise logistic regression analysis and bootstrap confirmed that delta-PIMax greater than 10 was associated with cardiopulmonary complications after adjusting for baseline and surgical factors (delta-PIMax: regression coefficient -0.002, $p=0.08$, bootstrap frequency 51%). Figure 1 shows a linear correlation between the reduction of delta-PIMax after exercise and the occurrence of complications with a peak for values greater than 10% reduction.



Conclusions:

The measurement of maximal inspiratory pressure at the mouth during exercise represents an additional parameter that can be used to refine risk stratification of lung resection candidates and identify patients that may benefit of inspiratory muscle training.

Disclosure: All authors have declared no conflicts of interest.

B-005**CAN EXTRACAPSULAR LYMPH NODE INVOLVEMENT BE A TOOL TO FINETUNE PN1 FOR ADENOCARCINOMA IN UICC TNM 7TH EDITION?**

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Objectives:

The current (7th) International Union Against Cancer (UICC) pN staging system is based on the number of positive lymph nodes but does not take into consideration characteristics of the metastatic lymph nodes itself. The aim of the current study was to examine the prognostic value of extracapsular (EC-LNI) and intracapsular (IC-LNI) lymph node involvement in esophageal cancer.

Methods:

From 1990-2010, 792 adenocarcinoma patients with primary R0 resection were retrieved from our prospective database. The number of resected lymph nodes, number of positive lymph nodes and number of EC-LNI / IC-LNI were determined. Extracapsular spread was defined as infiltration of cancer cells beyond the capsule of the positive lymph node.

Results:

Four-hundred-and-eight (51.5%) patients had positive lymph nodes. In 227 (55.6%) cases EC-LNI was detected. EC-LNI showed significantly worse cancer-specific 5-year survival compared to IC-LNI, 20.5% versus 40.7% ($p < 0.0001$). In the pN1-category (1 or 2 positive LN's – UICC stages IIB and IIIA) this was 30.2% versus 48.8%; ($p = 0.0035$). In higher UICC stages, this effect was no longer noticed. UICC stages IIB/IIIA, EC-LNI patients show survival rates that are more closely associated with stage IIIB, while IC-LNI patients have a survival more similar to stage IIB. Reclassifying stages IIB/IIA in IC- and EC-LNI, homogeneity of the TNM model increases (Log-Rank ChiSquare increases from 372.8 to 379.7; $df(8)$).

Conclusions:

EC-LNI is associated with worse survival compared to IC-LNI. In current UICC stages IIB/IIIA, EC-LNI patients show survival rates that are more closely associated with stage IIIB, while IC-LNI patients have a survival more similar to stage IIB. In future adaptations of the staging system for esophageal cancer, EC-LNI versus IC-LNI should be considered.

Disclosure: All authors have declared no conflicts of interest.

B-006

RESULTS OF LI-THO TRIAL: A PROSPECTIVE RANDOMIZED STUDY ON EFFECTIVENESS OF LIGASURE® IN LUNG RESECTIONS

Luca Bertolaccini, A. Viti, A. Cavallo, A. Terzi

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Objectives:

Electro-thermal bipolar tissue-sealing system (LigaSure®-Covidien) in lung resections is still undefined (although approved by F.D.A. with limitations).

Methods:

Prospective randomized study of 100 consecutive patients undergoing lobectomy. After muscle-sparing-thoracotomy and classification of lung fissures (Craig-Walker's), patients with fissure 2-4 were randomized to Stapler-Group or LS-Group. In LS-Group, only LS was used, instead Staplers, for fissures' completion. Cost-benefits-evaluation was performed using Pareto-Optimal-Analysis.

Results:

There were no significant differences between groups (demographic and baseline characteristics.) No patients were withdrawn from study; no adverse-effects were recorded. There was no mortality or major complications. There were no statistically significant differences between outcomes in LS-Group compared with Staplers-Group for operative-time, or morbidity. In LS-Group, there was increase of postoperative air-leaks, not significant, in first 24-postoperative hours, and statistically significant increase of drainage amount, without differences in hospital length-of-stay (Table). LS Group had favorable Multi-Criteria Analysis of cost/benefit ratio with good Pareto-Optimum.

Characteristics and outcomes

Patient characteristics	Liga Sure®-Group (n=50)	Stapler-Group (n=50)	p (χ^2 and Fisher's-test)
Age	69±4(47-81)	68±7(49-71)	0.93332
Medical illness			
COPD	13	11	0.68279
Diabetes	4	6	0.52709
Smoking			
History	23	21	0.76291
Current	27	29	0.78989
Pre-operative-pulmonary function			
FEV1(%)	77±6.5	78±9.8	0.45145

Characteristics and outcomes

Patient characteristics	Liga Sure®-Group (n=50)	Stapler-Group (n=50)	p (χ^2 and Fisher's-test)
FCV(%)	92±4.1	86±4.8	0.74359
DLCO(%)	95±6.2	99±7.5	0.78989
DLCO/VA(%)	79±7.1	67±6.2	0.95632
Pleural adhesion			
None	26	32	0.43068
Minimal	12	10	0.66966
Extensive	12	8	0.37109
Fissure (Craig–Walker's classification)			
II	17	16	0.86249
III	24	23	0.88478
IV	9	13	0.39386
Operating-time	75±15	80±10	0.28126
Outcomes			
Air-leaks (24-postoperative hours, L)	3.8±0.3(2.9-5.1)	1.8±0.4(0.4-5.5)	0.16183
Air-leaks (48-postoperative hours, L)	5.1±0.5(3.0-5.7)	5.8±0.7(3.1-6.4)	0.83200
Drainage-amount (mL)	580±70(210–660)	470±100(140–630)	0.00069
Chest-tube removal days	5.3(4.0–8.5)	4.6(3.5–6.7)	0.82481
Hospital length-of-stay	6.0	5.5	0.88209

Conclusions:

LS is a safe device for lung resections and can be a valid alternative to Staplers. LS allows for functional lung tissue preservation. LS is cost equivalent to Staplers. Nevertheless, larger series will be needed.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 27 MAY 2013

13:00 - 14:00

Session II/Videos

V-007

ANTERIOR MEDIASTINAL TRACHEOSTOMY (ATM) AFTER RECURRENCE OF LARYNGEAL CANCERMarc Boada¹, E. Cladellas¹, J. Berthet², J. Gimferrer¹, L. Molins³, A. Gomez-Caro¹¹*General Thoracic Surgery, Hospital Clínic, Barcelona/Spain,*²*Thoracic Surgery, A de Villeneuve Hospital, Montpellier/France,*³*Thoracic Surgery, Sagrat Cor University Hospital And Hospital Clínic, Barcelona/Spain***Objectives:**

To show the surgical technique and modifications of ATM.

Methods:

A 67-year-old male underwent a total laryngectomy plus chemoradiotherapy due to larynx squamous cell cancer 5 years ago. Follow-up cervicothoracic CT scan and visual inspection showed a local recurrence involving the previous tracheostomy and adjacent tissues. Uncontrolled distant metastases were ruled out and the patient was scheduled for oncological resection and anterior mediastinal tracheostomy. Previous tracheostomy and encompassing skin and soft tissues were resected to achieve R0. After trachea and esophagus dissection, specimen was removed and lower tracheal ring (inferior limit) was checked by frozen section. Cervical and mediastinal lymphatic and fat tissue was also carefully removed to accomplish the oncological resection. Excision of the manubrium of the sternum and inner third of first and second clavicles in both sides was carried out for AMT construction, exposing the innominate vessels. To avoid trachea-innominate fistula, airway was moved under the innominate artery and a myocutaneous pectoral flap was used for fill in the dead spaces and minimize the postoperative chest wall instability. New ATM was constructed in the midline of the skin island of the myocutaneous s flap to avoid dehiscence and deep infection caused by the healing impairment for the previous radiotherapy.

Results:

The patient had a postoperative pneumonia and respiratory failure needing mechanical ventilation and difficult weaning. After 86 days patient was discharged at home without quality of life deterioration regarding the previous status.

Conclusions:

Anterior mediastinal tracheostomy is a feasible and realible technique to treat patients with local recurrence of previous laryngeal tumours. Difficult postoperative management is the rule due to transitory respiratory insufficiency and wound dehiscence due to radiotherapy. However, a careful candidates selection is essential for excellent oncological and postoperative results.

Disclosure: All authors have declared no conflicts of interest.

V-008**SYNCHRONOUS PULMONARY SEQUESTRATION AND BRONCHOGENIC CYST: VIDEOTHORACOSCOPIC RESECTION**

Brian Morris, C. Chwat, J. Braga Menendez, J. Ansele, D. Chimondeguy
Cirugia Toracica, Hospital Universitario Austral, Buenos Aires/Argentina

Objectives:

Bronchogenic cysts and pulmonary sequestration are rare pathologies. Once diagnosis is made, surgical treatment is suggested due to the risk of potential complications.

Methods:

We present a video exposing the case of a 47-year-old man with diagnosis of left bronchogenic cyst and pulmonary sequestration. VATS resection was decided. After selective intubation and with the patient in right lateral decubitus, VATS was performed. Bronchogenic cyst was displayed in relation to the aortic arch, left carotid and subclavian arteries. Using blunt maneuvers with extreme care due to the proximity of the great vessels the entire lesion was excised. Pulmonary sequestration was seen in extralobar location, below the left lower lobe. Dissection was performed with electrocautery and then pedicle ligature was performed. Both pieces were extracted in a bag. A chest tube was placed.

Results:

The patient recovery and follow up was excellent. Discharged was on the fourth day.

Conclusions:

VATS resection was feasible and safe procedure, providing the advantages of minimally invasive surgery in a benign thoracic disease.

Disclosure: All authors have declared no conflicts of interest.



V-009

TOTALLY THORACOSCOPICEdoardo Mercadante, D. Spoletini, M. Carlini*General And Thoracic Surgery, S. Eugenio Hospital, Rome/Italy***Objectives:**

Intercostal lung hernia is a rare condition usually secondary to trauma or thoracic surgical procedures. It is defined as the protrusion of pulmonary tissue and pleural membranes through defects of the thoracic wall. About 300 cases are reported in the literature, and only few cases treated with thoracoscopic approach. In this video a case of iatrogenic intercostal pulmonary hernia, repaired with three ports thoracoscopic approach, is presented.

Methods:

The video shows a 69-year-old man that underwent implantation of bicameral pacemaker catheter, through a left IV intercostal space anterior thoracotomy. After insertion of double lumen tracheal tube, the patient was placed in right lateral decubitus and three 1 cm thoracoport incisions were made in the posterior side of left hemithorax. Adhesions between lingular segment of the upper lobe, the mediastinal fat and the thoracic wall were found between the second intercostal space and the sternum. The herniated tissue was freed from adhesions and reduced in the thoracic cavity with careful preservation of the pacemaker wire. The wall defect was repaired with a double mesh patch (PTFE – Polypropylene), tailored in oval fashion and secured to the thoracic wall with the mechanical Pro Tack™ 5 mm (Autosuture™) stapler.

Results:

No intra or postoperative complications were recorded and the patient was discharged at post operative day 3.

Conclusions:

Pulmonary hernia is a very rare disease that usually involves patients with previous thoracic surgical procedures, or after thoracic trauma and consequently with high suspicion of pleural adhesions. These conditions are not absolute contraindications for a totally mini invasive thoracic approach; moreover, in case of anterior hernias the thoracoscopic point of view could be helpful also for the better working angle.

Disclosure: All authors have declared no conflicts of interest.

V-010

ATYPICAL SEGMENTECTOMY (RIGHT SEGMENT 1A AND 2A) USING INDOCYANINE GREEN DYE METHOD

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Objectives:

Segmentectomy could be one of the mainstay for the treatment for resectable lung cancer. One of the most difficult points in a complete segmentectomy is to detect the intersegmental plane. Especially right upper or lower segmentectomy, which we have to make more than one intersegmental planes, is very difficult.

Methods:

The patient was a 66 year old female. We discovered an abnormal shadow on the chest x-ray. By the chest computed tomography, we diagnosed that she was at an early stage of lung cancer. There was a 11 mm nodule in the right segment 2a. And we recommended that she undergo on the operation right segment 1a and 2a segmentectomy. Operative Procedures: 1) Expose the pulmonary artery (PA), vein (PV) and bronchus (Br). 2) Ligate a segmental Br following the division of PA & PV. 3) Then inject ICG into the segment through Br. 4) The segment turns green following the injection. The border of an intersegmental plane is easily detected not only pleural surface but also pulmonary parenchyma.

Results:

After injecting ICG in the bronchus 1a and 2a, the intersegmental plane between segment 1a and 1b, segment 2a and 2b were highlighted. And we performed the segment 1a and 2a segmentectomy easier and safely. Operation time was 188 minutes. We removed the chest tube on the 4th post-operative day. She was discharged on the 6th post-operative day. There were no complications.

Conclusions:

Even though atypical segmentectomy needed more than one intersegmental planes is difficult, we can perform the atypical segmentectomy safely and usefully by this technique.

Disclosure: All authors have declared no conflicts of interest.

V-011

GIST OF THE ESOPHAGUS IN THE AORTOPULMONARY WINDOW OPERATED FROM THE RIGHT SIDEJoerg Hutter, S. Reich-Weinberger, J. Holzinger*Universitätsklinik Für Chirurgie, Landskrankenhaus, Salzburg/Austria***Objectives:**

Gastro-intestinal-stromal tumors (GIST) of the esophagus are rare. In a series of 1160 cases only 1,1% originated from the esophagus. Most stromal tumors of the esophagus are leiomyomas. Resection can be done endoscopically by submucosal dissection (ESD), open thoracotomy or video assisted thoracoscopy (VATS).

Methods:

We present the video of a patient with a stromal tumor of the esophagus, 40x17mm in the aortopulmonary window. Due to the size and the location the resection by ESD was withdrawn. Despite being located on the left side and because of the close relationship the large vessels the operation was done by VATS from the right side. After transection of the vena azygos and generous mobilization of the esophagus the enucleation of the tumor could be accomplished from the right side.

Results:

After an uneventful intra- and postoperative course the patient was discharged on day 2. The histology revealed a GIST of the esophagus, with clear resection margins, low mitotic activity (1/50 HPF), UICC Stage I (pT2).

Conclusions:

GISTs are rare malignant tumors of the esophagus. Enucleation of the tumor without resection of the esophagus is justified in tumors up to 4cm and low malignant potential. Even left sided tumors can be operated from the right side by VATS.

Disclosure: All authors have declared no conflicts of interest.

V-012

THORACOSCOPIC MEDIASTINAL LYMPH NODE DISSECTION FOR LUNG CANCER BY THE ENERGY DEVICE

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Objectives:

We evaluate the feasibility of thoracoscopic mediastinal lymph node dissection for lung cancer by the energy device.

Methods:

We performed VATS lobectomy and mediastinal lymph node dissection with 2 access windows both 3 cm lengths and 1 camera port completely under thoracoscopic view. We use an energy device called Ligasure blunt tip®(COVIDIEN), which is very convenient and safe especially to dissect the mediastinal lymph node. Now we present a video of thoracoscopic superior mediastinal lymph node dissection for lung cancer after right upper lobectomy by Ligasure blunt tip®. In addition, we examined the perioperative datas of these operations.

Results:

Up to now, we have performed aforementioned operation for 23 lung cancer patients. Perioperative datas were as follows:

- Median duration of the mediastinal lymph nodes dissection: 43minites (25-65)
- Median blood loss including lobectomy: 50 g (10-160)
- Median day of drain removed: 3rd (1-8) POD (Post Operative Day)
- Median dissected lymph nodes: 10 (5-20)
- Complication: 1 minor chylothorax recovered by low fat diet. The drain was removed at 8th POD.

Conclusions:

Thoracoscopic mediastinal lymph node dissection for lung cancer by Ligasure blunt tip is feasible.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 27 MAY 2013

14:00 - 15:30

Session III/Pulmonary Neoplastic

O-013

PROGNOSTIC SIGNIFICANCE OF METASTASIS TO SEGMENTAL OR SUBSEGMENTAL LYMPH NODES IN PATIENTS SUBMITTED TO SURGICAL RESECTION OF NON-SMALL CELL LUNG CANCER WITH PATHOLOGIC N1 LYMPH NODE STATUS

Ottavio Rena, G. Baietto, A. Roncon, E. Papalia, D. Turello, F. Massera, F. Davoli, C. Casadio

Thoracic Surgery, University Eastern Piedmont "Amedeo Avogadro", Novara/Italy

Objectives:

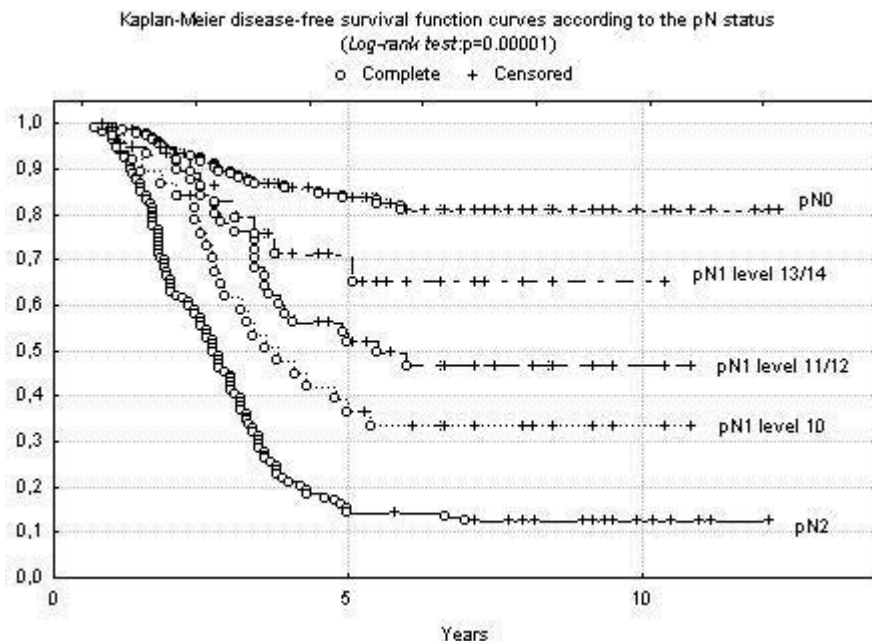
To investigate the prognostic significance of segmental and subsegmental (level 13 and 14) lymph nodes metastasis in patients with non-small cell lung cancer (NSCLC) who have pathologic N1 lymph node status

Methods:

Lymph nodal metastasis pattern was analysed in 139 patients with pN1 NSCLC. Long-term outcomes were compared for 390 pN0, 139 pN1 and 119 pN2 consecutive patients submitted to planned pulmonary resection for NSCLC between 2000 and 2006. The pN1 status was stratified into 3 groups according to the highest level of lymph node involvement: level 10 (hilar), level 11+12 (lobar + interlobar), level 13+14 (segmental + subsegmental).

Results:

The 5-year disease-free survival rates (DFS) for pN0, pN1 and pN2 patients were 84%, 52% and 14% respectively. The highest level of lymph node involvement was a significant prognostic indicator; the 5-years DFS rates for level 13+14, level 11+12, level 10 pN1 and pN2 were 71%, 52%, 37%, and 14%, respectively. Significant differences were recorded in long-term outcome when pN0 and pN1 level 13+14, pN1 level 13+14 and pN1 level 11+12, pN1 level 11+12 and pN1 level 10 were compared ($p < 0.05$) (Graph 1). The median number of examined level 13+14 lymph nodes was 2 (range 0-6) and 58% pN1 patients had metastasis at level 13+14 lymph nodes. T descriptor and histology subtype were other variables affecting long-term outcome.



Conclusions:

The above results indicate that the highest level of lymph nodes metastases may be used to stratify outcome of patients with pN1 disease. Patients with metastasis to the level 13+14 alone have an intermediate prognosis between pN0 and other pN1 status. Routine examination of level 13+14 lymph nodes is to be recommended to correctly identify patients at risk of relapse and predict long-term prognosis.

Disclosure: All authors have declared no conflicts of interest.



O-014

THE IMPACT OF PULMONARY HYPERTENSION ON MORBIDITY AND MORTALITY FOLLOWING MAJOR LUNG RESECTIONBenjamin Wei¹, T. D'Amico¹, Z. Samad², M. Berry¹¹*Cardiothoracic Surgery, Duke University Medical Center, Durham/United States of America,*²*Cardiology, Duke University Medical Center, Durham/United States of America***Objectives:**

Pulmonary hypertension (PHTN) is considered a significant risk factor for major lung resection, but literature investigating this subject is lacking. This study evaluates the impact of PHTN on short-term outcomes following lobectomy.

Methods:

All patients who underwent a lobectomy or bilobectomy for cancer from 1996 to 2011 and had a pre-operative transthoracic echocardiogram (TTE) within a year at a single institution were evaluated. Patients with and without PHTN, defined as an estimated right ventricular systolic pressure (RVSP) of 36 mm Hg or above by TTE, were compared. Multivariable analysis was performed to assess whether PHTN was an independent risk factor for morbidity.

Results:

During the study period, 298 patients met study criteria: 279 (94%) without PHTN and 19 (6%) with PHTN. Patients with PHTN had worse pulmonary function and a higher incidence of tricuspid regurgitation and mitral regurgitation than patients without PHTN, but the groups were otherwise similar (Table 1). The average RVSP of patients with PHTN was 47 mm Hg. Perioperative mortality (0% vs 3%, $p=1$) and postoperative complications (58% vs 48%, $p=0.48$) were not significantly different between patients with and without PHTN, respectively. Significant predictors of morbidity in multivariable analysis were age (Odds Ratio [OR] 1.08/year, $p<0.0001$), thoracotomy as operative approach (OR 2.81, $p=0.0002$), and congestive heart failure (OR 2.90, $p=0.04$). The presence of PHTN was not a predictor of adverse outcomes in either univariate or multivariate analysis.

Preoperative characteristics and postoperative outcomes of patients undergoing lobectomy

Variable	Patients without PHTN (n=279)	Patients with PHTN (n=19)	P value
Age	69 +/- 9	70 +/- 12	0.56
Gender			
M	174 (62%)	8 (42%)	0.09
F	105 (38%)	11 (58%)	
Tobacco abuse	185 (66%)	14 (74%)	0.33
Coronary artery disease	85 (30%)	6 (32%)	1.0
Congestive heart failure	18 (6%)	3 (16%)	0.14
Chronic renal insufficiency	23 (8%)	2 (11%)	0.38
Diabetes	73 (26%)	2 (11%)	0.17
COPD	93 (33%)	9 (47%)	0.22
FEV1 (% predicted)	70	59	0.015
DLCO (% predicted)	75	57	0.0001
Cerebrovascular disease	37 (13%)	2 (11%)	1.0
Operative approach			
VATS	174 (62%)	9 (47%)	0.22
Thoracotomy	104 (37%)	10 (53%)	
Median sternotomy	1 (<1%)	0 (0%)	
Conversion	6 (3.4%)	1 (10%)	0.34
Indication for lobectomy			
NSCLC	264 (95%)	18 (95%)	0.07
Stage IA	71 (27%)	4 (22%)	
Stage IB	61 (23%)	2 (11%)	
Stage IIA	43 (16%)	4 (22%)	
Stage IIB	37 (14%)	7 (39%)	
Stage IIIA	45 (17%)	1 (6%)	
Stage IIIB	2 (<1%)	0 (0%)	
Stage IV	5 (2%)	0 (0%)	
Mesothelioma	2 (1%)	0 (0%)	
Metastasis	12 (4%)	1 (5%)	
Lymphoma	1 (<1%)	0 (0%)	
Perioperative mortality	8 (3%)	0 (0%)	1.0
Median hospital stay (d)	5	5	0.15
Chest tube duration (d)	3	4	0.45
Complications			
Any	133 (48%)	11 (58%)	0.48
Technical	57 (20%)	7 (37%)	0.14
Cardiovascular	63 (23%)	6 (32%)	0.4
Pulmonary	38 (14%)	3 (16%)	0.73
Renal	6 (2%)	1 (5%)	0.37
Neurologic	12 (4%)	1 (5%)	0.58
Wound	2 (1%)	1 (5%)	0.18
Miscellaneous	19 (7%)	3 (16%)	0.16

Conclusions:

Lobectomy may be performed safely in selected patients with pulmonary hypertension, with complication rates comparable to those experienced by patients without pulmonary hypertension

Disclosure: All authors have declared no conflicts of interest.

O-015

CLINICAL MANAGEMENT OF ATYPICAL CARCINOID AND LARGE-CELL NEUROENDOCRINE CARCINOMA. A MULTICENTRE STUDY ON BEHALF OF THE ESTS NEUROENDOCRINE TUMORS OF THE LUNG WORKING GROUP

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Objectives:

In 2012 ESTS created the Lung Neuroendocrine Tumors Working-Group (NETs-WG) with the aim to develop scientific knowledge concerning clinical management of such rare neoplasms. This paper wants to outline outcome and prognostic factors of two aggressive NETs: Atypical Carcinoids (ACs) and Large-Cell Neuroendocrine Carcinomas (LCNCs).

Methods:

Using the ESTS-NETs-WG database, we retrospectively collected 216 patients in 7 Institution in Europe, between 1994 and 2011. We used: Cox-regression model to evaluate variables affecting patients survival and Competing-risk regression models (competing event: death by any causes) to estimate those which augment the risk of developing recurrences.

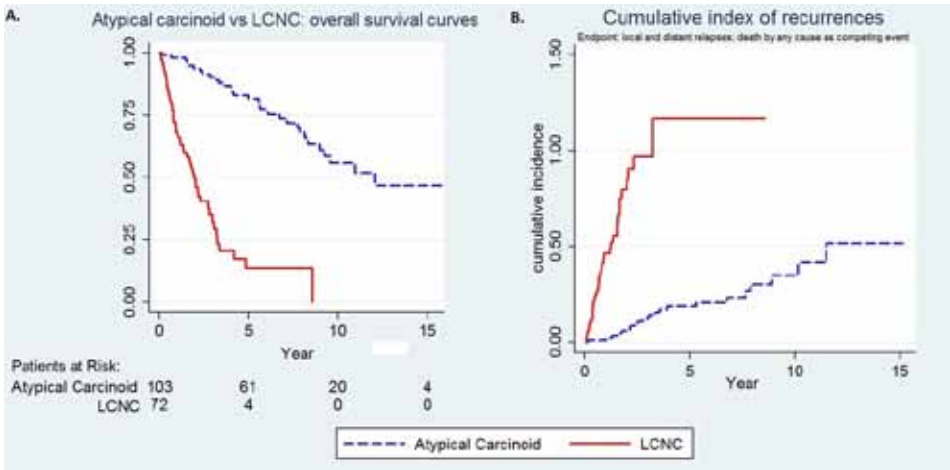
Results:

Table.1 summarizes the characteristics of the patients. Figure.1-A shows AC-LCNC overall survival rates. We found that amongst ACs, age ($p < .001$), paraneoplastic syndromes ($p = .002$), pT4 ($p = .03$) and N2 lymph-nodal involvement ($p = .01$) were negative prognostic factors (PFs); amid LCNCs, only pT4 tumors ($p = .02$) negatively affected the outcome. Recurrences developed in 80 patients and were statistically more frequent in LCNC (HR:2.27;95%CI:1.28-4.06). Figure.1-B shows their cumulative incidence in AC-LCNC groups. Lymph-nodal involvement (HR:9.05;95%CI:1.21-67.51) statistically increased the risk to develop recurrences in ACs, whilst the risk augmented with the growth in size, amid LCNCs.

TABLE.1

	AC(n:103)	LCNC(n:113)
males(n)	51	83
age-mean(range)	62.89(19-97)	64.49(39-84)
smoke(n)	55	94
paraneoplastic-syndromes(n)	4	6
symptoms(n)	57	62
previous-tumors(n)	12	15
peripheral location(n)	51	79
Tumor-size(cm)mean(range) [§]	2.92(0.60-11)	4.33(0.90-10)
T1a	30	15
T1b	31	16
T2a	29	40
T2b	5	13
T3	6	23
T4	2	5
Lymph-nodes [#]		
N0	63	64
N1	18	32
N2	15	15
Induction-CT	1	10
Adjuvant-CT	11	44
Surgery		
wedge	5	14
Segmentectomy	4	6
Lobectomy	78	70
Bilobectomy	6	3
Pneumonectomy	9	14
Extended-res	1	6
Recurrences(n)	28	52
LEGENDA: §:1LCNC:missing #:7AC and 2LCNC:missing		

FIGURE.1



Conclusions:

With this study we confirmed the AC and LCNC biological aggressiveness. We hope that these results will be soon confirmed with the improvement of the ESTS Lung NETs-database.

Disclosure: All authors have declared no conflicts of interest.

O-016

EFFECT OF IMPLEMENTING THE EUROPEAN GUIDELINES FOR FUNCTIONAL EVALUATION BEFORE LUNG RESECTION ON CARDIO-RESPIRATORY MORBIDITY AND 30-DAY MORTALITY IN LUNG CANCER PATIENTS. A CASE-CONTROL STUDY ON A MATCHED SERIES OF PATIENTS

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²*Pulmonology, Salamanca University Hospital, Salamanca/Spain*

Objectives:

We hypothesized that postoperative cardio-respiratory morbidity and/or 30-day death rates decreased after implementing the new European ERS/ESTS guidelines for functional evaluation before lung resection and tested the hypothesis by means of a case-control study.

Methods:

The analysis included a series of 916 consecutive patients who underwent anatomical pulmonary resection for NSCLC in our Center. Patients were divided in cases (September 2009-August 2012) and controls (December 2002- August 2009). We reviewed the records from a prospective computerized database; the final dataset included no missing data. The primary studied outcomes were the occurrence of cardio-respiratory morbidity or 30-day death after surgery. Patients were 1:1 matched according to age, ppoFEV1% and the need of pneumonectomy. Sample size for statistical significance was calculated (one-sided alpha 0.05 and beta 0.85).

Results:

After the matching process, 670 cases (335 cases and 335 controls) entered in the study. The rate of pneumonectomy in cases and controls was 5.7 and 13.2, respectively, ($p < 0.0001$) in the whole series and 5.7 and 6.9 after matching ($p = 0.52$). Cardio-respiratory morbidity was 8.1% (27/308) in cases and 9.8% (33/335) in controls (O.R. = 0.8; 95%CI: 0.4-1.4). 30-day mortality was 0.90% (3/335) in cases and 1, 2% (4/335) in controls (O.R.: 0.7; 95%CI: 0.1-4.4). With the current rates, 18362 cases would be needed to have statistical differences of morbidity and 4170 to have differences in 30-day mortality.

Conclusions:

Although we have observed a trending towards lower cardio-respiratory morbidity and 30-day mortality after implementing ERS/ESTS guidelines, the benefit of the guidelines remains unclear. Multicentric analysis including very large number of cases is needed to demonstrate statistically the effectiveness of the guidelines to reduce operative mortality and cardio-respiratory morbidity. Maybe the effect could be easier to demonstrate in series with higher operative mortality or morbidity.

Disclosure: All authors have declared no conflicts of interest.

O-017

THE INFLUENCE OF BODY MASS INDEX (BMI) AND WEIGHT LOSS ON OUTCOME OF ELDERLY PATIENTS UNDERGOING LUNG CANCER RESECTION

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Thoracic Surgery Unit, Second University of Naples, Naples/Italy

Objectives:

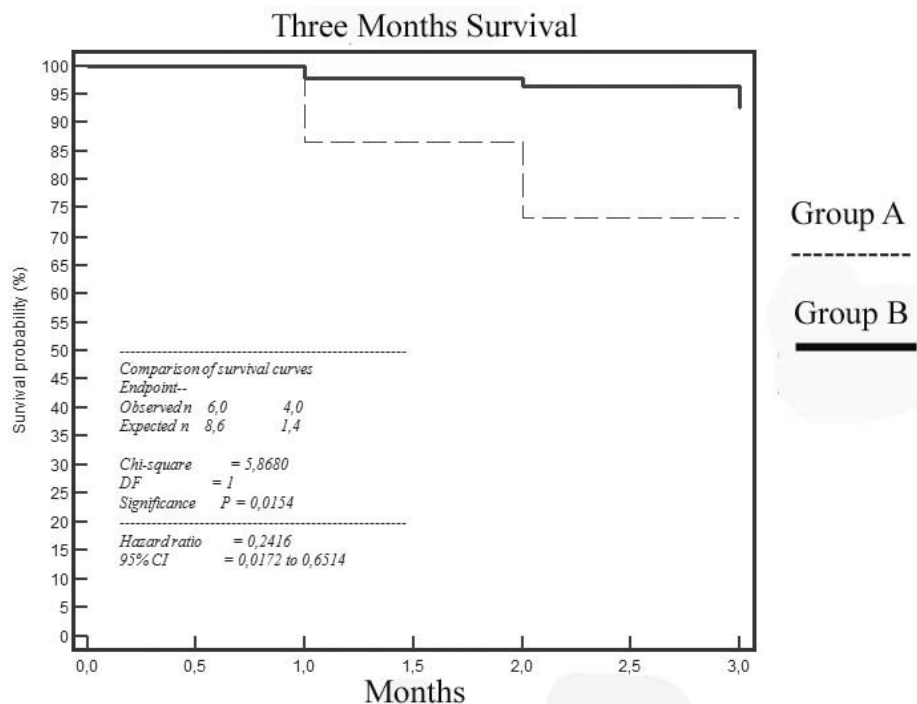
In few studies nutritional depletion is associated with poor outcome after lung cancer resection. No papers investigated its prognostic value in elderly patients resected for lung cancer, as in the present paper.

Methods:

145 lung cancer patients with age > 70 years were enrolled. In addition to routine staging procedures and fitness tests, other variables as body mass index (BMI, Kg/m²), weight loss, preoperative serum albumin, and total protein were registered for each patients. Patients were divided in Group A (BMI≤18.5-underweight) and Group B (BMI>18.5); the intergroup differences were statistically assessed.

Results:

The study group counted 117 resected patients while 28 were excluded (15 were unfit for surgery and 13 had exploratory thoracotomy). Mean age and overall BMI was 74±2.9 and 21.1±2.9, respectively. Group A (n=21) and Group B (n=96) had a BMI value of 16.7±1.3 and of 23.5±1.7, respectively. Preoperative variables were similar between two groups except for a lower incidence of diabetes in Group A (p=0.02;Chi-square test). The difference of postoperative complications between Group A and B was no significant (42% versus 39%; p=0.2;chi-square test). Multivariate analysis showed that significant predictors of any complication (dependent variable) were pneumonectomy (O.R. 10.9508;p=0.0003); preoperative cardiac risk (O.R. 2.5962;p=0.0001), and ppoFEV1 (<40%) (1.8818;p=0.0471); and of mortality (dependent variable) were pneumonectomy (O.R. 4.2255; p=0.006); and ppoFEV1 (<40%) (1.5846;p=0.0003). If considered postoperative mortality at three months (dependent variable), BMI (≤18.59) and weight loss (>5%) were unfavourable prognostic factors (O.R. 5.6785; p=0.0221 and O.R. 6.7857; respectively). Three months survival of Group B was significantly higher than Group A (p=0.01;Kaplan-Meier; Figure 1)



Conclusions:

BMI and weight loss were significant predictors of postoperative early death in elderly patients. They should be incorporated in the routine preoperative assessment. In case of low BMI or weight loss, improving the preoperative and postoperative patient's oral intake might be beneficial.

Disclosure: All authors have declared no conflicts of interest.



O-018

OBSERVATIONS IN LUNG CANCER CARE OVER 5 DECADES: AN ANALYSIS OF OUTCOMES AND COSTS AT A SINGLE HIGH VOLUME INSTITUTIONMichael Lanuti¹, C. Stock¹, A. Shihab², D. Mathisen¹, J. Michaelson²¹*Thoracic Surgery, Massachusetts General Hospital, Boston/United States of America,*²*Laboratory For Quantitative Medicine, Massachusetts General Hospital, Cambridge/United States of America***Objectives:**

This study reviews survival outcomes and cost of lung cancer care over 5 decades at a single high volume institution.

Methods:

17, 025 patients with a diagnosis of lung cancer were analyzed at a single institution from 1959-2010. Data was extracted from a tumor registry linked to a longitudinal medical record, clinical data repository and social security master death index. The analysis contains hospital billing data on 650 lung cancer patients from 2006-2010.

Results:

13,694 deaths occurred among 17,025 patients with lung cancer. The 1-yr, 5-yr, and 10-yr all-cause mortality rate was 41%, 78%, and 87%, respectively. NSCLC comprised 73% (n=12,361) of cases where the median survival = 2.5 yrs and the population was 94% Caucasian. Lung cancer was most prevalent between ages 60-79 years of life. The 5, 10, and 15-yr survival for NSCLC patients were 27%, 15%, and 5% respectively. Death rates measured at 1-yr after diagnosis were reduced; however, 5-year survival over each subsequent decade did not significantly change. In patients where the full scope of cost data was available, the median cost/patient with any stage NSCLC = \$40,500 where 63% of the cost is expended in the first year after diagnosis. The average length of treatment for NSCLC was 20.2 months. The greatest single category of expense was chemotherapy (31%), followed by surgery (24%), inpatient medical (17%), radiation therapy (12%), and diagnostics (5%). For surgically treated patients, stage II-IV costs roughly twice that of stage I patients.

Conclusions:

There has been no evident improvement over the past 5 decades in 5-survival (~27%) in patients diagnosed with NSCLC at a single high volume institution. Improvement in 1-year survival is thought to be attributed to improvements in identifying lung cancer earlier. Most of the healthcare expense for lung cancer is spent in the first year after diagnosis despite stage.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 27 MAY 2013

14:00 - 15:30

Session IV/Young Investigators Award

F-019

THE N2 PARADOX: SIMILAR OUTCOMES OF PRE AND POSTOPERATIVELY IDENTIFIED SINGLE ZONE N2A POSITIVE NON-SMALL LUNG CANCERThomas Tsitsias, A. Boulemden, K. Ang, A. Nakas, D. Waller*Thoracic Surgery, University Hospitals of Leicester; Leicester/United Kingdom***Objectives:**

Resection of N2a NSCLC diagnosed preoperatively is controversial but there is support for resection of unexpected N2 disease discovered at surgery. Since the 7th TNM revision we have intentionally resected clinical N2a disease. To validate this policy we determined prognostic factors associated with all resected N2 disease.

Methods:

From a prospective database of 1131 consecutive patients undergoing elective resection for primary lung cancer we identified 68 patients (33M:35F, median age 67 years, range 44 – 82) who had pathological N2 disease. All patients had CT PET staging and selective mediastinoscopy. A Cox-regression analysis was performed to identify prognostic factors.

Results:

At a median follow-up of 13.9 months (range 1-82 months) the overall median survival was 22.2 months (CI 14.6-29.8) months with 1, 2 and 5-year survival of 63.3%, 46.6% and 13.2% respectively. Survival after resection of pN2 disease is adversely affected by need for pneumonectomy, multi-zone pN2b involvement and by non-compliance with adjuvant chemotherapy. Pathological involvement of the subcarinal zone but no other zone appears to be associated with adverse prognosis ($p=0.063$). Importantly, long-term survival is no different between those patients who have a negative preoperative CTPET scan yet are found to have pN2 after resection and those who are single zone cN2a positive before resection on CTPET scan ($p=0.335$).

Table 1.

Factors	N	Hazard Ratio	95% CI	P value
PET cN2	30	1.37	0.73-2.59	0.335
Multi-zone pN2 involvement	13	2.83	1.32-6.06	0.007
Subcarinal Zone pN2	41	1.87	0.97-3.62	0.063
Lower Zone pN2	6	1.40	0.49-4.02	0.529
Upper Zone pN2	14	0.77	0.34-1.76	0.537
AP Zone pN2	19	0.99	0.49-1.98	0.967
Adjuvant chemotherapy	23	0.42	0.22-0.83	0.012
Pneumonectomy	15	2.70	1.36-5.35	0.005
Gender (male)	33	1.69	0.91-3.13	0.098



Conclusions:

Our results support a policy of intentionally resecting single zone N2a NSCLC identified pre-operatively as part of multimodality therapy.

Disclosure: All authors have declared no conflicts of interest.

F-020**MORPHOLOGICAL AND MOLECULAR CHARACTERIZATION OF CANCER PHENOTYPES ASSOCIATED WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)**

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Objectives:

NSCLC comprises a group of diseases with heterogeneous clinical and molecular characteristics. COPD and lung cancer are strictly related and COPD-associated cancers seems to have specific pathogenetic and morphological features, differently from tumors arising in non-COPD patients. Our aim was to identify the presence of specific morphological and molecular cancer phenotypes in COPD patients compared to control groups (healthy smokers and never-smokers).

Methods:

From 2010 to 2012, we prospectively analysed 43 patients with adenocarcinoma (10 COPD, 23 smokers, 10 never-smokers). Each patient underwent a complete clinical and instrumental assessment (GOLD criteria were used to identify COPD patients). Morphological study included pTNM staging, morphometric analysis of growth pattern, cell proliferation (Ki67/MIB1 expression) and parameters of intra- and peri-tumoral remodeling (inflammation, fibrosis, necrosis). Genetic analysis of EGFR and KRAS mutations was performed.

Results:

Three groups were comparable for main demographic and functional parameters except for male/female ratio, reversed in never-smokers, and for lung function, reduced in COPD patients. Compared to COPD and never-smoker cancers, tumors in smokers presented an increase of solid component (20%vs10% and 0%, respectively, $p=0.045$), a reduction of lepidic pattern (0%vs25% and 25%, respectively, $p=0.01$) and higher Ki67/MIB1 value ($50\pm25\%$ vs $30\pm30\%$ vs $24\pm18\%$, respectively, $p=0.013$). An increase of necrosis was found in smokers ($20\pm23\%$) and COPD ($18\pm23\%$) compared to never-smokers ($2\pm4\%$, $p=0.03$ and $p=0.05$, respectively). Concerning EGFR mutation, no differences were found between groups while KRAS mutation presented a significant higher percentage in smokers compared to COPD and never smoker patients (39% vs 15% vs 11% , $p<0.001$). The presence of KRAS mutation was associated to higher value of Ki67/MIB1 (60% vs 25% , $p=0.04$) and solid pattern (20% vs 5% , $p=0.02$) and to a strong reduction of lepidic pattern (0% vs 15% , $p=0.125$) compared to wild-type form.

Conclusions:

COPD-related cancer presents molecular and morphological features of lower aggressiveness (increased lepidic component, reduced solid pattern, lower cell proliferation and less frequent K-RAS mutation) compared to smokers.

Disclosure: All authors have declared no conflicts of interest.

F-021

AN AUDIT OF POSTOPERATIVE ANALGESIA AFTER SINGLE-PORT VATS LOBECTOMY. CAN WE AVOID EPIDURAL CATHETERS?

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¹Nottingham University Hospitals NHS Trust, thoracic Surgery, Nottingham/United Kingdom,

²Nottingham University Hospitals NHS Trust, Anaesthesia, Nottingham/United Kingdom

Objectives:

Audit the provision of postoperative analgesia after single-port VATS lobectomy

Methods:

A retrospective review of the initial 22 cases [11 male and 11 female, median age of 68.5 (range 45 to 85) years] in whom Single-Port VATS lobectomy was attempted between November 2011 and June 2012. Postoperative analgesia was provided by Epidural Catheter or by a single-shot Paravertebral injection and oral analgesia (Non-Epidural). A 4-Point Visual Pain Scores (0=no pain) were obtained from the medical casenotes on postoperative days 1 to 3.

Results:

Median (Range) Pain Scores

	EPIDURAL GROUP	NON-EPIDURAL GROUP	P values
6am DAY1	0 (0-2)	0 (0-0)	ns
2pm DAY1	0 (0-1)	0 (0-2)	ns
10pm DAY1	0 (0-1)	0 (0-0)	ns
6am DAY2	0 (0-2)	0 (0-1)	ns
6am DAY3	0 (0-1)	0 (0-1)	ns

Median FEV1 was 85 (range 35 to 157) % and Median Thoracoscoring was 1.8 (range 0.1 to 11.8). Operations took 118 (range 65 to 194) minutes and were performed in Upper (41%), Middle (4%) and Lower (55%) lobes. One patient died in hospital 23 days after surgery due to a dense stroke day 3 postop. Conversion rate was 9%. One patient required ITU admission for non-invasive ventilation after conversion to thoracotomy. Median hospital stay was 3 (range 1 to 21) days. There were no differences in Pain Scores between Group Epidural (11 cases) and the Group Non-Epidural (11 cases). 73% of patients in Non-Epidural Group were discharged home within 3 days, against only 36% in Epidural Group.

Conclusions:

Single-Port VATS lobectomy is consistently associated with rapid recovery and short hospital stay. 82% of the cases were discharged home within 5 days (target discharge date for lobectomies in our Enhanced Recovery After Surgery pathway). Avoidance of epidural catheters in this group of patients does not affect postoperative analgesia and might be associated with earlier hospital discharge

Disclosure: All authors have declared no conflicts of interest.

F-022**THE RISK OF BILOBECTOMY COMPARED TO LOBECTOMY. A RETROSPECTIVE ANALYSIS OF A SERIES OF MATCHED CASES AND CONTROLS**

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Objectives:

Bilobectomy is considered to be a risky procedure due to space mismatch. The objective of this study is to evaluate if postoperative complications related or not to size mismatch are more frequent after bilobectomy compared to right lobectomy cases.

Methods:

Case-control study on a series of matched NSCLC patients. Cases underwent right bilobectomy (upper and middle or lower and middle) and controls, right upper or lower lobectomy. Cases and controls matched by propensity scoring according to site, age, ppoFEV1, postoperative management, cardiac comorbidity, and pT status. Outcomes compared: occurrence of any cardio-respiratory complication and occurrence of any complication related to space discrepancies. All complicated case records were reviewed and two blinded observers agreed on the probability of each complication to be related to space discrepancies (kappa statistic). Overall odds ratio and 95% CI for each outcome was calculated on 2x2 tables (whole population and cases with upper or lower resections).

Results:

The study included 689 patients: 572 right lobectomy (419 upper, 153 lower) and 117 bilobectomy cases (30 upper and middle, 87 lower and middle). Observers agreed on space-related complications in 86% of the cases (kappa: 0.72). Cardio-respiratory complications were found in 14.4% (9/689), space-related in 19.59% (135/689). After matching, there were 170 lower (87 bilobectomy and 83 lobectomy) and 64 upper (30 bilobectomy and 34 lobectomy) resections. The rates of death, cardio-respiratory and space-related complications in matched cases are presented in Table I with the odds ratios and 95%CI values. Prevalence of cardio-respiratory complications was higher after lower and middle lobectomy compared to lower lobectomy ($p=0.0002$; O.R: 7.96, 95%CI: 2.19-43.16). No differences in space-related complications between groups of lobectomy and bilobectomy.

Table I. Prevalence of 30-day death, cardio-respiratory complications and space-related complications on matched cases.

OUTCOME	SITE	LOBECTOMY Cases/total (%)	BIL OBECTOMY Cases/total (%)	O.R. (95%CI)
30-day death	Upper	2/34 (5.9)	1/30 (3.3)	0.55 (0.01-11.22)
	Lower	0/83 (0)	2/87 (2.3)	N.A.
Cardio- respiratory morbidity	Upper	8/34 (23.5)	6/30 (20)	0.81 (0.2-3.14)
	Lower	3/83 (3.6)	20/87 (22.9)	7.96 (2.19-43.16)*
Space-related morbidity	Upper	8/34 (23.5)	3/30 (10)	0.36 (0.07-1.75)
	Lower	10/83 (12)	18/87 (20.7)	1.9 (0.77-4.8)

*p=0.0002

Conclusions:

This study failed to demonstrate a higher space-related complication rate in bilobectomy cases but cardio-respiratory complications were statistically higher after lower and middle lobectomy compared to lower lobectomy in matched cases.

Disclosure: G. Varela: Atrium Medical International Advisory Board

Baxter Ad-hoc Advisory Board Received financial support from Ethicon Endo

All other authors have declared no conflicts of interest.

F-023

NEW ANASTOMOSIS TECHNIQUE WITH SUPERIOR PULMONARY VEIN IN LUNG TRANSPLANTATION

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Thoracic Surgery And Lung Transplantation Unit, University Hospital Reina Sofia, Cordoba/Spain

Objectives:

Atrial anastomosis in Lung Transplantation (LT) can present significant technical difficulties, especially in donor-recipient (D/R) disproportion size, or excessive separation of the receptor's pulmonary veins (PPVV) due to atrial dilatation, hence its implementation requires excessive heart handling and longer ischemia time (IT), which result in increased perioperative complications. This technique, which uses the recipient's superior pulmonary vein (SVP), avoids these problems although it is not applicable in all cases, as no pressure gradient at the suture level is required. Therefore, the suture diameter must be equal or greater than the sum of both graft PPVV diameters.

Methods:

Retrospective. Variables: age/gender (D/R), preoperative morbidity, type of surgery, perioperative, vascular complications, mortality, PO stay. Descriptive and inferential statistical study by SPSS®.

Results:

82 LT between January-2009 and June-2012, 18 performed with the new technique: 14 men/4 women, 52±15 years. Pulmonary disease: 2 Cystic-Fibrosis, 7 COPD, 8 Idiopathic-Pulmonary-Fibrosis, and a re-transplantation. Cardiovascular risk factors (CVRF) in 4 cases. Corticosteroids therapy 16.7%. TP: 4 double lung (DL) [22.2%] /14 single lung (SL) [77.8] (10 Rights/ 4 Left). Extracorporeal Bypass 3 cases (time: 86.7±2.8 min). IT (Table1). Complications (38.9%). No dehiscence, fistulas, or thrombosis. Early exitus: 22.2% (4). Late cardiovascular complications: 6 arrhythmias (33.3%), 1 arterial hypertension. Significantly associated: CEC and exitus (intraoperative ($p<0.021$) / early ($p<0.043$)); steroids prior and early exitus ($p<0.043$), arrhythmias and early exitus ($p<0.045$), CVRF and vascular complications ($p<0.000$).

Comparative Group A (new technique) with Group B (classic)

	IT 1°SL	IT 1°DL	IT 2°DL	Vascular Complications
A (n=18)	305±57min	293,7±17min	428±18min	0
B (n=64)	308±84min	280±42min	398±52min	11 (5SL/6DL)
				$p<0,042$

Conclusions:

Following our study, we conclude that the new technique achieves the objectives described (not IT increases, fewer vascular complications). However, an absolute confirmation would require a study comparing similar technical LT given that the new resource was only used in high complexity procedures.

Disclosure: All authors have declared no conflicts of interest.

F-024

TIME-TREND ANALYSIS OF THE PULMONARY FUNCTION AFTER SURGICAL TREATMENT FOR ESOPHAGEAL CANCER: POTENTIALITY AND ROLE OF PULMONARY REHABILITATION

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Objectives:

To evaluate the post-op pulmonary function in patients who underwent radical oesophagectomy for cancer to identify the best candidates for pulmonary rehabilitation programmes.

Methods:

Data of 57 patients operated from 01/06 to 06/11 were retrospectively reviewed. Thirty-eight patients (67%) underwent transhiatal cervico-laparotomic (CL-Group) and 19 (33%) a Mc-Keown cervico-thoraco-laparotomic esophagectomy (CTL-Group). The different surgical approach and the presence of post-operative pulmonary complications (POPC), were compared on demographical/clinical characteristics and pulmonary function (evaluated before surgery and 1 month after discharge).

Results:

Mean age and male/female distribution were 66.6±10.6 yrs and 39/18, respectively. A total of 14 (24% of total sample) POPC occurred with a significantly higher occurrence in CTL-Group (71%vs28%, p<0.001). Preoperative pulmonary function was proven to be significantly related with occurrence of POPC (FVC:p=0.011; FEV1:p<0.001 and PEF:p=0.004). A global worsening of spirometric parameters (expressed as the baseline percentage change, Δ) emerged, but this decrease was significantly higher in CTL-Group in terms of Δ-FVC (p<0.001), Δ-FEV1 (p<0.001) and Δ-PEF (p=0.006). Similarly, patients who experienced a POPC, regardless of surgical approach, showed a higher reduction of pulmonary function in comparison with patients who did not (Δ-FVC:p=0.003; Δ-FEV1:p=0.001 and Δ-PEF:p=0.038).

Conclusions:

In the context of a global reduction of pulmonary function, patients who underwent Mc-Keown approach or experienced a POPC showed a significantly worse pattern. On the base of this evidence and our previous experience with post-operative pulmonary rehabilitation, we believe these patients would indeed benefit from therapeutic rehabilitative strategies in the pre-operative and/or post-operative setting. This assumption is to be proven through prospective clinical trials.

Disclosure: All authors have declared no conflicts of interest.

F-025

RISK FACTORS FOR ABDOMINAL COMPLICATIONS AFTER LUNG TRANSPLANTATION

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Objectives:

Serious abdominal complications after lung transplantation remain an important source of morbidity and mortality in this patient population. The aim of this study is to identify risk factors for abdominal complications after lung transplantation.

Methods:

From November 1997 to December 2011, 280 lung transplant recipients were evaluated for the development of abdominal complication in a single institution. Preoperative and postoperative characteristics were compared using Student's t-test and chi-square tests. Significant variables on univariate analysis were entered into a stepwise logistic regression.

Results:

A total of 32 (11,2%) out of 280 patients developed abdominal complications requiring surgical intervention. These involved cholecystitis (21,9%), colon perforation (40,6%), acute pancreatitis (3,1%), haemoperitoneum (18,8%), gastrointestinal perforation (9,3%), inguinal hernia (3,1%) and small bowel obstruction (3,1%). 6 patients (18,75%) died due to abdominal complication. Independent predictors of abdominal complications were: development of other postoperative complication (not abdominal ones) ($p=0,000$), pretransplantation pulmonary vasodilator therapy ($p=0,038$), pretransplantation corticoid therapy ($p=0,015$), postoperative hemodiafiltration ($p=0,000$), postoperative prostaglandin therapy ($p=0,021$), postoperative inotropic therapy for more than 12 hours ($p=0,005$) and longer intensive care unit stay ($p=0,021$). Multivariate analysis identified only development of non-abdominal complication ($p=0,008$) and postoperative hemodiafiltration ($p=0,010$) as independent risk factors for development of abdominal complication.

Conclusions:

Abdominal complications are common in lung transplant recipients. Surgical intervention is required for the management of these complications. Patients needing special postoperative support or presenting non-abdominal complications are at higher risk for the development of abdominal complications.

Disclosure: All authors have declared no conflicts of interest.

F-026

PN2 COMPLETE RESECTED NON-SMALL CELL LUNG CANCER: IS THERE REALLY A SUBSET OF PATIENTS WHO BENEFIT FROM SURGERY?

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Objectives:

Mediastinal lymph node involvement is the most important prognostic factor for the survival of non-small cell lung cancer (NSCLC), and the main cause of surgical treatment failure. Recent studies have described N2 as a heterogeneous group with some subpopulations which could benefit from a surgical treatment. The objective of this study was to analyze the patients with pN2 disease whom underwent a lung resection in our institution.

Methods:

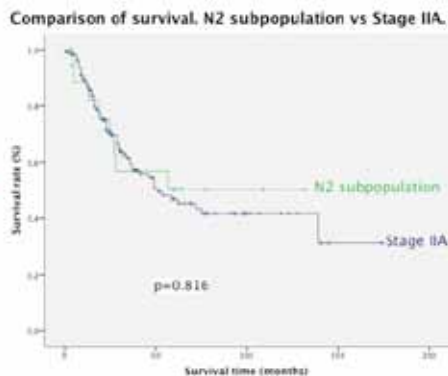
From 1076 patients with NSCLC who underwent surgical resection with curative intent we analysed 149 patients with pN2 involvement. All patients were unsuspected of mediastinal involvement before lung resection. We analysed different variables in order to find some subgroup of N2 disease with better survival and candidate for surgery.

Results:

Operative mortality rate was 4.6% and median follow-up period was 109 months. The 2-years and 5-years overall survival rate was 28% and 19% respectively. There were no significant differences in survival for lymph microscopic metastasis or extracapsular affection. The analysis of single vs. multiple-station affection showed a better survival in single-station affection with a 2-years and 5-years survival of 35% and 25% compared with 11% and 4% in multiple-station affection group ($p=0.00$). In subgroup of single-station affection, upper-lobe, lobectomy resection and affection of 4R and 5 lymph node station were favourable prognostic factor for survival with a 2-years and 5-years survival rate of 57% and 50% respectively. Significant differences were detected in survival between this subpopulation and stage IIIA of our database ($p<0.01$). This subpopulation were equivalent in survival rate to a stage IIA ($p=0.86$). (Graphics)

Conclusions:

Patients with a single-station affection have a better survival than multiple station, particularly those with upper-lobe and 4R or 5 station affection that only need a lobectomy for a complete resection. These subpopulation could benefit from surgery due to their survival rate.



Comparison of survival curves between N2 subpopulation with 4R or 5 lymph single-station affection and upper-lobectomy, and Stage IIIA and Stage IIA of our database. p calculated by log rank analyze.

Disclosure: All authors have declared no conflicts of interest.

F-027

RISK GROUP ANALYSIS FOR PROLONGED AIR LEAK FOLLOWING SURGERY FOR PRIMARY SPONTANEOUS PNEUMOTHORAX. IS PREOPERATIVE USE OF CANNABIS A PREDISPOSING FACTOR?

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Objectives:

Prolonged air leak (PAL) remains a risk factor for morbidity following any thoracic procedure. This complication is particularly 'annoying' in modern practice even after short procedures such as bullectomy and talc pleurodesis for primary spontaneous pneumothorax (PSP). We dissected our recent results and noticed a significant number of cannabis smokers treated for PSP who experienced postoperative prolonged air leak despite meticulous surgery. We therefore compared this group with a control and performed a literature search.

Methods:

We performed a retrospective analysis of 72 consecutive patients treated for PSP in our department in the last 23 months. Within this group we identified and compared the current or previous cannabis smokers (CG) with a control group (NCG). All received a standard bullectomy and talc pleurodesis. A single chest drain was placed on suction and was removed after 48-72 hours if there was no clinically significant air-flow and lung was expanded on a chest x-ray. Patients with prolonged air leak (>120 h) were connected to a Heimlich valve and discharged.

Results:

Thirteen (13) patients experienced a PAL (18.1%). The majority were cannabis-smokers (n=10). Additionally, PAL was evident in 43.5% and 6.2% between the CG and NCG group. Due to the relatively small number of patients and nature of data the Fisher's exact test was used for analysis. Prolonged air-leak and cannabis use were dependent variables (p<0.01).

Conclusions:

The use of cannabis evidently relates to spontaneous pneumothorax but is unclear if directly contributes to the development of bullous disease. It seems that cannabis smoking predisposes patients to prolonged air leak following surgery for PSP despite meticulous surgery and post-operative care. The study does not attempt to stigmatise patients by social habits but alerts physicians and patients of potential complications with an impact to community services and increase in treatment costs.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 27 MAY 2013**16:00 - 17:30****Session V/Pulmonary Non-Neoplastic****O-028****THE USE OF THE THORACIC MORBIDITY AND MORTALITY SYSTEM FOR THE INTERNAL ANALYSIS OF PERFORMANCE: A CASE MATCHED TEMPORAL AUDIT**Michele Salati¹, M. Refai¹, C. Pompili¹, F. Xiumè¹, A. Sabbatini¹, A. Brunelli²¹*Division Thoracic Surgery, Ospedali Riuniti Ancona, Ancona/Italy,*²*Thoracic Surgery, Ospedali Riuniti Ancona, Ancona/Italy***Objectives:**

The aim of the present study was to evaluate the usefulness of the Thoracic Morbidity and Mortality scoring system (TMM) in auditing the quality of care of our unit.

Methods:

We analyzed the performance of our unit comparing the incidence of complications and mortality occurred after anatomic lung resections during two different periods: early period (January 2000 – December 2009, 830 lobectomy–134 pneumonectomy–78 segmentectomy) and recent period (January 2010 – August 2012, 191 lobectomy–8 pneumonectomy–19 segmentectomy). The cardiopulmonary complications as traditionally defined in the European Society of Thoracic Surgeons (ESTS) database were also classified according to TMM system: this method grades the postoperative adverse events from 1 to 5 reflecting an increasing severity of management regardless the type of complication. Complications graded higher than 2 are regarded as major complications. To account for confounders, several baseline and surgical factors were used to build a propensity score that was applied to match the patients of the most recent group with their early group counterparts. These two matched groups were compared in terms of cardiopulmonary morbidity and mortality rates, and incidence of major complications according to TMM system.

Results:

The propensity score analysis yielded 209 well-matched pairs of patients operated on in the 2 periods. Table 1 shows the complication distribution among the two groups and their TMM grading. The two groups had similar rates of ESTS-defined cardiopulmonary complications (recent: 38 patients vs. early:37 patients, $p=0.9$). The use of TMM system revealed a higher incidence of major (grade>2) complications rate in the recent period (recent:29 patients vs. early:14 patients, $p=0.02$).

	Type/grade of complication	Early (209 patients)	Recent (209 patients)	p-value
Traditional cardiovascular complications	Pneumonia	16	7	0.9
	Atrial fibrillation	16	20	
	Atelectasis	4	7	
	Respiratory failure	5	5	
	Acute myocardial ischemia	2	1	
	Cardiac failure	0	3	
	Death	3	3	
TMM grading system	Grade 3a	1	16	0.02
	Grade 3b	3	5	
	Grade 4a	5	2	
	Grade 4b	2	3	
	Grade 5	3	3	

Conclusions:

The TMM scoring system for classifying the postoperative complications revealed a decline of quality of care of our unit otherwise undetected by applying traditional outcome measures. This tool can be used as an additional graded outcome endpoint to refine internal audit of performance.

Disclosure: All authors have declared no conflicts of interest.

O-029

CONTROL OF POST-THORACOTOMY PAIN BY TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION: A RANDOMIZED PROSPECTIVE STUDY

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Objectives:

Transcutaneous electrical nerve stimulation (TENS) has been used successfully to control post-operative pain in different surgical procedures. We aim to assess the efficacy of TENS on post-thoracotomy pain.

Methods:

Prospective study of 60 patients submitted to thoracotomy. Patients were divided in two independent groups (anterior thoracotomy -AT- and posterolateral thoracotomy -PT-). Postoperative analgesia protocol consisted in local anaesthetic (300mg/day) through a paravertebral catheter placed by the surgeon at the end of the procedure and Metamizole sodium (every 6 h). Subcutaneous Meperidine hydrochloride was employed as a rescue drug. Patients were randomized in 2 groups: TENS group (30 patients) who received postoperatively TENS for 3 days and control group (30 patients) without TENS. The level of pain was measured with the visual analogic scale (VAS) at 1, 6, 24, 48 and 72 h after surgery.

Results:

Seven patients (11.6%) needed meperidine as rescue drug (2 with TENS and 5 in control group). Mean VAS values were the following: all the cases (n=60): 5.0 ± 1.9 , AT (n=36): 4.3 ± 2.0 , PT (n=24): 5.8 ± 1.9 , TENS (n=30): 4.6 ± 2.0 , control group (n=30): 5.6 ± 2.1 , AT with TENS (n=18): 4.0 ± 2.1 , AT in control group (n=18): 4.8 ± 1.9 , PT with TENS (n=12): 5.5 ± 1.9 , PT in control group (n=12): 6.1 ± 1.7 .

Conclusions:

Post-thoracotomy analgesia combining paravertebral catheter and a nonsteroidal anti-inflammatory drug is a safe and effective practice. Patients submitted to AT experienced less pain than those with PT (4.3 vs 5.8, $p < 0.01$). VAS score in TENS group was significantly lower than in control group on 1, 6, 24, 48 and 72 postoperative hours. Finally, TENS patients required less rescue analgesia compared to control group ($p < 0.05$). TENS is a valuable complementary strategy to alleviate post-thoracotomy pain.

Disclosure: All authors have declared no conflicts of interest.

O-030

EXTRACORPOREAL LUNG SUPPORT IN TRAUMA PATIENTS WITH SEVERE CHEST INJURY AND ACUTE LUNG FAILURE: A 10-YEAR INSTITUTIONAL EXPERIENCE

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⁴*Department Of Internal Medicine Ii, University Medical Center Regensburg, Regensburg/Germany*

Objectives:

Severe trauma with concomitant chest injury is frequently associated with Acute Lung Failure (ALF). This report summarizes our experience with Extracorporeal Lung Support (ELS) in thoracic trauma patients treated at a University Medical Center in Germany.

Methods:

Retrospective, observational analysis of prospectively collected data (ECMO-Registry database) on all consecutive trauma patients with ALF requiring ELS.

Results:

Between April 2002 and April 2012, 52 patients (49 male) with severe thoracic trauma and ALF refractory to conventional therapy required ELS. Mean age was 32 ± 14 years (range, 16 – 72). Major traffic accident (73%) was the most common trauma followed by blast injury (17%), deep fall (8%) and blunt trauma (2%). Mean Injury Severity Score (ISS) was 58.9 ± 10.5 , mean lung injury score (LIS) was 3.3 ± 0.6 and sequential organ failure assessment (SOFA) score was 10.5 ± 3 . 26 patients required pumpless extracorporeal lung assist (PECLA) and 26 patients veno-venous extracorporeal membrane oxygenation (vv-ECMO). Mean time to ELS support was 5.2 ± 7.7 days (range, <24h – 38 days) and mean ELS duration was 6.9 ± 3.6 days (range, <24h – 19 days). In 24 cases (48%) ELS implantation was performed in an external facility. Cannula-related complications occurred in 15.4% of patients. Surgery was performed in 44 patients with 16 patients under ELS. Pulmonary recovery sufficient to wean the patient from ELS occurred in 85% of patients. Eight patients (15.4%) died during ELS and three patients (5.8%) died after ELS weaning. Overall survival rate was 79% compared to proposed ISS-related mortality (59%).

Conclusions:

ECMO support is an excellent, lifesaving treatment option in severe thoracic trauma patients with acute lung failure and facilitates survival in an experienced trauma-center with an interdisciplinary treatment approach. We encourage the use of vv-ECMO due to reduced complication rates, better oxygenation and best short-term outcome.

Disclosure: T. Bein: I received honoraria for lectures from Novalung.

T. Müller: I received an honorarium from MAQUET Cardiopulmonary AG for lectures concerning the ECMO systems (five years ago).

All other authors have declared no conflicts of interest.

O-031

SHOULD PATIENTS UNDERGOING LUNG RESECTION WITHOUT EPIDURAL ANALGESIA BE CATHETERISED ROUTINELY?Bilal Kirmani¹, T. Conley¹, J. Mcshane², M. Shackcloth¹¹*Cardiothoracic Surgery, Liverpool Heart and Chest Hospital, Liverpool/United Kingdom,*²*Clinical Quality, Liverpool Heart and Chest Hospital, Liverpool/United Kingdom***Objectives:**

The incidence of urinary retention (UR) following lung resection in patients without epidural analgesia is unknown. It is believed that patients undergoing lung resection without epidural do not routinely require catheterisation. We set out to identify the incidence and risk factors for UR in this population.

Methods:

A prospectively captured thoracic surgical database and patient case notes were reviewed. A total of 1052 patients underwent lung resection between 2001 and 2011 without epidural analgesia, of which complete data was available for 685 patients.

Results:

Of the total 685 patients, 287 (41.9%) were catheterised pre-operatively. The incidence of UR post-operatively was 118 out of 398 (29.6%). Odds ratios and p-values of risk factors for urinary retention identified by logistic regression were: male gender (OR 2.16, $p=0.005$); age (OR 1.05/y, $p=0.0005$); open thoracotomy (OR 3.01, $p=0.006$); anatomic lung resection (OR 2.26, $p=0.02$); and low FEV1 (OR 0.28/%, $p=0.05$). Use of paravertebral anaesthesia or pre-existing prostatic disease were not identified as risk factors in multivariate analysis. The c-index for the logistic regression was 0.73, with a Hosmer-Lemeshow statistic of $p=0.07$. The predicted risk of catheterisation ranged from 5 to 60%, with observed risks between 6% and 78% in these respective groups. The median length of stay in patients who developed UR was 7 days (IQR 5-10) compared with 5 days (IQR 4-7) in those that did not ($p<0.0001$).

Conclusions:

Patients undergoing lung resection without epidural analgesia do not require routine catheterisation. Use of a scoring tool allows identification of patients at high risk to be catheterised pre-operatively, and those at moderate risk to be treated for retention early in the post-operative period.

Disclosure: All authors have declared no conflicts of interest.

O-032**EARLY CHEST TUBE REMOVAL AFTER VIDEO-ASSISTED THORACIC SURGERY (VATS) LOBECTOMY WITH SEROUS FLUID PRODUCTION UP TO 500 ML/DAY**

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²*Department Of Cardiothoracic Surgery, Copenhagen University Hospital, Rigshospitalet, Denmark, Copenhagen/Denmark*

Objectives:

Attempting to fast-track pulmonary resections, we removed chest tubes after Video-Assisted Thoracic Surgery (VATS) lobectomy with serous fluid production up to 500 ml/day. Subsequently we evaluated the frequency of recurrent pleural effusions requiring drainage.

Methods:

Data from 622 consecutive patients undergoing VATS lobectomy from January 2009 to December 2011 were registered prospectively in an institutional database. Data included age, gender, lobe(s) resected, bleeding and operative time. Follow up was 30 days from discharge. All complications requiring pleural drainage and all readmissions were registered. 23 patients were excluded due to missing data leaving 599 for final analysis. Our primary outcome was number of patients requiring pleural drainage due to effusion. Secondary outcomes included postoperative day (POD) of chest tube removal and POD of discharge. Proportions of patients requiring drainage due to pleural effusion were compared between three groups according to POD of chest tube removal (day 0-1, 2-3 and ≥ 4 respectively) using the Fisher's Exact Test.

