



19th European Conference on General Thoracic Surgery



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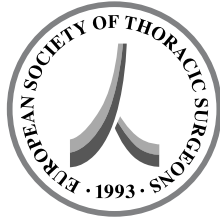
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Marseille - France

05 – 08 June 2011

ABSTRACTS





**19th European Conference
on General Thoracic Surgery**

**05 – 08 June 2011
Parc Chanot, Marseille, France**



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Monday, 6 June 2011**08:30 - 10:30****Session I/ Brompton Session****B-001****VATS PLEURODESIS THROUGH GENERAL OR AWAKE ANESTHESIA IN PATIENTS WITH RECURRENT PLEURAL EFFUSION. A RANDOMIZED STUDY**Federico Tacconi¹, L. Frasca², T. C. Mineo¹, E. Pompeo¹¹*Thoracic Surgery, Tor Vergata University, Rome/ITALY,*²*Rome, Tor Vergata University, Rome/ITALY***Objectives**

Recently, awake VATS under thoracic epidural anesthesia (TEA) has been employed to treat a series of thoracic conditions. We aimed to assess perioperative outcome of this approach in managing patients with recurrent pleural effusions.

Methods

Between January 2008 and October 2010, 40 patients with recurrent pleural effusion were randomized by computer to undergo VATS pleurodesis performed either by TEA (N=20) or general anesthesia and one-lung ventilation (N=20). Primary end-points were pain control assessed by VAS and the need for additional, perioperative, medical care scored ranging from 1 (no additional care) to 3 (major additional care), assessed at fixed time-points. Perioperative changes in PaO₂/FiO₂ ratio and FVC were regarded as secondary outcome measures.

Results

Overall, 36 patients had cancer-related effusion. Talc insufflation and biopsy was performed in all instances via a single-trocar access, with no difference in feasibility score between groups. Perioperatively, patients undergoing awake VATS showed better results in pain control 1-hour after the operation (P=0.03) and medical care score (P=0.03). Repeated-measure ANOVA showed a better preservation of perioperative respiratory function in the study group with smaller changes in PaO₂/FiO₂ (P=0.01), and in FVC (P=0.007). Yet, in both groups, medical care score was significantly correlated with perioperative PaCO₂ from baseline (P=0.03) and VAS-score (P=0.004). Time to drainage removal and rate of effusion recurrence were similar between groups.

Conclusions

In this randomized study, awake VATS pleurodesis resulted into a better medical management, superior preservation of respiratory function and equivalent recurrence rate when compared to results of the general anesthesia group.

Disclosure: All authors have declared no conflicts of interest.

B-002**RE-EVALUATION OF THE CURRENT PROGNOSTIC VALUE OF VISCERAL PLEURA INVASION IN STAGE IB NON-SMALL CELL LUNG CANCER USING THE PROSPECTIVE MULTICENTER ACOSOG Z0030 TRIAL DATA SET**

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Objectives

Examine the modern prognostic significance of visceral pleura invasion (VPI) in stage IB (T2aN0M0) non-small cell lung cancer (NSCLC) within the context of the 7th Edition TNM classification using the data set from a recent prospective multicenter trial.

Methods

1111 early-stage NSCLC patients participating in the ACOSOG Z0030 trial (1990-2004) and submitted to curative pulmonary resection were analyzed. After excluding T2b tumours (>5cm and <=7cm) and non-size-based T2 factors other than VPI, 289 patients were categorized as Stage IB NSCLC (T2aN0M0). Patients were divided into three groups according to size and VPI: tumours <=3cm with VPI ("VPI-alone", n=83), tumours >3cm and <=5cm without VPI ("Size-alone", n=156), and tumours >3cm and <=5cm with VPI ("VPI+Size", n=50). Multivariate Cox regression analysis was used to assess the association of VPI and size with survival, adjusting for age, gender, histology and type of resection.

Results

VPI in stage IB was identified in 133 patients (46.0%). The VPI+Size group had a 5-year survival rate of 55.0%, significantly shorter when compared to the VPI-alone group (68.3%; p=0.009), and the Size-alone group (67.2%; p=0.021). No difference was found between the VPI+Size and the VPI-alone groups. Multivariable analysis showed that VPI associated with size (tumours >3cm and <=5cm) was an independent negative prognostic factor for long-term survival, along with older age and limited resection.

Conclusions

Stage IB patients with VPI and tumours >3cm and <=5cm have significantly worse prognosis than those with 'T2a' tumours classified as such on the basis of VPI or tumour size alone.

Upstaging T2a patients in the VPI+Size group from the current IB status to stage IIA may be warranted.

Disclosure: All authors have declared no conflicts of interest.

STAGE IB (T2a-N0M0) PATIENT CHARACTERISTICS

	VPI-ALLIB	SIZE-ALLIB	VPI + SIZE	ESTS	p-value*
Number of patients	87	270	70	100	
Sex (n=100)	58 (71.4%)	171 (63.4%)	68 (97.1%)	91 (71.0%)	0.02
Male	58 (71.4%)	171 (63.4%)	68 (97.1%)	91 (71.0%)	
Female	29 (35.4%)	99 (36.6%)	2 (2.9%)	9 (7.0%)	
Age					0.000
Mean	68 (32.3%)	68 (25.2%)	61 (87.1%)	67 (53.5%)	
Median	68 (32.3%)	68 (25.2%)	61 (87.1%)	67 (53.5%)	
Stage of resection					0.00
Lobectomy/segmentectomy	71 (80%)	148 (54%)	61 (87%)	84 (84%)	
Lymphadenectomy	17 (20%)	122 (45%)	7 (10%)	16 (16%)	
Pathology					0.000
Adenocarcinoma	8 (9.2%)	68 (25.2%)	18 (25.7%)	112 (88.0%)	
Squamous carcinoma	47 (54.7%)	88 (32.6%)	23 (32.9%)	119 (93.0%)	
Other	32 (36.1%)	94 (34.2%)	13 (18.6%)	70 (55.0%)	
5-Year survival	68.3%	6.9.3%	85.0%	48.0%	<0.001

*Statistical analysis by chi-square test or Fisher's exact test. Percentages may not add due to rounding.

Table 1

B-003**THE IMPACT OF THE SEQUENCE OF PULMONARY VESSEL LIGATION DURING ANATOMIC RESECTION FOR LUNG CANCER ON LONG-TERM SURVIVAL – A PROSPECTIVE RANDOMIZED TRIAL**

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Objectives

The aim of this prospective randomized trial was to assess the influence of the sequence of pulmonary vessel ligation during anatomic resection on long term survival in patients with NSCLC.

Methods

This prospective randomized study included 385 patients treated surgically by lobectomy or pneumonectomy with standard lymphadenectomy between 1999 – 2003. Patients were randomly assigned to either primary ligation of the pulmonary artery or arteries (group A – 215 patients) or primary of the pulmonary vein or veins (group V – 170 patients). Patients in whom the sequence of vessel ligation was affected by technical difficulties or anatomic limitations were excluded. Univariate and multivariate analyses included: sequence of vessels interruption, age, sex, tumor histology, stage (TNM) and cause of death (cancer related or non cancer related).

Results

Median follow up was 63 months. The groups were similar in sex, histology, type of resection, T, N and overall stage. Overall 5-years survival reached 50% in group A and 54% in group V ($p = 0.82$) and did not differ significantly in both cancer related and non cancer related deaths. ($p = 0.66$ and $p = 0.25$). In patients with positive N2 disease, the 5-year survival was significantly better in the group V versus A ($p = 0,02$). There was a tendency to a smaller number of distant metastases in group V vs A (14.7% vs 20.5%). Univariate analysis identified higher T and N factors, advanced stage, pneumonectomy, male sex and older age as negative prognostic factors. Multivariate analysis demonstrated that age, T3-4 disease and nodal involvement were associated with inferior survival.

Conclusions

Sequence of pulmonary vessel ligation during anatomic resection for NSCLC does not significantly affect long-term survival. There is a trend to lower number of distant metastases in patients with pulmonary vein ligated first.

Disclosure: All authors have declared no conflicts of interest.

B-004

DOES FAST-TRACKING POLICY INCREASE THE READMISSION RATE AFTER MAJOR LUNG RESECTION? A CASE-MATCHED STUDY

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Objectives

The most recent evolution of patient management after thoracic surgery implies the concept of fast-tracking. Since 2008 our unit has implemented a program based on clinical protocols and standardized pathways of care aimed to reduce the postoperative stay after major lung resection. The objective of this study was to verify the safety of this policy by monitoring the patient readmission rate.

Methods

This is a prospective observational study on 914 consecutive pulmonary lobectomies performed in our institution from January 2000 to October 2010. Since we started the fast-tracking program in January 2008, we divided the patients in two groups: early period (678 patients, 2000 – 2007) and recent period (236 patients, 2008 – Oct 2010). Several baseline and operative factors were used to build a propensity score that was applied to match the recent group patients to their early group counterparts. These two matched groups were then compared in terms of early outcome and readmission rate. Readmission was defined as a re-hospitalization for any cause related to the operation within 30 days after discharge. We excluded from the analysis those patients with in-hospital mortality.

Results

Propensity score yielded 232 well-matched pairs operated on in the early (non fast-tracked patients) and most recent period (fast-tracked patients). The results of the comparison between the two groups are shown in Table 1. The fast-tracking management resulted in a postoperative stay reduction of 2.8 days ($p < 0.0001$), with a three-fold higher proportion of patients discharged before the 6th postoperative day ($p < 0.0001$). Nevertheless, we didn't observe differences in terms of readmission rate between the two periods.

Conclusions

In our experience the implementation of a fast-tracking program after pulmonary lobectomy resulted very effective and safe. It led to a postoperative reduction of hospital stay without an increase of the readmission rate.

Disclosure: A. Brunelli: Medela Healthcare Consultancy. All other authors have declared no conflicts of interest.

Table 1. Comparison between the two groups of matched patients.

B-005**TWINNED SINGLE LUNG TRANSPLANTATION: A PRIVILEGED MODEL FOR THE STUDY OF RECIPIENT DEPENDENT FACTORS FOR OUTCOME**

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Objectives

Lung transplantation is the only life-saving treatment for end-stage respiratory disease. Outcome will depend on graft quality, surgical conditions and recipient factors. Twinned single lung transplantation is defined as two different recipients treated with lung grafts from the same donor. Recipient dependent factors of outcome can be studied more accurately as graft quality is supposed equal for both recipients.

Methods

We reviewed all single-lung transplantation performed in France between 1998 and 2008 in the French registry run by the "Agence de Biomédecine" to record all donors to assess graft quality and all twinned recipients. Whole medical history and transplantation outcome was reviewed for each patient and compared to its twin recipient. End-points were primary graft dysfunction (PGD) grade 3, 1 month, 3 months and 12 months survival.

Results

A total of 387 single lung transplantations were performed in 10 French centers; 90 donors led to 180 twinned recipients. Statistical analysis revealed significantly different outcome for PGD only. PGD was significantly higher ($p < 0.05$) in fibrosis recipients compared to emphysema twins. In 28 pairs (31%) outcome was discordant for PGD, and fibrosis was significantly more often involved compared to emphysema ($p = 0.04$). Sixty two pairs had similar outcome: two pairs showed PGD in both recipients while 60 pairs were free of PGD.

Conclusions

We conclude that recipient's disease is a major determinant of outcome. Fibrosis is associated with an increased risk for PGD.

Disclosure: All authors have declared no conflicts of interest.

B-006

CONTROL OF POST-THORACOTOMY PAIN BY TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS): EFFECT ON SERUM CYTOKINE LEVELS, VISUAL ANALOGUE SCALE, PULMONARY FUNCTION, AND MEDICATION

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Objectives

Transcutaneous electrical nerve stimulation (TENS) has been used to control post-thoracotomy pain with contrastant results. We aimed to assess the efficacy of TENS on post-thoracotomy pain in relation to response of serum cytokines (not been investigated before), visual analogue scale (VAS), pulmonary function, and medication.

Methods

46 patients scheduled to undergo standard postero-lateral thoracotomy were enrolled and randomized in two groups: TENS Group (23 patients) who received post operatively TENS for 5 days and Control Group (23 patients) without TENS. In both groups serum cytokines (IL-6, IL-10, TNF-alpha) were measured by ELISA before surgery and at 6, 12, 24, 48, 72, 96, and 120 post-operative hours (POHs). Yet, we valuated how many doses of analgesia were given during post-operative period of 5 days; the pain score was measured using visual analogue scale (VAS) on 6, 12, 24, 48, 72, 96, and 120 POHs while pulmonary function tests (FEV 1 % and FVC % of predicted value) on 72, 96, and 120 POHs. Variables were expressed as median and range; intergroup differences were assessed by Mann-Whitney test.

Results

Serum IL-6 (Figure 1/A), IL-10 (Figure 1/B), and TNF-alpha (Figure 1/C) levels in TENS group were significantly lower than in control group during the entire postoperative course. Recovery of FEV 1 (Figure 1/D) and of FVC (Figure 1/E) was statistically better in TENS Group than in Control Group on 72, 96 and 120 PHOs. VAS score in TENS Group was significantly lower than in Control Group on 12, 24, 48, 72, 96, and 120 POHs (Figure 1/F). Finally, 25.9% of TENS patients required narcotics compared to 69% of control group patients during the 5-day postoperative period ($p < 0.05$).

Conclusions

TENS is a valuable strategy to alleviate post-thoracotomy pain with reduction of cytokine production and of analgesic consumption, and with positive effects on pulmonary ventilation function.

Disclosure: All authors have declared no conflicts of interest.

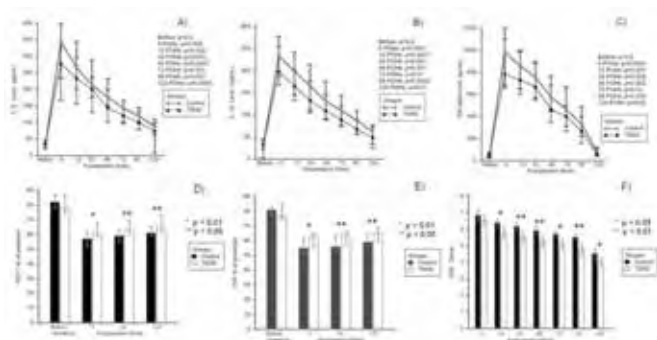


Figure 1 (Parts A/B/C/D/E/F)

Monday, 6 June 2011**11:00 - 11:30****Session II/ Featured Abstract****F-007****QUALITY OF LIFE OF SURGICAL ONCOLOGY RESIDENTS AND FELLOWS ACROSS EUROPE: RESULTS OF A WEB-BASED SURVEY**Pierre Mordant¹, C. Rivera², S. Deneuve¹, Association des Jeunes Chirugiens Oncologues³¹*Hôpital Bichat Claude Bernard, Paris/France*,²*CHU, Bordeaux/France*,³*Association des Jeunes Chirugiens Oncologues, Paris/France***Objectives**

Lung cancer is the leading cause of cancer-related mortality worldwide. Thoracic surgery residents and fellows face the difficulties of both learning surgery and taking care of cancer patients. If the quality of life of radiation and medical oncology fellows has already been studied, data are currently lacking regarding surgical oncology trainees. We sought to assess the training conditions and quality of life of surgical oncology residents and fellows across Europe.

Methods

For this purpose, we set a web-based survey, suggested to all members of the European Society for Surgical Oncology via the society mailing list. The questionnaire was dedicated to residents and fellows. Quality of life and fatigue were assessed by Linear Analog Scale Assessment (LASA), Sleepiness by the Epworth Scale, depression and burn out by 2-question screenings. Self reported medical errors, training improvement and career expectations were also questioned.

Results

The survey email was sent to 2182 ESSO members, answered by 404 members, including 109 residents and 53 fellows (Mean age 34,6 +/- 8,2, SR 2/1) who account for the survey population. The LASA mean score was 34,8 +/- 8,6 over a possible total of 50, but 17,6% of the trainees have a LASA score of less than 25. The level of fatigue was declared as low by 60% of the trainees, but 44% of the trainees have an abnormal Epworth Sleepiness score. Fifty one percent of the trainees were screened positive for depression, 25% for burn out, and 20% self reported medical errors during the last 3 months.

Conclusions

In Europe, training in surgical oncology is linked to a good quality of life. However, a subgroup of trainees presents a high level of sleepiness which respondents may not be aware of, and a high proportion of depression and burn out positive screenings. Additional work is needed to identify the characteristics of this subgroup and to fight against the cause of these symptoms.

Disclosure: All authors have declared no conflicts of interest.

F-008**SIMULATOR TRAINING IMPROVES PERFORMANCE IN THORACOSCOPIC WEDGE RESECTION**Johanna Bjurström¹, L. Konge², P. Lehnert², R. H. Petersen², H. J. Hansen², C. Ringsted¹¹*Center For Clinical Education, University of Copenhagen, Copenhagen/DENMARK,*²*Department of Cardiothoracic Surgery, Rigshospitalet, Copenhagen University Hospital, Copenhagen/DENMARK***Objectives**

An increasing proportion of thoracic procedures are performed using video-assisted thoracic surgery (VATS). This minimally invasive technique offers several advantages for the patients but places special demands on the thoracic surgeons. Mastering the fulcrum-effect and transforming two-dimensional pictures into three-dimensional perception requires deliberate practice. Simulation-based training on artificial models or animals has been proposed as an ideal way to overcome the first, steep part of the learning curve. The aim of this study was to investigate the effect of simulation-based training, and determine if a trained instructor is necessary during training.

Methods

Thirty novices were randomized into three groups: A control group (n=10), a self-guided training group (n=10), and an educator-guided training group (n=10). The training groups trained for three hours on three different scenarios of increasing fidelity and difficulty before taking a standardized test. The control-group and a group of thoracic surgeons (n=10) took the test with no prior simulator training. Performing the test, all forty participants had to locate a tumor in a porcine lung and remove it by using endoscopic staplers and endoscopic tissue-bag before placing a chest tube. The simulated wedge resections were recorded and assessed blindly and independently by two thoracoscopic experts using a validated assessment tool.

Results

Inter-rater reliability was good – Cronbach's Alpha = 0.83. The control group and the self-guided training group performed significantly worse than the surgeons - p=0.012 and p=0.010 respectively. There was no significant difference between the educator-guided training group and the surgeons – p = 0.271.

Conclusions

This is the first randomized study concerning simulation-based training in thoracoscopy. It shows that three hours of intensive simulator training with a dedicated instructor enables novices to perform an acceptable wedge resection in a simple, simulated model.

Disclosure: All authors have declared no conflicts of interest.



F-009

VALIDATION OF THORACOSCOPIC LOBECTOMY SIMULATORB. C. Tong¹, M. R. Gustafson², S. S. Balderson¹, T. A. D'Amico¹, Shari L. Meyerson³*¹Division of Cardiovascular and Thoracic Surgery, Duke University, Durham/NC/UNITED STATES OF AMERICA,**²Section of Cardiovascular and Thoracic Surgery, University of Arizona, Tucson/AZ/UNITED STATES OF AMERICA,**³Division of Thoracic Surgery, Northwestern University, Chicago/IL/UNITED STATES OF AMERICA***Objectives**

Although simulation is considered integral to general surgery training, its role has only recently been recognized in thoracic surgical education, perhaps due to a lack of widely available, validated simulators for advanced thoracic procedures. This study evaluates the validity of an inexpensive, easily reproducible simulator for teaching thoracoscopic lobectomy.

Methods

Construct validity (ability of the simulator to discriminate between users of different skill levels) was assessed by having surgical trainees perform a lobectomy on the simulator. Participants were divided into three groups (experienced, intermediate, novice) based on self-reported experience with minimally invasive surgery. After instruction and practice time to limit the effect of any simulator-specific learning curve, each performed a left upper lobectomy which was scored using a standardized assessment tool incorporating total time plus weighted penalty minutes assigned for errors. Content validity (simulator requires same steps and decision making as a clinical lobectomy) was assessed using a Likert scale by those residents who had previously seen a thoracoscopic lobectomy in a patient.

Results

Thirty-one residents participated in the study (12 experienced, 6 intermediate, and 13 novice). All 12 experienced participants completed the lobectomy. The other groups were less successful with 4 of 6 in the intermediate group and 5 of 13 in the novice group completing the lobectomy ($p=0.002$). Mean times for lobectomy + penalty minutes were 35 + 6.8 (experienced), 50 + 13 (intermediate) and 54 + 20 (novice). Differences between groups were statistically significant for experienced vs. novice ($p<0.001$) and experienced vs. intermediate ($p<0.04$). Content validity was assessed by the 18 participants who had previously seen a thoracoscopic lobectomy with a mean of 9.2 of 10 possible points.

Conclusions

The thoracoscopic lobectomy simulator used in this study demonstrates acceptable validity and can be a useful tool for teaching thoracoscopic lobectomy to trainees or experienced surgeons.

Disclosure: All authors have declared no conflicts of interest.

Monday, 6 June 2011**11:00 - 11:30****Session III/ Interesting Cases****I-010****MANAGEMENT OF AN AORTOESOPHAGEAL FISTULA IN A PATIENT WITH ARTERIA LUSORIA**Bastien Orsini¹, P. Amabile², P.M. Bonnet³, P. Piquet²*¹Département de Chirurgie Thoracique et des Maladies de L'œsophage, Université de la Méditerranée, Assistance Publique- Hôpitaux de Marseille, Hôpital Nord, Marseille Cedex 20/France,**²Département de Chirurgie Vasculaire, Université de le Méditerranée, Assistance Publique - Hôpitaux de Marseille, Hôpital de la Timone, Marseille/France,**³Département de Chirurgie Vasculaire et Thoracique, HIA Laveran, Marseille/France***Objectives**

We describe the first case of aorto-esophageal fistula due to left clavicle Kirschner wire (KW) migration in a 58-year-old man with arteria lusoria. Management for this patient was not optimal. We analyze errors that led to complications that could have been fatal.

Methods

The patient was hospitalized in emergency for chest pain management. Radiologic exams revealed KW migration from the left clavicle to the mediastinum, through the origin of the left subclavian artery (LSA) and the aortic arch. The KW finished its course close to the esophagus, where there was surrounding infiltration (no hemo- or pneumomediastinum).

Results

Initial surgery (performed in another center) was made by a median sternotomy. The identification of the KW and its extraction was impossible. An extension by a supraclavicular cervicotomy and a thoracotomy in the first left intercostal space were necessary. Following extraction of the pin, blood appeared into the mouth followed by hemorrhagic shock. No repair was possible by a sternotomy. Blackmore tube was placed and the patient was transferred to the ICU for treatment of the shock. He was then redirected to our center. We chose stent-graft treatment to close the aortic wound associated with transposition of the lusoria into the right common carotid artery. No intervention was performed on the esophagus because the wound was spotty, with no signs (biology/radiography) of mediastinitis. Post-operative course was marked by pulmonary complications requiring tracheotomy and left pleural decortication. Control CT scan performed six weeks later showed a patent carotid to subclavian transposition and no signs of mediastinitis. Six months later, the patient is alive with no specific treatment.

Conclusions

Intra-thoracic migration of orthopaedic wires is a common complication of clavicle osteosynthesis and must be managed in centres with cardio-thoracic and vascular capabilities. Wires must be withdrawn as soon as possible following bone healing.

Disclosure: All authors have declared no conflicts of interest.



Kirchner Wire migration from the left clavicle to the mediastinum

I-011

ACUTE HEMOPTYSIS AND PULMONARY HEMORRHAGE AFTER SPORTSJan Groetzner¹, R. Bettels², G. Huelskamp², M. Holzer¹¹*Dept. of Thoracic Surgery, Lung Cancer Center Muenster / Clemenshospital, Muenster/GERMANY,*²*Pediatric Dept., Lung Cancer Center Muenster-Clemenshospital, Muenster/GERMANY***Objectives**

Intralobar sequestration is a rare anomaly that is usually diagnosed with symptoms of cough, expectoration, or recurrent pneumonia in children.

Methods

We experienced a case of an 11-year-old boy with massive hemoptysis after judo sports. He was admitted to hospital and intubated due to respiratory failure. His chest computed tomography (CT) scan which was performed without contrast agent revealed a large intrapulmonary hematoma and hemothorax, mimicking traumatic hemothorax.

Results

Due to blood loss and circulatory instability, emergency thoracotomy was performed and a massive intralobar hemorrhage due to a ruptured intralobar sequestration artery was found. After lobectomy the patient was stabilized and extubated, but postoperative ARDS occurred. However, the young patient was discharged home 3 weeks later.

Conclusions

In young patients with hemoptysis and intrapulmonary hemorrhage after trauma, the possibility of ruptured intralobar sequestration should be kept in mind. This report shows that intralobar sequestration can have a dramatic course of disease, and for this reason non-urgent resection should be considered in all patients when this diagnosis is made.

Disclosure: All authors have declared no conflicts of interest.

I-012

TRACHEAL LACERATION

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Objectives

The case is about a rare complication of a relatively new method of treatment of thyroid nodules (thermal Nd:YAG laser ablation, LTA).

Methods

The patient first refused surgery, then underwent the LTA of her thyroid goiter followed by an important late complication (tracheal perforation), which necessitated a total thyroidectomy plus tracheal reparation; the definitive histology showed an area of papillary carcinoma, and radioactive iodine was definitively administered.

Results

The patient, a 73-year-old woman with a normo-functioning multinodular goiter, refused surgery and underwent, in the Endocrine Unit of our Hospital, LTA of thyroid nodular tissue under ultrasound real-time assistance. There was no early complication. After almost two months from the procedure the patient had hoarse, dyspnea and stridor; a first bronchoscopy showed a greyish, irregular 1cm² area of the tracheal mucosa in the right posterior-lateral part of the 2nd and 3rd ring with integrity of the mucosa. The patient was treated by antibiotics and cortisone. After one week, a second bronchoscopy showed clearly a necrotic area, with some tissue (thyroid) penetrating into the tracheal lumen, causing a partial obstruction. The patient was operated on through a cervicotomy. An intense inflammatory and fibrotic reaction completely surrounded the right inferior laryngeal nerve. The left nerve ran normally. After the completion of the thyroidectomy, it was evident an orifice (diameters cm 2x1) on the right posterior-lateral part of the 2nd and 3rd tracheal ring, through which the thyroid penetrated into the trachea. A resection-anastomosis was not necessary, and it was enough to close the tracheal defect by 5 sutures of PDS® 4-0. The post-operative course was normal. The histology showed a multinodular goiter with a capsulated focal area of papillary carcinoma and the patient was treated with radioactive iodine remnant ablation.

Conclusions

The follow-up and endoscopic control ten months after the operation are normal.

Disclosure: All authors have declared no conflicts of interest.

Monday, 6 June 2011**13:00 - 14:00****Session IV/ Moderated Posters****P-013****SURGICAL TREATMENT OF A RARE CASE OF EPITHELIOID HEMANGIOENDOTHELIOMA OF THE AZYGOS VEIN**Angela De Palma¹, V. Pagliarulo², N. P. Ardò¹, D. Loizzi³¹*Dipartimento Per Le Applicazioni In Chirurgia Delle Tecnologie Innovative, Università degli Studi di Bari, Sezione di Chirurgia Toracica, Bari/ITALY,*²*Sezione Di Chirurgia Toracica, University of Bari „Aldo Moro“, Bari/ITALY,*³*Dipartimento Di Scienze Chirurgiche, Università degli Studi di Foggia, Sezione di Chirurgia Toracica, Foggia/ITALY***Objectives**

Epithelioid hemangioendothelioma of soft tissues is a rare low-grade vascular tumour, with variable malignancy. Mediastinal localization is exceptional. We report the first case ever described in the literature of a radically resected epithelioid hemangioendothelioma of the azygos vein.

Methods

A 47-year-old man presented to our Institution with an asymptomatic incidental neck-chest CT evidence of a 3 cm mediastinal mass, resembling a station 4R lymphadenopathy, with rather distinct margins, strictly adjacent to the azygos vein. 18F-FDG-PET/CT revealed a SUV max of 2.3. Fiberbronchoscopy with trans-tracheal needle aspiration of station 4R yielded non diagnostic cytology result. A right lateral thoracotomy revealed an ovoidal mediastinal mass originating from the azygos vein, unresectable from it but showing cleavage from the superior vena cava. The mass with the involved azygos vein was resected en bloc by vascular stapler.

Results

Histopathology revealed a venous epithelioid hemangioendothelioma arising from the azygos vein. For the low mitotic rate and small tumour size, no adjuvant therapy was administered. Total body CT scan at one year from surgery shows neither local recurrence, nor distant metastases.

Conclusions

Epithelioid hemangioendothelioma should be considered in the differential diagnosis of mediastinal masses in adult patients. After radical removal prognosis is generally favourable, but strict follow-up must be performed because aggressive forms have been described.

Disclosure: All authors have declared no conflicts of interest.



P-014

TRAUMATIC FALSE ANEURYSM OF THE LEFT VENTRICLE: A SERIOUS COMPLICATION AFTER VIDEO-ASSISTED THORACOSCOPIC SURGERY

Julien Guihaire, E. Flecher, J. Verhoye, B. de Latour, A. Leguerrier
Thoracic and Cardiovascular Surgery, Pontchaillou Hospital, Rennes/France

Objectives

Video-assisted thoracoscopic surgery has been rapidly accepted as a safe and credible technique since 1990. Indications are well defined in the management of thoracic diseases. Lung injury is one of the main complication described after video-assisted thoracoscopy. There are few data about cardiac trauma and false aneurysm of left ventricular wall has not been reported yet.

Methods

We report the case of a 66 years-old woman with a left recurrent suppurative pleurisy. Medical treatment failed to reverse the infectious syndrome despite fifteen days of intravenous antibiotics and pleural drainage. A video-assisted thoracoscopy was then performed for bacterial sampling and surgical drainage. A massive hemothorax happened after thoracoscope intrusion. A left thoracotomy was necessary to stop bleeding because of severe pleural adhesences.

Results

An apical systolic murmur was found two weeks later during a systematic clinical examination. The patient was asymptomatic and had no personal history of cardiac disease. Color Doppler echocardiography showed two spurious aneurysms on the left ventricular free wall without any hemopericardium. There was any left ventricular dysfunction at that time and the patient never presented any acute coronary syndrome since the surgical procedure. Pericardial enhancement around the left ventricular was observed on the computerized tomography thoracic scan with contrast. After careful excision of the two false aneurysms, a surgical repair with strengthened suture was realized under cardiopulmonary bypass. The postoperative course was uneventful.

Conclusions

This case highlights a rare complication of thoracoscopic surgery: left ventricular traumatic false aneurysm. It is associated with a high mortality rate due to spontaneous rupture. Color Doppler echocardiography and computerized tomography scan with contrast are useful for diagnostic. Traumatic aneurysms of the heart have to be managed in intensive care unit in association with cardiovascular surgeons.

Disclosure: All authors have declared no conflicts of interest.

Monday P.M.
Abstracts 013 - 109

P-015

WANDERING CERVICAL SCREW : FROM CERVICAL VERTEBRA TO INTERMEDIARY BRONCHUSAhmet Demirkaya¹, E. Ersen¹, S. Teksoz², Z. Salihoglu³, A. Turna¹, K. Kaynak¹¹*Thoracic Surgery, Cerrahpasa Faculty of Medicine of Istanbul University, Istanbul/TURKEY,*²*General Surgery, Istanbul University Cerrahpasa Medical Faculty, Istanbul/TURKEY,*³*Anaesthesia, Istanbul University, Cerrahpasa Medical Faculty, Istanbul/TURKEY***Objectives**

A foreign body was detected incidentally on a chest x-ray of 75-years-old male patient.

Methods

History of cervical surgery for anterior plate fixation of the cervical vertebrae, was present . Although loosed screw was absent at follow-up cervical x-ray, it was unnoticed by the neurosurgeon.

Results

Screw eroded in the trachea and migrated through right main bronchus. Screw was detected in the intermediary bronchus by flexible bronchoscope and extracted by rigid bronchoscope (Figure 1). Post-operative chest x-ray was normal.

Conclusions

This case exhibits a very uncommon complication of a cervical surgical procedure.

Disclosure: All authors have declared no conflicts of interest.

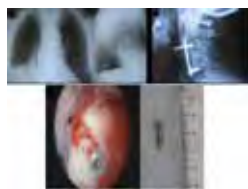


Figure 1

P-016

PNEUMOMEDIASTINUM AND CERVICAL SUBCUTANEOUS EMPHYSEMA AS FIRST SIGNS OF COLON PERFORATION

Luca Ampollini¹, R. Bilancia¹, A. Cocconi¹, V. Balestra², P. Bresciani³, L. Cattelani¹, P. Carbogiani¹, M. Rusca¹

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Objectives

Pneumomediastinum secondary to colon perforation occurred very rarely. A case of pneumomediastinum and cervical subcutaneous emphysema resulting from a retroperitoneal sigmoid diverticulum perforation is reported.

Methods

A 56-year-old man presented for fever and swelling of the face and neck suddenly developed. A diffuse subcutaneous emphysema with crepitations of soft tissue was present in the upper thorax, neck and palpebral regions. Chest examination was normal. The abdomen was slightly tender on deep palpation in the left lower quadrant, without signs of peritoneal irritations. A chest X-ray showed an unexpected pneumomediastinum; no air was present below the diaphragmatic dome. A chest CT-scan confirmed free air in the mediastinum, subcutaneous emphysema with no signs of pneumothorax. Bronchoscopy disclosed no evidence of tracheo-bronchial lacerations. A spontaneous pneumomediastinum was hypothesized. Abdominal soreness was stable; an abdomen-ultrasound revealed an uncomplicated acute diverticulitis. Peristalsis was active; body temperature, white blood cell and platelet counts were normal. Twelve hours later, patient was febrile and leukocytosis was noted. A contrast enema demonstrated free gastrografin and air in the retroperitoneum. An urgent laparotomy was performed.

Results

Sigmoid bowel was fixed on left psoas muscle. After mobilization, a perforation on the posterior wall of the sigmoid colon and a large retroperitoneal abscess were noted. The drainage of the abscess was followed by a segmental colon resection and end-colostomy. Culture of the pus revealed aerobic and anaerobic micro-organisms. Pneumomediastinum and subcutaneous emphysema disappeared quickly after the operation. Postoperatively the patient developed a right pulmonary embolism and anti-coagulant therapy was started. Histopathology examination showed strong inflammation with no signs of tumour; the hole measured 0,6x0,5 cm surrounded by inflamed and thinned mucosa. Three months later he underwent intestinal recanalization. Eighteen months postoperatively he remains symptom-free.

Conclusions

Pneumomediastinum and cervical subcutaneous emphysema occurred very rarely after intestinal perforation. Seemingly unrelated complaints must be correctly interpreted to avoid life-threatening complication.

Disclosure: All authors have declared no conflicts of interest.

P-017

BRONCHIAL PERFORATION BY ANTERIOR THORACIC PLATE

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Objectives

Serious complications after anterior spine surgery are rare. They are mainly infectious origin, pulmonary or implant-related. We report a complication that occurred 3 years after implantation of an anterior thoracic plate for fracture.

Methods

This is the case of a 48-year-old man who suffered 3 years earlier a thoracic spine trauma which necessitated anterior and posterior fixation. He was referred for removal of the anterior placed material the material had eroded through the right bronchus.

Results

The patient was operated through a postero-lateral thoracotomy and the material on the thoracic spine was exposed. One corner of the plate disappeared in the bronchus. The remaining screws were removed and a laceration of 2 by 5 cm in the right bronchus was exposed. This was primarily closed with resorbable material over an intraluminal stent as a protection for collapse. The suture was posteriorly reinforced with an intercostal muscle flap. The post-operative course was normal and his pulmonary function has returned to normal.

Conclusions

We report, to our knowledge, the first case of bronchial erosion by anterior thoracic plate for spine fixation.

Disclosure: All authors have declared no conflicts of interest.

P-018

MULTIMODAL TREATMENT OF SECRETING MEDIASTINAL PHEOCHROMOCYTOMA. CASE REPORT

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²*Medicina Nucleare, Istituto Nazionale dei Tumori, Milano/ITALY*

Objectives

Pheochromocytomas are catecholamine-secreting neuroendocrine tumours arising from adrenal medulla chromaffin cells or extra-adrenal paraganglia, which are referred to as extra-adrenal pheochromocytomas or paragangliomas. Due to secretion they often cause potentially lethal cardiovascular complications making their management demanding. We describe a case of complicated mediastinal pheochromocytoma.