Results:

Pleural effusion after chest tube removal required drainage in 17 patients (2,8%). (Table 1) Of these, 7 required readmission. Median time of chest tube removal was POD 2 and median time of discharge was POD 4. No statistical significant correlation were found between proportions of interventions due to pleural effusion and POD of chest tube removal ($p = .50$). Median time from chest tube removal to discharge was 1 day in all groups. Of the patients receiving drainage due to pleural effusion, none had complications to the intervention, except 1 who developed pneumothorax after pleurocentesis.

Table 1. Number of patients developing pleural effusion requiring drainage grouped according to postoperative day (POD) of chest tube removal.

Chest tube removed:	Number of patients (%)			Total <i>n</i> = 599
	POD 0-1 <i>n</i> = 227	POD 2-3 <i>n</i> = 182	POD ≥ 4 <i>n</i> = 190	
Re-insertion of chest tube due to pleural effusion	1 (0,4)	2 (1,1)	2 (1,1)	5 (0,8)
Pleurocentesis due to pleural effusion	8 (3,5)	2 (1,1)	2 (1,1)	12 (2,0)

Conclusions:

The proportion of patients who developed pleural effusion necessitating drainage was low (2,8%), and complications to the renewed intervention were few. Our findings indicate that chest tube removal after VATS lobectomy is safe despite volumes of serous pleural production up to 500 ml/day.

Disclosure: R.H. Petersen: Covidien, Consultant Takeda, Travel grants

H.J. Hansen: Covidien, Consultant Takeda, Travel grants

All other authors have declared no conflicts of interest.

O-033**SOURCES OF PERCEIVED SOCIAL SUPPORT AFFECT PERCEPTION OF THE DISEASE BUT NOT LIFE SATISFACTION IN PATIENTS WITH LUNG CANCER**

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³*Department Of Ethics And Human Philosophy, Medical University of Lublin, Lublin/ Poland*

Objectives:

This is a pilot study aiming to assess the impact of social support from persons or institutions on perception of the disease and on life satisfaction in patients with lung cancer.

Methods:

Forty nine patients with lung cancer (aged 32-78; mean 57.8 ± 10.0 years) admitted to our thoracic surgery department were surveyed before surgical intervention using questionnaires: author's Social Support Scale covering support from family, friends and medical personnel, Brief IPQ by Broadbent and Life Satisfaction Scale by Diener.

Results:

Strong support from friends was associated with improved perception of the disease in personal control dimension but showed a tendency to decrease concern dimension ($\rho=0.311$; $p=0.031$ and $\rho=-0.275$; $p=0.057$, respectively)(Tab. 1). Similarly, support from neighbors significantly decreased concern, but showed a tendency to improve personal control and coherence dimensions ($\rho=-0.301$; $p=0.04$, $\rho=0.27$; $p=0.066$ and $\rho=0.249$; $p=0.092$, respectively). Support from social aid institutions was associated with disease perception in identity and concern dimensions ($\rho=0.313$; $p=0.034$ and $\rho=0.266$; $p=0.070$, respectively), whereas support from church was linked with concern and emotional representation dimensions ($\rho=0.349$; $p=0.018$ and $\rho=0.285$; $p=0.057$). Interestingly, medical personnel significantly influenced personal control and coherence dimensions ($\rho=0.311$; $p=0.031$ and $\rho=0.290$; $p=0.046$). Life satisfaction analysis showed only a tendency in relation to support from social aid institutions ($\rho=-0.274$; $p=0.062$), which may confirm patient self-sufficiency.

Tab. 1. Perception of the disease vs. source of social support in patients with lung cancer

Disease perception (dimensions)	IPQ No	Source of support											
		Family		Friends		Neighbors		Social aid inst.		Church		Medical personnel	
		rho	p	rho	p	rho	p	rho	p	rho	p	rho	p
consequences	IPQ1	0,149	0,307	0,018	0,9	0,158	0,282	0,042	0,777	0,148	0,32	0,22	0,128
timeline	IPQ2	0,02	0,895	-0,071	0,637	0,124	0,411	0,093	0,539	-0,058	0,708	-0,152	0,307
personal control	IPQ3	0,224	0,126	,311(*)	0,031	0,27	0,066	0,1	0,502	0,068	0,655	,311(*)	0,031
treatment control	IPQ4	-0,046	0,758	-0,149	0,311	-0,246	0,095	-0,089	0,55	-0,015	0,92	0,212	0,148
identity	IPQ5	-0,112	0,454	-0,033	0,825	0,09	0,552	,313(*)	0,034	-0,152	0,319	-0,131	0,379
concern	IPQ6	-0,076	0,61	-0,275	0,059	-,301(*)	0,04	0,266	0,07	,349(*)	0,018	-0,101	0,493
coherence	IPQ7	0,229	0,117	0,154	0,296	0,249	0,092	-0,156	0,296	0,143	0,343	,290(*)	0,046
emotional representation	IPQ8	0,221	0,136	-0,056	0,707	-0,059	0,698	0,242	0,105	0,285	0,057	0,028	0,854

Conclusions:

Perceived social support affects many dimensions of disease perception in patients with lung cancer. Psychological condition of these patients and their individual perception of illness may be positively modified by adequate support from intimates, medical personnel and social or religious institutions. As psychological sphere constitutes an important part of a human being, such interventions may contribute to improvements in overall treatment outcomes in patients with lung cancer.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 27 MAY 2013

16:00 - 17:30

Session VI/Innovative/Experimental

F-034

THE COMPARISON OF TRACHEOTOMY AND TRANSARYNGEAL INTUBATION REGARDING FREE RADICAL FORMATION AND EFFECT ON THE LUNG IN RATS

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Objectives:

Our aim in this study was to compare the blood gas changes, the malondialdehyde (MDA) and endogenous antioxidant glutathione (GSH) levels in blood and lung tissues after ischemia/reperfusion, and the histopathological damage in lung tissue in rats provided respiratory support with mechanical ventilation after transaryngeal intubation and tracheotomy.

Methods:

A total of 45 rats divided into three equal groups were included in this study. Group 1 rats were provided mechanical ventilator support after transaryngeal intubation, group 2 rats were provided mechanical ventilator support after tracheotomy, and group 3 was the control group where rats were only anesthetized. Intergroup comparisons of blood gas changes, MDA and GSH levels, and histopathological changes in the lung tissue were made in the blood and tissue samples obtained.

Results:

Blood gas evaluation showed more marked increase in pO₂ values and decline in pCO₂ values in group 2 than group 1 ($p < 0.05$), and higher serum MDA levels in group 1 than group 2 ($p < 0.05$). Tissue GSH levels in groups 1 and 2 were higher than the control group but this difference was not statistically significant ($p > 0.05$). In terms of histopathological scoring, the damage score in group 1 was higher than in group 2 ($p < 0.05$).

Conclusions:

This is the first experimental study to show tracheotomy to be more advantageous than transaryngeal intubation in terms of the effect on blood gases, effect of ischemia/reperfusion damage on free oxygen radicals, and structural changes in the lung tissue. Transferring to tracheotomy as soon as possible in patients on long-term intubation will cause less tissue damage and provide maximum oxygen.

Disclosure: All authors have declared no conflicts of interest.

F-035

VEGF PATHWAY REFLECTS THE CLINICO-PATHOLOGICAL BEHAVIOUR OF THYMIC EPITHELIAL TUMOURS

Giuseppe Marulli¹, F. Rea¹, F. Di Chiara¹, G.M. Comacchio¹, F. Calabrese¹, L. Battistella², S. Nicotra², N. Nannini², F. Lunardi², F. Calabrese²

¹Cardiologic, Thoracic And Vascular Sciences, Division Of Thoracic Surgery, Padova/Italy,

²Dpt. Of Cardiac, Thoracic And Vascular Sciences, University of Padua, Padua/Italy

Objectives:

Thymic epithelial tumours (TETs) are a heterogeneous group of neoplasms with different clinical behaviour and prognosis. Completeness of resection, Masaoka stage and histology are well recognized prognostic factors, however it is difficult to predict thymic tumour behaviour on the basis of the morphology alone. Neoangiogenesis, an essential event for tumour development and progression, is regulated by different angiogenic factors: vascular endothelial growth factor (VEGF) and its receptors represent the primary involved pathway. Tissue evaluation of VEGF pathway has been reported in anecdotic reports. The aim of the study was tissue evaluation of VEGF pathway in different types of TETs and its relationship with clinical characteristics and prognosis.

Methods:

We prospectively studied 54 patients (mean age 55±13 years) affected by TETs operated on between 2004 and 2011. 13 patients with thymic hyperplasia or normal thymus removed during surgery for other reasons were used as control group. VEGF and its receptors (R1, R2, R3) were investigated in all thymic samples by immunohistochemistry using semiquantitative analysis (score between 0 and 300).

Results:

VEGF pathway was positive in all TETs (median score 200), while it was negative or slightly positive in control group. Significantly higher VEGF and its receptors R1 and R3 expression ($p<0.05$) was detected in more aggressive histological subtypes (B3 and thymic carcinoma) compared with subtypes A, AB, B1 and B2. Patients with VEGF score >200 presented a more aggressive clinico-pathological behaviour with significant proportion of advanced (III and IVa) Masaoka stage (64.8% vs 35.2%; $p=0.02$), increased percentage of histotypes B3 and C (61.1% vs 38.9%; $p=0.00001$), higher percentage of vascular invasion (12,9% vs 0%; $p=0.006$) and recurrence rate (10.4% vs 0%; $p=0.03$).

Conclusions:

A strong positive VEGF pathway expression could have a role in the development/invasiveness of more aggressive TETs. Antiangiogenic agents might be considered potential targeted therapy in more aggressive tumours.

Disclosure: All authors have declared no conflicts of interest.

F-036

ANTINEOPLASTIC ACTIVITY OF POVIDONE-IODIDE ON DIFFERENT MESOTHELIOMA CELL LINES: RESULTS OF IN-VITRO STUDY

Alfonso Fiorelli¹, V. D'Urso², D. Di Marzo², I.M. Forte², A. Giordano³, F. Pentimalli², M. Di Domenico⁴, M. Accardo⁵, M. Santini¹

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²*Cancer Research Center, Cancer Research Center, Mercogliano, Mercogliano/Italy;*

³*Sbarro Institute For Cancer Research And Molecular Medicine, Center For Biotechnology, Temple University, Philadelphia, Philadelphia/United States of America;*

⁴*General Pathology, Second University of Naples, Naples/Italy;*

⁵*Morphopatolgy Unit, Second University of Naples, Naples/Italy*

Objectives:

Povidone-Iodine (PVP-I) or betadine owing to its antineoplastic activity is also used as an adjuvant during intrabdominal or intrathoracic surgery. However, the protocol of PVP-I administration has not been optimized to achieve the best antitumoral efficacy. We aimed to determine the optimal concentration of PVP-I and the time of incubation into the pleural cavity by analyzing the effect of different doses and time of administration of PVP-I on the cell viability of different mesothelioma cell lines.

Methods:

Four different cell lines (MET 5A/normal mesothelium; H2052/sarcomatoid mesothelioma; ISTMES2/epithelial mesothelioma; MSTO/biphasic mesothelioma) were incubated with increasing concentration of diluted PVP-I (0.0001%; 0.001%; 0.01%; 0.1%; 1%) for 5, 10, 30 and 60 minutes, and for 24 hours. Cell viability was determined through the MTS assay, and cell death was determined through FACS analysis. The differences were statistically analyzed by ANOVA test.

Results:

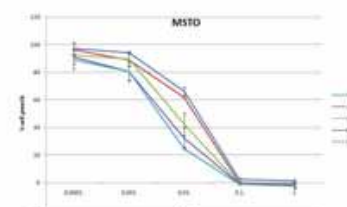
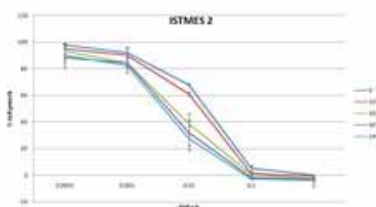
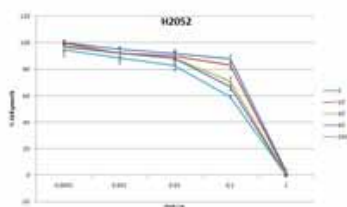
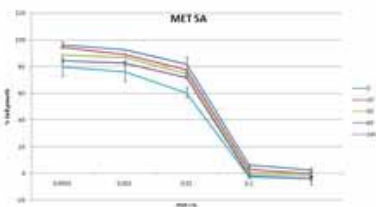
At 0.1% concentration and after 10 minutes of incubation, the percentage of viable cells was 2.5% ($p < 0.01$), 0.99% ($p < 0.01$) and 0.1% ($p < 0.01$) for MET 5A, ISTMES2 and MSTO respectively. Conversely, the same concentration did not significantly affect the H2052 cell line which was completely suppressed at a 1% concentration of PVP-I (Figure 1/A). Double staining of Annexin V and DNA showed that 0.1% PVP-I induced both apoptosis and necrosis in MSTO, ISTMES2 and MET 5A cells following 10 minutes treatment. Whereas this effect was reduced in H2052 cells (Figure 1/B).

Conclusions:

Our results confirmed the anti-neoplastic activity of PVP-I especially on ISTMES2 and MSTO cell line. Respect to chemotherapy pleural irrigation, washing with PVP-I is cost-effective and easy. If confirmed by larger study, our findings suggest that the intrapleural irrigation with PVP-I (0.1% concentration for 10 minutes) in patients with epithelial or biphasic mesothelioma undergoing cytoreductive surgery might be applied in thoracic surgery practice to prevent the neoplastic cell growth.

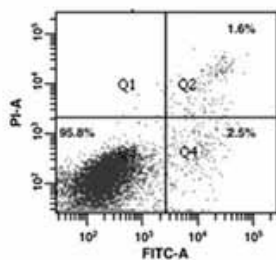
Disclosure: All authors have declared no conflicts of interest.

A) Cell growth

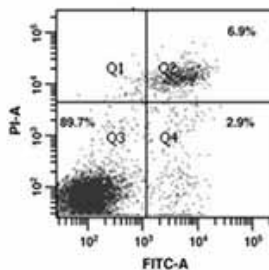


2) FACS Analysis

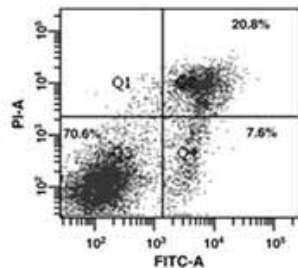
CTRL



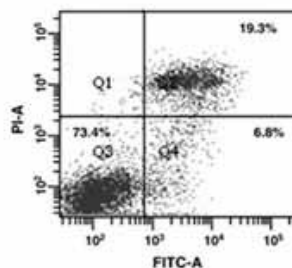
MET5A



MSTO



ISTMES 2



F-037

HUMAN ACELLULAR DERMIS SEEDED WITH AUTOLOGOUS FIBROBLASTS ENHANCES BRONCHIAL ANASTOMOTIC HEALING IN AN IRRADIATED RODENT SLEEVE RESECTION MODEL

Eric Roessner¹, A. Schulmeister¹, M. Vitacolonna¹, C. Tsagogiorgas², M. Brockmann³, P. Hohenberger¹

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²*Department Of Anaesthesia, University Medical Centre Mannheim, Mannheim/Germany,*

³*Department Of Neuroradiology, University Medical Centre Mannheim, Mannheim/Germany*

Objectives:

The combination of neoadjuvant radiochemotherapy and parenchyma preserving sleeve resection for lung cancer remains controversial due to potentially increased rate of anastomotic breakdown. We analysed the effects of applying a decellularised human dermis transplant seeded with autologous fibroblasts in a rodent sleeve resection model with neoadjuvant radiotherapy.

Methods:

64 male Fisher rats underwent a transection and surgical anastomosis of the left main bronchus and were randomized to receive +/- radiation treatment and +/- augmentation of the anastomosis with a fibroblast-seeded dermis transplant (2x2 factorial design). A μ CT scan was performed at postoperative days 7 and 14, and the animals were sacrificed on day 14. Anastomotic bursting pressure and hydroxyproline concentration were measured.

Results:

In the irradiated groups, the anastomotic bursting pressure was significantly higher in the augmented group at day 7 (100.9 ± 18.3 kPa vs. 141.3 ± 18.0 kPa, $p=0.0005$) but not at day 14. Hydroxyproline levels showed a similar pattern in the irradiated group with significant differences at day 7 (7d post-operative 158 ± 11.6 nmol/mg vs. 198.2 ± 10.9 nmol/mg, $p<0.0001$) but not at day 14 postoperatively.

Conclusions:

Augmentation of a bronchial anastomosis by a dermal matrix, seeded with autologous, viable fibroblasts improves early wound breaking strength. Fibroblast enhanced dermal matrices provide a new and easily usable tool to prevent early anastomotic leakage after neoadjuvant chemoradiation in locally advanced lung cancer.

Disclosure: All authors have declared no conflicts of interest.

F-038

REAL-TIME, IN-VIVO TISSUE IDENTIFICATION DURING THORACIC SURGERY

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¹*Department Of Thoracic Surgery, University of Debrecen Medical - and Health Science Center, Institute of Surgery, Debrecen/Hungary,*

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⁴*Medimass Ltd., Medimass ltd., Budapest/Hungary,*

⁵*Department Of Surgery And Cancer, Imperial College London, London/United Kingdom*

Objectives:

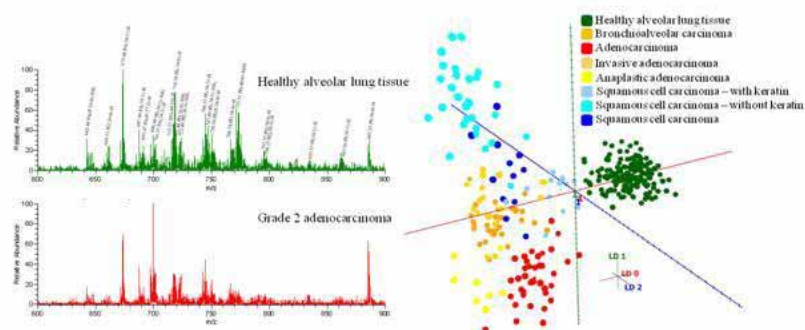
Rapid Evaporative Ionization Mass Spectrometry (REIMS) is an emerging technique allowing near real-time, in-vivo characterization of human tissue by mass spectrometric analysis of the aerosol released during electrosurgical dissection. This study aimed to validate the classification technique by applying this method to the analysis of fresh ex-vivo tissue collected during thoracic surgeries.

Methods:

A modified electrosurgical handpiece, incorporating ion transfer tubing was used for ionization. The ionization of the sample takes place at the surgical site during the electrosurgical dissection of the tissue pieces or ex-vivo. Transfer of the surgical aerosol to the distant mass spectrometer was carried out using Venturi pump and 4m long Teflon tubing. Mass spectrometric data was analyzed using multivariate statistical methods including principal component analysis (PCA) and linear discriminant analysis (LDA), and a spectral identification algorithm utilizing a similar approach was implemented.

Results:

Data was collected during 37 surgical interventions and the tissue specific database was tested on 13 additional patients. Our findings suggest that the ratio of each characteristic lipid species show tissue specific distribution (Figure 1). The separation of all tissues using PCA+LDA algorithm has proven to be successful with 96,69% sensitivity and 100% specificity using validation set, and 98.95% sensitivity and 98.77% specificity using cross-validation. The separation of tissues obtained from healthy lung, different lung cancers, lymph nodes containing metastases and healthy lymph nodes are possible using our technique (Figure 1).



1. Figure. Spectra obtained from different pulmonary tissue and 3 dimensional LDA plot of different histological tissue types.

Conclusions:

The main goal of this study was to test a real-time classification tool providing results in a couple of seconds or less in the theatre. Statistical analysis of healthy and cancerous alveolar lung and lymph node tissue proved that the mass spectrometer coupled intelligent surgical knife is capable of providing real-time identification of intra-operative pathology, which could significantly influence 'on table' decision-making.

Disclosure: All authors have declared no conflicts of interest.



F-039

THE EFFICACY OF 320-DETECTOR ROW CT FOR ASSESSMENT OF PREOPERATIVE PULMONARY VASCULATURE OF CANDIDATES FOR PULMONARY SEGMENTECTOMYShinya Tane, D. Hokka, S. Tauchi, Y. Maniwa*Division Of Thoracic Surgery, Kobe University Graduate School of Medicine, Kobe/Japan***Objectives:**

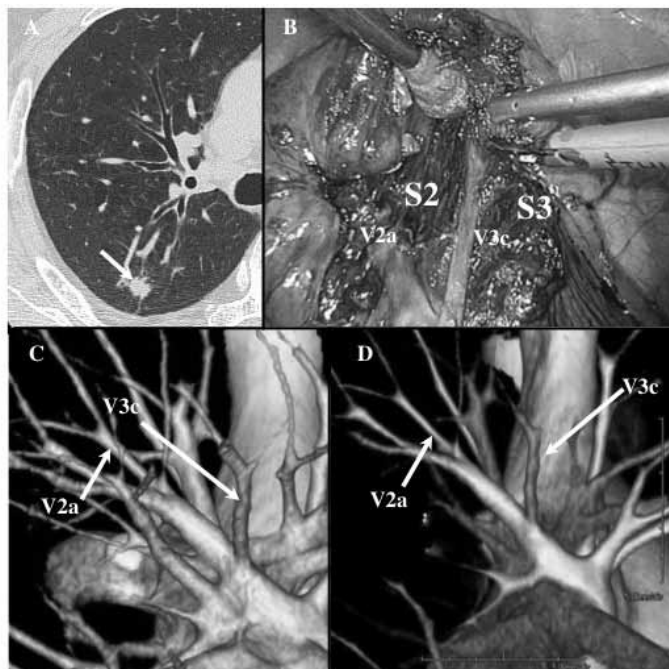
The purpose of this study was to compare the efficacy of 320-detector row computed tomography (CT) with that of 64-detector row CT for 3-dimensional assessment of pulmonary vasculature of candidates for pulmonary segmentectomy.

Methods:

Both CT procedures were used for 32 patients, who subsequently underwent pulmonary segmentectomy. Before the operation, 3-dimensional pulmonary vasculature images were obtained for each data and the arteries and intersegmental veins of the affected segments were identified. Two thoracic surgeons independently assessed the vessels with visual scoring systems, and kappa analysis was used to determine inter-observer agreement. The Mann-Whitney U-test was used to compare the visual scores for assessment of the visualization capability of the two methods, and ROC analysis was performed to compare their efficacy pulmonary vasculature assessment. Sensitivity, specificity, and accuracy of either method were also compared by means of McNemar's test.

Results:

Visualization scores for the pulmonary vessels were significantly higher for the 320- than for 64-detector CT ($p=0.001$ for the affected arteries, and 0.009 for the intersegmental veins). As for pulmonary vasculature assessment, the areas under the curve showed no statistically significant differences in between the two methods. The specificity and accuracy of intersegmental vein assessment were significantly better for the 320- than the 64-detector row CT ($p<0.05$). Inter-observer agreement for the assessment yielded by either method was almost perfect for all cases.



A: Primary lung cancer located in S2 B: Operative view C, D: 3D-CT (320-, 64-row)

Conclusions:

320- detector row CT is more useful than conventional 64-detector row CT for preoperative 3-dimensional assessment of pulmonary vasculature in candidates for pulmonary segmentectomy.

Disclosure: All authors have declared no conflicts of interest.

F-040

ABSOLUTE CEREBRAL VS STANDARD PERIPHERAL OXYGEN SATURATION IN THORACIC SURGERY: DOES IT REALLY DIFFER?

Bartosz Kubisa¹, J. Wójcik¹, J. Pieróg¹, J. Alchimowicz¹, M. Piotrowska¹, A. Kozak¹, M. Bielewicz¹, M. Wojtyś¹, K. Safranow², T. Grodzki¹

¹Thoracic Surgery, Pomeranian Medical University, Szczecin/Poland,

²Department Of Biochemistry And Medical Chemistry, Pomeranian Medical University, Szczecin/Poland

Objectives:

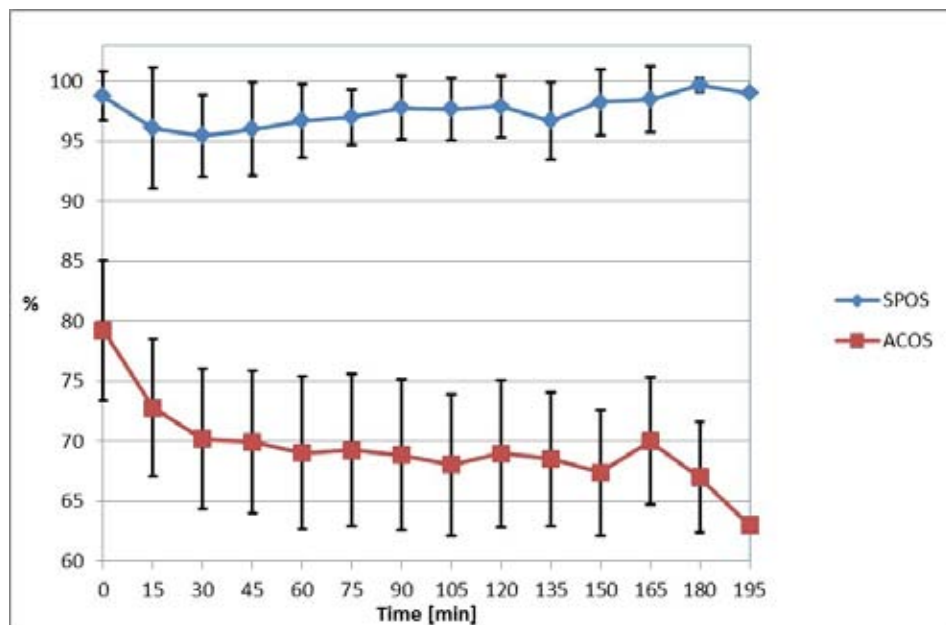
Thoracic operations evoke circulatory and pulmonary disturbances leading to cerebral oxygen deprivation. Absolute Cerebral Oxygen Saturation (ACOS) with Standard Peripheral Oxygen Saturation (SPOS) in thoracic operated patients were compared.

Methods:

Data were collected from 100 consecutive patients (37 women, median age 62, range 20-81). 96 patients had single lung ventilation. ACOS (FORE-SIGHT®, CASMED, USA) and SPOS were registered every 15 minutes from the intubation to the wound dressing and the observation lasted from 45 to 195 minutes. Mean and minimal ACOS and SPOS values during operation were calculated. Patients' age, operation time, side and hospitalisation time were also analysed. Wilcoxon signed-rank test was used to compare values measured at different time points and Mann-Whitney U test was used for comparisons between groups. Spearman's rank correlation coefficient (Rs) was calculated to measure strength of correlation between parameters.

Results:

ACOS and SPOS were significantly positively correlated in all measurements between 15 and 90 minutes (Rs between +0.20 and +0.36). SPOS during operation were significantly lower than baseline in all measurements between 15 and 90 minutes and at 135 minutes, while all ACOS between 15 and 165 minutes were significantly lower than baseline (Fig). Age was positively correlated with ACOS only at baseline (Rs=-0.20, p=0.044) while no correlation with SPOS was observed. Mean ACOS (but not SPOS) correlated negatively with hospital stay time (Rs=-0.21, p=0.036). Right side operated patients had significantly lower minimal SPOS (92.4±4.7 vs. 94.0±5.0%, p=0.017) and longer hospital stay time (9.1±6.5 vs. 7.2±4.8 days, p=0.043) than left-operated ones but no difference was observed for ACOS.



Conclusions:

ACOS and SPOS show similar decrease during the first 30 minutes of operation. Although later SPOS gradually returns to the baseline value, ACOS remains reduced till the end of operation. Lower mean ACOS (but not SPOS) predicts longer hospital stay of operated patients.

Disclosure: B. Kubisa: The measuring device Foresight Casmed, was supplied by SYMICO sp. z o.o., Wrocław, Poland

All other authors have declared no conflicts of interest.

F-041

EXPERIMENTAL MODEL TO EVALUATE LUNG COMPLIANCE FOLLOWING LOBAR RESECTIONGiuseppe Miserocchi¹, C. Salito², D. Bovio², E. Mazzuca², I. Rivolta¹, A. Aliverti², A. Brunelli³¹*Department Of Health Sciences, Università Milano Bicocca, Monza/Italy;*²*Dipartimento Di Bioingegneria, Politecnico di Milano, Milano/Italy;*³*Thoracic Surgery, Ospedali Riuniti Ancona, Ancona/Italy***Objectives:**

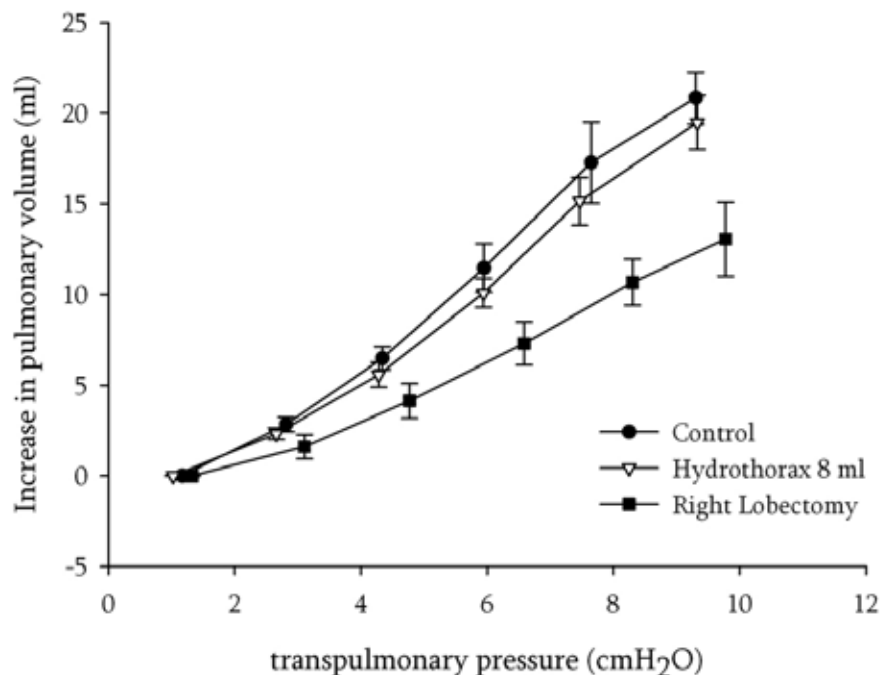
The mechanical consequence of pulmonary lobectomy is a decrease in lung compliance explained by the reduction in parenchymal volume and the resulting hydrothorax reducing lung expansion. In certain circumstances, the reduction in lung compliance may favor over-distension of the residual parenchyma, which in turn leads to fragmentation and yielding of the extracellular macromolecular matrix, whose integrity appears crucial for lung function. The objective of this study was to evaluate to which extent lung compliance is affected by the individual and combined action of lung resection and hydrothorax in an animal model.

Methods:

Anesthetized and mechanically ventilated rabbits (weight range 2.0-2.2 Kg) were randomized in two groups: 1) experimental hydrothorax of various degrees (from 2 ml to 8 ml) (N=4), 2) right lower lobectomy (N=5). We measured alveolar, oesophageal pressures and lung volume during slow inflation-deflation maneuvers, in control conditions and after hydrothorax or lung resection to derive lung compliance. That was estimated as the change in lung volume divided by transpulmonary pressure (given by the difference between alveolar and oesophageal pressure).

Results:

Under control conditions average lung compliance was 2.91 ± 0.50 ml/cmH₂O. Eight ml of hydrothorax decreased significantly ($P < 0.001$) lung compliance to 2.58 ± 0.48 ml/cmH₂O ($\approx 11\%$ reduction). The average lung tissue removed by right lower lobectomy amounted to 3.16 ± 1.06 g, corresponding to 41% decrease in right lung volume. This decreased lung compliance to 1.85 ± 0.48 ml/cmH₂O ($P < 0.001$).



Conclusions:

Due to the combined detrimental effects of hydrothorax and lobar resection on lung compliance, an increase in transpulmonary pressure would be needed to obtain the same tidal volume. Thus, the decrease in lung compliance may favor pulmonary over-distension as a consequence of fluid and air chest drainage. In the future, chest drainage systems will need to address this mechanical problem to maintain lung parenchymal integrity.

Disclosure: G. Miserocchi: The study was in part supported by Medela.

C. Salito: This study was in part supported by Medela.

D. Bovio: This study was in part supported by Medela.

E. Mazzuca: This study was in part supported by Medela.

I. Rivolta: This study was in part supported by Medela.

A. Aliverti: This study was in part supported by Medela.

F-042

ANTI-INFLAMMATORY AGENTS ALTER HYDROTHORAX REMOVAL IN MICE

Vasileios Kouritas¹, C. Zissis¹, S. Maggouta², I. Psalidas², I. Bellenis¹, I. Kalomenidis²

¹Thoracic And Vascular Surgery, Evangelismos Hospital, Athens/Greece,

²Physiology, "Marianthi Simou" Research Laboratory, Athens/Greece

Objectives:

NSAIDs alter the pleural Na⁺ channel/Na⁺/K⁺ pump transporting system, hindering the pleural fluid recycling. Aim of this study was to investigate the effect of different anti-inflammatory agents on fluid recycling in a hydrothorax model induced in mice.

Methods:

Hydrothorax was induced in 32 C57BL/6 mice by injecting 500μl PBS-BSA 1% isosmotic in their right hemithorax. Paracetamol (1gr/Kg), Ibuprofen (250mg/kg) and parecoxib (2mg/kg) were administered into the systemic circulation by intraperitoneal injection. The control group as well as each drug group included 8 mice. Mice from each group were sacrificed 2 and 4 hours after injections and the remaining hydrothorax was determined. Statistical analysis was performed with student's t-test and ANOVA.

Results:

In the paracetamol and ibuprofen groups, the remaining hydrothorax was greater than in the control group (350±61μl, 348±62μl and 272±61μl respectively, p=0.042) when mice were sacrificed within 2 hours. In groups sacrificed 4 hours after injections, in the paracetamol and ibuprofen groups the hydrothorax was also greater than in the control group (202±45μl and 198±44μl vs 107±56μl respectively, p=0.002). In the parecoxib group the remaining hydrothorax was 122±53μl (p=0.038 vs paracetamol and ibuprofen, p>0.05 vs control group). The absorption rate was similar and unaltered in 2 and 4 hour drug groups, but was higher in the 2 hour control group (114μl/hr vs 75μl/hr and 76μl/hr for paracetamol and ibuprofen groups respectively, p=0.048).

Conclusions:

NSAIDs acutely hinder pleural fluid recycling presenting lower fluid absorption rate and higher remaining hydrothorax volume. COX-2s presented lower remaining hydrothorax volume without acutely increasing absorption rate. These findings should be considered by thoracic surgeons when treating postoperative pain.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 28 MAY 2013

08:30 - 10:30

Session VIII/Mixed Thoracic

F-043

VIDEO-THORACOSCOPIC LOBECTOMIES IN THE EPITHOR® DATABASE: EPIDEMIOLOGICAL ANALYSIS AND COMPARISON WITH THE OPEN TECHNIQUE, OVER A 9-YEAR PERIOD

Pierre-Emmanuel Falcoz, L. Vitale, S. Renaud, J. Reeb, A. Olland, N. Santelmo, G. Massard
Thoracic Surgery, Strasbourg University Hospital, Strasbourg/France

Objectives:

The purpose of this study was to compare the results of video-thoroscopic (VATS) lobectomy and open lobectomy in a population of patients who could have benefitted from either procedure.

Methods:

A retrospective analysis of patients who underwent lobectomy (VATS or open) between January 2003 and June 2012 using the Epithor® database. The inclusion criteria were the following: primary lung cancer (T1 or T2, N0 or N1); pulmonary metastasis of cancer from other localizations; inflammatory, infectious and degenerative diseases. Comparisons of preoperative (gender, age comorbidities, FEV1, ASA, WHO, dyspnea and diagnosis) and postoperative variables (length of stay, prolonged air leak, bleeding, complications, reoperation and in-hospital mortality) were made.

Results:

Over the study period, 18,070 patients underwent lobectomy; 17,362 open lobectomies and 708 VATS lobectomies. The percentage of VATS lobectomies increased from 1.10% (n=12) in 2003 to 16% (n=104) over the first 6 months of 2012. The 2 groups were homogeneous in terms of preoperative variables; no statistically significant difference was found. VATS lobectomy was associated with a significantly lower complication rate and a shorter duration of hospitalization, when compared to open lobectomy: 25.6% vs 34.1%, $p<0.0001$; 9.7 days vs 12.9 days, $p<0.0001$, respectively. There was no difference in terms of in-hospital mortality between the 2 groups (1.12% vs 1.52%, $p=0.1$).

Conclusions:

The incidence of VATS lobectomy increased in the Epithor® database between 2003 and 2012. In a homogeneous population of patients who could have benefitted from either procedure, the patients who underwent VATS lobectomy developed fewer complications and had a shorter duration of hospitalization.

Disclosure: All authors have declared no conflicts of interest.



F-044

MINIMIZING AIR LEAK AFTER VIDEO ASSISTED THORACIC SURGERY (VATS) LOBECTOMYRené Horsleben Petersen, H.J. Hansen*Cardiothoracic Surgery, Copenhagen University Hospital Rigshospitalet, Copenhagen/Denmark***Objectives:**

Prolonged air leak is a common complication after lobectomy giving prolonged in-hospital stay and increasing the risk of empyema. In an attempt to minimize air leak after VATS lobectomy, the surgical approach was changed from a traditional technique of opening the fissure to a fissure-less technique, where the hilar structures are divided first and the fissure at the end with a continuous staplerline.

Methods:

Data were obtained from a prospective institutional database consisting of 1165 consecutive VATS lobectomies (1999-2012). In 2008 the surgical approach was changed to a fissure-less technique. Furthermore another type of stapler was introduced and the drainage system was changed from a traditional water seal system to a digital system. Prolonged air leak (more than 7 days), drain time, in-hospital stay and postoperative empyema were compared between the two cohorts of consecutive VATS lobectomies from 1999-2007 and 2008-2012 respectively. For statistical analysis chi-square test was used for categorical variables and unpaired t-test for continuous variables. Data were expressed as median and range or as percentage.

Results:

From 1999-2007 (n=208) 34.1% of the patients experienced prolonged air leak after VATS lobectomy. The drain time was 5 days (1-101) and in-hospital stay was 6 days (2-51). From 2008-2012 (n=957) the occurrence of prolonged air leak was significantly reduced to 14.7% ($p<0.0001$). The drain time and the in-hospital stay were reduced to 2 days (0-97) and 4 days (1-65) respectively. The reductions was highly statistically significant ($p<0.001$ and $p<0.001$). Furthermore there was a highly statistically significant reduction in the incidence of postoperative empyema from 8.2% to 2.2% ($p<0.0001$).

Conclusions:

The use of a fissure-less technique in VATS lobectomy seems to lower the incidence of prolonged air leak postoperatively. The drain time and the in-hospital stay were significantly reduced as was the incidence of postoperative empyema.

Disclosure: R.H. Petersen: Consultant Covidien Travel grant Takeda
H.J. Hansen: Consultant Covidien Travel grant Takeda

F-045**SURVIVAL PROGNOSIS OF PULMONARY METASTASECTOMY FOR COLORECTAL CANCER HAS BEEN IMPROVED WITH COMBINATION OF NEW CHEMOTHERAPY**

Jun Nakajima

Department Of Thoracic Surgery, University of Tokyo, Tokyo/Japan

Objectives:

Recently new chemotherapy, i.e. FOLFOX or FOLFIRI with bevacizumab improved prognosis of patients with unresectable or recurrent colorectal cancer. We examined prognostic impact of these regimens on the patients who had undergone pulmonary metastasectomy of colorectal cancer.

Methods:

We conducted retrospective multicenter study: We enrolled 1,229 eligible patients undergoing pulmonary metastasectomy for curative intent from 27 hospitals. According to regimens of chemotherapy for recurrent colorectal cancer, we divided these patients into 3 groups. Group A, B, and C included patients undergoing metastasectomy between 1982 and 1999 (N=580), between 2000 and 2004 (N=423), and between 2005 and 2007 (N=226), respectively. FOLFOX or FOLFIRI was adapted to patients in Group C. Clinical factors affected postoperative survival time were analyzed.

Results:

The 5-year cumulative survival rates after metastasectomy were 50 % in Group A, 56 % in Group B, and 63 % in Group C, respectively ($p<0.0001$). Chemotherapy was performed on 142 patients in Group A, 88 patients in Group B, and 62 patients in Groups C. The 5-year survival rates after both metastasectomy and chemotherapy were significantly higher in Group C patients; 28 % in Group A, 47 % in Group B, and 54 % in Group C ($p<0.0001$). However, postoperative prognosis of the patients without chemotherapy showed no significant difference among the groups. In Group C, patients who had chemotherapy showed significantly higher survival rate than those who did not undergo chemotherapy by multivariate analysis. However, in Group A and B, patients were not benefited by the chemotherapy.

Conclusions:

Survival rates of the patients after pulmonary metastasectomy of colorectal cancer have become increased by period of surgery if they underwent chemotherapy. It implies that newer chemotherapy regimens had positive impact on patients who had undergone pulmonary metastasectomy of colorectal cancer.

Disclosure: All authors have declared no conflicts of interest.

F-046

A COMPARATIVE ANALYSIS OF PANCOAST TUMORS RESECTION PERFORMED VIA VIDEO-ASSISTED THORACIC SURGERY VERSUS STANDARD OPEN APPROCHES

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Objectives:

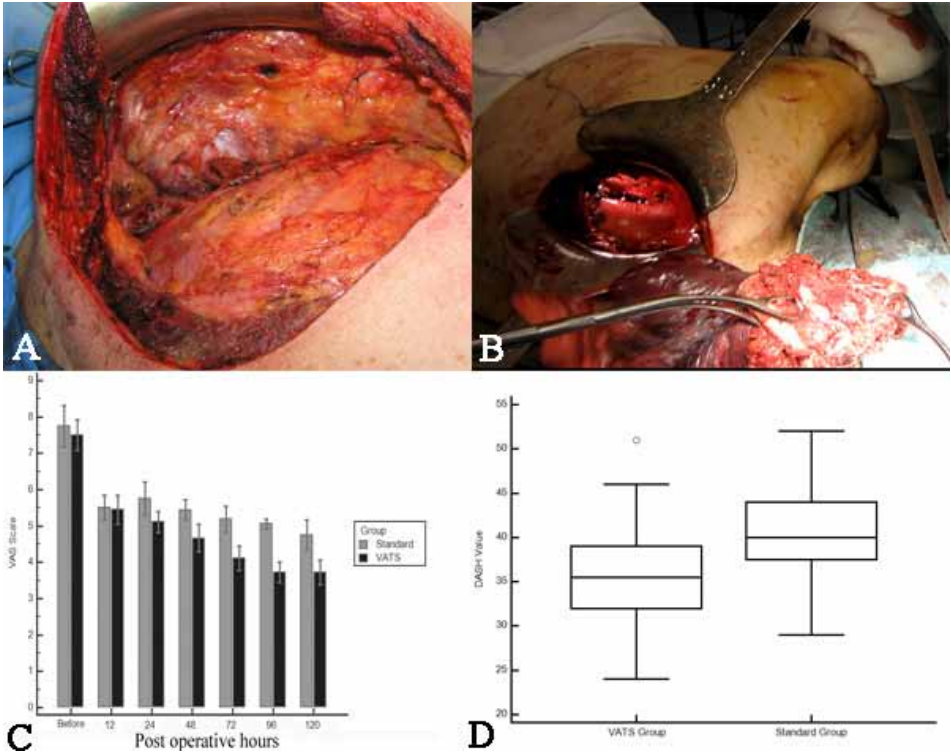
The use of video-assisted thoracic surgery (VATS) in the management of Pancoast tumors has been recently proposed in order to minimize chest wall trauma. The aim of the present paper is to understand if the less invasive approach is advantageous respect to standard technique in the treatment of Pancoast Tumors.

Methods:

In the last 8 years, 34 patients with Pancoast Tumors underwent surgery as part of multimodality treatment. In 16 cases a standard approach was attended while in 22 cases the resection was performed using VATS approach. In all cases, an en bloc chest-wall resection and mediastinal lymphadenectomy were performed. Un example of standard technique as well as VATS approach is reported in figure 1/A and 1/B. Preoperative, operative and postoperative data were recorded in all patients. In addition, postoperative pain measured with VAS scale, arm shoulder function using motion test and action research arm test and quality of life using the disability of the arm and shoulder questionnaire (DASH test) were also recorded for each patients. The two groups were statistically compared.

Results:

In 4 patients of VATS group the resection was contraindicated for the presence of pleural carcinoma not detected on the preoperative diagnostic work-up. No significant difference was found between standard group and VATS group regarding morbidity and mortality. VATS versus standard group presented a reduction of postoperative pain ($p < 0.001$, ANOVA test, Figure 1/C), a better results of motion test (14.8 ± 5.87 versus 10.5 ± 7.56 ; $p = 0.01$ - Mann-Whitney test), of action research arm test (54.25 ± 4.56 versus 47 ± 9.7 , $p = 0.02$, Mann-Whitney test), and of DASH test (35.5 ± 7.3 versus 40.3 ± 6 , $p = 0.02$ -Mann-Whitney test-Figure 1/D).



Conclusions:
VATS may be an effective and safe adjunct to standard surgical resection in patients with Pancoast Tumors. It reduces post-operative pain, preserves latissimus dorsi muscle, allows to detect pleural carcinosis avoiding exploratory thoracotomy.

Disclosure: All authors have declared no conflicts of interest.



F-047

DEPLETION OF DONOR MACROPHAGES REDUCES GRAFT DAMAGE AND IMPROVES ISCHEMIA REPERFUSION INJURY IN MOUSE LUNG TRANSPLANTSYukio Tsushima¹, J. Jang², W. Weder³, W. Jungraithmayr²¹*Department Of Thoracic Surgery, Juntendo University School of Medicine, Tokyo/Japan,*²*Division Of Thoracic Surgery, University Hospital Zurich, Zurich/Switzerland,*³*Department Of Thoracic Surgery, University Hospital Zurich, Zurich/Switzerland***Objectives:**

Macrophages (M) are one of the most important cells of the innate immune system for first line defence. Upon transplantation (Tx), these cells play a prominent role during lung ischemia reperfusion injury. Both, detrimental but also beneficial effects were assigned to the effects of these cells. Here, we hypothesize that the depletion of donor macrophages ameliorates the post-transplant lung ischemia-reperfusion injury.

Methods:

Orthotopic single lung Tx was performed between syngeneic BALB/c mice after a cold ischemic time of 8 hours, and a reperfusion time of 10 hours. Prior to graft implantation, alveolar macrophages of donor lungs were selectively depleted applying the “suicide technique” by intratracheal application of chlodronate liposomes (experimental, n=6) vs. the application of empty liposomes (control, n=6). Cell count (number of F4/80+ macrophages) and graft injury were evaluated by histology and immunohistochemistry, levels of LDH (apoptosis assay), ELISA for nuclear protein HMGB1, and TNF- α in plasma.

Results:

Chlodronate liposome successfully reduced 70% of macrophages from donor lungs when compared to grafts treated with empty liposome only. M-depleted transplants showed improved histology, revealed significantly less graft damage (LDH: 164 ± 7 vs. 439 ± 99 U/l) and reduced HMGB1 (3.2 ± 1.2 vs. 7.2 ± 2.5 ng/ml) when compared to control recipients. The inflammatory response (TNF- α) was significantly reduced in M-depleted mice when compared to control (0.012 ± 0.01 vs. 0.042 ± 0.02).

Conclusions:

The selective depletion of macrophages in donor lung transplants can be performed in a safe and successful manner, and results in a profound preservation of lung transplants that are otherwise damaged by ischemia-reperfusion. The beneficial effect of this preconditioning method could serve as a promising tool for the attenuation of ischemia-reperfusion prior to graft implantation.

Disclosure: All authors have declared no conflicts of interest.

F-048**FREE CIRCULATING DNA IN PATIENTS WITH LUNG CANCER**

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Objectives:

Lung cancer (LC) is the leading cause of cancer-related death worldwide and metastatic recurrence is the most frequent cause of death after complete surgical resection. Reliable strategies are crucial to early diagnose LC and recurrences. We report our experience with the determination of free circulating DNA (fcDNA) as a diagnostic tool.

Methods:

Thirty-six LC patients undergoing complete resection were evaluated. The mean age was 63.7±9.1 years. No one had previous history of cancer or received induction therapy. Twenty healthy subjects were the control group (CG). In all patients a withdrawal of 6 mL peripheral blood was obtained the day of surgery, 1 week, 3 months, 6 months and 1 year after surgery. The fcDNA was extracted and quantified by capillary electrophoresis and values were correlated with quantitative and qualitative variables and outcome.

Results:

We performed 30 lobectomies and 6 pneumonectomies. Nineteen patients (53%) were at stage I, 9 (25%) at stage II and 8 (22%) at stage III. Twenty-five patients (69.4%) had squamous cell carcinoma; tumor grading was poor (G3) in 20 cases (55.5%) and moderate (G2) in 16 (44.5%). The baseline fcDNA levels were higher in LC patients compared to CG ($p=0.0002$). Patients with G3 showed preoperative fcDNA levels higher compared to G2 ($p=0.001$). No correlation was found with age, gender, stage, history of smoking and type of surgery; squamous cell histology showed higher fcDNA values without reaching statistical significance. All patients showed a peak of fcDNA levels at 1 week ($p=0.0006$), but after 3 months they dropped down ($p=0.0001$). Four G3 patients (11%) (3 at stage II and 1 at stage III) developed distant recurrences and in all of them fcDNA levels increased significantly ($p=0.002$).

Conclusions:

The fcDNA determination might be a simple, useful and early diagnostic tool during follow-up after surgery.

Disclosure: All authors have declared no conflicts of interest.

F-049

PROGNOSTIC SIGNIFICANCE OF CENTRAL INFILTRATION OF INTERSTITIAL PNEUMONIA ON THIN-SECTION COMPUTED TOMOGRAPHY IN LUNG CANCER PATIENTS - A NEW PREOPERATIVE PREDICTOR OF POSTOPERATIVE MORTALITY

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Objectives:

Surgical mortality following pulmonary resection for lung cancer with interstitial pneumonia (IP) is one of the major problems in thoracic surgical field. Controversies remain as to predictors of surgical mortality in this population.

Methods:

Retrospective study was performed on 1625 patients who underwent surgical resection of primary lung cancer at our institute between January 2000 and March 2012. All thin-section CT findings were reviewed, and finally 203 (12.5%) patients were complicated with IP preoperatively. Following radiological findings were evaluated: presence of emphysema, presence of honey coming, distribution of IP (diffuse or localized in the lower lobe), extension of IP (extended to central area or localized in peripheral part). Following clinical factors were also investigated: age, gender, smoking index, blood exam (CEA, LDH, KL-6), arterial blood gas, respiratory function, operative time, blood loss, clinical stage of lung cancer, histology. Uni- and Multi-variate analysis were conducted to determine predictors of surgical mortality. $P < 0.05$ was considered to be significant.

Results:

There were 23 (1.4%) deaths among 1625 patients. Causes of death were as follows: acute exacerbation of IP ($n=4$) and bronchopleural fistula ($n=2$). Multivariate analysis showed following significant predictors of 90-day mortality: preoperative $pO_2 < 70$ mmHg (HR 15.3, 95%CI 2.7-73.3, $p=0.031$), diffuse distribution and central extension of IP (HR 9.2, 95%CI 1.2-68.3, $p=0.030$), and blood loss in surgery (ml: HR 1.003, 95%CI 1.001-1.004, $p=0.002$).

Conclusions:

Diffuse distribution and central extension of IP were a significant predictor of 90-day mortality, as well as preoperative hypoxia and blood loss in surgery. On the other hand, KL-6, CRP, and smoking index were not significant predictor. Thus radiological evaluation of IP as well as primary tumor is mandatory for this population.

Disclosure: All authors have declared no conflicts of interest.

F-050**DETECTION OF IMPALPABLE PULMONARY LESIONS WITH TACTILE MECHANORECEPTOR DURING THORACOSCOPY**

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Objectives:

The purpose of the study is to evaluate the efficiency of the tactile mechanoreceptor in detecting of pulmonary lesions during thoracoscopy.

Methods:

27 patients with peripheral undetermined subpleural solitary pulmonary lesion detected on CT were included in prospective non-randomized trial. All nodules from 7 to 18 mm in diameter were located deeply in lung parenchyma (≥ 10 mm from lung surface). All patients underwent thoroscopic exploration with diagnostic intent. At first, instrumental palpation with lung forceps was performed followed by thorough inspection of lung tissue with tactile mechanoreceptor. The device represents a metal tube 10 mm in diameter and could be inserted to the pleural cavity via standard 10 mm port. There is an elastic membrane on its working part, which deforms greatly if the palpated tissue has higher density. Intraoperatively surgeon pushed targeted region of pulmonary tissue with the mechanoreceptor and carried out the measurement. Density of tissue characteristics was displayed using special software by the mean of color change in real time. After detection of pulmonary nodule it was resected with endostaplers.

Results:

Instrumental palpation was successful in detection of pulmonary lesion in 10 (37,0%) patients and was confirmed by tactile mechanoreceptor either. In 5 (18,5%) patients neither forceps, nor tactile mechanoreceptor was able to detect pulmonary lesion, which required minithoracotomy for finger palpation. In 12 (44,5%) patients instrumental palpation failed to locate intrapulmonary nodule, while tactile mechanoreceptor facilitated to find the lesion and perform thoroscopic lung resection in all these patients. Intraoperative histologic examination confirmed benign disease in 8, metastatic lesion - in 12 and primary lung cancer - in 7 patients, required thoroscopic lobectomy. The overall efficiency of tactile mechanoreceptor in detection of pulmonary lesions was 81,5% and impalpable nodes – 70,4%.

Conclusions:

The tactile mechanoreceptor is an effective tool for detection of impalpable pulmonary lesions during thoracoscopy.

Disclosure: All authors have declared no conflicts of interest.

F-051

DIFFERENCES IN MRNA EXPRESSION OF CYSTEINE CONJUGATE-BETA LYASE GENE (CCBL1) IN NON-SMALL CELL LUNG CANCER: ASSOCIATION WITH SYSTEMIC KYNURENINE PATHWAY ACTIVITY

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Objectives:

CCBL1 (cysteine conjugate-beta lyase) is a gene located at 9q34.11 encoding a cytosolic enzyme metabolising cysteine conjugates and catalyzing transamination of the L-tryptophan metabolite L-kynurenine to form kynurenic acid (KYNA). Kynurenine metabolic pathway has been shown to be associated with aggressiveness and other biologic features of various types of non-small cell lung cancer (NSCLC). In this study we assessed differences in mRNA expression of CCBL1 in samples from tumor tissue, lung parenchyma and lymph nodes between various types of NSCLC and correlation with local and systemic activity of kynurenine metabolic pathway.

Methods:

CCBL1 mRNA expression was assessed using real-time Reverse-Transcriptase Polymerase Chain Reaction method (real-time RT-PCR) in tumor tissue, normal pulmonary parenchyma and lymph nodes samples from 63 patients with NSCLC undergoing pulmonary resection. GAPDH gene was used as a reference. Kynurenine pathway activity was assessed in tissues and serum by KYNA level measurement using ion-exchange resin and high performance liquid chromatography (HPLC).

Results:

mRNA CCBL1 expression in normal pulmonary parenchyma was higher than in tumor samples (1.70 ± 2.19 vs. 0.52 ± 0.97 ; $p=0.0006$)(Fig. 1), but differences between lymph nodes and tumor or lymph nodes and parenchyma were insignificant ($p>0.05$). CCBL1 expression in tumor samples was the highest in adenocarcinoma (1.22 ± 1.52), lower in squamous (0.42 ± 0.69) and the lowest in large cell lung cancer (0.06 ± 0.02) ($p=0.0004$)(Fig. 2), whereas in lung parenchyma and lymph nodes differences were insignificant. mRNA CCBL1 expression in tumor samples showed moderate positive correlation with peripheral blood KYNA level $R=0.32$; $p=0.05$), but not with its local tissue concentration ($p>0.05$).

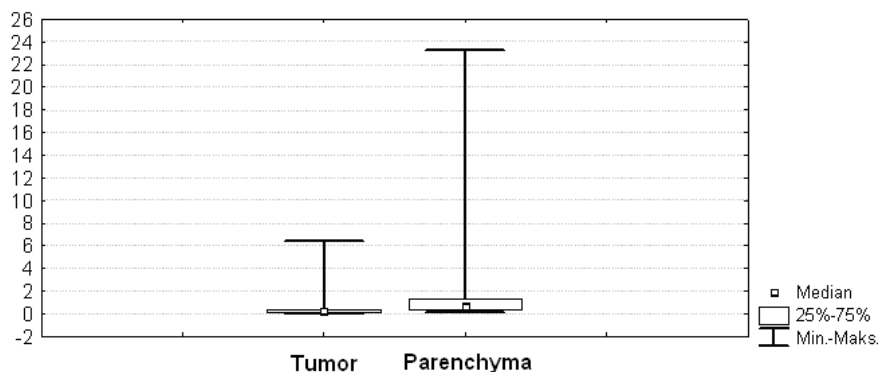


Fig. 1. mRNA CCBL1 expression in tumor samples vs. normal pulmonary parenchyma ($p=0.0006$)

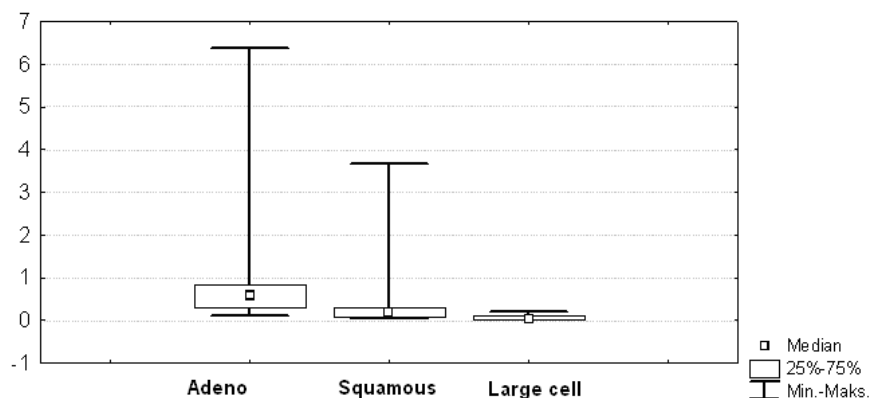


Fig. 2 mRNA CCBL1 expression in tumor samples

Conclusions:

mRNA CCBL1 expression in NSCLC tumor tissue is histologic-type-specific and differs significantly between tumor tissue and pulmonary parenchyma. It appears to be associated with systemic, but not with local activity of kynurenine metabolic pathway and may influence NSCLC biological behavior by interaction with systemic immune response.

Disclosure: All authors have declared no conflicts of interest.

F-052

PULMONARY METASTASECTOMY IN COLORECTAL CANCER: WORKING TOWARDS A CONSENSUS. A SURVEY OF PULMiCC UK TRIAL CENTRE PRINCIPAL INVESTIGATORS AND MDTs WITHIN A CANCER NETWORK

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²*Clinical Operational Research Unit, University College London, London/United Kingdom*

Objectives:

Controversies exist in randomising patients within PulMiCC. This study aims to examine differences in opinion between specialties regarding management within the trial.

Methods:

An 18-scenario, 60-answer questionnaire was sent to PulMiCC Investigators and also lung, colorectal and hepatobiliary MDT consultants within a single cancer network. Responses were grouped according to specialty: cardiothoracic surgery; abdominal surgery (colorectal / hepatobiliary); oncology (thoracic / colorectal). An intra-specialty consensus was >50% agreeing a management plan. Inter-group consensus was reached when specialties agreed the management plan.

Results:

35 responses were received: 16 of 28 (57%) trial centres representing 95% patients recruited to PulMiCC; the remainder from the cancer network MDTs. No inter-group consensus was reached when bilateral nodules were present ($p < 0.01$). There was intergroup consensus for pulmonary metastasectomy in the following scenarios: histologically confirmed (HC) solitary pulmonary nodule (SPN) without liver involvement ($p = 0.80$); non-HC-SPN with previous hepatectomy ($p = 0.83$); HC-SPN without liver involvement presenting either 1-3 years ($p = 1.0$) or > 3 years ($p = 0.19$) following bowel resection. There was intergroup consensus for randomisation into PulMiCC in the following scenarios: HC 2-5 PN and without liver involvement ($p = 0.28$) or with previous hepatectomy ($p = 0.41$), non-HC 2-5 PN with previous hepatectomy ($p = 0.49$). There were no intergroup differences in the proportion of scenarios where randomisation was favoured ($p = 0.3$). However, when randomisation was not favoured, surgeons were more likely to favour resection than oncologists ($p < 0.001$)

Conclusions:

There were significant differences in opinion between the three groups. Where a consensus is difficult to achieve, randomisation should be proposed.

Disclosure: All authors have declared no conflicts of interest.

F-053

PROGNOSTIC IMPLICATION OF N2 DISEASE IN LUNG METASTASES OF RENAL CELL CARCINOMA

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Objectives:

Pulmonary metastasectomy of renal cell carcinomas (RCC) remains controversial. Although thoracic nodal involvement (NI) is known to be a prognostic factor, few studies focused on the impact of hilar versus mediastinal involvement on survival. Our objective was to evaluate whether patients with N2 disease had a poorer survival than N1.

Methods:

We retrospectively reviewed the data of 122 patients operated in two different thoracic departments between 1992 and 2011. Appropriate statistical tests were used to make comparison between groups.

Results:

Our population consisted in 38 women and 84 men, mean age at time of thoracic metastasectomy was 63.3 years (min : 43, max : 82). NI was a significant prognostic factor both in univariate and multivariate analysis (mean survival : 84.8 months vs 55 months, $p=0.003$; HR=0.18 (0.05; 0.65) $p=0.009$ respectively), whereas there was no statistical significant difference on survival between hilar and mediastinal location (mean survival : 62.8 months vs 34 months respectively, $p=0.27$). Otherwise, in both univariate and multivariate analysis, a disease free survival of less than 12 months (mean survival : 23.8 months vs 84.2 months, $p<0.0001$; HR=4.13 (1.11 ; 15.42) $p=0.035$) had a significant impact on survival. Finally, having more than one thoracic metastase showed a trend in univariate analysis (mean survival : 83.3 months vs 64.1 months, $p=0.10$) and was significant in multivariate analysis (HR=0.38 (0.16 ; 0.94) $p=0.037$).

Conclusions:

The mediastinal location of NI seems not to have an impact on survival of patients undergoing metastasectomy for renal cell carcinoma, consequently these patients should not be excluded from surgical treatment. However, prospective studies, on larger cohort of patients, are mandatory to confirm these preliminary results.

Disclosure: All authors have declared no conflicts of interest.

F-054

TUMOR STANDARDIZED UPTAKE VALUE ON POSITRON EMISSION TOMOGRAPHY IS A NOVEL PREDICTOR OF ADENOCARCINOMA IN SITU FOR C-STAGE IA LUNG CANCER PATIENTS WITH PART-SOLID NODULE ON THIN-SECTION CT SCAN

Aritoshi Hattori, K. Suzuki, M. Fukui, T. Matsunaga, Y. Miyasaka, K. Takamochi, S. Oh
General Thoracic Surgery, Juntendo University, Tokyo/Japan

Objectives:

Adenocarcinoma in situ (AIS), which was defined as pathologically non-invasive nature by the new IASLC/ATS/ERS classification, might be included in patients that showed part-solid nodule on thin-section CT.

Methods:

Between 2008 and 2011, 556 c-stage IA lung cancer patients underwent pulmonary resection. The findings obtained by preoperative thin-section CT were reviewed for all patients and categorized as pure ground-glass nodule (GGN), part-solid, or pure-solid based on the findings on thin-section CT, i.e. consolidation/tumor ratio (CTR). Part-solid nodule was defined as a tumor with $0 < \text{CTR} < 1.0$, which indicated focal nodular opacity containing both solid and GGN components. All patients were evaluated by positron emission tomography (PET) and the maximum standardized uptake value (SUVmax) was recorded. Several clinicopathological features were investigated to identify predictors of AIS using multivariate analyses.

Results:

112 c-stage IA lung cancer patients showed a part-solid appearance on thin-section CT. Among them, AIS was found in 10 (23.8%) in 42 patients with $0 < \text{CTR} \leq 0.5$ in contrast to 3 (4.3%) in 70 patients with $0.5 < \text{CTR} < 1.0$. According to multivariate analyses, SUVmax and CTR were the significant predictors of AIS in patients with part-solid nodule ($p=0.0421$, 0.0221). Mean-SUVmax of the patients with AIS was 0.57 (0-1.6). Moreover, in the subgroup of part-solid nodule with $\text{SUVmax} \leq 1.0$ and $\text{CTR} \leq 0.40$, which were shown as cutoff values of predicting AIS based on the result of Receiver operating characteristics curve, 6 (40%) in 15 patients with these criteria showed pathologic non-invasive nature even in the patients with part-solid nodule.

Conclusions:

Among clinical stage IA adenocarcinoma with part-solid nodule on thin-section CT scan, extremely low level of SUVmax could reflect on pure-GGN equivalent radiologically and AIS pathologically. Preoperative tumor SUVmax on PET could yield important information for predicting the non-invasiveness in patients with part-solid nodule.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 28 MAY 2013

11:00 - 12:30

Session IX/Mixed Thoracic

F-055

SEMIMECHANICAL ANASTOMOSIS VERSUS HANDSEWN ANASTOMOSIS AFTER ESOPHAGECTOMY WITH GASTRIC TUBULISATION AND CERVICAL ANASTOMOSIS

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Objectives:

Semimechanical side-to-side stapled anastomosis is thought to reduce frequency of leaks and strictures when using whole stomach. Scarce data are available when using gastric tubulisation.

Methods:

Two matched groups of patients, operated between 2005 and 2008, were retrieved receiving a cervical esophagogastrostomy on gastric tubulisation: 92 semimechanical-anastomosis (SMA), 41 handsewn-anastomosis (HSA). EORTC QLC-30 and OES-18 questionnaires were used to score anastomosis related symptoms. A difference of 10 points or 10% was considered clinically significant.

Results:

Overall incidence of anastomotic leaks was 4.5%. Leakage rate in SMA was 2.17% versus 4.88% in HSA ($p=0.587$). Dilatation occurred in 30% of SMA and 61% of HSA ($p<0.001$), 15% and 49% respectively needing ≥ 3 dilatations ($p<0.001$). Both groups demonstrate an initial increase of dysphagia score, being steeper for patients with HSA (mean score 31 versus 26). Dysphagia subscales revealed at 3 months higher mean scores for solids (HSA 38 and SMA 31) than for semi-solids (HSA 30 and SMA 20) and for liquids (HSA 25 and SMA 26). Dichotomized results in symptomatic/asymptomatic showed a significant higher percentage of HSA patients (33%) being symptomatic for difficulties swallowing solids compared to SMA patients (22%). HSA-patients also had a significant higher score for swallowing saliva (30 versus 20). Past 3 months no more significant differences were seen except for reflux at 1 year being 27 % in HSA versus 16% for SMA. Patients in both groups gave a similar global HRQL score at all timepoints.

Conclusions:

Semimechanical-anastomosis results in better dysphagia scores for solids and semisolids and reduces significantly the need for dilatations, in particular repeat dilatations. The negative effect of dysphagia in the HAS group fades out over time, probably due to the treatment, i.e. dilatations. Semimechanical-anastomosis can be safely used after gastric tubulisation allowing thus resection of the lesser curvature, an important oncologic principle for distal half tumours.

Disclosure: All authors have declared no conflicts of interest.



F-056

LEARNING CURVES FOR THORACOSCOPIC ESOPHAGECTOMY: FROM DECUBITUS TO PRONE POSITIONM. Zhong¹, Y. Shen², L. Tan², M. Feng², H. Wang², Q. Wang², Wei Jiang²¹*Department Of Anesthesiology, Zhongshan Hospital, Shanghai/China,*²*Thoracic Department, Zhongshan Hospital, Shanghai/China***Objectives:**

Recently, more and more thoracoscopic esophagectomies were switched from decubitus position (DP) to prone position (PP). However, the learning curve for this changing procedure was less learned. In this report, we described our single-center experience on learning curves that a surgeon needs to have thoracoscopic esophagectomy performed from decubitus to prone position.

Methods:

From May 2009 to December 2010, we conducted thoracoscopic esophagectomies in the decubitus and then the prone position on consecutive patients admitted to our institution. The switching from decubitus to prone position was in February 2010. The patients were divided into three groups: Group PP1 comprised cases in the first 15 cases performed in PP, Group PP2 comprised cases 16 to 30, and Group PP3 included the final 15 cases. Patients underwent MIE in DP was reviewed as historical controls. The demographic characteristics and the PERI-operative variables were collected and compared to identify the differences between different periods of esophagectomy.

Results:

A total of 86 consecutive esophageal cancer patients were enrolled; Forty-one had their operations in DP and 45 in PP. There was no significant difference found between the two groups in clinical features. During the thoracoscopic esophagectomy, significantly longer duration was recorded in PP1 than in DP (67 versus 82 minutes, $p=0.023$), while PP2 and PP3 had a shorter duration than DP (54 minutes versus 48 minutes, $p=0.014$). Following the operation, similar findings were observed in major complications (26.34% versus 31.03%, 21.22%, 15.67%, $p=0.030$) in DP, PP1, PP2, PP3 respectively.