Methods

In 2002 a 21 year-old man presented thoracic pain and pleural effusion. CT scan revealed a right posterior mediastinal 10 cm sized tumor. During surgical biopsy a massive bleeding was hardly managed and an hypertensive crisis occurred. Surgical intervention was interrupted. Histology revealed a pheochromocytoma. Urinary and plasma catecholamines, urinary metanephrine and vanillylmandelic acid were abnormally high. In order to safely remove the tumor, the patient underwent selective arterial embolization. Despite premedication, the procedure was interrupted because of a life threatening hypertensive crisis. Partial embolization was obtained. Operative risks were considered prohibitive, therefore he was referred to I-MIBG metabolic therapy. In 27 months he received a total activity of 27.65 GBq.

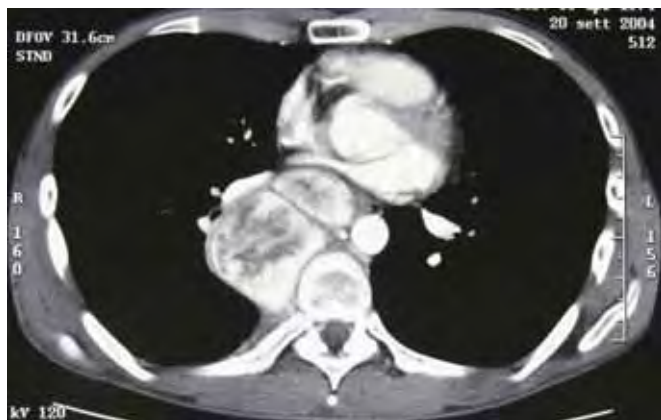
Results

Periodic follow-up shows tumor size stability and absence of catecholamines secretion. Surgery was avoided considering still high operative risks and good results achieved by metabolic treatment.

Conclusions

2% of pheochromocytomas are mediastinal. Their management is based on preoperative antihypertensive medication and surgical removal. Treated benign tumor survival rate is 95%. Malignancy is rare and related to bad prognosis (5 years survival rate is 50%). Hypertension persists in 50% of all patients. However particular cases present intra and perioperative complications requiring a different treatment with less invasive procedures. Our successful experience suggests arterial embolization and I-MIBG therapy as alternative. Results of metabolic therapy are encouraging and two other cases of preoperative embolization are reported. We conclude that when surgical removal is not achievable, a combined multimodal treatment should be considered to obtain a long term disease stabilization and absence of secretive activity.

Disclosure: All authors have declared no conflicts of interest.



Picture 1

P-019

A CASE OF PERSISTENT PNEUMOTHORAX IN RHEUMATOID DISEASEF. Sollitto¹, N. P. Ardò², P. Bufo³, A. De Palma², Domenico Loizzi¹¹*Dipartimento Di Scienze Chirurgiche, Università degli Studi di Foggia, Sezione di Chirurgia Toracica, Foggia/ITALY,*²*Dipartimento Per Le Applicazioni In Chirurgia Delle Tecnologie Innovative, Università degli Studi di Bari, Sezione di Chirurgia Toracica, Bari/ITALY,*³*Dipartimento Di Scienze Chirurgiche, Università degli Studi di Foggia, Sezione di Anatomia Patologica, Foggia/ITALY***Objectives**

We describe the case of a woman affected by rheumatoid arthritis who developed a multiple, severe pleuro-pulmonary pattern of the disease, refractory to surgery. The 'wait and see' strategy, instead of the advanced surgical option of 'open thoracostomy', gave a satisfactory clinical and radiological recovery.

Methods

A 43 year old, female patient in treatment for rheumatoid arthritis, presented with cough, chest pain and dyspnoea. CT-scan showed bilateral parenchymal nodules, left exudative pleurisy and subsequent pneumothorax. Regarding family history, spontaneous pneumothorax occurred in two brothers. Pleural drainage evacuated puruloid fluid with prolonged air leaks. Rheumatologic therapy was interrupted to restore immunocompetence and pleural toilette was performed through thoracotomy. No peel was identified and pleural surface was porous, with air and puruloid exudate leaking from it.

Results

Cultures on parenchymal exudates and pleural fluid were negative. Histology showed pleuro-parenchymal flogosis with fibrinoid stratification on pleural surface. The woman returned to methotrexate, methylprednisolone and ibuprofen therapy and became a chronic carrier of pleural drainage with prolonged air leaks, despite a second operation for parenchymal sutures. We decided not to proceed to open window thoracostomy and a 'wait and see' strategy was adopted. The patient was discharged with a Heimlich valve system. Chest X-rays after out-patient tube removing showed a non-totally expanded left lung; clinical checks revealed air from thoracotomy incision during cough. Hydroxychloroquine sulfate was added to therapy. A two months-outpatient clinical visit showed the complete thoracotomy incision healing, and the total re-expansion of the left lung with absence of the parenchymal nodules at CT scan.

Conclusions

Pneumothorax is not an exceptional complication of rheumatoid arthritis and requires full integration of medical and surgical therapy, often for a prolonged period. Probably a simple drainage and medical therapy are the best treatment.

Disclosure: All authors have declared no conflicts of interest.

P-020

PRIMARY PULMONARY PARAGANGLIOMA

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Objectives

Primary pulmonary paragangliomas (PPP) are very uncommon tumors arising from paraganglionic tissue. Two types of primary pulmonary paragangliomas have been reported; multiple miliary tumors and solid tumors. Multiple miliary paragangliomas probably arise due to an ischemic condition of paraganglion cells. Solid paragangliomas are rare. In the last WHO classification parasymphathetic paragangliomas were named as PPP.

Methods

A 59 year old non-smoker woman, presented with cough was referred to our clinic. Her physical examination and laboratory tests were within normal ranges. Chest x-ray showed a solid mass sized 4 cm at right lower zone. CT scan revealed a 4,2 x 3.5 cm nodular homogene, annular mass in the superior segment of right lung lower lobe besides multiple enlarged mediastinal lymph nodes (figure 1a) . Bronchoscopy and transthoracic needle biopsy revealed no sign of malignancy. In PET/CT there was pathologic increased uptake on mass –suv max:4,3- (figure1b) .

Results

Mass was totally resected via thoracotomy. Intraoperative frozen section study revealed malignant epithelial tumor so a right lower lobectomy and mediastinal lymph node dissection were performed. Macroscopic examination revealed a 4 cm sized, well circumscribed, nodular tumor. Immunohistochemical studies showed that nest of cells were reactive to chromogranin A and synaptophysin antigens (figure 1c, d), sustentacular cells were positive for S-100 protein and vimentin, there was negative reaction for actin, desmin and melan-A and a Zellballen pattern was present so final histopathologic diagnosis was reported as a primary pulmonary paraganglioma (Fig 1e,f).

Conclusions

The patient was discharged fifth days after operation in good clinical condition.

Disclosure: All authors have declared no conflicts of interest.

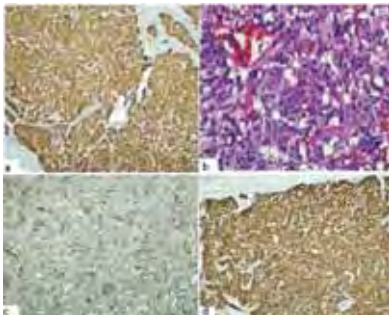


Figure 1

P-021

RUPTURE OF THE TRACHEA COMBINED WITH INJURY TO THE BRACHIOCEPHALIC TRUNK.Jiri Klein¹, P. Utikal¹, M. Herman², K. Vomackova¹¹*Surgery, University Hospital Olomouc, Olomouc/CZECH REPUBLIC,*²*Radiology, University Hospital Olomouc, Olomouc/CZECH REPUBLIC***Objectives**

Traumatic rupture of the trachea caused by an indirect mechanism is a rare yet life-threatening injury. Similarly, blunt trauma to the brachiocephalic trunk is also a rare, but often lethal complication of deceleration injuries. Concurrent injury to both structures leads to asphyxia or exsanguination and usually ends fatally even before adequate treatment is provided.

Methods

We present the case of a 19 year-old male, who was treated at the 1st Dept. of Surgery in Olomouc after a car accident during which the man suffered direct rupture of the trachea combined with a pseudoaneurysm of the brachiocephalic trunk. Injury to the trachea was preoperatively repeatedly described as a mere contusion; vascular injury was overlooked and diagnosed only preoperatively. The arterial aneurysm was resected and replaced by a temporary PTFE prosthesis, which enabled satisfactory access to both tracheal stumps.

Results

Rupture of the trachea was repaired using a transpericardial approach upon mobilization and distraction of the aorta and superior cava vein. A temporary arterial by-pass was then shortened to the appropriate length. The postoperative course was without complications; follow-up virtual bronchoscopy and MR angiography describe a favourable postoperative state.

Conclusions

The severity of concurrent injuries determines the chance of survival. Correct diagnosis is founded on an understanding of the mechanism of injury and correct interpretation of the results of paraclinical examinations. Immediate surgical treatment provides the best chance at a good result.

Disclosure: All authors have declared no conflicts of interest.

P-022

ONE-STAGE OPERATION VIA RIGHT THORACO-PHRENO-LAPAROTOMY AND VATS FOR A GIANT HEPATO-PULMONARY HYDATID CYST WITH BRONCHOBILIARY FISTULA.Francesco P. Caronia¹, E. Ruffini², A.I. Lo Monte³¹*Thoracic Surgery, Policlinico Morgagni, Catania/ITALY,*²*Thoracic Surgery, S. Giovanni Battista Hospital - Molinette, Turin/ITALY,*³*Chirurgia, University of Palermo, Palermo/ITALY***Objectives**

A case of giant hepato-pulmonary hydatid cyst with broncho-biliary fistula is presented. We discuss in details the clinical steps from the admission of the patient to the discharge. All that is supported by videos of the TC scan and of the procedure.

Methods

A 79-year-old man was admitted to our Institution with the complaints of cough, hemoptysis, and right-sided chest pain. While being hospitalized the patient presented an episode of hydatid vomica. Ultrasound and computed tomography showed a giant hepato-pulmonary hydatid cyst with broncho-biliary fistula. The optimal treatment plan was established by an urgent multidisciplinary meeting and the patient subsequently underwent a right thoracophrelaparotomy, right lower lobectomy, pericistectomy and resection of the broncho-biliary fistula. VATS was an useful adjunct in performing the lower lobectomy through the thoracotomy at the 10th intercostal space. The technique used is described in detail and shown in video clips.

Results

The patient had a successful surgical outcome and he was discharged home after 28 days. The patient at the one-year follow-up visit is very well, without any evidence of cyst recurrence or functional disability.

Conclusions

Bronchobiliary fistula is an uncommon but life-threatening complication of hydatid disease of the liver. Surgery is the treatment of choice. The proposed technique was effective in the management of this challenging case with excellent functional result and control of the disease.

Disclosure: All authors have declared no conflicts of interest.

P-023

IMPACT OF EPIDERMAL GROWTH FACTOR RECEPTOR AND KRAS MUTATIONS ON CLINICAL OUTCOME IN RESECTED NON-SMALL CELL LUNG CANCER PATIENTS

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²*Medical Oncology, Perugia/ITALY,*

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⁵*Institute of Pathological Anatomy and Histology, Perugia/ITALY*

Objectives

Surgery yields best results for non-small cell lung cancer (NSCLC) patients. However, approximately 30% of early stage (IA) patients die within 5 years. The identification of biomarkers that will predict a poor outcome and highlight who may benefit from targeted therapies is crucial to improve survival. The epidermal growth factor receptor (EGFR) and its downstream factor KRAS are mutated with different frequencies in NSCLC. Such mutations predict clinical response to tyrosine-kinase inhibitors. Their prognostic role remains unclear so we undertook this study to evaluate the incidence of EGFR and KRAS mutations and their correlation with clinicopathological parameters and outcome in resected stage I-III NSCLC.

Methods

Two hundred-thirtytwo patients were evaluated; median age was 67 (range 30-84), Male/Female: 182/50; squamous/adenocarcinoma/BAC/other: 98/100/4/30; smoker/never smoker: 194/38, and stage I/II/III: 132/48/52. EGFR (exons 18 to 21) and KRAS (exons 2 and 3) genes were amplified by nested PCR and sequenced in both sense and antisense direction. Kaplan-Meier estimates of overall survival (OS) and disease-free survival (DFS) were calculated for clinical and biological variables using Cox model.

Results

EGFR and KRAS mutations were detected in 22 (9.6%) and 39 (19.3%) patients respectively. The most common KRAS mutations were G12C (42.0%), G12V (23.0%) and G12D (7.6%). Both EGFR and KRAS mutations were associated with adenocarcinomas (19/22, 86.4% $p < 0.000$ and 24/39, 61.5% $p = 0.002$, respectively). EGFR mutations in adenocarcinomas were more frequent in women ($p = 0.001$) and in never-smokers ($p = 0.003$). Furthermore, EGFR exon 19 deletions and L858R mutations were associated with better DFS ($p = 0.03$). No difference in outcome was seen between patients harboring KRAS mutations.

Conclusions

These findings suggest that EGFR and KRAS mutations are frequent in adenocarcinomas. KRAS is not a prognostic factor for survival. EGFR mutations could be used to identify patients suitable for adjuvant treatment with targeted therapy resulting in significantly improved outcomes.

Disclosure: All authors have declared no conflicts of interest.

P-024

THE USE OF TACHOSIL® IN LYMPHOSTASIS AFTER SYSTEMATIC MEDIASTINAL LYMPHADENECTOMY IN LUNG CANCER PATIENTS.

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⁴*Department of Thoracic Surgery and Tumors, Collegium Medicum of Bydgoszcz, Nicolaus Copernicus University in Toruń, Bydgoszcz/POLAND*

Objectives

Final results of prospective randomized study to assess application of Tachosil® on mediastinum after systematic lymphadenectomy are presented.

Methods

In 29 patients from the Tachosil® group 1-3 large pieces of Tachosil (mean 1.8, SD±0.7) were applied. In 24 control group patients only coagulation was allowed. Clinical data were collected, and pleural concentrations of IL-6, IL-1ra and IL-8 on postoperative days 1, 2 and 3 were measured.

Results

Both groups were well balanced according to age, sex, number of packyears of cigarettes, time from smoking cessation, pulmonary function test results, concomitant diseases, BMI index and perioperative serum concentrations of IL-6, IL-1ra and L-8. Postoperative complications occurred in 8/29 and 12/24 patients from each group, respectively. No differences in time of surgery, intraoperative blood loss, amount of drainage and drainage hemoglobin concentration on subsequent postoperative days, time to drainage removal and number of blood units transfused between the groups were observed. The summarized pleural drainage was lower in Tachosil® group ($p=0.025$). No significant differences of IL-1ra and IL-8 in pleural fluid on subsequent postoperative days between the groups were observed. Concentration of IL-6 in pleural drainage was higher in the Tachosil® group on the first ($p=0.014$) and the second ($p=0.027$) postoperative days.

Conclusions

This study did not show any serious impact of application of Tachosil® on mediastinum after systematic lymphadenectomy on clinical outcome, except decreased amount of total postoperative drainage. It also showed a significantly higher concentration of IL-6 in pleural fluid on postoperative day 1 and 2, which may be the result of local immune response to Tachosil®, without any impact on postoperative complications.

Disclosure: T.J. Szczęsny: The company producing Tachosil promised to sponsor my journey and conference fee during the World Lung Cancer Conference in Amsterdam, 2011. All other authors have declared no conflicts of interest.

P-025

STAGE I NON-SMALL CELL LUNG CANCER (NSCLC): THE PRESENCE OF LYMPHOCYTE-SPECIFIC PROTEIN TYROSIN KINASE (LCK) IN THE TUMOR INFILTRATE IS ASSOCIATED WITH A BETTER LONG-TERM PROGNOSIS

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⁴*University of Rome Sapienza, Rome/ITALY*

Objectives

The prognostic value of the presence of tumor-infiltrating immune cells in patients with lung cancer is controversial. For this reason, we have studied the expression in the tumor infiltrate of a T-cell activation marker, the "lymphocyte-specific protein tyrosin kinase" (LCK), to assess if it could be associated with a better prognostic outcome in early stage Non-Small Cell Lung Cancer (NSCLC) patients.

Methods

This retrospective study included 25 patients undergoing lobectomy with standard hilo-mediastinal lymphadenectomy for pathological stage I NSCLC between 7-2003 and 6-2005. The presence of LCK was detected in the tumor infiltrate by immunohistochemistry on the specimen of all patients. No patient received adjuvant therapy.

Results

Resection was radical in all the patients. There was no postoperative mortality. Twelve patients resulted LCK-positive and 13 LCK-negative. The distribution of patients according to T-stage was similar between the LCK-positive group (6 T1, 6 T2) and the LCK-negative group (6 T1, 7 T2). Median follow-up time was 56 months (range:48-73). Median overall survival (OS) time was 61 months in the LCK-positive group and 30 months in the LCK-negative group ($p=0.01$, Log-rank test). Overall survival was longer than 40 months in 75% (9/12) of the LCK-positive patients and in 30.7% (4/13) of the LCK-negative patients ($p=0.01$, Fisher's exact test). Median time to relapse (TTR) resulted significantly longer in LCK-positive patients than in LCK-negative patients (not reached vs 25 months; $p=0.001$ – Log-rank test).

Conclusions

LCK-positive tumor-infiltrate is clearly associated with a longer OS and TTR in patients with radically resected stage I NSCLC.

Disclosure: All authors have declared no conflicts of interest.

P-026

WHAT IS THE EFFECT OF THORACOTOMY ON CEREBRAL BLOOD VELOCITY?Mehmet M. Erol¹, S. Kul², C. Tekinbas¹, E. Ertürk³, M. Topbas⁴¹*Thoracic Surgery, Karadeniz Technical University, Medical Faculty, Karadeniz Teknik Üniversitesi Tıp Fakültesi Farabi Hastanesi/TURKEY,*²*Department of Radiology, Karadeniz Technical University, Medical Faculty, Trabzon/TURKEY,*³*Anesthesiology, Karadeniz Technical University, Medical Faculty, Trabzon/TURKEY,*⁴*Department of Public Health, Karadeniz Technical University, Medical Faculty, Trabzon/TURKEY***Objectives**

The purpose of this study was to determine the impact of one lung ventilation (OLV) time and decubitus position on carotid artery flow dynamics in patients undergoing thoracotomy.

Methods

In our clinic, 30 patients included in the study that we've operated between 2008-2009. Thirty patients undergoing thoracotomy were prospectively recruited and underwent preoperative. In the operation room, angle-corrected time averaged flow velocity, pulsatility index (PI), resistive index (RI) and flow volume were measured. Changing according to the duration of the operation in each patient three-five exams were performed which were; 1. In the supine position, at least 15 minutes after the start of the general anesthesia 2. In the lateral decubitus position after waiting for 15 minutes but before the OLV 3. 15 minutes after the start of the OLV. 4. Each hour during the OLV

Results

There was no significant difference between the flow velocities, PIs, RIs and flow volumes measured within the supine and decubitus positions and during one-lung ventilation. Also, there was no significant difference between flow parameters of upper and lower carotids measured in the lateral decubitus position before and after the one-lung ventilation. There was no association between any of the flow parameters and the duration of the one-lung ventilation.

Conclusions

Thoracotomy operations and one-lung ventilation does not create a negative impact on cranial blood flow. These operations are reliable in terms of blood flow in brain operations.

Disclosure: All authors have declared no conflicts of interest.

P-027

30-DAY MORTALITY AFTER RESECTION FOR LUNG CANCER - DATA FROM A NATIONAL DATABASE

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Objectives

30-day mortality is one of the key indicators of quality in surgical outcome after resection for lung cancer. Data in the literature mostly reflect single institution experience. The Danish Lung Cancer Registry was established in 2000 and holds information on all patients who underwent surgery for lung cancer in Denmark. During the same period involved specialists audit all 30-day mortality annually.

Methods

Data from patients who were operated during the first 10-year period were analysed. Data completeness was established by cross-linkage with other national databases including pathology and the death-registry. Our definition of 30-day mortality was patient status at post operative day (POD) 30 irrespective of discharge status. Mortality rates were compared and predictors of mortality analyzed.

Results

6698 patients underwent surgery for lung cancer and 248 died before POD-30 (3.7%). During the 10-year period 30-day mortality rate declined from 4.9% to 2.5% per year. The median age of the 248 patients was 68 years [range 45-87] which did not differ from the main cohort. 30-day mortality was significantly lower in females (72 vs 176 or 2.3% vs 5.0%). Histology differed between sexes: adeno-/squamous-/other types were 50%/21%/29% in females and 31%/43%/26% in the male group and squamous-cell subtype was a predictor for 30-day mortality in both groups. During the 10-year period pneumonectomy-rate declined from 20% to 7% and lobectomy-rate increased from 58% to 77%.

Conclusions

This study provides national data on 30-day mortality which is one of the key indicators of quality in surgical outcome. 30-day mortality rate declined after establishing a national registry with national guidelines. Changes in surgical strategies may also have aided to the reduction in 30-day mortality just as we believe that annual national audits may have played a role. Male gender and squamous-cell histology are predictors of 30-day mortality.

Disclosure: All authors have declared no conflicts of interest.

P-028

MOLECULAR DETECTION OF BACTERIA AND VIRUS IN DISTAL AIRWAYS OF PATIENTS UNDERGOING LUNG CANCER SURGERY

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Objectives

To assess with a molecular approach the incidence of airways colonizations in patients submitted to lung cancer surgery.

Methods

A prospective study of all patients undergoing major lung resections for cancer was performed. Microbial assessments were obtained from broncho-alveolar lavage or lung biopsies from the resected lung specimen during surgery. Micro-organisms were detected using real-time PCR (polymerase chain reaction) assays targeting bacterial 16S rRNA gene, CMV and HSV. All postoperative events were recorded and compared to the results of the preoperative microbiological assessment.

Results

A total of 240 samples obtained from 87 consecutive patients were investigated by PCR. Sixteen were positives in 13 patients (15 %) constituting the positive-PCR group. The remaining 74 patients constituted the negative-PCR group. Colonizing agents were exclusively CMV and HSV. All the 16s RNA PCR remained negatives. Postoperative respiratory complications occurred in 18 (24 %) patients of the negative-PCR group and 9 (69 %) in positive-PCR group ($p=0.003$). Pneumonia occurred in 6 (8%) in negative-PCR group and in 4 (31 %) in positive-PCR group ($p=0.039$). On multivariate analysis, positive-PCR was the sole risk factor of postoperative respiratory complications (OR: 6,7; CI95 %: 1.3-33). Positive predictive value of positive-PCR in detection of postoperative respiratory complications was 0.70 (CI95%:0.5-0.9).

Conclusions

When tested by molecular techniques, lung parenchyma and distal airways are free from bacteria but CMV was found in a high proportion. With a good positive predictive value, CMV-PCR should be seen as a reliable marker to identify patients at risk of postoperative respiratory complications.

Disclosure: All authors have declared no conflicts of interest.

P-029

PULMONARY METASTASECTOMY IN COLORECTAL CANCER: IMPROVING THE EVIDENCE BASE

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Objectives

The European Society of Thoracic Surgeons Working Group established that lung metastasectomy is commonly performed, there is wide variation in practice, there are no randomised trials, no control data, and that “the level of evidence to support current practice is too low to set firm recommendations to the members of ESTS”. (JTO 2010 Supplement 2:120) Our objective is to improve the evidence base for practice.

Methods

The Thames Cancer Registry includes Dukes stage and the date of the primary operation for colorectal cancer. From large follow up studies also containing stage and the time interval between primary surgery and metastasectomy we extracted data for mathematical modelling. We estimated survival amongst registry patients with similar characteristics

Results

Survival rates predicted in the model (P5YS) for similarly selected patients were in each case higher than that observed (O5YS). (Table)

Conclusions

The assumption that few if any of the patients in highly selected series would have survived five years may not be correct. In the absence of control data, reported series cannot be relied upon as evidence for effectiveness of metastasectomy in prolonging life. We have therefore obtained National Cancer Research Institute support and Cancer Research UK funding for a prospective randomised trial called PulMiCC (Pulmonary Metastasectomy in Colorectal Cancer) which is now enrolling patients in the UK. Details can be found on the PulMiCC website: <http://www.rbht.nhs.uk/PulMiCC>.

Disclosure: All authors have declared no conflicts of interest.

Country	Year	Patients	O 5YS	95% CI	P 5YS
USA	1992	144	40%	32-48%	55%
Japan	1996	159	41%	33-48%	50%

P-030**HOARSENESS INCIDENCE AFTER MEDIASTINOSCOPY FOR LUNG CANCER STAGING: DOES VIDEO-ASSISTED MEDIASTINOSCOPY PROVIDES LOWER RATES OF HOARSENESS COMPARED WITH STANDARD CERVICAL MEDIASTINOSCOPY?**

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Objectives

The mediastinoscopy is performed with acceptable rates of morbidity in non-small cell lung cancer (NSCLC) staging. Theoretically, video-assisted mediastinoscopy (VAM) is defined as a method that provides a decrease in complications compared to standard cervical mediastinoscopy (SCM). We investigated whether the incidence of hoarseness decreased in VAM compared with the rates reported after SCM.

Methods

Between 2006 and 2010, 448 patients with NSCLC underwent mediastinoscopy for staging, were retrospectively investigated. The number of the lymph node stations and nodes, the complications and false negativity were analyzed. The clinical record of each patient was examined and grouped as VAM (n=261) and SCM (n=187) according to surgical method. These groups were indifferent statistically with respect to age, gender, T staging and tumor localization.

Results

Although the mean number of nodal stations sampled were no statistical significance between VAM (n=4.29±0.81) and SCM (n=4.14±0.84) (p=0.069), the number of sampled nodes were higher in VAM (n=7.91±1.97) compared to SCM (n=6.65±1.79) (p<0.0001). Hoarseness was reported in 24 patients (5.4%). We observed a high incidence of hoarseness in VAM (6.9%) with respect to SCM (3.2%) (p=0.087) and detected more in the left side tumors with a statistically significant difference according to the location of the primary tumor (p=0.038). Of the 309 patients (VAM=181, SCM=128) who were found to be pN0 after mediastinoscopy and underwent thoracotomy, mediastinal lymphadenectomy were performed which revealed a false negativity rate of 4.4% in VAM and 5.5% in SCM respectively (p=0.67).

Conclusions

As VAM provides a higher rate of mediastinal lymph node station exploration and a higher rate of sampling, the complication rate owing to this procedure is also reported to be high. Despite rigorous attempts to preserve recurrent laryngeal nerve hoarseness is observed more after mediastinal exploration of left side lung tumors.

Disclosure: All authors have declared no conflicts of interest.

P-031

PROPHYLAXIS OF SUPPURATIVE AND INFLAMMATORY POSTOPERATIVE COMPLICATIONS IN LUNG CANCER PATIENTS USING ANTIOXIDANT AND IMMUNOMODULATING DRUGS

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Objectives

Homeostasis in cancer patients is characterized with disorders in natural resistance system, which are pathogenic factors for the development of postoperative complications. The aim of the study was to reduce the postoperative suppurative and inflammatory complications in lung cancer patients through perioperative supportive therapy with antioxidant and immunomodulating drugs.

Methods

Antioxidant preparations, Laprot (LP, human milk lactoferrin) and Ceruloplasmin (CP, human blood ceruloplasmin), and immunomodulators, Imunophan (IM, a synthetic hexapeptide) and Galavit (GL, a phthalhydrozide derivative), were used. Lung cancer patients undergoing surgery (n=148) were randomized into groups according to their clinical status, perioperative therapy, and surgical treatment: control group (n=47) without supportive therapy, and four groups treated with various combinations of antioxidant and immunomodulating drugs, "CP+GL" (n=24), "LP+IM" (n=31), "LP+GL" (n=28), and "CP+IM" (n=18). The number and severity of complications were registered. Examination of laboratory indices of peripheral blood cells, immune and antioxidant status were performed before and after the pre- and postoperative supportive therapy.

Results

Leukocytosis or leukopenia, especially in combination with immunosuppression, before surgical treatment indicate high risk of developing postoperative complications and may serve as the criteria for administration of antioxidant and immunomodulating drugs. Suppurative and inflammatory complications were detected in 12.8% of patients from the control group, and 83.3% of them were severe (pleura empyema and pneumonia). In "LP+IM" group, complications were detected in 9.7% of patients, but only 33.3% of them were severe (pneumonia). No complications were observed in "CP+IM" group.

Conclusions

Perioperative supportive therapy, especially one that includes Imunophan in combination with Ceruloplasmin or Laprot, reduces the number and severity of suppurative and inflammatory postoperative complications.

Disclosure: All authors have declared no conflicts of interest.

P-032

A COMPERATIVE COST ANALYSIS STUDY OF LOBECTOMY PERFORMED VIA VIDEO-ASSISTED THORACIC SURGERY AND THORACOTOMY

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Objectives

The cost analyses studies which were performed in Western countries report that the over-all costs of lobectomies performed via video-assisted thoracic surgery is similar or even less than that performed via thoracotomy approach. The situation may be different in a developing country.

Methods

We retrospectively reviewed the hospital records of 81 patients who underwent lobectomy between September 2007 and March 2009 either via video-assisted thoracic surgery approach (video-assisted thoracic surgery group, n=32) or via thoracotomy (thoracotomy group, n=49). Patient characteristics, pathology, perioperative complications, additional surgical procedures, length of hospital and intensive care unit stay, outcomes of both groups were recorded. Detailed cost data for medications, anesthesia, laboratory, surgical instruments, disposable instruments and surgery cost itself were also documented. Statistical analyses were done to compare the groups.

Results

The two groups were homogeneous in regard to age, sex, pathology and perioperative morbidity. The mean duration of hospitalization in the video-assisted thoracic surgery group was significantly shorter than that of the thoracotomy group (7.78±5.11 days versus 10.65±6.57 days, p<0.05). Although there were no statistically significant differences in the charges for medications, laboratory examinations, anesthesia and the surgical fees between the two groups, overall mean final cost in video-assisted thoracic surgery group was significantly greater than that of thoracotomy group (\$3970±1873 versus \$3083±1013, p=0.002). This significant difference relies mostly (or totally) on the cost of surgical disposable instruments which were used much more in video-assisted thoracic surgery group than thoracotomy group (\$2252±1856 versus \$427±47, p<0.05).

Conclusions

In contrast to Western countries, in a developing country a video-assisted thoracic surgery lobectomy may have a greater cost than a lobectomy via thoracotomy. The relatively more expensive disposable surgical instruments and relatively cheaper hospital charges leads final over-all cost to be greater in video-assisted thoracic surgery lobectomy patients.

Disclosure: All authors have declared no conflicts of interest.

P-034

ARM AND SHOULDER FUNCTION AND QUALITY OF LIFE AFTER TRIMODALITY TREATMENT FOR PANCOAST TUMOURS: DOES THE SIDE MATTER?

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Objectives

Patients with Pancoast tumours may complain of pain or neurological deficit in the ipsilateral arm or shoulder. Also treatment with chemoradiotherapy and surgery may affect the function of arm or shoulder, reducing the quality of life (QOL). This study was done to evaluate the arm and shoulder function and QOL of patients treated for Pancoast tumours by concurrent chemoradiotherapy and surgery.

Methods

The arm and shoulder function and QOL was evaluated in patients in whom a Pancoast tumour was resected after induction chemoradiotherapy at our centre between 2002 and 2010. The following tests were used: DASH (disability of arm and shoulder) questionnaire, ARA (action research arm) test, nine-hole peg (NHP) test, ROM (range of motion) test and SF-36 questionnaire. Patients operated on the dominant side were compared with patients operated on the non-dominant side to test the hypothesis that the arm and shoulder function and QOL would be worse in patients treated for a Pancoast tumour on their dominant side.

Results

During the study period 66 patients were operated (median neoadjuvant radiotherapy dose 50 Gy (range 39 – 66Gy). The number of surviving patients when this study was done in 2010 was found to be 20, of whom eleven (mean age 55 years, mean follow-up 42 months (range 9-101 months)) could be evaluated with all tests: 8 had had the tumour on their dominant side and 3 on the non-dominant side. The ARA test, NHP test and ROM did not differ between the two groups. However, the DASH score and SF-36 indicated less disabilities in daily life and a better QOL for the domains pain, vitality and emotional in patients treated for a tumour on their dominant side.

Conclusions

This study suggests that patients with a Pancoast tumour on their dominant side end up with less disabilities and a better QOL after trimodality treatment.

Disclosure: All authors have declared no conflicts of interest.

P-035

PROGNOSTIC SIGNIFICANCE OF THE PRESENCE OF CARCINOMA IN SITU ADJACENT TO STAGE I TO IIIA RESECTED LUNG CANCERPierre-Yves Brichon¹, E. Cochet¹, A. Aubert¹, S. Lantuejoul², S. Guigard¹, D. Moro-Sibilot³¹*Thoracic Surgery, University Hospital of Grenoble, La Tronche/FRANCE,*²*Pathology, University Hospital of Grenoble, La Tronche/FRANCE,*³*Pneumology, University Hospital of Grenoble, La Tronche/FRANCE***Objectives**

To evaluate the prevalence and prognostic significance of the presence of Carcinoma In Situ (CIS) in Stage I to IIIA resected Non Small Cell Lung Cancer (NSCLC).

Methods

A retrospective study was conducted upon 1490 patients resected for stage I to IIIA NSCLC from 1979 to 2004. Univariate and multivariate analyses were conducted.

Results

There were 74 segmentectomy (4.93%), 1080 lobectomy (71.95%) and 347 pneumonectomy (23.11%). 146 patients (9.72%) had bronchial wedge or sleeve lobectomy. Resection was complete in 1352 (90.73%), microscopically incomplete (R1) in 113 (7.58%) and macroscopically incomplete (R2) in 36 (2.41%). There were 267 stage IA, 350 IB, 94 IIA, 393 IIB and 386 IIIA. 126 CIS (8.45 %) were found in the vicinity of the resected lung cancer (distant and/or at the bronchial margin). There was no statistical differences between CIS and control group. Overall operative mortality rate was 7.59%. Overall survival rate was 35.9% at 5 years (65.6% to 23.2%). The presence of CIS was not correlated to survival either in univariate nor multivariate analysis. However, after uni and multivariate analysis, age, some comorbidities, the side of the tumor, tumor stage, type of resection and bronchial margin positivity were predictive of survival.

Conclusions

Long-term survival of patients resected for stage I to IIIA NSCLC is adversely affected by factors related to the patients health status, to the tumor and to the treatment but not by the presence of CIS in the vicinity of the resected tumor.

Disclosure: All authors have declared no conflicts of interest.

P-036

ACUTE PHASE RESPONSE AND CLINICAL OUTCOME AFTER LOBECTOMY: THORACOSCOPIC VERSUS ANTEROLATERAL MUSCLE-SPARING THORACOTOMY

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Objectives

Many studies confirmed that video-assisted thoracoscopic surgery (VATS) approach is less invasive than conventional posterolateral thoracotomy including its immunological effect. In this prospective study we compare the clinical data and acute phase responses after VATS or open lobectomy performed by less invasive anterolateral muscle-sparing thoracotomy.

Methods

From 2009 to 2010 139 consecutive patients were included in this study. 74 patients (48 males and 26 females) underwent thoracoscopic lobectomy (VATS group) and 59 (40 males and 19 females) were operated on by anterolateral muscle-sparing thoracotomy (thoracotomy group). There was no difference between these groups regarding: age, gender, tumor size, preoperative lung function and comorbidity. Outcome variables analyzed included: length of hospitalization, chest tube duration, blood loss, 30-days mortality, morbidity and length of surgery. White blood cells count and following acute phase proteins were analyzed: C-reactive protein (CRP), haptoglobin (HAPT), α -1-acid glycoprotein (AGP), α -1-antitrypsin (AAT) at 6, 24, 72 and 144h post-operatively.