Conclusions:

Prone thoracoscopic esophagectomy resulted in shorter operation duration, but the switching from DP to PP requires at least 15 cases to reach the plateau of thoracoscopic esophagectomy. Further study based on larger population is required to confirm this finding.

Disclosure: All authors have declared no conflicts of interest.

Tuesday A.M.
Abstracts 043 - 063

F-057**THE CORRELATION BETWEEN TUMOR LOCATION AND POSTOPERATIVE LONG-TERM SURVIVAL IN PATIENTS WITH ESOPHAGEAL SQUAMOUS CELL CARCINOMA**

K. Zhang, Long-Qi Chen

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Objectives:

The seventh edition of the American Joint Committee on Cancer staging system considers tumor location as a factor in staging esophageal squamous cell carcinoma (ESCC). This new modification remains controversial. The aim of this study is to explore the correlation between tumor location and postoperative long-term survival in patients with esophageal squamous cell carcinoma.

Methods:

A retrospective review of 988 patients with ESCC who underwent complete resection between 1986 and 2001 with over 10 years follow-up result was conducted. Survival was calculated by the Kaplan-Meier method and log-rank test. Cox proportional hazards model was used to further determine the impact of tumor location on overall survival.

Results:

The median survival times for patients with pathologic T2N0M0 and T3N0M0 ESCC in the middle third, and lower third of the esophagus were 37.5 months and 41.8 months, respectively, with corresponding 5-year survival rates of 36.5% and 50.8%, respectively. Overall survival curves for the two categories of patients according to tumor location in the entire cohort of 624 patients were statistically different ($p=0.002$). Multivariate Cox regression analysis suggested that T category ($p=0.001$), N category ($p=0.000$) tumor location ($p=0.008$) were independent factors influencing overall survival, whereas sex ($p=0.271$), age($p=0.457$), and tumor length ($p=0.254$) were not significant prognostic factors.

Conclusions:

Tumor location is an independent prognostic factor for N0 esophageal cancer patients. Therefore the new TNM staging criterion should be followed.

Disclosure: All authors have declared no conflicts of interest.



F-058

EXTENSIVE MEDIASTINAL LYMPHADENECTOMY DURING MINIMALLY INVASIVE ESOPHAGECTOMY: ONCOLOGICAL OUTCOMES FROM SINGLE CENTER

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Thoracic Department, Zhongshan Hospital, Shanghai/China

Objectives:

Previously, extensive lymphadenectomy along bilateral recurrent laryngeal nerves (RLN) has been proved to be feasible during minimally invasive esophagectomy (MIE). However, whether this procedure provides survival benefits remains uncertain. The aim of this study was to examine its oncological value in compared with conventional lymphadenectomy (paraesophageal and subcarinal lymph node dissection) following MIE.

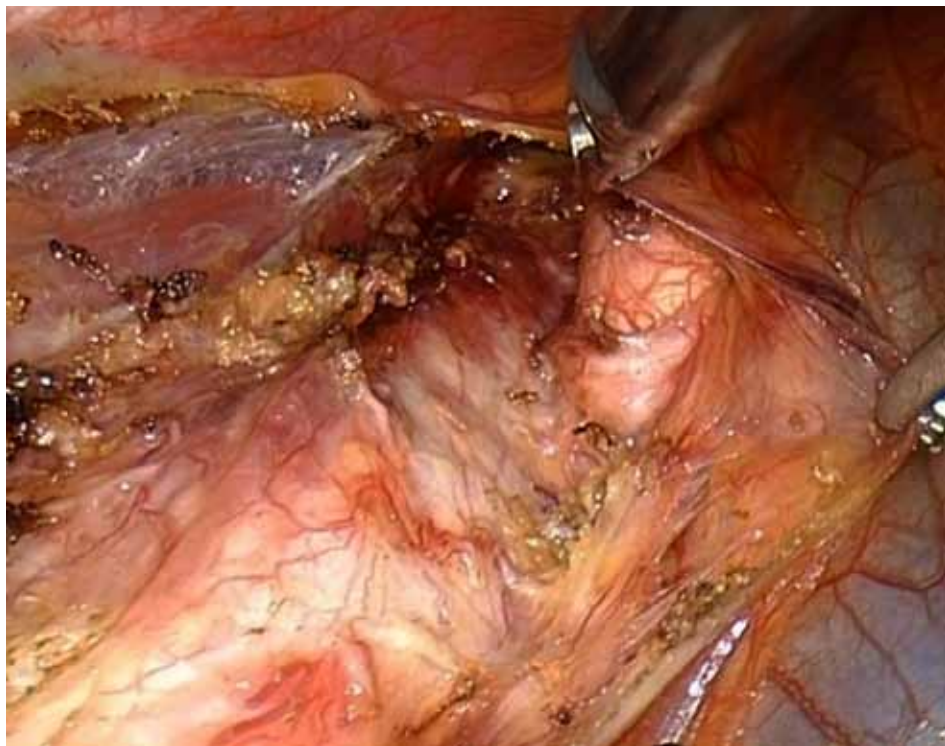
Methods:

A cohort of 156 patients undergoing MIE was retrospectively analyzed. During thoracoscopic esophagectomy, extensive lymphadenectomy along RLN was performed on 80 patients during June 2009 to January 2011 (Group A), and 76 patients underwent conventional lymphadenectomy from June 2008 to May 2009 were enrolled as historical controls (Group B). The clinical characteristics, in together with the follow-up results were recorded for both groups. Kaplan-Meier methodology and survival curves were compared to identify the differences between the two groups.

Results:

Peri-operatively, two groups were comparable in clinical features and tumor characteristics. No significant difference was found in mortality or morbidity from different approaches of lymphadenectomy ($p=0.733$), and the incidence of permanent RLN palsy was close between Group A and Group B (2.5% versus 0%, $p=0.499$). After three years' follow-up, the disease-free survival (DFS), as well as the over-all survival (OS) rate was significantly higher in Group A (DFS: 71.25% versus 48.68%, $p=0.004$, OS: 67.50% versus 46.05%, $p=0.007$). Longer median survival time was observed in Group A in comparison with Group B (27.6 months versus 33.4 months, $p=0.037$).

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**Conclusions:**

Lymphadenectomy along bilateral RLN during MIE is a safe procedure, which improves patients' survival in compared with conventional lymphadenectomy. Further study based on larger population is required to confirm these findings.

Disclosure: All authors have declared no conflicts of interest.

F-059

IMPACT OF TIME INTERVAL BETWEEN DONOR BRAIN DEATH AND COLD PRESERVATION ON LONG-TERM OUTCOME IN LUNG TRANSPLANTATION

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²*Visceral And Transplantation Surgery, University Hospital Zurich, Zurich/Switzerland*

Objectives:

Brain death (BD) is associated with various systemic responses and a cascade of inflammatory reactions. However, it remains undetermined how the time interval from BD to cold preservation (CP) affects survival after lung transplantation. This report investigates the influence of the time interval from BD to CP on long-term outcome in lung transplantation.

Methods:

We reviewed 250 consecutive patients retrospectively who underwent lung transplantation at our institution between January 2000 and December 2011. In Group-I (n=212) the time interval was less than 24 hours and in Group-II (n=38) more than 24 hours. Overall survival from surgery to death was analyzed by a multivariable Cox Proportional Hazard regression analysis. A step-wise backward regression analysis was performed to determine the risk factors (such as recipient sex and diagnosis, intraoperative ECMO-use, size-reduced transplantation, and re-transplantation) on survival.

Results:

The median time from BD to CP was 19.5 hours (range, 0.58 - 65.85). The rate of postoperative complications was comparable (p=0.814). The 30-day mortality was 7.5% in Group-I versus 0% in Group-II. Five-year survival was better in Group-II [69.9% (95% CI: 48.5-83.8%)] than in Group-I [65.9% (95% CI: 58.3-72.5%)]. The adjusted hazard ratio for overall survival was 0.73 (95% CI: 0.36-1.46, p=0.347). Intraoperative ECMO-use [RR=1.6, (95%CI: 1.04-2.60), p=0.03] and re-transplantation [RR=2.4, (95%CI: 1.10-5.36), p=0.028] were identified as significant risk factors for survival.

Conclusions:

The time interval from BD to CP has no impact on long-term outcome after lung transplantation. Intraoperative ECMO-use and re-transplantation influence survival significantly.

Disclosure: All authors have declared no conflicts of interest.

F-060**LUNG TRANSPLANTATION IN UNEXPECTED EARLY STAGE CARCINOMA OF THE EXPLANTED LUNG – IS IT A CURE FOR THE CANCER?**

Thomas Klikovits, M.A. Hoda, B. Ghanim, S. Zgud, V. Augustin, G. Muraközy, W. Klepetko, P. Jaksch

Division Of Thoracic Surgery, Medical University of Vienna, Vienna/Austria

Objectives:

The detection of cancer in a potential lungtransplantation (LuTX) recipient may be a contraindication for transplantation. Undetected carcinoma in the explanted lung is a rare finding and may affect outcome. We intend to report about our experience with incidence and survival of LuTX recipients and unknown pretransplant primary thoracic neoplasms.

Methods:

We retrospectively reviewed our database of 1262 patients that underwent LuTX between 1989 and 2012 at our institution.

Results:

The incidence of unexpected early stage thoracic tumors in this cohort was 1.03% (13 out of 1262). There were 8 men and 5 women with a mean age of 54.3 ± 9.02 years who received 1 single-lung and 12 bilateral transplants. The indication for LuTX was COPD in 10 and pulmonary fibrosis in 2 patients. One patient suffered from cystic fibrosis. The post transplant histological diagnosis of the explanted lung revealed adenocarcinoma in 6 cases, squamous cell carcinoma in 3 cases, bronchioloalveolar carcinoma in 2 cases, malignant epitheloid pleural mesothelioma (MPM) in 1 and carcinoid tumor in 1 case. UICC 2009 TNM staging for the 12 patients with primary lung cancers revealed stage IA (pT1a/b N0) in 9 and IB (pT2a N0) in 2 cases. One patient was in stage IIA (pT1b N1). The patient with MPM was in IMIG/IASLC stage III. The patients underwent full post transplant staging and no incidence of intrathoracic or distant metastasis was found. 5-year survival rate was 72%. Patients underwent regular PET/CT check-ups and no recurrence was detected at any time of follow-up.

Conclusions:

Unexpected malignant lung tumors in explanted lungs at transplantation are rare, with an incidence of 1% in our population. In patients with early stage lung cancer lung transplantation seems to be feasible without any recurrence or influence on survival.

Disclosure: All authors have declared no conflicts of interest.

F-061

SHORT TERM PROSPECTIVE MICROALBUMINURIA ASSESSMENT AFTER THORACIC SURGERY; CORRELATION WITH THE PAO₂/FIO₂ RATIOLucio Cagini¹, M. Andolfi¹, S. Ceccarelli¹, V. Tassi¹, G. Reboldi², F. Puma¹¹*Surgical Science, Thoracic Surgery Unit, University of Perugia, Perugia/Italy,*²*Internal Medicine, Internal Medicine, Perugia/Italy***Objectives:**

Microalbuminuria (MA) reflects the systemic vascular endothelial dysfunction. MA sudden increase is an adverse prognostic factor after trauma, ischemia-reperfusion injury and major surgery. It inversely correlates with the PaO₂/FiO₂ respiratory ratio, probably reflecting variation in capillary permeability of the lung tissue. MA has not been investigated after thoracic surgery.

Methods:

Design: short-term, prospective, pathophysiology driven, observational study. Setting: thoracic surgery unit in 255 consecutive patients. Mean age: 57 years; male:67%. Patients were divided in: Group A: 183, submitted to major pulmonary resections through a posterolateral thoracotomy (156 lobectomies, 14 segmentectomies, 13 pneumonectomies); Group B: 72 submitted to VATS wedge resections (38 metastasectomies, 19 benign nodules, 15 bullous disease). Stratification was also done according to the most common comorbidities encountered: COPD (112 patients), hypertension (114), diabetes (40). Outcome measures: MA in first-void urine samples expressed as MA:creatinine ratio, measured before surgery (Tp), at extubation time (T0), 6 hours following extubation (T6) , in postoperative day 1 (T24) and day 4 (T96). Pa/FiO₂ was measured at T0 and at T24.

Results:

Preoperative mean MA levels were normal. A significant and sharp increase was observed early after extubation, reaching the peak level at T6 (P<0.001). Significant time course MA differences were found between Groups A and B (open vs VATS, p< 0.006) and in diabetic and hypertensive patients. At T0 MA showed a significant inverse relationship with PaO₂/FiO₂ ratio (r = -0.28; p=0.03) only in Group A.

Conclusions:

MA is an early marker of increased vascular permeability after thoracic surgery. Post-extubation MA is significantly higher in patients submitted to thoracotomy for anatomical pulmonary resections, showing an inverse relationship with the PaO₂/FiO₂ ratio. MA could be a useful diagnostic tool for identification of high-risk patients for pulmonary complications after major thoracic surgery.

Disclosure: All authors have declared no conflicts of interest.

F-062

DAILY ROUTINE CHEST X-RAYS ARE NOT NECESSARY IN ASYMPTOMATIC PATIENTS WITH CHEST TUBE AFTER LOBECTOMY

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³Department Of Radiology, University of Szeged Hungary, Szeged/Hungary

Objectives:

A traditional “gold standard rule” is that a tube in the chest is an absolute indication for a daily chest X-ray (CXR), but others don’t follow it. The results of these two methods in our practice are compared.

Methods:

Data of one hundred and forty eight patients with “smooth” lobectomies and one drain were analysed. In the routine CXR group (R-CXR) (50 patients; operated in 2010) an immediate postoperative CXR, daily routine X-rays during the drainage period, and an X-ray after the operative drain removal were performed. In the symptomatic CXR group (S-CXR) (98 patients; operated in 2011) a CXR was performed only for symptomatic patients (repeated fever, hypoxia, enlarging subcutaneous emphysema, severe air leak) and/or only an X-ray was performed after the operative drain removal. If the result of this X-ray indicated, a new drain was inserted. The following postoperative data were compared: fever, pathologies on the X-rays (pneumothorax, fluid, atelectasis), number of X-rays, drainage time, new drain insertion.

Results:

The mean chest tube duration times were 3.7 and 3.8 days in R-CXR and S-CXR groups, respectively. Abnormal X-ray result after the operative drain removal reported pathologies in 50% (25/50) and 46.9% (46/96) ($p=0.724$), but a new drain insertion was necessary only in 3 (6%) and 7 (7.1%) ($p=0.793$) cases in R-CXR and S-CXR groups, respectively. There was no significant difference in postoperative fever between the two groups (21.8% and 27.2% in R-CXR and S-CXR groups, respectively). The mean number of CXRs by one patient was 5.6 and 2.3 ($p=0.0001$) in R-CXR and S-CXR groups, respectively.

Conclusions:

There were no more postoperative complications and abnormal final chest X-ray findings if the X-ray was ordered only for symptomatic patients instead of a “daily routine CXR” in the postoperative period. By the symptom-indicated CXRs, the number of roentgenograms can be reduced by 60%.

Disclosure: All authors have declared no conflicts of interest.

F-063

ANALGESIA IN THORACOTOMY PATIENTS: EPIDURAL VERSUS PARAVERTEBRAL TECHNIQUE. A RANDOMIZED, DOUBLE-BLIND, PROSPECTIVE STUDY

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²*Thoracic Surgery, AO San Paolo Università degli Studi di Milano, Milano/Italy,*

³*Intensive Care, A.O. San Paolo, Università degli Studi di Milano, Milano/Italy*

Objectives:

Pain control after thoracotomies prevents complications (infections, atelectasies, etc) and improves respiratory function. “Gold standard” for post-thoracotomy analgesia is drugs administration through an epidural catheter preoperatively placed by anesthesiologist. Aim of this study is to prospectively compare that technique with drugs administration through a paravertebral catheter.

Methods:

From November 2011 to June 2012, forty-two patients submitted to thoracotomy have been randomized into two groups for the administration of analgesic drugs, through an epidural in “group A” or a paravertebral catheter in “group B”. The last one was placed by the same surgeons’ équipe tunneling parietal pleura and entering paravertebral space before thoracotomy closure. The following parameters have been recorded on scheduled postoperative days: a) pain control using the Visual Analogue Scale b) respiratory function using FEV1 and ambient air saturation c) blood cortisol values as index of systemic reaction to pain. Records have been analyzed with Mann-Whitney or Student’s tests for independent variables.

Results:

Significant differences have been found in favor of group B concerning both cough and rest pain control ($p=0,002$ and $0,002$) and respiratory function in terms of FEV1 and ambient air saturation ($p=0,023$ and $0,001$). No significant differences have been found in blood cortisol trends comparing the two groups ($p>0,05$) (Table 1). No complications after placement were recorded in both groups. Collateral effects such as vomit, nausea, low pressure or urinary retention have been observed in 18 of 21 patients belonging to group A. Instead there were no recorded collateral effects in the paravertebral group.

Parameters	-24h		6h		12h		24h		48h		72h		P _o
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Vas rest			5,92	1,269	4,62	1,540	3,60	1,572	2,98	1,545	2,78	1,608	0,002*
			Median	Range	Median	Range	Median	Range	Median	Range	Median	Range	
			6,00	2-8	5,00	1-7	4,00	1-7	3,00	1-7	2,00	1-7	
Vas Cough			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	0,002*
			6,10	1,276	4,79	1,641	3,62	1,556	3,09	1,607	2,87	1,687	
			Median	Range	Median	Range	Median	Range	Median	Range	Median	Range	
Cortisol			6,00	2-9	5,00	1-8	4,00	1-7	3,00	1-7	2,00	1-7	0,08
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
			16,33	4,400	13,74	3,564	11,85	3,789	9,42	2,387	8,00	2,456	
O2 sat %			Median	Range	Median	Range	Median	Range	Median	Range	Median	Range	0,001*
			18,00	5-22	14,00	6-22	11,00	5-20	9,90	5-16	8,00	4-14	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
FEV 1			96,77	1,387	91,35	3,049	94,26	2,059	94,93	1,959	96,13	1,546	0,023*
			Median	Range	Median	Range	Median	Range	Median	Range	Median	Range	
			97,00	93-99	92,00	81-96	95,00	89-98	95,00	90-98	96,00	93-99	
			Mean	SD			Mean	SD	Mean	SD	Mean	SD	
			79,69	10,724			47,62	10,233	52,53	11,918	56,27	10,672	
			Median	Range			Median	Range	Median	Range	Median	Range	
			83,00	51-95			45,00	33-76	50,00	39-79	57,00	39-81	

Conclusions:

According to our data paravertebral catheter after thoracotomy is more effective than epidural and has no collateral effects. Moreover, its intraoperative placement is easy and without contraindications (spine anomalies and coagulation deficits). Therefore, paravertebral should be always considered as alternative to epidural catheter.

Disclosure: All authors have declared no conflicts of interest.

**TUESDAY, 28 MAY 2013****13:00 - 14:00****Session X/Videos****V-064****SINGLE-STAGE LARYNGOTRACHEAL RECONSTRUCTION**Konrad Hoetzenecker, W. Klepetko*Department Of Thoracic Surgery, Medical University of Vienna, Vienna/Austria***Objectives:**

Surgical resections of subglottic stenosis have been associated with good long-term results, provided that the laryngeal ventricle is not involved in the stenotic process. A high number of failures are reported in the literature for lesions with an advanced side-to-side narrowing of the subglottic airway. Monnier and colleagues have successfully applied single-stage laryngotracheal reconstruction (SSLTR) using cartilage interpositions in pediatric patients with this kind of stenosis. Herein, we report our experience with SSLTR in adults.

Methods:

A single-stage laryngotracheal reconstruction was performed in a 26-year old female patient with an idiopathic subglottic stenosis. To achieve a sufficient enlargement an anterior laryngeal split and a complete posterior split of the cricoid plate with a cartilage interposition had to be performed.

Results:

The perioperative course was uneventful and the patient could be discharged at POD 6. The functional outcome was excellent with a normal ventilation, swallowing and voice function 3 months after the operation, as evaluated by bronchoscopy, lung function testing, voice evaluation, swallowing tests.

Conclusions:

Single-stage laryngotracheal reconstruction is a valid option with good functional results in adult population with complex subglottic stenosis.

Disclosure: All authors have declared no conflicts of interest.

V-065

ROBOTIC RESECTION OF 2ND RIB TUMOURAli Zamir Khan, S. Khandelwal*Department Of Minimally Invasive And Robotic Thoracic Surgery, Medanta, The Medicity, Gurgaon/India***Objectives:**

We present a video of robotic resection of 2nd rib tumor. We show a new technique of cutting of 2nd rib using wire saw by minimally invasive technique

Methods:

An 18 year old male patient, during a routine naval pre selection medical screening, was found to have a tumor located on the posterior aspect of the 2nd rib. Open resection would entail a thoracotomy and a definite medical test failure for naval selection. We did a robotic resection of the 2nd rib tumor using innovative techniques to cut the two ends of the ribs by a wire saw. The specimen was delivered out through the port site with minimal chest wall injury.

Results:

This patient was eventually selected for the Indian Navy, having passed his medical test with flying colors and is now a training naval officer.

Conclusions:

Robotic resection of chest wall tumor is possible with minimal damage to chest wall and quick return to work. Innovative thinking and surgical techniques can benefit patients and help them to return to normal life and to choose fulfilling careers.

Disclosure: All authors have declared no conflicts of interest.



V-066

REPEAT VIDEO - ASSISTED MIDDLE LOBECTOMY AFTER RIGHT LOWER LOBECTOMYShunsuke Endo*General Thoracic Surgery, Jichi Medical University, Tochigi/Japan***Objectives:**

Background: Frequency of second lung cancer increases with the number of patients undergoing video-assisted thoracoscopic surgery (VATS) for lung cancer with good prognosis. Repeat VATS is an ideal approach but more challenging when a second lung cancer occurs in the ipsilateral lung. Objective: Surgical procedures of repeat VATS middle lobectomy after right lower lobectomy and nodal dissection, especially how to transect the intermediate bronchus, was presented in a video.

Methods:

(A case) The 69 - year old woman having a second lung cancer 3 years after VATS right lower lobectomy and nodal dissection for adenocarcinoma with nodal involvement was presented. Five ports were established in the same as the previous operation. The pulmonary vein and pulmonary artery to the middle lobe were identified in the interlobar fissure after dissection of pleural adhesion. The pulmonary vein to the middle lobectomy was divided from the superior pulmonary vein following pericariotomy. The pulmonary artery to the middle lobe was dissected from the middle bronchus and both were transected in order. Right middle lobe was extracted through the port. Right intermediate bronchus including the lower bronchial stump had a dense adhesion to the main pulmonary artery. The right main pulmonary artery was able to clamp proximally through transverse pericardial sinus followed by trimming of the intermediate bronchus. The middle bronchus, which was caudally retracted, carefully dissected toward the intermediate bronchus from the main pulmonary artery which was cranially retracted. The intermediate bronchus was finally transected with a mechanical stapler.

Results:

Operation time was 343 minutes and blood loss was 330 ml. No blood transfusion was required. Postoperative course was uneventful.

Conclusions:

Conclusion: Repeat VATS middle lobectomy was able to complete by various manipulations, even after VATS right lower lobectomy and mediastinal dissection.

Disclosure: All authors have declared no conflicts of interest.

V-067

PORT-ACCESS THORACOSCOPIC BISUBSEGMENTECTOMY OF THE RIGHT UPPER LOBE POSTERIOR AND ANTERIOR SEGMENTS

Hirohisa Kato, H. Oizumi, T. Inoue, H. Watarai, M. Sadahiro
Surgery², Yamagata University Faculty of Medicine, Yamagata/Japan

Objectives:

The incidence of small-sized lung cancer with ground-glass opacity has recently increased. Thus, limited lung resection and minimally invasive surgery are in great demand. However, although wedge resections may be sufficient to cure small lung cancers, they are sometimes difficult to perform when a tumor is located near the pulmonary hilum. In these cases, anatomical segmentectomy is preferred to secure adequate surgical margins. In addition, three-dimensional computed tomography (3-D CT) simulations are reportedly useful for thoracoscopic surgery. Here, we describe our technique: port-access thoracoscopic bisubsegmentectomy of the upper lobe anterior and posterior segments using 3-D CT simulations.

Methods:

Case: A 64-year-old woman was admitted to our hospital with a 16-mm non-solid tumor in the posterior segment of her right upper lung lobe that was suspicious of bronchioloalveolar carcinoma. Technique: One 20-mm flexible port and three 5-mm ports were used. Vessels and bronchi were identified using 3-D CT simulations pre- and intra-operatively. Subsegmental arteries (A2b, A3a) were identified and divided using an ultrasonically activated device (UAD). Subsegmental bronchi (B2b, B3a) were dissected. An intersegmental vein (V2c) was identified and divided using the UAD. B2b and B3a were ligated and cut after the right lung was inflated to visualize an intersubsegmental inflation-deflation line. Based on a 3-D image, the intersubsegmental veins were preserved. The parenchyma was dissected along the inflation-deflation line using electrocautery and the UAD. The peripheral parenchyma that included the nodule was dissected with a sufficient margin (> 2 cm) using a stapler.

Results:

A frozen section revealed bronchioloalveolar carcinoma. The surgical time was 191 minutes and bleeding was 101 ml.

Conclusions:

Port-access thoracoscopic bisubsegmentectomy using 3-D CT simulations can be performed safely and secures adequate surgical margins.

Disclosure: All authors have declared no conflicts of interest.



V-068

ROBOT-ASSISTED ENUCLEATION OF ESOPHAGEAL LEIOMYOMAS ; REPORT OF TWO CASESJae Hyun Jeon, C.H. Kang, Y.T. Kim, I.K. Park, H. Kim*Thoracic And Cardiovascular Surgery, Seoul National University Hospital, Seoul/Korea***Objectives:**

Surgical enucleation is the standard treatment of esophageal leiomyoma, and open or thoracoscopic enucleation has been performed. Recently, robot-assisted enucleation of leiomyoma has been introduced, but its role and benefit are not clearly defined. Herein, we report two cases of esophageal leiomyoma, which were operated successfully by robotic technique.

Methods:

There were 2 patients with complex esophageal leiomyomas enucleated using robotic approach. Robot-assisted enucleation of the leiomyoma was performed using the da Vinci Surgical System with three-dimensional imaging and articulated instruments. The patients were positioned in prone position and carbon dioxide gas was insufflated during operation for the wide surgical view and easy manipulation. Robotic surgery was performed by 4-arm technique. Two arms were used for retracting or holding tissues and one arm was used for dissection. Robot scissor or ultrasonic dissector was used for dissection. Esophageal muscular layer was repaired by robotic suture technique.

Results:

The first patient was an asymptomatic 25-year-old male with an irregularly shaped submucosal tumour, which was 8 cm long in its greatest dimension longitudinally, located at upper thoracic esophagus. The second patient was a 50-year-old female with dysphagia for 9 months. The tumor was 5 cm long in its greatest dimension and was located at the left side of the mid-esophagus with calcification. The leiomyomas were easily and successfully enucleated without any mucosal damage. During the operation, suctioning of blood was not necessary because total amount of bleeding was negligible during the operation. Both of the patients started oral feeding on the first postoperative day, and were discharged without any complications.

Conclusions:

Robot-assisted enucleation can be a safe alternative to the thoracotomy and thoracoscopic approaches, and in virtue of its meticulous articulations in arms and three-dimensional vision, it might have benefit over thoracoscopic approach in enucleating more complex lesions.

Disclosure: All authors have declared no conflicts of interest.

V-069

EXTENDED BRONCHOPLASTY FOR LOCALLY ADVANCED LUNG CANCER TO AVOID PNEUMONECTOMY

Tomoyuki Hishida, J. Yoshida, K. Aokage, Y. Matsumura, K. Nagai
Division Of Thoracic Surgery, National Cancer Center Hospital East, Kashiwa, Chiba/Japan

Objectives:

Extended bronchoplastic procedure associated with lung resection larger than lobectomy is demanding procedure, but is useful to avoid pneumonectomy especially in compromised patients. We present the patient who underwent extended bronchoplasty associated with left lower lobectomy and lingular segmentectomy for locally advanced lung cancer.

Methods:

A 80 year old ex-smoking man was referred to our institution with hemoptysis. Chest computed tomography scan revealed that a T2b tumor in the hilum of left lower lobe involved into hilar lymph node and interlobar pulmonary artery. Bronchoscopic examination showed the tumor exposing into left lower lobe bronchus invaded into distal portion of left main bronchus. Histological diagnosis revealed squamous cell carcinoma. The patient was diagnosed as having T2bN1M0 disease, and indicated for surgical resection. The octogenarian patient had impaired pulmonary function (FEV1.0, 1290mL) and recent history of acute myocardial infarction. To avoid left pneumonectomy, we planned left lower lobectomy and lingular segmentectomy by using extended bronchoplasty between left main and superior division bronchus.

Results:

Posterolateral thoracotomy through left 5th intercostal space was made. The tumor was resected by planned mode of resection. Partial segment of S1+2 was also resected to obtain adequate surgical margin. Frozen section of left main and superior division bronchus was negative for tumor cells. Bronchoplasty was performed by adjusting different size between left main and superior division bronchus using 4-0 monofilament absorbable material. Postoperative course was uneventful, and bronchoscopy revealed well-healed bronchial anastomosis.

Conclusions:

Extended bronchoplasty associated with lung resection larger than lobectomy was useful for compromised patient to avoid pneumonectomy. We present a case with a review of the literature.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 28 MAY 2013

14:00 - 15:30

Session XI/Chest Wall/Diaphragm/Pleura

O-070

PHRENIC NERVE PACING TECHNIQUE VIA INTRAMUSCULAR DIAPHRAGM ELECTRODES IN VENTILATOR DEPENDENT QUADRIPLÉGIC PATIENTSOmamah Almousa¹, S. Alnassar², W. Hajjar², F. Aboreida²¹*Thoracic Surgery, King Saud University, Riyadh/Saudi Arabia,*²*Thoracic Surgery, King Saud University, College of Medicine, Riyadh/Saudi Arabia***Objectives:**

Diaphragm pacing (DP) by electrical stimulation of the phrenic nerve offers important advantages to a highly select group of patients with respiratory paralysis and achieved by the placement of phrenic nerve electrodes via thoracotomy. However, this technique may be accomplished less invasively via laparoscopic placement of intramuscular (IM) electrodes, at a lower cost and with less risk of injury to the phrenic nerve. Our objective is to assess the feasibility and the success rate of laparoscopic placement of IM diaphragm electrodes to replace mechanical ventilators for quadriplegic patients with chronic respiratory insufficiency.

Methods:

This was a prospective interventional experience conducted from January 2010 to May 2012. Diaphragm pacing involves outpatient laparoscopic diaphragm motor point mapping to identify the site where stimulation causes maximum diaphragm contraction with implantation of Two IM diaphragm electrodes in each hemi diaphragm. Diaphragm pacing is conducted with low frequency electrical stimulation at a slow repetition (respiratory) rate to condition the diaphragm muscle against fatigue and maintain it fatigue-free.

Results:

Eight quadriplegic patients with cervical spinal cord injury had electrodes successfully implanted at the motor point with the maximum diaphragm contraction, ranging from 5 to 71 years of age and with an average of 28 years. The mean follow up period was 24 months (range from 8 to 36 months). Length of time on mechanical ventilation ranged from 1 to 20 months with an average of 10 months. In all patients, DP provided tidal volumes above basal needs. Six of the patients were weaned from the ventilator completely, with an average time of 30 days. The remaining two patients weaned from the ventilator for over 12 hours a day and/or are actively conditioning their diaphragms.

Conclusions:

Intramuscular diaphragm pacing was feasible and successfully replaced mechanical ventilators in selected quadriplegic patients, which improves quality of life.

Disclosure: All authors have declared no conflicts of interest.

O-071

COMPARATIVE STUDY OF THORACOSCOPIC DECORTICATION VS OPEN DECORTICATION IN EMPYEMA ADVANCED STAGES

Miguel Congregado, S. Moreno-Merino, R. Jimenez-Merchan, F. Cozar, M. Lopez Porras, P. Carmona, G. Gallardo, J. Loscertales

General Thoracic Surgery, Virgen Macarena University Hospital, Sevilla/Spain

Objectives:

Empyema is a severe condition, which needs adequate and expeditious treatment. Different modalities can be considered, from single drainage placement to open window thoracostomy. Videothoroscopic decortication joints the goal of good lung re-expansion with minimally invasive surgery, but in chronic pleural empyema sometimes this procedure is not easy and requires conversion to open surgery. The aim of this paper is to evaluate the feasibility of this approach in such cases and to perform a comparative study with open decortication.

Methods:

We have performed a retrospective comparative analysis of a prospective database. From 2000 to 2011 186 patients were admitted in our Department suffering empyema. Sixty (32.8%) of them needed decortication, 27 by videothoracoscopy (Group A) and 34 by thoracotomy (Group B). Variables: Operative time, Complications, Days of drainages, Postoperative Length of stay (LOS) and Mortality. Statistical analysis: Homogeneity between videothoroscopic and thoracotomy groups was evaluated. t-Student test was used for continuous variable, Unpaired t-test was used for operative time, LOS and days of drainage. Chi2 test was used for categorical data. Significance level $p=0.05$ (SSPS 17 Software).

Results:

Pleural decortication was performed in stage III chronic empyema with excellent results and only 3 patients needed conversion (11.1%). Comparison: Operative time: Group A 135 minutes (65-175) Group B 160 min. (90-240) No Significant. Complications: A 8.2% B 14.7% $p<0.05$. Days of drainage: A 5.9 ± 2 days B 9.3 ± 2 days $p<0.05$, LOS: A 7.8 days B 11.4 days $p<0.05$, Mortality: A 1 (1.6%) B 3 (4.9%) No Significant.

Conclusions:

Videothoroscopic decortication is a feasible procedure in stage III empyema with equally effective resolution as thoracotomy. Furthermore in our series it has better results in operative time, postoperative morbidity and length of stay. Multicentric-randomised trial should be performed to suggest this approach as gold standard of pleural empyema.

Disclosure: All authors have declared no conflicts of interest.

O-072

IS THERE ANY BENEFIT IN LUNG SPARING MACROSCOPIC COMPLETE RESECTION OVER VIDEO ASSISTED DEBULKING IN MALIGNANT PLEURAL MESOTHELIOMA?

Apostolos Nakas, T. Tsitsias, D. Waller

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Objectives:

The role of lung sparing surgery to prolong survival in the management of Malignant Pleural Mesothelioma (MPM) is yet to be confirmed. Video Assisted Debulking Surgery (VATS PD) has a role in symptom control and may prolong survival. Our aim was to determine whether Extended Pleurectomy Decortication (EPD) conveys any survival benefit over VATS PD.

Methods:

From a prospective database we identified 236 patients (201 male) who underwent EPD (152 patients) and VATS PD (84 patients). The patients in the EPD group were younger (mean 62 years) than the VATS group (mean 67.4, $p<0.05$). Cell type was similar (115 Epithelioid and 37 Biphasic in the EPD group, 70 Epithelioid and 14 Biphasic in the VATS PD group, $p=0.19$). We tested for differences in survival using selected subgroups.

Results:

Mean follow up was 15.5 (1-93) months. 30 and 90 day mortality was similar: 4% for EPD vs 4.8% for VATS PD, $p=0.75$ and 9.8 and 9.5%, $p=1$ respectively. Overall survival was similar: median 14.4 months for EPD (SE1.7, 95%CI 11-17.8) vs 13.2 for VATS PD (SE1, 95%CI 11.3-15.1), $p=0.26$. From the EPD group a smaller subgroup of node negative patients ($n=51$) had better survival: median 16 (SE3, 95%CI 10-22.4, $p=0.038$). In patients with Epithelioid disease there was a trend for better survival with EPD ($n=115$, median 18.2, SE2, 95%CI 14.5-21.8) vs VATS ($n=70$, median 14.4, SE1, 95%CI 12-17, $p=0.14$). In contrast the extent of surgery had no effect on survival in Biphasic disease: EPD $n=37$, median 9.7, (SE1.5, 95%CI 6.7-12.7) vs VATS $n=14$ (SE2.5, 95%CI 3-13), $p=0.57$. The smaller subgroup of Epithelioid node negative EPD ($n=33$) demonstrated the best survival (median 27, SE9, 95%CI 9-44) compared to Epithelioid VATS PD ($n=70$, median 14.4, SE1.2, 95%CI 12-17), $p=0.009$.

Conclusions:

Only node negative patients with Mesothelioma, especially epithelioid type, appear to benefit from radical surgery. This has many implications including accurate diagnosis of cell type and mediastinal staging.

Disclosure: All authors have declared no conflicts of interest.

O-073

FEASIBILITY AND SAFETY OF INTRAOPERATIVE HYPERTHERMIC PLEURAL PERFUSION IN PATIENTS CANDIDATE FOR MESOTHELIOMA LUNG SPARING SURGERY; A SINGLE CENTRE EXPERIENCE

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Objectives:

Surgery for mesothelioma is still under investigation due to the spread of different techniques and the recent results of MARS trial; consensus in literature is about standardizing procedures and achieving macroscopic complete resection. Hyperthermic Pleural Perfusion (HPP) is a technique associated with better local control of disease in combination with Extrapleural Pneumonectomy. We investigate the feasibility of HPP with lung-sparing surgery.

Methods:

From January 2006 to August 2012 at the University Hospital of Siena 27 patients with epithelioid or biphasic stage II or III Malignant Pleural Mesothelioma (MPM) were operated on by the same surgical team. The treatment protocol included Pleurectomy and Decortication, HPP and subsequent adjuvant chemotherapy. The aim of the study was to analyse feasibility and safety of the procedure and impact on postoperative outcome (morbidity and mortality). Secondary outcome was survival.

Results:

Mean age was 68 years old (range 50-81), twenty-one patients completed protocol and follow-up. Average cisplatin dose was 125 mg/m², ten (37%) had macroscopic residual disease. Minor surgical complication occurred in 40% of patients (bleeding in 7 pts, persistent air leak in 6), we recorded 1 fatal respiratory failure and 1 re-intervention for diaphragm rupture; none showed toxicity due to chemotherapy absorption. Mean overall survival was 25 months; significant improvement in survival occurred in patients without macroscopic residual disease (32 vs 17 months, p=0.044) and cisplatin dose higher than 100 mg/m² (31 vs 18, p=0.020); stage and histology were not significant prognostic factors.

Conclusions:

In our population survival varies greatly despite homogeneous selection of patients and standardization of treatment, but the feasibility of a technique that preserves the lung with potential prolonged survival should be considered in selecting borderline patients for surgical treatments. The uncompleted MCR and 40% morbidity reported in our preliminary study confirm the need for selecting surgical centres with wider experience.

Disclosure: All authors have declared no conflicts of interest.

O-074

RIB FRACTURES: MORTALITY RISK FACTORS

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Objectives:

Rib fractures occur in 10% of injured patients, are associated with mortality, and frequently necessitate intensive care unit (ICU) care. It is usually associated with other thoracic injuries, particularly with pulmonary contusion. The objective of this study is to assess which factors most influence on mortality in patients with rib fractures and create a method of survival prediction.

Methods:

We reviewed chest trauma patients admitted to our institution between January 2000 and December 2012 with the aim of establishing the mortality risk. 1,753 patients were admitted with a diagnosis of chest trauma. 1120 patients (64%) had rib fractures, 128 patients were transferred from other hospitals and excluded from analysis. 922 patients (700 men, 222 women, mean age 53 years) were studied prospectively. Patients were divided into two groups: Group I: Survivors (780), and group II: Dead (52). We compared patient data, thoracic injuries, associated injuries and clinical intervention. Statistical Analysis: Comparisons between two groups were performed with the Mann-Whitney U test. We searched for its predictors using a multidimensional analysis by logistic regression using the forward Wald stepwise model.

Results:

The most significant independent variables were: mechanical ventilation on admission, blood transfusion and stay in ITU. The risk estimate was: ITU admission: 20, Transfusion: 11, Mechanical Ventilation: 59, pulmonary contusion: 3.2, flail chest, 3, aged over 65 years: 3.8, and polytrauma: 2.4. Applying logistic regression test: flail chest, OR: 2.471, flail chest + pulmonary contusion, OR: 7.019, pulmonary contusion, flail chest + + patients over 65 years, OR: 9.335.

Conclusions:

In our series, the mortality in patients with rib fractures was 5.6%. Individual variables with greater risk estimation on mortality were: Need for mechanical ventilation at admission, admission to ITU and transfusion. The combination of pulmonary contusion, flail chest and patients over 65 years, the mortality risk increases by 10 times.

Disclosure: All authors have declared no conflicts of interest.

O-075**TIMING FOR SURGICAL FIXATION OF MULTIPLE SIMPLE RIB FRACTURES AND FLAIL CHEST: A SINGLE-CENTRE EXPERIENCE**

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Objectives:

The performance and timing of surgical fixation of multiple simple rib fractures and flail chest wall remains controversial. We report our experience with acute and delayed multiple simple rib fracture and flail chest wall surgical fixation.

Methods:

Since December 2006, 46 patients had surgical fixation using external titanium plates and bi-cortical screws for either multiple simple rib fractures or flail chest. We analysed operation details, hospital stay and complications.

Results:

29 patients (Group 1, 21 males, median age 54 (range 31-77) years) underwent fixation within 6 days following injury (range 1-43). Indications included: significant deformity/displacement, n=19; respiratory failure, n=6; uncontrolled pain, n=3; persistent pneumothorax, n=1. 17 patients (Group 2, 12 males, median age 58 (range 25-76) years) had delayed fixation at 12 (range 4-159) months following injury due to persistent pain, dyspnoea or deformity. 24 patients in Group 1 had flail chest versus 5 in Group 2 ($p<0.001$). Critical care stay was zero in Group 2. 18 patients in Group 1 had median critical care stay of 4 (range 0.5 to 34) days. Post-operative length of stay (PLOS) was longer in Group 1 for both flail chest and multiple simple rib fractures (13.6 ± 10 days vs 3.6 ± 0.6 days, $p=0.1$, and 7.4 ± 3.8 days vs 7 ± 1.7 days, $p=0.01$, respectively). Nine patients in Group 1 (31%) developed complications (chest infection, n=5; sputum retention, n=1; deep wound infection, n=1; prolonged respiratory wean, n=1; internal jugular vein thrombosis, n=1) versus 3 patients in Group 2 (17.6%, $p=NS$; surgical infection, n=1; neurogenic pain, n=1; haemothorax, n=1). Although symptomatic improvement was noted in most Group 2 patients, 18% had persistent pain.

Conclusions:

Fixation of multiple rib fractures is safe and effective in both the acute and delayed setting. Patients undergoing acute repair have an acceptable critical care stay. Although early repair is recommended, delayed fixation may still be of benefit.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 28 MAY 2013

14:00 - 15:30

Session XII/Pulmonary Neoplastic

F-076

IS PLASMA FIBRINOGEN A NOVEL INDEPENDENT PROGNOSTIC FACTOR IN PATIENTS UNDERGOING SURGERY FOR NON-SMALL CELL LUNG CANCER?

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Objectives:

An association exists between systemic pre-treatment inflammatory response and survival in NSCLC chemotherapy patients. The clinicopathological correlates in NSCLC surgical patients are less clear.

Methods:

NSCLC patients undergoing surgery between 1/9/2007 and 31/3/11 were included. Preoperative plasma fibrinogen level was correlated with clinicopathological factors, pathological TNM stage and survival. Survival analysis was performed on 1/10/12.

Results:

564 patients underwent surgery for NSCLC; 54% males, median age 68.4 (range 37.9 - 90.8) years. Median fibrinogen level was 4.0 (range 1.7 - 10.2) g/dL. 279 patients (49.5%) had fibrinogen level above reference range (2 - 4g/dL). Fibrinogen levels correlated with tumour size ($r=0.580$, $p<0.001$). Logistic regression analysis revealed a significant correlation between fibrinogen and: pTNM ($p<0.001$); histological grade ($p=0.05$); and cell type ($p<0.001$, with patients with squamous cell carcinoma having higher fibrinogen levels than patients with adenocarcinoma (4.8 ± 1.6 g/dL vs 4.0 ± 1.3 g/dL)) but not grade of differentiation. Furthermore, 61% of SCC patients had fibrinogen ≥ 4 g/dl as compared to 39% of patients with adenocarcinoma ($p<0.001$). There was no correlation with nodal stage ($p=0.435$). At the time of analysis, 362 (64%) patients were alive. Fibrinogen ≥ 4 g/dl ($p=0.001$), nodal staging ($p<0.001$) and pTNM stage ($p<0.001$) were univariate prognostic factors. In Cox multivariate analysis, fibrinogen level ($p=0.002$) and pTNM stage ($p<0.01$) were independent predictors of prognosis.

	Fibrinogen <4 g/dL	Fibrinogen ≥ 4 g/dL	p		
	n	Median survival	n	Median survival	
Stage I	174	NR	135	NR	0.003
Stage II	60	NR	86	42.0	0.055
Stage III	31	32.0	48	22.0	0.352

Conclusions:

Fibrinogen is associated with tumour size and TNM staging. Squamous cell carcinoma was associated with higher levels of fibrinogen. Although survival data are immature, fibrinogen ≥ 4 g/dl may be a novel independent prognostic factor following surgical resection. Further work is required to determine the clinical implications of high fibrinogen levels.

Disclosure: All authors have declared no conflicts of interest.

F-077

CLINICAL FEATURES OF MULTIPLE LUNG CANCERS BASED ON THIN-SECTION COMPUTED TOMOGRAPHY: WHAT ARE THE APPROPRIATE STRATEGIES FOR SECOND LUNG CANCERS?

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Objectives:

Surgical consensus of proper operative strategies for second lung cancers remains controversial for patients with multiple primary lung cancers (MPLCs).

Methods:

Between 2004 and 2011, 1112 consecutive patients underwent pulmonary resection for lung cancer. Among these, 59 patients (5.6%) with second lung cancers detected after the prior operation were investigated retrospectively. Based on the findings of preoperative thin-section CT, we classified them into two categories. S-S(+) group was defined that both first and second lung cancer showed solid appearance on TS-CT, whereas S-S(-) group was defined that ground-glass nodule (GGN) was included for at least one of them. Survival was calculated by the Kaplan-Meier estimation and several clinicopathological features were investigated to identify predictors for incidence of second primary tumors using uni or multivariate analyses.

Results:

Among 59 MPLCs patients, 30 were S-S(+) group and 29 were S-S(-) group based on thin-section CT. Univariate analysis elucidated that female gender, multiple expression more than three lung tumors and familial history for any cancers were the predictors for the incidence of S-S(-) group, whereas smoking status, mean tumor size, abnormal CEA titer and high SUVmax were those of S-S(+) group. Moreover, multiple expression more than three lung tumors was the significant predictor for S-S(-) group by multivariate analysis ($p=0.0270$). Overall 5-year survival was 71.7%. As for the surgical strategies, all of S-S(-) group included limited resection, whereas bilateral bilobectomy was performed for 36% of S-S(+) group. 5-year survival was 89.1% of S-S(-) group compared with 42.2% of S-S(+) group ($p=0.0312$).

Conclusions:

Regarding the operative strategies for second lung cancers, lobectomy should be aggressively considered for S-S(+) group as radical resection whenever operable. Whereas limited resection should be indicated for S-S(-) group as much as possible with the view to preserving lung function, because of high probability for the occurrence of third primary lung cancers.

Disclosure: All authors have declared no conflicts of interest.

F-078

GRADE OF BIOLOGICAL MALIGNANCY AND TREATMENT STRATEGY OF LUNG CANCER IN WHICH IT WAS DIFFICULT TO MEASURE THE SIZE OF GROUND GLASS OPACITY ON THIN-SECTION COMPUTED TOMOGRAPHY (LUNG CANCER WITH SCATTERED CONSOLIDATION)

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Objectives:

The size of ground glass opacity (GGO) on thin-section computed tomography (CT) is one of the most favorable prognostic factors in lung cancer. We reported lung cancer with scattered consolidation (LCSC), which was defined as lung cancer in which it was difficult to measure GGO (Interact Cardiovasc Thorac Surg. 2012 Dec 17). However details on the LCSC remain unknown.

Methods:

A retrospective study was conducted on consecutive 604 patients with resected lung cancer of clinical stage IA between January 2009 and October 2012. All patients underwent preoperative CT and authors reviewed radiological findings for all cohorts. LCSCs were selected and lung cancers on basis of the status of GGO were divided into four categories as follows; A, GGO group (GGO>0.5); B, LCSC (GGO unmeasurable); C, Part Solid (GGO≤0.5, >0); D, Pure Solid (GGO=0). To elucidate their characteristic findings, we investigate clinicopathological features (SUV max of PET-CT, Tumor marker and pathological findings). To compare two or more factors, chi-square test was used for statistical analysis. A p-value of <0.05 was accepted as statistically significant.

Results:

LCSCs were observed 71 (11.7%) of 603 patients with c-stage IA lung cancer and had no nodal involvement. Four categories (GGO group, LCSC, Part Solid group and Pure Solid group) are more graduated, more invasive and these distributions were significantly different (p<0.0001) (Table. 1). And, LCSC tends to have multiple primary lung cancer compared with other groups significantly, (21% (15/71) vs. 11% (61/532), p=0.034). Table. 1

	GGO group (GGO > 0.5)	LCSC	Part Solid group 0 < GGO ≤ 0.5	Pure Solid group GGO = 0
P-N1 or 2 (p value<0.0001)	0% (0/177)	0% (0/71)	4.4% (4/90)	25.4% (64/252)
Lymphatic invasion (+) (p value<0.0001)	0% (0/177)	12.7% (9/71)	15.6% (14/90)	44.4% (112/252)
Vascular invasion (+) (p value<0.0001)	0.1% (1/177)	5.6% (4/71)	12.2% (11/90)	48.8% (123/252)
SUVmax>3 (p value<0.0001)	5.4% (6/112)	6.8% (4/59)	11.4% (9/79)	68.1% (154/226)
CEA>3 ng/ml (p value<0.0001)	18.6% (33/177)	26.8% (19/71)	33.3% (30/90)	54.0% (131/252)

Conclusions:

Although LCSC was minimally invasive lung cancer, it was more malignant than GGO group. Furthermore, in LCSC, incidence of multiple primary lung cancer was higher. So surgical oncologist need to manage segmentectomy well as lobectomy and wide wedge resection. Now we are planning to perform prospective multicenter trial to reveal the appropriate treatment of LCSC.

Disclosure: All authors have declared no conflicts of interest.

F-079

SURGICAL TREATMENT IN PATIENT WITH NSCLC WITH FISSURE INVOLVEMENT: ANATOMICAL VS NOT-ANATOMICAL RESECTION

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Objectives:

Despite the intense debate concerning the prognostic impact of fissure involvement (FI) in patients with NSCLC, no specific surgical strategies have been recommended. In this setting, we report our mono-centric 10-yr-experience to investigate this issue.

Methods:

From 01/2000 to 01/2010, the clinical data of 40 patients with T1-3N0-2M0 NSCLC with FI underwent curative resection were retrospectively reviewed. The sample was stratified according to kind of resection: group-A (#28): anatomic resection [bilobectomy (#21,75%), pneumonectomy (#7,25%)]; group-B (#12,30%): not-anatomical resection (lobectomy-plus-wedge-resection). The end-points were: 1) impact of different surgical approach on the FEV1 [measured before surgery and 1 months after discharge (using $\Delta = (\text{post-pre/pre}) \times 100$)] 2) tumor recurrence 3) disease-specific mortality. The t-test, Kaplan-Meier method, chi-square and log-rank tests were used for the statistical analysis.

Results:

The T-average-size was comparable ($p=0.21$) in Group-A (4.8 ± 2.1 cm) and Group-B (3.8 ± 2.3 cm), and no differences ($p=0.44$) were found when comparing the distribution of pN+patients (46% Group-A vs 33% Group-B). Similarly, the baseline preoperative function (tested as FEV1%-predicted) was likewise comparable ($92.5 \pm 21.0\%$ in Group-A vs $85.2 \pm 20.0\%$ in Group-B, $p=0.54$). The decline of FEV1% after surgery was slightly higher in Group-A ($24\% \pm 13\%$) if compared with Group-B ($19\% \pm 13\%$), but this difference was not statistically significant ($p=0.52$). On the other hand, the median survival time was 64 months for group A and 60 months for group B. In detail, we observed 9 recurrences (37%) and 8 (32%) disease-specific deaths in Group A and similarly 4 (30%) recurrences and 4 (36%) disease-specific deaths in Group B ($p=0.44$ and $p=0.88$, respectively).

Conclusions:

In NSCLC with FI, an anatomic resection (bilobectomy, pneumonectomy) and not-anatomic resection (lobectomy-plus-wedge-resection) showed no statistically significant oncological differences and similar early-term outcome of pulmonary function. Further studies based on larger series are needed to confirm these preliminary data and also to investigate the impact of the two different surgical strategies on the post-op quality of life.

Disclosure: All authors have declared no conflicts of interest.

F-080

THE IMPACT OF METFORMIN USE ON SURVIVAL AFTER SURGERY FOR NSCLC

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Objectives:

Diabetes and metformin use are common in lung cancer patients and have been suggested as prognostic factors. The purpose of our study was to determine the prognostic impact of metformin use in lung cancer patients treated by primary surgery.

Methods:

Information on comedication was collected for stage I-II NSCLC patients, treated by surgical resection from 2003 to 2010 in our hospital. The database contains information on age, gender, TNM, histotype and type of surgery. Patients with sublobar resection, neoadjuvant chemotherapy or residual disease were excluded from the study. Patient and tumour characteristics for the various subgroups were tabulated and compared using chi-square analysis. Differences in overall survival were tested for significance with the logrank statistic. Information regarding diabetes occurring around or after diagnosis (n=12) was ignored in the survival analyses. The independent value of prognostic factors was assessed in multivariate proportional hazard analysis.

Results:

The final series comprised 138 men and 70 women, including 22 (11%) with diabetes. Within the latter group, 17 patients had been treated with metformin before diagnosis. Stage I comprised 74% of cases and 45% of patients were aged 70 years or older. Adjuvant chemotherapy was administered in 25 patients (12%) and thirty-day postoperative mortality was 2.4%. Five-year survival was significantly better for metformin users: 84% as compared with 46% for non-diabetes patients. This survival difference remained significant (HR=0.24, p=0.048) after controlling for age, gender, stage, histotype and extent of surgery. Five-year survival for diabetes patients on other medication was 0%.

Conclusions:

Our results suggest that in surgical lung cancer patients, survival for metformin users is better than for non-metformin users. Although, this is in accordance with studies in other cancers, it needs to be confirmed in larger series. Metformin has minor toxicity compared to regular chemotherapy and may be considered as a promising agent for future adjuvant trials.

Disclosure: All authors have declared no conflicts of interest.

F-081**A REVIEW OF 250 TEN-YEAR SURVIVORS AFTER PNEUMONECTOMY FOR NON-SMALL CELL LUNG CANCER**

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Objectives:

Historically considered as gold standard, pneumonectomy has been rapidly seen as a risky procedure, first reserved for tumours not amenable to lobectomy, and now discouraged even in advanced stages of non-small cell lung cancer (NSCLC). Our purpose was to rehabilitate this operation by reviewing patients who lived more than 10 years after pneumonectomy, and could be considered as cured.

Methods:

We set a retrospective study including every patient who underwent a pneumonectomy for NSCLC in 2 French centres from 1981 to 2002. We then compared the demographic and pathologic characteristics of patients according to their survival, less than 5 years (group 1), between 5 and 10 years (group 2), and more than 10 years (group 3).

Results:

During the study period, we performed 1466 pneumonectomies for NSCLC. Postoperative complications occurred in 396 patients (27%), including 93 deaths (6.3%). Five- and ten-year survival rates were 32% and 19% respectively, with 995 patients being included in group 1, 221 patients in group 2, and 250 patients in group 3. Thirty patients survived more than 20 years. As compared with group 1 and 2, group 3 was characterized by a higher proportion of standard pneumonectomies (74%, 81%, and 84%, respectively, $p < 0.001$), an intermediate rate of squamous cell carcinoma (61%, 77%, and 72%, respectively, $p < 0.001$), earlier clinical stages (stage IIIA 55%, 38%, and 33%, respectively, $p < 0.001$), and fewer pathological N2 diseases (51%, 26%, and 26%, respectively, $p < 0.001$). The proportion of patients with induction or adjuvant treatment did not differ significantly between the three groups.

Conclusions:

During the last thirty years, pneumonectomy was effectively performed for advanced NSCLC, even in the third of patients with mediastinal nodes metastases, allowing 10-year survival of 19% of patients. Such results have not yet been obtained by other non-surgical treatments and confirm pneumonectomy is still an advisable procedure.

Disclosure: All authors have declared no conflicts of interest.

F-082

SIGNIFICANCE OF SERUM CARCINOEMBRYONIC ANTIGEN AT THE FOLLOW-UP OF COMPLETELY RESECTED NON-SMALL CELL LUNG CANCER

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Objectives:

The study was conducted to elucidate the significance of serum carcinoembryonic antigen (CEA) at the follow-up of resected non-small lung cancer (NSCLC).

Methods:

From 2001 to 2006, 489 patients underwent complete resection for p-stage IA-IIIa NSCLC at our hospital. The patients were divided into 3 groups; those with normal serum CEA levels before (n) and 1-3 months after surgery (N) (nN group, n = 363), those with elevated serum CEA levels before surgery (h) but N (hN group, n = 97), and those with elevated serum CEA levels 1-3 months after surgery (H) (H group, n = 29). They had a follow-up with measurements of serum CEA levels at every visit until recurrence or for more than 5 years after surgery.

Results:

The numbers of patients who had recurrence were 122 (34%) in the nN group, 49 (51%) in the hN group, and 19 (66%) in the H group. Five-year lung cancer-specific survival rates of patients with normal and elevated serum CEA levels during the follow-up (more than 3 months after surgery) period were 84% and 41% ($p < 0.001$), respectively. The sensitivity/specificity of elevated serum CEA levels for detecting recurrences in the nN group and in the hN group were 30%/98% and 78%/79%, respectively. In the proportional hazards analysis, patients in the H group had a worse lung cancer-specific survival (hazard ratio 2.486, $p = 0.002$). Only 4 of 72 non-adenocarcinoma patients in the nN group had elevated serum CEA levels at the time of recurrence. Moreover, it was unable to identify a small population of adenocarcinoma patients in the nN group that would produce CEA.

Conclusions:

The H status was an independent worse prognostic factor in resected NSCLC patients. Measuring serum CEA levels at the follow-up might be useful in the hN groups for detecting recurrences.

Disclosure: All authors have declared no conflicts of interest.

F-083

PROGNOSTIC FACTORS IN A MULTICENTRE STUDY OF 246 ATYPICAL PULMONARY CARCINOIDS

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Objectives:

To analyze clinical and biomolecular prognostic factors associated with the surgical approach and outcome of 246 atypical lung carcinoids (AC) in a multi-institutional experience.

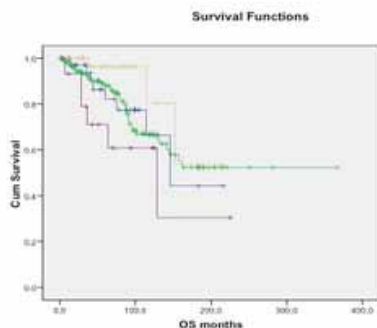
Methods:

We retrospectively evaluated clinical data and pathological tissue sample collected from 246 patients of ten Thoracic Surgery Units from different geographical areas of our country. All patients were divided in four groups according to surgical procedure: sub-lobar resections (GROUP I), lobar resections (GROUP II), tracheobronchoplastic procedures (GROUP III), and pneumonectomies (GROUP IV). Overall survival analysis was performed using the Kaplan-Meier method and log-rank test. Survival was calculated from the date of the surgery to the last date of follow-up or death. The parameters evaluated included age, gender, smoking habits, laterality, type of surgery, 7th edition of TNM staging, mitosis, Ki67/MIB-1, multifocal forms, tumorlets and type of lymphadenectomy. For multivariate analysis, a Cox regression model was used with a forward stepwise selection of covariates.

Results:

246 patients (123 male, 123 female; median 60.5 yrs, range 10-84) underwent surgical resection for AC in the last thirty years as follows: n=39 patients in GROUP I, n=153 patients in GROUP II, 38 patients in GROUP III and 16 patients in GROUP IV. Smoking history was present in 134/246 pts (54.5%). Mean follow-up period was 61.5 months (range 2.8-366.8). Surgical approaches, mitosis (≤ 5 or > 5) and Ki-67/MIB-1 are showed on graph. There were no

significant differences between gender, tumor location, and type of surgery at the multivariate analysis. Age ($p=0.003$), smoking habits ($p=0.007$), pathological stage($p=0.013$) and mitotic index($p=0.004$) were all significant at multivariate analysis.

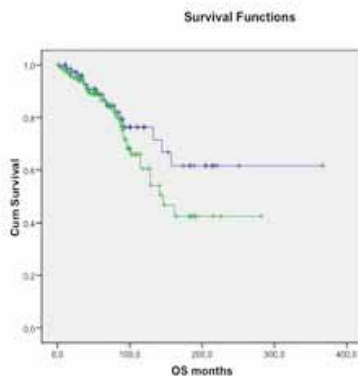
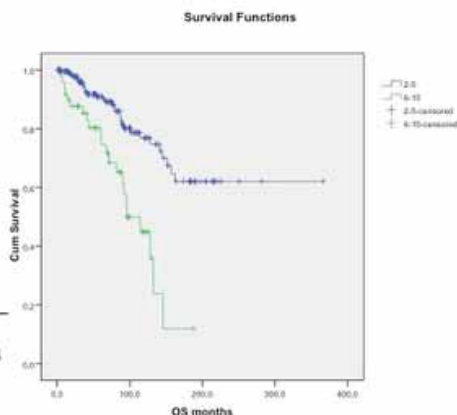


Surgical Approaches

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	6.072	3	.108

Mitotic Index

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	19.732	1	.004



Ki67/MIB-1

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	1.808	1	.179

Conclusions:

Atypical lung carcinoids are malignant neuroendocrine tumors with a worst outcome in patients over 60 year and in smokers. With exception of pneumonectomy, extent of resection does not seem to affect survival. Pathological staging along with mitotic index, more than Ki67/MIB-1, appears to be the most significant prognostic factors.

Disclosure: All authors have declared no conflicts of interest.



F-084

PERFORMING SLEEVE LOBECTOMY INSTEAD OF PNEUMONECTOMY FOR NON-SMALL LUNG CANCER WITH N1 NODAL DISEASE DOES NOT COMPROMISE LONG-TERM SURVIVAL

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Objectives:

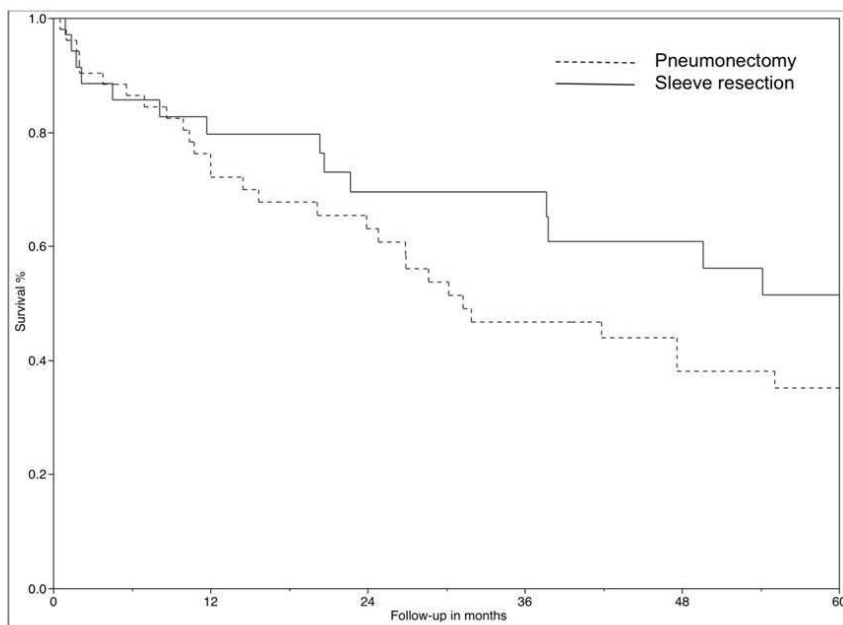
N1 nodal disease may be a risk factor for developing locoregional recurrence after sleeve lobectomy for non-small cell lung cancer (NSCLC). We evaluated if sleeve lobectomy had worse survival compared to pneumonectomy for NSCLC with N1 disease involvement.

Methods:

A retrospective review was performed of all patients with T2-3N1M0 NSCLC who underwent pneumonectomy or sleeve lobectomy at a single institution from 1999-2011. Survival was determined with the Kaplan-Meier method, and multivariable Cox proportional hazards regression was used to evaluate the impact of resection extent on survival.

Results:

During the study period, 87 patients underwent resection for T2-3N1M0 NSCLC with pneumonectomy (n=52, 60%) or sleeve lobectomy (n=35, 40%). Pneumonectomy and sleeve lobectomy patients had similar mean (SD) ages (60.9±10.7 vs 63.5±12.7, p=0.30), gender distribution (69.2% [36 of 52] vs 60.0% [21 of 35] male, p=0.37), mean FEV1 (66.3±15.9 vs 63.5±17.6, p=0.47), mean DLCO (70.2±17.4 vs 74±24.6, p=0.11), tumor stage (61.5% [32 of 52] vs 62.9% [22 of 35] stage II, p=0.90), and tumor grade (51.9% [27 of 52] vs 31.4% [11 of 35] well/moderately differentiated, p=0.17), respectively. Post-operative mortality (3.9% [2 of 52] vs 5.7% [2 of 35], p=0.68) and length of stay (5 [IQR 4-7] vs 5 [4-7] days, p=0.68) were similar between the two groups. Three-year survival after pneumonectomy (46.8% [95% CI: 31.8-60.4%]) and sleeve lobectomy (65.2% [45.5-79.3%]) were not significantly different (p=0.23, Figure). In multivariable survival analysis that included age, resection extent, stage, and grade, only increasing age predicted worse survival (HR 1.03/year, p=0.03).

**Conclusions:**

Performing sleeve lobectomy instead of pneumonectomy for NSCLC with N1 nodal disease does not compromise long-term survival.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 28 MAY 2013

14:00 - 15:00

Session XIII/Interesting Cases

O-085

MULTIDISCIPLINARY APPROACH TO AN UNUSUAL AIRWAY PROBLEM

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Objectives:

We want to share the experience of our multidisciplinary team of thoracic surgeons, ENT-surgeons, reconstructive surgeons and anaesthesiologists in resolving a deep tracheo-oesophageal fistula after laryngectomy and radiotherapy by combining all technical skills available.

Methods:

A 24-year old female patient was referred to our departments with a long and deep trachea-oesophageal fistula of 31mm in length upto 2.5cm above the carina after necrosis of the common party wall of pars membranacea and anterior oesophagus and a separate pharyngocutaneous fistula in the anterior neck. 16 months earlier she underwent a laryngectomy for an adenoid cystic carcinoma of trachea and subglottis, followed by radiotherapy. The postoperative period was complicated by fibrosis, leakage around the voice prosthesis and subsequent stenosis of the neopharynx. Therefore a stent was placed in the proximal oesophagus, ultimately leading to disruption of the tracheo-oesophageal septum.

Results:

Through a right thoracotomy in the 4th intercostal space the trachea was reached and the thoracic oesophagus mobilized. The end-standing tracheostomy was freed from the proximal oesophagus and the stenotic neopharynx was divided and resected upto the base of the tongue. A free skin-fascia flap pediculated on the radial artery and vein was harvested. This flap was then sutured in place via the thoracotomy to reconstruct the lost pars membranacea while on continuous left single-lung ventilation and off-pump. After revascularization of the graft to the neck vessels, the gastro-intestinal tract was reconstructed by creating a pharyngogastrostomy by means of a gastric tubulus. To conclude the remaining piece of the graft was sutured in place to cover the stomach at the level of the neck and a surgical jejunostomy was put in place. The patient is doing reasonably well 4 months postoperative.

**Conclusions:**

This case demonstrates how this often lethal complication could only be resolved by combining the specific skills of every discipline involved.

Disclosure: All authors have declared no conflicts of interest.

O-086

A NOVEL METHOD OF TRACHEOESOPHAGEAL FISTULA CLOSURE

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²*University Hospital Of Parma, Hospital Pharmacy, Parma/Italy,*

³*University Hospital Of Parma, Pneumology, Parma/Italy*

Objectives:

To describe the successful repair of tracheoesophageal fistula following caustic soda ingestion with porcine collagen membrane.

Methods:

A 22-year old woman was admitted for acute respiratory failure secondary to voluntary caustic soda ingestion. Five years earlier, two suicide attempts were registered. Endoscopic procedures revealed necrotic and ulcerative lesions of the pharynx and glottic plane. An important necrosis of the esophageal mucosa and ulcerative gastropathy was disclosed; a naso-gastric tube and central venous line were placed. A wide range antibiotic therapy was started. One week later, a tracheostomy was performed. Bronchoscopy revealed a significant necrosis of the inferior part of the trachea and a tracheoesophageal fistula was diagnosed. A subsequent bronchoscopy revealed a tightened stenosis of the larynx, epiglottis disappearance, immobile vocal cords. An endotracheal prosthesis was not implantable. The patient continued to be febrile with abundant purulent secretions. A surgical exploration for tracheoesophageal fistula repair was indicated.

Results:

A left mainstem bronchial intubation through the tracheostomy was performed. A right posterolateral thoracotomy was carried out. The azygos vein was interrupted; medial esophagus and carina were isolated. At this level the esophagus was tenaciously stuck to the tracheal membranous wall. The tracheoesophageal fistula was 5cm long: a large defect comprehending the distal part of the trachea and 2cm of the left main bronchus was observed. The esophageal laceration was sutured in two layers. The tracheal defect was repaired with a not cross-linked collagen membrane obtained from porcine dermis. The intercostal flap was placed between the two sutures. Two weeks later the patient was transferred to the rehabilitation unit and discharged home three weeks later. Subsequent bronchoscopies revealed the progressive revascularization and reepithelization of the porcine membrane with no evidence of the prosthesis.

Conclusions:

Not cross-linked porcine membrane is an ideal material for infected wound repair. Its consistency and resistance allowed perfect stabilization of the defect.

Disclosure: All authors have declared no conflicts of interest.

O-087

REPAIR OF A COMPLEX POST TRAUMATIC TRACHEAL DEFECTFrancesco Paolo Caronia¹, A.I. Lo Monte²¹*Thoracic Surgery, Policlinico Morgagni, Catania, Catania/Italy;*²*Department Of Surgery, Palermo University, Palermo/Italy***Objectives:**

An anterior tracheal wall defect was successfully treated with a double reversed pedicled cervical skin flap reinforced with costal cartilage grafts in a complex multi trauma patient.

Methods:

An 18 years old patient was involved in a high-speed motor vehicle collision resulting in craniomaxillofacial trauma, rupture of spleen and cervico-thoracic trauma on December 2010. She underwent urgent laparotomy, splenectomy, diaphragmatic suture and endotracheal intubation. A Montgomery t-tube was placed and maintained for 1 year then she was referred to our institution for the management of such a stenosis. The Montgomery t-tube caused an obstructive subglottic granuloma, a distal tracheal stenosis at the level of inferior Montgomery limb and a chronic infection of tracheostomy. The family didn't want the daughter to undergo tracheal resection and primary anastomosis via cervical incision. Two video laryngoscopic resection of obstructive subglottic granuloma allowed solving subglottic stenosis. Distal tracheal stenosis was treated with two rigid bronchoscopic dilatations. An enduring tracheal stoma with stenosis and an almost total disruption of lateral tracheal wall was treated with a double reversed pedicled cervical skin flap medially based reinforced with costal cartilage grafts. A fully covered expandable retrievable metal stent was at the same time positioned as a scaffold of the new anterior tracheal wall and removed after 3 months.

Results:

Cervical drains were removed on post-operative-day-1 and the patient was discharged home on post-operative-day-9. The patient had a successful surgical outcome and at six-months follow-up bronchoscopy there was a satisfactory tracheal lumen. The patient was referred to the plastic surgeon to recover cervical scars.

Conclusions:

This technique is very easy to perform and in selected patients it could be a very effective alternative to tracheal resection and primary anastomosis via cervical incision.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 28 MAY 2013

16:00 - 17:30

Session XIV/Oesophagus/Mediastinum

F-088

THE EFFECT OF NARROWED GASTRIC CONDUIT ON ANASTOMOTIC LEAKAGE FOLLOWING MINIMALLY INVASIVE ESOPHAGECTOMY

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Objectives:

Anastomotic leakage remains a major complication following minimally invasive esophagectomy (MIE). In this study, we hypothesized that narrowed gastric conduit formed during MIE would lead to lower incidence of anastomotic leakage. Based on our last-2-year experience on MIE, we herein presented our primary results.

Methods:

From January 2011 till December 2012, esophageal cancer patients undergoing MIE were assigned to narrow (3cm in width, Group N) or wide (5cm in width, Group W) gastric conduit according to different surgical groups. During the operation, the length of gastric conduit, in together with the anastomotic details were recorded. At the proximal site of gastric tube close to the anastomosis, changes in perfusion before and after gastric conduit formation were measured using laser Doppler perfusion monitor (PeriFlux 5010, Perimed, Sweden). Following the operation, the incidence of anastomotic leakage was statistically compared to identify the differences between the two methods of gastric formation.

Results:

There were 126 patients in Group N, and 133 patients in Group W. The patient demographics and operation features were comparable between the two groups. During the operation, lower reduction of perfusion unit (PU) was recorded in Group N than in Group W (28.1% versus 45.7%, $p=0.0030$), and the length of gastric conduit in Group N was significantly longer ($39.1\pm 2.7\text{cm}$ versus $35.6\pm 4.4\text{cm}$, $p=0.0021$). Postoperatively, a total of 34 cases (13.13%) of anastomotic leakage were observed, and the incidence of anastomotic leakage was significantly lower in Group N than in Group W (7.94% versus 18.05%, $p=0.016$).

Conclusions:

Narrowed gastric tube is longer in length and less interfered in perfusion, which contributes to lower incidence of anastomotic leakage following minimally invasive esophagectomy. Further study on its long-term effect is required to confirm the advantage of this technique.

Disclosure: All authors have declared no conflicts of interest.

F-089

MINIMALLY INVASIVE ESOPHAGECTOMY MORE EXPENSIVE THAN OPEN AT NORTH AMERICAN HOSPITAL DESPITE SHORTER LENGTH OF STAY

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Objectives:

Minimally invasive esophagectomy offers a number of advantages over open approaches, including reduced discomfort, shorter length of stay, and a faster recovery to baseline status. Alternatively, minimally invasive procedures are typically longer and consume greater disposable instrumentation, potentially resulting in a higher overall cost. The objective of this study was to compare costs associated with esophagectomy approaches for esophageal cancer.

Methods:

An institutional Resource Information Management System was queried for hospital cost data of patients undergoing esophagectomy for esophageal cancer between 2003 and 2012 via minimally invasive, open transthoracic, or transhiatal approaches. Patients that were converted from minimally invasive to open, or involved hybrid procedures were excluded.

Results:

A total of 158 esophagectomies were identified, including 60 minimally invasive (MIE), 34 open transthoracic (TT), and 64 transhiatal (TH). As shown in the Table, the median costs on the day of surgery were higher in the MIE group (\$12,187) than the open groups TT (\$7,689) or TH (\$5,118). The median costs of the entire hospitalization also appeared to be higher in the MIE group (\$25,879) compared to TT (\$23,622) and TH (\$15,248). The median length of stay was lowest in the MIE group (8.0 days) compared to TT (11.5 days) and TH (9.0 days).

Table: Baseline Characteristics and Cost Data

	MIE	TT	TH
No. Of Cases	60	34	64
Age at surgery (median)	63.5	63.5	63
Male (%)	77	91	83
Length of Stay (days)			
Mean	10.9 ± 8.6*	19.4 ± 18*	18.3 ± 28
Median	8.0	11.5	9.0
Day of Surgery Cost (\$)			
Mean	12,414 ± 2,153**	8,138 ± 2,521**	5,809 ± 2,575**
Median	12,187	7,689	5,118
Total Cost (\$)			
Mean	33,159 ± 27,443	34,574 ± 28,654	26,432 ± 35,846
Median	25,879	23,622	15,248

TT = Open Transthoracic, TH = Open Transhiatal

*p < 0.05, two-sample t-test, relative to MIE

**p < 0.001, two-sample t-test, relative to MIE



Conclusions:

The operating room costs associated with minimally invasive esophagectomy are significantly higher than open transthoracic or transhiatal approaches. Unfortunately, a shorter hospital stay after MIE does not consistently offset higher surgical expenses, as total hospital costs trend higher in the MIE patients. In a strained health care economy, efforts to reduce costs associated with the minimally invasive approach should address the postoperative period as well as operating room expenses.

Disclosure: All authors have declared no conflicts of interest.

F-090

SIGNET RING CELLS IN ESOPHAGEAL AND GE JUNCTION CARCINOMAS HAVE A MORE AGGRESSIVE BIOLOGICAL BEHAVIOR.

P. Nafteux, Hans Van Veer, T. Lerut, G. De Hertog, J. Moons, J. Dhaenens, W. Coosemans, G. Decker, H. Decaluwe, P. De Leyn
Thoracic Surgery, University Hospitals Leuven, Leuven/Belgium

Objectives:

In contrast with gastric cancer little is known about the biologic behavior and prognosis of SRC. To clarify the biologic behavior of esophageal signet-ring-cell containing carcinomas (SRC), clinicopathologic features were compared to non-SRC adenocarcinomas (ADC) of the esophagus and gastroesophageal-junction (GEJ).

Methods:

Between 1990-2009 seven hundred and seventy-nine patients underwent primary R0 resection. Specimens containing signet ring cells were classified according to WHO-criteria (>50%SRC or <50%SRC).

Results:

SRC were identified in 82 (10.5%) patients; 25 showed >50%SRC, 57 <50%SRC. Cancer-specific 5-year survival in ADC was 57.3%, being 30.2% in all SRCca ($p<0.001$). In SRC<50% this was 36%, in SRC>50% it was 16% (N.S.) Lymph node metastasis (pN+) was present in 438 patients with cancer specific 5 year survival of 32% in ADC, 29% in SRC<50% and) 0% in SRC>50% ($p=0.010$). The mean number of positive lymph-nodes was not significantly different between ADC and SRC<50% (5.85 vs. 6.61; $p=0.46$) but significantly different between ADC and SRC>50% (5.85 vs. 8.89; $p=0.049$). In ADC, 30% were pN3's (>6 positive LN's), not significantly different from pN3's in SRC<50% (37%, $p=0.39$) but highly significantly different from SRC>50% (61%, $p=0.006$). SRC showed a higher recurrence rate (56% versus 42% for ADC; $p=0.003$) in particular loco-regional recurrences (29% versus 16%; $p=0.002$). Loco-regional recurrence was more prominent in SRC>50% (44%) versus SRC<50% (23%) $p=0.053$. Pre-treatment biopsies were unreliable to define the presence of SRC>50% (Sensitivity=60%, PPV=50%).

Conclusions:

SRC are aggressive neoplasms carrying a worse prognosis compared to non SRC ADC after primary esophagectomy, which appears mainly related to the SRC>50% subgroup because of higher nodal stage (pN3) and increased locoregional recurrence, whereas pN+SRC<50% seem to have a similar behavior and survival rate as pN+ADC. As pre-treatment biopsies failed to reliably define presence of SRC>50%, presence of signet-ring cells in pre-treatment biopsies appear of no use to define treatment strategy nor prognosis.

Disclosure: All authors have declared no conflicts of interest.

F-091

TIME-TRENDS AND DISPARITIES IN THE THERAPY OF OESOPHAGEAL CANCER IN BAVARIA 2002-2009: A POPULATION BASED STUDY OF 8,362 PATIENTS

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²*Faculty Of Veterinary Science, Szent István University, Budapest/Hungary*

Objectives:

Rates of surgical therapy in patients with oesophageal cancer published by high-volume centers are hampered by selection bias and do not reflect everyday reality. We hypothesized, that operative treatment for cancer of the oesophagus and the gastric cardia is underused and we assessed resection rates in a population based sample.

Methods:

Using the database of the Bavarian Cancer Registry (2002–2009), a total of 8,362 patients were identified with cancer of the oesophagus and the gastric cardia. Characteristics of the study population were assessed. Long-term survival and trends in the rates of surgery, chemotherapy and radiation therapy were calculated. Multivariate logistic regression was employed to identify factors predicting failure to undergo surgical therapy.

Results:

Incidence rates for cancer of the oesophagus and the gastric cardia increased from 9.3 to 10.0/100,000 in Bavaria between 2002-2009. Most patients were male, average age was 66 years. Almost 50% of patients presented with non-metastatic cancer. While the percentage of patients undergoing of surgery (~40%) and chemotherapy (~30%) remained the same during the study period, use of radiotherapy dropped significantly from 27% to 19% of all patients. Overall 5-year survival rates were 20%. Median survival of patients undergoing surgical treatment for locoregional cancer was significantly better than of patients receiving non-operative therapy (34 months vs. 14 months; $p < 0.001$). Older patients, and patients with non-cardia cancers and with squamous cell histology were significantly less likely to undergo surgery.

Conclusions:

Incidence rates for cancer of the oesophagus and the gastric cardia are increasing in Bavaria. Surgical therapy is underused despite doubling survival in patients with non-metastatic disease. Elderly patients with squamous cell histology are particularly affected by this underutilization.

Disclosure: All authors have declared no conflicts of interest.

F-092

EARLY CLINICAL OUTCOMES OF ROBOT-ASSISTED SURGERY FOR ANTERIOR MEDIASTINAL MASS—ITS SUPERIORITY OVER CONVENTIONAL STERNOTOMY APPROACH EVALUATED BY PROPENSITY SCORE MATCHING

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Objectives:

We performed this study to assess early clinical outcomes of robot-assisted surgery for anterior mediastinal mass by comparing results of robot group with those of sternotomy group after propensity score matching.

Methods:

Between 2008 and 2012, 145 patients underwent resection of anterior mediastinal mass. Robot-assisted surgery was performed in 37 patients and conventional surgery by sternotomy in 108 patients. Propensity score matching was done between two groups with variables of age, sex, size of the mass, myasthenia gravis, resection of other organ, and pathologic diagnosis. 34 patients from robot group and 34 from open group were matched, fitting the model. Clinical outcomes of matched groups were compared.

Results:

In robot group, mediastinal cyst consisted 47.1%(16/34), thymoma 32.4%(11/34), thymic carcinoma 8.8% (3/34), thymic hyperplasia 8.8%(3/34), and liposarcoma 2.9%(1). Mean duration of follow-up was 1.11±0.2 and 1.85±0.2 years for robot group and open group, respectively. There were no mortality or recurrence in both groups during follow-up. There were no significant differences in operation time, postoperative WBC and CRP increase, and maximum VAS score for pain, and postoperative ICU care between two groups. Robot group revealed lesser number of drains (1.09±0.1 vs 1.41±0.1) and 24-hour tube drainage (189.4±20.5 vs 397.6±52.6mL), lower hemoglobin loss (0.54±0.4 vs 1.35±0.1g/dL) and hematocrit decrease(1.92±0.5 vs 3.85±0.4%), shorter chest tube days(1.53±0.2 vs 3.06±0.2) and hospital days(2.65±0.2 vs 5.53±0.8) after operation, which were statistically significant(Table 1). Although statistically insignificant, there were no postoperative complication in robot group but there were 5(14.7%) in open group (p=0.063).

	Robot group (n=34)	Open group (n=34)	
Age ^a (yr)	53.7±2.2	52.4±1.8	0.673
Mass size ^a (cm)	28.8±2.9	31.0±3.4	0.594
Male sex ^b (%)	15 (44%)	18 (52%)	0.607
Myasthenia gravis ^b (%)	2 (5.9%)	1 (2.9%)	1
Additional resection ^b (%)	3 (8.8%)	3 (8.8%)	1
Pathology ^b (%)			0.787
Thymic tumors/hyperplasia	17 (50%)	15 (44%)	
Cysts	16 (47%)	17 (50%)	
Others	1 (2.9%)	2 (5.9%)	
Mortality ^b (No.)	0	0	1
Recurrence during follow-up ^b (No.)	0	0	1
Operation time ^a (min)	157.2±12.6	139.3±8.86	0.268
WBC increase ^a (x10 ³ /uL)	5.78±0.57	7.37±0.64	0.064
CRP increase ^a (mg/dL)	7.36±0.83	8.85±0.97	0.263
Maximum VAS ^a (d)	5.47±0.34	5.53±0.29	0.881
Postoperative ICU care ^b (%)	2 (5.9%)	2 (5.9%)	1
Number of drains ^a (No.)	1.09±0.05	1.41±0.13	0.032
24-hour tube drainage ^a (mL)	189.4±20.5	397.6±52.6	0.002
Hemoglobin loss ^a (g/dL)	0.54±0.37	1.35±0.12	0.023
Hematocrit decrease ^a (%)	1.92±0.45	3.85±0.42	<0.001
Chest tube days ^a (d)	1.53±0.15	3.06±0.21	<0.001
Hospital days ^a (d)	2.65±0.18	5.53±0.75	0.001
Complication ^b (%)	0 (0.0%)	5 (14.7%)	0.063

Table 1. Patients' characteristics and clinical outcomes of surgery after propensity score matching.
a; Paired T-test, b; McNemar test

Conclusions:

Robot-assisted surgery resulted in excellent early clinical outcomes with lesser tube drainage, lower blood loss, shorter tube days and hospital days without any postoperative complications, compared with matched open group. Further investigation for long-term clinical outcomes and oncologic outcomes is required for robotic approach. Especially, long-term follow-up for local recurrence rate according to the pathologic diagnoses is required.

Disclosure: All authors have declared no conflicts of interest.

F-093**VIDEO-ASSISTED THORACOSCOPIC THYMECTOMY IS SIGNIFICANTLY CHEAPER THAN OPEN THYMECTOMY: ANALYSIS OF 79 CONSECUTIVE CASES**

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United Kingdom*

Objectives:

Thymectomy is recognised as an effective surgical treatment for myasthenia gravis (MG) and certain thymomas. Median sternotomy remains the most frequent approach. This study demonstrates the favourable cost of the less invasive video-assisted thoracoscopic (VATS) technique.

Methods:

We identified 78 patients who underwent thymectomy, 39 VATS and 39 open, over a seven-year period. For the VATS group, mean age was 35 +/- 15.8 and 33 were females; for the open group, mean age was 48.5 +/- 18.6 and 23 were females. Patients with stable and unstable MG and with small thymomas were included in both groups. Variables compared were duration of operation, cost of equipment, major complications and length of stay.

Results:

The estimated duration of operation based on theatre records is 180 minutes for VATS thymectomy and 90 minutes for open thymectomy. The operative costs are greater for VATS thymectomy: the intra-operative staffing costs are £498 for VATS thymectomy and £249 for open thymectomy and the costs of equipment are £404 and £184 respectively. However, the length of post-operative stay (median and interquartile range) in the VATS group was 2.5 days (2.0–3.2) compared to 5.1 days (4.2–7.2) in the open group ($p < 0.001$). Taking into account the planned post-operative ICU admission for patients with MG, the median cost of post-operative stay was calculated as £1940 (1740–2220) in the VATS group and £2960 (2620–3810) in the open group ($p < 0.001$). Major complications in the open group included an upper limb DVT and AF; there were three mortalities within 18 months follow up. In the VATS group, one patient with MG developed a phrenic nerve neuropraxia. Overall, a saving of £551 was made for each VATS thymectomy performed compared to open thymectomy.

Conclusions:

VATS thymectomy is cost effective. We advocate a greater adoption of this technique despite greater equipment costs.

Disclosure: All authors have declared no conflicts of interest.

F-094

RISK FACTORS FOR DEVELOPING POST-THYMECTOMY MYASTHENIA GRAVIS IN THYMOMA PATIENTS

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Objectives:

Thymoma patients who do not have history of myasthenia gravis sometimes develop the disease following thymectomy. The aim of the study was to clarify the risk factors for developing post-thymectomy myasthenia gravis in thymoma patients.

Methods:

We performed a retrospective analysis of patients, without preoperative myasthenia gravis, who underwent thymectomy for thymoma between 1991 and 2011 at our institution. Patient characteristics and preoperative acetylcholine receptor antibody levels were recorded, and the presence or absence of post-thymectomy myasthenia gravis was noted.

Results:

Among a total of 229 patients, 123 had no myasthenia gravis history at the time of operation. A positive result for acetylcholine receptor antibody, >0.2 nmol/L, was noted in 33 patients; of these, 10 developed post-thymectomy myasthenia gravis and 23 did not. The 90 patients with negative acetylcholine receptor antibody levels did not develop the disease. The mean day of myasthenia gravis onset was postoperative day 988 (range, postoperative day 3–2859). Patients with positive acetylcholine receptor antibody levels were significantly more likely to develop post-thymectomy myasthenia gravis than patients with negative levels ($p < 0.0001$). Other factors, including patient age, sex, respiratory function, surgical approach, tumor size, and Masaoka classification, were not associated with onset of the disease. Comparing patients who did and did not develop post-thymectomy myasthenia gravis, there were significant differences in the acetylcholine receptor antibody titers (12.2 ± 4.5 nmol/L versus 4.7 ± 1.1 nmol/L; $p = 0.0039$), the World Health Organization pathological classification (ratio of type B1, B2 and B3 to all, 80% versus 18.8%; $p = 0.0048$), and the rate of tumor recurrence (30% versus 0%; $p = 0.0220$).

Conclusions:

A positive preoperative acetylcholine receptor antibody level is a risk factor for developing post-thymectomy myasthenia gravis in thymoma patients. Patients with higher acetylcholine receptor antibody titers are more likely to develop the condition.

Disclosure: All authors have declared no conflicts of interest.

F-095**COMPARISON OF ONLY T3 AND T3-T4 SYMPATHECTOMY FOR AXILLARY HYPERHIDROSIS REGARDING TREATMENT EFFECT AND COMPENSATORY SWEATING**

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Objectives:

The routine approach for axillary hyperhidrosis treatment is T3-T4 sympathectomy. Our aim was to evaluate whether T3 sympathectomy was sufficient for axillary hyperhidrosis treatment and whether the T3 localization led to less compensatory sweating than T3-T4 in our 60-patient series.

Methods:

One hundred twenty endoscopic thoracic sympathectomies performed on 60 patients (M:F 29:31 with a mean age of 24.89 ± 10.19 (14-42) years) who had axillary hyperhidrosis were evaluated based on case histories with respect to operative method, symptom control, and patient degree of satisfaction. We used only T3 sympathectomy for palmar hyperhidrosis, while axillary hyperhidrosis patients were divided into two groups with the 17 patients in Group 1 undergoing T3-4 sympathectomy and the 43 patients in Group 2 undergoing T3 sympathectomy only for axillary hyperhidrosis. All patients were followed postoperative questionnaire survey for one year. The result of the axillary hyperhidrosis treatment was evaluated along with the presence, location, and severity of compensatory sweating and patient degree of satisfaction.

Results:

There was no statistically significant difference between the groups for the duration of surgery, inpatient duration and postoperative satisfaction level ($p > 0.05$) while the incidence and degrees of compensatory sweating were lower in the T3 group than the T3-T4 group at one-year follow-up ($p = 0.008$).

Conclusions:

T3 sympathectomy was as effective as T3-T4 sympathectomy for postoperative satisfaction but the T3 group showed lower compensatory sweating at the one-year follow-up for treating axillary hyperhidrosis.

Disclosure: All authors have declared no conflicts of interest.

F-096

DOES VIDEO-ASSISTED MEDIASTINOSCOPIC LYMPHADENECTOMY FULFILL CRITERIA TO BECOME A STANDARD PROCEDURE FOR EARLY STAGE LUNG CARCINOMA?

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Objectives:

Video-assisted mediastinoscopic lymphadenectomy (VAMLA) is a procedure for complete bilateral resection of mediastinal lymph nodes in stations 4, 10 and 7. Here, we present recent data on the use of VAMLA for mediastinal lymph node staging in early stage lung carcinoma. We evaluated the end-points disease free survival (DFS), overall survival (OS) and additionally stratified according to risk factors.

Methods:

Between 2005 and 2011, a total of 76 patients with NSCLC in UICC stage IA-IIB underwent VAMLA followed by thorascopic or open lobectomy. Data were compared retrospectively with 54 patients with NSCLC (same stages) who received thorascopic lobectomy followed by unilateral lymphadenectomy (control group, no prior mediastinoscopy).

Results:

There was no significant difference between groups concerning age, gender, histology or involvement of the mediastinal lymph nodes (pN0/1). DFS was significantly lower in VAMLA group (p=0.004) than in the control group, and also significantly lower in VAMLA subgroups with tumours up to 5 cm diameter (p=0,02), with squamous cell carcinoma (p=0,007), or with patients over 75 years of age (p=0,021). OS was not different between the VAMLA and control groups (p=0.06). In total, involvement of mediastinal lymph nodes was confirmed in 8 patients (pN1). VAMLA detected nodal involvement (pN1) in 3 patients, which had been radiologically classified as cN0, and confirmed lymph node metastases in 2 patients with cN1 classification. Similarly, in the control group, 3 patients were found pN1 that were originally classified cN0. Relapse of mediastinal lymph node metastases was observed in VAMLA group in 2,6 % (n=2) and 5,6 % (n=3) in control group (p=0,46).

Conclusions:

The present data indicate that VAMLA patients have lower DFS than patients with unilateral VATS-lymphadenectomy. However, the statistical power of the present study is limited due to small patient numbers. Based on these observations it seems questionable that VAMLA fulfills criteria for a standard procedure.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 28 MAY 2013

16:00 - 17:30

Session XV/Airway/Transplantation

O-097

LUNG TRANSPLANTATION OF INITIALLY REJECTED DONORS AFTER EX-VIVO LUNG RECONDITIONING: THE FRENCH EXPERIENCE

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Objectives:

Only 15% of the brain death donor lungs are considered suitable for lung transplantation (LT). The normothermic ex vivo lung perfusion (EVLP) technique is used to potentially increase the availability of high-risk donor lungs. We report our clinical experience of LT with initially rejected donors after ex-vivo lung reconditioning (EVLR).

Methods:

From April 2011 to July 2012, we performed EVLR in 21 pairs of lungs deemed unsuitable for transplantation and rejected by the eleven french lung transplant teams. After EVLR, lungs with acceptable function were transplanted. During the same period, 48 double lung transplantations (DLT) without EVLR were used as controls.

Results:

Among 21 donor lungs, 20 recovered physiological function during EVLR with a median PO₂/FIO₂ ratio increasing from 256 mm Hg to 485 mm Hg at the end of EVLR ($p < 0.0001$) and 20 DLT were performed. The incidence of primary graft dysfunction 72 hours after LT was 10% in the EVLR group and it was 8% in the control group ($p = 1$). The median times of extubation, intensive care unit stay, and hospital discharge were 2, 10, and 37 days, respectively, in the EVLR group and they were 1, 5, and 28 days, respectively, in the control group ($p = 0.055$). Thirty-day mortality was 5% in the EVLR group and it was 4.2% in the control group ($p = 1$). One-year survival rates are 95 % in the EVLR group and 90% in the control group.

Conclusions:

EVLR is a reliable and repeatable technique that offers a significant increase of available donors. The results of LT with EVLR lungs are similar to those obtained with conventional donors.

Disclosure: All authors have declared no conflicts of interest.



O-098

INHALED ISOFLURANE ATTENUATES LEUKOCYTE RECRUITMENT INTO THE LUNG AFTER ISCHEMIA/REPERFUSIONJohn Wain¹, N. Melo¹, B. Medoff²¹General Thoracic Surgery, Massachusetts General Hospital, Boston/United States of America²Pulmonary And Critical Care Medicine, Massachusetts General Hospital, Boston/ United States of America**Objectives:**

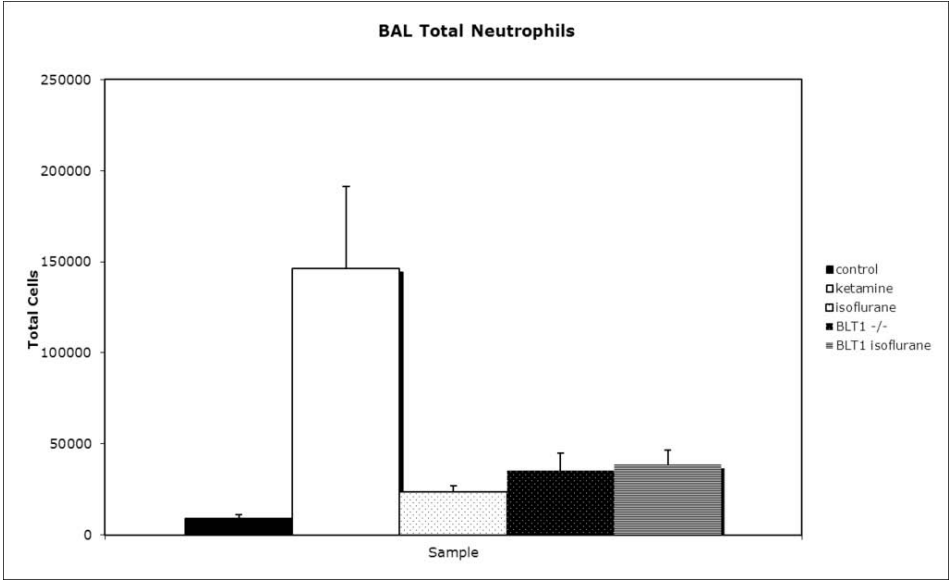
Some patients die after lung transplantation due to primary graft dysfunction (PGD), a process initiated by ischemia-reperfusion (I-R) of the lung graft. Cytokine/chemokine release by I-R results in the recruitment of leukocytes into the lung, which are critical for the progression to PGD. Inhaled isoflurane has been shown to decrease I-R injury in a variety of organs. We hypothesized that inhaled isoflurane may diminish the recruitment of leukocytes into the lung following I-R.

Methods:

Male C57BL/6 mice anesthetized using either ketamine (90mg/kg body weight (bw) intraperitoneal) or inhaled isoflurane (2%) underwent intubation, mechanical ventilation (6 ml/kg bw), left thoracotomy and clamping of the pulmonary hilum for 45 minutes. After clamp removal and chest closure the subjects resumed spontaneous breathing. A comparison group of mice lacking the leukotriene B4 receptor (BLT1^{-/-}), which have attenuated inflammatory responses, underwent similar hilar clamping. Twenty-four hours later, the animals were sacrificed. A group of control animals were sacrificed without anesthetic or thoracotomy. Six subjects were used in each group. Left lungs were obtained at sacrifice for analysis of cell populations. Comparisons between groups were made by T-test.

Results:

Ketamine animals had increased numbers of total neutrophils in bronchoalveolar lavage (BAL) of the left lung as compared to control ($P=0.009$) and BLT1^{-/-} ($p=0.04$) animals. Isoflurane animals had fewer BAL neutrophils as compared to ketamine ($p=0.02$). (Graph) Isoflurane treated animals had significantly lower numbers of total CD4 and activated CD4⁺ CD25⁺ lymphocytes than ketamine treated animals ($p=0.004$, $p=0.0003$, respectively) in the lung. Lymphocyte populations were not significantly different between isoflurane and BLT1 groups.



Conclusions:

I-R injury to the lung in vivo is associated with increased leukocyte recruitment into the lung at 24 hours, including BAL neutrophils and activated lymphocytes in the parenchyma. Inhaled isoflurane attenuates this response to an extent similar to that seen with leukotriene receptor ablation.

Disclosure: All authors have declared no conflicts of interest.

O-099

LUNG TRANSPLANTATION WITH GRAFTS RECOVERED FROM EUTHANASIA DONORS

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Objectives:

Donors after circulatory death (DCD's) enlarge the lung donor pool. We reviewed outcome in recipients transplanted with lungs recovered from controlled DCD's Category-5 (euthanasia donors).

Methods:

Between 01/2007-12/2012, 47/350 (13.4%) patients received pulmonary grafts from controlled DCD's, including 6 (1.7%) after euthanasia in accordance with state legislation and approval by Ethics Committee. Patients suffered from an unbearable neuromuscular (n=3) or neuropsychiatric (n=3) disorder with explicit wish to donate organs. Euthanasia was executed by an independent physician in a room adjacent to the operating room in the absence of the retrieval team.

Results:

Six recipients (2M–4M; median [range] age:51 [30-59] years) underwent bilateral lung transplantation for emphysema(n=3), pulmonary fibrosis(n=2), and BOS(n=1). Waiting time was 436 [195-507] days. In contrast to other DCD categories, pre-arrest agonal period was absent. Warm ischemic time between cardiac arrest and cold Perfadex® pulmonary flush was 13±3 min. Total ischemic time until reperfusion of the graft was 329 [225-427] min for first lung and 478 [346-603] min for second lung. No primary graft dysfunction grade 3 was present beyond T24. One recipient died after 3 months in ICU from an unrelated cardiac problem. Remaining patients were extubated after 2 [1-5] days and discharged from ICU after 7[2-10] days and from hospital after 27 [23-36] days. FEV1 and FVC increased from 20 [15-57]% and 59 [51-66]% pre-transplant to 85 [61-94]% and 75 [54-80]% at the time of hospital discharge, respectively; (p<0.01). Follow up was 37 [1-66] months. Actuarial survival and freedom from BOS grade 1 at 1, 3, and 5 years conditional to hospital discharge was 100%, 100%, and 100% and 100%, 100%, and 80%, respectively.

Conclusions:

Euthanasia donors accounted for 12.8% of all lung DCD's. Immediate post-transplant graft function and long-term outcome in recipients was excellent. More euthanasia donors are to be expected with more public awareness.

Disclosure: All authors have declared no conflicts of interest.

O-100**ISOLATED LUNG COLLAPSE IN TWO STAGES WITH BRONCHIAL BLOCKER: EQUIVALENT TO DOUBLE-LUMEN TUBE?**

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²Pneumologie - Chirurgie Thoracique, IUCPQ, Institut Universitaire de Cardiologie et Pneumologie de Quebec, Quebec/Canada

Objectives:

Double-lumen tube (DLT) and bronchial blocker (BB) are commonly used for OLV which is mandatory for VATS. It is believed that DLT tend to provide quicker and better quality lung collapse than BB. We hypothesized that two apnea periods during initiation of OLV using BB would allow for similar quality and time to complete lung collapse compared to DLT.

Methods:

After IRB approval 40 patients requiring OLV for VATS were randomized in a prospective single blind (thoracic surgeons) trial. We compared left-side DLT (20 patients) to BB (20 patients), with the internal lumen occluded. In both groups OLV began once the patient was in lateral decubitus position (LDP). In the BB group, two 30 seconds periods of apnea were performed: immediately after FOB verification of the BB position in LDP and just after incision of the pleura. Time from the start of OLV until complete lung collapse was recorded. The quality of the collapsed lung graded by the surgeon on a scale from 1 to 4 was also collected at 0, 5, 10 and 20 minutes (T0, T5, T10 and T20) after pleural incision. Surgeon's guess on which device was used for LI was recorded at the end of data collection.

Results:

Fisher's exact test showed no difference in the demographics of our patients, for FEV1 or FEV1/FVC ratio. Mean time to complete lung collapse was 32.5 +/-11.8 min and 47.8 +/-35.9 min for BB and DLT groups respectively (p=0.1 with Folded F). There was better lung collapse in BB-group at T0 (p=0.04). Surgeon's guess about the device used was incorrect in more than 50%.

Conclusions:

BB allows similar collapse time and quality of lung collapse than DLT. The surgeons were unable to correctly guess the device used in majority of cases.

Disclosure: All authors have declared no conflicts of interest.

O-101

LOBAR AND BRONCHIAL ANATOMICAL CHANGES AFTER RIGHT UPPER LOBECTOMY: IMPACT ON POST-OPERATIVE COURSE

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²*2i3m, Umr Cnrs 514^e, Montpellier University, Montpellier/France,*

³*Paris, HEGP, Paris/France*

Objectives:

Lobar and bronchial anatomical changes after right upper lobectomy (RUL) are common, mainly concerning the middle lobe. Yet, few studies have been reported on such changes and their effects on postoperative course. We have undertaken to analyse these aspects.

Methods:

We conducted a prospective monocentric study including all patients (n=136) who underwent RUL for tumoral or non-tumoral causes from November 2010 to December 2012. The complications (atelectasis, pneumonia, etc) were detected clinically and by daily postoperative chest X-rays. A systematic low dose CT-scan with reconstruction was performed on the 6th postoperative day focusing on bronchial and lobar shift. These radiological findings were analysed by a chest radiologist unaware of the postoperative course.

Results:

Three types of apical shift in bilobar position were observed: an equal shift of the two lobes (41%), a predominant shift of the lower lobe (42%) or the middle lobe (17%). Almost all were associated with a sagittal shift of the sublobar middle bronchi (74.5%). By multivariate analysis, only the plication of proximal middle bronchus was found a significant factor of the occurrence of all postoperative complications (p=0.034). On CTscan, segmental or lobar atelectasis of the middle lobe was diagnosed in 50.4% of cases. Two anatomical conducive factors were identified: predominance of apical lower lobe shifting (p=0.004) and ascending position of the distal part of middle lobe bronchus (p=0.037). Also the length of stapling was identified as a significant factor in middle lobe atelectasis occurrence (odds multiplied by 6.48 per extra 5 cm).

Conclusions:

After RUL, some specific anatomical changes were found significant factors of postoperative morbidity. Prevention of excessive lobar shift to avoid bronchial plication and limited stapling may reduce postoperative morbidity.

Disclosure: All authors have declared no conflicts of interest.

O-102

IDIOPATHIC LARYNGOTRACHEAL STENOSIS: SURGICAL OR NON-SURGICAL TREATMENT?

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⁴*Lung Transplantation Research Center, NRITLD, Tehran/Iran*

Objectives:

There is no consensus on type of treatment for idiopathic laryngotracheal stenosis (ILTS). Resection-anastomosis (RA) and non-resectional interventions (NRI) are current treatments. RA can lead to permanent cure; with risk of damaging vocal cords or need for a tracheostomy. On the other hand, NRI require repeated interventions and usually do not cure the patient. Presenting our clinical experience and results might be helpful.

Methods:

Patients included in this study are those that had been treated between 1996 and 2011 by us with diagnosis of ILTS. Types of treatment were included: RA or NRI. The surgery was performed by resection of the stenotic area, anterior arc of cricoid cartilage, and anastomosis of the trachea to the thyroid and cricoid cartilages. If after resection of the anterior arc, there was still remaining stenosis in subglottic area, posterior cricoidotomy was done followed by insertion of an autologous rib cartilage within cricoidotomy. NRI included repeated dilatation depending on the patients' symptoms, with or without laser and insertion of a T or tracheostomy tube in some patients. Results of treatment were determined as: good, acceptable and failure. Data were analyzed using Man-Whitney and Fisher's Exact Tests. α below 0.05 was significant.

Results:

Twenty-two patients were women and 3 were men. Average age was 37 years. Symptoms included dyspnea on exertion in 25, resting dyspnea in 22. Thirteen patients treated with RA and 12 by NRI. In 2 patients posterior cricoidotomy was performed. In RA group results were good in 12 patients and acceptable in one. In NRI group results were good in 6 patients and failure in remaining. According to Fisher's Exact Test difference of results between two types of treatment was significant ($p < 0.05$).

Conclusions:

RA had better results comparing to NRI, even though in some patients good results were also achieved by NRI.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 28 MAY 2013

16:00 - 17:30

Session XVI/VATS Anatomical Resections

F-103

VIDEO-ASSISTED THORACOSCOPIC LOBECTOMY IN NON-SMALL CELL LUNG CANCER PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE IS ASSOCIATED WITH LOWER PULMONARY COMPLICATIONS THAN OPEN LOBECTOMY : A PROPENSITY SCORE MATCHED ANALYSISJae Hyun Jeon, C.H. Kang, Y.T. Kim, I.K. Park, H. Kim*Thoracic And Cardiovascular Surgery, Seoul National University Hospital, Seoul/Korea***Objectives:**

Non-small cell lung cancer (NSCLC) patients with chronic obstructive pulmonary disease (COPD) are at an increased risk of pulmonary complications after pulmonary resection. This study aimed to identify whether video-assisted thoracoscopic (VATS) lobectomy can reduce postoperative pulmonary complications compared to open lobectomy in NSCLC patients with COPD.

Methods:

Between April 2005 to June 2012, a total of 1502 patients underwent lobectomy for NSCLC, and COPD was diagnosed in 446 patients (29.7%), based on spirometric criteria of Global Initiative for COPD (GOLD). Among them, 282 patients with stage I NSCLC were identified: 160 having VATS lobectomy, 122 having open lobectomy. A propensity analysis incorporating preoperative variables such as age, sex, Charlson comorbidity index, extent of smoking, preoperative pulmonary function, size of the mass, histological type of the tumor and additional lung resection was performed, and postoperative outcomes were compared. Fitting of the model was examined by Hosmer and Lemeshow test ($p=0.9989$).

Results:

Matching based on propensity scores produced 91 patients in each group for analysis of postoperative outcomes. There were 3 operative mortalities only in open lobectomy group, and all of them died of postoperative pneumonia. The overall incidence of postoperative complications was 32.9% (30/91) and 22.0% (20/91) in patients with open lobectomy and VATS lobectomy, respectively ($P=0.144$). Compared with open lobectomy, VATS lobectomy was associated with a lower incidence of pulmonary complications (1.1% vs 12.1%; $P=0.006$), shorter operation time (177.9 vs 206.3 min; $P=0.004$) and shorter length of stay (6.0 vs 9.0 days; $P=0.043$).

Table 1. Patients characteristics and postoperative outcomes

Variables	VATS (n = 91)	Thoracotomy (n = 91)	P value
Male sex	81 (89.0%)	79 (86.8%)	0.617
Age, mean (y)	69.1 ± 7.4	68.1 ± 7.2	0.380
Charlson comorbidity index	1.5 ± 0.9	1.5 ± 0.9	0.831
Smoking (PY)	36.7 ± 26.7	35.8 ± 25.1	0.775
Preoperative pulmonary function			
%FEV1	92.3 ± 14.5	91.5 ± 18.2	0.750
%FVC	104.6 ± 15.7	103.8 ± 15.7	0.716
%FEV1/FVC	60.8 ± 6.8	61.0 ± 8.2	0.601
%DLCO	99.4 ± 19.0	99.3 ± 22.6	0.949
Histology (Sqcc/ ADC/ Others)	34.1%/ 58.2%/ 7.7%	37.4%/ 55.0%/ 7.7%	0.880
Tumor size (cm)	2.6 ± 1.1	2.6 ± 1.2	0.653
Additional resection	6 (6.6%)	9 (9.9%)	0.405
Operation time (min)	177.9	206.3	0.004
Operative mortality	0	3	0.250
Overall complications	20 (22.0%)	30 (32.9%)	0.144
<u>Pulmonary complications</u>	1 (1.1%)	11 (12.1%)	0.006
Atrial fibrillation	7 (7.7%)	8 (8.8%)	1.000
Air leakage more than 7 days	10 (11.0%)	14 (15.4%)	0.541
Hospital stay (days)	6.0	9.0	0.043

Conclusions:

VATS lobectomy is associated with lower incidence of pulmonary complications compared with open lobectomy in stage I NSCLC patients with COPD. VATS lobectomy may be the preferred strategy for appropriated selected NSCLC patients with COPD.

Disclosure: All authors have declared no conflicts of interest.

F-104

VATS LOBECTOMY IS ASSOCIATED WITH IMPROVED SHORT-TERM AND LONG-TERM OUTCOMES COMPARED TO OPEN LOBECTOMY FOR C-STAGE I NSCLC: A PROPENSITY-MATCHED ANALYSIS OF 963 CASES

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¹*Surgery, The University of Texas Medical School at Houston, Houston/United States of America,*

²*Thoracic And Cardiovascular Surgery, MD Anderson Cancer Center, Houston/United States of America*

Objectives:

This study aimed to evaluate both short-term and long-term outcomes over a 10-year period of a large cohort of consecutive patients with clinical stage I non-small cell lung cancer (NSCLC) that underwent either thoracoscopic (VATS-L) or open lobectomy (OPEN-L).

Methods:

Patients with c-stage I NSCLC without preoperative treatment were included. Univariable, multivariable and propensity-matched analyses were performed on an intention to treat basis.

Results:

VATS-L was performed in 307 (32%) patients and OPEN-L in 656 (68%). 22 (7%) patients underwent conversion to open. Fewer patients in the VATS-L group had pT2 tumors compared to the OPEN-L group (39% vs. 48%, $p=0.012$) and fewer patients had squamous cell carcinoma (26% vs. 18%, $p=0.006$). These differences resolved with propensity matching. VATS-L was associated with reduced overall and pulmonary morbidity, atrial arrhythmias, chest tube duration and hospitalization (Table). Mortality was 0.3% and 1.4%, for VATS-L and OPEN-L groups ($p=NS$). In unmatched analysis 5-year survival favored VATS-L (78% vs. 68% $p=.007$), however, propensity matched analysis showed only a trend toward improved survival with VATS-L (78% vs. 73% $p=.071$). Multivariable analysis revealed VATS-L (HR 0.64), male sex (HR 1.43), Zubrod performance status (HR 3.42), and increasing age (HR 1.04) to be independent predictors of survival.

Postoperative Event	VATS (n=307)	Open (unmatched, n=656)	p	Open (matched, n=307)	p
Overall Morbidity (%)	19	34	<0.001	37	<0.001
Pulmonary Morbidity (%)	9	17	0.003	19	0.001
Atrial Arrhythmia (%)	12	20	0.001	21	0.003
Surgery time (minutes)	173	160	<0.001	159	0.007
Chest tube time (days)	2	3	<0.001	3	<0.001
Hospitalization (days)	4	6	<0.001	6	<0.001

Conclusions:

VATS lobectomy is associated with less perioperative morbidity compared to open lobectomy for clinical stage I NSCLC. There was a trend towards improved 5-year survival in the VATS-L group, which should be confirmed by larger prospective studies.

Disclosure: D. Rice: Paid consultant for Olympus America, Inc
All other authors have declared no conflicts of interest.



F-105

IS UNIPORTAL THORACOSCOPIC SURGERY A FEASIBLE APPROACH FOR ADVANCED STAGES OF NON-SMALL CELL LUNG CANCER?

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Objectives:

Conventional video-assisted thoracoscopic (VATS) lobectomy for advanced lung cancer is a feasible and safe surgery in experienced centers. The aim of this study is to assess the feasibility of uniportal VATS approach in the treatment of advanced NSCLC and compare the perioperative outcomes with early-stage tumors.

Methods:

From June-2010 to December-2012, we performed 163 uniportal VATS major pulmonary resections. Only NSCLC cases were included in this study. Patients were divided in two groups: A, early-stage and B, advanced cases (> 5 cm, T3 or T4 tumors, or tumors requiring neoadjuvant treatment). A descriptive, prospective and retrospective study was performed, comparing perioperative outcomes obtained in both groups

Results:

A total of 130 cases were included: 87 (A) vs 43 (B) patients (conversion rate 1.1 vs 6.5%, $p=0.119$). Mean global age was 64.9 years and 73.6% were man. The patient demographic data were similar in the two groups. Upper lobectomies (A - 56 vs B - 24patients) and anatomic segmentectomies (4 vs 0) were more frequent in group A while pneumonectomy was more frequent in B (1 vs 6 patients).Surgical time was longer (144.8 ± 41.6 vs 183.2 ± 48.9 , $p<0.001$), and median number of lymph nodes (14 vs 16, $p=0.004$) were statistically higher in group B. Median number of nodal stations (5 vs 5, $p=0.165$), days of chest tube (2 vs 2, $p=0.098$), hospital stay (3 vs 3, $p=0.072$), and rate of complications (18.6 vs 16.3%, $p=0.075$) were similar in both groups. A total of 77.4% of patients (A) and 36.6% (B) were classified as stage I after pathological examination .One patient died on the 58th postoperative day in group A

Conclusions:

Uniportal VATS lobectomy for advanced cases of NSCLC is a safe and reliable procedure, that provides perioperative outcomes similar to those obtained with early stage tumors. Further analyses of survival for uniportal VATS lobectomy of advanced stage tumors are ongoing.

Disclosure: All authors have declared no conflicts of interest.

F-106

COMPARISON OF THE PREDICTIVE MORTALITY SCORES BY “THORACOSCORE” AND “ESTS RISK-ADJUSTED CARDIOPULMONARY RISK MODEL” IN PATIENTS UNDERGOING VATS ANATOMICAL RESECTION FOR NSCLC

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Objectives:

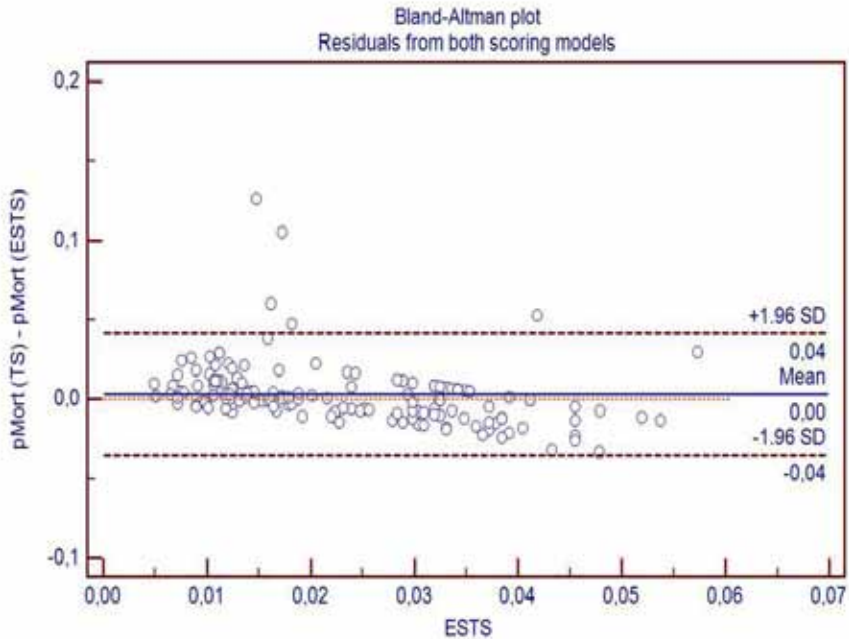
The ability to accurately predict patient outcome has an important role in clinical practice and research. Prognostic models combine several pieces of patient data to predict clinical outcome and are likely to be more accurate than simple clinical predictions. With currently two major prognostic models for mortality in lung cancer surgery at our disposal, we aimed to investigate their performance on a homogenous group of VATS anatomical resections for NSCLC.

Methods:

Between September 2009 and December 2012, 154 consecutive patients underwent VATS anatomical resection for NSCLC. All patients were entered in a prospective database build according (but not limited to) the ESTS database, including predicted mortality from ESTS risk-adjusted cardiopulmonary risk model (pMort-ESTS). Additional recorded fields on preoperative risk factors enabled calculation of the pMortality for ThoracoScore (pMort-TS).

Results:

There were 145 lobectomies, 8 segmentectomies and 1 pneumonectomy, all performed by VATS. Fifty-three patients (34%) were female and 103 male, with a mean age of 66.5 [44-86] years. Pathologic stage was as follows: 88-IA; 25-IB; 13-IIA; 13-IIB; 9-IIIA and 6-IV. The observed 30-day mortality was 1.3%, in-hospital mortality 1.9% and 90-day mortality 2.6%. The mean pMort-ESTS was 2.3% and pMort-TS was 2.6% (Welch-test $p = 0.0994$). Area under ROC curve was 0.756 [0.680-0.821] for pMort-ESTS and 0.792 [0.719-0.853] for pMort-TS ($p = 0.0012$ and 0.0001 respectively) for 90-day mortality. Bland-Altman plot of residuals from both scoring systems shows that both systems stay reasonably within ranges of agreement, but also that there are huge differences in predicted mortality for individual patients. pMort-TS generally overscores in pMort-ESTS ‘low-risk’ patients and underscores in pMort-ESTS ‘higher-risk’ patients (correlation coefficient: -0.347 ; $p < 0.0001$).



Conclusions:

Both systems show acceptable results in predicting mean mortality-risk in a cohort but fail to identify individuals risk stratification. Further investigations on large samples of patients are needed to demonstrate superiority of one system over the other.

Disclosure: All authors have declared no conflicts of interest.

F-107**THE COMPARISON OF COMPLICATIONS, PAIN, QUALITY OF LIFE AND PERFORMANCE, AFTER THE LUNG RESECTIONS WITH THORACOSCOPY AND AXILLARY THORACOTOMY**

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Objectives:

The aim of this prospective randomized study is to compare the effects of axillary thoracotomy (AT) and video-assisted thoracoscopic surgery (VATS) on acute phase responses, pain, performance status and quality of life in patients undergoing pulmonary resections.

Methods:

Fifty-five patients were enrolled into this study. They were prospectively randomized to pulmonary lobectomy by VATS or axillary thoracotomy. FEV1, smoking habits, complications, Charlson comorbidity index, sex, age, length of incision, length of operation, length of hospital stay, length of drainage, duration of air leakage; preoperative and postoperative TNF alpha, IL-1beta, IL-6, IL-8, IL-10, CRP values, visual analog scale, quality of life and performance status of the patients measured and compared.

Results:

Twenty-five patients had lung resection with VATS and 30 patients had lung resection with AT. Demographic variables were similar. There weren't any statistical significance between two groups in terms of operative variables, complications, pain, quality of life and performance status. The difference between the two groups' postoperative serum CRP levels at 6th and 48th hours; IL-6 levels at 6th, 24th and 48th hours; IL-8 levels at 24th hours and IL-10 levels at 24th and 48th hours were significantly lower at the VATS group (see image).

		<u>Mean Rank</u>	M-W U	p			<u>Mean Rank</u>	M-W U	p
Δ CRP1	VATS	23,00	250	0,035	Δ IL6_1	VATS	17,23	126	0,018
	AT	32,17				AT	26,20		
Δ CRP2	VATS	23,96	275	0,139	Δ IL6_2	VATS	15,27	83	0,001
	AT	30,33				AT	28,35		
Δ CRP3	VATS	22,16	229	0,014	Δ IL6_3	VATS	16,05	106	0,004
	AT	32,87				AT	26,95		
Δ VAS1	VATS	27,39	244,5	0,276	Δ IL8_1	VATS	18,36	151	0,082
	AT	23,06				AT	24,95		
Δ VAS2	VATS	26,23	270	0,567	Δ IL8_2	VATS	20,64	201	0,632
	AT	24,00				AT	22,45		
Δ VAS3	VATS	25,18	293	0,931	Δ IL8_3	VATS	16,83	122,5	0,014
	AT	24,85				AT	26,17		
Δ TNF1	VATS	20,93	207,5	0,753	Δ IL10_1	VATS	19,18	169	0,199
	AT	22,13				AT	24,05		
Δ TNF2	VATS	20,00	187	0,406	Δ IL10_2	VATS	17,64	135	0,032
	AT	23,15				AT	25,75		
Δ TNF3	VATS	21,52	220	0,990	Δ IL10_3	VATS	16,48	115	0,008
	AT	21,48				AT	26,52		

M-W U: ~~Mann-Whitney U~~

Conclusions:

VATS is a equivalent technique with axillary thoracotomy in terms of early complications, pain, performance status and quality of life but VATS may cause less effects on immune system than AT. AT, beside being less invasive than posterolateral thoracotomy is a safe and feasible technique close to VATS.

Disclosure: All authors have declared no conflicts of interest.

F-108**VATS PNEUMONECTOMY IS SAFE AND MAY HAVE BENEFITS OVER OPEN PNEUMONECTOMY**

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Objectives:

Pneumonectomy through a thoracotomy carries both high morbidity and mortality. Video-assisted thoracoscopic surgery (VATS) has reduced perioperative risks and allowed less fit patients to undergo cancer resection. In this way, VATS is ideally placed to reduce the insult and burden of pneumonectomy itself. However, little has been reported on the outcomes of VATS pneumonectomy. In this study we review our experience of VATS pneumonectomy.

Methods:

We carried out a retrospective observational study comparing VATS with open pneumonectomy. Between January 2003 and December 2012, 39 patients (33 males, 6 females) underwent pneumonectomy (20 left, 19 right) for primary lung cancer, of which 12 (30.8%) were by VATS ('VATS') and 27 (69.2%) were through a thoracotomy ('open').

Results:

The mean age was 59.8 years (Open 58 vs. VATS 65, $p=0.02$). Laterality was similar between the two groups (14 (52%) right-sided vs. 5 (42%), $p=0.73$). 5 patients received neoadjuvant chemotherapy (4 (16%) vs. 1 (9%), $p=0.51$). The mean tumour sizes were similar (5.4cm vs. 5.6cm, $p=0.80$) as was the distribution of pathological stage ($p=0.45$). The operating time was shorter for the VATS group (mean 234 minutes vs. 178 minutes, $p=0.03$) and blood loss was also less (median 350mls vs. 100mls, $p=0.008$). All resections were complete (R0) in the VATS group, and there were four R1 and one R2 resection in the open group. Bronchopleural fistula occurred in one open and none of the VATS cases. Length of stay was shorter in the VATS group (median 9 days vs. 7 days, $p=0.06$). The 30-day mortality was 10.3% (3 (11.1%) vs 1 (8.3%), $p=0.64$). The overall median survival was 34 months (22 months vs 34 months, $p=0.97$).

Conclusions:

VATS pneumonectomy in selected patients is safe with outcomes comparable to open pneumonectomy.

Disclosure: All authors have declared no conflicts of interest.



F-109

UNIPORTAL VIDEO-ASSISTED THORACOSCOPIC SURGERY: EXPERIENCE WITH 471 CASES

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Objectives:

Video-assisted thoracoscopic (VATS) approach to intrathoracic disorders is usually performed by two or three incisions. Our approach has evolved from a 3-port, to 2-port approach to currently a single incision with no rib spreading. We report our experience with uniportal VATS surgery for major and minor resections.

Methods:

In 2009 we started performing thoracoscopic surgery through a uniportal approach (non rib-spreading) initially for wedge resections. To December 2012, 471 patients were attempted by this single-incision approach. We have analyzed the early outcomes of these patients.

Results:

461 of 471 cases were successfully completed by single-incision VATS (2.1% of conversion rate, to double port or thoracotomy). Pleural biopsies, pleurodesis or sympathectomies were not included in the study. The mean age was 59.6 ± 10 years (63% patients were male). The procedures were: Lobectomies (31.4%), lung nodule resection (31%), lung biopsy (15.8%), other minor procedures (9.8%, including resection of mediastinal tumors, mediastinal lymph nodes, pleural tumors or lung nodule enucleation), surgery for pneumothorax (8.8%), pneumonectomies (1.5%) and anatomic segmentectomies (1.7%). Mean surgical time was 104 ± 58 min (range, 15 to 310 min), The median chest tube duration was 2 days (0-16) and the median length of hospital stay was 2 days (0.5-58). The rate of complications was 8.9% (41 patients). The 30-day mortality was 0.21% (only 1 patient died on the 58th postoperative day).

Conclusions:

Uniportal VATS surgery is a feasible, safe and effective procedure with good perioperative results. This technique can be applied as a first-line approach for thoracoscopic major and minor resections.

Disclosure: All authors have declared no conflicts of interest.

F-110

POSTOPERATIVE PULMONARY COMPLICATIONS AFTER LOBECTOMY: VIDEO-ASSISTED THORACOSCOPIC APPROACH AND THORACOTOMY

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²*Department Of Computer Science And Statistics, Poznan University of Medical Sciences, Poznań/Poland*

Objectives:

Pulmonary complications are the most common postoperative complication in patients undergoing thoracic surgery. The aim of our study was an analysis the risk of pulmonary complications incidence after video-assisted thoracoscopic (VATS) lobectomy and open lobectomy.

Methods:

In this retrospective study we analyzed the results of treatment of 567 patients operated on due to lung cancer from 2006 to 2012 in our institution. The entry criteria included patients with peripheral tumors less than 6cm large, without bronchial infiltration, chest wall invasion and mediastinal involvement. In 314 patients VATS lobectomy was performed and in 253 thoracotomy. There were no difference between VATS and thoracotomy group in term of: gender distribution, age, comorbidity rate, preoperative spirometry and stage of the disease. The postoperative outcome and complication rate was assessed. FEV1 less than 80% predicted, BMI, age, stage and surgical approach were analyzed as risk factors of postoperative pulmonary complications occurrence (atelectasis, pneumonia).

Results:

Compared with open lobectomy, video-assisted thoracoscopic lobectomy was associated with shorter length of stay (mean 8,1 vs 10,7days, $p<0,0001$), chest tube duration (mean 4,0 vs 4,8 days $p<0,0001$) and lower intraoperative blood loss (median 100 vs 200ml $p<0,0001$). There were no difference in term of: 30 days mortality (2,3% vs 2,2%), and time of surgery (mean 123,6 vs 126,6min) between the groups. The total rate of postoperative complications in VATS patients was 29% (n=91) and 50% (n=128) after thoracotomy (OR=2,29, $p<0,0001$). When examining pulmonary complications, thoracotomy patients have more markedly increased pulmonary complications compared with VATS patients (22,3% vs 6,4%, OR=4,21, $p<0,0001$). In a multi-variable analysis of pulmonary complications, thoracotomy approach (OR=5,4 $p<0,0001$), decreasing FEV1% predicted (OR=2,4 $p<0,0001$) and increasing age (OR=1.04, $p<0,001$) were independent risk factors of pulmonary complications.

Conclusions:

Video-assisted thoracoscopic lobectomy is associated with significantly lower risk of postoperative pulmonary complications and can be recommended as a favorable approach.

Disclosure: All authors have declared no conflicts of interest.



F-111

VATS LOBECTOMY RATES BEFORE AND AFTER ADOPTION OF A STANDARDISED ANTERIOR APPROACHDouglas West, T. Batchelor, G. Casali*Thoracic Surgery, Bristol Royal Infirmary, Bristol/United Kingdom***Objectives:**

Access to and definition of the hilar structures is crucial to the safe completion of VATS lobectomy. Several approaches have been described. We report the effect of three surgeons in our institution undertaking standardised anterior approach (SAA) training on subsequent rates of VATS vs. open lobectomy.

Methods:

Three consultant surgeons undertook SAA training at 2 different time points. 2 were performing VATS lobectomy prior to SAA training. Training involved a two-day visit to an established SAA unit. All isolated lobectomies performed by these surgeons between April 2011-December 2012 (20 months) were recorded prospectively. Bilobectomies, sleeve resections, pneumonectomies and chest wall resections were excluded. Overall VATS lobectomy proportions before and after SAA training were compared with Fisher's exact test.

Results:

163 isolated lobectomies were performed, 97 of these by VATS (59.5%). Mean age was 68.8 (+/- 10.5) years. Pathology was primary lung cancer in 137 (84.0%), other primary malignancy in 10 (6.1%), pulmonary metastases in 8 (4.9%) and benign in 8 (4.9%). The VATS lobectomy rate rose from 22.2% before SAA training to 78.0% after, $p < 0.0001$. The effect was significant at the group and individual operator levels, p 0.0004 to < 0.0001 . Median hospital stay was 4 days after VATS and 5 after thoracotomy, Mann-Whitney p 0.0002. There were 5 peri-operative deaths after thoracotomy and 0 after VATS lobectomy, unadjusted $p=0.01$.

Conclusions:

Formal training and group adoption of the SAA approach has been associated with a more than three-fold increase in our VATS lobectomy rate. The effect was immediate and sustained for all individual surgeons. The increase may reflect easier identification of major structures from the anterior view. Standardisation of surgical techniques and peri-operative protocols within a surgical group may facilitate efficient team working.

Disclosure: D. West: All authors received travel and accommodation expenses to attend standardised anterior approach VATS lobectomy training from Covidien UK.

T. Batchelor: All authors received travel and accommodation costs to attend anterior approach VATS lobectomy training from Covidien UK.

G. Casali: All authors received travel and accommodation expenses to attend standardised anterior approach VATS lobectomy training from Covidien UK.

WEDNESDAY, 29 MAY 2013**09:00 - 15:15****ESTS-BTOG Symposium****BTOG-112****CHEMOTHERAPY FOLLOWED BY SURGERY ON THE BASIS OF BIOMARKER EXAMINATION FOR INITIALLY UNRESECTABLE NON-SMALL CELL LUNG CANCER (NSCLC) PATIENTS; A CHALLENGING APPROACH**

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General Thoracic Surgery, Kagawa University, Kita-Gun/Japan

Objectives:

We have reported that certain biomarkers are prognostic indicators in patients with c-N2,3 non-small cell lung cancer treated by surgery after induction chemoradiotherapy. Low expression of ERCC-1, class III β tubulin, thymidylate synthase are favorable prognostic factors, of which simultaneous low expression of both ERCC-1 and tubulin is the most significantly prognostic. In the present study, we evaluated the pre/post chemotherapy biomarker status of tumors, selection of and response to chemotherapy, resectability, pathological effect and early survival.

Methods:

25 patients with pathologically proven non-small cell lung cancer initially diagnosed as unresectable were enrolled (2010.10-2012.9). As key biomarkers, ERCC-1, class III β tubulin and thymidylate synthase were determined. The criteria for drug selection were 1) platinum doublet, 2) platinum+DOC in ERCC-1(-) and tubulin(-), 3) platinum+ PEM in non-Sq with thymidylate synthase(-) and tubulin(+), 4) platinum+S-1 in Sq with thymidylate synthase(-) and tubulin(+), 5) addition of bevacizumab in non-Sq if possible. Chemotherapy was performed with or without concurrent radiation (50 Gy). IIIA/B/IV 1a/1b; 14/5/2/4, Ad/Sq/others; 12/11/2. For patients with good PR or CR, we tried surgery.

Results:

Platinum+DOC+RT (n=12), platinum+PEM+RT (n=4), platinum+DOC+ bevacizumab (n=3), platinum+S-1+RT (n=3), platinum+PEM+bevacizumab (n=2), and platinum+S-1 (n=1) were selected for the therapeutic menu on the basis of biomarker status. Twenty-one patients exhibited good PR, three SD and one PD. In all 21 PR patients, complete resection was successful without major morbidity or mortality. Four patients exhibited a pathologically complete response, and 10 a major pathological response. Among the 21 surgically treated patients, 16 achieved downstaging. Postoperative biomarker status was markedly changed in most cases (92.9%). Early survival results after surgery are favorable (2 year-survival: 100%).

Conclusions:

Chemotherapy followed by surgery on the basis of biomarker examination is a challenging approach for patients with initially unresectable non-small cell lung cancer, who otherwise might have a poor prognosis. Adjuvant chemotherapy must be applied according to postoperative biomarker status.

Disclosure: All authors have declared no conflicts of interest.

BTOG-113

A COMBINED ULTRASOUND OF THE MEDIASTINUM BY USE OF A SINGLE ULTRASOUND BRONCHOSCOPE FOR NON-SMALL-CELL LUNG CANCER RESTAGING – A PROSPECTIVE STUDY

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⁴Thoracic Surgery, Pulmonary Hospital, Zakopane/Poland

Objectives:

The aim of the prospective trial was to access a diagnostic yield of the combined approach – endobronchial (EBUS) and endoscopic (EUS) ultrasound guided needle aspiration by use of a single ultrasound bronchoscope (CUSb-NA) for non-small-cell lung cancer in patients after neo-adjuvant therapy.

Methods:

In a consecutive group of NSCLC patients with pathologically confirmed N2 disease, who underwent neo-adjuvant chemotherapy, CUSb-NA was performed. All negative patients underwent subsequently the transcervical extended bilateral mediastinal lymphadenectomy (TEMLA) as a confirmatory test.

Results:

106 patients underwent restaging CUSb-NA from Jan. 2009 to Dec. 2012. There were 175 mediastinal lymph node stations biopsied (stations: 1 – 1, 2R – 5, 2L – 4, 4R – 33, 4L – 43, 7 – 84, 8 – 5). CUSb-NA revealed metastatic lymph node involvement in 37/106 patients (34.9%). In 69 (65.1%) patients with negative or uncertain CUSb-NA, who underwent subsequent TEMLA metastatic nodes were found in 18 patients (17.0%) and there was “minimal N2” in 11 out of them. False positive results were found in 2 (1.9%) patients. In 7 patients CUSb-NA occurred to be false-negative in the right paratracheal stations 2R and 4R, only accessible for EBUS and in next 4 patients in station 5 – not accessible for CUSb-NA, only in small nodes. A diagnostic sensitivity, specificity, accuracy, PPV and NPV of the restaging CUSb-NA was 67.3% (95% CI – 58–88), 96.1% (95% CI – 85–98), 81.1%, 94.9% (95% CI – 87–100) and 73.1% (95% CI – 68–92), respectively. No complications of CUSb-NA were observed.

Conclusions:

CUSb-NA is a reasonable and safe technique for mediastinal restaging in NSCLC patients. After our data, in patients with negative result of the combined ultrasound guided endobronchial and endoscopic procedure, a surgical restaging of the mediastinum should be reconsidered.

Disclosure: All authors have declared no conflicts of interest.

BTOG-114**MAY PNEUMONECTOMY HAVE A ROLE IN THE MULTIMODAL TREATMENT OF LOCALLY ADVANCED NON-SMALL CELL LUNG CANCER?**

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Objectives:

The role of surgery in the treatment of patients with stage IIIA-IIIB non-small cell lung cancer (NSCLC) is still a controversial topic. In particular, pneumonectomy after neoadjuvant therapy has often been associated with an unacceptable perioperative morbidity and mortality. We retrospectively reviewed our experience regarding this procedure to analyse the risks and benefits balance.

Methods:

Medical records of 195 consecutive patients submitted to pneumonectomy for NCLSC between January 2000 and December 2009 were reviewed and divided in two groups: group 1 included patients who underwent a 2- or 3-drug platinum-based neoadjuvant chemotherapy regimen (30 pts, 15.4%), group 2 included patients submitted to surgery alone (165 pts, 84.6%). These two groups were then compared in terms of 30-day or in hospital mortality and perioperative complications, particularly regarding bronchopleural fistula, pneumonia and empyema.

Results:

In both groups patients were comparable regarding age, histology, comorbidity and side of operation. In group 1 and 2, perioperative mortality was 6.6% and 7.3%, respectively ($p = 0.9$), overall major morbidity 36.6% and 33.3%, respectively ($p = 0.72$); incidence of bronchopleural fistula was 3.3% and 4.2% ($p = 0.81$); incidence of empyema 3.3% and 1.8% ($p = 0.59$); incidence of pneumonia 0% and 9.7% ($p = \text{NS}$), respectively.

Conclusions:

Pneumonectomy after induction chemotherapy is associated with an acceptable overall perioperative morbidity and mortality. Early and aggressive chest physiotherapy has a leading role in preventing respiratory complications and improving surgical outcome. Multimodality treatment regimens in experienced institutions should not exclude this surgical option in carefully selected patients with locally advanced non-small cell lung cancer.