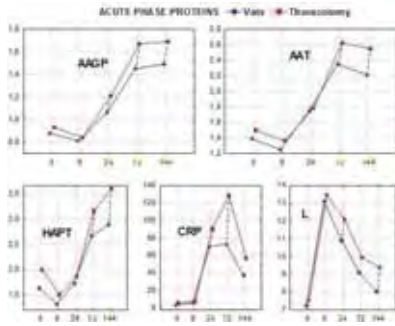
Results

There was no difference between VATS and thoracotomy group in terms of 30-day mortality. In the VATS group length of hospitalization (mean 7,6 days \pm 3,4 vs 9,8 days \pm 4,8), chest tube duration (mean 4,0 days \pm 2,1 vs 4,8 days \pm 2,5) and length of surgery (mean 117min \pm 29 vs 133min \pm 35) were shorter than after thoracotomy. Blood loss (mean 89ml \pm 75 vs 265ml \pm 109) and morbidity rate (21,6% vs 45,8%) were lower in the VATS group. The increase of leucocytes and acute phase proteins was observed in both groups but were higher in the thoracotomy group. Significant differences were reached for AGP, AAT and HAPT at 72h and 144h, for CRP at 24h and 72h and for leucocytes at 24h and 144h.

Conclusions

VATS lobectomy is associated with more favorable postoperative clinical outcome and reduced peri-operative acute phase responses compared to antero-lateral thoracotomy lobectomy.

Disclosure: All authors have declared no conflicts of interest.



Acute phase proteins - VATS versus thoracotomy

P-037

SLEEVE RESECTIONS WITH UNPROTECTED BRONCHIAL ANASTOMOSES ARE SAFE EVEN AFTER NEOADJUVANT THERAPY

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Objectives

Sleeve resection is the operation of choice in patients with centrally located tumors, in order to avoid a pneumonectomy. Most surgeons protect the bronchial anastomoses with tissue to prevent insufficiencies. The purpose of this study is to report on outcome of unwrapped bronchial anastomoses, especially after neoadjuvant chemo-or chemoradiotherapy.

Methods

Between 2000 and 2010, 103 patients (58 yrs \pm 1,3 (range 16-80 yrs) 40 females) underwent bronchial sleeve resections without coverage the anastomosis with a tissue flap. We retrospectively reviewed the data for morbidity, mortality and survival in regard to type of resection, neoadjuvant therapy and stage.

Results

Sleeve lobectomy was performed in 88, sleeve-bilobectomy in 8, sleeve-pneumonectomy in 4 and sleeve resection of the main bronchus in 3 patients. 27 patients had a combined vascular sleeve-resection. Neoadjuvant chemotherapy was performed in 25 and radio-chemotherapy in 5 patients. Non-small-cell lung cancer (NSCLC) was present in 76 (squamous cell carcinoma in 44, adenocarcinoma in 24, large cell carcinoma in 6, mixed cell in 2) and neuroendocrine tumor in 20 and other histological types in 7 patients. The pathologic tumor stage in NSCLC was stage I in 26, stage II in 26, stage IIIA in 16, stage IIIB in 7, and stage IV in 1 patient. There were no anastomotic complications especially no fistulas. Twenty-four patients had early post-operative complications, including 11 surgery-related complications (air-leakage, nerve injury, hemothorax or mediastinal emphysema). The 30 day mortality was 2.9% (one patient died due to heart failure and two with multiorgan failure). The 5-years survival rate was 63 % in NSCLC patients, and 86% in neuroendocrine tumor patients.

Conclusions

Sleeve resection without wrapping the bronchial anastomoses with a tissue flap is safe even in patient who underwent neoadjuvant chemo-or chemoradiotherapy. Therefore wrapping of the bronchial anastomoses is not routinely mandatory

Disclosure: All authors have declared no conflicts of interest.

P-038

SURGICAL TREATMENT OF 549 PATIENTS WITH LUNG METASTASES OF COLORECTAL ORIGIN. A PROSPECTIVE MULTICENTER SPANISH STUDY (GECMP-CCR-SEPAR)Laureano Molins¹, J. Rivas de Andres², R. Embun², S. GECMP-CCR-SEPAR³¹*General Thoracic Surgery, Hospital Clinic, Barcelona/SPAIN,*²*Thoracic Surgery, Hospital U Miguel Servet, Zaragoza/SPAIN,*³*Separ, GECMP-CCR, Barcelona/SPAIN***Objectives**

A prospective multicenter study for the clinical prognostic factors implicated in the surgical treatment of lung metastases of colorectal origin.

Methods

From March 2008 to February 2010, 32 Hospitals prospectively collected data on all patients with lung metastases of colorectal origin, surgically treated with curative intention.

Results

549 patients were included, 352 male (65,4%) and 197 female (34,6%), 32 to 88 y/o (mean 64,5y/o). The number of nodules: 1 to 12 (mean: 1,88), bilateral in 120 patients (22,8%). Surgical approach: unilateral (UNI) in 446 (85%) and bilateral (BIL) in 81 (15%), 23,7% in the same surgical session. 609 total surgical resections: 488 (80,1%) wedge, 19 (3,1%), segmentectomy, 98 (16,1%) lobectomy and 4 (0,7%) pneumonectomy. Number of lung metastases removed: 1 to 25 (mean 1,8). Nodules detected by CT/confirmed histologically: Same in 76,6% of patients (79,4% if UNI and 60,3% if BIL, $p<0.001$), less in 9,3% (7% UNI, 20,1% BIL $p<0.001$) and more in 14,1% (13,5% UNI 16,7% BIL). PET sensitivity was 84% (64% if $<1\text{cm}$; 93% if $>1\text{cm}$) and specificity 76% (83% if $<1\text{cm}$; 50% if $>1\text{cm}$). Systematic lymph node dissection (SLND) was performed in 51 patients (20,4%), sampling in 96 (38,4%) and less than that in 103 (41,2%). Lymph nodes removed: 1 to 41 (mean 5,5). N status: 77,7% N0; 2,4% N1; 7,7% N2 and 12,1% Nx. Morbidity in 81 patients (15,4%): air leak in 17 (3,2%), atelectasis in 14 (2,6%) and pneumonia in 12 (2,2%). Postoperative mortality in two patients (0,4%) because of ventricular fibrillation and sepsis.

Conclusions

Wedge resection is the most used technique. When multiple and bilateral nodules, simultaneous resection is an option. There was a significant difference between the number of nodules detected by CT and confirmed histologically when unilateral versus bilateral. SLND or sampling are not performed routinely. Morbidity and mortality are low.

Disclosure: All authors have declared no conflicts of interest.

P-039

ASSOCIATION BETWEEN LYMPH NODE STATION AND RECURRENCE IN NSCLC TREATED WITH SURGERY

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Objectives

To describe survival, incidence and localization of recurrence in NSCLC patients treated with surgery and single pN1 disease, multiple pN1 and single unsuspected pN2.

Methods

Between 2005-2009 we treated 378 lung cancer patients with surgery with radical intent, 151 cases were pN1 or pN2. Of this, we excluded patients with neoadjuvant treatment, incomplete resection, incomplete lymph node dissection, metastasis, cN2 disease, multiple pN2, SCLC and lack of PET-TC. All patients were staged with TNM classification 2010. The sample was 72 patients: 21 single pN1, 26 multiple pN1 and 25 single unsuspected pN2. The statistical analysis included descriptive statistics, Chi-square test, Kaplan-Meier and Log Rank test.

Results

There were 62 men (86%) and 10 women (14%), mean age 64±9 years. The most frequent histological type was squamous carcinoma (49%). The three subgroups were homogeneous in age, comorbidities, cTNM, pT and type of resection ($p>0.05$). Adjuvant treatment was performed in 55 patients (76%). The four-year survival of single pN1 was 77%, multiple pN1 36% and single unsuspected pN2 53% ($p=0.32$). The mean survival of single pN1 was 52±5 months, multiple pN1 42±5 months and single pN2 39±4 months. Single pN1 presents 5 patients with recurrence (24%): local recurrence in 4 and metastasis in 2. Multiple pN1 presents 14 patients with recurrence (54%): local recurrence in 8 and metastasis in 8. Single unsuspected pN2 presents 8 patients with recurrence (32%): local recurrence in 1 and metastasis in 8. The incidence of local recurrence was higher in patients with pN1 disease ($p=0.03$), whereas the incidence of metastasis was higher in multiple pN1 or single pN2 ($p=0.07$).

Conclusions

The survival of patients with single unsuspected pN2 is similar to patients with multiple pN1. Patients with pN1 disease present more local recurrence, while patients with multiple pN1 or single unsuspected pN2 present more metastasis.

Disclosure: All authors have declared no conflicts of interest.

P-040**MAXIMUM STANDARDIZED UPTAKE VALUE (SUV MAX) OF FLUORODEOXY-GLUCOSE POSITRON EMISSION TOMOGRAPHY (FDG-PET) OF PRIMARY TUMOR IS A GOOD PREDICTOR FOR PATHOLOGICAL NODAL INVOLVEMENT IN CLINICAL N0 NON-SMALL CELL LUNG CANCER (NSCLC)**

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Objectives

FDG-PET plays an important role in evaluating resectable NSCLC. However histological nodal involvement cannot be detected with this modality, resulting in stage migration for resectable lung cancer. In this study, we tried to evaluate the possibility to predict histological nodal involvement in patients with NSCLC using SUV max of FDG-PET of the primary tumor instead of that of lymph nodes themselves.

Methods

Between February 2008 and January 2011, 695 patients underwent lung cancer surgery at our institute. Among them, we retrospectively analyzed 196 patients with clinical N0 NSCLC patients, who underwent preoperative FDG-PET. Relationship between clinicopathological features including the findings of FDG-PET and pathological nodal involvement were investigated. Investigated factors were as follows; age, gender, preoperative carcinoembryonic antigen titer, maximum tumor dimension, SUV max in the primary tumor.

Results

Of 196 clinical N0 NSCLC patients, 155 (79.1%) had pathological N0 status and 41 (20.9%) had hilar and/or mediastinal histological lymph node involvement. Among 48 patients with NSCLC showing 10 or more SUV max of FDG-PET, 18 (43.9%) patients had nodal disease, while 23 (19.4%) had nodal disease of 148 patients with less than 10 SUV max of FDG-PET ($p=0.002$). On multivariate analysis, SUV max of primary tumor was only significant predictor for pathological nodal disease (risk ratio: 3.330, 95%CI:1.588-6.986, p -value: 0.015).

Conclusions

Postoperative nodal status was significantly predicted with SUV max of FDG-PET of the primary tumor instead of lymph nodes themselves. Patients with NSCLC showing 10 or more SUV max could have occult nodal metastases, and may be indicated further preoperative modality for accurate staging.

Disclosure: All authors have declared no conflicts of interest.

P-041

VARIATIONS IN PRACTICE OF INTRAOPERATIVE STAGING FOR LUNG CANCER RESECTION

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Objectives

Systematic lymph node dissection (SLND) is recommended by the European Society of Thoracic Surgeons as the gold-standard for intra-operative staging of non-small cell lung cancer (NSCLC). The aim of this study was to investigate the differences in intra-operative staging between four consultant surgeons in a single institution.

Methods

Retrospective analysis of histopathology reports from 350 consecutive patients from 11/06/08 to 30/03/10 who underwent resections for confirmed or suspected NSCLC. Comparisons in the lymph node stations reported by the pathologist were made between surgeons.

Results

Twenty-eight patients without NSCLC proven at or after surgery were excluded from subsequent analysis. Anatomical resection was in 290 (90.1%) (91.7% lobectomy/8.3% pneumonectomy/4.1% segmentectomy), wedge resection performed in 32 (11.0%). Sixty one of 322 (18.9%) patients did not have separate N2 lymph nodes sent for staging (range between surgeons 0% to 58.7%, $p < 0.0001$). The median number of N2 nodal stations reported varied between 0 and 3 ($p < 0.0001$). The percentage of cases with Station 7 nodes sent for histopathology varied between 17.4% and 91.0% ($p < 0.0001$). The percentages of patients with three or more N2 stations reported ranged from 2.2% to 56.2% ($p < 0.0001$) and the range for lobe-specific SLND was 0% to 25.8% ($p < 0.0001$). Survival analyses examining the differences in outcome between groups are awaited.

Conclusions

There were significant differences between the intra-operative staging practices of cardiothoracic surgeons. Lobe-specific lymph node dissection rates were generally low. Potential reasons for the low SLND rate include trusting the PET stage, practising selective lymph node and sweeping mediastinal nodes into the main specimen.

Disclosure: All authors have declared no conflicts of interest.

P-042

PNEUMECTOMY AFTER INDUCTION TREATMENT: IS IT JUSTIFIED?Cengiz Gebitekin¹, A. S. Bayram², H. Melek¹, T. Evrensel³, S. Saruhan⁴¹*Gogus Cerrahisi Abd, Uludag Universitesi Tip Fak., Bursa/TURKEY,*²*Thoracic Surgery, Medical Faculty of Uludag University, Bursa/TURKEY,*³*Medical Oncology, Uludag Universitesi Tip Fak., Bursa/TURKEY,*⁴*Radiation Oncology, Uludag Universitesi Tip Fak., Bursa/TURKEY***Objectives**

Pneumonectomy(PN) is a controversial type of resection particularly after induction treatment in the management of NSCLC. Our aim was to present the results of pneumonectomy performed after induction treatment and compare the results to the patients without induction treatment.

Methods

All pneumectomies performed for NSCLC between January 1997 and January 2011 were retrospectively reviewed. One hundred and seventeen pneumectomies were performed in the period and 42 (36%), Group 1, were performed after induction therapy (chemotherapy or chemoradiation) whereas 75(64%) patients, Group 2, had no treatment before surgery. All results were compared between the groups.

Results

All but four patients were male with a mean age of 57 (range 34-82). There were 16(38%) right and 26(62%) left PN in Group 1, 37(49%) right and 38(51%) left in Group 2, $p>0.05$. Major morbidity was observed in 24% of the patients in Group 1, whereas 37% in Group 2, $p>0.05$. Although mortality was not observed in Group 1, three patients (4%) died in the postoperative period in Group 2, $p>0.05$. Bronchial stump was closed with staplers in all but 13 patients. Overall BPF rate was 3.5% (4/114 pts), two patients in each group. No significant difference, $p>0.05$ was found between the groups in terms of surgical technique, extended resection, bronchial stump buttressing, type of bronchial closure, left vs right pneumonectomy, induction therapy vs no treatment, stapler vs hand suturing, mortality and morbidity.

Conclusions

Our results confirmed that pneumonectomy after induction therapy is a safe procedure with an acceptable morbidity and even without mortality.

Disclosure: All authors have declared no conflicts of interest.



P-043

**CANNABIS ABUSE AND SPONTANEOUS PNEUMOTHORAX:
A RETROSPECTIVE STUDY**

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Objectives

The link between cannabis abuse and spontaneous pneumothorax is still unclear, due to the lack of reports in literature. However, the number of marijuana-smoking young adults presenting with spontaneous pneumothorax is continuously increasing. This is a retrospective analysis of young cannabis-smoking patients admitted to our hospital with spontaneous pneumothorax.

Methods

In the last 6 years, 11 young cannabis smokers were evaluated. Clinical history, chest imaging studies, perioperative and postoperative data were assessed and the findings of this group (group A) were compared with those of 61 young non-cannabis smokers presented with primary spontaneous pneumothorax in the same period (group B).

Results

The median age was 29 years (range 22-38) in group A and 24 years (range 17-42) in group B. All patients in group A had a tobacco smoking history and 3 also were cocaine consumers, while 42 group-B patients (69%) were tobacco smokers. CT-scan showed multiple emphysematous bullae (size: 3.2-7.0 cm) in all the group-A patients; the 3 cocaine consumers showed larger bullae with pleural thickening (size: 5.1-12.0 cm). Only 33 group-B patients (54%) showed small apical blebs (size: 0.5-2.0 cm). All the group-A patients were treated by VATS for prevention of recurrent pneumothorax. Forty-three group-B patients (65%) underwent VATS. Mean postoperative drainage stay was longer in group A (6.6 versus 2.8 days; $p < 0.05$). The 3 group-B cocaine consumers showed a worse postoperative course (mean drainage stay: 7.8 days).

Conclusions

The results of our experience suggest that cannabis abuse can play an important role in the early development of bullous emphysema. Our Cannabis-smoking patients with spontaneous pneumothorax showed large bullae similar to those seen in elderly patients with bullous emphysema and presented prolonged air-leaks after bullectomy. Furthermore, cocaine, when smoked together with marijuana, seems to aggravate marijuana-induced lung injury.

Disclosure: All authors have declared no conflicts of interest.

P-044

SUBOPTIMAL PERCEPTION OF ILLNESS DUE TO SELF-REALIZATION CONSTRAINTS IMPAIRS PSYCHOLOGICAL WELFARE IN SURGICAL PATIENTS

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Objectives

Recognizing patients' psychological problems as well as understanding their social needs constitute important tasks for medical personnel, because these issues substantially contribute to overall outcome of treatment. People afflicted with surgical diseases need to determine the sense of everyday pursuits and activities, and balance it against the therapeutic process. The aim of the study was to assess the relationships between the perception of illness, satisfaction with life and meaning of life among surgical patients.

Methods

A total of 225 patients undergoing surgical treatment in the thoracic surgery department were enrolled in the questionnaire study using Multidimensional Essence of Disease and Illness Scale (MEDIS), Satisfaction With Life Scale (SWLS) and Life Meaningfulness Scale (LMS). Relationships between variables were assessed with Pearson's correlation.

Results

The analysis disclosed negative correlations between the perception of the disease in the light of self-realization constraints and the feeling of satisfaction with one's life ($r=-0.248$; $p=0.004$), an affective component of the LMS ($r=-0.291$; $p=0.001$), and the total result of the LMS ($r=-0.212$; $p=0.006$). Similar relationships were observed between the MEDIS dimension describing a disease as a social withdrawal and the total result of the SWLS ($r=-0.211$; $p=0.014$), and the affective component of the LMS ($r=-0.233$; $p=0.002$).

Conclusions

Suboptimal hospitalization-related perception of the disease due to self-realization constraints profoundly impairs psychological welfare of patients, and may exert negative impact on the overall outcome of treatment. To prevent these harmful psycho-social consequences of illness and hospital stay, surgical patients require early psychological, social and spiritual support.

Disclosure: All authors have declared no conflicts of interest.

Table 1. Relationships between perception of illness, life satisfaction and meaning of life in the group of thoracic surgery patients (Pearson's correlation) (* $p < 0.05$; ** $p < 0.005$)

The MEDIS factors	SWLS		Affective component of LMS		Cognitive component of LMS		Multidimensional component of LMS		The LMS total result	
	r	p	r	p	r	p	r	p	r	p
Self-realization constraints	-0.248**	0.004	-0.291**	0.001	-0.212**	0.006	-0.130	0.008	-0.125	0.006
Mental dysfunction	-0.195	0.021	-0.190	0.022	0.065	0.469	-0.022	0.776	-0.076	0.388
Physical dysfunction	-0.076	0.422	0.040	0.635	0.099	0.197	0.044	0.522	0.066	0.287
Isolation	-0.086	0.388	0.022	0.762	0.025	0.747	0.009	0.748	0.034	0.668
Social withdrawal	-0.211*	0.014	-0.233**	0.002	-0.069	0.379	0.049	0.523	-0.117	0.182



P-045

AN INITIAL EXPERIENCE WITH A SYNTHETIC SELF-ADHESIVE PATCH (TISSUEPATCH3) IN VIDEO-ASSISTED THORACOSCOPIC LUNG VOLUME REDUCTION SURGERY (VAT LVRS)

Inger F. Oey, K. Lau, D. Waller

*Thoracic Surgery, Glenfield hospital, Leicester/UNITED KINGDOM***Objectives**

Prolonged postoperative air leak is a key complication after VATLVRS for emphysema. We have previously used buttressed stapling in lung volume reduction surgery but have evaluated the novel use of TissuePatch3 (Tissuemed Ltd, Leeds, UK) which is a synthetic self-adhesive patch that forms an airtight support when applied onto the staple line. We have analysed the feasibility of applying TissuePatch3 by VAT and its effect on clinical outcome.

Methods

In the historical group (HG) since 1995 we have performed 157 unilateral VATLVRS procedures using buttressed staples: either Peri-Strips (Synovis Life Technologies Inc, St Paul MN, USA) or Seamguard (W. L. Gore & Associates, Flagstaff, Arizona). From June 2009 till Nov 2010 we used TissuePatch3 in 22 unilateral VATLVRS procedures (TPG). We used TissuePatch3 size 100*100mm or 50*100mm, divided into 3 or 4 smaller strips at the operation.

Results

In the HG an average of 12 firings (11 buttressed) was used whilst in the TPG only 6 firings, reflecting changes in practice. There was no intergroup difference in ITU usage (11 vs 14%) or in-hospital mortality (8 vs 9%).

Conclusions

The use of TissuePatch3 is feasible in VATLVRS and may shorten operation time, duration of air leak and hospital stay. The cost of TissuePatch3 does not preclude the conduction of a randomised trial comparing its use with buttressed stapling.

Disclosure: All authors have declared no conflicts of interest.

	HG	TPG	
Number	157	22	
Mean Age (yr)	60	63	
Gender (F:M)	58/99	8/14	
Duration of surgery (min) (mean+/-SD)	72	52	
Drain duration (mean+/-SD) (days)	16	15	
Drain duration (days) (median (range))	10 (2-64)	7 (2-52)	
Hospital stay (mean+/-SD) (days)	19	12	
Hospital stay (days) (median (range))	13 (4-197)	7 (4-41)	

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P-046

VIDEOTHORACOSCOPIC TREATMENT OF PRIMARY SPONTANEOUS PNEUMOTHORAX: TALC PLEURODESIS VERSUS MECHANICAL PLEURAL ABRASION? RETROSPECTIVE MULTICENTRE STUDY

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Objectives

The aim of this study was to determine the impact of different pleurodesis procedures on post-operative morbidity and late recurrence rate after surgical treatment of Primary Spontaneous Pneumothorax (PSP).

Methods

We retrospectively reviewed 104 patients with PNP undergoing VATS in two different hospitals between January 2007 and December 2008. Patients underwent apical lung resection or bullectomy and pleurodesis, being distributed in two different groups depending in the type of pleurodesis (mechanical pleural abrasion [MPA] at Hospital A, and talc pleurodesis [TP] at hospital B). The follow-up was until December 2010. Variables analyzed were: recurrence, complications, mortality, days of air leak, days of chest tube drainage and postoperative stay.

Results

We performed 106 interventions in 104 patients (89 males, 15 females, mean age 28 years). Right PNP was identified in 64 patients (60.38%) and 68 (64.15%) smoked before the first episode of NTX. Surgery was offered when second episode of ipsilateral PSP occurs (46.26%), in contralateral PSP (14.15%), and PSP with persistent air leak (26.42%). Median follow-up was 38 months. No mortality was related in neither group, and 4 patients (3.77%) presented a recurrence of PSP after surgery. Median air leak was 0.78 days, median chest tube drainage was 1.95 days and median hospital stay was 2.68 days. MPA (group A) was carried out in 74 patients (69.81%) and TP (group B) in 32 (30.19%). Both groups were homogeneous: age 26.73 (group A) vs 31.12 years (p 0.083); male 67.41% (group A) vs 82.35% (p 0.219), right PSP 54.05% (group A) vs 75.00% (p 0.053), and pre-PSP smoking rate 62.13% (group A) vs 68.75% (p 0.516). Results were not significantly different between the MPA and TP group in recurrence (4.05% vs 3.13% [p 0.818]), complications (6.76% vs 12.5% [p 0.448]) or mortality (0%). However, median hospital stay was lower in MPA than TP (2.22 vs 3.75 days, p 0.005).

Conclusions

VATS is a safe procedure for the management of PSP. In combination with apical lung resection or bullectomy, results of MPA do not significantly differ from TP, but patients undergoing MPA suffered half of complications and a significant lower hospital stay. Considering these results, we should recommend a multicenter clinical trial comparing both techniques to determine which one is preferable to provide a higher level of scientific evidence in an area yet to be defined.

Disclosure: All authors have declared no conflicts of interest.

P-047

SURGICAL TREATMENT OF SPONTANEOUS PNEUMOTHORAX OCCURRING ON A SINGLE LUNG (FUNCTIONAL OR AFTER PNEUMONECTOMY): ABOUT 14 CASES.

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Objectives

To assess the results of surgical treatment of spontaneous pneumothorax occurring on a single lung (functionally or after pneumonectomy).

Methods

From 1985 to 2007, 14 patients (13 males, mean age: 61,3 years) were operated on for a pneumothorax occurring on a single lung. In group 1 (8 patients), the pneumothorax occurred after a mean period of 22 months (0 to 57 months) after pneumonectomy for cancer 2 right, 6 left). In group 2 (6 patients) the contralateral lung to the pneumothorax was evaluated as non-functional: lobectomy for cancer followed by radiotherapy (3 cases), destroyed lungs by benign disease (2 cases), lobectomy for bronchiectasis (1 case). In all operation was scheduled from the first episode (due to the general condition of the patients or low tolerance) and was performed within a mean delay of 10,9 days. Symphysis was performed under general anaesthesia, for 3 patients by isolated talcage by pleuroscopy and for 11 others by axillary thoracotomy: 6 apical bullectomies, 9 subtotal pleurectomies associated with 4 talcages and 2 isolated mechanical abrasions. Five patients (group 2) had a double lumen tracheal tube.

Results

Two patients had a tracheostomy, one of which permanent. Five patients died in the postoperative period (50 days), from multivisceral failure (3), pneumonia (1) and bronchial cancer recurrence (1). One patient had a medically treated pneumothorax relapse. The mean survival period is 53,3 months. Seven patients died after 4, 27, 30, 48, 72, 84 and 108 months. Two patient are still alive (47 and 168 months). There is no difference between the groups.

Conclusions

Surgical treatment of pneumothorax occurring on a single lung is effective, despite a high morbidity-mortality rate. Sporadic cases have been published, some of which were operated with ECMO.

Disclosure: All authors have declared no conflicts of interest.

P-048**PROLONGED AIR LEAK AFTER LUNG RESECTION. DOES INTRAPLEURAL PRESSURE MATTER ?**

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Objectives

Digital drainage systems can measure intrapleural pressures data, which are usually considered not relevant. The study hypothesis was that these data may be informative and that intrapleural pressure may be related with postoperative air leak after lung resection.

Methods

The study was designed to prospectively enroll 100 patients undergoing pulmonary resection. Postoperative air leaks were monitored by the use of a digital chest drainage system (DigiVent, Millicore AB, Sweden). Drains were removed when no air leak was recorded for more than 24 hours. Maximum, minimum intrapleural pressures and air leak flow during the first 72 postoperative hours were compared between patients who had their drains removed within POD5 (group A), those in which they were removed between POD6 and POD15 (group B) and those who had drains removed later (group C).

Results

Study enrollement was stopped after 90 cases as the digital device became unavailable. Patients distribution was: group A 51 cases (56.6%), group B 17 cases (18.8%) and group C 22 cases (24.4%). Median air leak was significantly lower in group A after the first 24 hours (p 0.03), meanwhile no difference was recorded between group B and group C. Maximal intrapleural pressure curves had a different pattern in each subgroup: minimal shifts and continuous negative values in group A, large shifts and almost continuous negative values in group B, large shifts and more positive values in group C (p 0.04). No difference between groups was detected in terms of minimal intrapleural pressures.

Conclusions

Intrapleural maximal pressures and air leak flows are related and their interaction changes according to the duration of postoperative air leak. This information opens interesting perspectives on the potential predictive value of maximal intrapleural pressure in early definition of patients who will need chest drain for a long period of time.

Disclosure: All authors have declared no conflicts of interest.

P-049

BUILDING A PULMONARY THROMBOENDARTERECTOMY PROGRAM IN TURKEY: PRELIMINARY RESULTS

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Objectives

Pulmonary endarterectomy (PEA) is the treatment of choice for Chronic Thromboembolic Pulmonary Hypertension (CTEPH) patients who are considered operable by an experienced surgeon and interdisciplinary team. For the first time, a PEA program is being established in Turkey and in this study, we review our short-term results of patients undergoing PEA.

Methods

In the period of September 2009-January 2011, 26 patients underwent PEA. The clinical data were collected prospectively. Diagnosis was confirmed by right heart catheterisation, ventilation-perfusion scintigraphy, CT and/or pulmonary angiography.

Results

26 patients (20 male; mean age: 48.5 ± 15.8y) underwent PEA. Median time from CTEPH diagnosis to surgery was 25 months [1-48]. Prior to surgery all patients were in NYHA functional class III or IV, 6-min walk test of 218 ± 144 meters, mean pulmonary arterial pressure (mPAP) of 53.4 ± 12.2 mmHg in right heart catheterisation and a mean pulmonary vascular resistance (mPVR) of 9.4 ± 4.4 wood. Bilateral PTE was performed sequentially under total circulatory arrest with intraoperative cardiopulmonary bypass and deep hypothermia (18°C). Nitric Oxide (NO) was used after the end of circulatory arrest and inhaled iloprost was used after extubation. In-hospital mortality was 15% (4/26) with an uncontrollable intraoperative massive hemoptysis and heart failure (n=1), sepsis on postoperative 22nd day (n=1), heart failure following a massive bleeding from the left pulmonary artery (n=1) and a sudden reperfusion lung edema on the first postoperative day (n=1). Morbidity was seen in four patients (17,3%). Mean intubation time was 2 days, mean time in intensive care unit was 5 days and mean hospital stay after surgery was 11 days. sPAP decreased from 90.4 ± 24.6 to 42.1 ± 16.2 mmHg (p=0.0001) after PEA. Mean follow-up of discharged 22 patients was 155 days and all of them are NYHA class I or II.

Conclusions

Management of CTEPH patients in specialized centers suggest high quality care as indicated by low operative mortality and good early results. Future follow-up data will support critical decision-making regarding operability and treatment options for these patients.

Disclosure: All authors have declared no conflicts of interest.

P-050**SURGICAL TREATMENT OF NECROTIZING PNEUMONIA AND LUNG GANGRENE**

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Objectives

Necrotizing pneumonia, pulmonary abscess and lung gangrene are rare complications of severe pulmonary infection with devitalization and sloughing of lung tissue. Pulmonary necrosis is often associated with alcoholism and other chronic disorders with known immunodeficiency. Mortality is significant and both treatment strategies as well as the role of surgery are controversially debated.

Methods

In a retrospective review at a German tertiary referral hospital 17 patients with pulmonary resection for necrotizing lung disorders were identified since 2008. All procedures were performed by the same thoracic surgeon (MS). At hospital admission all patients suffered from pulmonary sepsis and despite adequate medical treatment progressing parenchymal destruction and devitalization took place. The majority of the patients developed a pleural empyema (11/17) and four patients a persisting air leak. On account of failing medical therapy six patients (35%) developed severe sepsis with septic shock and four patients (24%) were already preoperatively ventilated. Chronic alcoholism was present in 8 patients (47%).

Results

Gangrene of a complete lung was seen in four cases. Lobar gangrene or necrotizing pneumonia complicated by fulminant abscess was seen in the right lower lobe (7/17), middle lobe (4/17) and right upper lobe (2/17). Procedures included pneumectomy (4/17), lobectomy (11/17) and limited resection (2/17). The bronchial stump was reinforced with a pedicle muscle flap in 7 cases. There were three postoperative deaths due to septic shock with multi-organ-failure. The remaining 14 patients (82%) recovered well and were transferred to rehabilitation clinics specialized on pulmonary disorders.

Conclusions

Necrotizing pulmonary infections are infrequent but life-threatening disease entities. Patients often present with severe comorbidity and chronic disorders causing immunodeficiency. If initial medical therapy fails surgery offers a reasonable therapeutic approach. Aim of surgical therapy is resection of all gangrenous lung parenchyma and effective drainage of pleural empyema. Then recovery is feasible in up to 80%.

Disclosure: All authors have declared no conflicts of interest.



Fig 1a

Fig 1a: Bronchoscopic image from the right upper lobe bronchus showing gangrene and necrosis of the airways.



Fig 1b

Fig 1b: Computed tomography shows lobar gangrene with a large abscess cavity filled with slough.

Gangrene of the right upper lobe: Bronchoscopic image and CT scan

P-051

**THORACOSCOPIC BULLECTOMY FOR DYSPNOEA IN EMPHYSEMA:
DEFINING NEW BOUNDARIES**

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Objectives

There exists only limited guidance on patient selection for giant bullectomy in emphysema which is now 20 years old. Mortality was reported as 10%, and patients with FEV₁ <50% predicted were excluded. Our modern experience with lung volume reduction surgery has reduced our selection threshold. Thus we reviewed our results and their implications for patient selection.

Methods

Between June 1997 and November 2009, fifty five patients (45 male:10 female; median age 61 years (range 39-76 years)) with significant dyspnoea associated with giant emphysematous bullae underwent surgery. Their median preoperative FEV₁ was 31% predicted (range 9-93%). Twenty nine patients had FEV₁ <50%pred and fifteen <25%pred. Eight patients were in type I respiratory failure; 3 patients had alpha-1-antitrypsin deficiency. All were cigarette smokers and 4 had significant cannabis use. In all patients there was evidence of hyperinflation and a bulla occupying >30% of the hemithorax. All operations were performed by stapled VATS bullectomy and in the high risk patients 6 operations were performed under sedation with spontaneous ventilation and 2 using intraoperative extracorporeal membrane oxygenation (ECMO).

Results

Median hospital stay was 9 days (range 3-64 days). Prolonged airleak (lasting over 48 hours) was observed in 21 patients (38%). Three patients (6%) required postoperative ventilation. 30-day mortality was only 3.6% (2 patients). One year survival was 94.5% (52 patients). Symptomatic improvement in dyspnoea was reported in 73% patients. Median follow up of our patients was 6 years (range 1-13 years). In a subgroup study of the 15 most recent patients there was an improvement in postoperative FEV₁ in 14, with a median improvement of 15.2% at 1 year after the operation (range 1%-41%).

Conclusions

The selection of patients for VATS giant bullectomy for symptom relief should be extended to those with severe airflow obstruction and borderline respiratory failure.

Disclosure: All authors have declared no conflicts of interest.

P-052

DIFFERENCES IN CLINICAL PRESENTATION, SURGICAL APPROACH AND RESECTION TYPES IN BRONCHIECTASIS: A MULTICENTER STUDY

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Objectives

Despite the declining prevalence, surgical resection is the treatment of choice in patients with symptomatic bronchiectasis. It remains controversial as to which subgroups of patients would benefit from which surgical management. We aimed to investigate the variations in surgical approach, surgical indications and predictors of successful surgery in bronchiectasis patients in a multiinstitutional setting.

Methods

One hundred seventy consecutive patients (81 men, 89 women) who were operated on for bronchiectasis between January 1998 and August 2010 in 4 thoracic surgery departments were analyzed retrospectively. Mean age was 30.6 years. The disease was bilateral in 6 patients. Eight patients had pulmonary tuberculosis. A posterolateral or anterior thoracotomy was performed in 155 patients (91%), whereas 15 patients (9%) had videothoroscopic lobectomy. Follow-up data were obtained in 134 patients.

Results

Complete resection was achieved in 161 patients (94.7%). There was 5 operative mortality (2.9%). Forty-three patients (25.3%) developed at least one complication. Postoperatively the patients were asymptomatic in 94.7% of patients, improved in 2.4%. An immunological pathology was notified in 5 patients (2.9%). Univariate analysis disclosed that, videothoracoscopy was associated with fewer complications ($p=0.044$), shorter hospital stay ($p=0.035$) and less total chest tube drainage ($p<0.001$). Older age was not associated with higher morbidity. Pneumonectomy was performed in only one institution. An institution was found to be associated with left-sided resections ($p=0.01$). Logistic regression extracted the videothoroscopic resection for complication free surgical procedure with statistical significance ($p=0.04$).

Conclusions

Despite decreasing prevalence, indications and resection types greatly vary among institutions. Videothoroscopic resection can be performed safely and it is associated with fewer complications, shorter hospital stay.

Disclosure: All authors have declared no conflicts of interest.

P-053**ANTERIOR FLAY CHEST AND NUSS TECHNIQUE**Olivier Tiffet¹, V. Susset², F. Thevenet¹, A. Sulaiman¹, S. Molliex², F. Zeni²¹*Department of General and Thoracic Surgery, CHU Saint Etienne, Saint Etienne/FRANCE,*²*Intensive Care Unit, CHU Saint Etienne, Saint Etienne/FRANCE***Objectives**

Chest trauma associated with a flail chest in 5-15% of cases. Shunters are an independent factor of gravity. Their support is little or no systematic. The objective of this study is to describe an original technique of stabilisation of flay chest.

Methods

Retrospective study from March 2001 to March 2010 on four patients who received anterior flap surgical stabilization by the Nuss technique on a series of 44 patients with flail chest caused by trauma hospitalized service resuscitation. A bilateral thoracoscopy was performed, drainage and removal of two cavities and implementation of the retrosternal bar.

Results

For each it was an unstable component associated with a wide sternal fracture with indication for fixation was raised in a failure of respiratory weaning (8 days to 1 month). The duration of response was brief (75-90 min). Three of these patients showed a favorable trend (extubation J3-J4) with removal of material to 3 months. The fourth patient died in a context of multiple organ failure due to sepsis of pulmonary origin.

Conclusions

The Nuss technique could be efficient for the stabilization of the flaps previous lesions at high risk of instability wall. The advantage of this technique relies on the fact that a single action, short, is made to contain outbreaks of multiple fractures, sometimes complex and incompletely accessible to surgery. This technique could facilitate a strategy of rapid attachment and early traumatic anterior osteosynthesis.

Disclosure: All authors have declared no conflicts of interest.



P-054

RIB HEAD RESECTION VIA COSTOTRANSVERSE LIGAMENT RELEASE APPROACH FOR PATIENT WITH NON-SMALL CELL LUNG CANCER INVADING CHEST WALL

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Objectives

Lung cancer located in the paravertebral region occasionally invades the rib head (T3), but not the vertebra (T4). In such cases, a costotransverse ligament release (CTLR) approach might be useful for complete resection without transverse process removal.

Methods

Twenty-five patients with lung cancer underwent chest wall resection between 1996 and 2009 at our institutions. Of those, 9 who underwent chest wall removal with rib head resection via a CTLR approach (group A) and 16 without rib head resection (conventional rib resection, group B) were retrospectively analyzed.

Results

Three patients in group A underwent chemoradiotherapy and 1 in group B underwent chemotherapy as induction therapy. All rib head resections were conducted through a CTLR approach without postoperative complications. There were no hospital deaths in group A and 1 in group B. The mean number of resected-rib heads was 1.9 in group A, while a mean 2.1 ribs were removed in group B. There was no significant difference for operation time between groups A and B (346±99 and 295±102 minutes, respectively, $p=0.129$). Local recurrence was seen in no patients in group A and 4 in group B ($p=0.10$). The median survival time was 920 and 727 days, respectively, while 5-year survival rates were 0.25 and 0.35, respectively.

Conclusions

A rib head resection via a CTLR approach is a feasible procedure for T3 lung cancer infiltrating the rib head.

Disclosure: All authors have declared no conflicts of interest.

P-055

QUALITY OF LIFE OUTCOMES AFTER MINIMALLY INVASIVE REPAIR OF PECTUS EXCAVATUMKorkut Bostanci¹, H. Ozalper¹, P. Gunel Karadeniz², M. Yuksel¹¹*Thoracic Surgery, Marmara University Hospital, Pendik, Istanbul/TURKEY,*²*Biostatistics, Uludag University Graduate School of Health Sciences, Bursa/TURKEY***Objectives**

Surgical repair of the pectus deformities are mostly performed due to the cosmetic, psychological and social problems. Minimally invasive repair has become the treatment of choice for pectus excavatum in the last decade. This prospective study was conducted to explore the changes in quality of life and overall satisfaction in patients who have undergone a minimally invasive repair of pectus excavatum.

Methods

One hundred and forty patients, 120 male and 20 female, with a median age of 16 years (range:6-35) were included in the study. A modified two-step Nuss Questionnaire was applied twice to both the patients and their parents (or partners according to their age), preoperatively and on the postoperative 6th month. The data was analysed using Paired T Test to determine statistical significance of differences, with a <0.05 level of significance.

Results

The results based on these data revealed a statistically very significant improvement ($p < 0.0001$) on the overall quality of life and a high level of satisfaction following surgery. Both the psychosocial ($p < 0.0001$) and physical ($p < 0.0001$) components revealed a statistically very significant improvement. Ninety five % of the patients were satisfied with the surgical outcome. Only 7 patients fell into a low satisfaction group, 6 of them requiring reoperation for unsuccessful repair.

Conclusions

Minimally invasive repair has a positive impact on both the physical and psychosocial well-being of children and young adults who are suffering from pectus excavatum.

Disclosure: All authors have declared no conflicts of interest.

P-056

EXTENDED LATISSIMUS DORSI AND THORACOLUMBAR FASCIA FLAP FOR MASSIVE FULL THICKNESS THORACIC WALL DEFECTSMichel Gonzalez¹, T. Krueger¹, E. Salib², W. Raffoul³, H. Ris¹¹*Thoracic and Vascular Surgery, Centre Hospitalier Universitaire Vaudois, Lausanne/SWITZERLAND,*²*Plastic Surgery, Centre Hospitalier Universitaire Vaudois, Lausanne/SWITZERLAND,*³*Centre Hospitalier Universitaire Vaudois, Lausanne/SWITZERLAND***Objectives**

Chest wall resection and reconstruction can be performed with minimal mortality and excellent functional and cosmetic results using synthetic meshes, methylmethacrylate, or other substitutes. However, these techniques are less easily applicable if chest wall resections have to be performed for infections.

Methods

We report a technique for this purpose using a modified latissimus dorsi flap harvested in continuity with the thoracolumbar fascia. The vascularized fascia was sutured into the chest wall defect, providing a stable base for the muscular component of the flap. Patients requiring large full-thickness resections of the anterolateral chest wall for chronic infections were treated accordingly.

Results

10 patients underwent chest wall locally infected resection with reconstruction by modified latissimus dorsi flap. There were no intraoperative or postoperative complications and prompt extubation was possible without postoperative ventilation or tracheotomy. Healing of the infected chest wall was observed in all patients. Postoperative cine-magnetic resonance imaging revealed concordant movements of the replaced segments without evidence of paradoxical motion during inspiration and expiration.

Conclusions

This technique is easy and safe. It allows a stable and satisfactory reconstruction after large anterolateral full-thickness chest wall resections of infected and previously irradiated tissues using only well-vascularized autologous tissue.

Disclosure: All authors have declared no conflicts of interest.

P-057

THORACOSCOPIC DIAPHRAGM PPLICATION FOR PATIENTS WITH ACQUIRED DIAPHRAGM PARALYSIS

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There is still limited data on the advantages and disadvantages of VATS diaphragm plication. Some authors describe the difficulties of obtaining a sufficiently tense diaphragm using VATS. We would like to describe our technique and results of diaphragm plication by VATS.

Methods

Between January 2008 and December 2010 seven adult patients with acquired diaphragm paralysis (DP) were underwent VATS diaphragm plication by proposed method. Mean age was 37 ± 7 years. The etiology of paralysis was trauma (2 cases), cardiac bypass surgery (4 cases) and idiopathic (1 case). Five patients had left- and two – right-sided paralysis. Surgical technique: double-lumen endotracheal ventilation was used. The first trocar we insert along the midaxillary line - through the third intercostal space. The second trocar we place in the lowest point of the costo-vertebral sinus along the posterior axillary line. Then, drawing down the diaphragm, we insert the third trocar in the contralateral sinus. We continue to draw down the diaphragm using folded retractor until arising of two diaphragmatic plicas along the edges of the instrument. Using EndoStitch we suture tissue excess above the instrument and perform duplication. Thereby we replace dome of the diaphragm at a level of the eighths – nines intercostal space creating several duplications.

Results

There were no operation-related morbidity and mortality rate. Control CT-scan in the 2nd and 6th weeks after operation showed diaphragm position on level between VIII-IX intercostal spaces in all cases. All patients have sustained pulmonary function tests improvement (FVC and FEV1).

Conclusions

VATS diaphragm plication allows to treat DP in early stages of disease without excessively operation trauma related with standard thoracotomy. According to our experience it is secure and effective operation, that could be consider as a method of choice for patients with acquired DP.

Disclosure: All authors have declared no conflicts of interest.



P-058

MODIFIED SAWAMURA THORACOPLASTY: AN OLD TECHNIQUE STILL CURRENT FOR MANAGING COMPLEX EMPYEMAS IN ADULTS WITH EXCELLENT FUNCTIONAL AND AESTHETIC RESULTS.

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Objectives

Thoracoplastic operations are complex and include resection of osseous chest wall elements to obliterate a rigid and septic intrapleural space. Alternatively a fenestration may be performed. In the later scenario a second "muscle flap transfer", clagett or thoracoplasty procedure is necessary to obliterate the residual space. The journey is complex for patients and surgeons and costly for any health care system. Additionally such procedures are cosmetically not acceptable from patients, leading to a variable degree of shoulder dysfunction as well.

Methods

We managed two adults (mean age 51 years) with suppurative complex pleural effusions and trapped lungs after failed medical therapy by a modified Sawamura technique which seems to have been abandoned at recent years. Ribs were essentially stripped from periosteal beds but preserved and the soft tissue elements of the chest wall were allowed to collapse against the non compliant lung parenchyma to obliterate the residual space.

Results

No air-leak or infectious complications were present post-operatively. The patients were discharged within 5 days with no intercostal drains in situ. The respiratory performance remained unchanged. The cosmetic result was excellent with the scapula and shoulder supported by the unresected rib arcs.

Conclusions

The modified Sawamura thoracoplastic technique should be one of the options to be offered in patients with complex empyemas after previously failed medical or surgical treatment. It requires meticulous and generous 'stripping' of the ribs corresponding to the empyema space with no intercostal bundle and soft tissue disruption. There is no visual chest wall deformity upon completion of the procedure with aesthetically pleasing results. It offers a single cost effective procedure for treating complex empyema spaces with no need for revisions. It is extremely attractive in practices where community or tertiary care resources and finances are limited.

Disclosure: All authors have declared no conflicts of interest.

P-059

EXTENDED CHEST WALL RESECTION FOR AGGRESSIVE FIBROMATOSIS OF BREASTKároly L. Kovács¹, L. Fekete¹, G. Cserni², C. Olah¹, L. Füstös¹, M. Svebis¹¹*Department of Thoracic Surgery, Bács-Kiskun Teaching County Hospital, Kecskemét/HUNGARY,*²*Pathology, Bács-Kiskun Teaching County Hospital, Kecskemét/HUNGARY***Objectives**

The fibromatosis is rare of primary breast tumors. This is a non malignant disease of the breast. After successful surgical treatment the local recurrence is up to 25% of the cases. At an advanced stage the fibromatosis can infiltrate the chest wall. In our paper we take a report about a surgical treatment of aggressive fibromatosis with chest wall infiltration by mesh graft and transverse rectus abdominis myocutaneus (TREM) flap.

Methods

We present the case of a 23-year-old woman who had surgical resection by right breast tumor, after fine needle aspiration cytology and mammography examinations. The pathological report showed aggressive fibromatosis of the breast. A half year later we detected local recurrence of the tumor. At this time the CT examination showed infiltration of the sternum margin. The woman was pregnant so she did not take the surgical treatment at this time. The tumor expanded during her second pregnancy. We were able to perform the final surgical treatment two and half years after the detection of the local recurrence of the tumor. We resected the tumor together with the half part of the right breast. We performed the partial resection of the sternum and four ribs. We reconstructed the chest wall by artificial mesh graft and right TRAM flap.

Results

We did not have postoperative complication. The patient lives in a good plastical condition without any local recurrence.

Conclusions

We have good surgical possibility by treatment of the aggressive fibromatosis of the breast. The results of the successful surgical treatment are better at the earlier stage of the tumor.

Disclosure: All authors have declared no conflicts of interest.

P-060

EVALUATION OF MORBIDITY AND MORTALITY AFTER CHEST-WALL RESECTION

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Chest wall involvement occurs in less than 8% of patients with newly diagnosed non-small-cell lung cancer. There is only less information about the morbidity and mortality after combined lung-chest wall resection. We analyse the morbidity and mortality after chest wall resection in our institution.

Methods

By using the prospective database we analyse the complications followed chest wall resections in all patients with non-small-cell-lung cancer, operated in our institution between 2006 and 2009 and compare the data with the morbidity and mortality after normal lobectomy in the same period. We generate three groups: 1 En bloc resection of lung and chest-wall in case of a pancoast tumor; 2. en-bloc resection of lung and chest wall without a pancoast tumor; 3. single chest wall resection.

Results

From 2006 to 2009 we perform 1280 anatomical resections for lung cancer in our institution. 78 cases are en-bloc resection of the lung and the chest wall (6%). The percentage of pancoast tumors in this group is 42% (group 1). Group 2 includes 45 Patients and we perform 64 chest wall resections without lung resection (group 3). 91% of the patients in group 1 had a neoadjuvant radiochemotherapy.

Conclusions

The rate of pulmonary complications after en-bloc resection of lung and chest wall is significantly higher in comparison to isolated lung or chest wall resection. In the pancoast group the morbidity and mortality rate after resection is higher than in case of lower tumor localization. Mortality rate after combined resection of a pancoast tumor is 4 times higher than after a standard lobectomy. Neoadjuvant radiotherapy seems to be an independent risk factor. Because there are no comparable curative treatment options, the increased morbidity and mortality is maintainable.

Disclosure: All authors have declared no conflicts of interest.

	pulmonary complications	mortality
Group 1	12/33(36.4%)	3/33(9.1%)
Group 2	14/45(31.1%)	3/45(6.7%)
Group 3	2/64(3.1%)	0/64(0%)
lobectomy		10/602(1.7%)

P-061

FUNCTIONAL RESULTS AFTER CHEST WALL STABILIZATION WITH A NEW SCREWLESS FIXATION DEVICE

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Objectives

Prospective study of chest wall integrity and pulmonary function in patients who underwent chest wall stabilization with a new screwless fixation device (STRATOS™, MedXpert, Germany).

Methods

Between 2008 and 2010, 80 patients (65 men, 15 women) with a mean age 54 years (22-88) underwent chest wall stabilization. Indications included antero-lateral flail chest and dislocated rib fractures with shrinkage. Titanium rib clamps were placed and fixed to the stable parts of the most effected ribs and connected by titanium plates. Clinical outcome, pulmonary function testing and dynamic assessment of the chest wall mobility by cine MRI were preformed 6 months following surgery.

Results

42 (25,5%) patients had various combination of injuries of the thorax, head, abdomen and extremities. Median number of stabilised ribs was 4,17 (2-9) with a medium delay from admission till operation of 5,4 days (1-14). No plate dislocation was observed during the follow-up. Due to local infection, the implants were removed in 2 (2,5%) cases. In- hospital mortality rate was 1,25 % (1 of 80). Pulmonary function testing at 6 months after the operation was done till now in 61 (76,25%) Patients. The data show no restriction. Median ratio of the recorded vital capacity (VC) was 86,1%. Cine MRI showed symmetrical movement of the chest wall.

Conclusions

Our results suggest that in selected patients, extended chest wall injury accompanied by respiratory insufficiency can be effectively stabilised by screwless titanium fixation device. Early restoration of the chest wall integrity and respiratory pump function prevents restriction-related lung dysfunction.

Disclosure: All authors have declared no conflicts of interest.



P-062

**MINIMALLY INVASIVE REPAIR OF PECTUS CARINATUM:
A SINGLE INSTITUTION EXPERIENCE**

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Minimally invasive repair of pectus carinatum was defined by Abramson as a modification of the Nuss procedure, and it has been gaining support in the recent years. We have been performing minimally invasive repair of pectus carinatum in our institution since 2006. This prospective study describes our experience with our own bar and stabilizing system developed for the minimally invasive repair of pectus carinatum.

Methods

Following the first 3 cases being operated on placing regular excavatum bars presternally, we developed our own carinatum bar and stabilizing system in 2008. Between July 2008 and January 2011, 35 pectus carinatum patients between the ages of 10 and 27 (median: 15) were operated on using this minimally invasive technique following the basic surgical principles described by Abramson.

Results

One bar and two stabilizers were used in all patients for the correction of the deformity. The median operation duration was 60.5 minutes (range: 45-110) and the median duration of hospital stay was 4.5 days (range: 2-10). Excellent esthetic results obtained regarding the postoperative course, verified with the patients' and parent's answers on a satisfaction questionnaire; all patients except one (97.2%) feeling satisfied with surgical outcome. Five of the bars have been removed on planned time without any recurrence.

Conclusions

Minimally invasive repair of pectus carinatum placing a presternal bar can be preferred for the short operating time, low morbidity and high levels of patient satisfaction.

Disclosure: All authors have declared no conflicts of interest.

P-063

ANALYSIS OF 10 CONSECUTIVE CASES OF THORACO-BILIARY FISTULAAlexandru-Mihail Botianu¹, P.V. Botianu¹, S. Bataga², A.C. Dobrica¹, A.V. Botianu²¹*Surgical Clinic 4, University of Medicine and Pharmacy, Targu-Mures/ROMANIA,*²*Gastroenterology Clinic, University of Medicine and Pharmacy, Targu-Mures/ROMANIA***Objectives**

To analyse the outcome of surgery for thoraco-biliary fistula developed as a complication of prolonged subdiaphragmatic suppuration.

Methods

Between 01.01.1985-31.12.2010 in our unit we treated 10 patients with thoraco-biliary fistula complicated with intrathoracic suppurations requiring major surgery. Primary etiology was hydatid disease in 8 patients and biliary lithiasis in 2 patients. Treatment consisted in thoracotomy with solving of the intrathoracic lesions through decortication and/or resection, phrenotomy with debridation and drainage of the hepatic/subphrenic cavity and closure of the diaphragmatic defect. In 5 cases we were able to perform immediately the abdominal part with desobstruction and drainage of the common bile duct through a separate laparotomy (one-stage bipolar approach) while in the other 5 patients this was impossible due to poor biological status. Outcome in terms of mortality, morbidity and recurrence was followed.

Results

We encountered one postoperative death through uncontrollable sepsis. In terms of morbidity, all the major complications occurred in the group of patients in whom we were unable to perform desobstruction of the common bile duct in the same stage (2 recurrences of the thoraco-biliary fistula requiring reoperation and one external fistula treated conservatively) while in the one-stage bipolar approach we encountered only one pleural empyema treated by repeated thoracentesis and one suture granuloma. Postoperative hospitalisation ranged between 21 and 156 days, with a median of 55 days. At late follow-up (between 1,5 and 20 years) we encountered no recurrence of the fistula.

Conclusions

Thoraco-biliary fistula is a rare but very serious situation due to the extension of the lesions and sepsis. It requires complex procedures involving an extremely high morbidity. Use of less invasive procedures may improve the outcome of these patients.

Disclosure: All authors have declared no conflicts of interest.

PROSPECTIVE TRIAL EVALUATING SONOGRAPHY AFTER THORACIC SURGERY (SATS) IN POSTOPERATIVE CARE AND DECISION MAKING

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Objectives

Following thoracic surgery, daily chest x-rays (CXRs) are performed to assess patient evolution and to make decisions regarding chest tube removal and patient discharge. Sonography After Thoracic Surgery (SATS) has the potential to be an effective, convenient, inexpensive and easy to learn method. We hypothesized that SATS could alleviate the need for repetitive CXRs, thus reducing the related risks, costs and inconvenience.

Methods

This study consisted of a prospective cohort trial. All patients scheduled to undergo thoracic surgery at a single academic medical center were eligible. Post-operative bedside pleural ultrasound was performed whenever a CXR was ordered by the treating team. Investigators specifically assessed patients with the goals of identifying pleural effusions and pneumothoraces. Study investigators were blinded to CXR results. SATS findings were compared to CXRs, which were considered the “gold-standard” in routine post-operative pleural space evaluation.

Results

One hundred and twenty patients were prospectively enrolled over a 5.5 month period. Three hundred and fifty-two ultrasound examinations were performed (mean = 3.0±2.4 exams per patient). The time interval between the ultrasound and the comparative CXR was 166±149 minutes. The mean time required to perform SATS was 11±7 minutes per exam. To detect pleural effusion, SATS yielded a sensitivity of 83.1% and a specificity of 59.3%. In the detection of pneumothoraces, a sensitivity of 21.2% and a specificity of 94.7% were obtained.

Conclusions

Post-operative ultrasound may alleviate the need to perform routine CXR in patients with a previously ruled out pneumothorax. SATS used selectively may be able to reduce the number of routine CXRs performed, however, does not have enough accuracy to replace CXRs.

Disclosure: All authors have declared no conflicts of interest.

	Chest X-Ray			
	Pleural Effusion		Pneumothorax	
	Positive	Negative	Positive	Negative
Positive US	118	209	29	26
Negative US	24	305	108	462
Non-Conclusive US	6	14	17	25
Total	148	528	154	513

P-065**AUTOFLORESCENCE VATS EXPERIENCE: 23 CASES**Serife T. Liman¹, A. Elicora², A. G. Akgul², S. Mehmetoglu², S. Topcu²*Thoracic Surgery Department, Kocaeli University The Faculty of Medicine, Kocaeli/TURKEY***Objectives**

Videothoracoscopy is the frequently used surgical technique in thoracic surgery. It is performed for both diagnosis and treatment of pleural pathologies. It is seen that white light is insufficient in some lesions especially for premalignant lesions in endoscopic procedures like bronchoscopy and autofluorescence systems is used. It has been used in thoracoscopy also. We would like to discuss our 23 cases here, even it is a small serie, there is very small amount of information in literature. Autofluorescence VATS was first used in our clinic in Turkey.

Methods

Autofluorescence VATS was used in 23 cases (7 female, 16 male) in our clinic. The diagnosis was not achieved from previously performed examinations to explain the etiology of pleural fluid in all cases.

Results

There were 13 autofluorescence positive and 10 autofluorescence negative results. Autofluorescence examination showed positive results in 5 cases with malignant mesothelioma, in 4 cases with chronic pleuritis, 1 case with adenocarcinoma, 1 case with adenoid cystic carcinoma metastasis, 1 case with lymphoma metastasis and 1 case with gastric carcinoma metastasis. Two necrotising granulomatous pleuritis had negative results. The other negative results were detected in 6 chronic pleuritis. Two patients with malignant mesothelioma had negative result.

Conclusions

This system is very useful in determining the biopsy sites and mapping of pleural pathologies. It was seen that for autofluorescence examination, malignant mesothelioma may be one of the situations that this system may give false negative results. In other pleural malignancies there were no false negative results even they were low grade malignancies. Autofluorescence VATS was positive in 4 cases with benign pathology. Those results showed us that correct evaluations might be achieved if the number of cases were getting larger.

Disclosure: All authors have declared no conflicts of interest.



P-066

DIGITAL THORACIC DRAINAGE: OUR INITIAL EXPERIENCE IN 100 PATIENTSKosmas Tsakiridis¹, T. Marinos², S. Arikas¹, S. Tzamtzis¹¹*Cardiac and Thoracic Surgery, St.Luke, Thessaloniki/GREECE,*²*Cardiac and Thoracic Surgery, Papageorgiou Hospital, Thessaloniki/GREECE***Objectives**

The purpose of this study was to evaluate the clinical efficacy of the new electric digital drainage system Thopaz Medela and to compare it with the conventional under-seal drainage system.

Methods

The study was conducted on 200 patients undergone chest drainage for pulmonary resections, pneumothorax or pleural effusions. Patients were randomly assigned in two groups of 100 pts each: Traditional group (group A) received standard water seal chamber drainage due to pneumothorax (42 pts), pleural effusion (20 pts) and lung surgery (38 pts). Digital group (group B) received tube thoracostomy with the Thopaz medela system for pneumothorax (43 pts), pleural effusion (23 pts) and pulmonary resections (34 pts). Chest tube withdraw criteria were established in advance and medical care was conducted by the same physician. The following data were recorded: number of chest X-Ray required per patient, time to mobilization, duration of the drainage and length of the in-hospital stay.

Results

The two groups were well matched regarding preoperative and operative variables. In patients with drainage for pleural effusions there was no differences between the two groups. In patients with thoracostomy for surgery or pneumothorax all recorded data revealed statistically significant results in favor of the digital group that presented a mean reduction of 30% in all measured variables compared with the traditional group.

Conclusions

The real time quantification of air and liquid drainage offered by the Thopaz Medela digital drainage system decreases the need of postoperative chest x-rays and permits an earlier chest tube removal and a shorter in-hospital stay in patients undergone thoracostomy for surgery or pneumothorax.

Disclosure: All authors have declared no conflicts of interest.

P-067

WHAT IS THE BEST STRATEGY FOR THROMBOEMBOLIC PROPHYLAXIS FOLLOWING EXTRAPLEURAL PNEUMONECTOMY FOR MALIGNANT PLEURAL MESOTHELIOMA?

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Objectives

Patients with malignant pleural mesothelioma are at high risk for thromboembolic events. This risk is magnified during multimodality therapy including chemotherapy, extrapleural pneumonectomy (EPP) and radiotherapy. We reviewed our experience with two different thromboembolic prophylaxis regimens following EPP.

Methods

Observational study of patients undergoing EPP as part of multi-modality therapy at Guy's & St Thomas' hospital between January 2004 and December 2008. We evaluated a change in our practice. Patients operated on prior to January 2006 (group A) had thromboembolic prophylaxis by subcutaneous enoxaparin 40 mg once daily and TED compression stockings commenced a day prior to surgery and continued for 30 days postoperatively. After January 2006 (group B), patients had enoxaparin discontinued after 10 days and warfarin started after 7 days and continued for up to 6 months (target INR >2). All patients had a chest CT within 6 weeks following EPP and were referred routinely for adjuvant radiotherapy (54 Gy).

Results

Twenty one patients underwent EPP following neoadjuvant chemotherapy over the considered period. Eleven patients received enoxaparin only in group A. Nine of ten patients received warfarin in group B (one perioperative death). The two groups were comparable for characteristics. Fifteen patients received adjuvant radiotherapy. Three patients in group A suffered a postoperative pulmonary embolus at four weeks, six weeks and four months, respectively. One pulmonary embolus was fatal. No patient in group B suffered any thromboembolic complication nor any haemorrhagic complication. Due to our small cohorts, difference was not statistically significant ($p=0.089$ Chi square test, $p=0.1447$ Fisher's exact test).

Conclusions

Patients with malignant pleural mesothelioma are at high risk of thromboembolic events following EPP. Early anticoagulation with warfarin was well tolerated and should be evaluated in a prospective trial

Disclosure: All authors have declared no conflicts of interest.



P-068

SOLITARY FIBROUS TUMORS OF THE PLEURA: CLINICAL, SURGICAL, AND LONG-TERM OUTCOMES

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Objectives

Solitary fibrous tumors of the pleura (SFTsP) are uncommon mesenchymal neoplasms with unpredictable course. We evaluated clinical characteristics, surgical results, and long-term outcome of SFTsP.

Methods

Records of patients undergoing resection for SFTsP between January 1998 through December 2010 were reviewed using a prospective database.

Results

There were 48 patients (13 men; median age: 60 years). Twenty-four patients (50%) presented with symptoms (chest pain in 7, cough in 6, dyspnea in 4, and multiple symptoms in 7). Operative approach included thoracotomy in 31 patients, thoracoscopy in 13, hemiclammshell and sternotomy in 2 cases, each. Tumors originated from visceral pleura in 34 cases, and from parietal pleura in 14. SFT resection was accomplished by a pulmonary wedge excision in 29 patients, lobectomy in 3, pneumonectomy in 4, and wide parietal pleura excision in 8. Chest wall resection was performed in 4 patients (3 with pulmonary resection). SFTP was polypoid in 32 patients (66.6%) and sessile in 16 (33.4%); it was benign in 35 cases (72.9%) and malignant in 13 (27.1%). Resection was complete in all patients with benign tumor and incomplete in one malignant. Median tumor diameter was 5.2 cm (range, 0.7 to 25); 4.8 cm for malignant SFTsP and 5.3 for benign. Operative mortality was 2.3% (1/44). Postoperative complications occurred in one patient (2.3%). Follow-up was completed for all the patients and was 52 months (range, 1 to 146). Overall 10-year survival and disease-free were 80.7% and 94.8%, respectively. Ten-year survival for benign and malignant SFTsP were 92.9% and 55.1% ($p = .006$). Three patients had recurrence and were re-operated.

Conclusions

Surgical resection of benign SFTsP has an excellent long-term prognosis. Prolonged survival following resection of malignant SFTsP is possible. Recurrence of SFTsP is an ominous findings and surgery is the best therapeutic treatment.

Disclosure: All authors have declared no conflicts of interest.

P-069

PET/CT IN STAGING AND SURGICAL APPROACH FOR MALIGNANT PLEURAL MESOTHELIOMA

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Objectives

To show the PET/CT role in reducing the exploratory procedures with an early diagnosis, in a better staging of disease and in a postoperative follow-up in MPM.

Methods

Sixty-seven potentially extrapleural pneumonectomy (EPP) submitted patients (range age of 31-79 years) were observed between 1999 and 2009. All patients underwent PET/TC scan: median SUV was 6.8 (range 3-20). The same surgeon team operated 45 patients (29 male - 16 female), 23 right-sided lesions and 22 left-sided. Forty patients underwent EPP, 1 pleural decortications, 3 exploratory thoracotomies for chest wall or inferior vena cava invasion, and 1 laparoscopy for peritoneal metastases. One patient were no surgical proposed for macroscopically evidence of extended diseases and received chemotherapy. Thirty-seven patients had epithelioid subtype, 3 sarcomatous and 6 biphasics. Eighteen tumors were pStage I-II, 24 pStage III and 4 pStage IV according IMIG staging system.

Results

All T4 or M1 cases were detected by preoperative PET/CT. The follow-up study reported a PET/TC sensibility of 95% with a diagnostic accuracy of 92% regarding the local recurrences or distant metastases. The analysis correlation in patients with high and low SUV and epithelioid and non-epithelioid histotype showed a better prognosis in both low SUV and epithelioid tumor. The median follow-up for all surviving patients was 36 months. Disease free survival were 11 and 21 months for the high and low SUV groups, respectively. Median survivals were 16 and 29 months for the high and low SUV groups, respectively. In a multivariable analysis, high SUV tumors were associated with a 4.1 times greater risk of death than low SUV tumors ($p = 0.04$).

Conclusions

PET/CT appears to give a good support in staging and prognosis in MPM. A systematic use of PET scan could be anticipate the recurrence of MPM in follow-up period in EPP submitted patients.

Disclosure: All authors have declared no conflicts of interest.



P-070

DOES AN INCREASED INTEREST IN MESOTHELIOMA SURGERY WITHIN A MULTI-DISCIPLINARY TEAM HAVE AN IMPACT ON TREATMENT TRENDS?

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Objectives

The last decade has seen an increased surgical interest in Malignant Pleural Mesothelioma (MPM). A multi-disciplinary approach to management has been established to improve patient care. In our unit, this resulted in the continuous appointment of surgeons with an interest in mesothelioma surgery since 2006. We aimed to study the impact on our surgical practice of this increased interest in surgical management within the confines of various MDT.

Methods

A review of a prospective database of patients who underwent surgery from 2001 to 2010 was carried out. Patients treated from 2001 to 2005 (Group A) were compared to those treated in the second half of the decade (Group B). Demographics, Peri-Operative and Survival data were compared between the 161 patients [134 male, median age 67 (range 36-84) years] in Group A, and the 130 patients [114 male, median age 69 (range 47-83) years] in Group B.

Results

Spirometry was better in Group B (median FEV1 of 66% vs 57% in group A, p<0.01). 51% of patients in Group A were not sub-typed by histopathology while only 2% of Group B were reported as “non-specific MPM”, p<0.001). The overall median survival (±SEM) of Group A was 9.01±0.8 vs 15.59±1.04 months in Group B (p=0.003). The operative mortality was not significantly different (p=0.2), but median hospital stay increased from 6 to 7 days (p=0.01).

Conclusions

In second half of last decade, patients undergoing mesothelioma surgery were older, their histological assessment was more complete, and underwent an increased rate of debulking/ “radical” procedures. We have observed a demise of open palliative procedures. An overall improvement in survival is clear, probably multifactorial in origin.

Disclosure: All authors have declared no conflicts of interest.

	Group A:2001-2005	Group B : 2006-2010
	N=161	N=130
Open palliative	64	5
VAT palliative	94	77
Open debulking	3	9
VAT debulking	0	9
Radical surgery	0	30

Monday P.M.
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P-071

RESULTS OF ADJUVANT INTENSITY MODULATED RADIATION THERAPY INCORPORATED TRIMODALITY TREATMENT IN MALIGNANT PLEURAL MESOTHELIOMA

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Objectives

Locoregional recurrence is a significant problem in malignant pleural mesothelioma (MPM). We analyzed our MPM patients who received IMRT as the adjuvant radiotherapy treatment following surgery.

Methods

Patients with clinical stage I-III MPM, who underwent surgery, adjuvant IMRT and chemotherapy between 2008-2010, were included. Patients underwent pleurectomy or extrapleural pneumonectomy (EPP). One month following surgery, patients were treated with intensity modulated radiotherapy with inverse treatment planning algorithm. CT images were obtained with a 2mm slice thickness of the whole thorax and abdomen. The clinical target volume was defined as the whole thoracic cavity for EPP patients, and tumor bed around the lung for pleurectomy patients. The target volume and critical organs were contoured by the same physician (HBC). Patients also received adjuvant chemotherapy (Pemetrexed- Cisplatin). Patient characteristics, treatment toxicity, recurrence and survival were recorded.

Results

11 patients (Average age 52,3 $\hat{A}\pm$ 6,5; 6 females) were treated with this protocol. Histology was epithelial (n=9) and mixed (n=2). 9 underwent EPP and 2 pleurectomy. Hospital stay was 8,6 days. IMRT related mild-moderate toxicity occurred in 4 patients (1 pleurectomy). Toxicities were dysphagia and pneumonitis. 10 patients received at least 3 cycles of chemotherapy. Locoregional recurrence was seen in 4 patients at an average of 18,6 months (2 abdominal and local, 2 local). 2 patients died at 13 and 18 months, one from non-mesothelioma related causes. 1 and 2-year survival rates were 87 and 66%.

Conclusions

IMRT incorporated multimodality treatment appears to achieve good local control and acceptable survival in MPM with low toxicity rates.

Disclosure: All authors have declared no conflicts of interest.

P-072

EXTRAPLEURAL PNEUMONECTOMY WITH INTRACAVITARY INTRAOPERATIVE HYPERTHERMIC CISPLATIN-GEMCITABIN AND EXTERNAL RADIOTHERAPY FOR TREATMENT OF MALIGNANT PLEURAL MESOTHELIOMA: RESULTS OF A PROSPECTIVE PHASE II STUDY

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Objectives

The aim of this prospectively phase II study was to determine the feasibility and safety of hyperthermic intraoperative intracavitary based on cisplatin and gemcitabine perfusion association, after extrapleural pneumonectomy in the treatment of malignant pleural mesothelioma. Secondary objective was survival.

Methods

The therapeutic protocol consists in Patients with proved (mesothelioma) mixed or epithelioid mesothelioma who were surgical candidates. They underwent extrapleural pneumonectomy followed by hyperthermic intraoperative intracavitary chemotherapy infusion (42°C). This consisted of 1 hour intra-thoracic lavage with cisplatin 100 mg/m² and gemcitabine 1250 mg/m². Morbidity and mortality were recorded prospectively.

Results

Eighteen patients were enrolled for extrapleural pneumonectomy. In 2 cases, local tumor invasion gave up resection. Sixteen underwent resection and 15 received hyperthermic intraoperative intracavitary chemotherapy (1 case of failure because of technical problem). All were men and median age was 60 years. Histology was epithelioid for 14 patients and mixed for 2 patients. Ninety days mortality was 6.6 % (1 patient). Major morbidity was 57%. In 4 cases, atrial fibrillation, in 1 case (before use of thiosulfate as renal protection, 1 reversible renal failure requiring dialysis, 14 received blood transfusion (median 8 units). Fourteen patients underwent 54 Gy external radiotherapy (78%). Recurrence appeared in 7 patients, 2 local (13%) and 5 distant, in a median time of 14.3 months. Median survival was 25 months. Three and 5 years survival rates were respectively 46 and 23%.