Disclosure: All authors have declared no conflicts of interest.

BTOG-115

THYMOMA AND INTER-RELATIONSHIPS BETWEEN CLINICAL VARIABLES: A MULTICENTER STUDY IN 537 PATIENTS

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Objectives:

In Thymomas, the role of Masaoka-Koga Stage, histology and presence of Myasthenia Gravis (MG) has been considered fundamental for patient management and outcome. In this study we retrospectively evaluated several clinical variables, with the aim to outline their relationships and clinical/prognostic significance in resected Thymoma patients.

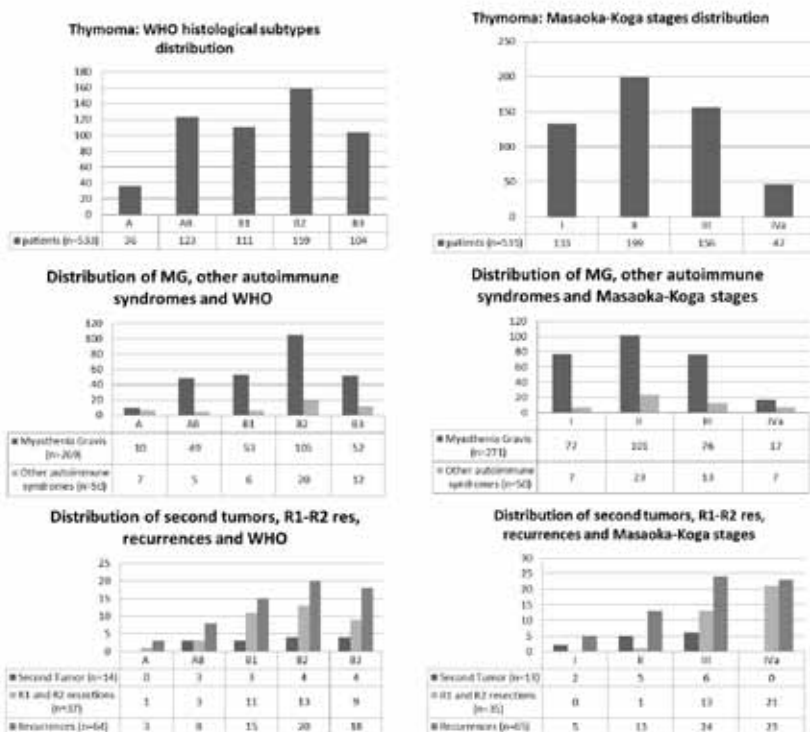
Methods:

A retrospective search of our surgical database for patients operated for Thymoma in the above-mentioned centers between 2000 and 2010, was conducted. The following clinical variables were evaluated: the presence of MG or other autoimmune syndromes (AS), of second tumors, the Masaoka-Koga Stage, the WHO (World Health Organization) tumor histology, the completeness of tumor resection and the development of recurrences.

Results:

There were 537 patients. Figure 1 summarizes clinical patients characteristics and inter-variables frequencies according to Thymoma stages and WHO histology. Patients with Stage III-IVA and B2-B3 Thymoma present with a high risk for incomplete resection; B2-B3 ones are statistically associated with MG and AS. Survival is strongly influenced by the presence of MG and second tumors (Table 1). FIGURE 1 TABLE 1

Figure 1: Patients characteristics and distributions of clinical variables according to Thymoma WHO and stage.



in 4 patients data concerning WHO are missing

in 2 patients data concerning Masaoka-Koga stage are missing

	Hazard-Ratio	p	95%CI
OUTCOME VARIABLE:TUMOR STAGE*			
MG	0.83	0.09	0.66-1.03
Other Aut.Syndromes	0.90	0.56	0.63-1.29
Second-Tumors	0.81	0.37	0.50-1.31
R1-R2	2.49	<0.001	2.07-3.01
OUTCOME VARIABLE:WHO*			
MG	1.46	<0.001	1.22-1.75
Other Aut.Syndromes	1.26	0.08	0.99-1.58
Second-Tumors	1.22	0.46	0.74-2.00
R1-R2	1.43	0.03	1.07-1.92
OUTCOME VARIABLE:RECURRENCES(R0 res)€			
Stage I-II vs III-IVA	6.06	<0.001	2.57-14.29
WHO A-AB-B1vs.B2-B3	1.69	0.15	0.82-3.49
MG	0.96	0.91	0.45-2.02
Other Aut.Syndromes	0.95	0.96	0.12-7.42
Second Tumors	0.76	0.80	0.09-6.33
OUTCOME VARIABLE:DEATH FOR THYMOMA#			
Stage I-II vs.III-IVA	1.45	0.49	0.51-4.07
WHO A-AB-B1vs.B2-B3	1.84	0.27	0.62-5.49
MG	3.63	0.04	1.03-12.78
Other Aut. Syndromes	1.82	0.43	0.41-8.16
Second-Tumors	8.33	0.06	0.91-76.11
*Pearson-chi2test €Cox-regression model #Competing-risk-regressionl			

Conclusions:

We found that MG, second tumors, thymoma advanced stages and aggressive ones as well as incomplete resections represent negative prognostic factors. Multimodal and aggressive treatment is needed in such patients.

Disclosure: All authors have declared no conflicts of interest.

BTOG-116

PREDICTED POSTOPERATIVE LUNG FUNCTION IS ASSOCIATED WITH ALL-CAUSE LONG-TERM MORTALITY AFTER MAJOR LUNG RESECTION FOR CANCER

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Objectives:

Preoperative lung function is an independent predictor of long-term survival after lung resection for NSCLC. The extent of resection has an impact on operative mortality, determines postoperative lung function, and may influence both overall and cancer-specific survival. We sought to determine the impact of predicted postoperative lung function on long-term survival after lung cancer resection.

Methods:

We previously reported long-term survival analyses for patients who underwent major lung resection for NSCLC 1980-2006. For this study we calculated predicted postoperative (ppo) spirometry (FEV1) and diffusing capacity (DLCO) in the same cohort using the functional segment technique or quantitative perfusion scans when available, and updated survival data; missing data were imputed. We assessed the relationship of ppoFEV1 and ppoDLCO to long-term survival using Cox regression.

Results:

Of 854 patients, 471 (55%) were women, the mean age was 63 years, and median survival was 42 months. At the time of analysis, 70% of patients had died. On regression analysis, all-cause mortality was related to age, stage, performance status, renal function, and coronary artery disease. Preoperative lung function was marginally associated with mortality (DLCO [10 percentage point decrease]: OR 1.04 [1.00-1.08], $p=0.056$; FEV1 [10 percentage point decrease]: OR 1.04 [1.00-1.09], $p=0.067$). In contrast, predicted postoperative lung function was strongly associated with mortality (ppoDLCO: OR 1.06 [1.01-1.12], $p=0.024$; ppoFEV1: OR 1.06 [1.01-1.12], $p=0.031$).

Conclusions:

Predicted postoperative lung function is strongly associated with long-term survival after major lung resection and is more strongly related to survival than preoperative lung function. Surgeons struggle with challenging decisions about the appropriate extent of resection for early stage cancer, balancing factors such as operative morbidity/mortality, local recurrence, and postoperative quality of life. Predicted postoperative lung function and its relation to survival also should be taken into consideration during such deliberations.

Disclosure: All authors have declared no conflicts of interest.

BTOG-117

WHAT IS THE APPROPRIATE OPERATIVE STRATEGY FOR RADIOLOGICALLY “SOLID” TUMOR IN SUBCENTIMETER LUNG CANCER PATIENTS?

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Objectives:

Radiologically solid tumors are considered to be invasive pathologically even in subcentimeter lung cancer. Conversely clinicopathological features and appropriate operative strategies are still controversial for these tiny lesions.

Methods:

Between 2004 and 2011, 140 patients underwent pulmonary resection for subcentimeter lung cancer. The findings of preoperative thin-section CT were reviewed for all 140 patients and categorized as pure ground-glass opacity (GGO), part-solid, or pure-solid. Eligible solid tumors were consisted of part-solid or pure-solid lesions, and pure GGO was excluded from this study. Several clinicopathological features were investigated to identify predictors of nodal metastasis using multivariate analyses. Survival curves were estimated by Kaplan-Meier method and tested by log-rank using Cox proportional hazards model.

Results:

71 c-N0 subcentimeter lung cancer patients showed solid appearance on thin-section CT. 46 patients had part-solid tumor, and 25 had pure-solid tumor. Nodal involvements were found pathologically in 6 (13%) patients, and all had pure-solid lesions ($p=0.0008$). Among patients with pure-solid subcentimeter lung cancer, SUVmax was the only significant predictor of nodal involvement by multivariate analysis ($p=0.0452$). Frequency of nodal involvement was approximately 40% for patients with pure-solid subcentimeter lung cancer and $\text{SUVmax} \geq 2.5$. Overall 5-year survival was 92.8% and disease-free survival was 79.1% in solid subcentimeter lung cancer. Moreover, there was significant difference in disease-free survival between high SUVmax and low SUVmax group ($p=0.0026$). Postoperative recurrence was developed in 4 (33%) of 12 patients with both pure-solid subcentimeter lung cancer and $\text{SUVmax} \geq 2.5$. Whereas locoregional failure was never shown by limited surgery even in pure solid, subcentimeter lung cancer if tumors had low SUVmax.

Conclusions:

Among patients with solid subcentimeter lung cancer, lobectomy should remain standard especially for patients with pure-solid tumor and high SUVmax because of possible nodal metastasis. Conversely, limited resection could be justified for subcentimeter lung cancer patients with low SUVmax in spite of solid appearance.

Disclosure: All authors have declared no conflicts of interest.

POSTERS**Display time: Sunday - Tuesday, 26-28 May 2013 from 08:30 to 17:30****P-118****IMPACT OF INTER-OBSERVER VARIABILITY ON THORACOSCORE RISK STRATIFICATION**

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Objectives:

Thoracscore is a risk model for prediction of in-hospital death in patients undergoing thoracic surgery. Despite good performance characteristics, a number of its component variables are subjective in nature and as such may be prone to inter-observer variability. We undertook a prospective study to assess concordance of independently derived Thoracoscores in patients undergoing thoracic surgery.

Methods:

Thoracscore variables were prospectively and independently documented by separate observers in patients undergoing thoracic surgery between August 2012 and January 2013. Comparisons of component variables and overall Thoracoscores were undertaken. Bland-Altman plot was constructed to compare extent of agreement.

Results:

The 9 fields of Thoracscore and overall score were prospectively and independently documented for 83 patients undergoing thoracic surgery. In 8 of 83 patients (9.6%) Thoracscore fields were in agreement. In the remaining 75 patients (90.4%), variability in documentation was observed in at least one of 9 fields. Overall Thoracscore was in agreement in 25 of 83 cases (30.1%) and variation in Thoracscore occurred in the remaining 58 cases (69.9%). Median difference of paired Thoracoscores varied by a factor of 2.1 (range 1-17). In 44 patients (53%) Thoracscore varied by a factor of at least 2. The mean difference in paired Thoracoscores was significantly different ($p < 0.001$, paired t test). Using Bland-Altman methods, the discrepancy between Thoracoscores was 1.12 (95% CI for the difference = 0.64 to 1.61). Regression for slope parameter of Bland-Altman plot was 0.25 (95% CI: 0.11-0.38; $p < 0.001$) suggesting disparity between scores increased with higher risk cases.

Conclusions:

Thoracscore is associated with a clinically importance difference when taken by different observers and variability increases with increasing Thoracscore. This has implications for its utilisation in risk assessment of individual patients and for its potential use in risk stratification for purposes on inter-unit comparison of data. Measurement of Thoracscore may be particularly variable in the highest risk cases.

Disclosure: All authors have declared no conflicts of interest.

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NO CLOSING OF THE LUNG PARENCHYMA AFTER ATYPICAL LASER RESECTION - INITIAL AIR - TIGHTNESSAndreas Kirschbaum¹, A. Steinfeld², A. Gockel², P. Di Fazio³, D. Bartsch¹¹*Surgery, University Hospital Marburg, Marburg/Germany,*²*Anesthesiology, University Hospital Marburg, Marburg/Germany,*³*Surgical Research, University Hospital Marburg, Marburg/Germany***Objectives:**

Often lung metastases are atypically resected with the Nd:YAG Laser (1318 nm wavelength). The coagulated resection surface is always closed using slowly-resorbable running sutures (PDS 4-0) occasionally in more layers when the defects are deeper. The lung tissue frequently reveals an obvious restriction during re-ventilation. We aimed to examine whether, by foregoing a closing suture on the resection surface, the lung would be initially airtight.

Methods:

We conducted this investigation on isolated, perfused and protectively-ventilated (PEEP + 5 cm H₂O, p1=20 cm H₂O; frequency: 10/Min) paracardial swine lung lobes (n=12; average weight: 46g). In the unventilated group A lungs, an atypical peripheral parenchyma resection and in group B a central parenchyma resection were carried out with the Nd:YAG Laser LIMAX[®] 120 (Fa. Martin, Tuttlingen, 100-watt output). Ventilation was continued for the next 15 minutes and the lungs' air-tightness tested and assigned a modified score ranging from 0 to 4. Burst pressure on the resection surface was then measured.

Results:

All the group A lobes were airtight during pressure-controlled ventilation; the mean burst pressure measured 35,1 cm H₂O. 6 (75%) of the group B lobes were completely airtight, but 2 revealed a considerable leak in the parenchyma (score 3), caused by an opening in the segmental bronchus. The parenchyma surrounding these openings was, however, airtight; mean burst pressure was 33,1 cm H₂O. A second external inspection of the resection surface revealed an opening in the segmental bronchi.

Conclusions:

Atypical laser resections on the lung surface are absolutely airtight initially, thus the parenchyma need not be suture-closed. However, the segmental bronchi may open in conjunction with central resections. Only they, and not the surrounding lung parenchyma, require treatment.

Disclosure: All authors have declared no conflicts of interest.

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IMPACT OF INDUCTION THERAPIES ON PATHOLOGY AND OUTCOME AFTER SURGICAL RESECTION OF NON-SMALL LUNG CANCER: A 30-YEAR EXPERIENCE OF 859 PATIENTS

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Objectives:

The management of localized non-small cell lung cancer (NSCLC) has been modified over the last decades, with induction therapies being increasingly recommended as a prerequisite to surgical resection. However, the relative impact of chemo and chemoradiotherapy on tumours' pathology and patients' survival is still discussed.

Methods:

We set a retrospective study including every patient who underwent surgical resection for NSCLC in 2 French centres from 1980 to 2009. We then compared the tumours' pathology and patients' survival according to the use of induction chemotherapy (group 1) or induction chemoradiotherapy (group 2).

Results:

There were 733 patients in group 1 and 126 patients in group 2. In group 1, 669 patients (91%) had platinum-based chemotherapy, for 2 to 3 cycles in 564 cases (77%). In group 2, chemoradiotherapy was concomitant in 68 patients (54%), and sequential in 58 patients (46%). As compared with group 1, group 2 was characterized by younger age (mean 59.8 ± 9.5 vs 56.4 ± 9.6 , respectively, $p < .001$), a higher rate of tumours deemed unresectable before induction treatment (25% vs 44%, $p < .001$), and a higher proportion of T4 (25% vs 44%, $p < .001$) or N2 diseases (56% vs 69%, $p = .005$). The type of resection, postoperative complications, and postoperative mortality were not significantly different between groups. On final pathologic report, as compared with group 1, there were more N0 and N1 disease in group 2 (N0: 43% vs 58%, $p = .002$; N1: 22% vs 10%, $p = .002$) while the rate of N2 disease was comparable (34% vs 32%, $p = \text{ns}$). The median, 5-, and 10-year survivals were 28 months, 35%, and 21% for group 1, and 29 months, 36%, and 23% for group 2, respectively ($p = \text{ns}$).

Conclusions:

As compared with induction chemotherapy, induction chemoradiotherapy was performed in more advanced NSCLC, and resulted in better downstaging, similar postoperative course, and comparable longterm outcome after surgical resection.

Disclosure: All authors have declared no conflicts of interest.

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SOLID PART DIMENSION IS NOT EQUAL TO MAXIMUM TUMOR DIMENSION AS A PROGNOSTIC IMPACT FOR LUNG CANCER - UNDERESTIMATION OF THE SIZE OF SOLID COMPONENT ON THIN SECTION CT SCANTatsuo Maeyashiki¹, K. Suzuki², K. Takamochi², S. Oh²¹*Department Of General Thoracic Surgery, Juntendo University School of Medicine, Tokyo/Japan,*²*General Thoracic Surgery, Juntendo University School of Medicine, Tokyo/Japan***Objectives:**

The solid part dimension is an independent unfavorable prognostic factor, regardless of the maximum tumor dimension on thin section CT scan. It also has more accurate prediction of pathological lymph node metastasis for part-solid nodule. However, in case of assessing the prognosis of early lung cancer by the solid part dimension, it remains uncertain which nodule is more invasive between part-solid and pure-solid nodule with same size of solid component. Thus, we sought to evaluate the relationship between the solid part dimension and prognosis for both part-solid and pure-solid nodules.

Methods:

Between February 2008 and October 2012, 522 consecutive patients with lung cancer that measured less than 30 mm in diameter of solid component on thin-section CT underwent surgical resection at our hospital. Univariate and multivariate analyses were performed by the logistic regression procedure to determine the relationship between pathologic lymph node metastasis-positive status and clinical or radiological findings such as the size of solid component, the presence of GGN and the preoperative serum carcinoembryonic antigen (CEA) level.

Results:

Of the 522 patients, 76 (14.6%) had pathologic lymph node metastasis. Univariate analysis revealed the significant predictors of pathological nodal involvement: the presence of GGN, the size of solid component and the preoperative CEA level ($p < 0.01$, respectively). In a multivariate analysis, the size of solid component and the presence of GGN were significant predictors of nodal metastasis ($P < 0.01$, respectively). Among 127 patients with lung cancers that showed solid component larger than 20mm with the absence of GGN, 43 (33.9%) had nodal metastasis.

Conclusions:

Pure-solid nodule showed more pathological lymph node metastasis than part-solid nodule, even though solid part dimension was same on thin section CT. In case of adopting only solid part dimension as predictor for lymph node metastasis, it would lead to an underestimation of invasiveness for pure-solid nodule.

Disclosure: All authors have declared no conflicts of interest.

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ANATOMICAL SEGMENTECTOMY WITH VATS AND ROBOTICS. DOES IT MATTER?

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Objectives:

Minimally invasive lung resections especially segmentectomy is becoming a more employed procedure everyday. We evaluated our perioperative database of complete minimally invasive segmentectomies to compare the two different minimally invasive technics.

Methods:

Thirty patients (Group A: 20 patients with VATS and Group B: 10 patients with Robotics) data was analyzed and compared. All chest tubes were removed during hospital stay.

Results:

Results have demonstrated statistically almost equal results in terms of age, pulmonary function tests, rate of malignancy, length of chest tube drainage and hospital stay (Table). Although not significant, length of chest tube duration/hospital stay is 3,4/6,2 days in Group A and 2,5/3,8 days in Group B.

Table.

	VATS [mean ±SD (min-max)]	Robotics [mean ±SD (min-max)]	p
Age	50 ±15 (18-66)	54 ±18 (28-84)	0,58
Pulmonary Function Test (%)	84 ±29 (44-128)	77 ±14 (52-100)	0,50
Length of chest tube drainage	3,42 ±3,2 (1-13)	2,50 ±1,5 (1-6)	0,40
Length of hospital stay	6,21 ±4,2 (2-16)	3,80 ±1,3 (2-7)	0,09

Conclusions:

Yet, robotic surgery has equal results with VATS in segmentectomy operations. However, length of chest tube duration time and length of hospital stay are promising with Robotic surgery.

Disclosure: All authors have declared no conflicts of interest.

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QUALITY OF LIFE IN PATIENTS WITH EARLY STAGE NON-SMALL CELL LUNG CANCER TREATED WITH SURGERY ALONE OR SURGERY FOLLOWED BY ADJUVANT CHEMOTHERAPY

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Objectives:

A monocentric prospective observational study was designed to evaluate quality of life (QoL) in patients with early stage non-small cell lung cancer (NSCLC) treated with curative resection either alone (Arm A) or followed by adjuvant chemotherapy (Arm B) according to internationally accepted criteria. The objective was to find out if adjuvant chemotherapy has an influence on QoL.

Methods:

Between 09/2008 and 03/2012 p-stage IB-IIB NSCLC patients were followed clinically and examined for QoL at baseline 4-6 weeks postoperatively and 3, 6 and 12 months after surgery using the EORTC QLQ-C30 and QLQ-LC13 questionnaires. Descriptive and parametric statistical methods were applied to test for longitudinal effects and differences between the two arms focussing on the EORTC major scales (“global health”, “functional” and “symptom”).

Results:

Change of QoL after surgery could be assessed in 154 patients (A: 99, B: 55) after 3 months in 139 (A:89, B:50,) and 113 (A:74, B:39,) after 6 and 12 months and respectively exhibited improvement of QoL at all three observation points compared with baseline. When examining changes in QoL between the two arms symptoms improved in Arm A at 3 months compared to baseline but not in Arm B ($p=0.04$); nausea/vomiting was worsening ($p=0.003$) and fatigue was not improving (0.02) in Arm B. After 6 and 12 months neither the three EORTC major scales nor any sub-items showed statistical significance. Overall, the changes over one year of follow up and differences in QoL between the two arms were small in relation to the ranges covered by the questionnaires.

Conclusions:

Post-operative adjuvant chemotherapy following curative resection for early stage NSCLC has no strong influence on QoL. Notwithstanding the side effects identified above adjuvant chemotherapy should be given to early stage NSCLC patients when indicated, in particular, when the survival benefits of this treatment element are taken into consideration.

Disclosure: All authors have declared no conflicts of interest.

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HYPONATRAEMIA FOLLOWING LUNG RESECTION: EPIDURAL ANALGESIA MAY BE A CONTRIBUTING FACTOR

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Objectives:

During a routine audit of postoperative care we identified a high incidence of hyponatraemia following anatomical lung resection for cancer. It is recognised that lung tumours, but not usually non-small cell cancer (NSCLC), can cause hyponatraemia. We wished to determine whether peri and/or intraoperative factors contributed to the occurrence of postoperative hyponatraemia.

Methods:

The regional thoracic surgery database was searched for all anatomical non-small cell lung cancer resections performed during the period January 2011 – December 2012. 97 patients were identified. Parameters relating to patient characteristics, tumour features and perioperative care were examined. A multivariate analysis was performed to determine what factors indicated high risk for hyponatraemia and what management practices could be addressed to reduce its incidence.

Results:

Hyponatraemia occurred in 44 patients in our cohort (45.4%). The major factor, which showed an association with hyponatraemia was the use of epidural analgesia, 31/62 (50%) as opposed to paravertebral catheter, 13/35 (37%), ($p=0.002$). Staging of lung cancer (Stage I and II versus III and IV), presence of central versus peripheral tumour, gender, age, diuretic therapy, complications and post-operative admission to critical care unit were not seen to be statistically different between the two groups. No deaths occurred as a result of hyponatremia. All cases of hyponatremia observed in the study responded to fluid restriction. Length of hospital stay was longer in epidural patients (9.6 versus 7.7 days, $p=0.027$).

Conclusions:

This study demonstrated an increased risk of hyponatraemia in patients receiving thoracic epidural. In cases where the avoidance of large fluid volumes or electrolyte disturbances is critical, the use of a paravertebral infusion may be a safe, effective option.

Disclosure: All authors have declared no conflicts of interest.

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SHOULD PATIENT WITH N2 DISEASE BE EXCLUDED FROM THORACIC METASTASECTOMY OF COLORECTAL CANCER?

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Objectives:

Pulmonary metastasectomy of colorectal cancer is increasingly taking place in the field of thoracic surgery. Even if several risk factors are known, patients who may clearly benefit from surgery have not been identified. In particular, few studies have focused on the impact of N1 vs N2 involvement.

Methods:

We retrospectively reviewed the data of 323 patients operated in two different thoracic departments between 1992 and 2011. Appropriate statistical tests were used to make comparison between groups.

Results:

Our population consisted in 107 women and 216 men, mean age at time of thoracic metastasectomy was 63.3 years (min: 27, max: 86). Nodal involvement (NI) was a significant prognostic factor both in univariate and multivariate analysis (mean survival: 79.7 months vs 41.5 months, $p < 0.001$; HR=0.20 (0.12 ; 0.33) $p < 0.001$ respectively), whereas there was no statistical significant difference on survival between hilar and mediastinal location (mean survival: 45.8 months vs 31.3 months respectively, $p = 0.22$). Otherwise, in both univariate and multivariate analysis, having more than 2 metastases (mean survival: 77.6 months vs 55.5 months, $p = 0.004$; HR=0.5 (0.28 ; 0.91) $p = 0.02$) or an hepatic metastase (mean survival: 72 months vs 54.6 months, $p = 0.01$; HR=0.20 (0.08 ; 0.50) $p = 0.001$) had a significant impact on survival. Disease free survival and pre-operative ACE had no impact on survival.

Conclusions:

The mediastinal location of NI seems not to have an impact on survival of patients undergoing metastasectomy for colorectal cancer, consequently these patients should not be excluded from surgical treatment. However, prospective studies, on larger cohort of patients, are mandatory to confirm these preliminary results.

Disclosure: All authors have declared no conflicts of interest.

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PROGNOSTIC SIGNIFICANCE OF MYC AND HUMAN TELOMERASE (TERC) GENE AMPLIFICATION IN SURGICALLY TREATED EARLY STAGE NON-SMALL CELL LUNG CANCER (NSCLC)

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Objectives:

We investigated the incidence of MYC and TERC increased gene copy number (GCN) in early stage NSCLC and evaluated the correlation of these genomic imbalances with clinicopathological parameters and outcome.

Methods:

Tumor tissues were obtained from 113 NSCLC patients who were subjected to curative pulmonary resection. Median age was 66 years (range 40–84); most patients were male (84%), former/current smokers (92%), had poorly differentiated histology (42%) and stage I disease (62%). The histological types included 51% squamous cell carcinoma (SCC), 30% adenocarcinoma, 8% BAC, and 11% of other subtypes. MYC and TERC GCNs were tested by fluorescence in situ hybridization (FISH) using commercial probes according to the University of Colorado Cancer Center (UCCC) criteria and based on the receiver operating characteristic (ROC) classification.

Results:

When UCCC criteria were applied, 41 (36%) cases for MYC and 41 (36%) cases for TERC were considered FISH-positive. MYC and TERC concurrent FISH-positive was observed in 12 cases (11%): 2 (17%) cases with gene amplification and 10 (83%) with high polysomy. By using the ROC analysis, high MYC (mean ≥ 2.83 copies/cell) and TERC (mean ≥ 2.65 copies/cell) GCNs were observed in 60 (53.1%) cases and 58 (51.3%) cases, respectively. High TERC GCN was associated with SCC histology ($p=0.001$). In univariate analyses, increased MYC GCN was associated with shorter overall survival (OS) ($p=0.032$ (UCCC criteria) or $p=0.02$ (ROC classification)), while high TERC GCN showed no association. In multivariate analysis including stage and age, high MYC GCN remained significantly associated with worse OS using both the UCCC criteria ($p=0.02$) and the ROC classification ($p=0.008$).



Conclusions:

Our results confirm MYC as frequently amplified in early stage NSCLC and increased MYC GCN as a strong predictor of worse survival. Increased TERC GCN does not have prognostic impact but has strong association with squamous histology.

Disclosure: All authors have declared no conflicts of interest.

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EXISTENCE OF AIR BRONCHOGRAM IN THE PRIMARY TUMOR IS POSITIVE PREDICTIVE FACTOR FOR C-STAGE IA LUNG CANCER PATIENTS WITH RADIOLOGICALLY “PURE SOLID” APPEARANCE ON THIN-SECTION CT SCAN

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Objectives:

Phase III trial as to the feasibility of limited resection for lung cancer 2 cm or less in size is now ongoing in Japan. But small-sized lung cancers with a predominant solid lesion on thin-section CT are considered to be invasive nature with an incidence of nodal involvement of more than 20%.

Methods:

Between 2008 and 2011, 556 c-stageIA lung cancer patients underwent pulmonary resection. The findings obtained by preoperative thin-section CT were reviewed for all patients and categorized as pure ground-glass nodule (GGN), partly solid, or pure solid. Eligible pure-solid tumor was defined as a lung tumor that only showed consolidation without GGN on thin-section CT. Maximum standardized uptake value (SUVmax) on positron emission tomography (PET) was recorded for all. Several clinicopathological features were investigated to identify predictors of nodal metastasis using multivariate analyses.

Results:

184 c-stageIA lung cancer patients showed a pure-solid appearance on thin-section CT. Among them, air bronchogram was found radiologically in 58 (32%) patients. Nodal involvement was observed in 10 (17%) patient with air bronchogram compared with 34 (43%) without air bronchogram in c-stageIA pure-solid lung cancer. Existence of air bronchogram in the tumor was strongly correlated with SUVmax, maximum tumor dimension and pleural indentation by multivariate analysis ($p=0.0003$, 0.0006 , 0.0434 , respectively). Moreover, multivariate analysis elucidated that air bronchogram, c-T1a and SUVmax were significant predictors of nodal involvement ($p=0.0093$, 0.0001 , 0.0333 , respectively). Frequency of nodal involvement was approximately 7% for patients of c-T1a pure-solid lung cancer with air bronchogram. Furthermore, 17 patients were no nodal involvement even in pure-solid tumor if the patients had following factors of c-T1a and air bronchogram with $SUV_{max}<3.0$.

Conclusions:

Existence of air bronchogram was a predictor of negative nodal involvement for c-stageIA pure-solid lung cancer. Limited surgery could be feasible for these patients even in pure-solid appearance.

Disclosure: All authors have declared no conflicts of interest.

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BRONCHIAL CARCINOID TUMORS WITH NODAL INVOLVEMENT

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Objectives:

To determine nodal involvement (Nlv) in lung carcinoids and its implication in prognosis.

Methods:

From 1998 to 2009, a multicenter study group collected 923 cases of lung carcinoid tumors in 2 groups: Retrospective (until 1997): 345 (88.5%) typical carcinoids (TC) and 45 (11.5%) atypical carcinoids (AC); Prospective: 451 (84.6%) TC and 82 (15.4%) AC. All the pathological cases were classified according to 2004 WHO-classification and 7th TNM edition. Mediastinal sampling or nodal mediastinal dissection were systematically performed in the prospective group. Clinical variables considered were: age, location (central, peripheral), Nlv and pTNM stage. Survival data and incidence of metastases were determined. Statistical analysis was made using SPSS (Statistical Package Social Sciences 19.0). Student's t and Pearson's chi-squared test were performed. Survival analysis: Kaplan-Meier, Mantel-Cox log-rank test. Multivariate analysis: Cox regression. Signification $p < 0.05$.

Results:

Surgical procedures (SP) performed in TC/AC were: standard resection 75%/83%, broncho-plastic resection 11%/5% and sublobar resection 14%/12%, respectively. The data as concerns distribution of Nlv by histology, location and retrospective vs prospective group and survival at 5 and 10 years were reflected in Table 1. TC vs AC pN+, $p = 0.001$. Metastases at follow-up stage: TC 22 (16 N0, 5 N1, 1 N2) $p = 0.001$; A C27 (14 N0, 5 N1, 8 N2) $p = 0.077$. Multivariate analysis: TC: Survival: the most significant risk factors were: age HR 1.063 ($p = 0.000$), M factor HR 7.85 ($p = 0.002$) and metastases at follow-up stage HR 6.174 ($p = 0.000$). Nlv and SP were not significant. Metastases: Nlv HR 5.809 ($p = 0.001$) and retrospective group HR 2.788 ($p = 0.027$). AC: Survival: retrospective group HR 5.12 ($p = 0.002$), Nlv HR 2.14 ($p = 0.027$) metastases at follow up stage HR 6.67 ($p = 0.000$). Metastases: age HR 1.05 (0.015), Nlv HR 2.855 ($p = 0.035$) and retrospective group HR 1.714 ($p = 0.258$).

Tumor		N Factor			Survival			
		N	n	%	p	5 y (%)	10 y (%)	p
TC		N0	734	92.2	0.000	96	91.1	0.775
		N1	40	5		96.7	82.9	
		N2	22	2.8		100	-	
AC		N0	84	66.1	0.022	88.7	74.3	0.022
		N1	18	14.2		68.1	68	
		N2	25	19.7		66.1	57.9	
Location								
Central	TC	N0	501	92.4	0.000	98.7	98.2	0.714
		N+	41	7.6		100	85.7	
Peripheral	AC	N0	41	57.7	0.001	87.6	77.9	0.385
		N+	30	42.3		80	74	
	TC	N0	234	92.1		97	94.8	0.389
		N+	20	7.9		92.3	92	
	AC	N0	43	76.8		89.4	70.1	0.005
		N+	13	23.2		42	42	
Retrospect/Prospective								
TC	Retrospec t.	N0	327	94.8	0.004	95.8	90.3	0.149
		N+	18	5.2				
	Prospect.	N0	407	90.2	0.0845	96	93.3	0.014
		N+	44	9.7				
AC	Retrospec t.	N0	29	64.4	0.146	70.9	59.9	0.481
		N+	16	35.6				
	Prospect.	N0	55	67.1	0.457	89.7	84.4	0.094
		N+	27	32.9				
Central TC	Retrospec t.	N0	234	94.4	0.077	96.6	92.2	0.538
		N+	14	5.6				
	Prospect.	N0	268	90.8	0.099	97.5	96.7	0.154
		N+	27	9.2				
Central AC	Retrospec t.	N0	14	63.6	0.099	72.7	65.5	0.154
		N+	8	36.4				
	Prospect.	N0	26	54.2	0.099	93.1	84.6	0.154
		N+	22	45.8				
Peripheral TC	Retrospec t.	N0	93	95.9	0.077	87.3	84.8	0.538
		N+	4	4.1				
	Prospect.	N0	140	89.7	0.099	98	89.1	0.154
		N+	16	10.3				
Peripheral AC	Retrospec t.	N0	15	65.2	0.099	69.6	54.7	0.154
		N+	8	34.8				
	Prospect.	N0	29	85.3	0.099	83.5	-	0.154
		N+	5	14.7				

Conclusions:

- Survival is not influenced by nodal involvement in TC but shows a clear influence in AC.
- Standard lymphadenectomy improved survival in the prospective group. Systematic lymphadenectomy should be always performed in both typical and atypical carcinoid.

Disclosure: All authors have declared no conflicts of interest.

P-129

SLEEVE LOBECTOMY VS PNEUMONECTOMY AFTER INDUCTION THERAPY: SHORT AND LONG TERM RESULTS OF MULTICENTRIC STUDY

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Objectives:

Although Sleeve Lobectomy (SL) is considered the best therapeutic option in locally advanced non-small cell lung cancer (LA-NSCLC) patients even when pneumonectomy (PN) is tolerated, its feasibility and long-term results after induction therapy (IT) are very rarely investigated. We present the results of a multicenter experience.

Methods:

From 01/90 to 12/12, patients from 3 tertiary referral centers underwent SL (bronchial, arterial or both) or PN for LA-NSCLC after IT (chemotherapy alone or concurrent radio-chemotherapy). The indication to SL was done whenever technically possible. Clinical and pathologic variables were collected and peri-operative result were assessed and compared in both groups. Long-term survival was investigated according to clinical and pathological features and calculated by Kaplan-Meier method and log-rank test as well by Cox proportional hazard regression model.

Results:

There were 119 patients, 94 male/female= 94/25. Clinico-pathological features, surgical findings and post-operative results are summarized in Tab. 1. PN was performed in 68 patients and SL in 51 patients. Overall 30-day mortality and morbidity were 2.9% and 22.1% for PN vs 3.9% and 9.8% for SL, respectively. One-year, 3-year and 5-year survival rates were: 82.4%, 50.9%, 43.1% in PN vs 92.5%, 60.5%, 53.8% in SL, respectively. Overall recurrence rate was 32/66 (47.0%) in PN and 21/49 (42.8%) in SL (p=0.34) and among these, 8/66 local recurrences in PN (12.1%) vs 11/49 in SL (22.4%) (p=ns). The Cox analysis suggested N-status and right side as independent mortality risk factors (HR=1.96 [CI95%: 1.12-3.44], p=0.018 and HR=2.96 [CI95%: 1.13-8.66], p=0.047, respectively) in SL-group. As well, N status and right side resulted as powerful risk factor of relapse (HR=2.33 [CI 95%: 1.17-4.64] p=0.016 and HR=2.96 [CI 95%: 1.13-8.66] p=0.046 respectively), in patients undergone SL.

Conclusions:

For LA-NSCLC, a SL represents a safe and effective surgical option when compared to PN even after IT, with comparable early and long-term results.

Disclosure: All authors have declared no conflicts of interest.

P-130**THE IMPACT OF VIDEO-ASSISTED MEDIASTINOSCOPIC LYMPHADENECTOMY ON SURVIVAL IN INOPERABLE STAGE IIIA-IIIB (N2) NON-SMALL CELL LUNG CANCER PATIENTS: EARLY RESULTS**

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Objectives:

Mediastinal lymph node involvement is of great importance in survival of patients with non-small cell lung cancer. Mediastinoscopy has been accepted as a gold standard tool for preoperative mediastinal staging. However, the role of video-assisted mediastinoscopic lymphadenectomy (VAMLA) has not been fully elucidated. We aimed to analyze accuracy of VAMLA as a tool for preoperative staging and the impact of the technique on survival in patients who were found to have N2 disease

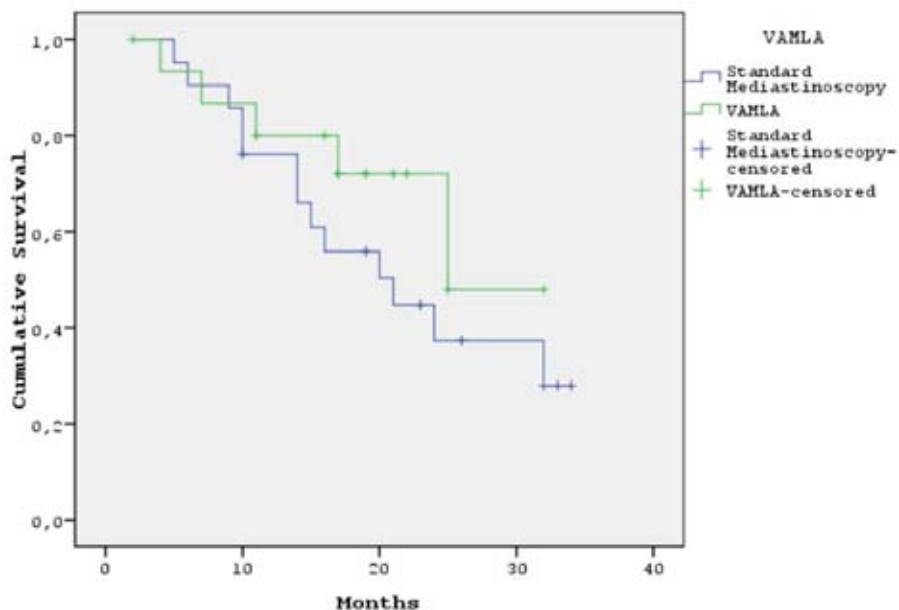
Methods:

Between May 2005 and December 2012, 124 N2 patients with non-small cell lung cancer who had undergone standard mediastinoscopy or VAMLA and found to have ipsilateral mediastinal lymph node metastasis were evaluated. Of these, 16 patients underwent VAMLA, whereas 108 patients underwent standard mediastinoscopic exploration. The median resected lymph node was 5 in VAMLA group (mean was 4.9), while the median was 4 (mean was 4.2) in mediastinoscopy group. All patients with N2 disease were referred to medical oncology and radiation oncology departments. The survival rates were calculated using Kaplan-Meier test.

Results:

Dysphonia was seen in 1 (6.3%) of patients who had VAMLA while the complication rate was 3.4%(4 dysphonia) in patients who underwent mediastinoscopy. The difference was statistically significant ($p=0.03$). The 2-year survival rate of N2 patients who had VAMLA was 48.0%, whereas it was 27.9% in patients who underwent mediastinoscopy (Figure 1; $p=0.28$). Multiplicity of nodal status, type of histology, t factor did not have an impact on survival. Patients with multiple N2 disease.

Survival Functions OF Patients with Mediastinal Lymph Node Metastasis According to Type of Mediastinoscopy



Conclusions:

VAMLA seemed to provide slightly longer survival in non-small cell lung cancer patients. This effect could be due to complete resection of mediastinal lymph nodes. Further studies in order to clarify the possible survival impact are warranted.

Disclosure: All authors have declared no conflicts of interest.

P-131

LONG-TERM OUTCOME OF INTENTIONAL LIMITED RESECTION FOR PULMONARY GROUND-GLASS NODULES -COMPARISON TO LOBECTOMY PATIENTS WITH cT1aN0M0 NSCLC

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Objectives:

In 2012, we reported the long-term outcome of our in-house prospective trial of intentional limited resection for pulmonary ground-glass opacity lesions 2 cm or smaller*. Including these cases, we retrospectively analyzed the long-term outcome of cT1aN0M0 NSCLC patients who underwent intentional limited resection, compared to those undergoing lobectomy.

Methods:

Between 1992 and 2007, there were 422 patients who underwent lung resection for cT1aN0M0 NSCLC in our hospital. Among them, 69 patients underwent intentional limited resection (ILR group, 8 segmentectomy and 61 wedge resection) for peripheral nodules with predominant ground-glass opacity on high-resolution computed tomography. We retrospectively compared their clinicopathological characteristics and outcome with those of remaining 353 patients who underwent lobectomy (Lobectomy group). Palliative limited resection patients were excluded from the present study.

Results:

Among the entire patients, there were 209 men (49%). Their median age was 61 years old, and median follow-up period was 96 months (range: 7-170 months). Five- and ten-year recurrence free survival rates of ILR and lobectomy groups were 100/86% and 81/70%, respectively, and the ILR survival was significantly superior ($p < 0.01$). However, when only patients whose consolidation/tumor ratios were 0.5 or less were compared, 5 patients (8%) in 63 ILR patients developed recurrence, while there were no recurrence in 60 lobectomy patients. All recurrent patients in the ILR group underwent wedge resection. Four of them developed local recurrence 5 years or longer after resection, about which we described in detail in our 2012 report*.

Conclusions:

We concluded that 5 years is not a sufficient period of follow-up, and that limited resection, especially wedge resection, should still be done only in a trial setting, even for small ground-glass opacity lesions. * Nakao M, et al. J Thorac Oncol. 2012; 7: 1563-1566

Disclosure: All authors have declared no conflicts of interest.

P-132

LUNG ADENOCARCINOMA IN FEMALE SMOKERS AND NON-SMOKERS: A RETROSPECTIVE CASE-CONTROL STUDY

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Objectives:

To evaluate histological differences in primary lung adenocarcinoma from female smoker and non-smoker patients.

Methods:

Women who underwent lobectomy and lymphnodes dissection for primary lung adenocarcinoma over a 8-year period (2003-2010) were considered. Histological reports were reviewed according to WHO criteria and IASLC recommendations. Variables considered in the analysis included: smoking history, pleural invasion, lympho-vascular invasion, primary and secondary growth patterns according to Sica, WHO grade and TNM stage. Follow-up was complete for all patients. Effect on overall survival and disease-free survival was calculated by Kaplan Meier analysis and multivariate Cox regression.

Results:

94 patients were included in the analysis; 53 (56%) were non-smokers. Mean age was 65 (48-85); mean follow-up was 50 months (24-108). Mean age at diagnosis was lower for smokers than non smokers (63 vs. 69 years, $p < .05$). Primary histologic patterns were: acinar 49%, solid 22%, papillary 15%, lepidic 9%, micropapillary 4%, colloid 1%. 91% of tumours with solid pattern were found in smokers ($p < .01$) compared with 63% of lepidic pattern in non-smokers ($p < .01$). Primary score ($p < .001$) and combined grade ($p < .001$) proposed by Sica were significantly higher in smokers in comparison to non-smokers. By univariate analysis, primary Sica score, TNM stage, pleural and lympho-vascular invasion were significantly correlated with survival. Primary Sica score ($p < .05$) and TNM stage ($p < .01$) maintained an independent effect at multivariate analysis.

Conclusions:

Pulmonary adenocarcinoma in female smokers occurred at younger age and showed more frequent solid pattern and higher Sica grade. Histological pattern (primary and combined Sica score) was an independent predictor of survival.

Disclosure: All authors have declared no conflicts of interest.

P-133

CLINICAL PREDICTOR OF PRE OR MINIMALLY-INVASIVE PULMONARY ADENOCARCINOMA; A PROPOSAL FOR SUB-CLASSIFICATION OF CLINICAL T1a

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Objectives:

The pathological classification of pulmonary adenocarcinoma will be changed according to the amount of invasion, which relates to the prognosis. As such, to distinguish the group of patients with extremely good survival is crucial before surgery.

Methods:

Among 412 surgical patients of lung cancer from 2008 to 2011, 110 clinical stage I patients underwent segmentectomy or lobectomy and revealing all 4 parameters- 1) whole size of the tumor in computed tomography (WS), 2) size of solid component in computed tomography (SS), 3) SUVmax and 4) serum level of carcinoembryonic antigen (CEA), were assessed on the points of predictive power for pre or minimally-invasive adenocarcinoma and relapse free survival (RFS).

Results:

With respect to prediction of pre or minimally-invasive adenocarcinoma, the area under the curve (AUC) of the receiver-operation curve (ROC) was over 0.7 in all 4 parameters and only SS was independent in multivariate logistic regression analysis. In cox proportional hazard model analysis, SS and SUVmax were statistically significant and SS was exclusively independent in a multivariate analysis. The RFS was more distinguishable using SS than WS between T1a and T1b, and in sub-classification of T1a using a break point of 1.0cm in SS (T1a- $\{\alpha\}$ and T1a- $\{\beta\}$), the 2-year RFS rate was 100% in T1a- $\{\alpha\}$ (n=21), 89.4% in T1a- $\{\beta\}$ (n=27) and 68.3% in T1b (n=26), respectively (p=0.002 between T1a- $\{\beta\}$ and T1b).

Conclusions:

SS could distinguish pre or minimally invasive adenocarcinoma from other types of lung cancer and may provide sub-classification of T1a.

Disclosure: All authors have declared no conflicts of interest.



P-134

INTRALOBAR SPREAD OF PRIMARY LUNG CANCER IS MOSTLY RETROGRADE EXTENSION FROM HILAR LESION: A RATIONALE OF RADICAL SEGMENTECTOMY

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Objectives:

Segmentectomy has been re-evaluated as a curative surgery for peripheral small lung cancer. This study is aiming for clarifying adequacy of the radical pulmonary segmentectomy by examination of intralobar spread pattern in resected specimens.

Methods:

From September 2009 to July 2012, in a consecutive series of 312 patients who underwent pulmonary resection more than two segments for lung cancer, intralobar spread to lymph nodes as well as lung parenchyma was pathologically examined. Thirty-four patients who received with preoperative treatments were excluded. TNM staging and nodal station number was according to UICC-7 coding.

Results:

Eligible 278 patients (male/female: 194/84) included 187 adenocarcinoma, 66 squamous cell carcinoma, 12 large cell carcinoma and 13 others, and 188 peripheral type and 90 central type. Pathologic stages were 137 0-IA, 64 IB, 31 IIA, 18 IIB, 25 IIIA and 3 IIIB-IV, and 27 N1 and 22 N2/3. Sixty-two peripheral small (≤ 20 mm) lesions were not accompanied by any intra/extra nodal or parenchymal metastases except for one small cell lung cancer and two solid adenocarcinomas. In 229 patients with N0, intralobar spread was detected in 2 patients; these were detectable on preoperative radiological examination. Intralobar spread was observed in 23 (8.3%), in whom 21 (7.6%) were segmental/intersegmental nodal metastases, 5 (1.8%) were parenchymal metastases (3 were both). Of them, spread to non-tumor-bearing segment was recognized in only 5 (1.8%), and 4 of them were harboring extralobar nodal metastasis. In 1 (0.4%) patient, nodal metastasis was occurred only in non-tumor-bearing segment. N2 skipping hilar and intralobar nodes were recognized in 7 (2.5%) patients.

Conclusions:

Segmentectomy would be almost as radical as lobectomy for peripheral type non-small cell lung cancer. However, if nodal metastasis is recognized at the surgery, lobectomy should be done to avoid incomplete resection in care of retrograde spread to non-tumor-bearing segment.

Disclosure: All authors have declared no conflicts of interest.

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ADRENALECTOMY FOR ISOLATED METASTASIS FROM OPERABLE
NON-SMALL CELL LUNG CANCER

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Objectives:

In patients with non-small cell lung cancer (NSCLC), isolated metastases in the adrenal gland may be identified either synchronously or metachronously. This study aims to identify whether, after curative lung resection, adrenal metastatectomy improves survival when compared against medical therapy.

Methods:

A systematic review was performed. The results were collated and are described below.

Results:

3 published series were identified comparing adjuvant medical therapy against adrenalectomy after R0 resection of NSCLC. Together 60 patients were assessed. Management strategy was left to the discretion of the clinician. In all 3 series, survival was improved in the adrenalectomy group (see table 1). DFI was longer and patients were younger in the adrenalectomy groups. No difference was identified in histological subtypes or tumour size.

Table 1 - abbreviated results of literature reviewd

Paper	Patient Group	Outcomes	Results
1	37 patients. 20 operative vs 17 underwent non-operative management.	5 year survival	34% in the adrenalectomy group versus 0% in the non-operative group (p=0.002)
2	14 patients with isolated synchronous adrenal metastasis from NSCLC. 8 underwent surgical resection. 6 underwent non-operative management	Median survival	Median survival 31 months in the adrenalectomy group versus 8.5 months in the non-operative group
3	9 patients with isolated adrenal metastases from surgically resected lung cancer. 5 underwent surgical resection. 4 underwent non-operative management.	Survival	Adrenalectomy group: 2/5 alive at 24 and 40 months respectively 3/5 died at 9, 17 and 20 months respectively. Non-operative group: All died within 6 months.



Conclusions:

Surgical resection is associated with improved survival for selected patients with isolated adrenal metastasis from NSCLC. Patient selection is critical. Important factors are: otherwise early stage NSCLC at initial staging, R0 resection, long DFI, and no evidence of other metastasis. Ipsilateral adrenal metastasis may represent early lymphatic spread and therefore these patients may derive more benefit from adrenalectomy.

Disclosure: All authors have declared no conflicts of interest.

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DOES PREVIOUS SURGICAL TRAINING IMPACT THE LEARNING CURVE IN VATS LOBECTOMY FOR TRAINEES?

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Objectives:

To evaluate if the number of open lung resection performed by trainees before starting video assisted thoracic surgery (VATS) lobectomy training program have any influence on intraoperative and postoperative results.

Methods:

prospective analysis of 46 consecutive patients (23 males; median age 67.3 years) who underwent VATS lobectomies between December 2011 and September 2012 by two trainees (AB and LO). The previous surgical background of the two trainees were analyzed in order to assess any difference in terms of learning curve. In group A (AB) 25 VATS lobectomies and in the group B (LO) 21 were performed respectively.

Results:

There was no statistical difference in terms of operating time and intra-operative bleeding between the two groups ($p=0.16$; $p=0.6$): The conversion rate was 8% (2 out of 25 cases) in group A and 23.8% (5 out of 21 cases) in group B ($p=0.002$). Considering only the vascular injury there was no difference in the conversion rate: 8% in group A and 4.8% in group B ($p=0.56$). The median length of the drainage and of hospital stay were 4 days and 7 days in group A and 4 days and 8 days in group B respectively ($p=0.36$ and $p=0.24$). The complication rate was 44% in group A and 47.6% in group B ($p=0.52$). AB performed 139 and LO 70 operations as first operator before starting their VATS lobectomy training, the surgical experience had an impact only on the conversion rate. In group A there was a statistical difference in terms of operating time between the first 10 cases and the second 15 cases ($p=0.02$), but there was no difference in group B ($p=0.13$).

Conclusions:

Our study showed that a training program in VATS lobectomy is feasible, and previous surgical training shows a minimal impact on intraoperative and postoperative results.

Disclosure: All authors have declared no conflicts of interest.

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PROGNOSTIC ROLE OF CLINICO-MORPHOLOGICAL FACTORS

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Objectives:

30-60% of patients with early stages of Non-small cell lung cancer have disease progression after operation. Molecular-genetic markers can help to select patients with worse prognosis for additional treatment. The aim of our study was to investigate prognostic role of clinico-morphological factors and molecular markers.

Methods:

Since 2008 to 2011 years we treated 179 patients with I-II stage of Non-small cell lung cancer. All patients received surgical treatment. Immunohistochemical assessment of tumor was performed after operation. The relationship between cancer specific survival and various potential prognostic factors were analyzed with the help of Cox proportional hazards model (table 1). Table 1. Relationship between cancer specific survival and different potential prognostic factors

Factors	Category	Hazard ratio	p value
Sex	Male vs Female	1,39	0,16
Age	from 42 to 77 year	-0,25	0,79
Size of the tumour	from 1,5 to 14 cm	2,8	0,004
Location of the tumor	Right lung vs left lung	0,14	0,88
Stage	I vs II	0,24	0,71
Histological types	Squamous vs nonSquamous	0,3	0,01
T status	T1 vs T2-3	0,49	0,62
N status	N0 vs N1	1,03	0,29
Grade	G1 vs G2	0,03	0,96
P53 expression	From “+” to “+++”	6,28	<0.001
Ki-67	≥25% vs <25%	2,73	0,006
CD31	from 14 to 156 micro vessels	3,2	0,001
E-cadherin	positive vs negative expression	-0,54	0,58
HER2/Neu	positive vs negative expression	-0,88	0,38
EGFR	positive vs negative expression	-0,47	0,64

Results:

There is no relation among sex, age, location of tumor, stage, T status, N status, grade, E-cadherin, HER2/Neu, EGFR expression of tumor and survival of patients with early (I-II) stage of Non-small cell lung cancer. Most important prognostic factors are size, histological type of tumor and expression of p53, Ki-67, CD-31.

Conclusions:

TNM classification of Non-small cell lung cancer must be updated considering molecular characteristics of the tumor.

Disclosure: All authors have declared no conflicts of interest.

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TRAIL GENE POLYMORPHISM IS ASSOCIATED WITH THE RISK OF NON-SMALL CELL LUNG CANCER IN STAGE IIB-IIIb PATIENTS

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Objectives:

Apoptosis is a fundamental biochemical cell-death pathway essential for normal tissue homeostasis, cellular differentiation, and development. TNF-related apoptosis inducing ligand (TRAIL) is important critical protein in extrinsic and intrinsic pathways of apoptosis. Activation of the tumor necrosis factor-related apoptosis-inducing ligand (TRAIL) receptor pathway is a promising therapeutic strategy to selectively eradicate cancer cells, including non-small cell lung cancer (NSCLC) cells. The aim of this study was to investigate the susceptibility and prognostic implications of the TRAIL in the non-small cell lung cancer.

Methods:

We investigated a single nucleotide polymorphism (SNP) in the 3-untranslated region of the TRAIL gene at position 1595 exon 5 in patients with non-small cell lung cancer who underwent resectional surgery between April 2011 and December 2012. We used PCR, RFLP and gel electrophoresis techniques to detect these polymorphism in 87 non-small cell lung cancer patients and 87 healthy controls.

Results:

We found no association between TRAIL genotypes and susceptibility of non-small cell lung cancer. The frequencies of the CC, CT and TT genotypes were 60.9%, 25.3%, 13.8% in NSCLC cancer patients and 55.2%, 36.8%, 8% in healthy controls, respectively. There were no association between tumor stages, lymph node metastasis and TRAIL genotypes ($p > 0.05$) but we found an increased risk in subjects carrying CT genotypes in stage IIB-IIIb patients.

Conclusions:

TRAIL polymorphism may not be associated with susceptibility to NSCLC.

Disclosure: All authors have declared no conflicts of interest.

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VIDEO ASSISTED THORACIC SURGERY (VATS) LOBECTOMY. THE COPENHAGEN EXPERIENCE WITH 1165 CASES

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Objectives:

Despite the introduction of Video Assisted Thoracic Surgery (VATS) Lobectomy more than 2 decades ago, widespread acceptance of the procedure is not yet achieved. We present the surgical outcome, complication and mortality rates of the largest series of VATS lobectomies in Europe thus far.

Methods:

Data were obtained from a prospective institutional database consisting of 1165 consecutive VATS lobectomies from October 22nd. 1999 until December 31st. 2012. Data collection included age, gender, FEV1, co-morbidity, final histology, pathological TNM classification, operating time, intra-operative bleeding, drain time, in-hospital stay, blood transfusion, conversion rate, complications and 30-day mortality rate. VATS lobectomy was performed with a standardized 3 port anterior approach (except the first 50 cases where a 4 port posterior approach was used), strictly monitor based with individual division of the hilar structures and no use of a rib retractor. Data were expressed as median and range or percentage.

Results:

VATS lobectomy were performed in 625 females and 540 males with an age of 66 (7-90) years, FEV1 2.1 (0.89-5.12) l/min. Diagnosis were benign disease 54(4.6%), pulmonary metastases 78 (6.7%) and lung cancer 1033(88.6%). Conversion rate was 4.6 %. Operating time 120(40-360) min, intra-operative bleeding 100(5-1900) ml, drainage time 3(0-101) days and in-hospital stay 4(1-65) days. Blood transfusion rate was 4,8%. In 67% of cases there were no complications. Minor complications occurred in 36%and major complications in 11%. The 30.day mortality rate was 0.6%.

Conclusions:

VATS lobectomy is a safe procedure that can be performed with acceptable morbidity and mortality rates.

Disclosure: R.H. Petersen: Consultant Covidien, travel grant Takeda

H.J. Hansen: Consultant Covidien, travel grant Takeda.

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CT-GUIDED PERCUTANEOUS TRANSTHORACIC LOCALIZATION OF SMALL PULMONARY NODULES PRIOR TO VIDEO-ASSISTED THORACOSCOPIC SURGERY USING BARIUM SUSPENSION

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Objectives:

This study was performed to evaluate the effectiveness of CT-guided percutaneous barium marking prior to video-assisted thoracic surgery (VATS) for localization of small pulmonary nodules, which are difficult to palpate.

Methods:

From October 2010 to December 2012, 56 patients with small pulmonary nodules who were scheduled to undergo VATS resection were enrolled. A 140% barium sulfate suspension was injected percutaneously with 21-gauge needle around the nodule under guide of CT. During VATS operation, we utilized fluoroscopy to detect the injection barium suspension.

Results:

The size of targeted nodules was ranged from 3mm to 24mm and average size was 9.79 ± 3.90 mm. Injected volume of barium suspension was average 0.19 ± 0.07 cc but intraoperative detection of barium was failed in 3 patients owing to barium dispersion. Regardless of barium dispersion, all nodules were successfully resected by VATS and open conversion to detect the lesion was not necessary. Among them 31 nodules were pure ground glass opacity (GGO) and 17 nodules were mixed GGO while 8 nodules were solid in its character on preoperative CT scan. Pathology revealed 16 invasive adenocarcinomas, 17 adenocarcinoma-in-situ, 11 atypical adenomatous hyperplasias, 6 metastatic carcinomas from extrapulmonary malignancy and 6 benign lesions. Whilst procedure related pneumothorax was developed in 6 patients, additional procedure was not indicated.

CT findings	Number of cases
Solid	
Benign nodule	2
Pulmonary metastasis of extrapulmonary cancer	6
Pure GGO	
Benign nodule	3
Atypical Adenomatous Hyperplasia	7
Adenocarcinoma in situ	10
Adenocarcinoma	11

Mixed GGO	
Benign nodule	1
Atypical Adenomatous Hyperplasia	4
Adenocarcinoma in situ	7
Adenocarcinoma	5
Total	56

Conclusions:

Preoperative CT-guided barium marking is safe, convenient and effective localization procedure prior to VATS resection. It enables accurate minimal invasive resection and diagnosis of faint or small subcentimetre nodules that are difficult to palpate under limited approach of VATS.

Disclosure: All authors have declared no conflicts of interest.

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CHEST X-RAY PRIOR TO DISCHARGE AFTER VATS ANATOMICAL PULMONARY RESECTION. FRIEND OR FOE?

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Objectives:

We aimed to evaluate the benefit of a chest X-ray in clinically fit patients prior to discharge from hospital after a VATS anatomical resection. Will possible early detection of complications outweigh potential overtreatment? Do thoracic surgeons and chest physicians differ in their interpretation of these X-rays?

Methods:

A retrospective chart study was performed of all elective VATS anatomical resections between January and November 2012 (N= 86). A chest X-ray was taken in 35 patients deemed clinically fit for discharge. Since these X-rays were intended as a baseline for follow-up, they were not viewed during the hospital stay. Whether an in-hospital baseline X-ray was performed was not protocolised. All X-rays, demographics, procedural details and 30-day follow up were retrieved. No significant differences were found between the 35 and the remaining 51 patients. Two chest physicians and 2 thoracic surgeons were asked whether they would discharge a patient based on their X-ray, considering there were no clinical contra-indications. Sensitivity and specificity for predicting complications were calculated per physician. To assess inter-observer agreement Cohen's Kappa was calculated.

Results:

During 30-day follow-up one bronchopleural fistula and one pneumothorax occurred. Thoracic surgeon 1 scored a sensitivity of 100% detecting patients with complications, specificity of 58%. Thoracic surgeon 2; sensitivity 0%, specificity 97%. Kappa -0.165 (no agreement). Chest physician 1: sensitivity 50%, specificity 85%. Pulmonary medicine resident: sensitivity 100%, specificity 79%. Kappa 0.236 (fair agreement). The generalised Kappa, estimating agreement among the four was 0.163 (slight agreement).

Conclusions:

Varied sensitivity rates and only slight agreement between physicians were found based on their chest X-ray. In our retrospective series, a chest X-ray, therefore, is an unreliable tool to predict complications. This, combined with the low specificity, potentially resulting in unnecessarily prolonged hospital stay and possibly overtreatment make a chest X-ray in a clinically fit patient a foe.

Disclosure: All authors have declared no conflicts of interest.

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LUNG CANCER MIMICKING ORGANIZING PNEUMONIA – A NOVEL RADIOLOGICAL ENTITY OF PULMONARY MALIGNANCY

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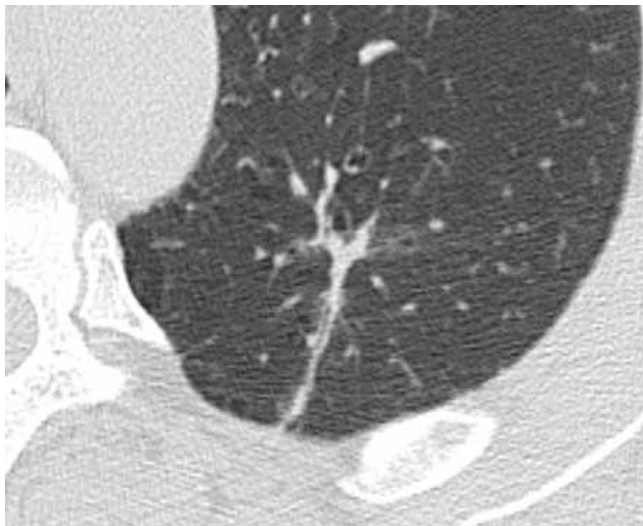
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Objectives:

Classification of radiological findings of lung cancer on computerized axial tomography (CAT) is consisted with three groups: ground glass opacity (GGO), consolidation, and mixture. On the other hand, there are some lung cancers not belonging to any of those categories. Some of the lung cancers could be misdiagnosed as organizing pneumonia. Clinicopathological features of these lung cancers were unknown.

**Methods:**

A retrospective study was conducted on 862 lung cancers resected between 2008 and 2011. Thin-section CAT scans were available for all cohorts, which were reviewed by authors (TI, MT, MF, KS). Finally 13 cases were found to be lung cancer like organizing pneumonia (LCOP). The criteria are as follows: (a) irregular shape, (b) reticular pattern, (c) surrounding GGO, (d) extension along broncho-vascular tree toward hilum. All of 13 cases are adenocarcinoma, and we compared LCOP and other adenocarcinoma of the lung (n=551). The relationship between LCOP and other adenocarcinomas were evaluated using the chi-square test and

Fisher's exact test. The medical record of each patient was examined to operated age, gender, pack-year smoking, preoperative serum carcinoembryonic antigen (CEA) level and diameter of tumors. P-value <0.05 was considered statically significant.

Results:

Among 13 LCOP, four were men. The median age was 70 years. Six patients followed up more than one year because those lesions were misdiagnosed as organizing pneumonia. Tumor doubling time ranged from 233 to 10297, with a median of 526 days. Preoperative CEA was significantly high, and maximum tumor dimension was significantly big for LCOP (P=0.025 and 0.001 respectively). There were no vascular invasion and only one lymphatic invasion pathologically. One lymph node metastasis to N2 node was found.

Conclusions:

Basically LCOP were less invasive, and long tumor doubling time. However, nodal metastasis could be found. Radiological diagnosis based on the findings of CAT scan is inevitable to avoid delay in diagnosis.

Disclosure: All authors have declared no conflicts of interest.

P-143

ADEQUACY OF VIDEO-ASSISTED MEDIASTINAL LYMPHADENECTOMY FOR STAGE I NON-SMALL CELL LUNG CANCER

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Objectives:

The rationale of this study was to compare the efficiency of video-assisted thoracic surgery (VATS) mediastinal lymph node dissection (MLND) and MLND by thoracotomy for stage I NSCLC.

Methods:

Retrospective study on 50 cases of MLND and lobectomy by VATS for clinical stage I NSCLC and a matched group of patients undergoing open MLND and lobectomy. Total number of resected lymphnodes, resected lymphnodes per station and postoperative outcome were compared between both groups after matching for age, gender, clinical stage of NSCLC and type of lobectomy.

Results:

Patients' median age was 64 years (VATS: 49-86; open: 47-84) and 40% of patients were female. Clinical stage was cT1a in 72% and 68% (VATS: 36; open 34), cT1b in 28% and 32% (VATS: 14; open: 16). 50% of patients underwent right-sided lobectomies and 60% and 64% had upper lobectomies (VATS: 30; open: 32). Median numbers of removed lymph nodes were 19.5 (range 6-55) in the VATS group and 18 (range 6-40) in the open group. Right-sided VATS lymphadenectomy resulted at station 2R/4R in 6 (median; range 1-25) (open 5.5; 0-28; ns) at station 7 in 7(2-23) (open 4.5; 1-11; ns) and at station 8/9 in 1(0-4) removed nodes (open 1; 0-4; ns) On the left side VATS lymphadenectomy resulted at station 5 and 6 in 4(median; range 1-12) (open .4; 1-12; ns), at station 7 in 7(2-21) (open 4.5, range 1-14;ns) and at station 8/9 in 1 (0-6) dissected lymph nodes (open 1; 0-7). Pathological upstaging (pN1; pN2) was found in 9 patients (18%) after VATS MLND, and 8 (16%) after open MLND, respectively.

Conclusions:

VATS MLND results in an equal number of dissected lymph nodes as compared to MLND by thoracotomy. The implementation of a VATS lobectomy program does not influence the extent of mediastinal lymphadenectomy for stage I NSCLC.

Disclosure: All authors have declared no conflicts of interest.

P-144

DOES DRAIN TIP CULTURE PREDICT POSTOPERATIVE INFECTIONS IN LUNG CANCER SURGERY?

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Objectives:

Postoperative infection is one of the most frequently observed complications following lung resection and should be addressed in perioperative management. We routinely perform the drain tip culture in thoracic surgery for early detection of postoperative infection. This study evaluated the clinical significance of drain tip culture relevant to postoperative infection.

Methods:

From September 2002 to December 2011, a total of 1438 patients who underwent lung cancer surgery in Shizuoka Cancer Center Hospital were evaluated. Postoperative infections (i.e., surgical site infection [SSI], postoperative pneumonia, and postoperative empyema without fistula) were defined as those occurring within 30 days of thoracotomy.

Results:

Postoperative infections developed in 84 (5.8%) of the 1438 patients. There were 42 (2.9%) SSI cases, 36 (2.5%) pneumonia cases, and 13 (0.9%) empyema cases. The sensitivity, specificity, and positive predictive value (PPV) of drain tip culture were 23%, 98%, and 41.3%, respectively. On univariate analysis, the following factors were significantly associated with the development of postoperative infections: age ≥ 70 , presence of smoking history, co-existing diabetes mellitus (DM), FEV1.0% < 70 , anatomical resection, blood loss > 77 ml, operation time > 250 min, and positive drain tip culture. Multivariate analysis demonstrated that the independent risk factors associated with the development of postoperative infections are co-existing DM ($p=0.022$) and positive drain tip culture (Odds ratio (OR)=10.08, $p<0.001$), in association with SSI is positive drain tip culture (OR=7.8, $p<0.001$), in association with pneumonia are age of ≥ 70 years ($p=0.003$), co-existing DM ($p=0.002$), and positive drain tip culture (OR=5.0, $p=0.002$), and in association with empyema is positive drain tip culture (OR=30.5, $p=0.002$).

Conclusions:

Positive drain tip culture strongly predicts postoperative infection in lung cancer surgery and is useful for early detection of postoperative infection.

Disclosure: All authors have declared no conflicts of interest.

P-145

FACTORS INFLUENCING MALIGNANT EVOLUTION OF BENIGN SOLITARY PLEURAL FIBROUS TUMOURS

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Objectives:

Solitary Pleural Fibrous Tumor (SPFT) is a relatively uncommon neoplasm with a difficult therapeutic management because it is well known that some primary benign tumors can develop a malignant relapse. The objective of this investigation is to identify variables predicting this aggressive behavior in a series of primary benign SPFT tumors.