Conclusions

For selected patients, extrapleural pleuropneumonectomy with hyperthermic intracavitary cisplatin-gemcitabine perfusion can be safely performed. Seventy-eight percent of patients in our study complete the treatment. Morbidity and mortality are acceptable with a good local control. These results need to be confirmed by larger studies.

Disclosure: All authors have declared no conflicts of interest.

Monday, 6 June 2011**13:00 - 14:00****Session V/ Videos****V-073****A NOVEL TECHNIQUE OF THORACOSCOPIC THYMECTOMY USING A BILATERAL APPROACH**Francesco P. Caronia¹, E. Ruffini², A.I. Lo Monte³¹*Thoracic Surgery, Policlinico Morgagni, Catania/ITALY,*²*Thoracic Surgery, S.Giovanni Battista Hospital - Molinette, Turin/ITALY,*³*Chirurgia, University of Palermo, Palermo/ITALY***Objectives**

To describe the use of a novel technique of bilateral thoracoscopic thymectomy in an attempt to facilitate radical removal of thymic and perithymic fatty tissue.

Methods

Between October 2005 and January 2011, 37 patients underwent thoracoscopic thymectomy. For the last 12 patients we used this new technique. The patient was placed first in the right lateral decubitus. The arm of the operative side was prepped and wrapped by a sterile waterproof stockinet and maintained parallel to the body by securing it to the hip with an adhesive tape. The first trocar was inserted through the 4th intercostal space in the in mid-axillary line for a 10-mm 30° thoracoscope. Two 5-10-mm trocars were inserted through the 2nd-3rd and the 6th intercostal space on the anterior axillary line. A fourth 5-mm trocar was inserted through the 7th-8th interspace in the posterior axillary line. The patient repositioned in the left lateral decubitus, only the first three ports were inserted in the same way as those of the left side. The dissection is easily carry out alternating the use of trocars, without a sternal retractor. The surgeon can also work cranially to the head of the patient, being the arm fixed to the hip. The specimen is removed from the right side using an endobag through one of the port or through an utility incision in case of thymoma.

Results

There were 4 men and 8 woman with a mean age of 36,4 yrs (range: 17-60 yrs). In all patients a radical removal of thymic and perithymic fatty tissue was achieved. Three patient presented a thymoma. The average operative time was 185mins (range:150-240 mins); the average blood loss was 210mL (range: 150-300mL). The average hospitalitation was 9 days. There were neither complications nor perioperative deaths.

Conclusions

Our technique is feasible, safe and facilitates a radical dissection of the mediastinal fat.

Disclosure: All authors have declared no conflicts of interest.



V-074

NEW MINIMALLY INVASIVE TECHNIQUE FOR CORRECTION OF PECTUS CARINATUM

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Objectives

We describe a new video-assisted operative technique for correction of pectus carinatum (PC) using a modified Nuss procedure.

Methods

A new design of the steel bar was developed, so that it could be introduced and placed in a suitable position through very small skin incisions. Substantial modifications were introduced in the bar length and shape aimed at facilitating insertion and subsequent removal when required. All the surgical manoeuvres took place under direct vision using a 30° thoracoscope.

Results

Single unilateral fixation of the bar in a subpectoral pocket provided satisfactory stabilisation without the need for lateral stabilisers. Adequate correction of the deformity was achieved with minor postoperative scars.

Conclusions

Our results support the view that minimally invasive surgical repair should be preferred over open surgery for correction of pectus carinatum in young adults and children.

Disclosure: All authors have declared no conflicts of interest.

Monday P.M.
Abstracts 013 - 109

V-075

LEFT SEGMENT 9 SEGMENTECTOMY USING INDOCYANINE GREEN DYE FOR LUNG CANCER: A NEW METHOD FOR DETECTING INTER-SEGMENTAL PLANE

Shiaki Oh, K. Suzuki, K. Takamochi, Y. Miyasaka, T. Matsunaga, Y. Kitamura, M. Fukui
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Objectives

Segmentectomy could be one of the mainstay for the treatment for resectable lung cancer. Randomized control trials of lobectomy vs segmentectomy for small lung cancer are ongoing now. One of the most difficult point in a complete segmentectomy is to detect the inter-segmental plane while maintaining enough surgical margin. The method for detecting the inter-segmental plane remains controversial.

Methods

The patient had an about 14 mm nodule in left segment 9. We judged that she had an early lung cancer. And we recommended her the operation of left segment 9 segmentectomy.

Operative Procedures:

- 1) Expose the pulmonary artery, vein and bronchus.
- 2) Ligate a segmental bronchus following the division of pulmonary artery and pulmonary vein.
- 3) Then inject indocyanine green into the segment through bronchus.
- 4) The segment turns green following the injection.
- 5) The border of an inter-segmental plane is easily detected not only pleural surface but also pulmonary parenchyma.

Results

After indocyanine green injection, we recognized the inter-segmental plane between segment 8 and 9, segment 9 and 10. And we performed the segment 9 segmentectomy easier and safely. There were no complications concerned with the dye injection. The bleeding and air leakage of this procedure was a little.

Conclusions

Even though segmentectomy of a central segment such as left segment 9 is difficult, we can perform the segmentectomy safely and easily. We developed a new technique for performing segmentectomy. As segmentectomies become more and more prevalent, the indocyanine green method will allow for greater precision and ease.

Disclosure: All authors have declared no conflicts of interest.

V-076

UNIQUE RECONSTRUCTION TECHNIQUE IN A YOUNG PATIENT AFTER MANUBRIAL RESECTION IN GRADE II CHONDROSARCOMAAkos Kocsis¹, L. Agócs¹, B. Lévy¹, M. Molnár¹, F. Tóth², P. Vadász¹*¹Dept. of Thoracic Surgery, National Korányi Institute of TB and Pulmonology and Semmelweis Univ., Budapest/HUNGARY,**²National Institute of Traumatology, Budapest/HUNGARY***Objectives**

Approximately 30% of malignant, primary bone tumors are chondrosarcomas, a most frequent develop on the anterior chest wall. Patients who are treated with adequate surgical intervention recover, 10 years survival rate is 97%. Besides the aesthetic outcome, preservation of breathing and loading are crucial.

Methods

Authors present a case of a 44- year-old male patient operated on Grade II chondrosarcoma of the manubrium. Concerning the youth of the patient, immediately reconstruction was carried out . The infiltrated part of the sternum was resected with wide margins. The reconstruction was performed with Dual Mesh covered by a pedicled left sided pectoral major muscle . As a unique technique, authors used the tendon of the semitendinous muscle to fix both clavículas together to give the stability and function for the chest wall.

Results

After an uneventful postoperative period the patient has a fast recovery.

Conclusions

There are no data in the literature for such a method to fixate the anterior chest wall. The method is suggested by the authors.

Disclosure: All authors have declared no conflicts of interest.

V-077

ONE STAGE RECONSTRUCTION OF A COMPLEX TRACHEO-BRONCHIAL ANOMALY

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Objectives

Congenital anomalies of the major airways are rare but challenging disorders for the surgeon if reconstruction is needed.

Methods

A 21 year old ex-premature female was referred to our department with stridor since birth. A bronchoscopy at the age of 12 years revealed a stenosis of the right main bronchus. Conservative treatment was advised as symptoms were only pronounced on exertion. Over the last years, breathing problems gradually increased during physical activities. A repeat bronchoscopy + spiral CT-scan of the chest revealed circular chondral rings in the trachea without membranous part, a left posterior tracheal diverticulum 7 cm below the vocal cords with stenosis of the distal trachea and the right main bronchus until the level of the intermediate bronchus and a carinal bronchus to the right upper lobe. The left bronchial tree was normal.

Results

In this video, the complex tracheo-bronchial reconstruction is demonstrated. We performed a one stage procedure through a right thoracotomy including sleeve resection of the distal trachea with diverticuloplasty, sleeve resection of the right stem bronchus with reimplantation of a neosubarina between upper lobe bronchus and bronchus intermedius into the native carina. No parenchymal resection was needed. The entire operation was executed with the aid of intermittent intubation and ventilation of the left lung in the operative field. The use of extracorporeal oxygenation was not needed. Intraoperative bronchoscopy showed patent anastomoses and airways to left and right lung. The patient was extubated immediately after wound closure without the need for ventilatory support postoperatively. Flow volume loop was improved six months after the procedure.

Conclusions

A one stage reconstruction of a complex congenital tracheo-bronchial anomaly is feasible without extracorporeal circulation

Disclosure: All authors have declared no conflicts of interest.



V-078

BRONCHOPLASTIC LEFT LINGULAR AND LOWER LOBE RESECTION OF LUNG CANCER IN A PATIENT WITH CONTRA-LATERAL BENIGN ATELECTASIS OF MIDDLE AND LOWER LOBE

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*General Thoracic Surgery, Juntendo University Hospital, Bunkyo/JAPAN***Objectives**

Bronchoplastic and/or angioplastic procedure are fairly effective for resecting lung cancer, avoiding pneumonectomy. Those procedures also contribute to lung resection in compromised patient, such as poor lung function.

Methods

We hereby present a case with poor lung function due to tuberculous atelectasis of contra lateral middle and lower lobe. We performed surgical resection of lung cancer located in the left lower lobe. Patient was 68 -year old man and had bloody sputum. Computed tomography revealed lung cancer located in the left hilum and atelectasis of right middle and lower lobe. Pre-operative bronchoscopy confirmed this finding, showing complete obstruction of bronchus intermedius. Thus the patient remains alive with right upper lobe and left lung. Oncologically surgical resection was indicated. However if pneumonectomy would be performed, the patient must be alive with only right upper lobe of the lung. Therefore pneumonectomy should be avoided.

Results

Surgical resection was performed through posterolateral thoracotomy, and tumor appears to be resectable. To resect tumor left lingular and lower lobe resection combined with left atrium were necessary. Bronchoplasty was also needed to make anastomosis between the left main bronchus and left superior division bronchus. This plastic procedure was performed with 4-0 prolene with interrupted sutures. Lung cancer was diagnosed to be squamous cell carcinoma, and completely resected. Intraoperative blood loss was 500cc and operative time was 5 hours and 11 min. The patient had postoperative empyema, but it was improved by irrigation. Pre-operative pulmonary function was FEV1.0 1.62l and post-operative pulmonary function was FEV1.0 1.41L. The patient needs no oxygen therapy and remains good performance status.

Conclusions

Thus this patient is alive with right upper lobe and left superior division. We present this rare mode of surgery using High Vision mode of movie.

Disclosure: All authors have declared no conflicts of interest.

Monday, 6 June 2011**14:00 - 15:30****Session VI/ Pulmonary Neoplastic****O-079****LYMPH-NODE MICROMETASTASES AFFECT LONG TERM SURVIVAL AND DISEASE FREE INTERVAL IN LUNG CANCER PATIENTS**

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Objectives

Most stage one lung cancer patients undergo a complete resection of their tumor but they still harbor a considerable risk to die from recurrence. An association between presence of lymph-nodes micrometastases and poor prognosis has been observed. The aim of the study is to correlate the lymph-node molecular staging with five years survival and disease-free interval following pulmonary lobectomy for NSCLC.

Methods

From 2000 to 2003 the patients with operable NSCLC referred to our unit have been enrolled if their histories were negative for previous malignancy. At operation, all the accessible mediastinal lymph-nodes were gathered and divided: one half was frozen for molecular study and the second half was fixed for routine examination. After lobectomy, the hilar lymph-nodes were treated in the same way and tumor specimens were also frozen. Quantitative real-time reverse-transcriptase polymerase-chain-reaction for carcinoembryonic antigen messenger RNA was performed on primary tumors and lymph nodes. CEA mRNA quantification in lymph nodes was achieved with the standard curve method. The enrolled patients were strictly followed-up for five years; patients were censored if a new malignancy occurred. The disease-free interval and total survival were recorded.

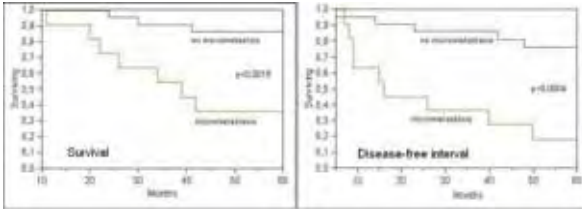
Results

CEA transcript levels were detected in all the tumors of the 60 patients enrolled. The highest CEA mRNA level among the 14 control lymph-nodes from patients without any malignancies was used as a threshold cycle. Of the 261 analyzed lymph-nodes 35 were positive at molecular staging. Among patient with negative lymph-nodes at classical staging, disease-free interval and total survival were significantly worst in the patient with lymph-nodes positive to molecular staging ($p < 0.0004$ and $p < 0.0019$ respectively).

Conclusions

CEA mRNA molecular analysis can reveal the presence of micrometastasis in lymph-nodes of patients submitted to lobectomy for NSCLC. Such test has a strong correlation with survival and disease-free interval in patients otherwise staged as node negative.

Disclosure: All authors have declared no conflicts of interest.



Survival and disease-free interval plots. Kaplan-Meier analysis in patients with hematoxylin-eosin negative lymph-nodes. P values refer to log-rank tests.

O-080

B-TYPE NATRIURETIC PEPTIDE & PULMONARY ARTERIAL PRESSURE AS PREDICTORS OF AF AFTER MAJOR PULMONARY RESECTIONS: PRELIMINARY RESULTS IN A PROSPECTIVE SERIES OF PATIENTS

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Objectives

The evaluation of Brain B-type natriuretic peptide (pro-BNP) and pulmonary arterial pressure (PAP) as predictive markers for atrial fibrillation (AF) after major pulmonary resection surgery.

Methods

Thirty consecutive NSCLC patients (male/female: 26/4, mean age 66 ±8 SD) undergoing lobectomy (70%), bilobectomy (3.33%) or pneumonectomy (26.67%) were prospectively studied. Preoperative evaluation included spirometry, transthoracic echocardiography with PAP evaluation, 8-lead ECG and pro-BNP plasma level. Pro-BNP was also measured a few hours after surgery and on days 1, 2, 3 and 7 postoperatively. Mann Whitney and Student's t-tests were used for the comparison of study markers between two groups. ROC analysis was used to evaluate the predictive ability of BNP and PAP.

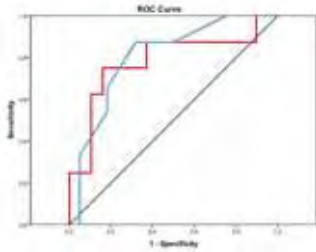
Results

Postoperative AF was identified in 9 patients (30%). Postoperative AF between different types of resections was not significantly different (p=0.666). BNP levels preoperatively and on day 2 were significantly greater in patients with postoperative AF (p<0.05). Patients with postoperative AF had significantly increased levels of PAP (27.4 mmHg±6.5 vs. 34 mmHg±5.5, p=0.013). The area under the curve (AUC) resulted from ROC analysis for the prediction of postoperative AF from preoperative BNP was 0.78 (95% CI: 0.56-1.00), whereas the optimal cut off of BNP showed in ROC analysis was 135 pg/ml. Subjects with preoperative BNP more than 135.6 pg/ml had sixteen times greater risk for postoperative AF (OR=16.00, 95% CI: 2.12-120.64). The AUC for PAP was 0.81 (95% CI: 0.64-0.97) with optimal cut off equal to 30 mmHg. Patients who developed postoperative AF needed prolonged hospitalisation (median 10 vs. 8 days, p=0.043).

Conclusions

The simultaneous measurement of preoperative BNP level and PAP seems to be a reliable method for the detection of patients with high risk of AF development after major lung resection surgery. Administration of prophylactic antiarrhythmic medication is potentially indicated to this particular group of patients.

Disclosure: All authors have declared no conflicts of interest.



ROC curves

ROC analysis showed that preoperative BNP (red line) had predictive ability for postoperative AF. The area under the curve (AUC) was 0.78 (95% CI: 0.56-1.00). ROC curve analysis showed that the optimal-cut off of preoperative BNP for the prediction of postoperative AF was 135.6 pg/ml with sensitivity equal to 75% , specificity equal to 84.2, positive and negative predictive values equal to 66.7% and 88.9%, respectively. Subjects with Preoperative BNP more than 135 pg/ml had 16 times greater risk for Postoperative AF (OR=16.00, 95% CI: 2.12-120.64). ROC analysis showed that pulmonary arterial pressure (PAP) (blue line) had predictive ability for Postoperative AF. The area under the curve (AUC) was 0.81 (95% CI: 0.64-0.97). ROC curve analysis showed that the optimal-cut off of pulmonary pressure for the prediction of postoperative AF was 30 mmHg with sensitivity equal to 88.9% , specificity equal to 66.7, positive and negative predictive values equal to 53.3% and 93.3%, respectively. Subjects with PAP more than 30 mmHg had 16 times greater risk for post-operative AF (OR=16.00, 95% CI: 1.65-154.60).

O-081

PROGNOSTIC IMPACTS OF INTRATUMORAL MICROVASCULAR INVASION AND MICROLYMPHATIC PERMEATION ON NODE NEGATIVE NON-SMALL CELL LUNG CANCER: WHICH INDICATOR IS STRONG PROGNOSTIC FACTOR?Tomoyuki Hishida¹, J. Yoshida², R. Maeda¹, G. Ishii³, M. Nishimura², K. Nagai²¹*Thoracic Surgery, National Cancer Center Hospital East, Kashiwa, Chiba/JAPAN,*²*Department of Thoracic Surgery, National Cancer Center Hospital East, Kashiwa, Chiba/JAPAN,*³*Pathology Division, Center For Innovative Oncology, National Cancer Center Hospital East, Kashiwa, Chiba/JAPAN***Objectives**

Microvascular invasion (MVI) and microlymphatic permeation (MLP) have been considered as powerful prognostic indicators for non-small cell lung cancer (NSCLC). Several studies have proposed these reflected on the size-based T factor in the TNM staging system. The aim of the study was to classify the comparative prognostic importance of MVI, MLP, and tumor size in the resected node negative NSCLCs.

Methods

We reviewed consecutive 1039 patients with pathologic size-based stage T1a-T3N0M0 NSCLC who underwent lobectomy or more from 1993 to 2005. Median follow-up period was 9.0 years. MVI and MLP were distinguished by the Victoria blue van Gieson stain. Recurrence-free survival (RFS) was analyzed.

Results

MVI and MLP were observed in 358 (35%) and 205 (20%) of patients, respectively. Both MVI and MLP were significantly more prevalent in non-adenocarcinomas ($p < 0.001$ and 0.0045) and larger-sized tumors ($p < 0.001$ and < 0.001). On multivariate analysis, MVI but not MLP proved to be an independent risk factor for recurrence (MVI, HR 1.57, $p = 0.0024$; MLP, HR 1.38, $p = 0.139$). Five-year RFS rates of either MVI or MLP positive T1a and T1b groups were significantly lower than those of the corresponding double negative (dn) T groups (T1a, $p < 0.001$; T1b, $p = 0.0027$) and, and overlapped to the survival of dnT2a (dnT1a 92%, MVI+T1a 75%, MLP+T1a 79%, dnT1b 90%, MVI+T1b 76%, MLP+T1b 83%, dnT2a 81%). However, in T2a and T2b, only MVI positive populations revealed significantly lower 5-year RFS rates relative to corresponding dn T population, and overlapped to next dn T populations. (dnT2a 81%, MVI+T2a 58%, MLP+T2a 79%, dnT2b 60%, MVI+T2b 40%, MLP+T2b 60%, dnT3 39%).

Conclusions

Intratumoral MVI rather than MLP might be a strong risk factor for recurrence for node negative NSCLC. MVI and MLP should be examined separately and be collected for the next revision of the staging system.

Disclosure: All authors have declared no conflicts of interest.



O-082

A COMPARISON OF THE COMBINED ULTRASOUND OF THE MEDIASTINUM BY USE OF A SINGLE ULTRASOUND BRONCHOSCOPE VERSUS ULTRASOUND BRONCHOSCOPE PLUS ULTRASOUND GASTROSCOPE IN LUNG CANCER STAGING - A PROSPECTIVE TRIAL

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Objectives

The aim of the prospective trial was to compare a diagnostic utility of the combined ultrasound of the mediastinum in lung cancer staging by use of a single ultrasound bronchoscope (EBUS) – (CUSb) and two scopes: EBUS and ultrasound gastroscop (EUS) – (CUS).

Methods

In consecutive lung cancer patients in stage IA-IIIB the CUS or CUSb were being performed under local anaesthesia and mild sedation. All patients with negative result of biopsy subsequently underwent lung resection with systematic lymph node dissection (SLND) of mediastinum as a confirmatory test.

Results

From 01.03.10 to 31.12.10 in 214 lung cancer patients, 110 underwent CUS and 104 CUSb and 618 mediastinal nodes were biopsied. The CUS revealed metastatic nodal involvement in 55/110 patients (50%) and CUSb in 51/104 patients (49%). A prevalence in both groups was 60%. In 55 CUS negative and 53 CUSb negative patients the subsequent SLND revealed metastatic nodes in 5 patients (4.5%) and in 9 patients (8.7%), respectively. There was “minimal N2” in 11 out of these 14 patients. A diagnostic sensitivity, specificity, accuracy, PPV and NPV of CUS was 91.7%, 98%, 94.6%, 98.2% and 90.7% and of CUSb was 85%, 93.2%, 88.5%, 94.4%, 82%, respectively. There was no significant difference in sensitivity and NPV of CUS versus CUSb ($p = 0.255$ and $p = 0.192$). A mean time of CUS (25 ± 4.4 min) was significantly longer comparing with CUSb (14.9 ± 2.3 min) ($p < 0.001$). No complications of both methods were observed.

Conclusions

1/The combined ultrasound by use of the single EBUS scope is significantly less time-consuming and as equally effective and safe as by use of two scopes (EBUS and EUS).
2/Unless the imaging of the left adrenal gland or liver is required, the single scope combined ultrasound technique may be the standard endoscopic approach for mediastinal lung cancer staging.

Disclosure: All authors have declared no conflicts of interest.

O-083

PNEUMONECTOMY - CALCULABLE OR NON TOLERABLE RISK FACTOR IN TRIMODAL THERAPY FOR STAGE III NSCLC?

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²*Robert Bosch Hospital; Schillerhoehe Hospital, Gerlingen/GERMANY,*

³*General Thoracic Surgery, Robert Bosch Hospital, Schillerhoehe Hospital, Gerlingen/GERMANY*

Objectives

Stage III NSCLC still have disappointing survival rates of less than 20%. Neoadjuvant approaches can provide superior results in selected patients but some authors shy away of recommending pneumonectomy as completing procedure because of reported mortality rates of more than 40% especially after chemoradiotherapy and right-sided operations. We analyzed our experience with pneumonectomy concerning feasibility, morbidity, mortality and outcome over 17-year time span.

Methods

Retrospective single center cohort analysis with all patients (n=164) after neoadjuvant radiochemotherapy and resection at our hospital for stage III NSCLC between 1989 and 2006. 18 were excluded from further analysis because of having had explorative thoracotomy without resection. Oncologic staging was based on 6th edition of TNM-system. Group with pneumonectomy(A) vs. group of lobectomy/bi-lobectomy(B) was compared using chi² , T-Test or M-W-test for clinical differences. Survival was calculated using Kaplan-Meier-method and risk factors were tested with log rank-test and cox-regression.

Results

No significant differences between group A and B were seen. 119 men/27 women with 90 right-sided tumors had 98 stage IIIb and 48 stage IIIa NSCLC when entering trimodal therapy. 78 pneumonectomies with 30% sleeve-resections and 65% extended resections were necessary to achieve R0-resection. Treatment related comorbidity was 52%. Hospital mortality was 4.8% (n=7). Overall 5y-s-r was 38%. Overall mean and median survival were 61 and 31 months. In case of pneumonectomy mean and median survival was 59 and 26 months respectively. Neither pneumonectomy(p=0.717), right-sided pneumonectomy(p=0.716) nor initial UICC-stage(p=0.985), T-Stage(p=0.459) or N-stage(p=0.836) were risk factors for survival but ypN-stage(p=0.001), ypT-stage(p<0.001) and yUICC-stage(p<0.001).

Conclusions

Pneumonectomy as completing procedure in trimodal therapy can be done save in experienced facilities and represents a valuable and necessary option in neoadjuvant treatment for stage III NSCLC. Survival rates even after pneumonectomy can be superior compared to single modality approaches in selected patients.

Disclosure: All authors have declared no conflicts of interest.



O-084

CANINE SCENT DETECTION IN THE DIAGNOSIS OF LUNG CANCER: REVISITING A PUZZLING PHENOMENON

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Objectives

Lung cancer (LC) continues to be the deadliest form of cancer. Favourable prognosis depends on early diagnosis. Exhaled breath of patients may represent the ideal specimen for LC screening and early diagnosis. However, current technologies based on signal pattern analysis are not reliable diagnostic tools due to their inability to identify a clear target.

Methods

In a prospective study, we tested the exhalation samples of 110 healthy individuals (group A), 60 patients with histologically confirmed lung cancer (Group B) and 50 with COPD (Group C). The specimens were collected in specially designed glass tubes containing an adsorbent matrix. Four sniffer dogs were trained to identify LC in human exhalation samples according to a published protocol. For analysing the diagnostic accuracy of LC detection, each dog performed the following tests: I) group A (n=40) versus group B (n=10), II) group B (n=10) versus group C (n=40), III) group B (n=5) versus group A+C (n=20). Patient history and drug administration were analyzed to identify potential bias or confounders.

Results

Our specially trained sniffer dogs were able to identify LC in 1 out of 5 probes with a sensitivity of 90% and a specificity of 72% with a moderate inter-rater variability of $\kappa=0,436$. Thereby, the detection of LC is independent from COPD and can be reliably discriminated from tobacco smoke, and food odors. Logistic regression identified two drugs as potential confounders.

Conclusions

We confirmed the existence of a stable target that is strongly associated with LC and independent from COPD, but can be reliably discriminated from tobacco smoke, food odors and potential drug metabolites. The integration of sniffer dogs into research strategies for the development of future diagnostic targeting and monitoring devices may advance non-invasive LC screening methods.

Disclosure: All authors have declared no conflicts of interest.

Monday, 6 June 2011**14:00 - 15:30****Session VII/ Young Investigators****F-085****EFFECT OF ANTI-INFLAMMATORY AGENTS ON THE HUMAN PARIETAL PLEURAL ELECTROPHYSIOLOGY**

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Objectives

Different anti-inflammatory agents are used after thoracic surgery in order to regulate pain. It is not known, however, whether these agents cause pleural permeability alterations and consequently interfere with the postoperative pleural fluid recycling. The aim of this study is to investigate the effects of different anti-inflammatory agents on the electrophysiology of human parietal pleura.

Methods

Parietal pleural specimens were obtained from 12 patients subjected to thoracic surgery and were mounted as planar sheets of tissue (1.43cm²) between Ussing chambers. Solutions containing paracetamol, prednisolone, acetylsalicylic acid, nimesoulide, diclofenac, lornoxicam or parecoxib were added in the chambers facing the pleural and the outer-pleural surface. Seven experiments were conducted for each drug and each specimen surface. Trans-mesothelial Resistance (R_{TM}) was determined as a permeability indicator. Statistical significance ($p < 0.05$) was determined with paired t-test whereas comparison between groups was determined with ANOVA (Bonferoni's Post-hoc) test.

Results

Prednisolone induced a rapid R_{TM} decrease on the pleural ($p=0.04$) and outer-pleural surface ($p=0.013$). Paracetamol, acetylsalicylic acid, diclofenac and nimesulid induced a rapid R_{TM} increase on the pleural ($p=0.03, 0.049, 0.012$ and 0.032 respectively) and outer-pleural surface ($p=0.032, 0.007, 0.008$ and 0.028 respectively). Lornoxicam and parecoxib had no effect on the R_{TM} .

Conclusions

Prednisolone increases pleural permeability and augments pleural recycling whereas paracetamol, acetylsalicylic acid, diclofenac and nimesulid decrease pleural permeability and hinder fluid recycling. Lornoxicam and parecoxib do not affect the pleural permeability. This knowledge should be considered by surgeons who use anti-inflammatory agents postoperatively.

Disclosure: All authors have declared no conflicts of interest.

F-086

THE IMPACT OF PERCEIVED PATIENT SATISFACTION: A COMPARATIVE ANALYSIS BETWEEN TWO THORACIC SURGICAL CENTRES

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Objectives

The objective of this investigation was to compare the levels of satisfaction of patients submitted to lung resection in two different thoracic surgical units.

Methods

Prospective analysis of 280 consecutive patients submitted to pulmonary resections for neoplastic disease in two centers (center A: 139 patients; center B: 141 patients) (2009-2010). Although the two centers are dedicated general thoracic units with qualified surgeons, dedicated personnel and similar perioperative pathways of care, they differ in internal staff organizations and catchment areas endowed with heterogeneous socioeconomic profiles. Patients' satisfaction was assessed at discharge through the EORTC-InPatSat32 module, a 32-items self-administered anonymous questionnaire including multiple scales related to different aspects of care (doctors, nurses, other personnel, waiting time for tests, access, comfort, exchange of information and general satisfaction). Each scale (range:0-100) was compared between the two units. Multivariable regression and bootstrap were used to verify factors associated with the patients' general satisfaction (dependent variable).

Results

Characteristics of patients in the two units and their satisfaction scales are shown in the table. The risk-adjusted (ESTS risk model) mortality rates in the two units were similar (1.8% vs. 2.1%, $p=0.8$). Patients of unit B reported a higher general satisfaction (91.5 vs. 88.3, $p=0.04$), mainly due to a significantly higher satisfaction in the doctors-related scales (doctors technical skill- $p=0.001$, doctors interpersonal skill- $p=0.008$, doctors availability- $p=0.005$, doctors information provision- $p=0.0006$). Multivariable regression analysis and bootstrap confirmed that care in unit B ($p=0.006$, bootstrap frequency 60%) along with a lower level of education ($p=0.02$, bootstrap frequency 62%) were independent factors associated with a higher general patients satisfaction.

Conclusions

Patients' satisfaction appears unrelated to clinical indicators of quality (i.e. mortality), warranting its inclusion in composite performance scores. A reduced level of patients' satisfaction should drive changes in management policy of individual units in order to meet patients' expectations and improve organizational efficiency.

Disclosure: All authors have declared no conflicts of interest.

Variable	Unit A (138 pts)	Unit B (147 pts)	p-value
Age (years)	62 (10)	62 (10)	0.3
Female gender (%)	36 (26%)	37 (25%)	0.866
Diagnosis (n)	3 (2%)	34 (23%)	0.006
Education (%)			
High school diploma (%)	4 (3%)	17 (12%)	0.080
High school diploma (%)			
DIS	66 (48%)	67 (45%)	0.361
DIP	66 (48%)	66 (45%)	0.322
DIP	66 (48%)	66 (45%)	0.387
DAV	66 (48%)	66 (45%)	0.294
NAV	66 (48%)	67 (45%)	0.8
NTS	67 (49%)	67 (45%)	0.8
NIS	66 (48%)	66 (45%)	0.8
OTH	66 (48%)	66 (45%)	0.7
WAI	66 (48%)	67 (45%)	0.3
ACC	66 (48%)	66 (45%)	0.368
COM	67 (49%)	66 (45%)	0.266
GEN	67 (49%)	67 (45%)	0.8
EXE	66 (48%)	67 (45%)	0.8
EXE	66 (48%)	67 (45%)	0.8
EXE	66 (48%)	67 (45%)	0.368

Characteristics of patients in the two units

Results are expressed as means (SD) unless otherwise indicated. DTS: Doctors technical skill; DIS: doctors interpersonal skill; DIP: doctors information provision; DAV: doctors availability; NTS: nurses technical skill; NIS: nurses interpersonal skill; DIP: nurses information provision; NAV: nurses availability; EXE: exchange of information; OTH: other hospital personnel kindness and helpfulness; WAI: waiting time (tests and procedures); ACC: access; COM: comfort; GEN: general satisfaction

F-087

REPLACEMENT OF AUTOFLAPS WITH REVASCULARIZATION USING MICROSURGICAL TECHNIQUES IN MANAGEMENT OF EXTENSIVE DEFECTS OF TRACHEA: LESSONS LEARNED.

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Objectives

Now there is a set of publications devoted to surgical treatment of cicatricial stenoses of a trachea, however liquidation of extensive window defects of the trachea arising after excising of its wall, remains a difficult problem and to this day. To develop a technique allowing to liquidate window tracheal defects of almost any sizes by single-step procedure.

Methods

51 patients with extensive tracheal defects were managed using microsurgical technologies for elimination defect. From them, in 35 cases it was used dermo-osteal radial flap with revascularization, in 16 cases a dermo-cartilaginous autograft and in 1 dermal flap. The flap plasty was finishing of stages of reconstructively-plastic interventions. In total at 51 patients before its carrying out 118 operations on formation of a lumen of a trachea have been executed. Operation was made simultaneously by team of thoracic and microsurgeons. The equipment of a time endoprosthesis carried out under endoscopic control. An endoprosthesis deleted after performance of operations on different terms.

Results

All 51 patients were discharged. The maximum term of observation makes 12 years. In one case there was no disturbance of a circulation of a graft and, as consequence of a good revascularization of tissues, its pyesis.

Conclusions

Elimination of extensive defects of a trachea with using of microsurgical complexes of autogenous tissues with revascularization is new intervention technology in reconstructive surgery of a trachea, allowing to liquidate large window defect by one-step procedure.

Disclosure: All authors have declared no conflicts of interest.

F-088

**HIGH EMERGENCY WAITING LIST FOR LUNG TRANSPLANTATION:
EARLY RESULTS OF A SINGLE CENTRE EXPERIENCE**

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Objectives

Death on the waiting list still is a matter of concern (16 % in 2004 in France) and has led the French transplantation authorities to set up a dedicated emergent procedure, so-called high emergency waiting list (HEWL) in 2005, giving priority after an expertise process, to selected patients registered on the regular waiting list (RWL) and presenting with an acute respiratory failure.

Methods

From January 2005 to December 2010, 188 patients were listed on the RWL: 22 died (11.7%), 118 were transplanted with an overall 14 % 90-day mortality rate, and 19 were switched to the HEWL. Among them, 7 had required ECMO and 12 invasive mechanical ventilation, and 17 received a lung graft. Population characteristics, morbidity, mortality and survival rates were investigated.

Results

Median age was 26 years (18-52). Indications for LTx were cystic fibrosis in 11 patients, COPD in 3, idiopathic pulmonary disease fibrosis in 3 and redo LTx in 2. Two patients died of multiorgan failure on the HEWL. Median waiting time on the HEWL for the transplanted patients was 5 days. One intra operative death occurred (disseminated intravascular coagulation). Eleven patients required ECMO support during the postoperative period. Eight were weaned. Bleeding complications occurred in 9 patients (56 %), all under ECMO. Haemodialysis was necessary for 8 patients (50 %) among whom 7 ECMO patients. Overall 90-day and 18-month survival rates were 52% and 42%, respectively.

Conclusions

The observed mortality on the waiting list could have been doubled in the absence of the HEWL procedure. This apparent benefit was balanced by the fact that 1 patient only on 2 who received a lung graft in this setting survived. Therefore, this high emergency priority should be considered in stringently selected patients. Increasing the potential donor pool remains the best rational approach to improve LTx results.

Disclosure: All authors have declared no conflicts of interest.

F-089

PHOTODYNAMIC THERAPY ENHANCES THE DISTRIBUTION OF LIPOSOMAL DOXORUBICIN IN TUMORS DURING ISOLATED LUNG PERFUSION

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Objectives

Photodynamic therapy (PDT), at low drug-light conditions, can enhance the effective permeability of the tumor vasculature to macromolecular therapeutics injected intravenously. Here we determined the impact of intraoperative Visudyne[®]-mediated PDT on the distribution of liposomal doxorubicin (Liporubicin[™]) administered by isolated lung perfusion (ILP) in sarcoma tumors grown on rodent lungs.