Methods:

Retrospective, observational study of 16 cases of benign SPFT operated on in a single thoracic unit between July 1995 and March 2011. Samples were studied for histological, immunohistochemical and cytogenetic (aCGH, FISH) characteristics. Clinical variables were retrieved from case records. Statistical analysis: relationship between variables and the occurrence of relapse were tested using comparative X2 test to calculate the odds ratio and its 95% confidence interval. If a positive relationship was found, a binary logistic regression model was developed using the statistically significant variables

Results:

13 females. Mean age: 57.4±16.6 years. Median survival time of the series was 155.7±18.6 months. Parietal pleural implantation of the primary tumor (X2=4.84; bilateral p= 0.02; OR: 0.235 95%CI (0.1-0.554)) and a high expression of mib1 (X2=14.7; bilateral p= 0.001; OR: 6 95%CI (1.03-35.9)) showed a statistical significant relationship with recurrence. In the binary logistic regression, both variables maintained their statistical significance (Table 1)

Variables	Wald T.	p	β	β95%CI
Parietal Pleura Implant	6.17	0.013	0.46	0.004-0.52
High MIB1 expression	4.42	0.035	9.02	1.16-70.02

Conclusions:

High risk of relapse is found in primary benign tumors that were localized in the parietal pleural and those with a medium high mib1 index so long-term follow-up is warranted to this patients. These findings have to be confirmed in larger series.

Disclosure: All authors have declared no conflicts of interest.



P-146

LUNG CANCER SURGERY CAUSES A PERMANENTLY DECREASED HEALTH RELATED QUALITY OF LIFE (HRQOL) IN LONG-TERM SURVIVORSIlkka Ilonen¹, V. Rauma², J. Räsänen², J. Salo²¹*Department Of Surgery, Päijät-Häme Central Hospital, Lahti/Finland,*²*Department Of Cardiothoracic Surgery, Helsinki university central hospital, Helsinki/Finland***Objectives:**

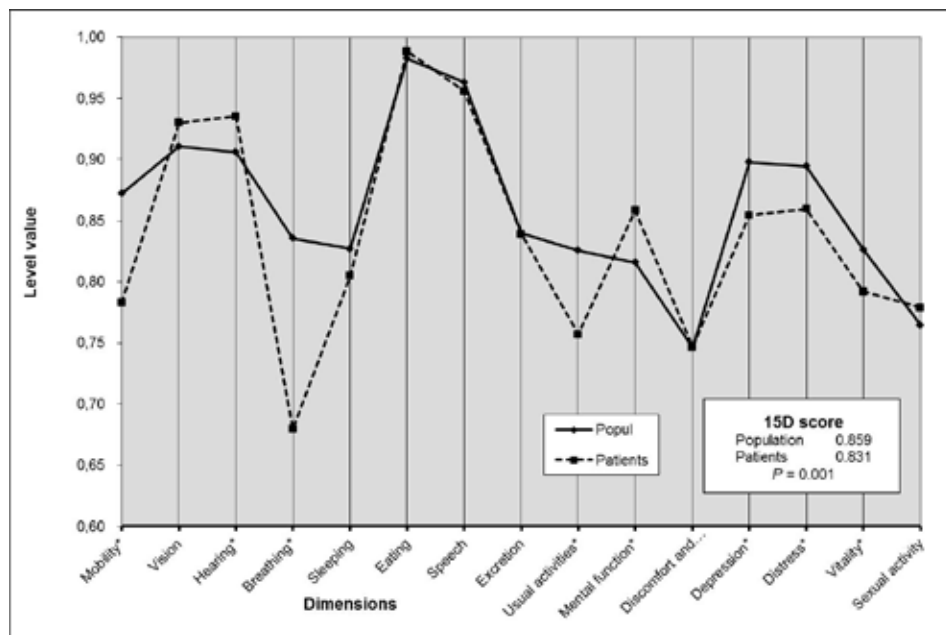
To retrospectively evaluate the long-term health related quality of life (HRQoL) and factors affecting to this, among patients operated for non-small cell lung cancer (NSCLC).

Methods:

A total of 586 patients were operated for NSCLC in the Department of Cardiothoracic surgery of the Helsinki University Hospital between January 2000 and June 2009. Two validated quality of life –questionnaires, the 15D and the EORTC QLQ-C30 with its lung cancer specific module QLQ-LC13, were sent to patients alive in June 2011. Results of the 15D were compared with those of an age- and gender-standardized general population. Patient and treatment features predicting higher or lower long-term HRQoL were identified.

Results:

Of the 276 patients who were sent the questionnaires, 230 (83.33%) answered. The median follow-up time was 4.85 years. When compared with the general population, our patient group had significantly lower scores in the 15D total score, representing the total HRQoL of the patients, and in the dimensions Mobility, Breathing, Usual activities, Depression, Distress and Vitality. The patient group scored significantly higher in the dimensions Hearing and Mental function. Features predicting lower long-term HRQoL were comorbidity, measured with the Charlson comorbidity index (CCI), post-operative complications and pre-operative FEV1 \leq 70% of the predicted value. Adjuvant-therapy was observed to predict higher long-term HRQoL.



Conclusions:

NSCLC patients suffer from permanently reduced long-term HRQoL compared to the age- and gender-matched normal population. Factors associated with reduced HRQoL were presence of comorbidity, postoperative complications and reduced FEV1-status preoperatively. The occurrence of complications was also associated with a significantly reduced survival rate. Adjuvant-therapy was associated with a higher HRQoL. Age and gender were not associated with significant differences in the total 15D-score or the QLQ-C30 global health score.

Disclosure: All authors have declared no conflicts of interest.

P-147

PLASMA PLATELET FACTOR 4 (PF4) AS PREDICTOR OF ANGIOGENIC ACTIVITY – DIAGNOSTIC AND PROGNOSTIC TOOL FOR EARLY STAGE NON-SMALL CELL LUNG CANCER (NSCLC)

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Objectives:

Angiogenesis is an important factor that has been shown to correlate with tumor malignancy and was demonstrated as a prognostic indicator for a wide range of cancers including NSCLC. PF4 is a chemokine involved in regulation of angiogenesis associated with tumorigenesis. Previous studies carried by our group suggest potential role of PF4 as useful diagnostic and prognostic biomarker in NSCLC.

Methods:

The study involved 20 patients with early stage NSCLC (I-II) who underwent radical pulmonary resection without adjuvant therapy between 2010 and 2011. Median follow-up time was 22 months. PF4 levels were determined by ELISA in peripheral blood samples collected from NSCLC patients prior to surgery and from 15 apparently healthy controls. The process of angiogenesis was assessed in resected tumor tissue samples by immunohistochemistry with additional staining for CD34 and determining total tumor vascularity (TTV).

Results:

There was no postoperative mortality. Overall survival rate was 95%. Nine patients (45%) had relapse. Median time to relapse was 13 months. Increased levels of PF4 observed in plasma samples of early stage NSCLC patients (13 pg/ml) compared to healthy controls (10.6 pg/ml) ($p=0.01$). There was strong positive correlation between TTV rate and PF4 plasma levels: $r=0.6$ ($p=0.002$). Analysis of histological subtypes showed stronger correlation in cases of adenocarcinoma – $r=0.84$ ($p=0.008$). Patients with no relapse had lower PF4 levels (mean 11.8 pg/ml) at the time of surgery than patients with relapse (mean 14 pg/ml) ($p=0.047$). More active angiogenesis was found in tumor tissue samples from patients with relapse (mean TTV rate 16.3 blood vessels per mm²) ($p=0.041$).

Conclusions:

The measurement of plasma PF4 concentrations could provide a useful way of diagnosing and monitoring patients with high risk of lung cancer development. Increased PF4 plasma levels in NSCLC patients undergoing treatment for NSCLC may indicate active cancer-induced angiogenesis associated with worse long-term outcome.

Disclosure: All authors have declared no conflicts of interest.

P-148

CARDIOPULMONARY EXERCISE TESTING – A USEFUL ADJUNCT IN
DECISION MAKING IN HIGH-RISK LUNG CANCER RESECTION SURGERY – A
TERTIARY REFERRAL CENTRE EXPERIENCE

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Objectives:

The ability of cardio-pulmonary exercise testing (CPEX) to predict post-operative morbidity and mortality for high-risk lung resections remains unclear. We evaluated our experience of using CPEX as a risk stratification tool in terms of in-hospital mortality and length of stay outcomes.

Methods:

A retrospective analysis, over a 24-month period, was performed on 96 patients with anatomically resectable lung cancer. They were deemed high-risk on performance status, clinical evaluation and lung function testing and were further risk stratified using CPEX testing.

Results:

34 of the 96 patients did not undergo surgery due to poor cardio-pulmonary function and functional status, a decision often supported by a High Risk MDT review. The mean VO2 max for the unoperated patients was 14.2 ml/kg/min (8.7-18.8). The remaining 62 patients underwent 35 (56.5%) lobectomies, 10 (16.1%) wedge resections, 5 (8.1%) bi-lobectomies and 12 (19.4%) pneumonectomies. The mean VO2 max was 16.34 ml/kg/min (10-25.8) in the surgical cohort, similar to the “safe level” in other reported studies. The mean DLCO (% predicted) in both groups was 60.

	Operated	Non-Operated
Mean VO2 max ml/kg/min	16.34 (10-25.8)	14.2 (8.7-18.8)
Mean VE CO2	35.4 (27-48)	38.6 (21-50)
Anaerobic Threshold L/min	0.83 (0.47-1.51)	0.74 (0.54-1.33)

In-hospital mortality was 5 (8.1%) for the surgical group with a median length of stay of 10.5 days (7.0-14.0 IQR).

Conclusions:

Our initial experience of CPEX testing has shown that it may provide additional physiological insight. In combination with conventional lung function testing, a High Risk MDT review, this can aid surgeons in decision making for high-risk surgery. We recommend the further embracement of CPEX into routine thoracic surgery practice, as a stratification tool in high-risk patients.

Disclosure: All authors have declared no conflicts of interest.

P-149

CARDIOMEGALY IS A SIGNIFICANT PREDICTOR FOR POSTOPERATIVE ATELECTASIS FOLLOWING LEFT SUPERIOR SEGMENTECTOMYYoshikazu Miyasaka, K. Suzuki, K. Takamochi, S. Oh*General Thoracic Surgery, Juntendo University School of Medicine, Tokyo/Japan***Objectives:**

Segmentectomy is increasing for small sized lung cancers tend to be found recently. Especially left upper superior segmentectomy (LUSS) is the most popular procedure in segmentectomy. Atelectasis is one of the common postoperative complications following segmentectomy. Atelectasis of lingular segment lifted following LUSS was frequent but not investigated sufficiently. In this study, we investigated to define atelectasis of lingular segment lifted following LUSS.

Methods:

Among 270 patients with segmentectomy of lung at our institute between February 2008 and August 2012, 60 patients underwent LUSS were investigated in retrospective study. The detecting and making an inter-segmental plane were following; resected segment inflation method were 57 and indocyanine green dye method were three, and, stapler were 41 and cautery were 19. The relationship between atelectasis of lingular segment and clinical factors was analyzed by multivariate analysis. Clinical factors were following; age, gender, body mass index, preoperative cardio/thoracic dimension ratio (CTR), preoperative forced expiratory volume in one second (FEV1), operative time, intraoperative bleeding, the method of making inter-segmental plane, the extent of lobe-separation, the interval of thoracic drainage.

Results:

Atelectasis of lingular segment was occurred in nine (15.0%) patients. Preoperative CTR was predictor for atelectasis of lingular segment. ($p=0.010$) Preserved FEV1.0 were 73.8% in atelectasis of lingular segment and 86.8% in control, respectively. There was significant difference. ($p=0.025$) Meanwhile atelectasis of middle lobe lifted following RUL was occurred in 10/238 (4.2%) within same term.

Conclusions:

Preoperative CTR was related to atelectasis of lingular segment. One of the merits of segmentectomy is postoperative preservation of respiratory function. However, in patients with cardiomegaly, preserved respiratory function following LUSS could be less than expectation.

Disclosure: All authors have declared no conflicts of interest.

P-150**CLINICAL SIGNIFICANCE OF NODAL STAGE MIGRATION IN LUNG CANCER – DATA FROM A VATS LOBECTOMY COHORT**

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Objectives:

To compare clinical nodal staging with pathological staging after VATS lobectomy and define its clinical significance.

Methods:

Retrospective analysis of a prospectively maintained database.

Results:

Between 2009 and 2012, 191 patients with lung cancer were scheduled for primary VATS lobectomy. Clinical staging was PET/CT scan in all patients and EBUS-TBNA or mediastinoscopy in patients with PET positive or enlarged mediastinal lymph nodes in the CT scan (29 patients, 15.2%). Clinical and pathologic nodal stages were identical in 127 patients (66.4%). Nodal downstaging occurred in 35 patients (18.3%). Nodal upstaging was found in 29 patients (15.3%); in patients with clinical N0 disease (cN0), pathologic workup revealed N1 disease in 15 patients and N2 disease in 10. In patients with clinical N1 disease, N2 positive lymph nodes were found in 4 patients. T-stage changed in 20 patients. In pN0 patients, survival and rate of tumor recurrence did not differ between patients with nodal downstaging (cN+pN0) and clinically nodal negative (cN0pN0) patients ($p=0.2246$; 15.6 vs. 10.6%, $p=0.5239$). Tumor recurrence rate was 13.3% for clinically nodal positive patients (cN+pN+) and 38% for patients with nodal upstaging (cN0pN+), $p=0.1624$. There was no difference in survival between these groups ($p=0.2830$). Sensitivity and specificity of clinical nodal staging was 0.301 and 0.765, respectively. Positive and negative predictive value was 0.271 and 0.797, respectively. Accuracy was 66.5%.

Conclusions:

Accuracy of clinical nodal staging with PET/CT is low. Nodal downstaging did not translate into inferior survival, indicating a proper surgical lymph node staging. We found nodal tumor invasion in 18% of cN0 patients. Adjuvant therapy was indicated for all these patients. Low sensitivity of PET/CT is a pitfall for noninvasive local treatment strategies for cN0 patients. We therefore advocate surgical therapy including nodal dissection for all patients with appropriate fitness for surgery.

Disclosure: All authors have declared no conflicts of interest.

P-151

EVALUATION OF METASTASES IN MEDIASTINAL LYMPH NODES BASED ON PET CT SCANNING IN NSCLC

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Objectives:

The aim of the study was to determine suitability of the new mediastinal lymph node evaluation models, based on Receiver Operating Characteristics (ROC) and Artificial Neural Networks (ANN) in predicting metastases to mediastinal lymph nodes on the basis of PET CT scanning in patients suffering from NSCLC.

Methods:

Data of 150 NSCLC patients (467 groups of lymph nodes) treated in thoracic surgery department, were analyzed retrospectively. Metastases to mediastinal lymph nodes were suspected on the basis of PET CT scan images and confirmed with EBUS TBNA, mediastinoscopy or limfadenectomy during thoracotomy. A database containing clinical and radiological data on mediastinal lymph nodes was created. Single factor prognostic models based on Receiver Operating Characteristics and multidimensional model based on Artificial Neural Networks were created. Clinical suitability of the created prognostic models was described with Area Under Curve (AUC) and basic measures of tests: sensitivity, specificity positive predictive value (PPV), negative predictive value (NPV), accuracy (ACC). Models were verified in prospective study consisting of 26 patients (80 groups of lymph nodes).

Results:

Results table.

	PPV	NPV	ACC	Sensitivity	Specificity	AUC
single factor diagnostic models						
weight > 1 cm	0,94	0,17	0,91	0,93	0,84	0,94
SUV > 2,8	0,79	0,01	0,92	0,97	0,90	0,97
length > 1,6 cm	0,78	0,13	0,85	0,62	0,93	0,84
volume 1,26 ml	0,79	0,07	0,89	0,81	0,92	0,92
multidimensional models						
1-st ANN model retrospective	0,91	0,03	0,95	0,92	0,96	0,99
2-nd ANN model retrospective	0,89	0,21	0,95	0,95	0,96	0,99
1-st ANN model prospective	1,00	0,29	0,94	0,93	1,00	X
2-nd ANN model prospective	1,00	0,40	0,90	0,88	1,00	X

Conclusions:

Prognostic models created on the basis of Artificial Neural Network and Receiver Operating Characteristics, using clinical and radiological information reveals a similar sensitivity. Multi-dimensional models (ANN) reveal a greater accuracy and specificity than single factor diagnostic tests (ROC). Prospective verification of the elaborated anticipating models revealed similar accuracy as in the retrospective group.

Disclosure: All authors have declared no conflicts of interest.

P-152

LUNG CANCER IN PATIENTS WITH TUBERCULOSIS

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Objectives:

Coexistent pulmonary tuberculosis and lung cancer is rarely encountered in western countries. However, it is more common in developing countries. In this study we aimed to share the diagnostic and treatment approaches.

Methods:

Between February 2006 and December 2012 lung resection was performed on 1266 patients due to non-small cell lung cancer. Seventeen of these patients had concurrent active tuberculosis. Patients' characteristics, operation, methods, pathologies, postoperative complications, stages, treatment and survival time were analysed.

Results:

Eleven of the patients had squamous cell carcinoma and six of them had adenocarcinoma. Mean age was 54.9. Two of the patients were receiving the antituberculosis treatment before the operation. Fifteen of them were given the treatment after the operation. Concurrent chemotherapy and radiotherapy was given to 11 of the patients after 20 days of antituberculosis treatment. Nine (52.9%) of the operated patients had centrally located tumors, while eight (47%) of them had periferally located ones. Stage IB cancer was diagnosed in three (17.6%), stage IIB in five (29.4%) and stage IIIA in nine (52.9%) patients. Pneumonectomy was performed in four (23.5%), sleeve lobectomy in three (17.6%), lobectomy in eight (47%), bilobectomy in two (11.7%) patients. Postoperative surgical complications were observed in four (23.5%) patients. Bronchopleural fistula occured in only one patient. No postoperative mortality was detected. Mean survival time was 32±2 months.

Conclusions:

The incidence of tuberculosis accompanied with lung cancer is highly unlikely in thorax surgery practice. To prevent the patient from potential morbidities, the timing of the surgery and adjuvant chemotherapy is important in patients with active tuberculosis or patients who were diagnosed as tuberculosis after the operation. In developing countries like our country where tuberculosis disease is common, determining the optimum treatment present difficulties.

Disclosure: All authors have declared no conflicts of interest.

P-153

VATS LOBECTOMY FOR STAGES II AND III NSCLC: COMPARISON OF OUTCOMES WITH STAGE I DISEASE

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Objectives:

Our unit is enthusiastic about VATS lobectomy and believe there are few contraindications to attempting the VATS approach for lung cancer resection. We compared clinical outcomes of VATS resection between early and advanced lung cancer to explore the suitability of VATS for stages II and III disease.

Methods:

Prospective data was collected for 200 patients (87 (43.5%) VATS and 113 (56.5%) thoracotomy) who underwent lobectomy for NSCLC between October 2008 and October 2012. We compared the outcome for VATS for early (Stage I, n=68) versus advanced (Stage II, III, n=19) lung cancers.

Results:

Median age was similar in both groups early versus advanced 67.5(48-85) versus 71(51-85) years (p=0.52). Mean pre-operative FEV1 was early 85±18% versus 80±25% (p=0.41). There were no significant differences between groups for median post-operative drain duration 4(2-42) versus 3(2-22) days (p=0.75) and median length of stay 6(3-56) versus 5(3-69) days (p=0.66). One early stage patient had a in situ carcinoma at bronchial resection margin. In-hospital mortality was 1 (1.5%) for early tumors and 2 (10.5%) for advanced tumors (p=0.056).

Conclusions:

We believe that it is possible to achieve comparable early post operative outcomes for stage II and III nsclc as with stage I with VATS. With increasing experience the contraindications for a VATS approach are getting fewer and fewer.

Disclosure: All authors have declared no conflicts of interest.



P-154

SPLIT-LOBE RESECTIONS VERSUS LOBECTOMY FOR LUNG CARCINOMA OF THE LEFT UPPER LOBE: A PAIR-MATCHED CASE-CONTROL STUDY

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Objectives:

Segmentectomy is indicated for peripheral small lung carcinoma up to 2 cm diameter confined to one segment, and / or in patients unable to tolerate a lobectomy. The left upper lobe can be divided easily into an upper (segments 1 - 3) and lingular (segments 4 and 5) segmental group, facilitating sublobar resections that are probably appropriate for tumours of larger diameters and unfavourable localisation.

Methods:

This study compares 22 consecutive split- lobe resections to 44 pair-matched left upper lobectomy controls with regard to clinical and oncological outcome.

Results:

Split-lobe and lobectomy groups had equal tumour diameters (22,5 (11-63) mm vs. 25 (7-68) mm) and identical pN stages (pN0 77.3%, pN1 9.1%, pN2 9.1%, ypN0 4.5%), a similar clinical course despite lower pre-OP FEV1 and higher co-morbidity in the split-lobe group, and similar long-term overall (0,904 vs. 0,821 at 5 years) and disease-free survival (0,854 vs. 0,609 at 5 years).

Conclusions:

Left upper lobectomy might be an overtreatment for lung carcinoma resectable by split-lobe procedures. Larger confirmatory studies are necessary.

Disclosure: M. Huertgen: Storz, Tuttlingen, Germany - consultant

Wolf, Knittlingen, Germany - consultant

All other authors have declared no conflicts of interest.

P-155

MEDIASTINOSCOPY AND VIDEO-ASSISTED MEDIASTINOSCOPIC LYMPHAD-ENECTOMY CAN BE PERFORMED ON AN OUTPATIENT BASIS: A CLINICAL COHORT OF 625 PATIENTSA. Demirkaya, Akif Turna, S. Ozkul, B. Kilic, K. Kaynak*Department Of Thoracic Surgery, Istanbul University Cerrahpasa Medical Faculty, Istanbul/Turkey***Objectives:**

Mediastinoscopy has been accepted as a gold standard tool for preoperative mediastinal staging. Despite rarely, complications may develop following mediastinoscopy including bleeding, pneumothorax and dysphonia. We analyzed our patients cohort in order to find out if a short period of postoperative observation is appropriate in patients who underwent mediastinoscopy

Methods:

A total of 625 patients who underwent cervical mediastinoscopy including 41 video-assisted videomediastinoscopic lymphadenectomy (VAMLA) in our institution between January 2004 and September 2011 were retrospectively reviewed. Three-hundred-fifty-one mediastinoscopy (58.2%) were performed for mediastinal staging whereas 218 (36.1%) were accomplished for mediastinal lymph node diagnosis. We analyzed the patients who were operated in the early period (2004-2008) and the patients who had undergone mediastinoscopy in the recent period (2008-2011)

Results:

There was no mortality. Three-hundred-seventy-five patients (60.0%) could be discharged home on the same day of operation (Substitution index: 60.0%). Sixty-nine of 185 patients (37.2%) in the early period were operated in outpatient basis, whereas in the recent years (2008-2011) 331 out of 440 patients (75.2%) were discharged without hospitalization. The increase in substitution index was found to be statistically significant ($p < 0.001$). Five patients had major complication (0.8%). Of these only one patient (0.016%) needed re-admission

Conclusions:

Mediastinoscopy and VAMLA resulted very low rate of complication and the complications develop in the same day. Hospitalization of these patients seems unnecessary and these procedures could be performed on an outpatient basis. This approach should decrease the hospitalization cost while raising the patients' satisfaction

Disclosure: All authors have declared no conflicts of interest.

P-156

A PROSPECTIVE RANDOMIZED TRIAL COMPARING HETEROLOGOUS AND AUTOLOGOUS FIBRIN SEALANTS FOR THE CONTROL OF ALVEOLAR AIR LEAK

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Objectives:

Vivostat is an autologous fibrin sealant that confers elastic properties, faster absorption time and the absence of risk of transmission of blood-borne diseases. Tisseel is an heterologous fibrin sealant used as an adjunct to hemostasis in surgeries involving cardiopulmonary bypass. The objective of this prospective study was to compare heterologous and autologous fibrin glues in the control of postoperative air leak.

Methods:

We conducted a randomized, single blind controlled study. Primary endpoints were duration of air leak, time to chest tube removal, and length of hospital stay. Secondary endpoint was to compare postoperative complications. We also aimed to investigate the role of digital air leak flow measurement in the prediction of prolonged air leak.

Results:

Between May 2011 and May 2012, 41 patients were randomized. The analysis included 40 patients 33 male (82.5%) and 7 female (17.5%). Mean age was 53.2 years. Indications for surgery were primary lung cancer in 23 patients (57.5%), pulmonary metastasis in 3 patients (7.5%) and 14 patients (35%) underwent surgery for benign disease. Median duration of air leak was 3 (0 to 8) days versus 3 (2 to 8) days for Tisseel and Vivostat groups respectively ($p=0.758$). Median hospital stay was 34 (1 to 8) days versus 4 (3 to 9) days for Tisseel and Vivostat groups respectively ($p=0.825$). There was no significant difference in the incidence of complications between two groups ($p=0.756$). Whereas the mean air leak flow 162.0 ml/min versus 72.8 ml/min in Tisseel and Vivostat applied patients respectively ($p=0.289$). An algorithm could be constructed to predict chest tube removal using air leak measurement ($AUC=0.9$, $p=0.720$ for ROC analysis)

Conclusions:

Heterologous and autologous fibrin sealants seem to be equally effective in air leak control. Digital air leak measurement could help to predict the day of chest tube removal in patients who had pulmonary resection.

Disclosure: All authors have declared no conflicts of interest.

P-157

SINGLE-PORT VATS LUNG VOLUME REDUCTION SURGERY FOR EMPHYSEMA: REDUCING SURGICAL TRAUMA DOES NOT COMPROMISE THE PROCEDURE

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Objectives:

Lung Volume Reduction Surgery (LVRS) is an effective symptomatic procedure for selected patients with end-stage emphysema. The improvement on surgical tools has led us to adapt a Single-Port technique instead of the standard 3-port VATS. We aimed to assess whether the procedure is compromised by the change.

Methods:

We reviewed all 24 patients [13 male and 11 female, median age 59 (range 43 to 76) years] undergoing LVRS under a single Consultant from 2010 to September 2012. The selection criteria for the operation and perioperative care were similar for the entire study period. We compared the patient's characteristics and perioperative data (number staplers, weight of specimen, duration of drainage and hospitalization, postoperative analgesia) between the first 15 patients (3-Port VATS) to the latest 9 cases (Single-Port VATS).

Results:

There were no perioperative deaths and no need for reoperations, mechanical ventilation or readmission to the intensive Care Unit. None of the procedures were converted to open surgery. Age, FEV1, TLCO, heterogenicity and Shuttle Walk Tests were similar between the two groups. The use of staplers (median of 9 vs 10) and weight of the specimen (median of 86 vs 94 grams) were also similar ($p=ns$). Postoperative Pain scores measured at different times at day 1 and 2 after surgery were also similar as well as usage of epidural analgesia. Although not statistically significant due to the early experience, Single-Port VATS LVRS was associated with a shorter hospital stay (median of 7 vs 11 days, $p=0.1$).

Conclusions:

Progressing into a Single-Port VATS technique has not resulted in any compromise of the LVRS procedure or increased use of resources. With a larger experience the postoperative hospital stay might be reduced further.

Disclosure: All authors have declared no conflicts of interest.

P-158

REAL-TIME DATABASE DRAWN FROM ELECTRONIC HEALTH RECORD FOR A THORACIC SURGERY UNIT: HIGH QUALITY CLINICAL DATA SAVING TIME AND HUMAN RESOURCESMichele Salati, C. Pompili, M. Refai, F. Xiumè, A. Sabbatini, A. Brunelli*Division Thoracic Surgery, Ospedali Riuniti Ancona, Ancona/Italy***Objectives:**

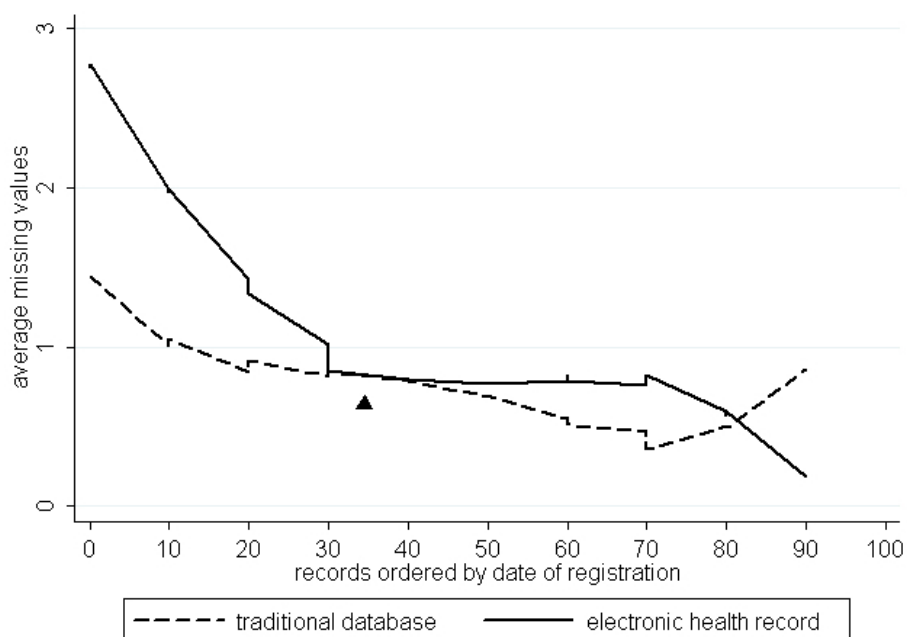
The aim of the present study was to verify if the implementation of an Electronic-Health-Record (EHR) in our thoracic surgery unit allowed to create a high quality clinical database saving time and costs.

Methods:

Before August 2011, multiple physicians compiled the on-paper documents/records and a single data manager imputed selected data into the database (traditional-tDB). Since the adoption of an EHR in August 2011, the four staff surgeons are responsible to compile the EHR, which automatically generates a real-time database (eDB), without the need of a dedicated data manager. Data quality of the first 100 anatomic lung resections recorded in the eDB was assessed by measuring the total number of missing values (MV: existing non-reported value) and inaccurate values (wrong data) occurring in 95 core variables. The average MV of the eDB was compared to the one occurring in the same variables of the last 100 records registered in the tDB. A learning curve was constructed by plotting the number of MV in the electronic and traditional databases with the patients ordered by date of registration.

Results:

The tDB and eDB had similar MV (0.74 vs. 1, $p=0.13$). The learning curve (Figure 1) showed an initial phase including about 35 records, where MV in the e-DB was higher than in the tDB (1.9 vs. 0.74, $p=0.03$), and a subsequent phase, where the MV was similar in the two databases (0.7 vs. 0.74, $p=0.6$). The inaccuracy rates of these two phases in the eDB were stable (0.5 vs. 0.3, $p=0.3$). Using EHR saved an average of 9 minutes per patient, totaling 15 hours saved for obtaining a dataset of one hundred patients with respect to the tDB.

**Conclusions:**

The implementation of EHR allowed streamlining the process of clinical data recording. It saved time and human resource costs, without compromising the quality of data.

Disclosure: All authors have declared no conflicts of interest.



P-159

REOPERATIVE PULMONARY RESECTION-IS THERE ANY BENEFIT FOR A MINIMALLY INVASIVE APPROACH?

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Objectives:

The aim of this study is to clarify the outcome of reoperative pulmonary resection either by a thoracotomy or a thoracoscopy.

Methods:

Between January 2000 and December 2009, 144 patients underwent pulmonary resections for benign and malignant nodules were performed on reoperative chests at our institution and evaluated retrospectively. Twenty patients underwent attempted reoperative video-assisted thoracoscopic surgery (VATS), 124 patients underwent reoperative thoracotomy upfront. Clinical parameters were analyzed with chi-square testing, Fisher's exact test, or Mann-Whitney test as appropriate.

Results:

Attempted reoperative VATS was completed in 14 patients (70%) and in multivariate analysis, a significant risk factor for intraoperative conversions was a previous mediastinal procedure ($p=0.0127$). Intraoperative conversion was not a significant factor for prolonged operation time ($p=0.13$), intraoperative bleeding ($p=0.67$), postoperative morbidity ($p=0.92$), prolonged hospital stay ($p=0.81$), or prolonged pleural drainage ($p=0.77$). Completed reoperative VATS showed significantly shorter operation time ($p=0.02$), but not a significant factor for intraoperative bleeding ($p=0.51$), lower postoperative morbidity ($p=0.13$), shorter hospital stay ($p=0.13$), or shorter pleural drainage ($p=0.051$). In multivariate analysis, VATS at first procedures was a significant factor of better postoperative morbidity ($p=0.0121$) and shorter hospital stay ($p=0.0047$) at reoperative pulmonary resection.

Conclusions:

Reoperative VATS is feasible and worth trying because intraoperative conversion was not a significant factor of postoperative morbidity. Of interest, not reoperative VATS but VATS at first procedures was a significant factor of better postoperative outcome at reoperative pulmonary resection.

Disclosure: All authors have declared no conflicts of interest.

P-160

“IS UK STILL IN THE EUROZONE?” VALIDATING AN OFF THE SHELF RISK SCORING SYSTEM - A PROSPECTIVE AUDIT

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Objectives:

Thoracscore is a risk stratification system that predicts In Hospital Mortality in patients undergoing thoracic surgery. The test population in the creation of the scoring system were from continental Europe. We investigate the use of Thoracscore in British patients who underwent lung resection in a prospective audit.

Methods:

We collected data from 125 consecutive patients in our unit over a period of 6 months. We calculated their predicted mortality pre-operatively using Thoracscore and compared it to our actual In Hospital Mortality (IHM).

Results:

We found that the average predicted mortality for all 125 patients was 1.77% compared to our actual IHM of 1.6% (2 patients). The table below shows a further analysis of subgroups within our patient population.

Comparison of Predicted mortality and IHM

	Number of patients	Predicted Thoracscore	In hospital Mortality	P-Value
All lung resections	125	1.77%	1.6%	0.877
Male	65	2.22%	0%	0.00
Female	60	1.27%	3.39%	0.367
Major Lung Resections	75	2.16%	2.63%	0.801
Minor Lung Resections	50	1.18%	0.00%	0.00
Malignant Disease	92	2.16%	2.17%	0.993
Benign Disease	33	0.7%	0.00%	0.00
Pneumonectomies	8	5.51%	12.5%	0.602
Other	117	1.52%	0.85%	0.44

Conclusions:

In our group of patients undergoing lung resections, we found that in the population as a whole the predicted mortality and actual mortality were similar. However, we found that Thoracscore underpredicts In Hospital Mortality in some subgroups. There are a variety of reasons, such as using risk prediction systems with small subsets of patients, changing risks for surgical procedures and finally the dangers of using summary data as opposed to real time Bayesian systems.



Overall we found that Thoracoscore is able to predict mortality accurately within our patient population in UK and can be safely and accurately used to quote predicted mortality to British patients undergoing thoracic surgery.

Disclosure: All authors have declared no conflicts of interest.

P-161

ENDOBRONCHIAL VALVES AND THE ROLE OF “LATENT” COLLATERAL VENTILATION

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Objectives:

Endobronchial valves (EBV) are a less invasive approach in the palliation of patients with emphysema. However, they are reliant on absence of collateral ventilation between pulmonary lobes for adequate functional outcome. Chartis catheters are used to confirm absence of collateral ventilation prior to valve implantation. We wanted to look into EBV failure in our practice.

Methods:

In a single surgeon practice, Chartis catheter assessment was performed in 19 patients and EBV implanted in 18 patients without collateral ventilation. Interval check bronchoscopy was performed in 10 patients (55.6% of patients) who failed to show persistent or adequate atelectasis or had recurrent symptoms with no clinical improvement.

Results:

Of the 10 patients who had a check bronchoscopy, 8 patients had endobronchial valves that continued to expel air on ventilation. In 7 (38.9%) of these patients the EBV positions were satisfactory (indicating there was collateral ventilation) and therefore all their EBV were removed. 1 patient (5.6%) had removal of one EBV as it had become partially dislodged resulting in reinflation and recurrent symptoms.

Conclusions:

The initial Chartis catheter assessment confirming absence of collateral ventilation was followed by successful implantation of EBV. However, subsequent failure in some patients (38.9%) suggests the presence and recruitment of “latent” collateral ventilation channels. There is a potential for discussion of alternative investigations before implanting valves to ensure higher success rates.

Disclosure: All authors have declared no conflicts of interest.

P-162

EMERGENT PNEUMECTOMY FOR LUNG GANGRENE – DOES THE OUTCOME WARRANT THE PROCEDURE?

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Objectives:

Sloughing and gangrene of a complete lung are only very infrequently encountered complications of necrotizing pneumonia and fulminant pulmonary abscess formation. Surgical intervention and particularly the role of emergent pneumectomy are controversially debated. Aim of this study was to investigate the outcome of surgical management with special regard to the results of emergent pneumectomy.

Methods:

In a retrospective review covering a study-period of 5 years at a German tertiary-referral-hospital the outcome of patients with anatomic lung resection for lung gangrene was analyzed. Only cases of necrotizing pneumonia were included whereas malignant lesions were kept out.

Results:

Overall 30 patients were identified (25 male, 5 female, average age 60.4 years). When a thoracic surgeon was consulted pulmonary sepsis (17/30), pleural empyema (20/30), persistent air leakage (10/30) and respiratory failure with mechanical ventilation (7/30) were already present. The mean Charlson index of comorbidity was 2.9. Procedures were segmentectomy (3), lobectomy (20) and pneumectomy (7). In-hospital-mortality was 6/30; 2 following pneumectomy and 4 after lobectomy. In comparing the pneumectomy group with the lobectomy group we found no significant differences in age ($p=0.54$), Charlson index of comorbidity ($p=0.46$) and postoperative mortality ($p=0.63$). Charlson index of comorbidity ≥ 3 (OR: 6.58; 95% CI: 0.60-353.41), preoperative pleural empyema (OR: 2.91; 95% CI: 0.26-157.26) and preoperative persistent air leak (OR: 5.59; 95% CI: 0.62-76.69) were associated with higher risk for fatal outcome. Furthermore patients with sepsis ($p=0.02$) and patients sustaining acute renal failure ($p=0.04$) had significant higher mortality.

Conclusions:

Pulmonary sepsis, sepsis associated complications and preexisting comorbidity are the major reasons for fatal outcome in case of necrotizing lung infections whereas the extent of surgical resection shows no significant influence. Emergent pneumectomy as ultimate ratio is not only justified but also life saving. Further improvement seems achievable by earlier surgical intervention before the onset of pulmonary sepsis.

Disclosure: All authors have declared no conflicts of interest.

P-163

VALIDATION OF BODE INDEX IN PREDICTION OF POSTOPERATIVE COMPLICATIONS AFTER PULMONARY LOBECTOMY: A PRELIMINARY STUDY

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Objectives:

BODE index (B body-mass index, O airflow obstruction, D dyspnea, E exercise capacity) is a well-documented, simple grading scale predicting risk of death due to respiratory and other causes among patients with chronic obstructive pulmonary disease. The aim of the study was to validate the applicability of BODE index in predicting early morbidity after pulmonary resections.

Methods:

Observational data of 87 patients who underwent lobectomy due to non-small cell lung cancer were analyzed. The influence of identified BODE index value 0 (n=53), 1 (n=27), 2 (n=7) on postoperative complications was evaluated. Each of components of BODE index scale were analyzed separately [predicted forced expiratory volume in 1 second, Medical Research Council (MMRC) dyspnea scale, distance walked in six minutes and body-mass index (BMI)].

Results:

Cardiac complications occurred more often in patients with higher BODE index (11,7% if BODE index exceeded 1 vs. 5.6% in BODE index 0 $p<0.01$). Consistently with original scale we identified higher pulmonary complications rate in patients with lower BMI (25% vs. 7% $p=0,035$). The complications occurred less common in patients with lower BODE index (28% - BODE index 0 vs. 44% BODE index 1 or more $p=0.199$). On the base of the power=0.8 and alpha level 0.05, the estimated group in which the difference could be calculated as significant is assumed for 299 patients. Higher value of MMRC dyspnea scale was associated with higher complication rate (29% for 0 vs. 48% in 1 or 2; $p=0,171$). The estimated group was accounted for 258 patients to prove the significant impact. Significant difference in pulmonary complications between BODE index 0 (11%) and more (23%) would be uncovered in group of 309 patients.

Conclusions:

BODE index, as well as its components, could be helpful in identification of patients with higher risk of postoperative complications.

Disclosure: All authors have declared no conflicts of interest.

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SURGERY OF DRUG RESISTANT CAVITARY PULMONARY TUBERCULOSISIgor Motus¹, E. Kildyusheva²¹*Thoracic Surgery, Urals Research Institute for Phthiopulmonology, Ekaterinburg/
Russian Federation,*²*Chemotherapy, Urals Research Institute for Phthiopulmonology, Ekaterinburg/
Russian Federation***Objectives:**

Objective. Cavitary pulmonary tuberculosis (CPTB) with persisting lung cavity often associated with drug resistance cannot be cured therapeutically and is the subject for surgical treatment. The aim of the study was to elucidate factors influenced on surgical treatment outcome of patients with drug-resistant CPTB.

Methods:

Methods. The data of 145 patients with CPTB underwent surgery and completed the treatment are presented. Multi- and extensive drug resistance (MDR/XDR) was in 124 and 21 patients respectively. The complex of measures to reduce the tuberculous activity and improve the general conditions of patients was undertaken. Namely, therapy based on drug susceptibility tests results was used in all cases; artificial pneumothorax and/or pneumoperitoneum was applied before operation in 51 patients to reduce the cavity size and pericavitary infiltration; nutrition and immune support was carried out. We performed 89 lobectomies, 35 pneumonectomies and 21 thoracoplasties.

Results:

Results. Postoperative complication rates and hospital mortality was 18,6% and 2,7% the highest being after pneumonectomies – 37,1% and 8,6% respectively. Sputum culture conversion was achieved in 111(76,5%) cases, namely in 97(78,2%) with MDR and 14(66,7%) with XDR. Conversion rates were significantly ($p<0,01$) lower in patients with failure of previous treatment and CPTB persisted more than two years (54,9%) than in new cases (88,3%). All cases of relapse were connected with interruption of the treatment. Of 64 patients followed more than 3 years 48(75,0%) have still negative sputum culture. In control group of 66 patients treated therapeutically 41(62,1%) remain still MBT positive ($p<0,01$).

Conclusions:

Conclusion. Surgical treatment is mandatory in drug-resistant pulmonary tuberculosis with persisting cavitary disease. Timely attempted operation can achieve satisfactory outcomes. Proper therapeutic support and patient's adherence to the treatment are of decisive importance.

Disclosure: All authors have declared no conflicts of interest.

P-165

EXPERIENCE WITH CLIPPING AND UNCLIPPING IN THE TREATMENT OF HYPERHIDROSIS AND FACIAL BLUSHING IN 200 PATIENTS

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Objectives:

Main cause of dissatisfaction after videothoroscopic sympathectomy (VATS-S) in the treatment of hyperhidrosis (HH) and facial blushing (FB) is compensatory sweating (CS). Theoretically Sympathetic Nerve (SN) clipping permits to revert the block effect by removing the clips. We present our experience with this technique.

Methods:

From January 2007 to December 2011, 200 patients diagnosed of HH and/or FB were treated by clipping of SN. Clipping levels were: in FB: R2; palmar HH: R3; axillary HH: R4; palmar-axillary HH: R3-4. Results were evaluated after one week, 3, 12 and 24 months. Mean follow-up was 18 months.

Results:

There were 80 males/120 females, mean age: 29 years (15-58). In 55 patients (27.5%) main symptom was FB; in 73(36.5%) palmar HH; in 46(23%) palmar-axillary HH and in 22 (11%) axillary HH. Most patients were discharged in less than 24 hours (194; 97%), and 170 (85%) as part of our outpatient surgical unit. Seven patients (3.5%) were admitted 24h for minor complications. 190 of the 200 patients showed improvement of their symptoms (95%), 50/55 of FB (90%); 73/73 of palmar HH (100%), 46/46 (100%) of palmar-axillary HH and 17/22(77%) of axillary HH. CS was seen in 128/200 (64%), being labelled as mild in 107 (53.5%), severe in 16 patients (8%) and insufferable in 5 (2.5%) who required clip removal that was performed after 2 months in 3 patients, 3 months in one and 7 months in the other. Only one case presented technical difficulties. One year after unclipping, 3 patients (of the 5 with clip removal) presented improvement of CS (3/5:60%) and 2(2/5:40%) maintained the primary clipping effect over HH/FB.

Conclusions:

SN clipping by VATS is a safe and effective outpatient procedure for the management of FB and HH. Improvement and CS are consistent with other series and, if necessary, unclipping can be performed to try to improve CS.

Disclosure: All authors have declared no conflicts of interest.

P-166

SEVERITY OF POSTOPERATIVE PNEUMONIA IN THORACIC SURGERY VERSUS MAJOR ABDOMINAL SURGERY

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Objectives:

Postoperative pneumonia could have a different course according to the type of major surgery, although the management remains the same. Its incidence ranges between 1,3% and 17,5%. These differences could involve a different management.

Methods:

To compare the incidence, evolution, microbiological features and treatment of postoperative nosocomial pneumonia after elective open approach for lung resection versus major abdominal surgery.

Results:

There were not statistically significant differences in comorbidity between groups. There were more smokers ($p<0.001$) and a higher ASA scale ($p<0.037$) in thoracic group. The main procedures were the following: 33 lobectomies (80,5%) in thoracic group; 24 colorrectal (57,1%), 7 esophageal (16,7%), 6 gastric (14,3%), 4 hepatobiliary (9,5%), and 1 pancreatic (2,4%) resections in general group; 1 aortobifemoral bypass in vascular group; and 3 nephrectomies (42.85%), 2 prostatectomies (28.57%), and 2 cystectomies (28.57%) in urological group. Postoperative bronchoscopy was significantly more used in thoracic group (58,5%) than in general (24,4%, $p=0,002$), vascular (0%), and urology (14,3%, $p=0,032$). PaO₂/FiO₂ ratio was lower in thoracic group compared to general (178,7 vs. 241,9, $p=0,03$). The main pathogens responsible for pneumonia were: *P. aeruginosa* (13%), *K. pneumonia* (10%), *S. pneumoniae* (9%), methicillin resistant *S. aureus* (3%), fungi (13%), and miscellanea (52%). Empirical antibiotic treatment was as monotherapy (36,1%), double (56,6%) and triple therapy (7,2%). From all deaths, *Pseudomona* was isolated in 50% and *K. pneumonia* in 35% cases whereas empirical monotherapy was administered in 64,3% and as double therapy in 35,7%. Thoracic surgery showed the highest mortality rate.

	Abdominal General Surgery	Thoracic Surgery	p	Vascular Surgery	p	Urology	p
Total number of patients (3304)	2383	260		87		574	
Pneumonias 91 (2,75%)	42 (1,76%)	41 (15,7%)		1 (1,14%)		7 (1,21%)	
Demographic features							
Age	70,2±13,8	66,9±10,6	0,073	55		68,29±9,69	0,872
Gender (Man/Woman)	32(76,2%) vs 10(23,8%)	37 (90,2%) vs 4 (9,8%)	0,087	1 (100%) vs 0		7 (100%) vs 0	
Risk Indexes:							
ASA	42 (100%)	41(100%)	0,037	1 (100%)		7 (100%)	0,053
I	0 (0%)	0 (0%)		0 (0%)		1 (14,3%)	
II	15 (35,7%)	5 (12,2%)		1 (100%)		1 (14,3%)	
III	25 (59,5%)	31 (75,6%)		0 (0%)		3 (42,9%)	
IV	2 (4,8%)	5 (12,2%)		0 (0%)		2 (28,6%)	
Risk Index for postoperative pneumonia (Arozullah)	42(100%)	41(100%)	0,074	1 (100%)		7 (100%)	0,001
1	1 (2,4%)	0 (0%)		0(0%)		0 (0%)	
2	8 (19%)	3 (7,3%)		1 (100%)		2 (28,6%)	
3	31 (73,8%)	29 (70,7%)		0(0%)		3 (42,9%)	
4	2 (4,8%)	9 (22%)		0(0%)		2 (28,6%)	
5	0(0%)	0(0%)		0(0%)		0 (0%)	
Clinical Evolution							
ICU	11(26,2%)	27(65,9%)	<0,001	0 (0%)		1 (14,3%)	0,016
Mechanical Ventilation	5(11,9%)	13(31,7%)	0,042	0(0%)		1 (14,3%)	0,329
Good evolution	40(95,2%)	29(70,7%)	0,003	1 (100%)		7 (100%)	0,169
Mortality	2 (4,8%)	12 (29,3%)	0,003	0(0%)		0 (0%)	
Mortality due to pneumonia	1 (2,4%)	10 (24,4%)	0,003	0(0%)		0(0%)	
Patients with other postoperative complications associated to pneumonia	21 (50%)	28 (68,3)	0,090	0(0%)		0(0%)	
Mortality due to other causes	1(2,4%)	2(4,9%)		0(0%)		0(0%)	

Conclusions:

Incidence and severity of postoperative pneumonia are higher in thoracic surgery. *P. aeruginosa* is one of the main and more aggressive pathogens responsible for that. We should consider a more accurate and aggressive medical management in thoracic surgery patients.

Disclosure: All authors have declared no conflicts of interest.

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THORACOMYOPLASTY VERSUS LUNG RESECTION IN TUBERCULOUS LESIONS COMPLICATED WITH ASPERGILLOMAA. Botianu, Petre Vlah-Horea Botianu*Surgical Clinic 4, University of Medicine and Pharmacy, Tirgu-Mures/Romania***Objectives:**

The objective of this paper is to compare the results achieved by thoracomyoplasty versus lung resection for chronic tuberculous (TB) lesions overinfected with aspergillus.

Methods:

The study included 33 patients operated in our unit between 01.01.1985-01.01.2012 for aspergilloma developed on TB lesions (active or sequelae). The patients were divided according to the type of procedure: resection (group A) and thoracomyoplasty with removal of the fungus and complete obliteration of the diseased space (group B). Group A (resection) included 26 cases (lobectomy – 5 cases, non-anatomic – 21, with 5 cases associating an applatation-plication of the cavity) and group B (thoracomyoplasty) included 7 cases. In 3 patients (included in group B) the planned procedure was resection but this was abandoned due to intraoperative difficulties. The following parameters were followed: mortality, morbidity, need for a reoperation, hospitalisation.

Results:

Overall mortality was 6% (1 patient in each group). We encountered 3 residual suppured cavities requiring a major reoperation (2 in the resection group and one in the thoracomyoplasty). Comparative evaluation resection vs thoracomyoplasty showed no difference in terms of mortality (1/26 vs 1/7) and incidence of postoperative empyema requiring reoperation (2/26 vs 1/7) or other major postoperative complications ($p>0,05$ for all the parameters). A longer postoperative hospitalisation was noted for thoracomyoplasty patients (resection group: ranges 12-76, median 18 days vs thoracomyoplasty group: ranges 10-87, median 42 days, $p<0,05$).

Conclusions:

With carefull selection of patients thoracomyoplasty offered comparable results with resection for TB lesions overinfected with aspergilloma. In patients with intraoperative difficulties and/or high risks associated with lung resection, thoracomyoplasty procedures should be considered more often.

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All other authors have declared no conflicts of interest.

P-168**THE OUTCOME OF PULMONARY RESECTION FOR INVASIVE FUNGAL INFECTION COMPLICATING HEMATOLOGIC MALIGNANCY**

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Objectives:

Pulmonary resection for invasive fungal infection complicating hematologic malignancy is a clinical challenge. The aim of this study is to clarify clinical outcomes and identify prognostic factors associated with survival and progression of fungal infection.

Methods:

Between 1985 and 2010, 28 patients underwent 31 pulmonary procedures for invasive fungal infection complicating hematologic malignancy. Retrospective chart review was performed. Seventeen patients were resected (therapeutic) and 11 were biopsied only (diagnostic). In the therapeutic resection group, survival and progression of fungal infection were analyzed with Kaplan-Meier method and prognostic factors were analyzed with Cox proportional hazards.

Results:

Median follow-up was 9.5 months (range 0-139 months). Operative mortality was 23.5% and 8.3% in the therapeutic and diagnostic group respectively. Median survival was 5 months and 12 months in the therapeutic and diagnostic group respectively. Anemia ($p=0.018$) and perioperative transfusion ($p=0.038$) adversely affected survival following therapeutic resection in univariate analysis. The rate of fungal progression in the therapeutic group was 29.4 %. In multivariate analysis, only bilateral lesion ($p=0.0005$) was a significant factor of fungal progression after therapeutic resection. In the diagnostic group, 10 patients (91%) were cured of fungal infection and in 3 patients (27.3%), the management was changed based on biopsy.

Conclusions:

Diagnostic biopsy contributes to good diagnostic yield with low perioperative complication. Survival following therapeutic resection significantly relied on the severity of preoperative anemia and perioperative transfusion.

Disclosure: All authors have declared no conflicts of interest.

P-169

SURGERY IN MULTIDRUG-RESISTANT TUBERCULOSIS: SHORT- AND LONG-TERM RESULTS

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Objectives:

Epidemic of MDR-TB is an increasing challenge. As treatment options are limited due to resistance of M .tuberculosis to at least isoniazid&rifampicin, surgery remains a procedure-of-choice in selected cases. Single institution experience in a region with high MDR rate (24.6% all new smear-positive cases in 2011) is analyzed.

Methods:

Total of 1678 patients with pulmonary TB underwent surgery in 2007-2011. There were 194(11.6%) MDR patients (146M/48F) aged 36.5±11.7 years, including 7 cases of XDR-TB. Patients had tuberculomas (n=132), cavernous/fibrocavernous(n=58) and cirrhotic TB (n=4). 31(16.0%) patients had extensive double-sided process.

Results:

Staple resections of 1-2 segments performed in 57.7%, combined multisegmentary resections in 27.8%, lob/bilob/pneumonectomies in 10.3% (24.1% among cavernous/fibrocavernous TB), thoracoplasty in 4.6%, re-do resections of residual lobe/lung in 1.5%. 20 (10.3%) patients underwent bilateral interventions (single-stage/staged 13/7). Postoperative conversion to smear-negative achieved in 97.9%, closure of cavities in 99.0% MDR-TB cases (98.5 and 97.0% in preserved susceptibility; $\chi^2=0.38$, $p=0.54$ and $\chi^2=2.52$, $p=0.11$, respectively). Postoperative morbidity was higher (12.9%) in MDR-TB than in pan-susceptible group (5.2%; $\chi^2=17.8$, $p<0.001$). The most frequent complications were residual pleural cavity (n=18), broncho-pleural fistula (n=4), pleural empyema (n=4). 30-days mortality was 1.0 and 0.7%, respectively ($\chi^2=0.31$, $p=0.58$). Long-term results obtained in 160 (82.5%) MDR-TB patients at mean 21.5 (4-60) months after surgery. Poor outcomes were registered in 26 (16.3%) MDR-TB patients at mean 18.0 (0-43) months: progression of TB (n=18, ipsilateral/contralateral 11/7), late relapses of TB (n=8). Failure rate was higher (42.9%) in XDR-TB cases ($\chi^2=5.43$, $p=0.02$).

Conclusions:

Surgery in MDR-TB allows to achieve rates of sputum conversion to smear-negative and closure of destructive cavities comparable with those in pan-susceptible TB. Although overall postoperative morbidity was higher, no significant difference in postoperative mortality was registered. We consider refusal of chemotherapy after operation, unilateral surgery in double-sided lesions and XDR to be principal causes of unfavourable long-term outcomes after surgery in MDR-TB.

Disclosure: All authors have declared no conflicts of interest.

P-170

COMPARISON OF VATS AND OPEN LOBECTOMY FOR BENIGN DISEASE: AN INTENT-TO-TREAT COHORT STUDY

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Objectives:

To compare the results of elective open (OL) vs. intent-to-treat thoracoscopic lobectomies (TL) for benign disease in a 2-centre cohort study.

Methods:

From January 2010 to December 2012, 58 patients with a benign lung disease having undergone a lobectomy in 2 tertiary referral centres were reviewed. Nine patients were already considered for an open procedure due to the evidence for severe parenchymal and or pleural scarring at CT scan, and were not included in the analysis. We thus identified a group of 49 patients: in 33 a thoracoscopic lobectomy was attempted whereas 16 received in first intention an open procedure at the surgeon discretion. All files were reviewed and an intent-to-treat comparison was performed.

Results:

Underlying conditions were benign tumors (6 TL; 2 OL), emphysema (1 TL; 2 OL), bronchiectasis (12 TL; 5 OL), chronic lung infections (5 TL; 0 OL), tuberculosis (4 TL; 5 OL), arterio-venous malformations (1 TL; 0 OL), lung sequestration (1 TL; 1 OL), and miscellaneous (3 TL; 1 OL). Three TL patients (5.9%) underwent conversion to thoracotomy. Operative time was 135 [60-300 mn] in the TL group and 90 [60-233 mn] in the OL group ($P<0.05$). In-hospital mortality was nil in both groups. Median chest tube time was 4 days [1-17 days] vs. 5.5 [3-14 days] respectively ($P=0.048$). Respective median post operative stay was 5 days [-18 days] and 8 days [6-22] ($P<0.05$). An uneventful postoperative course was observed in 20 patients (60.6%) vs. 5 (31.3%) ($P<0.05$). Hospital re-admissions were experienced by 1 patient of the TL group (3%) and 2 of the OL group (12.5%) ($P=0.16$).

Conclusions:

VATS lobectomy for benign disease is feasible, safe, and has the potential to lower postoperative morbidity in comparison with thoracotomy. Inflammation induced adhesions remain the key limiting factor but seem to be correctly identifiable on the basis of CT-scan findings.

Disclosure: All authors have declared no conflicts of interest.

P-171

SHORT AND MIDTERM CHANGES OF LUNG FUNCTION AFTER BILATERAL PULMONARY METASTASECTOMYH. Cheufou¹, Stefan Welter², G. Weinreich³, G. Stamatis¹¹*Thoracic Surgery, Ruhrlandklinik Essen, University of Essen, Germany, Essen/Germany,*²*Thoracic Surgery, Essen Ruhrlandklinik on behalf of ESTS Neuroendocrine Tumors of the Lung Working Group, Essen/Germany,*³*Pneumology, Ruhrlandklinik, Essen/Germany***Objectives:**

The loss of pulmonary function after lung metastasectomy is a matter of current interest. Bilateral metastasectomy was identified as risk factor for impaired postoperative function. The amount of functional loss remains unclear.

Methods:

31 patients (21 males) were prospectively investigated with preoperative pulmonary function tests (PFT) and three months after the second intervention. Fifteen of these patients had PFTs additionally after both sequential operations before discharge from hospital.

Results:

Altogether 271 nodules (median 7, mean 8.7) were removed with a lobectomy in two and segmentectomy in eight patients being the largest resection. The mean time between the two operations was 28 days; four patients had a simultaneous bilateral metastasectomy. The mean time from the date of first operation to the follow-up visit was 4.4 months. The mean loss of pulmonary function at follow-up visit was significant for all volume measures and for DLCO and is depicted in table 1. No changes were found between preoperative and follow-up values for pO₂, pCO₂ and diffusion coefficient for carbon monoxide. All volume measures demonstrated a stepwise deterioration after the first and second intervention with significant reduction of pO₂ from the first to the second operation (-9.3 mmHg, p = 0.01), followed by a final partial recovery. Table 1: Mean values of pulmonary function tests before three months after bilateral pulmonary metastasectomy. Parameter n = preop. follow-up difference significance (foll.-pre) IVC (%) 31 97.8 82.7 -15.1 < 0.001 TLC (%) 31 96.3 82.4 -13.9 < 0.001 FEV₁ (%) 31 89.7 73.5 -16.2 < 0.001 DLCO (%) 24 83.6 70.2 -13.4 < 0.001 pO₂ mmHg 31 79.3 81.2 +1.9 0.347

Conclusions:

Staged bilateral open pulmonary metastasectomies cause a stepwise deterioration of lung function with intermediate reduction of pO₂. Whereas pO₂ went back to normal after three months, volume parameters and DLCO remain significantly reduced by around 15%.

Disclosure: All authors have declared no conflicts of interest.

P-172

EN-BLOC RESECTION OF PULMONARY METASTASES FROM EXTRATHORACIC CARCINOMA WITH INFILTRATION OF THE SPINEServet Bölükbas¹, T. Dönges¹, M. Eberlein², J. Schirren¹¹*Thoracic Surgery, Dr. Horst Schmidt Klinik, Wiesbaden/Germany,*²*Division Of Pulmonary, Critical Care And Occupational Medicine, Carver College of Medicine, University of Iowa, Iowa City/United States of America***Objectives:**

Pulmonary metastases from extrathoracic carcinoma with infiltration of the spine are very uncommon. There is a lack of data with regard to the benefit of extended pulmonary metastasectomy. The purpose of this study is to describe our surgical en bloc approach and to assess the outcome and survival.

Methods:

We retrospectively analyzed all patients, who underwent pulmonary resection for metastatic disease from extrathoracic carcinoma with en bloc chest wall resection and hemivertebrectomy or total vertebrectomy between January 2003 and December 2012. Survival was estimated by the Kaplan-Meier method. Log-rank analyses were used to compare groups.

Results:

Twelve patients (age 51.8 ± 18.9 years, 8 males) were included in the study at a single center. Location of the primary cancers were: testicular (n=3), renal (n=3) and other (n=6), respectively. Median time interval between therapy of the primary cancer and metastasectomy was 31.6 ± 1.9 months. Seven patients (58%) had induction therapy before surgery. Indications for metastasectomy were curative intend in nine and palliative intend (neurologic impairment, unstable spine) in three patients, respectively. All patients underwent pulmonary resections with en bloc chestwall resection and hemivertebrectomy (n=9) or total vertebrectomy (n=3) with subsequent reconstructions. Sleeve lobectomy had to be performed in one patient. Resections were complete in 9 patients (75%). Morbidity was observed in four patients (33%). No mortality occurred. Median, 1- and 5-year survivals were 48.0 ± 14.0 months (CI 95% 20.6–75.4), 83% and 35%, respectively. Surgeries with palliative intend ($p = 0.003$) and age ≥ 65 years ($p = 0.003$) were associated with inferior survival.

Conclusions:

Pulmonary resections with en bloc hemivertebrectomy or total vertebrectomy can be performed safely for metastatic disease from extrathoracic carcinoma. These extended resections in curative intend offer promising long-term survival in highly selected patients. Patients aged ≥ 65 years should be selected very carefully for surgery.

Disclosure: All authors have declared no conflicts of interest.

P-173

ELECTROCAUTERY VERSUS ULTRACISION VERSUS LIGASURE IN SURGICAL MANAGEMENT OF HYPERHIDROSIS

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Objectives:

Aim of the study was to evaluate the sympathectomy procedures for primary hyperhidrosis in terms of complications and effectiveness.

Methods:

From January 2010 to September 2012 we performed 130 sympathectomies in 65 patients, 27 males (42%) and 38 females (58%). Thirty-one patients (48%) had palmar, 16 (25%) palmar and axillary, 8 (12%) axillary, 6 (9%) palmar-plantar and 4 (6%) facial hyperhidrosis. Electrocoagulation was used in 20 procedures (15%), ultrasonic scalpel in 54 (42%) and radiofrequency dissector in 56 (43%). Seven patients (11%) underwent bilateral sympathectomy in the same surgical session while in 58 (89%) the right surgical approach was delayed 30 days from the left.

Results:

The length of surgery (18 ± 2 minutes) and hospital stay (1 day) were identical with the different techniques. We noticed 12 complications (9%): a) chest pain in 6 patients (4 with electrocoagulation, 1 with ultrasonic scalpel and 1 with radiofrequency dissector), disappeared in 20 ± 1 days; b) paresthesias in 3 electrocoagulation patients, was solved in 23 ± 5 days; c) bradycardia in 1 ultrasonic patient, normalized in 4th postoperative hour; d) recurrences in 2 electrocoagulation patients, positively treated in 1 patient by re-surgery in VAT. A questionnaire administered at 24 ± 1 month after intervention to assess the electrocoagulation, ultrasonic and radiofrequency clinical effectiveness showed respectively: a) an improvement of sweating in 90%, 98% and 98% of patients; b) enhancement of the quality of life in 89%, 99% and 99% of patients; c) a general satisfaction in 90%, 100% and 100% of patients.

Conclusions:

The latest generation devices offered greater efficacy in the treatment of hyperhidrosis, minimizing complications and facilitating the resumption of normal work and social activity of patients.

Disclosure: All authors have declared no conflicts of interest.

P-174

DYNAMIC COMPRESSION SYSTEM AND PECTUS CARINATUMOlivier Tiffet, M. Lopez, A. Patoir, A. Villard, T. Tiffet, F. Varlet*Department Of General And Thoracic Surgery, Universitary Hospital Saint Etienne, Saint Etienne/ France***Objectives:**

This study sought to evaluate the efficacy of Dynamic Compression System (DCS) with pressure measuring of the deformity device in the treatment of Pectus Carinatum (PC) described by Martinez-Ferro, as an alternative to surgery.

Methods:

Infants and adolescents presenting with PC between October 2011 and October 2012 were prospectively enrolled in this study. The management protocol included: the custom of DCS, strengthening exercises, and monthly clinical follow-up. The criteria's of inclusion were: patients with PC and pressure of initial correction (PIC) ≤ 9 PSI (pound square inch).

Results:

A total of 42 patients with PC (41 males and 4 females) were evaluated in outclinics patient. Three were treated by minimal invasive surgery (Abramson technique) due to highly elevated PIC. These three patients were excluded of this study. The patients treated by DCS were: Symmetric PC in 26 cases and Asymmetric PC in 16 cases. The mean age was 15 years-old (5-19). The mean PIC was 6.1 PSI (2.5-9). The mean utilization time was 18 hours daily for 8 months (3-12). None patients abandoned treatment. Esthetic Results were evaluated by using a double blinded scale (1-10). In 12 cases the treatment was completed with excellent esthetic results. In the 30 cases remaining, the normal shape of the thorax has been obtained, but the patients still keep the brace during the weaning.

Conclusions:

This preliminary study demonstrated that DCS with pressure measuring of the deformity device is effective and helpful for treatment of PC in patients where the anterior chest wall is still compliant. The control of different pressure's measurement could be used as the inclusion criteria as well as predictive factor for esthetic results and duration of the treatment.

Disclosure: All authors have declared no conflicts of interest.

P-175

EVALUATION OF NON-OPERATIVE TREATMENT BY VACUUM BELL IN PECTUS EXCAVATUMOlivier Tiffet¹, A. Patoir¹, A. Villard¹, T. Tiffet¹, M. Lopez²¹*Department Of General And Thoracic Surgery, Universitary Hospital Saint Etienne, Saint Etienne/France,*²*Department Of Pediatric Surgery, Universitary Hospital, Saint Etienne/France***Objectives:**

To report our experience of non-operative treatment of pectus excavatum.

Methods:

In a prospective study, between October 2011 and october 2012, 28 infants, adolescents or adults (20 boys and 8 girls) having a pectus excavatum were treated by VacuumBell. Mean age was 11 years. There were 22 symmetrical type and 6 asymmetrical. In 2 cases, it was an hybrid type (pectus excavatum associated with carinatum). Follow up and evaluation were every 2 months. Evaluation criteria were: Depth of the pectus and evolution, morbidity and observance of the treatment, satisfactory scale.

Results:

Twenty patients had a sufficient distant follow up of six months for the evaluation. Seventeen of them used the Vacuum Bell at least three times a day, one infant twice a day, and the two last once a day. One patient gave up after three months and had a surgery. The subective evaluation of the results raise, in all cases except one, good to excellent results The median depth of pectus decreased from 3 cm to 1 cm after six months. No cutaneous side effects were noticed until now.

Conclusions:

Treatment using Vacuum Bell is an efficient way to cure Pectus Excavatum providing that the thorax is flexible. Results are directly linked to the usage frequency: a frequent use means shorter treatment and better results. Thus, the Vacuum Bell seems appropriate for infants awaiting for a treatment, possibly surgery.

Disclosure: All authors have declared no conflicts of interest.

P-176

SOLITARY FIBROUS TUMORS OF THE PLEURA: P16 EXPRESSION AS A MARKER OF MALIGNANCYDagmar Krenbek¹, U. Setinek¹, A. Chott¹, M.R. Mueller², S.B. Watzka²¹*Pathology, Otto Wagner Hospital, Vienna/Austria,*²*Thoracic Surgery, Otto Wagner Hospital, Vienna/Austria***Objectives:**

Solitary fibrous tumour of the pleura (SFTP) is a rare neoplasm of mesenchymal origin. Most SFTPs are benign and cured by surgical excision. In some cases apparently benign SFTPs locally recur and even metastases have been described. In order to identify markers to predict the biological behavior we applied a panel of antibodies on a series of well characterized benign and malignant SFTPs.

Methods:

The retrospective study comprised 29 patients who underwent surgery for SFPT between 1991 and 2009. Histological features were benign in 23 and malignant in 6 cases. Immunohistochemical staining of CD34, bcl-2, CD99, ER, PR, p53 and p16 was performed in 5 malignant and 12 benign tumors.

Results:

The majority of patients with benign SFTP were asymptomatic, compared to only a single patient with malignant SFPT. Well-circumscribed tumor growth prevailed in benign cases in contrast to an irregular and infiltrating pattern in most malignant cases. All benign cases were recurrence-free during the follow-up period, while three out of 6 patients with malignant SFTP presented with recurrence of disease up to 144 months after first operation. Immunohistochemical studies revealed positivity of at least two of the markers CD34, BCL2 or CD99 in all examined specimens. The expression of p53 as well as estrogen and progesterone receptor was similar in malignant and benign tumors. P16 was strongly expressed in all malignant tumors, whereas only a few cells were reactive in the benign cases.