Methods

A syngeneic methylcholanthrene induced sarcoma (MCA) cell line was implanted subpleurally in the left lower lobe of 42 Fischer rats. Ten days later, intraoperative Visudyne[®]-mediated photodynamic pre-treatment of the tumor bearing lobe was performed followed by ILP of the left lung with 400ug of Liporubicin[™]. Treatment schemes consisted of ILP alone (n=11), low-dose PDT (0.0625 mg/kg Visudyne[®], 10J/cm² and 35mW/cm²; n=11) and high dose PDT (0.125 mg/kg Visudyne[®], 10J/cm² and 35mW/cm², n=11). For each treatment group, we determined the uptake and distribution of Liporubicin[™] in tumor and lung tissues by high performance liquid chromatography and fluorescence microscopy.

Results

Both PDT pre-treatments did not result in a higher overall drug uptake in tumors or a higher tumor-to-lung drug ratio compared to ILP alone. However, low-dose PDT significantly enhanced the distribution of Liporubicin[™] in tumors compared to high-dose PDT (p<0.05) and ILP alone (p<0.05). Also, low-dose PDT was selective for tumors and did not enhance drug distribution in the lung tissues.

Conclusions

Intraoperative low dose Visudyne[®]-mediated PDT selectively enhances Liporubicin[™] distribution administered by ILP in sarcoma tumors of rodent lungs without affecting the total dose of drug in the tumor.

Disclosure: All authors have declared no conflicts of interest.

F-090**FALSE POSITIVITY OF MEDIASTINAL LYMPH NODES HAS NEGATIVE EFFECT ON SURVIVAL IN SURGICALLY STAGED OR RESECTED NON-SMALL CELL LUNG CANCER**

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Objectives

It has been shown that increased metabolic activity of primary tumor has a negative effect on survival in non-small cell lung cancer (NSCLC) staged with positron emission tomography integrated computed tomography (PET/CT). We hypothesized that an increased metabolic activity of mediastinal lymph nodes would have worse survival even if it's false.

Methods

Consecutive 328 patients with NSCLC histology were imaged with PET/CT within 90 days before surgery between September 2005 and March 2009. Patients who had neoadjuvant chemotherapy (n=22), patients with previous history of NSCLC (n=9) or other malignancies in past 5 years (n=11) were excluded from the study. Patients with negative mediastinoscopy underwent resection. Pathological results were revised according to the 7th TNM staging system. Kaplan-Meier test was used for survival. Log-rank and Cox analyses were used for comparisons.

Results

A total of 286 patients (262 male; mean age:58.5 years) were evaluated. There were 22 (6.7%) operative deaths and 2 patients (0.6%) were lost to follow-up. The median follow-up in the remaining 262 patients was 26 months (range, 2-61 months). Tumor size, nodal spread and stage (figure 1) were all strongly associated with survival from NSCLC (p<0.001). There were 63 true positive, 65 false-positive (FP), 152 true-negative (TN) and 6 false-negative findings in mediastinal staging with PET/CT. After excluding pN2 positive patients, TN patients had better survival than FP patients (p=0.007). There were 146 patients with pT1-4, pN0 treated by R0 surgical resection. Disease free survival and overall survival was also significantly better for TN patients in completely resected group (p=0.017 versus 0.016).

Conclusions

We have shown that false positivity of mediastinal lymph nodes had yielded worst survival in surgically staged or resected NSCLC patients staged with PET/CT. This result may help to allocate patients with potentially poor prognosis for considered additional therapy.

Disclosure: All authors have declared no conflicts of interest.



F-091

COMPARATIVE STUDY BETWEEN SCOT-15® AND PERFADEX® AS LUNG PRESERVATION SOLUTIONSAnne B. Olland¹, C. Meers¹, S. Wauters¹, G. M. Verleden², D. Van Raemdonck³²Laboratory for Experimental Thoracic Surgery, Katholieke Universiteit Leuven, Leuven/BELGIUM,²Pneumology, University Hospitals Leuven, Leuven/BELGIUM,³Thoracic Surgery, University Hospitals Leuven, Leuven/BELGIUM**Objectives**

SCOT-15® is a low K⁺ preservation solution including polyethylene glycol (PEG) as a colloid for protection of vascular endothelium during cold ischemia. Besides, PEG was demonstrated to have “immunocamouflage” properties. SCOT-15® is already clinically used for kidney, pancreas and liver preservation. The aim of this study was to assess the properties of SCOT-15® for lung preservation in comparison with Perfadex® as golden standard solution.

Methods

Two groups with 6 pigs each were compared. After 2L cold pulmoplegia with either Perfadex® [P] or SCOT-15® [S], lungs were stored cold for 4 hours. Left lung function was then assessed during 45 minutes in an ex vivo lung perfusion and ventilation model with Steen® solution and 50% inspired oxygen. Pulmonary artery flow and pressure were recorded to calculate pulmonary vascular resistance (PVR). Mean airway pressure (mAwP) was monitored as a surrogate for lung compliance. Blood gases were taken at 15' intervals on the perfusion outflow line to measure partial oxygen pressure (PO₂). Wet-to-dry weight ratio (W/D) was recorded as a marker of lung edema.

Results

PVR was significantly lower in [S] compared to [P] (846 +/- 70 versus 2063 +/- 633 Dynes.sec. cm⁻⁵, p=0.04) [Figure]. There were no differences in PO₂ (232 +/- 24 versus 258 +/-18 mmHg; p=0.13), mAwP (6.3+/- 1.2 versus 7.3+/- 0.4 mmHg; p=0.24), and W/D (3.6 +/-0.6 versus 4.2 +/- 0.4; p=0.06) between [S] versus [P], respectively.

Conclusions

Lungs preserved for 4 hours with SCOT-15 have a lower vascular resistance with comparable oxygenation capacity and compliance. Higher flows do not lead to edema formation reflecting well preserved endothelial function. Further experiments with longer cold ischemia are needed to assess the clinical relevance of this new solution.

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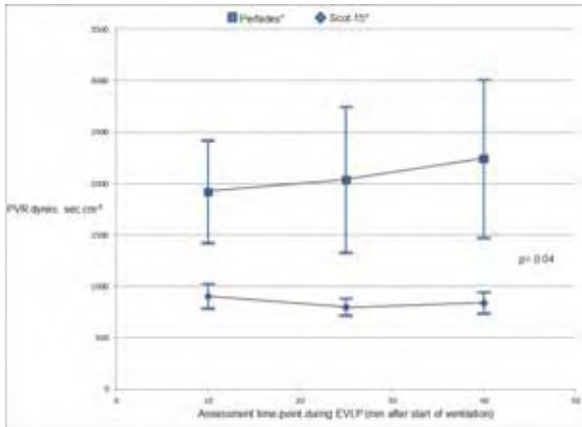


Figure: PVR in Perfadex® and Scot-15® group during EVLP assessment

Pulmonary artery pressure and flow were measured 10' after start of ventilation and at 15' intervals to calculate PVR. Mean values are presented at each time-point for lungs preserved either with Perfadex® or with Scot-15®. PVR was significantly lower in lungs preserved with Scot-15* (p=0.04).

F-092

EXTENDED CERVICAL MEDIASTINOSCOPY: MATURE RESULTS OF A CLINICAL PROTOCOL FOR STAGING BRONCHOGENIC CARCINOMA OF THE LEFT LUNG

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Objectives

To evaluate the accuracy of extended cervical mediastinoscopy (ECM) in the staging of bronchogenic carcinoma (BC) of the left lung based on our updated experience.

Methods

From 1998 to 2003, 89 patients underwent routine ECM for staging of BC of the left lung. In 2004, routine positron emission tomography (PET) was included in our staging protocol and ECM was reserved for those with positive mediastinal or hilar PET images, large lymph nodes on CT scan or central tumours. Following this protocol, from 2004 to 2010, we performed 132 selective ECM. ECM was considered positive when metastatic nodes or tumour involvement directly in the subaortic or paraaortic regions was confirmed pathologically. Patients with negative ECM underwent subsequent thoracotomy for tumour resection and systematic nodal dissection (SND).

Results

221 ECM were performed from 1998 to 2010 (89 routine and 132 selective). In the routine ECM protocol, 4 cases were positive and thoracotomy was contraindicated. The remaining 85 patients were operated and 5 had nodal disease in subaortic (LN5) or paraaortic (LN6) stations. In the selective ECM protocol (n=188), 132 patients underwent ECM and in 19 it was positive; the remaining 113 patients underwent thoracotomy and SND found involved LN5 or LN6 in 6 patients; the other 56 patients underwent direct thoracotomy and 4 had positive LN5 or LN6. Sensitivity, specificity, positive predictive value, negative predictive value and accuracy of ECM was 0.67, 1, 1, 0.94 and 0.95, respectively. The staging values of routine / selective ECM protocols were: 0.44 / 0.65, 1/1, 1/1, 0.94 / 0.94 and 0.94 / 0.95, respectively.

Conclusions

Selective ECM protocol according to CT and PET findings has high negative predictive value and accuracy. Therefore, its selective use is recommended because it saves around 30% ECM without decreasing staging values of the current protocol.

Disclosure: All authors have declared no conflicts of interest.

F-093

SIGNIFICANCE OF A NEW FDG-POSITIVE LESION ON RESTAGING PET/CT AFTER INDUCTION THERAPY FOR NSCLCStéphane Collaud¹, H. Steinert², R. Stahel³, W. Weder¹, D. Lardinois⁴¹*Thoracic Surgery, Zurich University Hospital, Zurich/SWITZERLAND,*²*Division of Nuclear Medicine, Zurich University Hospital, Zurich/SWITZERLAND,*³*Division of Oncology, Zurich University Hospital, Zurich/SWITZERLAND,*⁴*Thoracic Surgery, Basel University Hospital, Basel/SWITZERLAND***Objectives**

Restaging of patients with locally-advanced NSCLC is of paramount importance, since only patients with downstaging after induction therapy will benefit from surgery. In this study, we assessed the etiology of new FDG-positive focal abnormalities on restaging PET/CT in patients with a good response after induction chemotherapy in the primary tumor and lymph nodes.

Methods

Between 2004 and 2008, 31 patients with histological proven stage III NSCLC had a PET/CT prior and after induction chemotherapy. Their medical charts were retrospectively reviewed.

Results

Restaging PET/CT revealed a new FDG-positive lesion in 6/31 (19.4%) patients. Initial clinical stage of the disease was IIIA N2 in 4 and IIIB T4 in 2 patients. The maximal standard uptake value (SUV max) in the primary tumor ($p=0.043$) and in the initially involved mediastinal nodes ($p=0.068$) decreased after induction treatment in all patients. The new PET/CT findings were located in an ipsilateral cervical in 2, a contralateral mediastinal in 1 and an ipsilateral mammary internal lymph node in 1 patients. Two other patients had a lesion on the contralateral lung. Malignant lymph node infiltrations were excluded following fine-needle puncture, intraoperative biopsy or follow-up PET/CT. Contralateral pulmonary lesions were diagnosed as benign following mini thoracotomy and pulmonary wedge resection.

Conclusions

New lymph node or contralateral pulmonary solitary FDG-positive lesions on restaging PET/CT following induction chemotherapy in good-responding patients to chemotherapy for NSCLC are not rare. In our experience, these lesions were not associated with malignancy but histological/cytological examination should be performed before surgery.

Disclosure: All authors have declared no conflicts of interest.

Monday, 6 June 2011**16:00 - 17:30****Session VIII/ Pulmonary Non-Neoplastic****O-094****THE RISK IS NOT OUR BUSINESS: SAFETY OF SURGERY IN PATIENTS WITH ANTI-PLATELET THERAPY**

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Thoracic Surgery Unit, S. Croce e Carle Hospital, Cuneo/ITALY

Objectives

Recommendations of AHA changed preoperative management of patients in anti-platelet therapy (APT). We assessed surgery outcomes in patients taking APT.

Methods

Prospective study of consecutive series of patients taking APT, who underwent thoracic surgery. Using propensity score-matching methods, patients were matched (ratio 1:4) with patients not-receiving APT at time of surgery. Logistic regression analysis was used to identify covariates among baseline patient-variables imbalanced. Resulting-matched patients were analyzed for differences in intraoperative and postoperative outcomes. χ^2 and Fisher's test were used to calculate probability value for dichotomous variables comparison. Statistical analysis was performed using Wolfram Mathematica 8.0.

Results

38 patients receiving APT at time of surgery (2008-2010) were matched with 141 patients not-receiving APT (Table). APT indications, operations performed, outcomes are showed in Table. None of patients required reoperation for bleeding. Two patients received blood transfusion. Chest-tube drainage amount was not statistically significant different. There were not statistically significant differences between outcomes for patients receiving APT compared with controls for operative time, hospital length-of-stay, blood losses, or morbidity (stratified by procedure).

Conclusions

Thoracic surgery can be safely performed in patients receiving APT

Disclosure: All authors have declared no conflicts of interest.

Characteristics	Patients receiving APT (n=38)	Patients not-receiving APT (n=141)
Age	68±5 (47–81)	67±8 (49–71)
Male	21 (55%)	101 (71%)
Female	17 (45%)	40 (28%)
History of coronary artery disease	19 (50%)	78 (55%)
Coronary stent	11 (29%)	42 (30%)
History of peripheral vascular disease	8 (21%)	21 (15%)
Patient on double APT	9 (24%)	0
Surgical operations		
Lobectomy	18	68
Mediastinoscopy	8	28
VATS±wedge resection	7	25
Wedge resection	2	9
Decortication	2	8
Thymectomy	1	3
Intraoperative and postoperative outcomes		
Amount of chest-tubes	340±70 (220–470)	370±110 (150–680)
Redo-thoracotomy for bleeding	0	2 (1%)
Average hospital length-of-stay	2.0 (0–6)	4.1 (0–28)
Postoperative surgical morbidity	0	5 (4%)
Postoperative medical morbidity (including blood transfusions)	4 (11%)	23 (16%)
Operative mortality	0	2 (1%)



O-095

AGGREGATE RISK SCORE FOR PREDICTING MORTALITY AFTER SURGICAL LUNG BIOPSY FOR INTERSTITIAL LUNG DISEASE

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Objectives

Develop a generalizable and practical risk score for 90-day mortality following surgical lung biopsy (SLB) for interstitial lung disease (ILD).

Methods

311 consecutive patients undergoing SLB for ILD in a single center were reviewed retrospectively (2002-2009). Preoperative variables were initially screened for possible association with 90-day postoperative mortality by univariate analysis. Variables with a $p < 0.1$ were used as independent predictors in a stepwise logistic regression analysis. The significant predictors were used to build the risk score. A threshold effect was sought for significant numeric variables by using ROC analysis. The scoring system was built by proportionally weighting the regression coefficients. The score for each patient was the sum of the individual factors.

Results

30-day and 90-day mortality rates were 9% and 10.6%, respectively. Independent predictors significantly associated with 90-day mortality were: age > 67 , $p < 0.0001$; preoperative ICU admission, $p = 0.006$; immunosuppressive treatment, $p = 0.004$; open surgery, $p = 0.03$. Accordingly, the following coefficients were assigned: open surgery = 1, immunosuppressive treatment = 1.5, age $> 67 = 2$, preoperative ICU = 2. Individual scores varied from 0-6 points. Patients were grouped into 4 classes (A-D) showing incremental risk of 90-day mortality. Those patients with an aggregate score of 0 (Class A) had a 90-day mortality of 2% whereas this was 86% with a score > 3 (Class D).

Conclusions

SLB for presumed ILD has considerable risk with overall 90-day mortality around 10%. The ILD aggregate risk score developed in this study is a useful and easily applied tool for quantifying the risk of death after SLB and allows for better risk/benefit stratification prior to SLB.

Disclosure: All authors have declared no conflicts of interest.

ILD LUNG BIOPSY RISK SCORE

SCORE	CLASS	MORTALITY
0	A	2%
1.0 - 2.0	B	12%
2.5 - 3.0	C	40%
> 3.0	D	86%

Chi-square = 71.2; p<0.0001

Open Surgery	-1.0
Immunosuppression	-1.5
Age > 67	-2.0
ICU prep	-2.0

ILD Lung Biopsy Risk Score - showing 90-day mortality for risk classes A to D.

O-096

IMPACT OF THE LEARNING CURVE IN THE USE OF A NOVEL ELECTRONIC CHEST DRAINAGE SYSTEM AFTER PULMONARY LOBECTOMY: A CASE-MATCHED ANALYSIS ON THE DURATION OF CHEST TUBES

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Objectives

The objective of this investigation was to verify the impact of the learning curve on the chest tube duration after the introduction of a novel electronic chest drainage device following pulmonary lobectomy.

Methods

Propensity score case-matched analysis comparing the first consecutive 51 lobectomy patients managed with a novel electronic chest drainage unit with 51 counterparts managed with a traditional device. Exclusion criteria: air leak > 7 days, chest tube duration > 10 days, hospital stay > 14 days, ICU stay, chest wall resection; reoperation. Population: 51 patients managed with electronic chest drainage system (E), 235 patients managed with traditional system (T). Analysis: Several surgical and perioperative variables were used to construct the propensity score used to match the 51 E patients with 51 T counterparts. The two matched groups were compared in terms of chest tube duration and hospital stay. A curve was then generated by plotting the duration of chest tubes of the two matched groups, with the patients ordered by date of operation.

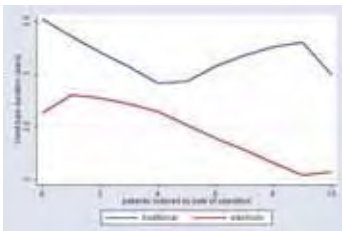
Results

Baseline and perioperative characteristics of the two matched groups were not different. Group E patients had shorter chest tubes duration (2.5 days vs. 4.4 days, $p < 0.0001$) and hospital stay (4.5 days vs. 6 days, $p = 0.0003$), and reduced hospital costs (1802€ vs. 2553€, $p = 0.0002$). The figure shows that compared to group T, patients of group E had a consistent shorter duration of chest tube since the very first cases. The curve sloped down for the first 40 patients before reaching a plateau, when the maximum benefit of the electronic device was evident.

Conclusions

Compared to traditional devices, the use of a novel electronic chest drainage system was beneficial since its initial application. The inherent learning curve was short and didn't affect the efficiency of the system.

Disclosure: A. Brunelli: Consultant agreement with Medela Healthcare. All other authors have declared no conflicts of interest.



Duration of chest tube of the 2 case-matched groups with patients ordered by date of operation

O-097

THE IMPACT OF CHEST TUBE REMOVAL ON PAIN AND PULMONARY FUNCTION AFTER PULMONARY RESECTION

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Objectives

To assess the immediate influence of chest tube removal on chest pain and FEV1 after pulmonary resection.

Methods

Prospective longitudinal investigation on 104 consecutive patients (53 wedge/segmentectomies and 51 lobectomies; 69 muscle and nerve-sparing lateral thoracotomy and 35 VATS). Postoperative chest pain was controlled in all patients by a standardized combination of oral and intravenous non-opioid analgesics. All patients had one chest tube (24French). Static and dynamic (after forced expiratory effort) pain and FEV1 were assessed before and one hour after chest tube removal by the same operator. No additional analgesics were administered before or after chest tube removal. Pain level was assessed by the numeric pain scale (range 0: no pain to 10: excruciating pain). FEV1 was assessed by a portable spirometer. Bronchodilators were not used in these patients. Pre-removal and post-removal measurements were compared by the Wilcoxon signed rank test.

Results

The average pre-removal static and dynamic pain scores were 2.6 and 4.1, respectively. The static and dynamic pain scores decreased by 42% and 41%, respectively, after tube removal ($p < 0.0001$). The average FEV1 before chest tube removal was 1.5 L or 53% of predicted value and increased by 13% after tube removal ($p = 0.0004$). 56% and 78% of patients reported static and dynamic pain scores improvement, and 67% a FEV1 improvement after chest tube removal. Similar results were observed in patients operated on through VATS or thoracotomy. Compared to patients whose chest tube was removed later, those who had their chest tube removed before POD3 showed a greater reduction in static pain score (41% vs. 31%, $p = 0.05$) and greater improvement in FEV1 (18% vs. 0.01%, $p = 0.02$).

Conclusions

Removing a chest tube reduces pain and improves ventilatory function, independent of surgical access and particularly in the early postoperative phase. A fast track chest tube removal policy may favor patients' recovery.

Disclosure: A. Brunelli: Medela Healthcare consultancy. All other authors have declared no conflicts of interest.

O-098

GASTROPARESIS IS A CONTRIBUTING FACTOR TO PNEUMONIA AFTER PULMONARY RESECTION

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Objectives

There are few data in the literature concerning relations between thoracic surgery and digestive motility. The aim of our study was twofold : 1)showing a link between thoracic surgery and gastric distension and, 2)between post operative pneumoniae and gastric distention.

Methods

A retrospective analysis was conducted on 262 patients who had undergone a thoracotomy between January and December 2007. The transverse diameter of the stomach was measured on chest X-rays performed on day 0, and on day 1. Gastric distension was defined as a ratio (R) D1/D0 higher than 1.3 (min: 0.5 ; max: 4.1). 3 groups were defined: group 1 (absence of distension) R inferior to 1.3 ; group 2 (moderate distension) R [1.3 ; 2.3], group 3 (major distension) R superior to 2.3. International criteria of Center of Disease Control were used to define pneumonia. Appropriate statistics test were used.

Results

There were 73 female (27.8%) and 189 men (72.1%), age ranging from 20 to 83 years (average: 59.9 years old). As for gastric distension, 194 patients (74%) constituted group 1, 53 (20.2%) group 2 and 15 (5.7%) group 3. Pneumonectomy significantly increased the incidence of gastric distention on day 1 ($p=0.03$). The side, the type of mediastinal lymphadenectomy, a personal medical past history of upper gastro-intestinal tract surgery had no statistically significant influence on the incidence of gastric distension. Patients with gastric distension on D1 had significantly more infectious pneumonia on day 5 ($p=0.01$): 16 (8.2%) patients in group 1, versus 14 (26.4%) in group 2 and 7 (46.6%) in group 3. On Day 5, 20.8% ($n=5$) of pneumectomies had pneumonia, against 5.7% ($n=13$) of patients who had undergone another type of surgery ($p=0.01$).

Conclusions

We established in our cohort of patients a link between type of thoracic surgery (pneumonectomy), gastric distension on day 1 and infectious pneumonia on day 5. A prospective multicenter study is desirable to verify these data.

Disclosure: All authors have declared no conflicts of interest.

O-099

ECHOCARDIOGRAPHIC ASSESSMENT PREDICTS THE ONSET OF ATRIAL FIBRILLATION AFTER MAJOR PULMONARY RESECTIONS

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Objectives

Atrial fibrillation (AF) is one the most frequent complications after major pulmonary resections. Notwithstanding prevention and early treatment, AF may show a negative impact on outcome. We investigated echocardiographic variables as potential predictive factors for postoperative AF.

Methods

One-hundred-thirty-four patients undergoing thoracic surgical procedures were prospectively evaluated. Seventy-two patients (53.7%) undergoing either lobectomy or pneumonectomy were considered the study group (SG) and 62 (46.3%) receiving other minor thoracic procedures were the control group (CG). The only exclusion criteria was previous AF. All patients underwent bidimensional echocardiography at preoperative work-up. Demographics, type of surgical resection, histology, staging, presence of COPD, induction chemotherapy, smoking history, pre and postoperative magnesium levels, other cardiologic comorbidities, electrocardiographic findings and echocardiographic variables (atrial and ventricular diameters, left atrial area, left ventricular ejection fraction, left ventricular diastolic dysfunction) were evaluated.

Results

Preoperative demographic and functional variables didn't show any statistically significant difference between SG and CG. Twenty-one patients (15.7%) postoperatively developed AF after a mean of 3.7 ± 1.8 days. All AF episodes occurred in the SG ($p < 0.00001$). Three patients (14.2%) with AF died during the postoperative course ($p = 0.0007$). Left atrial antero-posterior diameter and left atrial area were significantly enlarged in patients with AF ($p = 0.001$ and $p < 0.0001$); 18 AF episodes out of 21 (86%) occurred in patients with atrial enlargement. Postoperative magnesium plasma levels < 2 mg/dl, left ventricular diastolic dysfunction, left atrial antero-posterior diameter > 40 mm, left atrial area enlargement > 20 mm² and extended resections were statistically significant in the univariate analysis. Multivariate analysis showed that only left atrial area enlargement of > 20 mm² ($p < 0.0001$) was an independent predictive prognostic factor for postoperative AF.

Conclusions

Preoperative echocardiographic assessment of left atrial area may be useful to predict the onset of postoperative AF in patients undergoing lobectomy and pneumonectomy.

Disclosure: All authors have declared no conflicts of interest.

**Monday, 6 June 2011****16:00 - 17:30****Session IX/ Innovative / Experimental****F-100****FIRST TIME IDENTIFICATION OF CIRCULATING TUMOR CELLS IN MURINE MODELS OF HUMAN NON-SMALL CELL LUNG CANCER**Pierre Mordant¹, Y. Lorient², C. Decraene², B. Lahon¹, Y. Castier³, J. Soria¹, E. Deutsch¹¹*Institut Gustave Roussy, Villejuif/France*,²*Institut Curie, Paris/France*,³*Hopital Bichat, Paris/France***Objectives**

Circulating tumor cells (CTCs) have been found in up to 40% of patients with either localized or metastatic non-small cell lung cancer (NSCLC). However, level of CTCs has never been established in preclinical murine models of human NSCLC. We sought to determine the levels of CTCs in subcutaneous and orthotopic murine models of human non-small cell lung cancer.

Methods

We used athymic nude mice and luciferase-positive A549 lung adenocarcinoma cell line (A549-luc, Xenogen Corp, USA). In group 1, animals underwent subcutaneous injection of cells in both flank (n=6). In group 2, animals underwent general anesthesia, chest wall incision, and transpleural injection of cells in the parenchyma of the left lung (n=15). After 2 weeks, bioluminescent in vivo imaging (IVIS) was performed after intra peritoneal injection of luciferine, and xenograft implantation rates were calculated. During the third week, tumor-bearing animals were anesthetized, 1-mL venous blood was punctured from the cavernous sinus, mixed with 7-mL of healthy human blood, and tested using the Cellsearch assay (Veridex LLC, USA). Animals were then humanely killed.

Results

Xenograft implantation rates were 100% in group 1 (n=6) and 60% (n=9) in group 2. Among the 6 blood tubes collected from the first group, none were clotted, 6 tubes underwent successful Cellsearch assay, and 5 assays were positive for CTCs detection (CTCs level range 2-5, mean 2.5, sd 1.76). Among the 9 blood tubes collected from the second group, 3 tubes were clotted and impossible to analyze, 6 tubes underwent successful Cellsearch assay, and 5 assays were positive for CTCs detection (CTCs level range 2-21, mean 9.5, sd 9.35). When comparing groups, the difference in CTC levels show a trend toward statistical significance (student test, p=0.058).

Conclusions

Two weeks after tumor implantation, CTCs are detected in 83% of nude mice bearing either subcutaneous or orthotopic NSCLC tumors. Evolution of CTCs level after cells injection should be established, but this model could be of interest to study oncogenesis and to assess new treatments.

Disclosure: All authors have declared no conflicts of interest.

Monday P.M.
Abstracts 013 - 109

F-101**CD26 – INHIBITION RECRUITES REGENERATIVE STEM CELLS VIA SDF-1 – CXCR4 AXIS AND IMPROVES ISCHEMIA-REPERFUSION INJURY IN THE MOUSE MODEL OF LUNG TRANSPLANTATION**

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Objectives

The CD26 antigen is a transmembrane glycoprotein that is constitutively expressed on activated lymphocytes and in pulmonary parenchyma. This molecule possesses a catalytic domain (dipeptidyl peptidase IV, DPP4) that cleaves a host of key biologically active peptides. Here, we aimed to identify an important substrate of CD26/DPP 4 – stromal cell-derived factor 1 (SDF-1) – which functions as a key modulator for stem cell homing together with its receptor CXCR4 in response to injury.

Methods

Orthotopic single lung transplantation (Tx) was performed between syngeneic C57BL/6 mice. Inhibition of CD26/DPP 4 in recipients was achieved using vildagliptin (10 mg/kg/day) sc., 6 hours ischemia time was applied to induce ischemia-reperfusion (I/R) prior to implantation. Histology, ELISA for SDF-1, and fluorescent activated cell sorting for its receptor CXCR4, and for markers of regenerative progenitor cells were assessed in Tx lungs and upon inhibition of CD26/DPP IV.

Results

Compared to untreated Tx grafts, systemic CD26/DPP IV-inhibition of Tx grafts resulted in an increase of protein concentrations of SDF-1 in plasma (1347 vs. 1176 pg/ml), lung (740 vs. 611 pg/mg) and spleen (1726 vs. 1545 pg/mg). Concordantly, the fluorescence intensity of CXCR4 rose in blood circulation (46.9 vs. 24.3) and in the lung (74.4 vs. 60.2) when compared to WT. Furthermore, CD34 and the regenerative stem cell marker c-kit showed an enhancement of fluorescent intensity in CD26/DPP IV-inhibited plasma and transplants. Histology and immunohistochemistry of inhibited grafts revealed less recruitment of immune cells when compared to transplanted lungs alone.

Conclusions

Decreased degradation and enhancing of the SDF-1 – CXCR4 axis through CD26/DPP IV inhibition increased progenitor cells capable for recovering of the I/R lung injury. Stabilization of endogenous SDF-1 is achievable and may be a promising strategy to intensify sequestration of regenerative stem cells thus emerging as a novel therapeutic concept.

Disclosure: All authors have declared no conflicts of interest.



F-102

SHORT TERM PROSPECTIVE EVALUATION OF MICROALBUMINURIA AFTER THORACIC SURGERY

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Objectives

Micro-albuminuria (MAU) is associated with a generalized increase in systemic vascular permeability and a sensitive marker of endothelial dysfunction. Several studies documented its rapid increase and its adverse prognostic significance after trauma, pancreatitis, ischemia reperfusion injury, and surgery. However, little is known about MAU and its potential implication after thoracic surgery. We performed a prospective study to serially assess MAU after thoracic surgery.

Methods

Design: short-term prospective observational pathophysiology driven study. Setting: thoracic surgery unit. Patients: 80 consecutive patients. Outcome measures: MAU in first-void urine samples before thoracic surgery and in postoperative day 1, 3 and 7.

Results

Mean age was 63 years [60 to 65], 67% were male, and the most common comorbidities were COPD (55), hypertension (38), and diabetes (9). Sixty-four patients underwent standard thoracic surgery (55 lobectomies, 4 pneumonectomies and 5 thymectomies) and 16 VATS resections. Preoperative MAU level was normal, mean 0.61 mg/dl ([0.48 to 0.79]) while on postoperative day 1 we observed a seven fold increase (4.45 mg/dl [3.50 to 5.65] $p < 0.001$). An even larger increase was observed in patients with diabetes and hypertension (8.95 mg/dl [1.54 to 52.09]; $p < 0.001$ and 5.852 mg/dl [4.04 to 8.46]; $p < 0.001$ respectively). On postoperative day 1 we did not find significant MAU differences between categories defined by type of surgery. Average MAU was normal and close to baseline level on postoperative day 7, however 45% of patients submitted to open procedures still had MAU greater than baseline level.

Conclusions

Our study showed that MAU might be an early marker of increased vascular permeability in thoracic surgery patients. As expected a larger increase was observed in diabetics and hypertensives. A wider proportion of patients undergoing VATS compared to open thoracic surgery recovered baseline MAU within 7 days. Persistence of MAU seems associated with the severity of surgical stress.

Disclosure: All authors have declared no conflicts of interest.

F-103**PERCUTANEOUS RADIOFREQUENCY SYMPATHICOLYSIS IN SEVERE HYPERHIDROSIS AND FACIAL BLUSHING: EFFICACY AND QUALITY OF LIFE.**

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General Thoracic Surgery, Candelaria University Hospital, Santa Cruz de Tenerife/SPAIN

Objectives

Hyperhidrosis (Hh) and facial blushing (Fb) are conditions caused by hyperactivity of the sympathetic system that affect around 2% of the population. Severe cases have been typically treated with thoracic sympathectomy through a minimally invasive approach. We sought to determine if severe Hh and/or Fb patients who are reluctant to go through an operation with general anaesthesia could benefit from receiving percutaneous radiofrequency ablation of the sympathetic chain.

Methods

Prospectively collected data obtained from May 2007 to May 2010 were analysed to compare the treatment efficacy and effects on quality of life of the two procedures.

Results

From a total of 58 patients enrolled in the study, 31 were treated with radiofrequency procedures while 27 received surgical sympathectomy. Patients with Hh had better results with surgery than with radiofrequency sympathicolysis in terms of efficacy ($p=0.0001$) and quality of life ($p=0.0002$). However, there was still a significant improvement in quality of life in the group of patients treated with radiofrequency sympathicolysis ($p=0.004$). Patients with Fb had good results with surgical procedures and poor outcomes with radiofrequency ablation, resulting in significant differences in treatment efficacy ($p=0.005$) and in quality of life ($p=0.003$). Fb patients treated with radiofrequency procedures had no improvement in quality of life after the intervention ($p=0.28$).

Conclusions

Our results support the view of surgical sympathectomy as the gold-standard treatment in severe cases of Hh and Fb. Radiofrequency sympathicolysis is useful as a second treatment choice for Hh patients. Fb patients do not benefit from radiofrequency sympathicolysis.

Disclosure: All authors have declared no conflicts of interest.



F-104

ENDOSCOPIC TRANSORAL SURGICAL LUNG BIOPSY IN THE DOG

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*Department of Surgery, Chang Gung Memorial Hospital at Linko, Chang Gung University, Gueishan Shiang/TAIWAN***Objectives**

Natural orifice transluminal endoscopic surgery (NOTES) remains a controversial approach during intra-abdominal and intrathoracic surgery.

Methods

To evaluate the feasibility of natural orifice surgery in thoracic surgery, we performed transoral (via an incision over vestibulum oris) surgical lung biopsy on 20 dogs. We also investigated the effectiveness of different antibiotic regimens (single dose cefamezine (20 mg/kg, n=10) vs. 3-day course of cefamezine (20 mg/kg per day, n=10)) to prevent post-operative infection in transoral surgical lung biopsy. We have recorded and analyzed rectal body temperature, respiratory rate, oral intake, daily performance, and white blood cell count in all animals before operation and after 1, 2, 3, 7, and 14 days after operation.

Results

No intraoperative and postoperative complications were noted. Transoral surgical lung biopsy was successful in 17 dogs. In 3 dogs, the lingula of the left upper lobe was misinterpreted as the left lower lobe. With regard to the optimum duration of prophylactic antibiotic for preventing postoperative infection, there were no difference in clinical signs and hematological reactions between the two regimens 2 weeks after surgery.

Conclusions

Surgical lung biopsy by NOTES is a feasible and safe procedure. The data also show that both single dose and 3-day course of antibiotic was effective in preventing potential infection after NOTES. We believe that this novel technique will open a new frontier for the minimally invasive approaches for thoracic surgery.

Disclosure: All authors have declared no conflicts of interest.

F-105

CONSERVATIVE DRAIN REMOVAL PROTOCOL DOES NOT FAVOR DIGITAL CHEST DRAINAGE AFTER LOBECTOMY: MULTICENTER RANDOMIZED TRIALTomasz Marjanski¹, A. Sternau¹, K. Pawlak², L. Gasiorowski³, W. Rzyman¹¹*Thoracic Surgery Department, Medical University of Gdansk, Gdansk/POLAND,*²*Thoracic Surgery Department, Wielkopolska Center of Pulmonology and Thoracosurgery, Poznan/POLAND,*³*Thoracic Surgery, Poznan University of Medical Sciences, Poznan/POLAND***Objectives**

Recently implemented to daily clinical routine advanced digital thoracic drainage systems still need feasibility studies. Spectrum of used drainage systems is wide. This study compares Thopaz Medela® drainage system with traditional glass bottle drainage after major pulmonary resections.

Methods

Between January 2010 and January 2011 one hundred twenty six patients subjected to lobectomy were enrolled in the three study centers in Poland. Patients after signing informed consent were randomly allocated to one of the two study arms. In group I Thopaz Medela® drainage system was applied, while patients in group II were subjected for the drainage with traditional glass-bottle system. The drain was removed when the air leak was less than 20 mL/min in group I and there were no air bubbles in group II and less than 200 mL of exudate production per day. Patients in group II were submitted to suction on first two postoperative days in contrast to patients in group I who were submitted to constant suction of -15 cm H₂O. The study was approved by Regional Ethic Committees.

Results

Seven patients were excluded from the study, all from group I. Four patients due to resection other than lobectomy and three due to surgeon decision. One patient in group I died in the postoperative period due to ileus. Patients in both study groups did not differed in terms of demographics and performance status. Comparison of postoperative data is listed in the Table.

Conclusions

Conservative drain removal protocol does not favor digital chest drainage. Constant suction could prolong postoperative hospital stay. Thopaz Medela® is at least as safe as traditional glass bottle drainage.

Disclosure: All authors have declared no conflicts of interest.

	Group I Thopaz Medela®	Group II Traditional drainage	p value
Complications rate	24/63 (38%)	14/63 (22%)	0,081
• Atrial fibrillation	13/63 (20%)	6/63 (10%)	0,135
• Persistent air leak	6/63 (10%)	5/63 (8%)	1,000
Drainage length	median 4 days	median 4 days	0,963
Length of hospitalization	median 7 days	median 6 days	0,0419
Number of postoperative X-rays	median 4	median 7	0,527

Patients' postoperative course. The data were compared using Mann-Whitney U test and Yates' Chi-square test.

F-106

ROBOTIC LUNG ANATOMICAL SEGMENTECTOMY: TECHNICAL ASPECTS AND INITIAL RESULTSGiulia Veronesi¹, B. Park², A. Pardolesi³, A. Borri¹, P. Maisonneuve¹, L. Spaggiari¹¹*Division of Thoracic Surgery, European Institute of Oncology, Milan/ITALY,*²*Hackensack University Medical Center, Hackensack/NJ/UNITED STATES OF AMERICA,*³*Thoracic Division, Istituto Europeo di Oncologia, Milano/ITALY***Objectives**

Robotic lobectomy with radical lymph node dissection is the new frontier of minimally invasive thoracic surgery. Series of sublobar anatomical resections for primary lung cancers or for metastasis employing video-assisted thoracic surgery (VATS) have been reported, but no cases have been so far reported using the robot assisted approach. We present the technique and surgical outcome of our initial experience.

Methods

Clinical data of patients undergoing robotic lung anatomical segmentectomy were retrospectively reviewed. All cases were done using the Da Vinci System. A 3-incision strategy with a 3 cm utility incision in the anterior 4th or 5th intercostal space and two or three additional ports was performed. Individual ligation and division of the hilar structures was performed using hemolock or mechanical endoscopic staplers. The parenchyma was transected with endovascular staplers mainly through the utility incision. Systematic mediastinal lymph node dissection or sampling was performed.

Results

From 2008 and 2010 17 patients underwent a robot-assisted lung anatomical segmentectomy in two centres. There were 10 female and 7 males with mean age of 59 yy (range 35-81). Mean duration of surgery was 189 minutes. There were no major intraoperative complications. Conversion to open procedure was never required. Postoperative morbidity rate was 17.6% with pneumonia in one case and prolonged air leak in two patients. Median postoperative stay was 5 days (range 2-14), and postoperative mortality was 0%. Final pathology was non-small cell lung cancer in 9 patient, typical carcinoid in 1 and lung metastases in 7.

Conclusions

Robotic anatomic lung segmentectomy is a feasible and safe procedure. A robotic system that offers improved ergonomic, 3 dimensional view and precise movements may make minimally invasive segmentectomy easier to adopt and perform.

Disclosure: All authors have declared no conflicts of interest.

F-107

NEW SCOPE FOR THORACIC SURGEONS – INDIVIDUAL ADAPTED CHEMOTHERAPY OF NSCLC BY LYMPH NODE BIOPSY?

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Objectives

Expression levels of ERCC1 and RRM1 in the primary tumor of NSCLC are well-examined predictive parameters for the response of platin-based chemotherapy. Analyzing and comparing the expression levels of ERCC1 and RRM1 in the primary tumor to the associated lymph node metastasis is the aim of this study, as their heterogeneity would lead to important decisions in further therapies of the NSCLC.

Methods

Tissues of the primary tumor and associated lymph node metastasis were macrodissected from formalin-fixed, paraffin-embedded material of 12 NSCLC. Thereafter RNA was isolated and preamplified for analyzing the relative expression levels of ERCC1 and RRM1 with reference to Pol I α and β -GUS by RT-PCR.

Results

The relative expression levels with a median DDct are 0,59 (range 1,23-0,11) for the primary tumor and 0,42 (range 1,20-0,27) for the associated lymph node metastasis for ERCC1. Median DDct for RRM1 is 0,69 (range 1,08-0,45) for the primary tumor and 0,625 (range 1,74-0,27) for the lymph node metastasis. A positive correlation between the primary tumor and the associated lymph node metastasis was generated for both enzymes (r 0,81) and could be assured by analyzing the clinical data.

Conclusions

Based on the correlation of the expression levels of the primary tumor to the associated lymph node metastasis, the lymph node biopsy might be a new pivotal approach for the individual therapy decision of the NSCLC. Furthermore a biopsy of the primary tumor and the lymph node metastasis might be done in course of an ineffective platin-based chemotherapy.

Disclosure: All authors have declared no conflicts of interest.

F-108

USING TRACHEAL SEGMENTS FOR REPLACEMENT OF CERVICAL ESOPHAGUS: AN EXPERIMENTAL STUDY

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Objectives

Segmental resection and anastomosis of esophageal lesions are not performed as a routine clinical practice because of complications and associated problems, while tracheal resection and anastomosis is a routine clinical practice. In this experimental study we resected a segment of cervical esophagus and replaced it with a tracheal segment.

Methods

In 8 dogs (mixed races), weighting 20-30 kg, aging 1-2 years, through a cervical incision and under general anesthesia, through a cervical incision 5 cm of cervical trachea was separated while preserving its attachments to surrounding fibroareolar tissues. Afterwards, 5 cm of esophagus was resected and replaced with a prepared segment of trachea. Oral liquids started at the first postoperative day; the animals were kept for 2 months then euthanized. Quality of swallowing, and voice was evaluated. After an autopsy, anastomoses were examined grossly and histopathologically.

Results

No complications occurred during surgery. Swallowing function and voice were normal in all eight dogs after the operation. No sign of aspiration was seen in clinical and radiographic examinations after starting oral diet. In autopsy examination, anastomoses were patent without narrowing or abnormal mucosal changes. Remarkable histopathologic findings in replaced tracheal segment were: squamous metaplasia, atrophy and degeneration of mucosal glands and degeneration of cartilages.

Conclusions

Replacement of a segment of the esophagus with an autogenous tracheal segment is a practical procedure with low complications and can probably be used for the treatment of cervical esophageal lesions in human beings.

Disclosure: All authors have declared no conflicts of interest.

Monday, 6 June 2011

17:30 - 19:00

Ad Hoc Committee Women in Thoracic Surgery Session

F-109

A LATE RIGHT CATAMENIAL PNEUMOTHORAX WITH PARTIAL LIVER HERNIATION

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Objectives

In literature several case reports and case series about catamenial pneumothorax have been reported, with very different clinical courses and surgical findings. Pathogenic theories are controversial, and there is no unique surgical treatment. This is why the treatment of catamenial pneumothorax is still debated.

Methods

A 43 years old woman had recurrent right pneumothorax associated with menses. In anamnesis dysmenorrhea under estro-progestinic therapy. The first episode occurred at 42 during menses, treated by pleural drainage. Chest x-ray showed diaphragmatic lesions, so she underwent CT and MRI. They showed partial liver herniation through diaphragmatic disruptions.

Results

The recurrence occurred 2 months later, so thoracoscopy was performed. It showed multiple diaphragmatic defects (diameter 2-3cm) of the tendinous part with herniation of liver dome. Neither subpleural blebs nor pleural lesions were found. After biopsy of diaphragmatic lesions (liver at histopatology), partial pleurectomy and talcage on the diaphragm were performed. Preoperative CA125 levels were normal. After 6 months occurred a right basal pneumothorax, in coincidence with changing of hormonal therapy. It was treated successfully by pleural drainage, talc slurry and another hormonal therapy. After 12 months no other recurrence occurred.

Conclusions

Few cases in literature report liver herniation through diaphragmatic lacerations in catamenial pneumothorax. Defects of the diaphragm and thoracic endometriosis were reported in 38% of patients. The implantation of endometriosis on the diaphragm, on thoracic or peritoneal side, lead to involution of the muscular fibres with creation of holes. The negative intratoracic pressure during years makes the liver herniate through the diaphragmatic defects and ingrowth into the thorax, as observed in this report. The surgical treatment of this lesions could be difficult, because it has the aim of no other recurrence without being too much demolitive. In addition, the right hormonal therapy is essential.

Disclosure: All authors have declared no conflicts of interest.

**Tuesday, 7 June 2011****13:00 - 14:00****Session X/ Moderated Posters****P-110****VIDEO-ASSISTED THORACOSCOPIC MAJOR PULMONARY RESECTIONS IN ELDERLY PATIENTS**

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Objectives

Advanced age is a known risk factor for postoperative complications after pulmonary resections. In this study we investigate the results of video-assisted thoracoscopic surgery (VATS) for major pulmonary resections in old patients (group B, ≥ 75 years) compared with younger patients (group A, < 75 years).

Methods

A retrospective review was performed of all patients operated by VATS in our department between July-2007 to July-2007. We reviewed preoperative data and perioperative results, complications, length of stay, 60-day mortality and survival.

Results

Over the period studied, 200 patients underwent VATS anatomic resections (42 of these were ≥ 75 years old). The characteristics and the comparison of both groups are described in table 1. The median follow-up time was 14.57 months (group A) and 17.47 months (group B). The actuarial survival rate was 88.3%(A) and 76.6%(B) at 2 years ($p=0.312$).

Conclusions

VATS major pulmonary resections in elderly patients are a safe procedure with good postoperative results similar to outcomes in younger patients. We consider advanced age not to be a contraindication for VATS lobectomy and we prefer anatomic resections rather than wedge resections according to the oncological criteria. Table 1-Comparison between group A and group B

Disclosure: All authors have declared no conflicts of interest.

	Group A (<75y) N=158	Group B(≥75y) N=42	p-value
Male/female	120/38	35/7	NS
FEV (%)	86.3±20.9	86.1±24.3	NS
Cardiovascular disease	46/158 (29.%)	25/42 (59.5%)	0.047
Operative time (min)	198.08±6.4	207.26±62.5	NS
Left upper lobectomy (most frequent resection)	40/158 (25.3%)	12/42(28.5%)	NS
Conversion	23/58 (14.5%)	6/42 (14.2%)	NS
Mean Lymph nodes studied	12.07±6.96	10.32±6.8	NS
NSCLC Stage I	133/158 (84.2%) 93/133 (69.9%)	39/42 (92.8%) 30/39 (76.9%)	NS
Air leak >7 days	21/158 (13.2%)	5/42 (12%)	NS
Mean hospital stay (days)	6.39±7.9	7.52±7.69	NS
Postoperative complications	39/158 (24.6%)	12/42 (28.5%)	NS
60-day Mortality	4/158 (2.5%)	1/42 (2.3%)	NS

Table 1. Comparison between group A and group B



P-111

LASER ASSISTED PULMONARY METASTASECTOMY: EVALUATION OF PATIENT CHARACTERISTICS, SURGICAL APPROACH AND COMPLICATION RATE

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Objectives

Different techniques of pulmonary metastasectomy are described in literature. Laser resection permits limited excision of deep-seated lesions sparing lung tissue as much as possible. Our aim was to evaluate patient characteristics, surgical approach and complication rate of laser assisted resection in comparison to wedge and anatomical resections.

Methods

A pulmonary Metastasectomy Registry of all patients who underwent pulmonary metastasectomy in our center between 01/2005-05/2010 was assembled using administration database of patients operated for diagnosis of secondary malignant pulmonary disease (C78.0) according to international classification of disease (ICD-10). Patient characteristics, surgical report and complications were recorded from electronic patient files. The number of resected lesions was registered according to the histology report.

Results

300 patients were included for analysis. There were 132 female and 168 male patients (ratio 1/1.27). Age ranged from 11-85 years (mean 60 years, median 64 years, SD 14.6). In an increasing number of metastasectomies over the years laser assisted technique was applied in 20.3% of cases (61 patients) over this period. The number of lesions in laser assisted resections ranged from 1-86 (mean 11.2, median 7.0) as compared to a range of 1-52 (mean 4.4, median 2.0) in wedge and anatomical resections ($p < 0.01$). Perioperative mortality was 0.0% in both groups. In wedge and anatomical resections the need for re-drainage and prolonged drainage (> 7 days) was higher than in laser assisted resections (4.2% vs. 1.6%, $p = 0.34$). Except for a higher incidence of pneumonia in laser assisted resections 2.5% vs. 11.5% ($p = 0.02$) there was no significant difference in overall morbidity 24.6% vs. 20.9% ($p = 0.55$).

Conclusions

In our series laser assisted resection was the favored technique in 20% of patients especially in patients with high numbers of metastases. Despite significantly higher numbers of lesions in Laser assisted resections there was no significant difference in overall morbidity except for pneumonia.

Disclosure: All authors have declared no conflicts of interest.

P-112

A PROPENSITY-MATCHED COMPARISON OF SURVIVAL AFTER LUNG RESECTION IN PATIENTS READMITTED TO INTENSIVE CARE VERSUS PATIENTS WITH NO READMISSION

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Objectives

Patients undergoing lung resection for cancer already suffer from several co-morbidities and may have impaired lung function. Readmission to intensive care unit (ICU) after initial recovery in these patients is not uncommon (5-9%). In this study we aimed to compare the outcome and survival rates of these patients with patients who were not readmitted to ICU after lung resection for lung cancer.

Methods

We reviewed patient data for a ten-year period; a total of 1981 patients who had lung resection for lung cancer were included. Of these patients 131 (6.6%) were readmitted to ICU due to respiratory failure. For our analysis, we excluded all the cases that died in hospital. A logistic regression model was then used to develop a propensity score for readmission to the ICU and non-readmitted patients were matched to readmitted patients based on propensity score at a ratio of 3:1. We also used the Kaplan-Meier survival curves before and after matching for the patient characteristics, procedure, type and the stage of the cancer.

Results

Mortality rate was 29.7% (n=39) in readmitted group and only 0.4% (n=8) in the non-readmitted group (p less than 0.001). At three years the difference in the survival between the two groups was similar after matching, however after this time, patients who were readmitted showed a worse survival rate but this did not reach the statistical significance (p=0.07).

Conclusions

ICU readmission is associated with high in-hospital mortality. However, the patients who were readmitted to ICU after lung resection and survived this episode and were discharged home had the same rate of survival rates compared to their non-readmitted counterparts. We conclude that in patients with lung cancer undergoing lung resection, readmission to ICU is an independent factor affecting short-term, but not long-term survival.

Disclosure: All authors have declared no conflicts of interest.

P-113

PROGNOSTIC VALUE OF PROLIFERATION AND APOPTOTIC INDECES IN COMPLETELY RESECTED STAGE I NSCLC

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²Department of Pathology, Siena/ITALY

Objectives

To assess the significance of Proliferative and Apoptotic Index (PI and AI) as prognostic factors after surgery for NSCLC.

Methods

A total of 147 patients who underwent surgery for previously untreated pathologic stage I NSCLC between 2000 and 2005 were reviewed. Only patients affected by adenocarcinoma and squamous cells tumors were considered. For each tumour the pathologist evaluated the proliferation index (PI), the apoptotic index (AI) and the Turnover Index (TI) expressed as $3 \times \text{PI} - \text{AI}$. Patients were divided according with the median value of each index. Survival was also evaluated according: age, sex, T status, pleural infiltration, histology and grading.

Results

Between the 147 patients only 139 were considered for the study (3 lost at follow up and 5 not tumour related dead). Age, sex, T status, histology, visceral pleural infiltration resulted not significant in affecting the survival. Also the 5yrs survival rates according with PI, AI and TI were not significant ($p=0.83$, $p=0.79$ and $p=0.62$ respectively). The same index was than used in adenocarcinoma and squamous group separately. Despite no differences in 5yrs survival were found among the squamous tumors, in the adenocarcinoma series a lower TI was significantly associated with a better 5yrs survival ($p=0.006$) as well as the AI ($p=0.033$), but not for PI ($p=0.091$).

Conclusions

PI and the AI are often advocated as prognostic factors however without any strong evidence. Our results confirms that these indeces and particularly the derived TI can be applied as prognostic indicator for the pulmonary adenocarcinomas confirming their different behaviour respect the squamous and stressing the importance of an histology tailored treatment.

Disclosure: All authors have declared no conflicts of interest.

P-114

IS RADICAL SYSTEMIC MEDIASTINAL LYMPHADENECTOMY JUSTIFIED IN ELDERLY LUNG CANCER PATIENTS?Kalliopi Athanassiadi¹, M. Kolokotroni², C. Zisis², I. Bellenis²¹*Thoracic & Vascular Surgery, Athens/GREECE,*²*Thoracic and Vascular Surgery, Evangelismos Hospital, Athens/GREECE***Objectives**

The population is aging and the proportion of patients older than 75 years continues to increase. The therapeutic impact of a radical mediastinal lymphadenectomy (RLA) associated with a pulmonary resection for lung cancer remains controversial. Our objective is to investigate the impact of lymph node dissection on the overall survival for elderly lung cancer patients and assess whether the non-performance of an RLA could be justified in the surgical treatment for this group.

Methods

We analysed the records of 60 patients aged 75 years and older (41 males, 19 females) who underwent surgery for non-small-cell lung cancer. They were divided into two groups, according to the type of intra-operative mediastinal lymphadenectomy, the radical systematic lymphadenectomy (RLA Group, n = 36) and the non-radical lymphadenectomy (NLA group, n = 24) groups. A Cox proportional hazards model and the Kaplan–Meier method were used for the survival analyses.

Results

RLAs had no protective effect on mortality; the hazard ratio for the RLA group in comparison to the NLA group was 0.93 in the multivariate analysis. The 3-year survival for the NLA group, was marginally better than that of the RLA group. There was no significant difference in the overall survival between the two groups ($p > 0.05$).

Conclusions

There was no survival benefit for RLA. Although in some reports a systematic mediastinal lymphadenectomy is recommended for correct staging, a pulmonary resection with non-performance of radical lymphadenectomy could be an acceptable surgical treatment for the increasing number of elderly lung cancer patients.

Disclosure: All authors have declared no conflicts of interest.

P-115

DE NOVO BRONCHIAL CANCER FOLLOWING KIDNEY TRANSPLANTATION

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Objectives

Chronic immunosuppression is associated with a higher cancer incidence. Bronchial cancer (BC) is associated with the highest mortality rate. Aim of this study was to evaluate incidence and outcome of patients developing BC following single or combined kidney-pancreas (or liver) transplantation.

Methods

Patients transplanted between 1996 and 2010 were analyzed retrospectively.

Results

Among 1761 patients, 20 (5 females) developed BC (1.14%). 16 patients had a kidney, 3 a simultaneous pancreas-kidney and 1 patient a simultaneous liver-kidney transplant. Median age at transplantation was 56 (range 39 - 65) years. In 19 patients maintenance immunosuppression consisted of calcineurin-based triple drug therapy. Pre-transplant chest X-rays were without abnormal findings. 1 patient denied smoking. Median interval from transplantation to tumor diagnosis was 57 (3 - 205) months. In 13 patients (65%), carcinomas were diagnosed at UICC stage IV (1 SCLC) and received palliative or best supportive care. Among 7 carcinomas diagnosed and curatively resected at UICC stage I, 3 experienced complete response, 2 progressed disease and 2 died of postoperative complications.

Conclusions

Due to high incidence, late diagnosis and increased postoperative morbidity of de novo BC, special screening and therapeutic strategies as well as intensive educational training of transplanted patients with a smoking history should be considered.

Disclosure: All authors have declared no conflicts of interest.

P-116

THE ANALYSES OF FLUORODEOXYGLUCOSE (FDG)-PET MAXIMAL STANDARDIZED UPTAKE VALUES (SUV) OF SURGICALLY RESECTED ADENOCARCINOMA AND SQUAMOUS CARCINOMA

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Objectives

FDG PET/CT has been used to differentiate malignant solid lung nodules from benign nodules and to evaluate patients preoperatively. Although the prognostic role of SUV_{max} of 18-FDG-PET has been largely investigated, many issues regarding its relationship with major histological subtypes still remain controversial. We analysed the SUV_{max} values and specimen findings of resected Adenocarcinoma (AC) and Squamous cell carcinoma (SCC) patients.

Methods

Pathology and PET/CT reports of 60 NSCLC (34 SCC, 26 AC) patients who underwent a pre-operative assesment and curative lung resection were reviewed. The SUV_{max} values for each histological subtype, along with primary tumor sizes, were compared using Spearman's correlation test and Mann Whitney-U analyses. The optimal cut off values for malignancy were calculated by use of the Receiver-operating-characteristic (ROC) analysis.

Results

The 34 patients with SC histology were found to have significantly greater preoperative SUV_{max} values than the 26 patients with AC (mean 13.5 vs. 10.2, $p < 0.03$), despite the fact that no significant differences in tumor size were observed between histological subtypes. SCC showed significantly larger tumor size than the AC (mean 5.12 cm vs 3.33 cm, $p < 0.006$). The optimal cut-off value of SUV_{max} to predict malignancy in the whole series was 10.6 ($p = 0.026$). No significant differences were observed between primary tumor size and SUV_{max} ($p < 0.08$).

Conclusions

These data suggest that SCC tumors have significantly greater uptake on PET/CT than AC tumors. This findings might be useful to identify the predominant pathology of mixed tumors. Further studies are needed to confirm our results.

Disclosure: All authors have declared no conflicts of interest.

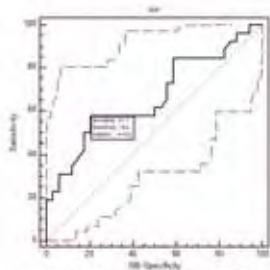


Table 1.

The graph shows optimal cut-off value of SUVmax to predict malignancy

P-117

MULTIMODAL ANALGESIC TREATMENT IN VIDEO-ASSISTED THORACIC SURGERY LOBECTOMY USING AN INTRA-OPERATIVE INTERCOSTAL CATHETER

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Objectives

No golden standard analgesia exists after video-assisted thoracic surgery (VATS) lobectomy. Acute post operative pain following VATS lobectomy, without the use of rib-retractor, is considered to originate from the drain site. Thus, we wanted to report our experience with a simple multimodal analgesic treatment including a continuous intercostal catheter at chest drain level.

Methods

A prospective series of 48 consecutively patients received a standardized regime consisting of daily: 4g paracetamol, 1600mg Ibuprofen and 900mg of gapapentin. Intraoperatively, surgeons performed a single shot paravertebral block (PVB) at 5 levels (15ml) and then inserted an intercostal catheter (ICC) at level of the drain site for continuous delivery of 6ml 0.5% bupivacaine/hr. Patients were followed for 4 days or until discharge.

Results

48 patients, mean age 64±13years, with a median surgery time of 127 minutes (range 75 – 225 minutes) were included. Median time of PVB and ICC placement was 5 minutes (inter quartile range, 4-6 minutes). Median pain score at rest using a numerical rating scale (0-10, no pain to worst imaginable pain) was 2 in the 1st – 6th postoperative hour (Figure 1.). Mean morphine consumption on post operative day (POD) 0 was 18mg and rescue via the ICC was administered a median of 2 times (range 0-5). As a standard, the ICC was removed together with the chest drain, followed shortly afterwards by discharge of the patient. By the end of POD 1, 2, 3 and 4 respectively 24,13,6 and 3 patients still had a chest drain and received the simple multimodal treatment including ICC.

Conclusions

Localised pain from the chest drain as seen after VATS lobectomy may be adequately controlled using a multimodal regime including an intercostal catheter. The low pain scores and time used inserting the ICC may offer an alternative to thoracic epidural analgesia.

Disclosure: All authors have declared no conflicts of interest.

P-118

PULMONARY REHABILITATION AND PROPHYLACTIC NON INVASIVE VENTILATION BEFORE LUNG CANCER SURGERY IN VERY HIGH-RISK PATIENTSPatrick Bagan¹, V. Oltean², A. Ben Abdesselam¹, J.C. Couffignal¹, H. De Crémoux³¹*Thoracic and Vascular Surgery, Victor Dupouy Hospital, Argenteuil/FRANCE,*²*Pulmonary Rehabilitation, Le Parc Hospital, Taverny/FRANCE,*³*Pulmonology, Victor Dupouy Hospital, Argenteuil/FRANCE***Objectives**

The benefits of a rehabilitation program before lung cancer resection remain to define. The purpose of this prospective observational study was to assess the effects of pulmonary rehabilitation associated with non invasive ventilation (NIV) in patients with high operative risk.

Methods

Between December 2009 and December 2010, 14 consecutive patients (12 male, 2 female, mean age: 66 years [44-79]) with a clinical N0 non small cell lung cancer were included. Eligibility criteria were a predictive respiratory function (FEV1, VO2Max) under the thresholds of the guidelines and/or associated severe co-morbidities increasing the thoracscore level *. The protocol included a cardio-respiratory rehabilitation program and 3 hours of NIV a day. The function tests were repeated after 3 weeks of therapy.

Results

The average increase of the FEV1 and of the VO2 max was 12 % and 3.5 ml / kg / mn respectively. Carcinologic surgery was performed in all patients (lobectomy, n=9; pneumonectomy, n=2, bilobectomy, n=2; segmentectomy, n=1). The post operative complication rate was 35.7 % (acute renal failure, n=2; atelectasis n=1; prolonged air leak, n=1; hemothorax, n=1). There was no potoperative death. The mean duration of hospital stay was 11 days. A postoperative rehabilitation allowed a return at home in all patients.

Conclusions

Pulmonary rehabilitation associated with perioperative NIV allows carcinologic surgery performance at first-line not eligible patients. An evaluation of the long-term survival in comparison to the non surgical therapies is necessary. *: ERS/ESTS clinical guidelines in lung cancer patients; The Thoracic Surgery Scoring System (Thoracscore) of the French Society of Thoracic and Cardiovascular Surgery; Epithor Group.

Disclosure: All authors have declared no conflicts of interest.

P-119

NON-SMALL CELL LUNG CANCER (NSCLC) HISTOLOGIC TYPES AND ACCURACY OF INTEGRATED POSITRON EMISSION TOMOGRAPHY AND COMPUTED TOMOGRAPHY (PET/CT) FOR INTRATHORACIC NODAL STAGING

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Objectives

To compare the accuracy of integrated PET/CT for the preoperative assessment of intrathoracic nodal status between patients with adenocarcinoma (AD) and those with squamous cell carcinoma (SQ).

Methods

Retrospective study of 353 consecutive patients with clinically resectable NSCLC who underwent surgical nodal staging after integrated PET/CT had been obtained. Histological results were used as reference standard.

Results

A total of 2286 nodal stations (1643 mediastinal, 333 hilar and 310 intrapulmonary) were assessed. Prevalence of N disease was 32.4% (79/244; N1=31; N2=47; N3=1) and 29.3% (32/109; N1=21; N2=11) in AD and SQ patients, respectively. PET/CT staged the disease correctly in 193/244 (79.1%) AD patients and 91/109 (83.5%) SQ patients. Understaging occurred in 37 (15.2%) and 4 (3.7%) patients, and overstaging in 14 (5.7%) and 14 (12.8%) patients, respectively. PET/CT had lower sensitivity (53.8% [43/80] vs 87.5% [28/32]; $p=0.0005$) and accuracy (79.1% [193/244] vs 3.5% [91/109]; $p=0.2$), and higher specificity (91.5% [105/164] vs 81.8% [63/77]; $p=0.02$) in AD patients than in SQ patients. In AD patients, median short-axis diameter of lymph node stations and median maximum standardized uptake value of primary tumors that yielded false-negative results on PET/CT were significantly lower compared with those that yielded true-positive results on PET/CT (6.5mm vs 12.0mm, $p<0.001$, and 7.5 vs 11.2, $p=0.002$, respectively). In the detection of mediastinal nodal metastasis, PET/CT showed decreased sensitivity (38.8% [19/49] vs 81.8% [9/11]; $p=0.01$) and increased specificity (97.4% [190/195] vs 91.8% [90/98]; $p=0.03$) in AD patients in comparison with SQ patients. Accuracy did not differ between the two groups of patients (85.7% [209/244] vs 90.8% [99/109], respectively; $p=0.1$).

Conclusions

In patients with clinically resectable NSCLC, diagnostic characteristics of integrated PET/CT remain suboptimal for the assessment of nodal status. Invasive procedures for confirmatory tissue diagnosis are needed for accurate preoperative nodal staging.

Disclosure: All authors have declared no conflicts of interest.

P-120

VAGAL-SPARING RADICAL OESOPHAGECTOMY IMPROVES LONG-TERM FUNCTIONAL RESULTS WITHOUT COMPROMISING ONCOLOGICAL OUTCOME IN PATIENTS WITH CARCINOMA

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Objectives

The intersection of vagus nerves routinely accompanies oesophagectomy is the main cause of digestive disorders during years after operation. With the aim to improve long-term quality of life we modified routine procedure with preservation of vagus nerves.

Methods

We evaluated the quality of life in 19 patients (T1N0M0-T2N1M0) who undergone the radical vagal-sparing oesophagectomy (2005-2009) with 29 patients that were operated in the routine mode. The quality of life was accessed by evaluating motor activity of gastric reservoir with radiolabeled meal and QLQ-EORTIC questionnaires.

Results

There were no specific complications established in vagal-sparing group (VSG). All patients from VSG were observed more than 12 months. No local recurrences were diagnosed. In 1 year after operation the progression of the disease was found in one case (T2N1M0). The motor function of gastric reservoir assessed in technetium gastric emptying scan and was 22 % on average after surgery (56% after standard surgery, 14% in healthy persons) after surgery and 24%, 18% and 26% in 6, 12, 24 months appropriately. According to our data patients after vagal-sparing oesophagectomy did not suffer from delayed stomach emptying and dumping. Weight loss (5-15%) was detected in 7 (30%) patients in VSG and in 16 (55%) patients after routine procedure. Quality of life was significantly higher in this group of patients also according to questioning.

Conclusions

Vagal-sparing oesophagectomy in patients with carcinoma significantly improves the quality of life and can be considered as the alternative to routine procedure in patients with early stage disease.

Disclosure: All authors have declared no conflicts of interest.

P-121

EFFECTIVENESS OF ANTIREFLUX SURGERY (FUNDOPLICATION) FOR THE CURE OF CHRONIC COUGH ± ASSOCIATED WITH GOR SYMPTOMSG.M. Guiducci¹, M. Lugesesi¹, Alberto Ruffato¹, B. Aramini¹, P. Candoli², S. Mattioli¹¹*Center For The Study and Therapy of Diseases of The Esophagus, Division of Thoracic Surgery Alma Mater Studiorum - University of Bologna, Bologna/ITALY,*²*AUSL Ravenna, Division of Pneumology, Lugo/ITALY***Objectives**

The outcome of surgical therapy for atypical extra-oesophageal symptoms allegedly secondary to GORD is controversial. Aim of this study was to assess the results of antireflux surgery in patients affected by 1) typical, 2) typical + atypical, (chronic cough), in whom a dedicated preoperative work up was performed.

Methods

Between 1995-2010, 151 patients with GORD-related typical and/or atypical symptoms were submitted to antireflux surgery. 100% preoperatively underwent semi-quantitative evaluation of typical/atypical symptoms, chronic cough and oesophagitis, barium swallow, endoscopy and histology and oesophageal manometry, (24 hour pH-recording or intraluminal impedance/pH monitoring system in the absence of gross oesophagitis). In addition, patients with chronic cough underwent chest HRCT scan, methacholine challenge test and spirometry. Surgery was performed exclusively on patients positive for GORD and negative for pulmonary diseases. Preoperative tests for GORD were repeated at follow-up.

Results

Patients were ordered into two groups: A) 83 patients with typical symptoms only, B) 68 patients with typical symptoms and chronic cough. See table for preoperative clinical and instrumental assessment, type of surgery, morbidity, mortality, follow up and outcomes. In both groups, antireflux surgery demonstrated to significantly improve typical symptoms. The global score for outcome showed no significant differences between group A and B. In group B, antireflux surgery significantly improved chronic cough as well.

Conclusions

The preoperative work up was highly effective in selecting patients for antireflux surgery which achieved very satisfactory results in the treatment of GORD and GORD-related chronic cough.

Disclosure: All authors have declared no conflicts of interest.

		Group A		Group B	
Mean Age (years) (range)		57 (12-80)		57 (12-80)	
Gender		25 (49%)		22 (41%)	
procedures		18 (35%)		13 (24%)	
Followed Up Patients No (%)		21 (100%)		17 (100%)	
Mean Follow Up (months)		22 (2-100)		22 (2-100)	
Weight		70 (2-100)		70 (2-100)	
		Preop	Postop	Preop	Postop
Malaise	0 (0%)	1 (5%)	1 (5%)	2 (9%)	0 (0%)
Symptoms (Typical)	1 (2-4week)	5 (9%)	8 (12%)	12 (19%)	12 (19%)
No (%)	2 (2-4week)	36 (61%)	2 (2%)	24 (39%)	1 (1%)
	3 (3-6w)	43 (67%)	0	30 (44%)	0
p (Preop, Vs postop)		p = 0.001		p = 0.003	
Myalgia	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No (%)	1 (2-4week)	42 (52%)	12 (12%)	20 (20%)	46 (12%)
	2 (2-4week)	28 (34%)	2 (2%)	11 (10%)	6 (6%)
	3 (3-6w)	4 (5%)	0	1 (1%)	0
p (Preop, Vs postop)		p = 0.005		p = 0.001	
Exacerbate	0 (0%)	42 (51%)	11 (10%)	38 (38%)	61 (13%)
No (%)	1 (2-4week)	31 (37%)	10 (12%)	2 (2%)	6 (6%)
	2 (2-4week)	9 (11%)	6 (6%)	2 (2%)	0
	3 (3-6w)	1 (1%)	2 (2%)	2 (2%)	0
p (Preop, Vs postop)		p = 0.014		p = 0.006	
Exacerbate	0 (0%)	18 (19%)	7 (7%)	18 (18%)	63 (14%)
No (%)	1 (week)	18 (18%)	2 (2%)	18 (17%)	2 (2%)
	2 (week)	39 (37%)	7 (7%)	28 (27%)	3 (3%)
	3 (week)	22 (19%)	0	10 (10%)	0
p (Preop, Vs postop)		p = 0.004		p = 0.001	
Chronic	0 (0%)			0	0 (0%)
Cough	1 (week)			13 (12%)	6 (6%)
No (%)	2 (week)			26 (24%)	1 (1%)
	3 (week)			10 (10%)	0
p (Preop, Vs postop)				p = 0.000	
Glucose	0 (normal, HDL, CG, ETC)	11 (10%)		16 (17%)	
Outflow	1 (normal, HDL, CG, ETC)	24 (22%)		18 (17%)	
	2 (fast, HDL, CG, ETC)	6 (5%)		4 (4%)	
	3 (fast, HDL, CG, ETC)	0		7 (7%)	
p (Preop, Vs postop)				p = 0.100	
p (Preop, Vs group B)				p = 0.100	

Table

P-122

NEW METHOD OF MINIMALLY INVASIVE TREATMENT OF ESOPHAGEAL ACHALASIA COMBINING LAPAROSCOPIC TECHNIQUE AND ENDOSCOPIC ASSISTANCE APPROACHES

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Objectives

Esophageal achalasia is a rather rare pathology of the esophagus. According to literature data its morbidity doesn't exceed 0.7 cases for 100 000 people. Laparoscopic esophagogastromyotomy for achalasia based on Heller method is the operation of choice, however, such of complications as perforation, dysphagia, gastroesophageal reflux, recurrence of the disease are possible. The aim was to work out a new method of minimal-invasive treatment of achalasia, based on the combination of operation of forming esophagogastic anastomosis and antireflux procedures.