Conclusions:

Careful clinical examination as well as thorough histopathological work-up is essential for the detection of malignant SFTPs. In addition, p16 immunohistochemistry could be helpful to identify clinically aggressive SFTPs.

Disclosure: All authors have declared no conflicts of interest.

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TRAINING OPPORTUNITIES IN THORACIC SURGERY FOR GENERAL SURGERY RESIDENTS

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Objectives:

For gaining board certification in general surgery in Switzerland a small number (n=15) of thoracic operations are required. Aim of the study was to evaluate the proportion of teaching operations among thoracic surgical procedures.

Methods:

Thoracoscopy was chosen as the indicator operation. The database of the Swiss Association for Quality Management in Surgery (AQC) in the period between 1/2006 and 12/2010 was analysed evaluating items such as operating surgeon, indication, operating times and in hospital complications. Hospitals with additional thoracic surgery departments (TS) were separated from general surgery departments (GS) and particular rates were calculated for each.

Results:

In the evaluated period 1384 thorascopies were performed in 52 hospitals (769 in GS clinics and 615 in TS). The proportion of teaching operations by residents was 10% (n=138), 9% in GS, 11% in TS clinics. Among teaching thorascopies the two most frequent indications were pleural effusion (n=40; 29%) and pneumothorax (n=30; 22%) compared to malignancies (n=425; 35%) and pneumothorax (n=241; 20%) in non-teaching operations. The median operating time for teaching thorascopies was 37 min (20 min for GS and 40min for TS) compared to 60min for non-teaching operations (idem in GS and TS). The reported complication rates were 6% (n=6) for teaching and 6% (n=80) for non-teaching operations (6% in GS and 7% in TS) including 3 patients with postoperative death in the non-teaching group. With regards to the compulsory minimum of 15 thoracic operations for gaining board certification in Switzerland, the reported 138 teaching operations in the evaluated 5-year-period would suffice for 9 surgeons to apply for board certification in general surgery.

Conclusions:

Training capacity in thoracic surgery beyond placement of thoracic drainages remains low. The data suggests that more teaching thorascopies could be conducted with acceptable complication rates. Up to date indications seem to be limited to simple and benign disease.

Disclosure: All authors have declared no conflicts of interest.

P-178

CONTINUOUS INFUSION ANALGESIA IN THORACIC SURGERY (CIATS) REDUCES MORPHINE USAGE IN PATIENTS WHO HAVE EMPYEMA AND UNDERGOING OPEN DECORTICATION

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Objectives:

Thoracic epidural analgesia is considered the gold standard for postoperative pain control, however it is not always feasible for patients undergoing decortications for empyema. We have utilised continuous incisional analgesia in thoracic surgery (CIATS) for post-thoracotomy pain control. CIATS consists of a catheter in the wound, which is initially topped up with 10 mls of 0.25% chirocaine and then connected to a continuous infusion of 0.1% chirocaine running at 5ml/hr. We reviewed the impact of CIATS in thoracic surgery in decortication patients.

Methods:

15 cases that had undergone thoracotomy for decortication were retrospectively analysed. 8 had CIATS concomitantly with morphine PCA (Group1) while 7 patients had only morphine PCA (Group2). Post-operative pain scores, amount of morphine used and length of hospital stay (LOS) were measured.

Results:

In group1, (7F:1M) median age was 51yrs. In group 2, (3F:4M) median age was 48yrs and 1 patient underwent two procedures in the same admission. Mean morphine infused, mean duration of PCA used, mean post-operative pain scores on day 1 and 2 and mean hospital stay are recorded in Table1. There was a trend of better pain scores and reduced morphine usage in CIATS however this did not achieve significance, however there was a statistical significance between the 2 groups in mean duration of PCA usage (p=0.05). Table 1.

	Group 1 (CIATS + PCA)	Group 2 (PCA)	P values
Mean total morphine infused (mg)	92	112mg	p = 0.29
Mean duration of PCA used (hrs)	44	66hrs	p = 0.05
Mean post-operative pain score D1	2.2	2.4	p = 0.37
Mean post-operative pain score D2	1.8	2.7	p= 0.22
Mean hospital stay (days)	7	7	p= 0.5

age (p=0.05).

Conclusions:

CIATS is efficacious in the management of post thoracotomy pain. We need to validate this result with a prospective randomised controlled trial.

Disclosure: All authors have declared no conflicts of interest.

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SURGICAL TREATMENT OF EMPYEMA THORACIS IN ADULTS: IMPLICATIONS IN QUALITY OF LIFE, CLINICAL OUTCOME, WORK DISABILITY AND HEALTH INSURANCE COSTS

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Objectives:

To evaluate the quality of life, clinical outcome, sick leave, work disability and health insurance costs caused by the surgical treatment of empyema thoracis in adults.

Methods:

Prospective study of 53 patients that underwent surgical treatment of empyema thoracis during 2009-2011. All patients completed the SF-36v2TM Health Survey Score Questionnaire and underwent chest X rays, pulse oxymetry and spirometry prior to surgery and at 7 days, 3 and 6 months post surgery. Work and health insurance records were followed up during the same intervals and clinical follow up was performed in the Thoracic outpatients clinic. SPSS v12.0 was used for statistical analysis.

Results:

Patients were 41 males and 12 females (mean age 58.9 years, range 18-65 years). Presenting symptoms until treatment were 10-26 days (transitional phase empyema). Mean duration of the procedure was 68 min (range 50–195min). No intraoperative or postoperative deaths or major complications were recorded. Clinical severity at presentation was associated with a deprived quality of life, mainly during the first 6 months after surgery ($p=0.03$) and increased sick leave ($p=0.04$). Mean duration of sick leave was 33 days for white and 50 days for blue collar workers. Work disability was significantly increased during the first 3 months post surgery (84% of patients) and decreased after 6 months (17%). Health insurance costs were increased throughout the whole follow up interval (mean cost 3,789 EU) as patients seemed to seek often specialist consultations and consumed increased amounts of anti-inflammatory drugs even when not in pain due to increased feeling of insecurity (79% patients).

Conclusions:

Complicated empyema thoracis comprises a surgical condition with many implications in terms of quality of life, socioeconomic, professional and financial state. Understanding these could point to important entry-points for interventions and policies to tackle the multidimensional burden of this condition and reduce its overall costs.

Disclosure: All authors have declared no conflicts of interest.

P-180**DOES THE USE OF A SYNTHETIC SEALANT CATER FOR INTRAOPERATIVE AIR-LEAKS FOLLOWING LUNG RESECTIONS IN ALL PATIENTS? A SINGLE CENTRE PROSPECTIVE STUDY**

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Objectives:

We evaluated the effectiveness of a novel synthetic sealant patch (TissuePatch™) used for intraoperative parenchymal air-leaks in facilitating quicker chest drain removal time and hospital stay.

Methods:

A single-centre prospective study. Between March 2010 and July 2011 we enrolled 31 patients (TP group, TPG) who underwent lung resection either by open or VATS technique. Air-leaks were graded using the Machiarrini scale with post-resection lung submersion. The defects were attended using sutures and TP or TP alone. Postoperatively a digital drainage system (THO-PAZ™-MEDELA) was used to quantify air-leak and duration as standard of care. A control-matched group (CG) of 10 patients was identified in whom standard closure techniques were applied.

Results:

We identified a shorter time for drain removal in the TPG (median = 4 days) compared to CG (median = 11.5). Similarly quicker discharge for the TPG group (median = 5.0) compared to CG (median = 7.5). Those patients who had an open procedure had a shorter hospital stay in the TPG (median 5 days) compared to the CG (median 7 days). This trend was also favourable compared to National data (HES, hospital episode statistics for England 2010) (median of 8 and 9 days for lobectomy and bilobectomy respectively). We witnessed no adverse events related to the application of the sealant.

Conclusions:

We advocate the use of TissuePatch in the intraoperative management of lung parenchymal leaks. Although the sample size was not adequate to reach statistical significance, important lessons have been learned. Sealants have a place in the management of parenchymal leaks providing careful patient selection and utilization of products either alone or in combination with suturing techniques. The position and size of tear and the quality of underlying parenchyma play the most important role in the effective application of sealants and reward a successful outcome.

Disclosure: All authors have declared no conflicts of interest.

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LESS INVASIVE TECHNIQUES AND LEARNING CURVE EFFECTS IMPROVE THE OUTCOME AFTER EXTRAPLEURAL PNEUMONECTOMY FOR MALIGNANT PLEURAL MESOTHELIOMA

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Objectives:

Since extrapleural pneumonectomy (EPP) for malignant pleural mesothelioma (MPM) is a quite invasive, complicated, and infrequent surgery, EPP-starters often feel difficulty to obtain enough skill. Detailed report on outcome of institutional/personal first 51 EPPs will be informative for EPP-starters.

Methods:

We reviewed all patients in a prospective database of institutional EPP program since its start. All but one EPPs were performed by the same operator (SH), and institutional first EPP was his personal first EPP. A total of 51 EPP cases were divided into Group 1 (n=26, 1st to 26th) and Group 2 (n=25, 27th to 51st). In Group 1, EPP was performed through an S-shaped long skin incision, posterolateral thoracotomy with 5th rib resection plus anterior costal arch division, and two rib retractors. Less invasive EPP was introduced in Group 2, where EPP was performed by direct eye vision and also VATS monitor vision through 6th or 7th posterolateral thoracotomy with no use of anterior costal arch division nor rib retractors.

Results:

Patient characteristics were similar in Groups 1 and 2 in age , sex , and histology. Prominent improvement was seen in operation time, blood loss, MCR ratio, 30-/90-day mortality rates, and adverse effects ratio. The overall (n=51) median, 2- and 5-year survivals were 35.9 months, 53.3%, and 35.6%. Actual survival rates at 1- and 2- years after EPP was 58% (15/26) and 35% (9/26) in Group 1, and 89% (16/18) and 90% (9/10) in Group 2, respectively.

	Group 1 (n=26)	Group 2 (n=25)
Blood loss (median; range)	1765; 600-9060	1320; 365-2950
MCR ratio	88% (23/26)	100% (25/25)
30-day mortality	3.9% (1/26)	0% (0/25)
90-day mortality	11.5% (3/26)	0% (0/25)
Adverse effects (CTCAE grade \geq 4)	15.4% (4/26)	4.0% (1/25)

Conclusions:

Dedicated EPP beginners could obtain acceptable risk/benefit through less invasive EPP techniques and Learning curve effects.

Disclosure: All authors have declared no conflicts of interest.

P-182

11-YEAR SINGLE CENTER EXPERIENCE WITH LUNG-SPARING RADICAL PLEURECTOMY FOR MALIGNANT PLEURAL MESOTHELIOMA

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Objectives:

We report our 11-year single center experience of malignant pleural mesothelioma (MPM) treated with radical pleurectomy (RP) as surgical arm within a multimodality approach.

Methods:

In a prospective, non-randomized study, all patients with histologically proven MPM, clinical stage cT1-3 cN0-2 and without prior treatment for MPM were evaluated for multimodality therapy from 2002 to 2012: lung-sparing RP followed by 4 cycles of chemotherapy (Cisplatin/Pemetrexed). Prophylactic radiation of the chest wall was only performed between 2002 and 2010. Kaplan-Meier analysis, log-rank test and Cox regression analyses were used to estimate survival and to determine predictors of survival.

Results:

One-hundred-two out of 231 consecutive patients underwent RP. 84 out of 102 patients (82%) completed the therapy. Surgical morbidity and mortality were 29.4% (30/102) and 2.9% (3/102), respectively. Median survival (MS) and 5-year-survival were 26 months (mo) and 28%, respectively. Progression-free-survival was 13 Mo. The sites of failure were locoregional in 44.1% (45/102), distant in 9.8% (10/102) and both in 13.7% (14/102), respectively. MCR ($p < 0.001$), T1/T2 ($p = 0.011$), N0 ($p = 0.016$), IMIG stage I/II ($p < 0.001$) and age < 70 years ($p = 0.034$) were associated with significant prolonged survival in the univariate analyses. Non-epitheloid histology ($p = 0.089$) and tumor spread at the resected previous incision sites ($p = 0.058$) showed a trend towards inferior survival. Gender, type of recurrence and laterality had no significant impact on survival. Histology (HR 13.9, $p < 0.001$) and tumor spread at the resected previous incision sites (HR 9.7, $p = 0.006$) remained the only independent significant prognostic factors.

Conclusions:

Lung-sparing RP within a multimodality therapy concept is associated with promising long-term survival. Tumor biology in terms of type of histology and tumor spread at the resected previous incision sites is the most important prognostic factor for patients with MPM. Patients aged ≥ 70 years should be selected very carefully for multimodality therapy.

Disclosure: All authors have declared no conflicts of interest.

P-183

PERSISTENT LUNG EXPANSION AFTER PLEURAL TALC POWDRAGE IN MALIGNANT PLEURAL MESOTHELIOMA NOT ELIGIBLE FOR SURGICAL RESECTION: AN INDEPENDENT PROGNOSTIC FACTOR

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Objectives:

To investigate the prognostic effect of persistent lung expansion (no pleural fluid recurrence) after pleural talcage and other variables in not surgically treated malignant pleural mesothelioma (MPM).

Methods:

All consecutive patients submitted to video-assisted thoracoscopic (VAT) pleural biopsy and pleurodesis by talc poudrage for MPM between 2007 and 2011 were studied. The following parameters were prospectively recorded: age, sex, smoking history, asbestos exposure, preoperative C-reactive protein (CRP) levels, platelets (PLT) count, ECOG performance status (PS), histological subtype, clinical stage (cStage), chemotherapy, persistence of lung expansion at 3 months follow-up. Survival was assessed on December 2012.

Results:

A total of 172 patients were considered; 26 patients were excluded because of not complete lung expansion at discharge; the remaining 146 patients were the objective of the present study. Median survival was 14 months (95% confidence interval [CI], 13 – 16). Two- and 5-year disease-specific survival was 15% (95% CI, 8-26%) and 7% (95% CI, 3-16%), respectively. Age, ECOG PS, not-epithelioid histology, CRP level >5 mg/L, PLT count > 400,000/dL, cStage > II and pleural fluid recurrence at 3 months follow-up influenced outcome at univariate analysis. Multivariate analysis showed that not epithelioid histology (hazard ratio [HR], 2.78; 95% CI, 1.80 – 5.08), pleural fluid recurrence (HR 2.56; 95% CI, 1.75 – 4.41), cStage >II (HR 2.38; 95% CI, 1.52 – 4.34), PS >I (HR 2.23; 95% CI, 1.29 – 4.28), CRP > 5 mg/L (HR 2.01; 95% CI, 1.18 – 4.12) and PLT count > 400,000 (HR 1.80; 95% CI 1.19 – 3.98) were independent worse survival predictors.

Conclusions:

Persistent lung expansion after pleural talc poudrage and absence of fluid recurrence is demonstrated to be a stronger factor rather than clinical stage and other clinical variables in not surgically treated MPM patients. Further studies are needed to evaluate its utility in the clinical staging of MPM.

Disclosure: All authors have declared no conflicts of interest.

P-184

LONG TERM FUNCTIONAL RESULTS AFTER SURGERY FOR DIAPHRAGMATIC EVENTRATION OR RUPTURE: THE RATIONALE OF PROSTHETIC REINFORCEMENT

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Objectives:

To assess pulmonary and diaphragmatic function after diaphragmatic plication reinforced by pericostal fixed mesh for eventration and repair of diaphragmatic hernia through reduction and direct suture

Methods:

From 1996 to 2010, 10 patients with unilateral eventration and 6 patients with misunderstood chronic trans-diaphragmatic hernia underwent elective surgery. Preoperative and 12 months follow-up assessment included pulmonary function tests, measure of maximum inspiratory pressure in clino- and orthostasis, blood gas analysis, chest-CT scan and dyspnoea score

Results:

Patients of the two groups did not differ in terms of preoperative lung function nor postoperative complications or in-hospital stay; at follow-up of 12 months, Eventration group showed significant improvement of FEV1% (+18,2 – p<0.001), FVC% (+12,8 – p<0.001), DLCO% (+6,84 – p=0,04) and pO2 (+9,8 mmHg – p<0.001). Conversely in Hernia group only pO2 gain was significant (+8.3 – p=0.04). Although Maximal Inspiratory Pressure (MIP) increased in both groups at follow-up, patients operated for hernia showed minor improvement with persistent significant fall of MIP passing from orthostasis to clinostasis (p<0.001). Transitional dyspnoea score reflected such improvements but no differences were found in gain between the two groups. CT-scan showed a slight elevation of diaphragm in patients operated for diaphragmatic laceration, even without recurrent hernia, while patients operated for eventration maintained postoperative ipercorection. Chronic pain was present in 1 patient operated for eventration

Conclusions:

The use of prosthetic reinforcement after diaphragmatic surgery is safe and seems to ensure better and more stable results either in terms of pulmonary flows and paradoxical diaphragmatic movement (assessed through maximum inspiratory pressure) in patients operated for eventration. Large diaphragmatic tearings involving main branches of phrenic nerve are likely to cause diaphragm denervation; consequent underlying eventration may therefore impair

postoperative functional results at long-term follow-up and could so benefit of prosthetic reinforcement as usual in our Institution for pure eventration

Disclosure: All authors have declared no conflicts of interest.

P-185

“PRELIMINARY RESULTS OF DIAPHRAGM PACING APPLICATION IN AMYOTROPHIC LATERAL SCLEROSIS PATIENTS. FIRST TURKISH EXPERIENCE”

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Objectives:

Is to share the application and results of the diaphragmatic pace stimulating system - DPSS uses in the Amyotrophic lateral sclerosis (ALS) patients for the first time in Turkey.

Methods:

Eleven ALS patients were included in the DPSS application. In defining the DPSS indication; besides questioning the demographic and clinic characteristics of the patients, pulmonary function tests (PFT), arterial blood gas analysis (ABGA), diaphragmatic EMG for the patients needing it, thoracic computed tomography and diaphragmatic thickness measurements were carried out. Average age of the patients was 57.55 ± 8.80 , average disease duration was 2.64 ± 1.43 years. In four patients using mechanical ventilation (MV) had tracheostomy and three patients had percutaneous endoscopic gastrostomy. Average peripheral oxygen saturation (SpO₂) value of the patients during the preoperative period was 93.91 ± 2.88 %. The number of patients whose forced vital capacity value is below 45% was four. DPSS application was performed by implanting two electrodes to the areas that respond the best to the electrical stimulation of the diaphragms laparoscopically with the application of general anesthesia.

Results:

During the postoperative period, duration of staying at the hospital of the patients was 15.64 ± 7.09 days in average. There were no technical and/or clinical problems as to DPSS application in the patients. One patient completely left the MV support. Late postoperative SpO₂ value of the patients was calculated as 96%. A distinct clinical and functional recovery was seen in the patients.

Conclusions:

It was proved that DPSS application can be carried out in ALS patients laparoscopically with the general anesthesia, and that it has positive effects to the clinical, functional and life qualities of the patients.

Disclosure: All authors have declared no conflicts of interest.

P-186

OPTIMUM LYMPHADENECTOMY FOR ADENOCARCINOMA OF THE OESOPHAGUS: “CUT OFF” NUMBER OF RESECTED NODES VERSUS “TOTAL LYMPHADENECTOMY”

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Objectives:

According to the Worldwide Esophageal Cancer Collaboration (WECC), maximum 5-year survival is modulated by T classification: resecting a minimum of 10 nodes for pT1, 20 nodes for pT2, 30 nodes for pT3/4 (Rizk NP et al Ann Surg 251, 2010;). To verify if the WECC parameters are applicable for adenocarcinoma of the oesophagus, we counted the number of lymph nodes resected/patient in a case series who received the “total lymphadenectomy”.

Methods:

We considered 194 consecutive patients. Visible nodes and fat tissue for each station (4L/R-3-4-7-10-8-9-15-16-17-18-19-20 TNM 7th ed. and pancreatic and pyloric nodes) were carefully resected, #nodes/station was counted by the pathologist. The bivariate correlation (Spearman’s Rho (r)) between the mean number of harvested nodes and the corresponding pT parameter was calculated.

Results:

6010 lymph nodes were resected, with a median (IQR) of 30 per case (18-40). The median number of harvested nodes was 22.5 (11.7-37) for pT1, 31 (23.5-43.5) for pT2, 30 (16.5-38) for pT3 and 32 (17.5-45) for pT4a tumors. The #nodes/patient, ranged from 4 to 61. The #nodes was: <10 in 21% (4/21) of pT1, <20 in 8% (2/27) of pT2, <30 in 44% (64/146) for pT3-4. No linear relationship between the mean number of nodes and T was calculated (rs = 0.040, p = 0.584).

Conclusions:

For adenocarcinoma of the oesophagus, it is evident that in high number of cases total lymphadenectomy is necessary to provide a #nodes/T ratio close to the WECC indications which nevertheless are not applicable in all patients (in over 40% of T3/4) to estimate survival. In order to avoid the risk of undervaluing the quality of surgical resection because of the lack of



resectable nodes, we suggest to adopt “total lymphadenectomy” rather than to refer to a theoretical #nodes/T ratio.

Disclosure: All authors have declared no conflicts of interest.

P-187

OCCURRENCE OF INVASIVE CANCER FOLLOWING ENDOSCOPIC TREATMENT OF BARRETT'S WITH HIGH-GRADE DYSPLASIA AND INTRAMUCOSAL CANCER IN PHYSIOLOGICALLY FIT PATIENTS: TIME FOR A REVIEW OF SURVEILLANCE AND TREATMENT CRITERIA

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Objectives:

Patients with Barrett's esophagus and high-grade dysplasia (HGD) or intramucosal cancer (IMC) are increasingly treated with endoscopic approaches to avoid esophagectomy. Incidence and pattern of recurrence of invasive cancer following endoscopic treatment is currently poorly documented.

Methods:

160 patients undergoing endoscopic treatment for HGD and IMC were entered into an IRB-approved prospective database. The study group comprises four physiologically fit patients who returned with invasive cancer.

Results:

Four male patients with ages 53, 64, 67, and 73 years presented with multi-focal HGD (1), IMC (3) with Barrett's segment ranges between 3 and 10 cm. All patients underwent EMR and three patients had RFA. All four patients had regular followup with two ultimately documenting endoscopic and histologic complete Barrett's ablation. Patient's followup varied between 8 months and 7 years. One patient subsequently presented with an obstructing luminal mass at 3 months following RFA. Another demonstrated persistent nodularity following 3 previous EMR's and RFA with additional EMR showing T1b Cancer. Two others presented with extramucosal recurrences 3 and 5 years following ablation. One of these patients underwent repeat EMR with resection of a T1b submucosal adenocarcinoma. Three patients underwent subsequent esophagectomy when presenting with recurrent invasive cancer with pathologic finding stages of pT0N0Mx, T1bN0Mx and pT2N1Mx. The third patient presenting with submucosal tumor had pulmonary metastasis, which were confirmed by surgical resection, T3NxM1.

Conclusions:

Endoscopic therapy is being increasingly applied in physiologically fit patients with HGD and IMC. Cure rates in this population are expected to be high, however, invasive cancers can recur, and these recurrences can be submucosal with locoregional and distant metastatic disease. Good surgical candidates, especially those with IMC, should meet with an experienced surgeon as a component of their treatment planning. An appropriate system for following up needs to be developed to detect mucosal and submucosal recurrent cancer.

Disclosure: All authors have declared no conflicts of interest.

P-188

OUTCOMES AND SURVIVAL OF ESOPHAGEAL SQUAMOUS CELL CARCINOMA AFTER VIDEO-ASSISTED THORACOSCOPIC ESOPHAGECTOMY – A REPORT OF 502 CASES FROM AN ACTIVE CENTER IN CHINA

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Objectives:

To assess the outcomes and survival of esophageal squamous cell carcinoma (SCC) after video-assisted thoracoscopic esophagectomy (VATE).

Methods:

From April 2005 to September 2012, we performed VATE for 508 patients with SCC (succeeded in 502). The patients enrolled after pathological diagnosis and imaging examinations. The including criterion was cTis-3N0M0, and 43 cases had underwent neoadjuvant therapy (chemotherapy in 38 and radiation in 5).

Results:

There were 416 men and 92 women. Median age was 56.3 years (range, 32-83). Conversion to open procedure was required in 6 patients (3 cases due to bleeding and 3 due to technical difficulty). VATE was successfully completed in 502 cases and the approaches involved thoracoscopy+laparotomy+cervical anastomosis (n=60), thoracoscopy+laparoscopy+cervical anastomosis (n=439), thoracoscopy + laparoscopy + intrathoracic anastomosis (n=3). The average chest operation time was 107±22min; blood loss was 96±60ml; lymph node harvest from chest was 13.2±5.4; the intensive care unit stay was 1 day (range, 0-36). Total complication rate was 36.1%. And the rate of severe pulmonary or circulatory complication needing readmission to ICU was 5.4% (n=27); anastomotic leak was 12.4% (n=62); gastric conduit necrosis was 1.4% (n=7). Surgical technique related complications included: postoperative bleeding (n=1), chylothorax (n=4), recurrent laryngeal nerves injury (n=10) and tracheal injury (n=1). Re-operation was 0.8% (n=4), including hemostasis (n=1), ligation of thoracic duct (n=2) and tracheal repair (n=1). Perioperative mortality was 1.0% (n=5). At a mean follow-up of 32 months (range, 3-92), the stage specific 5-year survival was 83% (stage 0+I, n=102), 55% (stage IIa, n=217), 40% (stage IIb, n=64), 27% (stage III, n=93), 13% (stage IVa, n=26).

Conclusions:

In our experience, VATE is a feasible and safe procedure for SCC patients. And it could offer good surgical outcomes and oncological survival, which seems to be competitive. However, prospect randomized controlled trials are required to reach confirmative conclusion.

Disclosure: All authors have declared no conflicts of interest.

P-189

SURGICAL TREATMENT OF SHORT ESOPHAGEAL BENIGN STENOSIS: INDIVIDUALIZED APPROACH BEYOND STATISTICSM. Bagirov¹, R. Vereshchako², V. Getman¹, Vitalii Sokolov¹, O. Seikovskiy³¹*General Thoracic Surgery Department, National Medical Academy for Postgraduate Education named after P.L.Shupik, Kiev/Ukraine,*²*General Surgery Department #4, Ukrainian National Medical University named after O.O.Bogomolets, Kiev/Ukraine,*³*General Surgery Department #3, Ukrainian National Medical University named after O.O.Bogomolets, Kiev/Ukraine***Objectives:**

To evaluate surgical options of treatment of short (3 cm or less) esophageal benign stenosis.

Methods:

During last 30 years we treated 347 patients with benign stenosis of the esophagus. 137 (39,5%) required surgical reconstruction. 24 out of them had stenosis less than 3 cm and were resected locally without graft interposition. There were 20 male and 4 female patients with mean age 39,6 years (range 16 - 86). Caustic burn, previous esophageal surgery, trauma, GERD and Zenker diverticulum were the causes of stenosis. It was associated with obliteration of esophageal lumen in 6 patients and esophageal fistula in 3 patients. 8 patients had stenosis at pharyngo-esophageal junction, 3 in cervical, 1 in upper thoracic, 4 in mid-thoracic, 2 in lower thoracic esophagus and double level location was diagnosed in 6 patients. We performed 7 types of surgical procedures to restore esophageal continuity. At the cervical level: 1. Pharyngoesophagotomy, resection of stenosis in 3/4 of circumference with anastomosis. 2. Circular resection of the esophagus with end-to-end anastomosis. 3. Esophagotomy, resection of involved mucosa with anastomosis in 2/3 of circumference. 4. Circular pharyngo-esophageal anastomosis after avulsion of the esophagus from the pharynx in trauma to the neck. 5. Resection of Zenker diverticulum with esophagotomy and plasty of the wall with a flap fashioned from the diverticulum. In the thorax: circular resection of the esophagus with end-to-end anastomosis. 6. esophagocardiomy, resection of the stenosis in 3/4 of circumference with anastomosis and 7. Esophagotomy, plasty of the stenosis with a flap fashioned from the dilated supragenitic esophageal wall.

Results:

All but three anastomoses healed and esophageal continuity was restored. Three cases of anastomotic leak were treated conservatively. There were no postoperative deaths.

Conclusions:

Local surgical resection and reconstruction in short esophageal benign stenosis carries low rate of complications, good functional results and avoids the need for complex esophagocolo(jejuno) plasty.

Disclosure: All authors have declared no conflicts of interest.

P-190

COMPARISON OF INTRATHORACIC MINIMALLY INVASIVE STAPLED AND OPEN HAND SEWN ANASTOMOSIS AFTER ESOPHAGECTOMY FOR ESOPHAGEAL ADENOCARCINOMAJuha Kauppi, J. Räsänen, J. Salo*Clinic Of General Thoracic And Esophageal Surgery, Helsinki University Central Hospital, Heart and Lung Center, Helsinki/Finland***Objectives:**

To compare the minimally invasive port assisted circularly stapled (MIEA) intrathoracic esophagogastric anastomosis with conventional open hand sewn anastomosis (OHSA). Despite of minimally invasive esophagectomy (MIE) the anastomosis is usually made with open technique left in the neck. Intrathoracic anastomosis is often used in open resections for esophageal adenocarcinoma (EAC), but there are very few studies on the reliability and quality concerning MIEA and no comparison with OHSA.

Methods:

147 consecutive patients (124 men, 23 women; median age 64 years; range 40-85) with EAC were operated on using two-field lymphadenectomy and intrathoracic esophagogastric anastomosis during 2006-2012, 78(53%) patients by means of minimally invasive approach. Neoadjuvant chemotherapy was administered on 96(65%) patients because of locally advanced status of disease. Both groups were similar for preoperative characteristics except for the median Charlson comorbidity score, which was 5 in MIE and 4 in open group. In both groups the intraoperative frozen section confirmed tumor-free distal and proximal resection margins. Narrow gastric tube was anastomosed with esophagus in both groups in posterior mediastinum; in MIEA using circular stapler (Ø25mm), in OHSA with 4-0 resorbable polydioxanone monofilament suture in two layers.

Results:

Operative mortality was 1.5% and overall complication rate 49% with no difference between both groups. Median number of analyzed lymph nodes was 20 in open and 17 in MIE. The operative blood loss and postoperative stay in ICU were significantly less in MIE. The rates of anastomotic leaks after MIEA were 8/78=10% and after OHSA 3/69=4% ($p = 0.08$). Rate of postoperative strictures causing dysphagia and necessitating 1-2 endoscopic dilations was in OHSA 29% (20/69) vs. 8% (6/78) in MIEA ($p = 0.001$). No chronic strictures developed in either group.

Conclusions:

MIEA is at least as safe as OHSA. The leak rate is similar, but MIEA has less anastomotic strictures.

Disclosure: All authors have declared no conflicts of interest.

P-191

ASSESSMENT OF QOL IN RELATION TO THE TYPE OF RECONSTRUCTION IN COMPLEX CORROSIVE STRICTURES OF UPPER GI TRACT

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Objectives:

Corrosive injuries of the upper gastrointestinal tract is one of the common cause for Upper gastrointestinal strictures in the Indian subcontinent. Frequently, esophageal substitution surgeries with either tubularised stomach or colon is done to bypass the strictured esophagus

Methods:

To analyse the quality of life following the two types of reconstructive surgeries: gastric pull-up vs. coloplasty. (Colon Substitution) Materials and Methods:

We used SF-36 General Health Questionnaire and self-made disease-specific questionnaire. All Patients who underwent conduit surgery at our department between march 2009 and February 2011 were asked to fill this questionnaire one month and one year following the surgery. The results of the two time periods are compared for better differentiation.

Results:

A total of 44 patients were included in the study. Among them 12 underwent gastric pull-up and 32 patients underwent coloplasty. Patients undergoing coloplasty had higher mean scores in both physical and mental health components at one month and one year follow-up and was found to be statistically significant in most of the components analysed. Also, reflux related scores; weight related scores and psychological scores were significantly higher for coloplasty patients at one-year follow-up.

Conclusions:

Long term results of colon as esophageal substitute is better than gastric pull-up.

Disclosure: All authors have declared no conflicts of interest.

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TOTALLY STAPLED PHARYNGO CAECOPLASTY WITH COLON PULL-UP: OUR EXPERIENCE WITH 52 CASES USING THIS NEW TECHNIQUE.

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Objectives:

Complex pharyngo oesophago gastric corrosive strictures are the most difficult problems to manage, as coloplasty is the only available option in most of the situations. This is not without any problem as there is a need for adequate length of colonic conduit with good vascularity, wide secure anastomosis to avoid leak or stenosis. This original technique described by the author has overcome all these problems.

Methods:

Steps of the procedure: (1) Right Transverse colon, entire ascending colon and terminal ileum are first mobilized; (2) Right colic and ileocolic vessels are ligated in majority and middle colic Artery ligated if warranted; (3) Ileal transection is done 7 cms from ileocaecal junction and taken up along the retrosternal route. (4) In the neck – the site for anastomosis is usually the posterior pharyngeal wall. (5) The anvil of CDH 25 stapler is passed intra-orally and brought out through the pharyngeal wall. (6) The stapler is now passed through the ileum and it emerges through the medial wall of caecum and pharyngo caecal stapling is completed. (7) The ileum is now stapled closed to ileocaecal junction using TLC 55. (8) Stapled Anterior Cologastric anastomosis is done without redundancy.

Results:

This new technique has been done in 53 patients with mortality in 3, minor leak in four – which settled with conservative therapy; recurrent dysphagia in 2 of which one revised with endostapler.

Conclusions:

This original technique has thus overcome the problems of conventional coloplasty; and it is possibly has given the best results in the management of these complex problems.

Disclosure: All authors have declared no conflicts of interest.

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PRIOR ENDOSCOPIC TREATMENT HAS NO IMPACT ON SURGICAL OUTCOMES OF ACHALASIA PATIENTSH Volkan Kara¹, Z. Bilgi¹, A. Issaka¹, B. Yildizeli¹, N. Bekiroğlu², H.F. Batirel³¹*Department Of Thoracic Surgery, The Ministry of Health of Turkey – Marmara University Hospital, Istanbul/Turkey,*²*Department Of Biostatistics, The Ministry of Health of Turkey – Marmara University Hospital, Istanbul/Turkey,*³*Department Of Thoracic Surgery, Marmara University Faculty of Medicine, Istanbul/Turkey***Objectives:**

Endoscopic treatment methods for achalasia has moderate success for management of achalasia but it is known that either repeated attempts are needed over time or patients resort to surgery. Scar tissue and anatomical disruptions induced by balloon dilatation may make surgery more risky and affect outcomes. In this study we analyzed patient reported outcomes of primary surgery versus surgery after endoscopic treatment.

Methods:

Patients who underwent surgery for achalasia after standard of care diagnostic workup between 2007-2012 were assigned into two groups; Group 1, primary surgery and Group 2, surgery after prior endoscopic treatment. All patients underwent myotomy and fundoplication in laparoscopic cases. Patient characteristics were derived from prospectively recorded database. Patients were interviewed individually for pre and post surgery Eckart scores. Mann Whitney U test was used for evaluating pre and post surgery changes in Eckard scores, Student s T test was used

Results:

There were 59 patient operated on. 37 patients were available for evaluation (12 men and 25 women). The mean age was 45.2(25,3-80,8). Median hospital stay was 3.2 days There was no operative mortality. 17 patients underwent surgery without prior intervention. 20 patients had undergone prior endoscopic treatment. The duration of the effectivity of this treatment was endoscopic treatment 3.3 months (1-12months). The groups were evenly distributed in terms of age and sex. There was only 25% decrease in Eckardt score after endoscopic treatment alone. After myotomy and fundoplication the decrease rate in Eckardt Score was %86 in Group 1 (primary surgery), in Group 2 (surgery after endoscopic treatment) decrease was 85%, comparison of two groups was not statistically meaningful ($p=0,9$).

Conclusions:

Gastroesophagealmyotomy and fundoplication is safe and durable option for treatment of achalasia. Prior endoscopic treatments can pose technical difficulty for surgery but in our practice this does not translate into reduced benefit from surgery

Disclosure: All authors have declared no conflicts of interest.



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SALVAGE ESOPHAGECTOMY FOR RESIDUAL ESOPHAGEAL CANCER AFTER DEFINITIVE CHEMO-RADIOTHERAPYMitsuyo Nishimura, H. Daiko, T. Hujita*Thoracic Surgery, National Cancer Center Hospital East, Kashiwa/Japan***Objectives:**

It is difficult to treatment that local recurret patients after definitive chemoradiotherapy of esophageal cancer. We retrospective evaluate the survival and efficacy of salvage surgery after definitive chemo-radiation therapy of locally advance esophageal cancer.

Methods:

We reviewed patients of salvage esophagectomy from January 2001 to December 2011 at our hospital retrospectively. There were one hundred patients who received 5-fluorouracil combined with cisplatin plus concurrent over 50Gy of radiation therapy followed by surgery.

Results:

One hundred patients were resected after full dose concurrent chemoradiotherapy (90 male, all squamous cell carcinoma). Median age was 63 years (range 41-87). Thirty-one patients had relapse after complete response; 52 patients were partial response; 6 patients were no change cases; 11 patients were PD. The tumor location was: upper thoracic 13 cases, middle thoracic 48 cases, lower thoracic 39 cases. pT0 cases were 11. pT1 cases were 5, T2 were 15, T3 were 54 cases, T4 were 15 cases. pN0 cases were 56 cases. Operation method consisted of the trans-thoracic approach, three-field esophagectomy and reconstructed gastric tube or colon. Postoperative morbidity increased. Total were 76 cases: pneumonia 25; arrhythmia 60; anastomotic leak 23; wound infection 28; anastomotic stenosis 8; paralysis recurrent laryngeal nerve 46; empyema 2; multiple organ failure 2; operative mortality (hospital death) 10 cases. Postoperative one and 3 years survival rate were 57% and 24% respectively. Long-term survivors were pathological N0 cases. 3 years survival rate of pN0 was 34% and pN1 was 10%. The 3-year survival rate of R0 and R2 was 30% and 0 % respectively.

Conclusions:

Morbidity and mortality of salvage esophagectomy for relapse or residual tumor after full-dose chemo-radiotherapy increased; however pN0 patients in this group achieved long-term survival and R0 resection is important.

Disclosure: All authors have declared no conflicts of interest.

P-195

EXPERIENCE ON THE DIAGNOSIS AND TREATMENT OF INTRATHORACIC GASTRO-AIRWAY FISTULAE AFTER ESOPHAGECTOMY FOR ESOPHAGEAL CARCINOMALong-Qi Chen*Thoracic Surgery, West China Hospital, Chengdu, Sichuan/China***Objectives:**

To summarize our results and experience in dealing with the postoperative intrathoracic gastro-airway fistulae after esophagectomy for esophageal carcinoma.

Methods:

From January 2010 through February 2012, 1490 patients with esophageal carcinoma underwent esophagectomy in our department. The postoperative intrathoracic gastro-airway fistulae were documented in 10 patients, with a frequency of 0.67%. Five of them died. The possible etiology, clinical characters, treatment and prevention of this complication were reviewed.

Results:

The locations of the fistulae were 7 at left main bronchus, 1 at right main bronchus, and 2 at distal trachea. After 2-3 weeks conservative treatment, 1 patient underwent primary surgical repair and cured, one refused any further intervention and sacrificed, 8 patients underwent endoscopic insertion of covered stent and only 3 healed. For the remaining 5 cases with failed stent therapy, 2 died of severe aspiration and lung infection, 3 had surgical repair, one of them survived and 2 died of aspiration and aortic rupture, respectively.

Conclusions:

The development of intrathoracic gastro-airway fistulae was associated with the iatrogenic injuries and suturing material irritation of the gastric tube to the tracheal/bronchial wall. Therefore, a meticulous closure and wrapping of gastroplasty and appropriate isolation using artificial patch or great omentum between airway and esophageal substitution could effectively reduce the fistulae. The stent therapy usually fails in treating this entity and surgical repair remains the final and radical therapeutic option. Primary repair is suggested and careful preoperative assessment remains crucial.

Disclosure: All authors have declared no conflicts of interest.



P-196

ROBOTIC ASSISTED MODIFIED HELLER MYOTOMY PROVIDES SUPERIOR VISUALIZATION RESULTING IN IMPROVED OUTCOMES FOR PATIENTS WITH ACHALASIA

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Objectives:

Surgical myotomy provides the best long-term results for achalasia. While minimally invasive approaches are the preferred approach, prior non-surgical intervention has resulted in an increased complication rate for surgical intervention and reduced long-term outcomes. In an attempt to improve outcomes and limit intraoperative surgical misadventure, we have employed the use of robotics for improved articulation and better visualize.

Methods:

Fifty-one consecutive patients underwent robotic assisted modified Heller myotomy (RAMHM) through an abdominal (47) or left thoracic approach (4). A D'Orr fundoplasty was performed in all patients with an abdominal approach and no anti-reflux procedure was performed in the transthoracic approach. All patients underwent a barium swallow on POD1, and at 1, 3 and 5 years following the procedure.

Results:

There were no mortalities. LOS was 1.7 days. Operative time was 127 minutes. 38/51 patients had prior non-surgical interventions. There were three intraoperative mucosal entries. Two patients required esophagectomy due to multiple failed procedures. Two patients who required transthoracic approaches required conversion to an open procedure. Five patients (10%) had persistent dysphagia following surgical myotomy, 4/5 had prior surgical intervention and required either Nissen takedown (2/4) or redo myotomy (2/4) at the time of their initial surgery. One patient who had a primary myotomy has persistent symptoms following her procedure but has refused any further evaluation. However 47/49 (95%) were satisfied with their ability to swallow. Eight patients (15%) had reflux, 4 were occasional; all 6 patients are controlled with proton pump inhibitors. Contribution and profit margin were still positive even with the addition robot related costs/case.

Conclusions:

Robotic assisted modified Heller myotomy is a safe, feasible, and still profitable operation which has resulted in improved outcomes, improved patient satisfaction and fewer complications compared to our previous experience with either open or other minimally invasive techniques for the treatment of achalasia

Disclosure: All authors have declared no conflicts of interest.

P-197

ADVANCEMENT COLOPLASTY FOR RESTORATION OF CONTINUITY AFTER SEGMENTAL LOSS OF COLON IN LONG SEGMENT COLON INTERPOSITION - SINGLE INSTITUTION EXPERIENCE

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Objectives:

Complex pharyngoesophageal strictures due to corrosive ingestion requires esophageal replacement by either gastric or colonic pull up. While colonic pull up upto the neck may cause total or partial ischemia to the conduit due to traction (or) tension of vascular pedicle. Partial ischemia of the conduit results in upper end of conduit necrosis, which leads to total dysphagia causing failure of Coloplasty. We are describing the new technique to bridge the short segment conduit loss by advancing the available redundant colon with intact pedicle.

Methods:

Three patients underwent advancement of the redundant colon conduit in our institution. Median sternotomy was done in all three patients and adhesions of the colon conduit were released. Abdominal mobilization was done with care taken to protect the vascular pedicle. Primary neck anastomosis was done in the same operation in 2 patients and in the other patient, colon was left in the neck without anastomosis which was completed in a second sitting.

Results:

There was no leak or stenosis.

Conclusions:

Failure of high pharyngocolic anastomosis is one of the difficult to manage situations. This requires revision surgery for its management. Many people have opted for doing an interpositional jejunal graft with microvascular anastomosis. We have described a new technique using the available colon, which can be advanced. In patients with redundant colon conduit, we have found that redundancy can be utilized to take the conduit further up for revision anastomosis.

Disclosure: All authors have declared no conflicts of interest.



P-198

COMPARATIVE ANALYSIS OF VATS TOTAL THYMECTOMY VERSUS OPEN TOTAL THYMECTOMY

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Objectives:

Recently Video-Assisted thoracic surgery (VATS) has evolved for thymectomy. However a VATS approach remains controversial. We present a study to evaluate the feasibility of VATS total thymectomy for the treatment of thymoma and to compare the outcomes with those after open total thymectomy.

Methods:

A comparative study of consecutive 66 patients who underwent surgical resection for thymoma in preoperative Masaoka stage I and II between January 2005 and October 2012 was performed retrospectively. Data of patient characteristics, operation time, intraoperative bleeding, morbidity, length hospital stay, recurrence, and survival were collected for statistical analysis.

Results:

33 cases were in the VATS group and 33 cases were in the open groups. Thymomas were classified to Masaoka staging system: 36 cases in stage I, and 20 cases in stage II preoperatively. The mean tumor size in the open group was 5.1 ± 2.3 cm and the VATS group 3.0 ± 1.4 cm. The operative time was no significant difference between two groups (average 241.6 min vs 217.1 min). The intraoperative bleeding was less in the VATS group than in the open group (average 73.4 ml vs 262.7 ml). The median length of hospital stay was shorter in the VATS group than in the open groups (9.0 days vs 12.0 days). A median follow-up time was 24.3 months (0.3-88.6). There were no recurrence and no mortality in both groups.

Conclusions:

VATS total thymectomy is technically feasible and is associated with a less bleeding and a shorter hospital stay. The oncologic outcomes were similar in the open and VATS groups during short-term follow-up.

Disclosure: All authors have declared no conflicts of interest.

P-199

SEQUENTIAL THORACOSCOPY AND ANTERIOR CONTRALATERAL THORACOTOMY VS STERNOTOMY - A COMPARATIVE ANALYSISFrancesco Paolo Caronia¹, A. Fiorelli², M. Santini², A.I. Lo Monte³¹*Thoracic Surgery, Policlinico Morgagni, Catania, Catania/Italy;*²*Thoracic Surgery Unit, Second University of Naples, Naples/Italy;*³*Department Of Surgery, Palermo University, Palermo/Italy***Objectives:**

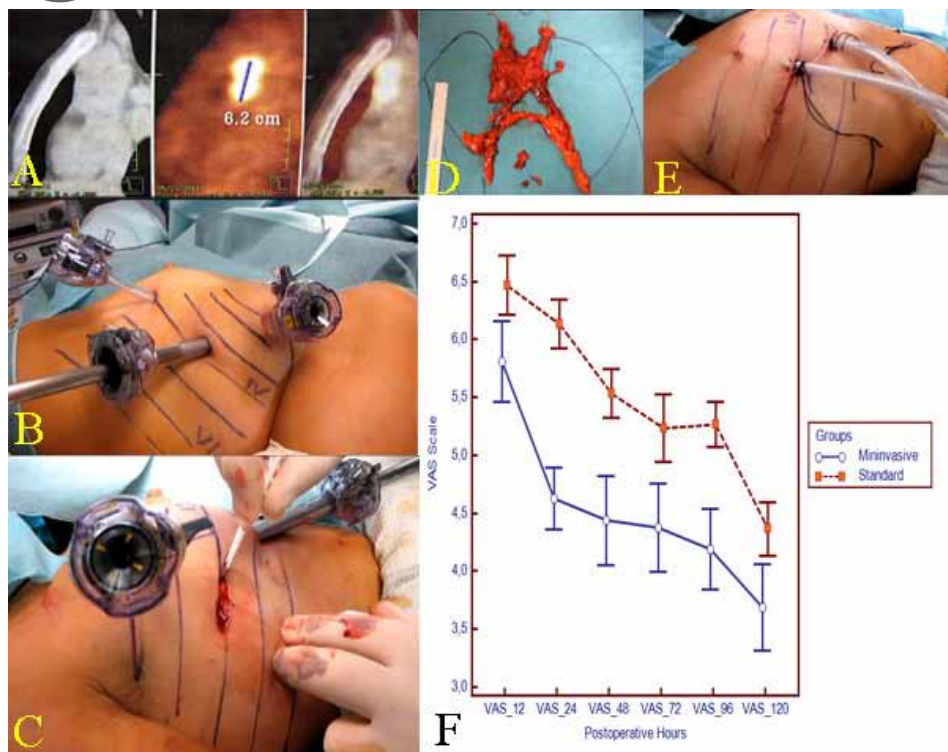
Sequential thoracoscopy and anterior contralateral thoracotomy for thymoma resection is a novel technique which has been recently proposed as an alternative to sternotomy. The aim of the present paper is to understand if such miniminvasive approach may be advantageous respect to standard resection.

Methods:

We retrospectively reviewed the clinical records of 37 patients undergoing surgical resection of thymoma. In 12/37 (32%) a sequential thoracoscopy and anterior contralateral thoracotomy approach was applied (Minim invasive group) and in 25/37 (68%) a standard approach through sternotomy (Sternotomy group). An example of the new technique is reported in Figure 1 A-E. Preoperative, operative and post operative data were recorded in all patients with particular regards on pain measured with VAS scale measured at 12,24,48,72,120 hours after the procedure. The two groups were statistically compared.

Results:

Two patients of the miniminvasive group needed to be converted to sternotomy: one patient presented a thymoma infiltrating the pericardium, and the other showed a tumor of a gel-like consistency. The two groups were homogeneous regarding preoperative variable. No significant difference was found regarding morbidity and mortality. Minim invasive group presented a significant reduction of postoperative pain respect to standard group ($p < 0.001$, ANOVA test, Figure 1/F).



Conclusions:

This study suggests that in selected patients our new technique offers an alternative access to median sternotomy. The result is a reduction of post-operative pain and a better cosmetic result, which is relevant especially in young patients. In theory, such an approach offers the same advantages of robotic surgery, with the gain of saving cost.

Disclosure: All authors have declared no conflicts of interest.

P-200**THYMECTOMY FOR PATIENTS WITH MYASTHENIC CRISIS**

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Objectives:

Thymectomy for myasthenia gravis (MG) is well-established, patients with thymoma, early disease and severe symptoms benefit most. There is now a tendency to refer patients with increasingly severe disease for earlier thymectomy. However, in the short term thymectomy does not bring about immediate relief and can precipitate myasthenic crisis. The aim of this study is to review our experience of thymectomy on patients with the severest symptom – recent myasthenic crisis.

Methods:

We performed a retrospective, descriptive study. Between 2005 and 2012, 50 patients underwent thymectomy for MG. Of these, 12 patients (9 females: 3 males, mean age 45.2, 6 thymomatous MG) had prior myasthenic crisis, defined as respiratory failure requiring intensive care (ICU) admission.

Results:

During the crisis episodes, 8 patients required intubation, 1 required non-invasive ventilation (NIV) and 3 required neither. At the time of operation, 3 patients were still in ICU: one was intubated and 2 required NIV. The median interval between crisis-onset and thymectomy (5 trans-sternal, 6 thorascopic and 1 robotic) was 56.5 days (range 9–233). Preoperatively, 9 patients received intravenous immunoglobulin and 4 underwent plasmapheresis. There were no post-operative deaths or long-term morbidity. The median ICU stay was 1 day (interquartile range (IQR) 1–8) and in-hospital stay was 10.5 days (IQR 5.2–17.8). The three ICU patients had the longest ICU and in-hospital stay (median 14 and 108 days respectively). Median follow-up was 65 months. There were no complete remissions. 8 and 7 patients had reduced pyridostigmine and prednisolone doses respectively. 4 patients had further crises. We compared the 6 patients operated early (group E, median interval 21.5 days) with 6 patients operated later (group L, 104.5 days). All 4 patients with recurrent myasthenic crisis were in group L ($p=0.03$).

Conclusions:

With modern management of MG, early surgery with myasthenic crisis is safe with good long-term outcomes.

Disclosure: All authors have declared no conflicts of interest.

P-201

EXTENDED TRANSCERVIVAL APPROACH WITH ELEVATION OF THE STERNUM FOR RESECTION OF THE THYROID CANCER METASTATIC NODES AFTER PREVIOUS THYROIDECTOMY - ANALYSIS OF THE LARGEST REPORTED SERIESWojciech Czajkowski, M. Zieliński*Thoracic Surgery, Pulmonary Hospital, Zakopane/Poland***Objectives:**

Analysis of the operative technique and the results of the minimally invasive transcervical approach for resection of the mediastinal metastatic lymph nodes of the thyroid cancer

Methods:

Clinical diagnosis of the metastatic spread to the mediastinal nodes was based on the elevated Thyreoglobulin (Tg) level for papillary and follicular cancer, elevated Calcitonin (Ct) level for medullary cancer and on visualization of the suspicious nodules on the imaging studies (CT, PET/CT, Scintigraphy). The patients with retrosternal goiter and ectopic mediastinal goiter were excluded. Operative technique included elevation of the sternum with a hook connected to special frame (Rochard bar, Aesculap-Chifa, Nowy Tomysl, Poland) which widened the access to the mediastinum. The mediastinal nodes were resected en-bloc with the surrounding fatty tissue. The dissection was guided by the previous imaging studies.

Results:

Overall, there were 94 patients operated on in the period from 1.7.2007 to 31.12.2012. In 5 patients (5.3%) concomitant thyroidectomy was performed. Re-resection of the recurrent metastases was performed in 7 patients. In 43 patients there was single mediastinal nodal station involved and in 51 patients there were multiple (2-5) nodal stations involved. Resection was incomplete in 5 patients (5.3%). Conversion to sternotomy/thoracotomy was necessary in 3 patients (3.2%). In 5 patients (5.3%) concomitant partial sternectomy was performed for sternal metastasis. There was no mortality and 8.9% morbidity.

Conclusions:

1. Analysis of this largest reported series of the mediastinal metastases of the thyroid cancer showed that transcervical approach with elevation of the sternum enabled minimally invasive, safe and effective resection with sternotomy or thoracotomy avoided in almost all patients.
2. Detailed imaging studies of chest should be a standard of preoperative evaluation of patients with thyroid cancer

Disclosure: All authors have declared no conflicts of interest.

P-202**ENHANCED RECOVERY PATHWAYS IMPROVE DAY CASE RATES FOR PATIENTS UNDERGOING ELECTIVE MEDIASTINOSCOPY**

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Objectives:

Mediastinoscopy has traditionally involved a one or two night hospital stay. Pre-operative assessment and day-of-surgery admission has made day case mediastinoscopy a realistic and increasingly popular proposition. We initially developed enhanced recovery (ER) pathways for major thoracic surgery with an emphasis on nutrition, patient education, pain control and mobility. Subsequently, these principles were applied to all patients undergoing elective mediastinoscopy with a view to increasing day case rates.

Methods:

Initially, a retrospective analysis was performed of 100 consecutive patients admitted for elective video-mediastinoscopy between January 2009 and August 2010. All patients were admitted on the day of surgery and patients were discharged home when they met certain pre-defined criteria. Once ER protocols had been fully adopted, prospective data was collected on a further 100 consecutive patients admitted for elective mediastinoscopy (April 2011 to August 2012).

Results:

There were no deaths or major complications. Before ER was implemented, 82% of mediastinoscopies were performed as a day case. The reasons for failure of discharge on the day of surgery were medical in 14 patients (nausea, pyrexia, hypoxia or an inability to pass urine) with late returns from theatre accounting for the remaining 4 cases. Older patients were more likely to require an overnight stay ($p<0.05$). Following the introduction of ER the day case rate increased to 92% ($p<0.05$). The reasons for failure of discharge changed: 4 patients lived alone while medical reasons accounted for only an additional 4 cases. Furthermore, age was no longer a factor in determining whether a patient would require an overnight stay ($p=0.83$).

Conclusions:

Mediastinoscopy can be safely performed as a day case procedure. By adopting the principles of enhanced recovery, day case rates are significantly improved.

Disclosure: All authors have declared no conflicts of interest.



P-203

THYMECTOMY BETWEEN VIDEO-ASSISTED THORACOSCOPY AND DIFFERENT OPEN SURGICAL TECHNIQUESMagdi Muhammad*Cardiothoracic Surgery, King Fahd Hosp, Almadina Almunawara/Saudi Arabia***Objectives:**

Thymectomy is well established in the treatment of myasthenia gravis. Numerous techniques for performance of thymectomy have been described and published. We conducted this study to compare the outcomes of the three distinctly different operative techniques, which are thymectomy through total median sternotomy, partial median sternotomy and video-assisted thoracoscopy

Methods:

Between January 2008 and December 2011, thirty patients (9 male and 21 female) aged 20-65 years were included in this study. Patients were subdivided into three groups: group (A) 10 patients underwent thymectomy through total median sternotomy, group (B) 10 patients underwent thymectomy through partial median sternotomy and group (C) 10 patients underwent thymectomy through video-assisted thoracoscopy. Preoperative, intra-operative, postoperative variables and mortality are compared in all groups.

Results:

In all groups, preoperative variables were well matched for age, sex and preoperative clinical staging according to the MGFA clinical classification. Operative time was statistically highly significant; it was longer in Group [C]. There was no intra-operative complication in all groups. Also, postoperative length of hospital stay was statistically highly significant; it was shorter in Group [C]. Postoperative complications occurred in three patients (10%) mostly in group [A] and group [B]. There was no perioperative mortality in all groups.

Conclusions:

We conclude that video-assisted thymectomy is effective as the traditional open surgical approaches for performance of thymectomy in the management of patients with myasthenia gravis. In addition, the improved cosmesis of the video-assisted approach ideally will lead to earlier thymectomy in patients with myasthenia gravis. Key Words: Myasthenia gravis, Thymectomy, sternotomy, thoracoscopy.

Disclosure: All authors have declared no conflicts of interest.

P-204

COMBINED APPROACH FOR RESECTION OF RESIDUAL THORACIC AND RETROPERITONEAL MASSES AFTER CHEMOTHERAPY FOR METASTATIC NON-SEMINOMATOUS GERM CELL TUMOURS

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Objectives:

Resection of residual masses after chemotherapy is advocated for metastatic nonseminomatous germ cell tumours (NSGCT) since residual masses may contain viable tumour and/or teratoma. However, a combined approach for resection of residual thoracic and retroperitoneal disease has rarely been reported. We therefore reviewed our experience to determine the potential advantages of a combined approach to access the abdomen and chest simultaneously.

Methods:

We performed a retrospective review of all patients undergoing thoracic surgery for metastatic NSGCT between 01/2005 and 12/2012 in our institution. All patients received cisplatin-based chemotherapy before surgery.

Results:

Out of 48 patients undergoing thoracic surgery for metastatic NSGCT, 20 had a combined approach to the chest and abdomen, 16 had a sequential approach to the chest and abdomen, and 12 had an isolated thoracic procedure. Patients undergoing a combined approach presented predominantly with mediastinal disease (15 out of 20 patients, 75%) while patients undergoing a sequential approach presented more frequently with pulmonary disease alone (11 out of 16 patients, 69%) ($p=0.02$). Among patients undergoing a combined approach, the laparotomy was combined with a sternotomy ($n=12$), a thoracotomy ($n=5$), or a transdiaphragmatic approach ($n=3$). The sternolaparotomy was combined with a transpericardial approach to access tumor located below the subcarinal space in the mid visceral mediastinum ($n=5$) and/or a transdiaphragmatic approach for tumours located in the lower visceral mediastinum ($n=2$). No peri-operative death was recorded and all patients were discharged home. At follow-up, 3 patients developed recurrence, including one in the chest.

Conclusions:

Combined approach to the chest and abdomen for resection of residual masses after chemotherapy for metastatic NSGCT can be safely performed. A sternolaparotomy is particularly beneficial in patients presenting with residual retroperitoneal and mediastinal disease located in the upper, middle and/or lower mediastinum.

Disclosure: All authors have declared no conflicts of interest.



P-205

NECK AND BILATERAL MEDIASTINAL LYMPH NODE DISSECTION BY MEDIAN STERNOTOMY IN N3 LEFT NSCLCShingo Ikeda, T. Yokota, T. Hoshino, M. Mikubo*Surgical Department Of Respiratory Center, Mitsui Memorial Hospital, Tokyo/Japan***Objectives:**

The role of surgical intervention as the first treatment for clinical stage IIIA or IIIB disease would be beaten somewhat a retreat, especially for clinical N3 diseases. An aggressive approach to neck and mediastinal nodal dissection based on the knowleges about the pathways of lymph drainage, 'systematic neck and bilateral mediastinal nodal dissection through a median sternotomy,' beyond the anatomical difficulties would bring some improvement on the survival of the patients with N3 left NSCLC without any preoperative treatments routinely.

Methods:

Patients with p- N3 α and N3 γ (neck lymph node metastases case) cases have a poor prognosis, and lung operation is not normally indicated. We have performed neck and bilateral mediastinal lymph node dissection by median sternotomy to resect lung cancer and dissect the bilateral mediastinal lymph nodes. We have performed this operation in 273 patients with primary left lung cancer excluding small cell carcinoma and stageIV since 1987. 33 patients had p-N3 lymph node metastases. We will report the investigation of the prognoses of left NSCLC patients who underwent initially our extended neck and bilateral mediastinal dissection, focused on the patients with N3 disease. According to the macroscopic dissection procedure, dissection of the lymphatics from the lungs to the supraclavicular lymph nodes was performed by sequential removal of the related organs. We systematically compared and reviewed the route of lymphatic communications to the neck and contra lateral side with the anatomical significance of left-to-right lymphatic communications in the bilateral mediastinal lymph nodes.

Results:

The 5-year survival rate (Kaplan-Meier method), including operative deaths and deaths due to unrelated diseases, was 45.5% in p-N3 α 34.1% in N3 γ .

Conclusions:

We found various lymphatic metastases pattern such as between neck and mediastinal lymph nodes and around the trachea in terms of clinical and anatomical status. Our results suggest the importance of the extend dissection by median sternotomy.

Disclosure: All authors have declared no conflicts of interest.

P-206

IMPACT OF PROLONGED VENTILATED DONORS ON LUNG TRANSPLANTATION: SHORT TERM RESULTS

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Objectives:

Extended donor criteria include donors ventilated >5 days, few centres accept >7 days, shortage of lung donors prompted us to accept lungs from prolonged ventilated donors for 5-18 days with inevitable abnormal bronchoscopic findings. Our aim is to determine the impact of this policy on the early outcome of lung transplantation.

Methods:

Thirty one consecutive lung transplantations performed from 29 donors from March 2010 to August 2012 were retrospectively reviewed. Recipients were classified into two groups; Group I (N=14) received lungs from donors of 5 to 7 days ventilation, Group II (N=17) >7 days. We followed the standard donor criteria except presence of excessive secretions at bronchoscopy. We adopted accepting donors with non-turbid, non-accumulating secretions as tested by repeated bronchoscopy after one hour. Donor groups were comparable regarding age, gender and cause of death. Recipient groups were comparable regarding age, gender, type of transplantation and diagnosis, received same immunosuppression and anti-microbial regime.

Results:

There were no statistically significant differences between the 2 groups regarding prolonged Ischemic time >6hs (28.6% vs. 23.5%), need of cardiopulmonary bypass (21.4% vs. 29.4%), ECMO support (7.1% vs. 5.9%), Intubation time (12.2±16.1 vs. 21.6±44.3 days), ICU stay (15±14.7 vs. 26±43.5 days), hospital stay (32.5±21.3 vs. 47.4± 59.8 days), bronchial anastomotic complications (7.1% vs. 5.9%). At a mean follow up of 442±311 days, the best lung function tests (83.8±17.6% compared to 77.9±22.3%), grade 3 PGD (42.8% vs. 41.2%), pneumonia confirmed by bronchoscopic BAL Culture (21.4% vs. 23.5%) and mean survival (85.7% vs. 82.4%), all statistically insignificant.

Conclusions:

Prolonged ventilated donor with non-turbid, non-accumulating secretions based on 2 pre-harvesting bronchoscopies with no evidence of infection or aspiration does not increase the incidence of early pneumonia, early rejection, or short term survival of lung transplantation. This has the potential to increase donor's pool. Long-term evaluation is advised.

Disclosure: All authors have declared no conflicts of interest.

P-207

SPERROT.COM A NEW WAY OF REPORTING TRACHEAL STENOSIS

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²Pneumology, Mexican Institute of Social Security, Mexico/Mexico,

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Objectives:

Postintubation tracheal stenosis is a common problem for thoracic surgeons. There are classifications of this pathology but none is complete enough to direct final treatment. The report of tracheal stenosis in our hospital is not standardized and this may cause confusion and delay in surgery when indicated. The purpose of the study was to create a new way of reporting benign tracheal stenosis that could be used by thoracic surgeons and pneumologist.

Methods:

a new classification was developed to report benign tracheal stenosis based on the letters SPERROT.COM which means: Site, Percentage, Extension, tracheal Rings above, tracheal Rings below, Other findings, Treatment performed and Treatment proposed. The .COM means comorbidity. We establish a score for each letter and a schema to draw the bronchoscopic findings. A final statement was obtained. The final statement was similar to: S[3]P[3]E[2]Ra[CrC]Rb[8na]O[1i]T1[1(DILAT+MITO)]T2[2(TQP)] .COM [1] S[3-5]P[2]E[3]Ra[1na]Rb[2na]O[0]T1[0]T2[2(MONT)] .COM [0] S[2]P[1]E[1]Ra[0]Rb[1na]O[1nr(2°-3°)]T1[0]T2[1(MONT)] .COM [2] To evaluate if this classification is useful, we prospectively classify the bronchoscopic findings of patients with tracheal stenosis from July 1st 2011 to december 31st 2012.

Results:

We performed 22 broncoscopic revisions in first-time patients with tracheal stenosis. In every bronchoscopic report was possible to classify by SPERROT.COM

Conclusions:

this new classification allows reporting bronchoscopic findings in a more complete way than usual. The final statement can be easily placed in a database. More investigation is needed to develop a tracheoscore to direct the management of patients with tracheal stenosis, based in this classification.

Disclosure: All authors have declared no conflicts of interest.

P-208**EXTRACORPOREAL LIFE SUPPORT AS A BRIDGE TO LUNG TRANSPLANTATION: INSTITUTIONAL EXPERIENCE**

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Objectives:

Extracorporeal life support (ECLS) is the only option for lung transplant candidates who do not respond to maximal ventilator support while waiting for an available donor lung. The study objective was to compare survival in patients requiring pretransplant ECLS with that of patients not requiring ECLS. Institutional experience with ECLS as a bridge to lung transplantation (LuTX) is reported.

Methods:

Between January 2000 and December 2012, 285 LuTX were performed at our institution. Twenty patients underwent ECLS with intention to bridge to LuTX. Sixteen patients (median age 44.5 years, range 17-65 years) were successfully bridged to LuTX on ECLS. The underlying diagnosis was idiopathic pulmonary fibrosis (n= 9), cystic fibrosis (n= 6), and emphysema (n= 1). The type of ECLS was venovenous extracorporeal membrane oxygenation (ECMO) (n= 6), venoarterial (n= 3), interventional lung assist (n=2), and stepwise combination of them (n=5). Primary LuTX was performed in 14 and retransplantation in 2 cases. The type of procedure was bilateral LuTX in 9, bilateral lobar LuTX in 5 and unilateral LuTX in 2 patients.

Results:

Two patients weaned from ECLS and 2 patients died on ECLS while waiting for a donor. Success rate for bridging was 80%. Median duration of ECLS was 17.5 days (range, 1-46 days). Twelve patients required ECMO in the postoperative period (median 2.5 days, range, 1-9 days). Unadjusted 30-day, 1-year, and 2-year survivals were 81%, 66%, and 47%, respectively, for ECLS patients and 95%, 86%, and 80% who were transplanted during the same period without preoperative ECLS (p=0.0001).

Conclusions:

Extracorporeal life support as a bridge to LuTX is associated with higher perioperative morbidity and mortality. Our data show significantly lower survival in this high-risk group compared to those who were transplanted without preoperative ECLS.

Disclosure: All authors have declared no conflicts of interest.

P-209

ROLE OF CARDIOPULMONARY EXERCISE TESTING IN PATIENTS WITH ENDOBRONCHIAL VALVES

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Objectives:

Lung volume reduction surgery and transplant can improve quality of life and survival in selected patients but are associated with significant morbidity and mortality. Endobronchial valves (EBV), an alternative less invasive therapy, have shown to improve lung function, exercise tolerance, and symptoms of advanced emphysema in selected population. Objective assessment of EBV use includes pre- and post-implantation quality of life assessment, lung function assessment, 6-minute walk test and cardiopulmonary exercise testing (CPEX). In this study we have prospectively assessed the relevance of CPEX in a subset of patients pre- and post-EBV implantation.

Methods:

Between 1st of Feb 2011 and 29th of Feb 2012, 9 patients (8 males), median age 62 years (range 34 – 71 years), with heterogenous emphysema were implanted with EBV following Chartis assessment under general anaesthetic. All patients had pre- and post- EBV implantation lung function and CPEX assessment.

Results:

In total 27 valves were implanted (21 valves size 4.0 mm and 6 valves size 5.5 mm, median 3 valves per patient). At 3 months follow-up all patients experienced symptomatic improvement despite no significant change in lung function testing (FEV1: 1 ± 0.7 litres vs 1 ± 0.7 litres, $p=0.514$; FVC: 2.8 ± 1 litres versus 2.9 ± 1 litres, $p=0.427$). Similarly there was no improvement in maximum peak oxygen consumption (13.8 ± 7.6 mls/min/kg vs 12.7 ± 8.1 mls/min/kg, $p=0.238$). There was a significant reduction in the slope of ventilation to carbon dioxide output towards normalisation consistent with symptomatic improvement (VE/VCO₂: 35.6 ± 5.9 vs 30 ± 6.9 , $p=0.03$).

Conclusions:

In our subset population, VE/VCO₂ was the best objective indicator of functional improvement. Future evaluations should include greater patient numbers and also measurements of health related quality of life and assessment of ventilatory efficiency using the VE/VCO₂ slope.

Disclosure: All authors have declared no conflicts of interest.

P-210

PROSPECTIVE OBSERVATIONAL STUDY OF PERCUTANEOUS TRACHEOSTOMY WITH SPECIAL ATTENTION TO THE ROLE OF BRONCHOSCOPY AND SURGICAL TECHNIQUE

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Objectives:

Percutaneous tracheostomy has become a routine procedure in intensive care. However, considerable variation exists in the procedure. The aim of the current study was to evaluate the role of intraoperative bronchoscopy and to compare various surgical techniques of tracheostomy.

Methods:

During a one-year period all percutaneous tracheostomy cases in three intensive care units of one hospital were prospectively documented according to a unified protocol. In one unit bronchoscopy was used during the whole procedure and in two units only to determine the position of the guiding needle.

Results:

111 patients (34 female, 77male) with median age of 64 (range 18-86) years and BMI of 25.4 (range 15.9-50.7) were included. In unit "A" anterior tracheal wall was directly exposed; in unit "B" limited dissection to enable immediate tracheal wall palpation was made. Bronchoscopy was used to check the location of an already inserted guiding needle. In these units needle position required correction in 8 and 12% of cases, respectively. In unit "C" bronchoscopy was used to guide needle insertion without dissection of pretracheal tissue; the position of the needle required correction in 66% of cases. Median duration of operations performed by a thoracic surgeon or a surgical resident (unit "B") was 10 (range 3-37) minutes; operations performed by an ICU doctor or a resident 16.5 (range 3-63) minutes ($p<0.001$). Time since beginning of preparations until the end of the whole procedure was median 32 minutes when tracheostomy was performed in an ICU bed and 64 minutes when in an ICU theatre ($p<0.001$).

Conclusions:

Surgical dissection of pretracheal tissue to expose the anterior wall of trachea allows proper guiding needle insertion and bronchoscopic support is rarely needed. Procedures performed by a thoracic surgeon are faster and performing tracheostomy in an ICU bed saves time considerably.

Disclosure: All authors have declared no conflicts of interest.

P-211

PERIOPERATIVE MORBIDITY AND MORTALITY AFTER THORACOSCOPIC LUNG VOLUME REDUCTION SURGERY FOR ADVANCED EMPHYSEMAMichaela Tutic¹, P. Kestenholz², D. Schneiter², I. Opitz², M. Kohler³, W. Weder²¹*Department Of Thoracic Surgery, Department of Thoracic Surgery, Zurich/Switzerland,*²*Department Of Thoracic Surgery, University Hospital Zurich, Zurich/Switzerland,*³*Division Of Pulmonology, Division of Pulmonology, Zurich/Switzerland***Objectives:**

Lung Volume Reduction Surgery (LVRS) improves in selected patients with advanced emphysema improves symptoms, pulmonary function, exercise tolerance, quality of life and may even prolong survival in comparison to medical treatment. However, despite these advantages LVRS is not adequately applied worldwide partially due to a misleading notion of prohibitive risks. After establishing selection criteria's and optimized treatment algorithms the aim of this study is to evaluate our current mortality and morbidity.

Methods:

252 consecutive patients (64 years (31-84), 111 females) with advanced emphysema FEV1 26 % (14-58%), RV/TLC: 0.68 (0.53-0.87); DLCO: 34% (10-71%) (median and range) were treated by video-assisted thoracoscopic LVRS (77 unilateral) and analyzed from our prospective study over the last 10 years. All types of emphysema morphology including the non-heterogeneous type were accepted.

Results:

The 90-day mortality was 1.2% (3/252). 2 patients died due to cardiac insufficiencies (elevated cardiac risk profile known preoperatively) and 1 due to respiratory failure. The median drainage time was 6 days (2-43) and hospitalization was 11 days (4-91). 143 (57%) patients had no complications at all. In 88 (33%) patients pulmonary complications occurred; 60 (24%) had prolonged air leaks (>7 days), 30 (12%) treated with a reoperation, 6 (2%) with pneumonia, 10 (4%) were temporarily reintubated. 2 (1%) patients with severe adhesions developed a hemothorax). 13 (5.2%) patients had cardiovascular morbidity requiring medical and antiarrhythmic treatment. 6 (2%) had a gastrointestinal complication and 11 (4%) other complications (cerebrovascular incident, urinary tract infection).

Conclusions:

Thoracoscopic LVRS in selected patients with severe emphysema and impaired lung function is safe in a dedicated and experienced centre when the appropriate selection criteria's are respected. The 90-day mortality with 1.2% is low and the perioperative morbidity is acceptable when the possible gain in quality of life is taken into account.

Disclosure: All authors have declared no conflicts of interest.

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REDO TRACHEAL SURGERY FOLLOWING PREVIOUS RESECTIONCiprian Bolca, M. Dumitrescu, O. Danaila, C. Paleru, I. Cordos*Thoracic Surgery, "Marius Nasta" National Institute of Pneumology, Bucharest/Romania***Objectives:**

To present our experience with tracheal resection and reconstruction.

Methods:

Between January 2007 and December 2010 we have performed redo tracheal surgery in eight patients. Reresection was performed "per primam" in a patient with an adenoid cystic carcinoma recurrence 3 years after surgery and in five patients with anastomotic stenosis after initial resection for postintubation injury. Two more patients (with initial resection for postintubation stenosis) were initially dilated by means of rigid bronchoscopy. In addition a tracheal T-tube was used for a period of time before redo surgery. The range of the resected specimen length was 1.5 to 2.5 cm of trachea, so finally we had a total length of tracheal resection between 2.5 and 4 cm. Only pretracheal dissection (more difficult this time) and neck flexion were used as release maneuvers. All cases with initial postintubation stenosis were cervically situated and the approach was a simple cervicotomy; the tumoral recurrence required a partial sternotomy. In all cases we performed a circular tracheal resection; there was no subglottic laryngeal involvement.

Results:

There were no perioperative deaths. After a follow up between 3 and 6 years there were no stenotic recurrences. A good outcome with no physical limitations and a normal voice was achieved in 7 patients. Vocal cord dysfunction was seen in one patient.

Conclusions:

Redo tracheal resection is safe in well chosen patients. Good results can be expected in experienced centers. Adenoid cystic carcinoma is well known for local recurrence long term after initial surgery, so close follow up must be done. Anastomotic tension and failing to initially resect all impaired tracheal tissue are the main causes of tracheal restenosis.

Disclosure: All authors have declared no conflicts of interest.

P-213

ARTIFICIAL TRACHEO- LARYNGEAL COMPLEX (ATLC) TRANSPLANTATION IN PATIENTS WITH TRACHEAL DISEASES. EARLY RESULTS (A 6- MONTH FOLLOW-UP PERIOD). KRASNODAR (RUSSIAN FEDERATION) EXPERIENCE

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Objectives:

Problems of replacing the trachea with a graft, especially in cases with inoperable tracheal process when it is impossible to suture resected margins, should be settled in several ways. Probably the most promising way is to apply wide possibilities of regenerative medicine to cover an artificial nanocomposite scaffold with a patient's native stem cells. We offer our first transplantation of ATLC created by regenerative medicine novel techniques.

Methods:

Performed in June, 2012, two consecutive transplantations of ATLC covered with native stem cells became the results of a mutual preparatory 9-month work of Russian, Sweden and American scientists and surgeons. These two young patients with benign extended diseases of thoracic and cervical trachea (including vast tracheal defects) had undergone series of unsuccessful reconstructive operations. Operations were performed via the cervical approach under the general anesthesia with sequential ALV types and direct tracheo-laryngeal anastomoses.

Results:

There were no cases of intraoperative complications. We observed a reliable graft retention and recorded proliferating epithelial tissue in the scaffold lumen. In terms from 6 to 8 weeks patients developed scaffold deformities and excessive growth of granulation tissue along the anastomotic line. And these problems required a prolonged bronchial treatment with mitomycin. Due to the critical scaffold malformations occurred by the middle of the fourth postoperative month each patient was placed two self-expanding metal bronchial stents. All this period patients are mobile, their breath is fluent and undependable, no signs of external infection are noticed.

Conclusions:

The first transplantation of nanocomposite tracheo-laryngeal complex covered with patient own stem cells (a 6-month follow-up period) demonstrated reliable immediate results, but the technology of nanocomposite scaffold needs to be improved.

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P-214

EXTRA CORPOREAL MEMBRANE OXYGENATION (ECMO) DURING THORACIC PROCEDURES EXCLUDING LUNG TRANSPLANTATION. A MULTICENTRE STUDYP. Rinieri¹, C. Peillon¹, B. Veber², J. Arrignon³, P. Falcoz⁴, J. Bessou⁵, P. Litzler⁵, Jean-Marc Baste⁶¹*Thoracic Unit, Rouen University Hospital, Rouen/France,*²*Intensive Care Unit, Rouen University Hospital, Rouen/France,*³*Cardiac Intensive Care Unit, Rouen University Hospital, Rouen/France,*⁴*Thoracic Surgery, Nouvel Hôpital Civil, Strasbourg/France,*⁵*Cardio-thoracic Department, Rouen University Hospital, Rouen/France,*⁶*Thoracic, Rouen University Hospital, Rouen/France***Objectives:**

ECMO for respiratory support is increasingly used in intensive care units, whereas it is rarely utilised during thoracic surgical procedures outside the transplantation setting. ECMO is an alternative to conventional cardiopulmonary bypass for major tracheal and bronchial surgery without in field ventilation. Our aim is to describe its benefits, indications and complications.

Methods:

Multicentre retrospective study (questionnaire) of ECMO use during thoracic surgical procedure excluding lung transplantation.

Results:

From March 2009 to June 2012, 17 of the 33 centres in France have applied ECMO within these indications in 34 patients. They were veno-venous n=19 or veno-arterial n=15. Ten veno-arterial ECMO procedures were done with peripheral cannulation and 5 with central cannulation; all veno-venous ECMO were achieved through peripheral cannulation. Group 1, n=26: total respiratory support without mechanical ventilation, 22 tracheo-bronchial procedures, 4 single lung procedures. Group 2 partial support n=5: patients with respiratory insufficiency. Group 3, pre-operative ECMO n=3: surgery in the setting of ARDS. Mortality at 30 days in groups 1, 2 and 3 was 8, 40 and 67% respectively (p<0.05). In group 1, ECMO was weaned intraoperatively in 52% or within 24h. In group 2 ECMO was weaned in ICU over several days. In group 1, two patients with veno-arterial support were converted to veno-venous for chronic ventilatory support. Bleeding was the major complication with 18% of the patients requiring return to theatre for haemostasis. There were two cannulation related complications (6%).

Conclusions:

Veno-venous or veno-arterial ECMO is a satisfactory alternative to in-field ventilation in complex tracheo-bronchial surgery or in single lung surgery. ECMO needs to be considered and used in precarious post-operative respiratory condition. Full respiratory support can be achieved with veno-venous ECMO. Indications and results of ECMO during surgery in patients with ARDS needs to be carefully further investigated.

Disclosure: All authors have declared no conflicts of interest.

P-215

QUANTITATIVE ASSESSMENT OF EMPHYSEMATOUS PARENCHYMA USING MULTIDETECTOR-ROW COMPUTED TOMOGRAPHY (MDCT) IN PATIENTS SCHEDULED FOR ENDOBRONCHIAL TREATMENT WITH ONE-WAY VALVES

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Objectives:

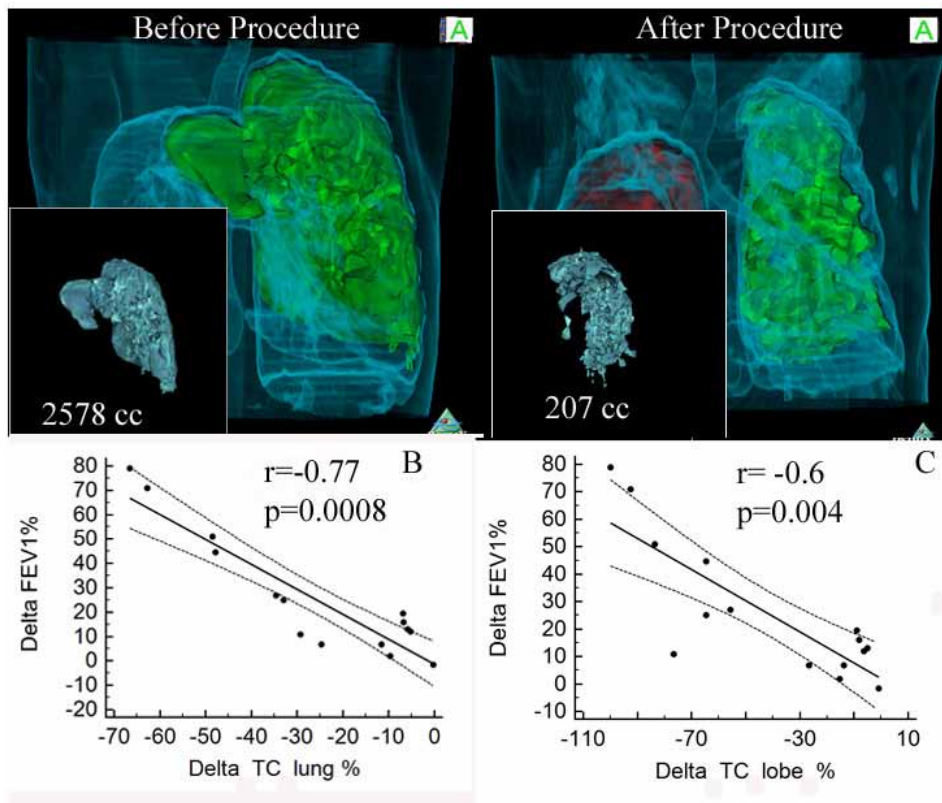
Quantitative chest-tomography assessment of emphysema represents a valid tool to evaluate parenchymal hyperinflation in emphysematous patients. We aimed to investigate if the quantitative assessment (global lung and/or target lobe) of emphysematous parenchyma using multi-detector-row computed tomography (MDCT) may improve the selection of patients scheduled for bronchoscopic lung volume reduction (BLVR).

Methods:

15 patients underwent BLVR using endobronchial-one-way valves in the last five years. All patients were studied pre and post-operatively with MDCT chest scan and fitness tests. Emphysematous parenchyma was obtained applying density thresholds of -1.024/-950 HU. The differences between pre-operative and postoperative radiological findings were statistically compared (Mann-Whitney Test) and plotted against spirometric results (Spearman test) observed three months after the procedure.

Results:

Radiological findings showed the presence of giant emphysematous bullae associated with heterogeneous emphysema (n=9) and heterogeneous emphysema alone (n=5). Respect to pre-operative value, the postoperative volume of global lung (1876 vs 1493; p=0.001) and of the target lobe (1626 vs 1049; p<0.0001) was significantly reduced. Volumetric median reduction of global lung and of target lobe was 24% [66%-0.3%] and 26% [100%-0.9%], respectively. Figure 1 showed an example. Respect to preoperative data, FEV1 (46% vs 38%; p=0.02), and FVC postoperative value (51% vs 42%; p=0.02) was significantly increased, while RV postoperative value (189% vs 153%; p=0.0001) significantly reduced. Significant correlation existed between the increase in FEV1 and the reduction in volume of global lung (r=-0.77; p=0.0008; 95% CI:-0.920 to -0.42, Figure 1/B) and of target lobe (r = -0.6; p=0.004; 95% CI:-0.850 to -0.28; Figure 1/C).



Conclusions:

Our study showed a significant correlation between the volume reduction of emphysema measured using MDCT and the improvement of FEV1. Considering the costs of valves, the MDCT quantification of emphysema may be used in preoperative work-up to select patients who will benefit or not from BLVR with cost saving.

Disclosure: All authors have declared no conflicts of interest.

P-216

REDUCING THE EXTENT OF RESECTION IN NON SMALL CELL LUNG CANCER WITH THE USE OF PHOTODYNAMIC THERAPY

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Objectives:

About one-third of NSCLC patients have unresectable locally advanced tumor or limited pulmonary function. Preoperative and intraoperative photodynamic therapy (PDT) was performed for the purpose of reducing the extent of resection in this type of patients.

Methods:

22 patients with central stage II-III NSCLC (main bronchus/distal trachea involvement) who completed the treatment plan were prospectively analyzed. They were not initially eligible for surgery: 12 patients were not tolerate pneumonectomy, 10 patients had tracheal invasion from primary lesion (mostly left). Treatment plan included preoperative endobronchial PDT plus chemotherapy followed by tumor resection and intraoperative PDT. Once a macroscopic complete resection was achieved, the intraoperative PDT of the open bronchial stump and mediastinum was performed, the stump was than manually sutured. The second generation photosensitizer agent chlorine E6 and 662 nm laser light was used for PDT.

Results:

Endoscopic response was noted in 21 (95%) patients after neoadjuvant treatment. 12 patients were originally candidates for pneumonectomy, and it became possible to reduce the extent of resection to lobectomy or bilobectomy in all of them. In 10 patients with initial trachea tumor it disappeared from the trachea lumen in 9 ones. These 9 patients underwent pneumonectomy, remaining one – carinal pneumonectomy. One patient died postoperatively. Microscopic examination revealed malignant cells of bronchial stump in 3 patients (R1-14%), N0 in 6 (27%), N1 in 14 (64%) and N2 in 2 (9%). Main follow-up period - 31 months (6 to 55 months), no local recurrence was diagnosed. 1 and 3-year survival was 95% and 91%, respectively.

Conclusions:

This study suggests that PDT may have an important role in combination with operation in NSCLC and makes possible to reduce the extent of resection.

Disclosure: All authors have declared no conflicts of interest.

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THE USE OF BIOLOGICAL IMPLANTS FOR SOFT TISSUE AND CHEST WALL RECONSTRUCTION IN THORACIC SURGERY IS SAFE EVEN IN CONTAMINATED ENVIRONMENTS

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Objectives:

To evaluate our experience using bio-prostheses in extended thoracic surgery in contaminated/infected environments

Methods:

A review was performed of the 83 patients who underwent extended surgical procedures requiring thoracic soft tissue reconstruction with bioprosthetic materials from August 2009 to November 2012. Operations involved Extended Total Pleurectomy for Mesothelioma (n=56), extended operations for thoracic malignancies (n=16), surgery for trauma, perforated organs or complications (n=9), and for other benign causes (n=2) We compared the outcomes between the 64 patients undergoing surgery under a “clean” surgical environment without contamination of their pleural space and the 19 cases in which surgery was performed non-electively in the presence of empyema or a contaminated space.

Results:

Postoperative Results

median (range)	Clean Environment	Contaminated Environment	P value
age	65 (39-84)	64 (40-89)	0.2
postop Death	3 (4.6%)	0	1
Hospital Stay	10.5 (4-26)	13 (5-149)	0.1
Reoperation	5 (7.9%)	1 (5.2%)	0.5
Infection	2 (3.2%)	1 (5.2%)	0.5
Patch Problem	2 (3.2%)	1 (5.2%)	1

A total of 140 patches were used (median of 2, range 1 to 3). Median hospital stay was 11 (range 4 to 149) days. There were three postoperative deaths (3.6%) and six patients (7.2%) required reoperation (one haemothorax, one tension pneumothorax, two for patch dehiscence and two for empyema that did not require removal of the patch) There were no differences in mortality, hospital stay or complications between the two groups.

Conclusions:

Bioprosthetic patches for soft tissue and skeletal reconstruction in thoracic surgery are safe and effective even in contaminated/infected environments. As previously described in abdominal surgery, the fear to use patches in infected environments within the thoracic cavity is no longer justified

Disclosure: All authors have declared no conflicts of interest.

P-218

ASSESSMENT OF ISCHEMIA REPERFUSION INJURY BY MICRO-COMPUTED TOMOGRAPHY AND ULTRA-SHORT ECHO-TIME MRI AFTER MOUSE LUNG TRANSPLANTATION

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Objectives:

Ischemia/reperfusion-injury (I/R-injury) can severely impair the post-transplant course of lung transplant recipients. Early, pre-clinical detection of I/R-injury is crucial to avoid deterioration of organ function. The purpose of this study was to compare ultra-short echo-time (UTE) sequences in magnetic resonance imaging (MRI) with a micro-computed-tomography (micro-CT) reference standard for the detection of I/R-injury in the experimental model of mouse single lung transplantation.

Methods:

Mice (C57BL/6, n=6) were transplanted with a syngeneic left lung transplant (C57BL/6, n=6) that was exposed to 6h cold ischemia time. Imaging was performed within 24h after transplantation with high-resolution micro-CT (tube voltage: 50kV, current 500mA, aluminium-filter 0.5mm) and small animal MRI at 4.7Tesla with a linearly-polarized whole-body mouse coil. The imaging protocol comprised of 3D-UTE sequences with different echo-times (TR 8ms, TE50/75/100/500/1500/3000/4000/5000µs). Calculated spin-densities and T2* transverse-relaxation-times (MRI) of lung parenchyma were compared to HU-density (micro-CT). ROC-curves and AUC-values were calculated for comparison of diagnostic power. All samples underwent histological examination.

Results:

Both, UTE-sequences and micro-CT, showed excellent depiction of pulmonary infiltration due to I/R-injury. Measured parametrical values were for not-transplanted right lung vs transplanted lung: mean HU -416±120 vs 29±35, mean spin-density 1655±440vs. 2310±300, and mean T2* 895±870µs vs. 4550±3230µs. Slight infiltration could better be discriminated with micro-CT, whereas UTE-MRI provided a better contrast for strong infiltration. AUC-values were: HU-density 0.99, spin-density 0.89, T2* 0.96, combination spin-density and T2* 0.98. H&E sections of transplanted lungs showed significantly more mononuclear cells including neutrophils and macrophages, and a severe swelling of the alveolar wall, compared to the right lung side.

Conclusions:

Comparing MR imaging and micro-CT, a similar diagnostic power in the detection of I/R-injury after lung transplantation could be observed. Due to complementary properties in the evaluation of dense and slight infiltration, the combination of both modalities seems favourable for the early detection of I/R-injury.

Disclosure: All authors have declared no conflicts of interest.

P-219

NON-GENERAL ANAESTHESIA IN THORACIC SURGERY. RESULTS OF A SURVEY AMONGST MEMBERS OF THE EUROPEAN SOCIETY OF THORACIC SURGEONSEugenio Pompeo*Thoracic Surgery, Tor Vergata University, Rome/Italy***Objectives:**

A survey amongst European Society of Thoracic Surgeons (ESTS) members has been performed to investigate the current trends, rates of adoption as well as potential for future expansion of non-general anesthesia thoracic surgery (NGATS) performed in spontaneously ventilating patients.

Methods:

A 14-question-based questionnaire has been mailed to ESTS members. To facilitate the completion of the questionnaire both quantitative and multiple-choice answers were adopted. Investigated issues included previous experience with NGATS and number of procedures performed, preferred types of anesthesia protocols (i.e. thoracic epidural anesthesia, intercostal or paravertebral blocks, laryngeal mask, use of additional sedation), type of procedures, ideal candidates for NGATS, main advantages and technical disadvantages. Non-univocal answer to multiple-choice questions was permitted.

Results:

Out of 104 responders, 67 (64%) already had an experience with NGATS. The preferred types of anaesthesia was intercostal blocks with (60%) or without (49%) sedation, followed by thoracic epidural anesthesia with sedation (21%). The most frequently performed procedures included thorascopic management of recurrent pleural effusion (98%), pleural decortication for empyema thoracis and lung biopsy for interstitial lung disease (24% each); pericardial window (23%), and mediastinal biopsy (19%). More complex procedures such as lobectomy, lung volume reduction surgery and thymectomy have been performed by a minority of responders (1.9% each). Poor-risk patients due to co-morbidities (70%) and elderly patients (40%) were considered as ideal candidates. Main advantages included faster recovery (66%), reduced morbidity (58%) and shorter hospital stay with decreased costs (41% each). Technical disadvantages included coughing (58%) and poor maneuverability due to lung movement (55%). Overall, 68% of responders indicated that NGATS procedures will be likely to increase in the near future.

Conclusions:

In this survey, NGATS resulted quite widely adopted amongst ESTS members to perform simple thorascopic procedures, particularly in poor-risk and elderly patients. An expanded adoption of this strategy is also hypothesized in the near future.

Disclosure: All authors have declared no conflicts of interest.

P-220

THORACOSCOPIC OUTPATIENT WEDGE LUNG RESECTION: IS IT A SAFE AND EFFECTIVE PROCEDURE?Stefano Cafarotti¹, M. Giuliani², E. Mattarelli³, G. Karoubi⁴, G. Carboni⁵, A. Dutly¹¹*Thoracic Surgery, Ente Ospedaliero Cantonale, Bellinzona/Switzerland,*²*General Surgery, EOC, Bellinzona/Switzerland,*³*General Surgery, University of Syon, Syon/Switzerland,*⁴*Thoracic Surgery, University of Toronto, Toronto/Canada,*⁵*Thoracic Surgery, Stadtspital Triemli Zurich, Zurich/Switzerland***Objectives:**

Outpatient surgical procedure has become a common practice in general surgery. However, only sporadic studies have been reported on thoracic surgery and almost exclusively for conditions that not require a lung resection. Aim of the present study was to evaluate the outcome of thorascopic- outpatient-wedge-resections using a “real-time” air leak digital device

Methods:

Data were collected prospectively on all patients underwent thorascopic-outpatient-wedge resections from November 2010 to August 2012. All procedures were performed under general anaesthesia with double-lumen-endotracheal-tube. Three port sites were used and one or two stapled wedge resection were performed without any suture-reinforcement. A chest-drain in continuous aspiration (-20 cm/H₂O) has been positioned as needed. Chest tubes were removed when no air leak (0 ml/min) or bleeding (< 200ml) were detected by digital device one hour after surgery. The distribution of study subjects according to sex, smoking habit, indication to resection, number of wedge, histological findings and the readmission or not readmission into hospital was compared by the Exact Fisher's test. A logistic-regression was fitted to estimate the odds ratio for readmission in hospital. The significance limit was set at $p < 0.05$

Results:

Thirty-seven patients with mean age of 59 (± 11.88) underwent outpatient-thoracoscopy during the study period. The thorascopic- outpatient-wedge-resections were performed in 33 cases (3 interstitial and 30 nodular disease). In 11 of these (33.3%) two parenchymal resections were performed. The overall readmission rate was 9.1% (3/33). When air-flow detected before drainage removal was 0 ml/min the presence of two pulmonary resections, malignant histology, interstitial disease or smoke history seem to not imply a significant readmissions rate (Table.1)

Conclusions:

When air-flow detected by digital device before drainage removal is 0 ml/min the thorascopic-outpatient-wedge resections seems to be a safe and effective procedure

	Readmission-due-to-pneumothorax-or-other-complications				Fisher's-exact-test p-value
	Relative-Risk (RR)	95%-confidence-interval	Odds-Ratio	95%-confidence-interval	
Sex (male-vs.-female)	0.8696	0.3813 to 1.983	0.6087	0.04773 to 7	1.00
Smoking habit (yes-vs.-no)	1.176	0.4981 to 2.778	1.529	0.1246 to 18.77	1.00
Indication to resection (nodular-vs.-non-nodular)	1.111	0.9861 to 1.252	0.8909	0.03758 to 21.12	1.00
No.-of-parenchymal-resection (-one-vs.-two-wedge)	1.00	0.4320 to 2.315	1.00	0.08060 to 12.41	1.00
Malignant histology (yes-vs.-no)	1.429	0.5883 to 3.469	2.286	0.1865 to 28.01	0.60

Table 1. Relative Risk, Odds Ratio and Fisher's exact test p-value of readmission according to sex, smoking habit, indication to resection, number of parenchymal resection and malignant histology

□ **gCM**, 3T □ All authors have declared no conflicts of interest.

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TRANS-CERVICAL AND RETRO-STERNAL APPROACH TO LEFT THORACIC CAVITY USING A FLEXIBLE ENDOSCOPE

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Objectives:

Mediastinoscopy remains the gold standard for surgical exploration of the mediastinum. Nevertheless, surgical exploration of left mediastinal and left thoracic lymphnodes still remains a surgical challenge due to anatomical difficulties to access left thoracic cavity (vascular and neurological structures). The aim of this anatomical study is first to describe a new left thoracic approach through a single cervical incision and retro sternal dissection using a flexible endoscope as unique instrument and secondly to evaluate the risk of injuries of adjacent anatomic structures.

Methods:

We conducted an experimental work on 12 refrigerated and non-embalmed cadavers. Through a small cervical incision, we dissected, first digitally and then using a mediastinoscope, the retro-sternal space to the level of Louis angle. We then opened the left mediastinal pleura. We introduced the flexible endoscope through this pleural window into left thoracic cavity. To study the distance between the endoscope entry point and the adjacent anatomic structures, we performed a left postero-lateral thoracotomy. We defined and measured three distances between the borders of the endoscope entrance point and the adjacent structures (phrenic nerve and mammary artery).

Results:

We didn't notice any injury of phrenic nerve and mammary artery. Mean measured distances between the endoscope entry point, phrenic nerve and mammary artery were: 17, 1 mm [02; 40], 39, 5 mm [17; 80] and 19, 1 mm [10; 40].

Conclusions:

Retro-sternal approach for left thoracic cavity exploration through a small cervical incision using a flexible endoscope is feasible. Retro-sternal area has less anatomic fragile structures and present less potential anatomic lesion during mediastinal approach. The mean distances we calculated show the potential safety of our approach concerning the phrenic nerve and the mammary artery. An experimental protocol on living animals is currently started to confirm these preliminary results

Disclosure: All authors have declared no conflicts of interest.

P-222

IMAGE CORRELATION AND ANALGESIC EFFECTIVENESS OF PARAVERTEBRAL THORACIC CATHETER USING IODINE CONTRAST

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Objectives:

Analgesia with thoracic paravertebral catheter is an effective technique with less side-effect than epidural catheter. However the correct placement of paravertebral is not always guaranteed and this fact is the reason for its failure. We propose a radiologic image after iodine contrast administration through paravertebral catheter to evaluate the correct placement and its effectiveness.

Methods:

From January to December of 2012, 55 consecutive patients underwent posterolateral thoracotomy and was placed a paravertebral catheter before surgery. After surgery a chest ray was performed after the administration of 5ml of iodine contrast (Ultravist®). According to the images obtained patients were divided in two groups: A) contrast shows infusion of three or more intercostals spaces, including thoracotomy space(gold standard image) B) other images. Analgesia was measured by VAS pain (before and after physiotherapy), and respiratory function with Peak-Flow, at 0, 6, 12, 24, 48 and 72 hours

Results:

Thirty-three patients formed group A and 22 group B. No statistical differences between both groups for patient characteristics, type of surgery or catheter placement by surgeon or anesthesiologist were detected. At 24 hours VAS was higher in group B ($p<0.05$) and the demand to advance the scheduled analgesia was 8 times higher (odds ratio 8.078) in this group. At 48 hours, after physiotherapy in group B advanced analgesia was demanded 12 times higher (odds ratio 12.011) and 15 times (odds ratio 15.004) before physiotherapy. No difference of peak-flow or increased respiratory complications were observed.

Conclusions:

According to our results the radiological assessment of correct placement of the paravertebral catheter using an iodine contrast is a safe and useful technique. An incorrect position of the catheter allows his new placement or alternative anesthetics.

Disclosure: All authors have declared no conflicts of interest.

P-223

A CHEAP AND PRACTICAL ARTIFICIAL MODEL FOR MINIMALLY INVASIVE VASCULAR DISSECTION TRAINING

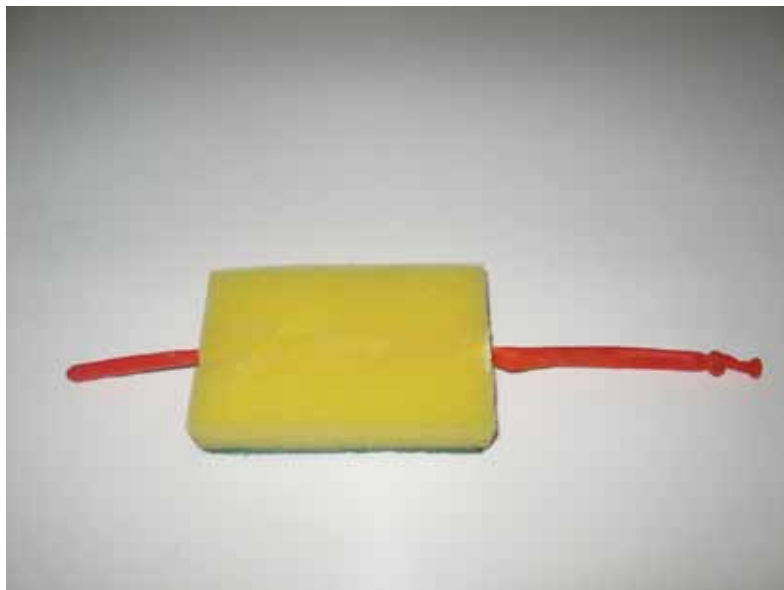
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Objectives:

Vascular dissection during minimally invasive surgery is difficult to teach and needs significant experience with lesser invasive procedures. We designed a novel model for vascular dissection and assessed the progress of thoracic surgery residents in a training program.

Methods:

An artificial lung and vessel environment was formed using a yellow scrub sponge, a dark colored balloon and a creamy adhesive product. Small tunnels were formed inside the sponges and adhesives were injected inside. The balloons were then placed inside these tunnels (Figure). The balloons were filled with water during training. The sponges were fixed inside a VATS training box and each thoracic surgery resident dissected the balloon model twice. Total dissection distance was 11 cm and maximum duration per attempt was limited to 10 minutes. The model was used 4-8 hours after preparation for a better adhesion environment. Their dissection times and injury to the balloon was recorded and compared. The dissection was terminated if the balloon was torn.



Results:

Five residents (4,5; 3,5; 3; 3 years and 6 months) were enrolled in the VATS training. In 9 attempts, the residents had a tear in the balloon. Median distance dissected was 3,1 cm (1-4,7) in the first attempt and it was shorter 2,5 cm (2-3,2) in the second attempt. However median dissection duration was shorter in the second attempt (5,05 vs 3 minutes). The residents felt more confident in the second attempt and as a result they tore the balloons in all of their attempts.

Conclusions:

This is a cheap and novel model for VATS vascular dissection training. None of our residents had real VATS vessel dissection experience, thus they needed training and there was improvement in dissection times. The risk of tear in the balloon and an adherent balloon to the sponge forms an environment similar to real VATS vessel dissection.

Disclosure: All authors have declared no conflicts of interest.

P-224

THE USE OF TRANSTHORACIC ULTRASOUND FOR THE ASSESSMENT OF LUNG EXPANSION COMBINED WITH DIGITAL AIR LEAK MEASUREMENT IN THORACIC SURGERY PATIENTS

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Objectives:

To evaluate the use of transthoracic lung ultrasound (LU) in post-thoracic surgery patients paired with digital air leak measurement for the assessment of lung expansion and/or residual pneumothorax, as a possible substitute to chest radiographs.

Methods:

We include 55 surgically placed chest drains, 32 non-pulmonary and 23 pulmonary surgery cases. Transthoracic LU evaluation of the anterior and anterolateral chest wall was performed 20 minutes after chest drain placement, the presence or absence of lung sliding was recorded, and a digital air leak measurement was taken. A cut off point of 20 ml/min air leak value was set for chest drain removal. Digital chest radiograph was obtained and reported in all cases.

Results:

Lung sliding was present in 46 cases, and an air leak value of 20 ml/min or less was reported in 49 cases, 83.63% and 89.09% respectively. When compared, LU vs. digital air leak measurement of <20 ml/min, LU has a sensitivity and specificity of 91.84% and 83.33% respectively for the diagnosis of full lung expansion, with a positive predictive value (PPV) of 97.83% and a negative predictive value (NPV) of 55.56%. In non-pulmonary surgery cases, a 100% agreement (Cohen's Kappa 1.0) between LU and chest radiograph, and LU vs. digital chest drain measurements was obtained. In pulmonary surgery, sensitivity is 76.47% and PPV is 92.86%.

Conclusions:

The observation of lung sliding in a transthoracic LU evaluation when paired with a digital air leak value of 20 ml/min or less, can safely exclude pneumothorax in post thoracic surgery patients and no further radiographic exploration is warranted, especially in non pulmonary surgery cases. However in pulmonary surgery cases, resection volume and site have to be taken into consideration, as the surgical absence of pulmonary tissue will result in absent lung sliding even in cases with low air leak values.

Disclosure: All authors have declared no conflicts of interest.

P-225

COUGHING AT EXTUBATION OF DOUBLE-LUMEN ENDOBRONCHIAL TUBE CAUSES EXTRA AIR LEAKAGE: - LARYNGEAL MASK FOR EXTUBATION WITHOUT COUGHING

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Objectives:

In thoracic surgery, coughing at extubation of a double-lumen endobronchial tube (DLT) after lobectomy sometimes causes tearing of the lung along the staple line, which causes air leakage and bleeding. Although a DLT is more irritating and causes coughing more readily than a normal endotracheal tube, it is essential for thoracic surgery for differential lung ventilation. We examined air leakage after normal extubation of a DLT. Moreover, we evaluated the efficiency of a laryngeal mask, which is less irritating, to prevent coughing at extubation.

Methods:

The following parameters were evaluated in patients with air leakage after normal extubation of a DLT from April 2010 through June 2012: gender, presence of emphysema or interstitial pneumonia, treatment for air leakage, and duration of chest tube drainage. A laryngeal mask was applied before awakening under adequate anesthesia from July 2012 through December 2012, and the efficiency was evaluated according to the following parameters: presence of emphysema or interstitial pneumonia and postoperative frequency of air leakage, pneumonia, atelectasis and arrhythmia.

Results:

From April 2010 through June 2012, 246 patients underwent lobectomies, and no air leakage before extubation was found in 210 patients. Air leakage caused by coughing at normal extubation of the DLT was found in 15 of these 210 patients (7.1%). Of these 15 patients, all were male, 10 had emphysema, 3 had interstitial pneumonia, 10 required pleurodesis and 1 required re-operation for air leakage. Chest tubes were removed 8.5 days after surgery. A laryngeal mask was used for 48 patients, 14 had emphysema and 1 had interstitial pneumonia (31.3%). Coughing at extubation, postoperative air leakage, pneumonia, atelectasis, and arrhythmia were not observed.

Conclusions:

Coughing at normal extubation of DLT after lobectomy causes air leakage in 7.1%, and the laryngeal mask is effective in preventing coughing at extubation and postoperative air leakage.

Disclosure: All authors have declared no conflicts of interest.



P-226

INITIAL RESULTS FROM A CASE-MATCH STUDY COMPARING POST-OPERATIVE PAIN BETWEEN UNIPORT AND MULTIPORT VATS LOBECTOMY

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Objectives:

Single port VATS lobectomy has recently been developed. Previously, 3-4 ports were typically used. A study was carried out to determine whether uniportal lobectomies resulted in less pain post-operatively compared to multiportal lobectomies.

Methods:

Uniport VATS lobectomies were matched 1:1 to multiport VATS lobectomies in our institution. Matching criteria were age, gender, stage and lobe resected. Patients with a diagnosis of pre-operative chronic pain or opiate use were excluded. The morphine use (mg) and mean visual analogue pain score (0-10) in the first 24 hours post-operatively were recorded.

Results:

100 VATS lobectomies were completed between 2011-2012, including 12 uniportal VATS lobectomies. 2 with chronic pain were excluded, 2 could not be matched, leaving 8 for analysis. Continuous variables were compared with a paired student's t test. Tabulated results are shown below:

	Uniport (Standard Deviation)	Multiport (Standard Deviation)	p-value
Age	71(7)	70 (7)	0.957
ASA	2.5 (0.5)	2.25 (0.5)	0.170
Pre-operative FEV ₁	95 (16)	86 (8)	0.914
Stage			0.538
Ia	3	2	
Ib	4	3	
IIa	1	3	
IIb	1	1	
Gender (Male:Female)	5:3 (63% male)	5:3 (63% male)	1.000
Morphine Use (mg) first 24 hours	19.25 (10.65)	31.96 (17.19)	0.121
VAS Pain Score ≤ 2	7 (87.5%)	7 (87.5%)	1.000
Duration of Intercostal Drain (days)	3.13 (2.10)	3.5 (2.56)	0.790
Duration of Patient Controlled Analgesia (days)	1 (0)	0.875 (0.35)	0.363
Mortality	0 (0%)	0 (0%)	1.000

Conclusions:

Uniport VATS lobectomy was feasible and safe when compared to multiport. There was a trend towards lower morphine use in the first twenty-four hours after uniport surgery. This is the first comparison study of short-term outcomes after uniport versus multiport VATS lobectomy.

Disclosure: All authors have declared no conflicts of interest.

P-227

A DETAILED IMMUNOHISTOCHEMICAL ANALYSIS OF PI3K/AKT/MTOR PATHWAY IN LUNG CANCER: CORRELATION WITH PIK3CA, AKT1, K-RAS OR PTEN MUTATIONAL STATUS AND CLINICOPATHOLOGICAL FEATURES

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Objectives:

1. To search for any relation between the mutational status of tPIK3CA, K-RAS, AKT-1 and PTEN and expression levels of p85 α and p110 γ subunits of PI3K, phosphorylated (p-)AKT, p-mTOR, PTEN, p-p70S6K and p-4E-BP1 in non small cell lung cancer (NSCLC) 2. To examine the relationships of these molecules to clinicopathological characteristics and assess their prognostic utility in NSCLC.

Methods:

Retrospective study in 102 NSCLC patients. Expression of phosphorylated (p-) mTOR, p-AKT, p85 α and p110 γ subunits of PI3K, p-p70S6K, PTEN and p-4E-BP1 was studied by immunohistochemistry in 71 surgical and 31 biopsy specimens. The results were correlated with clinicopathological features. We also tested 61 of our cases for the presence of PIK3CA, AKT-1, PTEN and K-RAS mutations.

Results:

Patients were 14 females and 88 males (median age: 71, range 46–89). A common PIK3CA mutation was detected at exon 9 in two samples (p.E545K) and a rare one (p.D1018N) in one other. 10/54 cases (18.5%) had a K-RAS mutation at codon 12, five had a PTEN mutation (exon 7 and 8) and 1 an AKT-1 mutation (p.E17K). PTEN mutations were associated with nodal metastases. p-mTOR expression correlated with p-AKT and p-p70S6K and was higher in adenocarcinomas along with nuclear p110 γ PI3K expression. p-4E-BP1 was higher in squamous cell carcinomas. p85 α PI3K/p110 γ PI3K and cytoplasmic p-AKT were associated with downstream effectors. An inverse correlation was noted between p-4E-BP1 immunoexpression and tumour status and nuclear p-AKT expression regarding stage. Univariate survival analysis proved that p-4E-BP1 expression, single or combined with cytoplasmic p-AKT expression had an adverse prognostic significance in adenocarcinomas. The combination of p-4EBP1 and cytoplasmic p-AKT expression remained significant in multivariate analysis in terms of their interaction with histology.

Conclusions:

Alterations of PI3K/AKT/mTOR pathway components are differentially implicated in the pathogenesis and aggressiveness of NSCLC. Nuclear p-4E-BP1 immunoexpression seems to be a prognostic molecular marker in adenocarcinomas especially when combined with p-AKT. Careful evaluation of these parameters may predict tumours most sensitive to PI3K/AKT signalling inhibitors.

Disclosure: All authors have declared no conflicts of interest.

P-228

SMALL BORE THORAX CATHETER VERSUS THORAX DRAIN IN TREATMENT OF PRIMARY SPONTANEOUS PNEUMOTHORAXM.E. Cardak¹, Serdar Evman², H. Eryilmaz¹, K.B. Ozer¹, A. Kosar³, R. Demirhan¹¹*Department Of Thoracic Surgery, Kartal Lütfi Kırdar Training and Research Hospital, Istanbul/Turkey,*²*Thoracic Surgery, Kartal Lütfi Kırdar Training and Research Hospital, Istanbul/Turkey,*³*Department Of Thoracic Surgery, Maltepe University, Istanbul/Turkey***Objectives:**

Aim of the study was to evaluate the effectiveness of (28F) chest tube thoracostomy (TT) and (8F) small-bore thorax catheter (TC) in treatment of primary spontaneous pneumothorax patients.

Methods:

Spontaneous pneumothorax patients without underlying any known pulmonary disease were considered as primary spontaneous pneumothorax (PSP) and included in the study. Between October 2010 and May 2011, 30 consecutive patients with Light Index calculated pneumothorax space greater than 20% and treated with small or large bore drain, were randomized into two groups according to admission. Groups were then compared in terms of hospital length of stay (LOS), duration of air leak, drain removal time, visual analogue scale (VAS) pain scores, and complications.

Results:

Age average of the patients was $27,6 \pm 9,76$. Complaints on admission were dyspnea in 5 (16.7%), chest pain in 2 (6.7%), and both dyspnea with chest pain in 23 (76.7%) patients. Mean pneumothorax percentage, the duration of air leak, catheter removal time, and LOS of patients between TT and TC groups were similar ($p>0.05$). No complication or recurrence was seen in any patient in the study. Wound healing subjectively took a longer period in the TT group. At the end of 1-year follow-up, all TT patients were found to have scar formations in the insertion site, an objective cosmetic hitch. According to VAS scores of 1st, 4th, 12th, and 24th hour after the procedures, TC seemed to be less painful. 4th hour VAS score revealed a significant difference between the groups, in favor of TC group ($p=0.022$).

Conclusions:

TC is found to be as effective as TT, in the treatment of PSP. With advantages of simple and rapid technical application, reduced pain, increased patient comfort, and good cosmetic results; small-bore TC should be the choice of treatment for PSP patients.

Disclosure: All authors have declared no conflicts of interest.

P-229

WOMAN'S CHOICE: PREFERENCES IN THE LOCALIZATION AND NUMBER OF INCISIONS IN VATS PROCEDURES

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Objectives:

Recent advances have allowed video-assisted thoracic surgery (VATS) to be performed through a minimal number of incisions. The choice of incision sites in non-anatomic pulmonary resections and other lesser procedures is practically unrestricted. The aim of the endoscopic surgeon is to overcome technical challenges to bring minimal invasiveness to the patient.

Methods:

Anonymous questionnaires from 259 women were analysed. Two groups of women [≤ 25 years old ($n=94$) and >25 years old ($n=165$)] were compared. Women were asked to indicate the preferable number, length, and location for the thoracic incisions.

Studenckie Koło Naukowe przy Klinice Chirurgii Klatki Piersiowej Gdańskiego Uniwersytetu Medycznego

ANKIETA

1. Wiek _____

2. Wykształcenie

A. Podstawowe, niepełne podstawowe
B. Średnie, niepełne średnie
C. Wyższe, niepełne wyższe, student

3. Jestem pracownikiem Głównego zdrowia

A. Tak
B. Nie

4. Macierzyństwo

A. Nie rodziłam
B. Rodziłam, nie karmiłam piersią
C. Rodziłam, karmiłam piersią

5. Czy posiadasz na dele białny po oparzeniach?

A. Tak
B. Nie

6. Rodzaj preferowanej przez Ciebie bielizny (odpowiedź zaznacz)

klasyczna sportowa

7. Rozmiar biustonosza (odpowiedź zaznacz)

65 70 75 80 85 90 95 >100
A B C D DD+E F G

8. Niekiedy malowaliśmy (nie szliśmy) operacyjne w obrębie klatki piersiowej, można przeprowadzić z jednego, dwóch lub trzech cięć śródmięśnych. Ilość cięć śródmięśnych nie wpływa w istotny sposób na bezpieczeństwo zabiegu i szybkość powrotu. Proszę zaznaczyć trzy rodzaje cięć śródmięśnych wraz z ich rzeczywistymi wymiarami (linia). Proszę zaznaczyć rodzaj cięcia (cięć), który preferowałabyś, gdyby decyzyj o ich wyborze należało jedynie do Ciebie

A. 1 cięcie 2,5 cm _____
B. 2 cięcia: 1,5 cm i 0,5 cm _____
C. 3 cięcia: 1,5 cm i dwa cięcia 0,5 cm _____

9. Na jednym z poniższych trzech schematów zaznacz jedną okolicę, w której, Twoim zdaniem, cięcie śródmięśne stanowiłoby najmniejszy defekt kosmetyczny

10. Na jednym z poniższych trzech schematów zaznacz jedną okolicę, w której, Twoim zdaniem, cięcie śródmięśne stanowiłoby najgłębszy defekt kosmetyczny

11. Przy wyborze najlepiej mających wpływ na efekt kosmetyczny pod uwagę brałabyś (wybierz dowolną ilość odpowiedzi):

A. Możliwość zakrycia blizn ubraniami wewnętrznymi
B. Możliwość zakrycia blizn bielizną
C. Mały widoczność góry (wzrost nago)
D. Potencjalny ból/zniknięcie w okresie poporodowym
E. Inne: _____

Results:

The area below the breast was the most acceptable location for the entire population (51% of all women). The second and third selections were: the area covered by the bra strap (20%) and the armpit (16%). Younger women were more likely to prefer the area covered by the bra strap (27% of the younger group vs. 16% of the older group, $p=0.036$), and older women were more likely to prefer the armpit (19% of the older group vs. 11% of younger group, $p=0.075$). The least acceptable locations were the area between the clavicle and the breast (61%) and the breast (31%). Younger women (45%) preferred two shorter incisions (15 mm and 5 mm), while older women (35%) preferred one longer 25-mm incision ($p=0.105$).

Conclusions:

The most acceptable incision locations for younger women were the area under the breast and the area covered by the bra strap, and they preferred two short incisions versus one longer incision. Older women preferred the area under the breast and the armpit, and they preferred one longer incision. The area of décolletage and the breast were not considered acceptable sites of surgical intervention for the majority of women.

Disclosure: All authors have declared no conflicts of interest.

P-230

THORACOSCOPIC ANATOMIC LUNG SEGMENTECTOMY PERFORMED UNDER SIMULATION BY COMPUTED TOMOGRAPHY ANGIOGRAPHY

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Objectives:

This retrospective study evaluated the efficacy of anatomic thoracoscopic lung segmentectomy performed under the guidance of three-dimensional multidetector computed tomography angiography (3DCTA) simulation.

Methods:

During September 2004–March 2012, 118 patients (median age = 66 years, range = 16–85 years) underwent unilateral thoracoscopic segmentectomy. The selection criteria were as follows: in lung cancer patients 1) ground glass nodule (GGN) of ≤ 2.5 cm in diameter, 2) solid tumors with a diameter of ≤ 1.5 cm with no lymph node metastases, 3) high-risk candidates for lobectomy, 4) metastases and 5) benign lesions. Preoperative diagnosis showed lung cancer of curative intent resection in 70 including 55 GGNs, lung cancer of high-risk in 21, metastases in 23, and benign lesions in 4 patients respectively. One 20-mm flexible port and three 5-mm ports were used. The vessels were identified pre- or intraoperatively by using the 3DCTA. The parenchyma was dissected along the intersegmental vein and the inflation-deflation line. The procedure was classified into 3 categories according to the degree of surgical difficulty.

Results:

The success rate of segmentectomy performed under complete thoracoscopy was 98%. Mini-thoracotomy was required for 2 patients because of arterial bleeding. There were 34 easy, 66 fairly difficult, and 18 difficult cases of segmentectomy procedure respectively. The median operating time was 194 min, and the median blood loss was 61 ml. The chest tubes were left in place for 1–8 d (median, 1 d). In lung cancer patients, the overall 5-year survival rates for the curative-intent resection group patients and the poor-risk patients were 100% and 69%, respectively (mean follow-up, 45 months). No recurrence was observed in the curative-intent group patients.

Conclusions:

3DCTA simulation enabled precise parenchymal dissection and sufficient surgical margin design. Therefore, thoracoscopic lung segmentectomy performed under the guidance of 3DCTA is feasible and safe.

Disclosure: All authors have declared no conflicts of interest.

P-231

PROSPECTIVE RANDOMIZED TRIAL COMPARING BUTTRESSED VERSUS NONBUTTRESSED STAPLING IN PULMONARY LOBECTOMYKazuya Takamochi¹, S. Oh¹, K. Suzuki²¹*General Thoracic Surgery, Juntendo University School of Medicine, Tokyo/Japan,*²*General Thoracic Surgery, Juntendo University, Tokyo/Japan***Objectives:**

The buttressed stapler was developed as a stapler with an attached polyglycolic acid sheet for the reinforcement of the stapler line. The purpose of this study is to evaluate the efficacy of buttressed stapling for reducing the rate of air leak associated with pulmonary lobectomy.

Methods:

Patients that were about to undergo pulmonary lobectomy were preoperatively randomly assigned to the nonbuttressed stapling group (non-B group) or the buttressed stapling group (B group). The primary end-point was the frequency of intraoperative air leak.

Results:

This trial closed early with 100 patients because some cases of the postoperative fatal bleeding were reported after pulmonary resection using a buttressed stapler in clinical practice. However, no fatal postoperative bleeding occurred in the present study. Lobectomy was performed without using a stapler to divide the interlober plane in 24 patients. Therefore, a total of 76 patients using a stapler (35 in the non-B and 41 in the B group) were the subjects for analyses. No statistical differences were observed between the non-B and B groups in the frequency of intraoperative air leak (22[62.9%] vs. 26[63.4%]), the frequency of air leak associated with the use of a stapler (7[20.0%] vs. 4[9.8%]), the postoperative duration of air leak (median 3.5 vs. 2.9 days), and the perioperative adverse events (9[20.0%] vs. 12[29.3%]). However, the frequency of air leak from the stapler hole was significantly lower in the B group than in the non-B group (2.4% [1/41] vs. 20.0% [7/35]; $P = 0.035$).

Conclusions:

The efficacy of buttressed stapling for reducing the rate of air leak in pulmonary lobectomy could not be clearly demonstrated in this trial. However, air leak from the stapler hole could be prevented by using buttressed stapling. The development of novel atraumatic buttress materials is therefore warranted.

Disclosure: All authors have declared no conflicts of interest.

P-232

A SIMPLE TECHNIQUE TO FACILITATE DUMON SILICONE STENT PLACEMENT IN SUBGLOTTIC TRACHEAL STENOSIS

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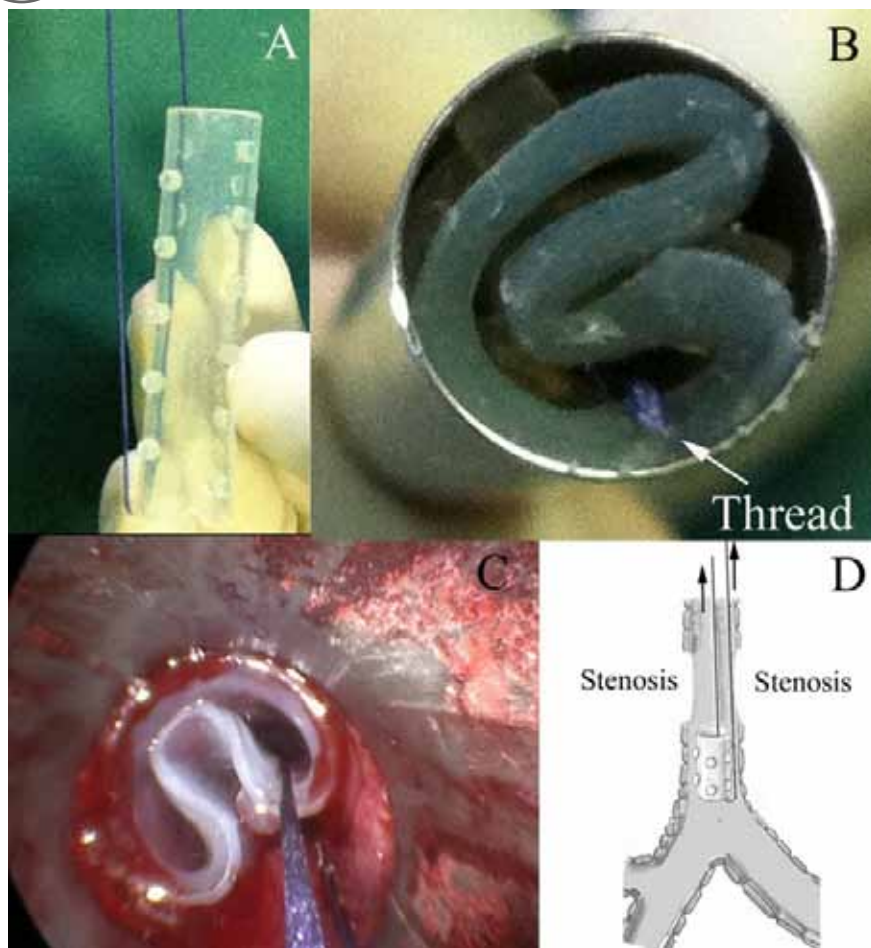
Objectives:

Dumon silicone stent is usually the first choice for the treatment of subglottic tracheal stenosis. However, the stent placement in this area may be challenging in non-expert hands and if adequate foreign-body forceps are not available. To facilitate such manoeuvre, we propose a new simple technique

Methods:

The stent placement was attended using a rigid bronchoscope under general anaesthesia with spontaneous respiration; the procedure was summarized as following:

- An adequate tracheal lumen was obtained in a standard manner.
- The bronchoscope was positioned with the tip distally to the stenotic lesion.
- A long thread was passed from outside to the inside of the stent for retraction (Figure 1/A).
- The stent was placement in the introducer tube using a stent loader (Figure 1/B)
- The introducer tube was passed down the open bronchoscope, and a prosthesis pusher expelled the stent out into the stenotic segment (Figure 1/C)
- During expulsion of the stent, the bronchoscope was simultaneously retracted over a distance equal to the length of the stent
- The stent was pulled into the proper position using the thread (Figure 1/D)
- Finally, the thread was removed



Results:

In the last two years, this procedure was adopted to treat 5 patients with subglottic (n=3) and/or tracheal stenosis (n=2) including 4 non-malignant and 1 malignant form caused from thyroid cancer. The stent was easily placed at the desired level in all patients. The mean time of the procedure was 75 ± 13 minutes. No complication during the procedure was registered; the stent was well tolerated, and irritative cough did not occur.

Conclusions:

Our method was proven safe, cheap and efficient. It may be useful especially for young surgeon or in little centers where a large variety in the size of forceps is not available.

Disclosure: All authors have declared no conflicts of interest.

P-233

THE EFFECTS OF CEPAE EXTRACT-HEPARINE-ALLANTOIN USE IN PREVENTING PLEURAL ADHESIONS AFTER THORACOTOMY IN RATS

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Objectives:

We planned to investigate the effect of Contractubex® (cepa extract heparine-allantoin) Gel in preventing pleural adhesions after thoracotomy in rats and find its applicability in human beings.

Methods:

In our study we used 20, 200-220 gr 3 months old Sprague-Dawley type female rats. Rats were randomly assigned to three groups: Sham (group I), Control (group II) and Study (group III). In Group I left thoracotomy was applied. In group 2 adhesion model was established following left thoracotomy. In group 3 after the adhesion model was set following left thoracotomy Contractubex® Gel (CTBX) was applied to the left intrapleural space. On Day 21 all the rats were sacrificed, adhesions were investigated macroscopically and microscopically.

Results:

Average adhesion lengths were 0.75 ± 1.50 , 4.00 ± 3.66 , 0.19 ± 0.37 in groups 1, 2 and 3 correspondingly. Adhesion severity score was 1.25 ± 0.50 , 2.62 ± 1.41 , 1.25 ± 0.46 in groups 1,2 and 3 correspondingly. There was no statistical difference between sham-control group, sham study group and control-study group in the presence of adhesions ($p > 0.05$). There was no statistical difference between sham-control-study group, sham-control group and sham-study group in the length of adhesions ($p > 0.05$), but there was significant difference between control-study groups ($p < 0.05$). There was no statistical difference in adhesion severity scores between the three groups ($p > 0.05$). There was no significant difference in the measurement of parietal and visceral pleural thickness between sham-control-study group, control-study group, sham-control group and sham-study group ($p > 0.05$) There was no difference between control and study group in foreign body reactions in parietal and visceral pleura, moid degeneration and development of mesothelial hyperplasia ($p > 0.05$). There was no significant difference between the three groups in the severity of vascularisation and fibrosis in visceral and parietal pleura and chronic inflammation ($p > 0.05$).

Conclusions:

The use of Contractubex® Gel after thoracotomy decreases adhesions but it does not provide effective efficacy.

Disclosure: All authors have declared no conflicts of interest.

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ATRIAL NATRIURETIC PEPTIDE PROTECTS AGAINST PULMONARY INFLAMMATION

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Objectives:

Atrial natriuretic peptide (ANP) is clinically available in the treatment of acute heart failure in Japan. It has been reported that ANP exhibits a wide range of cardioprotective effects, including anti-fibrosis and anti-inflammatory activities. We recently reported that administration of ANP during the perioperative period had prophylactic effects on not only cardiovascular but also respiratory complications following pulmonary resection. However, the molecular mechanisms of ANP protective effects on the lung were not well understood. The objective of the present study was to investigate the direct effects of ANP on pulmonary inflammation.

Methods:

Inflammatory signaling and the expressions of vascular adhesion molecules induced by lipopolysaccharide (LPS) were studied in vitro using human pulmonary artery endothelial cells in the presence or absence of ANP. Of the vascular adhesion molecules, E-selectin plays the key role of first attachment of the neutrophils to the vascular endothelial cells during inflammatory response. For the evaluation of early phase of inflammation in vivo, we examined cell count and protein concentration in the bronchoalveolar lavage fluid (BALF) and histological change in the lung of C57/B6 mice 24 hours after LPS injection (intravenous, 1mg/kg) with ANP or saline.

Results:

ANP attenuated the phosphorylation of nuclear factor-kappa B and upregulation of E-selectin expression induced by LPS in human pulmonary artery endothelial cells. There were significantly lower cell count and protein concentration in the BALF, and inflammatory cells infiltration of the lung parenchyma in the ANP-treated mice compared to the control mice after LPS injection.

Conclusions:

ANP had a direct protective effect on LPS-induced pulmonary inflammation by reducing inflammatory cells infiltration of the lung via pulmonary vascular endothelial cells in the acute phase. ANP may have important implications in therapeutic strategies aimed at the treatment of pulmonary inflammation such as acute lung injury.

Disclosure: All authors have declared no conflicts of interest.

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ANTI-EGFR ANTIBODY THERAPY FOR ESOPHAGEAL SQUAMOUS CELL CARCINOMA

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Objectives:

A malignant esophageal cancer, squamous cell carcinoma is one of the most prevalent cancers in East Asia. Despite the use of current surgical technical techniques combined with various treatment modalities, such as radiotherapy and cisplatin-based chemotherapy, the overall 5-year survival rate of ESCC remains at 40-60%. In this study, we assessed the additional effect of cetuximab in combination with cisplatin, using cell lines and animal xenograft model.

Methods:

EGFR expression level was detected in tumor tissue and ESCC cell lines using RT-PCR and western blot analysis. The effects of cetuximab on the ESCC cell lines alone and in combination with cisplatin were detected by MTS assay and western blot analysis. In vivo tumor growth and survival ESCC xenograft experiments were performed with cetuximab and cisplatin, either alone or in combination.

Results:

EGFR overexpression was detected in 40% of tumor and most of ESCC cell lines. To check whether cisplatin would improve the cytotoxicity of cetuximab, we combined it with an anti-EGFR monoclonal antibody, cetuximab. Combination of cetuximab and cisplatin resulted in a cytotoxicity increase in ESCC cell lines effectively. Furthermore, we showed that cisplatin induced EGFR activation was inhibited by cetuximab in EGFR overexpressed, KRAS wild-type ESCC cell line, TE-8 using western blot analysis. In mouse xenograft model established with TE-8 cells, cetuximab alone or in combination with cisplatin inhibited tumor growth effectively.

Conclusions:

Our data suggest that cetuximab combined with cisplatin had an additional anti-tumor effect for ESCC in vitro and in vivo. This combination therapy could be a promising strategy for personalized therapy using EGFR expression and KRAS mutation in ESCC.

Disclosure: All authors have declared no conflicts of interest.

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THE OPTIMUM SHEET FOR COMBINED APPLICATION OF FIBRIN SEALANT AND BIOABSORBABLE SHEET AGAINST ALVEOLAR AIR LEAKAGEHideki Itano*Department Of Thoracic Surgery, Uji Tokushu-kai Hospital, Uji, Kyoto/Japan***Objectives:**

The combination of fibrin sealant (FS) and bioabsorbable sheet (BS) is known to provide a better sealing effect on alveolar air leakage compared to the single use of FS. Previously, we studied the optimum techniques for their combination [Eur J Cardiothorac Surg 2008;33:457-460.]. This time, we studied on what BS is optimum. Tachosil was also compared with them.

Methods:

Standardized pleural defects produced by electric cauterization in retrieved swine lungs. Experiment I: The 2 x 3 cm defects were covered with the following BS (3 pieces) by the above-mentioned Rub + Soak B technique: 0.15mm polyglycolic acid (PGA) felt (Neoveil)(Group I), 0.3mm PGA felt (Neoveil)(Group II), 0.5mm PGA felt (Neoveil)(Group III), oxidized cellulose sheet (OCS) (Surgicel absorbable hemostat)(Group IV), woven PGA sheet (woven Vicryl mesh) (Group V), knitted PGA sheet (knitted Vicryl mesh) (Group VI), knitted OCS (Interceed) (Group VII). Experiment II: The defects were covered with one piece of 0.15mm PGA felt (Neoveil) by Rub + Soak B technique (Group VIII), Tachosil alone (Group IX), and thrombin-applied Tachosil after rubbing with fibrinogen solution (Group X). The minimum seal-breaking airway pressure was compared among the groups.

Results:

The seal-breaking pressure (SBP) was significantly higher in Group I than in Groups III, IV, V and VII, in Group VI than in Groups III, IV and VII, and in Group X than in Groups III, IV and VII. The SBP was significantly lower in Group IX than in Groups VIII and X ($p < 0.05$). Histologically, clot penetration into the tissue was significant in Groups I, VIII and X.

Conclusions:

0.15mm PGA felt was the optimum sheet in Rub + Soak B technique, followed by knitted Vicryl mesh. Tachosil with FS was comparable to them in this model. Further studies are needed to determine responses in living tissue and SBP over time in vivo.

Disclosure: H. Itano: This study was supported by CSL Behring Co.

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INCREASED FORKHEAD-BOX-P3 (FOXP-3) IN THE TUMORAL REGION IN HUMAN NON-SMALL-CELL LUNG CANCER

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Objectives:

Non-small-cell lung cancer (NSCLC) represents approximately 85% of all lung cancer cases. The success of a therapeutical intervention is unfortunately limited. The immunosuppressive environment created by the tumor inhibits an effector T cell anti-tumor immune response locally.

Methods:

In this study, we isolated cells from the tumoral, peri-tumoral and control region from the residual post-surgery resected lung tissue. As defined after chest CT scan analysis and macroscopic pathology, we separated the tumor area from the peri-tumoral (<2cm) and control area (>5cm). Ten patients were analyzed in this study. Eight of them had primary NSCLC and two had lung metastases from colon adenocarcinoma and squamos-cell carcinoma of the tongue, respectively.

Results:

Transforming growth factor beta (TGF-beta) is produced by many lung adenocarcinoma cell lines. It induces a tolerogenic environment inhibiting the host immune-response by activating Foxp-3 transcription in naïve CD4+ T cells thus imprinting the T regulatory phenotype. Here we analyzed Foxp-3 mRNA expression via real time PCR in the tumoral, peri-tumoral and control lung regions of ten patients with NSCLC. We found a significant up-regulation of Foxp-3 mRNA expression in the tumoral (T) region as compared to the peri-tumoral (PT) region (T: 4.73+/- 1.3 and PT: 1.54+/- 0.6; p=0.04) in the ten patients analyzed. The peri-tumoral region contained increased percentage of CD8+ T cells as compared to the tumoral region in the same subject (patient with squamous carcinoma: T: 24.17+/- 0.6 versus PT: 50.47+/- 1.71 with p<0.001).

Conclusions:

Foxp-3 is induced in T cells surrounding the tumour and is repressed in the peri-tumoral area where a possible activation of an anti-tumor CD8+ T cell immune response takes place. To date less is known about the control of Foxp-3 in T cells surrounding the tumor. Unrevealing how the immune system represses Foxp-3 up-regulated by the tumor could open new avenues for selective immunotherapy of NSCLC.

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Initiated by the European Society of Thoracic Surgeons (ESTS) in cooperation with TAKEDA, the ESTS Travel Fellowship Programme is a new educational programme for ESTS members – both graduates or trainees – living and practising in Europe as thoracic surgeons.

Why should I participate?

Participants will have the unique opportunity to observe and interact* at established European Departments specialised in General Thoracic Surgery (case load exceeding 400 operations per annum). Financial support is available – a maximum of EUR 300, EUR 600 or EUR 900, depending on the applicant's country of origin.

* For legal reasons, you will have observer-status only during operations, but may be actively involved in other hospital activities.

Am I eligible to participate?

To take part in this programme, you need to be a surgeon or trainee practising in Europe, an ESTS member, and you need to have paid your annual membership dues. Please note that you can only take part in this programme once.

How can I apply?

Further details are available at

https://www.events.mondial.at/ei/getdemo.ei?id=469&s=_33WOKAIMG

Spaces are reserved on a 'first come, first served' basis.

Some impressions of past participants

"... able to observe the full spectrum of thoracic cases, e.g. mediastinal tumors, carcinoma of the lung..."

"... opportunity to get familiar with new technologies, namely mini-invasive surgery and mediastinoscopy, as well as the excavation pectoris method..."

"... impressive experience to observe closely a number of difficult surgical interventions..."

"... chance to meet colleagues in another country, observe their surgery and see a country I've never been to before. Thank you ESTS."

Kind regards,

Dirk Van Raemdonck
President
ESTS

Alessandro Brunelli
Secretary General
ESTS

through an educational
grant offered by



Takeda Pharma