Methods

Within 2008- 2010 in the of Brest regional hospital 19 patients with the diagnosis of achalasia were treated. Stage I of the disease was diagnosed in 2 patients, stage II – in 11 and stage III in 6 patients. In eight of them (4 patients with the 2nd and the 4 with the 3rd stage) surgical procedure consisted in apparatus esophagogastic anastomosis by analogy with Gröndahl's operation and Toupet fundoplication. The application of the cutting-suturing stapler allows forming esophagofundo-anastomosis for a longitude of 4.5 cm, which means complete dissection of the distal esophageal sphincter.

Results

The duration of the first operations was 140±15 minutes and for 70±15 minutes now. Intraoperative hemorrhage was 50-70 millilitres. The next day after the operation all the patients began fluid diet. One patient with the 3rd stage of esophageal achalasia in the early postoperative period had dysphagia of the 2nd degree, which was treated conservatively. The results of the treatment in 8 patients showed stable positive clinical effect without any seriously complications.

Conclusions

The suggested by us technique of laparoscopic transgasric surgery of esophageal achalasia with endoscopic assistance (BY patent priority 20091189) is minimalinvasive, pathogenetically based and clinically effective, which allows to recommend it for implementation in practice as a method of choice.

Disclosure: All authors have declared no conflicts of interest.

P-124

AVOIDING ANASTOMOTIC LEAK AFTER MINIMALLY INVASIVE IVOR-LEWIS ESOPHAGECTOMY THROUGH A STRICT POSTOPERATIVE FEEDING PROTOCOLCiprian Bolca¹, M. Methot², M. Losano Brotons², M. Conti², E. Frechette²¹*1st Clinical Department of Thoracic Surgery, 'Marius Nasta' National Institute of Pneumology, Bucharest/ROMANIA,*²*Thoracic Surgery, Institut Universitaire de Cardiologie et de Pneumologie, Quebec/QC/CANADA***Objectives**

Anastomotic leak is one the most common complications of esophagectomy. Minimally invasive techniques of esophagectomy are performed with increasing frequency, but it is unclear if these emerging techniques could allow a reduction of this serious complication. To review the initial experience of a university center in performing minimally invasive Ivor-Lewis esophagectomy (MIILE) in order to identify factors associated to the development of postoperative anastomotic leaks.

Methods

Charts of all patients undergoing MIILE in a single center between Mars 2006 and December 2010 where reviewed. Operative results were collected and patients were divided in two groups, before and after the instauration of a strict postoperative protocol that included: 1) retarding oral feeding to the 7th postoperative day, 2) immediate pyloric dilation for any sub-optimal gastric emptying on contrast swallow before starting the oral diet, and 3) continuing outside-patient jejunostomy feeding at night to 80% of patients caloric needs up to the 30th postoperative day.

Results

There were a total of 33 patients, 17 in the earlier group and 16 in the following group. Malignancy was the main indication for surgery (27 - ADK, 5 - SCC). There was one conversion to open thoracotomy (3%). Overall, the mortality rate was 6% (2 patients) and the anastomotic leak rate was 9% (3 patients). All 3 anastomotic leaks occurred in the earlier group of patients. There was no leak following the postoperative protocol instauration, signifying a reduction of anastomotic leak rate from 18% to 0% (p=0.23).

Conclusions

Although the increasing experience of the surgical team over time must be considerate, the results of this study suggest that the adoption of a strict feeding protocol may minimize the risk of developing postoperative anastomotic leak in patients undergoing MIILE.

Disclosure: All authors have declared no conflicts of interest.



P-125

DELAYED ANASTOMOTIC RECONSTRUCTION FOR THE COMPROMISED GASTRIC CONDUIT

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Major anastomotic disruption and dehiscence is one of the most devastating complications of esophageal reconstruction. Reconstruction is challenging if not well planned at the first intervention. Patients who require esophagectomy with a compromised conduit, require a staged esophageal reconstruction algorithm to provide both excellent survival and long term functional results.

Methods

Nine patients with either benign (6) or malignant (3) disease underwent urgent (3) or emergent (6) operation via transhiatal (8) or transthoracic (1) esophagectomy with placement of the gastric (8) or colonic (1) conduit in the cervical position without anastomosis. Formation of a long esophagostomy placed on the anterior chest was performed in all patients. All patients treated in this fashion survived to their second stage reconstruction, which required cervical exploration and esophagogastric anastomosis at an average of 4 months (2-7 months).

Results

No post-operative leaks occurred, and all patients underwent Barium swallow at 7 days postoperatively and were taking a regular diet at the time of discharge from the hospital. All patients are able to orally aliment and only 2 patients require intermittent dilatations, both with benign disease.

Conclusions

We provide a management strategy for the marginal conduit which is successful and reproducible. Visual inspection of the conduit, the patients overall condition, the indication for surgery and the judgment of the surgeon are probably as good a predictor of conduit survival when compared to intraoperative viability studies. The long-term complications of anastomotic disruption are so devastating we describe a method for preventing this complication with excellent outcomes, limited morbidity, no mortality and very good long-term functional results.

Disclosure: All authors have declared no conflicts of interest.

P-126

EXTENDED SURGICAL TREATMENT FOR OESOPHAGOGASTRIC JUNCTION ADENOCARCINOMA: 10-YEAR EXPERIENCEAndrei Baranov¹, V. Malkevich¹, L. Ositrova¹, M. A. Pryshchepau¹, V. Zharkov²¹Research Center for Oncology and Medical Radiology, Minsk/BELARUS,²Department of Thoracic Surgery, Research Center for Oncology and Medical Radiology, Minsk/BELARUS**Objectives**

To evaluate the possibility and safety of extended surgical resection in patients with oesophago-gastric adenocarcinoma with involvement of adjacent structures.

Methods

From 1995 to 2005, 156 patients with oesophago-gastric adenocarcinoma were operated in our institution. The patients were divided into 2 groups: group A (98 patients) includes patients without adjacent structures resection and group B (58 patients) with multiorgan resection. The survival rates were calculated by Kaplan-Meier method and the difference between the groups was analyzed by log-rank test.

Results

12 patients were included in TNM classification stage I in group A; 42 patients were in stage II in group A and 15 in group B; 41 patients were in stage III in group A and 22 in group B; 3 patients were in stage IV in group A and 21 in group B. In group B only one adjacent structure was resected in 52% of cases (30 patients) and multiple organs (2 or more adjacent organs) resection was performed in 48 % (28 patients). The involved organs were spleen in 23 patients, diaphragm in 14 patients, pancreas in 20 patients, mesocolon in 6 and liver in 3 patients. The postoperative mortality was 5,1 % in group A (5 patients) and 6,9 % in group B (6 patients). The leading cause of postoperative mortality in both groups was septic conditions with multiorgans failure. The postoperative morbidity was 26,5% in group A and 25,8% in group B. The 5-year survival was 28% in group A and 13% in group B.

Conclusions

The extended surgical resection in T4 patients with oesophago-gastric junction adenocarcinoma is a valuable approach and does not lead to increased postoperative mortality and morbidity in comparison with patients without adjacent structures resection.

Disclosure: All authors have declared no conflicts of interest.

P-127

PROGNOSTIC SIGNIFICANCE OF HIGH PODOPLANIN EXPRESSION AFTER CHEMORADIOTHERAPY IN ESOPHAGEAL SQUAMOUS CELL CARCINOMA PATIENTS

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Objectives

Podoplanin(PP) antibody has been widely used to stain lymphatic endothelium for evaluating lymphatic microvessel density (LMVD). Tumor cell PP immunoreactivity had also been reported to associate with poor outcome in non-chemoradiotherapy pretreated upper-aero- digestive-tract SCC. Here we investigated whether tumor PP expression after CRT in esophageal SCC also predicted poor outcome.

Methods

We evaluated the PP immunoreactivity in one hundred and thirteen post CRT-treated ypT3N0 esophageal SCC patients by immunochemistry method. The impact of cancer PP expression intensity on patient survival was judged in combination with clinical and pathological descriptors (lymphovascular invasion(LVI), tumor differentiation and circumferential resection margin(CRM)).

Results

There were 109 males and 4 females (mean age, 57.6 years; range: 38–79 years) with the mean tumor length of 5.32cm. 95% patients had PP immunoreactivity on tumor while 38.1% of them were judged as high. High PP expression tumors had higher percentage of LVI but had no association with positive CRM or tumor differentiation. Multivariate analyses revealed tumor PP immunoreactivity and CRM as independent prognostic factors for survival. Patients with positive CRM and high PP expression had worst survival followed by those with either positive CRM or high PP and patients without any of the 2 events(5yr DSS: 5% vs. 20% vs. 40%, $P<0.01$).

Conclusions

Tumor PP immunoreactivity in conjunction with CRM status are useful markers to identify aggressive post-CRT treated ypT3N0 esophageal SCC.

Disclosure: All authors have declared no conflicts of interest.

P-128

NEO-ADJUVANT CHEMOTHERAPY INCREASES THE RISK OF ATRIAL FIBRILLATION FOLLOWING OESOPHAGECTOMY

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Atrial fibrillation (AF) adds to pre-existing morbidity in an increasingly older population of patients undergoing surgery for intra-thoracic malignancy. We examined risk factors for new onset AF following oesophagectomy for cancer in an attempt to guide prophylactic use of anti-arrhythmic drugs.

Methods

A retrospective interrogation of a database of patients who underwent oesophagectomy between 1991 and 2009 was carried out. Patients with pre-operative arrhythmias were excluded leaving 997 patients for further analyses. Patients who developed AF were compared to the rest. Univariate and multivariate logistic regression analyses were performed to identify factors predicting AF. Survival curves were produced by the Kaplan-Meier method (log-rank test for comparison). Statistical significance was reflected in a p value <0.05.

Results

Patients who developed AF (n=209; 20.96%) included 141 males (19.9% of males) and 68 females (23.6%)(p=0.11) and were older (median age 70.54 vs 66.9; p<0.01). Patients with AF were noted to have a higher in-hospital mortality rate (n=17; 8.1% vs n=38; 4.8%)(p=0.04), longer stay in hospital (median 14 vs 12 days; p<0.01), and a greater risk of developing pulmonary embolism (n=10; 4.8% vs n=12; 1.5%; p<0.01) but not anastomotic leak (n=15; 7.2% vs 53; 6.7%; p=0.46). AF did not affect long-term survival (median survival 18.19±2.3 vs 19.77±1.09 months; p=0.42). Multivariate analysis identified age and neo-adjuvant chemotherapy to be independent predictors of the risk of developing post-operative AF.

Conclusions

Age and neo-adjuvant chemotherapy are independent predictors of the risk of developing AF after oesophagectomy. AF was associated with a higher mortality and length of stay in hospital but did not affect overall survival. However, AF is a frequent occurrence after major thoracic surgery and a better understanding of its mechanisms is necessary before prophylactic strategies are considered.

Disclosure: All authors have declared no conflicts of interest.

P-129

LOCALLY ADVANCED ESOPHAGEAL ADENOCARCINOMA: NEOADJUVANT RESPONSE AND SURVIVAL CAN BE PREDICTED BY [18F]FDG-PET-CT

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Objectives

[18F]Fluorodeoxyglycose-Positron Emission Tomography/Computer Tomography (PET/CT) is commonly used in staging of locally advanced (cT2N1M0-T34N0-1M0) esophageal adenocarcinoma. The value of PET/CT in predicting overall survival or neoadjuvant response is unclear.

Methods

58 consecutive patients with locally advanced esophageal adenocarcinoma were operated after neoadjuvant therapy (52 patients received chemo- and 6 radiochemotherapy). Staging was done prospectively using PET/CT before and after completion of neoadjuvant therapy. Pre- and posttherapy maximal standardized uptake values (SUV1 and SUV2) were determined, and their relative change (SUV^Δ%) was calculated. SUVs and their changes were compared with histopathologic response and overall survival.

Results

Histopathologic response (less than 10% vital tumor cells in resected tumor bed) was achieved in 13/58 patients (22.4%). Median follow-up time was 17.5 months (range 4-62 months). Overall survival probability at 3 and 5 years was 57.1% (Kaplan-Meier). In ROC analysis, histopathologic response was optimally predicted by an over 47% change in baseline maximal SUV (SE 100%, SP 53.33%, PPV 38.24% and NPV 100%). In univariate survival analysis, (Kaplan-Meier, Log-rank) association with prolonged overall survival was found with histopathologic response (p=0.036), male gender (p=0.009), SUV^Δ% ≥47% (p=0.003), ypN- (p=0.002) and ypM- (p<0.0001) categories. In Cox regression proportional hazards survival analysis (same model with histopathologic response, gender, ypN and ypM categories), SUV^Δ% ≥47% (HR 0.250, p=0.010) was independently associated with good prognosis.

Conclusions

Our results suggest, that PET-CT could be used to exclude patients who will not have complete histopathologic response. However, this finding should not be used to guide treatments algorithms since patients with even partial response seem to have favorable prognosis. As an independent prognostic marker, PET-CT results can contribute to clinical decision making.

Disclosure: All authors have declared no conflicts of interest.

P-130

THE ROLE OF PLEURECTOMY FOR THE TREATMENT OF MASAOKA STAGE IVA THYMOMAServet Bölükbas¹, M. Eberlein², N. Kudelin¹, J. Schirren¹¹*Thoracic Surgery, Dr. Horst Schmidt Klinik, Wiesbaden/GERMANY,*²*Division of Pulmonary and Critical Care Medicine, Johns Hopkins University School of Medicine, Baltimore/MD/UNITED STATES OF AMERICA***Objectives**

The treatment for Masaoka stage IVa thymoma is not standardized. Pleuropneumectomy is associated with high morbidity and mortality. We investigated the outcome of pleurectomy in locally advanced Masaoka stage IVa thymoma.

Methods

The office records of all patients diagnosed with thymoma at Masaoka stage IVa were reviewed between January 2000 and December 2010 at a single institution. Eleven patients (56 women, age 50.3 ± 14.4 years) were included in the study. Preoperative clinical staging included computed tomography, magnetic resonance imaging of the chest as well as needle biopsy for histological classification in all patients. World Health Organization classification were Typ C (n=6), Type B3 (n=3) and Type AB (n=2), respectively

Results

Three patients were inoperable at the time of surgery after 6 cycles of platinum-based induction chemotherapy due to infiltration of the arcus aortae (n=2) and conus pulmonalis (n=1). These patients underwent chemoradiation therapy afterwards. Eight patients underwent complete mediastinal tumor resection and pleurectomy. Complete pleurectomy was performed in 2 patients. Two patients had 4 cycles of platinum-based induction chemotherapy. Six patients without induction therapy proceeded to adjuvant chemoradiation (n=3) and adjuvant radiation (n=3), respectively. Morbidity was observed in 2 patients (25%) including chylothorax and necessity of mechanical ventilation because of myasthenic crisis. No mortality occurred. Mean Follow-up was 40.3 ± 22.4 months. No patient was lost to follow-up. Pleurectomy was associated with prolonged survival (66.1 ± 3.6 months) compared to unresectable patients who underwent chemoradiation (22.4 ± 9.2 months, $p=0.017$).

Conclusions

Pleurectomy can be performed with low morbidity and mortality in locally advanced Masaoka stage IVa thymoma. Despite imaging studies exploratory thoracotomies might occur because of possible gray zones in distinguishing between tumor invasion and attachments. Long-term survival might be achieved in highly selected patients. The timing (neoadjuvant vs. adjuvant) of chemotherapy and radiotherapy remains unclear.

Disclosure: All authors have declared no conflicts of interest.



P-131

IS THORACOSCOPIC THYROIDECTOMY SUPERIOR TO STERNOTOMY IN THE MANAGEMENT OF BENIGN RETROSTERNAL GOITER? TEN YEARS EXPERIENCE AT A SINGLE THORACIC UNIT

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Objectives

To evaluate the use of a combined thoracoscopic and cervical approach as an alternative to sternotomy in the management of retrosternal goiter.

Methods

A consecutive series of 24 patients referred for thoracic surgical input for benign retrosternal goiter was reviewed from 2001 till 2010. The surgical approach was decided during preoperative discussion between endocrine and thoracic surgeon. In the majority of cases the operation commenced with trial cervical dissection. Our surgical intent was to mobilise the intrathoracic thyroid component by video assisted thoracoscopic surgery (VATS) if inferior excision could not be completed. The procedure was performed via three 2cm ports under single lung ventilation using sharp and blunt dissection. In all VATS cases a right axillary approach was used. In selected cases primary open surgery was performed due to the size and location of the gland.

Results

Of 23 patients (8 male:15 female) referred by endocrine surgeons: 10 patients had cervical incision alone; 7 patients required open thoracic surgery (two converted VATS) and in 6 successful VATS mobilisation was achieved. VATS thyroidectomy took no longer than cervical or open surgery: 180(120-240) min vs 180(90-240) min; $p=0.35$ and patients were discharged a day earlier: 4.5(3-7) days vs 6(3-66) days; $p=0.4$. There was a trend towards smaller glands being suitable for VATS: maximum diameter 6.25(4-14.5) vs 10.5(5.5-15) cm; $p=0.08$. There was no significant difference in epidural analgesic requirement between the VATS and open groups.

Conclusions

VATS thyroidectomy in selected patients is a valid and safe option where the gland is small enough to be delivered through the thoracic inlet. Advantages over conventional surgery are less pain, minimal scar, and shorter hospital stay. In many suspected cases of thoracic entrapment thoracic input is not required- a fact which should be considered in logistic planning.

Disclosure: All authors have declared no conflicts of interest.

P-132

INTRA-THORACIC LYMPH NODE INVOLVEMENT IN EXTRA-THORACIC MALIGNANCIES: DIAGNOSTIC VALUE OF PET-CTAlper Findikcioglu¹, D. Kilic², T. Canpolat³, M. Aydin⁴, A. Hatipoglu²¹*Thoracic Surgery, Baskent University Adana Hospital, Adana/TURKEY,*²*Thoracic Surgery, Baskent University Ankara Hospital, Ankara/TURKEY,*³*Pathology, Baskent University Adana Hospital, Adana/TURKEY,*⁴*Nuclear Medicine, Baskent University Adana Hospital, Adana/TURKEY***Objectives**

Intra-thoracic lymph nodes may be affected due to an extra- thoracic malignancy. In this study, pure mediastinal and hilar lymph node involvement in extra-thoracic malignancies were evaluated. Diagnostic value of size of the lymph nodes and FDG uptake values compared with histopathological results.

Methods

Twenty-two patients (16 female and 6 male, mean age was 59,14) with extra-thoracic malignancies underwent surgical lymph node biopsies because of suspect of mediastinal or hilar lymph nodes metastasis . Chest CT and FDG PET-CT were used in screening for metastases. If the mediastinal lymph node greater than 10 mm and /or SUV Max value > 2.5 the patient underwent video-mediastinoscopy for mediastinal lymphadenopathy and video-thoracoscopy for hilar lymph node biopsies.

Results

Metastatic lymph nodes were diagnosed in 10 of the 22 patients (%45). The most common malignity caused mediastinal and hilar lymphadenopathy were colon-rectum carcinoma (%27) (figure 1). Lymphadenectomy was done for single lymphadenopathy in 8 of the patients. Malign metastasis were frequent in single hilar lymphadenopathies (%62.5) whereas less common in multiple lymphadenopathies (%35.7). SUV Max values , size and histopathology of the lymph nodes are shown in table 1.

Conclusions

Mediastinal and hilar lymph node metastases may affect the choice of treatment and survival rates in extra-thoracic malignancies. Neither CT, nor PET-CT can provide the differential diagnosis. Lymph node size and SUV Max uptake values can be misleading, histopathological diagnosis is necessary for correct staging and appropriate treatment of the disease. Total lymphadenectomy via videothoracoscopy or videomediastinoscopy may also provide metastatectomy in case of single lymph node metastasis

Disclosure: All authors have declared no conflicts of interest.

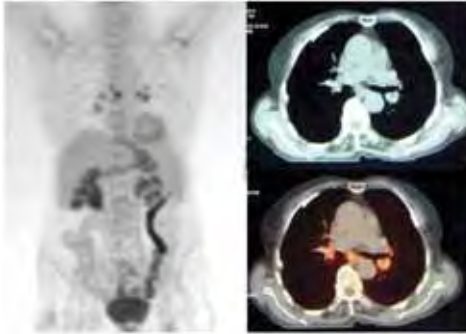


Figure 1: PET-CT images of a 73 years old woman with colon cancer. FDG uptake values of the hilar and mediastinal lymph nodes were resembling intrathoracic lymphatic metastasis. Histopathologic examination of the lymph nodes were sarcoidosis.

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	Sarcoidosis	Tuberculosis	Malign met.	Total	p
Patients (n)	5	7	10	22	
Suv Max	12,14±5.66	8,75±1.75	9,19±4.35	9,72±4,11	0,33
Lymph node size (mm)	22,60±12.58	16,14±4,91	19,70±5,71	19,23±7,55	0,34

P-133

**POST-OPERATIVE OUTCOME AFTER THYMECTOMY:
THE CRUCIAL ROLE OF THE PRE-OPERATIVE CLINICAL RISK
STRATIFICATION**

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Objectives

Clinical risk stratification score in patients underwent thymectomy is still unclear and to date, no clinical factors have been clearly identified as predictors of post-operative complications . The aim of this study is to analyze post-operative outcome after trans-sternal thymectomy for myasthenia gravis (MG) or thymomatous disease.

Methods

From 01/03 to 12/07, the data of 86 patients who underwent trans-sternal thymectomy were prospectively collected. The following preoperative features were evaluated: sex, age, body mass index, grade of symptoms (MGFA/Osserman-Classifications), disease interval, existence of thymoma and Masaoka Staging, history of myasthenic crisis, doses of anticholinesterase drugs, steroid use, pulmonary function, blood gases analysis, presence of other disease, operation time and blood loss. In all cases MG was substantially well-controlled by the drug-therapy before surgery. Myasthenic patients were admitted in Intensive Care Unit [ICU] (for the first 24 hrs) after surgery. All the variables showing a potential association with perioperative outcome ($p < 0.10$) were entered into a multivariate analysis (Cox proportional hazard model) to identify independent predictive factors.

Results

Mean hospitalization stay and mean ICU stay were 7.53 ± 2.6 days and 27.0 ± 14.3 hours, respectively Post-operative morbidity was 11,6% (10 patients) and blood transfusions were needed in 34 cases (39,5%). One patient died (30-day mortality:1,2%). The results of logistic regression analysis are reported in Table 1. Osserman grade is proven to be the only independent predictive factor for post-operative complications while none of the pulmonary functional values seems to be significant. Additionally ICU-stay is longer in patients with previous history of myasthenic crisis.

Conclusions

When a pre-operative good neurological status is achieved, the Osserman grade is the only independent predictive factor of post-operative outcome after trans-sternal thymectomy.

Disclosure: All authors have declared no conflicts of interest.

POSTOPERATIVE COMPLICATIONS				
	Univariate		Multivariate	
	OR (95% CI)	p	OR (95% CI)	P
Myocardial Infarct	0.27 (0.12-0.62)	0.001	-	100
Cerebrovascular	0.21 (0.09-0.52)	0.001	0.10 (0.05-0.17)	0.007
Stroke	0.27 (0.12-0.62)	0.001	-	100
Multi-Drug Therapy	0.49 (0.23-1.06)	0.044	-	100
Atelectasis	0.77 (0.40-1.52)	0.001	-	100
ICU STAY < 24 HOURS				
	Univariate		Multivariate	
	OR (95% CI)	p	OR (95% CI)	P
AAA	1.01 (0.70-1.47)	0.93	-	100
Diaphragm	0.48 (0.29-0.81)	0.003	-	100
ICU STAY > 24 HOURS				
	Univariate		Multivariate	
	OR (95% CI)	p	OR (95% CI)	P
Aortic	0.21 (0.09-0.52)	0.001	-	100
Myocardial Infarct	0.21 (0.09-0.52)	0.001	-	100
Myocardial Infarct	0.21 (0.09-0.52)	0.001	0.01 (0.01-0.17)	0.001

P-134

DESCENDING NECROTIZING MEDIASTITIS: IMPROVING SURVIVAL WITH A NOVEL TREATMENT ALGORITHM

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Objectives

Necrotizing mediastinitis (NM) is a highly lethal and uncommon infectious process. We hypothesized that an algorithmic approach utilizing surgical debridement and frequent cervicothoracic imaging would decrease morbidity and mortality.

Methods

We prospectively applied a treatment algorithm for NM that focused on serial operative debridement guided by cervicothoracic computerized tomography (CT). Charts were then retrospectively reviewed to collect data including demographics, comorbidities, laboratory/culture results, operative details, imaging frequency/findings, complications, and survival. Continuous variables were reported as median value and range.

Results

From 2007-2010, 7 NM patients received care according to the algorithm. The typical patient underwent 11 imaging studies (4-19) and required 4 operative debridements (1-15)(Table). Patients received 6 antibiotics (2-10) for 42 days (40-55). Median hospitalization was 33 days (16-55). We achieved 100% survival (median follow-up 15.4 months), with no major complications, readmissions, or reinfections.

Conclusions

Application of a systematic approach to NM treatment reduced mortality. Patients had excellent outcomes despite the widely known lethality of this condition, suggesting that such an algorithmic approach decreases complications and improves survival.

Disclosure: All authors have declared no conflicts of interest.



Demographics	Age in years (range)	33 (28-63)
	Male	5 (71%)
Pathophysiologic Process	Pharyngitis	3 (43%)
	Sternoclavicular infection	2 (29%)
	Benign tracheal fistula	1 (14%)
	Pharyngeal injury	1 (14%)
Bacterial Etiology	Peptostreptococcus	4 (57%)
	Streptococcus anginosus	5 (71%)
Procedure	Neck exploration	5 (71%)
	Thoracotomy	4 (57%)
	Thoracoscopy	2 (29%)
	Thymectomy	2 (29%)
	Bone resection	2 (29%)
	Muscle resection	2 (29%)
	Anterior mediastinotomy	1 (14%)
	Carotid sheath exploration	1 (14%)
Hospital Course	Imaging studies (range)	11 (4-19)
	Debridements (range)	4 (1-15)
	Total antibiotics (range)	6 (2-10)
	Antibiotic duration in days (range)	42 (40-55)
	Length of stay in days (range)	33 (16-55)
	Intensive care stay in days (range)	12 (7-48)
Outcomes	Survival	7 (100%)
	Reinfection	0 (0%)
	Readmission	0 (0%)
	Major complication	0 (0%)

P-135

THE PATHOLOGICAL MASAOKA STAGE IS THE MOST IMPORTANT PREDICTOR OF RECURRENCE IN RESECTED THYMOMA

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Objectives

The rate of recurrence is a better measure of outcome after resection of thymoma than overall survival because of the indolent behavior of thymoma.

Methods

We have performed a multivariate analysis of predictive factors in 305 patients surgically treated for thymoma from 1987 to 2009 to define which factors independently predict recurrence.

Results

Out of 305 patients, 41 patients had recurrence (13.4%). The recurrence rate was 0% (0/19), 6.3% (4/63), 4.2% (2/48), 18.6% (11/59), 20.7% (24/116) in type A, AB, B1, B2, B3 tumors, respectively. The recurrence rate according to Masaoka stage was 6.1% (8/132), 11.4% (13/114), 26.8% (11/41), 50.0% (9/18) in stage I, II, III, IV, respectively. In univariate analysis, operation type performed (extended thymectomy vs thymomectomy), resection type (R0 vs R1), WHO histologic type (A,AB,B1 vs B2,B2), pathological Masaoka stage, size of tumor (<8 cm vs ≥8 cm) and type of adjuvant therapy presented significant difference on freedom from recurrence after resection of thymoma. In multivariate analysis, only the pathological Masaoka stage was significantly independent predictor on recurrence (HR, 1.595; 95% CI, 1.140-2.232; p=0.006).

Conclusions

The recurrence of thymoma after resection is correlated with WHO histologic type and the pathological Masaoka stage. The pathological Masaoka stage is the most important predictor of recurrence.

Disclosure: All authors have declared no conflicts of interest.

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SUPPURATIVE THORACIC INFECTIONS CAUSED BY STREPTOCOCCUS MILLERIPeter Tcherveniakov¹, E. Svennevik¹, K. Kostopanagiotou¹, R. Milton¹, K. Papagiannopoulos²¹*Thoracic Surgery, St. James's University Hospital, Leeds/UNITED KINGDOM,*²*Thoracic Surgery Dept., Leeds Teaching Hospitals Trust, St. James's University Hospital, Bexley Wing, Leeds/UNITED KINGDOM***Objectives**

Streptococcus milleri (SM) are normal colonizing bacteria of the gastrointestinal and genitourinary tract, which can manifest high virulence causing aggressive tissue destruction throughout the body. We aim to make surgeons appreciate the deleterious nature of this organism by presenting our experience in managing suppurative thoracic infections caused by SM.

Methods

This is a retrospective case series comprising four patients with complicated suppurative SM thoracic infections who were referred to our thoracic surgical unit over the past 24 months. For each of these cases we examine the presenting features, the extent and progression of the infection, and management.

Results

Two patients presented with empyema and required multiple surgical procedures, including thoracotomy with extensive soft tissue debridement and pleural drainage, vacuum dressing applications, and musculocutaneous flap reconstruction (figure 1). Patient after initial soft tissue debridement (left) and after muscle flap reconstruction with skin grafts (right). The other two patients presented with descending mediastinitis resulting from either peritonsillar or dental abscess and underwent multiple open debridements with wide drainage of the neck, mediastinum and affected pleural cavities during prolonged stays in the ICU. One patient required musculocutaneous flap reconstruction. All four patients survived with a mean hospital stay of 41.5 days.

Conclusions

SM infection reaches the thoracic cavity by either aspiration of oral secretions, direct inoculation during instrumentation or trauma, mediastinal descent of cervical infection such as retropharyngeal abscess, or haematogenous spread. They are remarkably resistant to antibiotic treatment alone and therefore urgent surgical intervention is often necessary. According to the literature SM is cultured in up to 50% of the total number of cases of suppurative thoracic infections. This infection carries with it a significant patient morbidity and leads to prolonged ITU and hospital stays. We have found that early awareness and a combination of aggressive medical and surgical management is paramount for successful outcome in patients presenting with suppurative thoracic infections attributed to SM.

Disclosure: All authors have declared no conflicts of interest.



P-137

**RESECTION OF THYMOMA: VATS VS. STERNOTOMY.
DOES IT REALLY MATTER?**

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The aim of this study was to determine the efficacy of thymoma resection with videothoracoscopic surgery (VATS).

Methods

A retrospective review was done on the prospective thymoma database of 110 patient's; records from June 2001 to December 2010. Forty-four patients, who had neoadjuvant treatment or extended resections (23 patients) and patients who had thoracotomy or pleural implants (21 patients) were excluded. Sixty-six patients (Group 1: 30 patients who underwent complete VATS resection) and (Group 2: 36 patients who underwent sternotomy) were analyzed and 2 groups were compared to each other.

Results

Groups were similar in terms of age (p:0.8), gender (p:0.6), WHO classification (p:0.2), presence of myasthenia gravis (p:0.3) and number of complications (p:0.8). Groups showed statistically significant difference in terms of length of postoperative stay (p:0.002) and Masaoka Stage (p:0.05). Further analyses in myasthenia gravis (MG) patients demonstrated that MG patients with VATS (4.7 +/- 2.6) experienced statistically significant shorter postoperative stay than MG patients with sternotomy (13.5 +/- 10.8 days) (p:0.002). However, no benefit was demonstrated with VATS thymoma resection in non MG patients (p:0.3) with regards to length of postoperative stay.

Conclusions

VATS resection of thymoma is a developing technique with demonstrable benefit of postoperative length of stay, particularly in MG patients. This study did not show any benefit in non MG patients other than cosmesis. In these series, mean number of Masaoka Stage in VATS resected patients were smaller than those of sternotomy patients and it may also need to be considered.

Disclosure: All authors have declared no conflicts of interest.

P-138

THE COMBINED EBUS-EUS PROCEDURE: A COMPREHENSIVE, MINIMALLY INVASIVE, DIAGNOSTIC APPROACH TO ALL MEDIASTINAL LYMPH NODE STATIONS IN THORACIC MALIGNANCY

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Objectives

Minimally invasive, endoscopic lymph node aspiration via either Endobronchial Ultrasound (EBUS) or Endoscopic Ultrasound (EUS) is becoming commonplace for the diagnosis and staging of mediastinal lymph nodes in thoracic malignancy. It was hypothesized that a combined EBUS-EUS evaluation during a single procedure could provide comprehensive lymph node staging at all stations and improve the accuracy, diagnostic yield and efficiency of results when compared to a single technique alone.

Methods

Retrospective review of patient data prospectively entered into a clinical research database at a single academic medical center. The diagnostic yield, lymph node biopsy results, lymph node stations evaluated and change in management in 104 consecutive patients who underwent a combined EBUS-EUS procedure over a 12 month period were reviewed.

Results

Combined EBUS-EUS was performed in sixty six patients (63%) for lung cancer staging, 16 (15%) for esophageal cancer staging and 22 (21%) for tissue diagnosis in cases of mediastinal lymphadenopathy. A total of 273 fine needle aspirations were performed. EBUS and EUS were used to biopsy $1,78 \pm 0,09$ and $0,86 \pm 0,06$ lymph node stations per patient, respectively. The combined EBUS-EUS procedure led to biopsy of $2,65 \pm 0,12$ lymph node stations per patient ($p < 0,05$). In 76% of patients, the combined technique allowed for biopsy of an additional lymph node station not attainable using a single technique.

Conclusions

Combined EBUS-EUS allows for the evaluation of a greater number of lymph node stations compared to a single technique alone. The two techniques are complementary and improve mediastinal lymph node staging and diagnosis in thoracic malignancy.

Disclosure: All authors have declared no conflicts of interest.

P-139

MINIMALLY-INVASIVE STRATEGY OF MEDIASTINAL STAGING OF LUNG CANCER

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Objectives

The aim of the study was to assess a minimally invasive strategy for mediastinal staging of lung cancer, incorporating the combined-ultrasound (EBUS-NA plus EUS-NA) and PET-CT.

Methods

A consecutive group of lung cancer patients underwent PET-CT scanning and the combined ultrasound (CUS) imaging of the mediastinum with needle biopsy of N2/N3 nodes. CUS-negative patients underwent pulmonary resection with systematic lymph node dissection. The diagnostic yield of these techniques was calculated for any N2 involvement and for more than minimal N2.

Results

There were 202 patients enrolled, mean age was 64 years. In 106 of them CUS confirmed multi-level or bulky N2/N3 disease and these patients were referred to induction treatment. The remaining 96 patients underwent surgery. The mean number of mediastinal nodes removed was 16. The sensitivity, specificity, PPV and NPV of CUS in detecting any N2 involvement were: 0.89, 0.94, 0.96 and 0.85, respectively. For the more than minimal N2 these figures were: 0.96, 0.93, 0.95, and 0.96, respectively. Incorporation of PET-CT resulted in increase of the sensitivity and NPV of CUS to 0.93 and 0.86 for any N2, and to as high as 0.98 and 0.97 for more than minimal N2, respectively. There were no procedure-associated complications.

Conclusions

1) CUS is safe and accurate, minimally invasive technique of mediastinal staging. 2) Incorporation of PET-CT increases the sensitivity and NPV of CUS. 3) In patients with negative result of both: CUS and PET-CT the risk of any N2 involvement is low and the risk of more than minimal N2 involvement is very low, and these patients do not need invasive mediastinal exploration.

Disclosure: All authors have declared no conflicts of interest.

P-140

**MANAGEMENT OF TOTAL CICATRICIAL LESION OF TRACHEA:
TRANSPLANTATION OF TRACHEA WITH REVASCULARIZATION**

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Objectives

Treatment of subtotal cicatricial stenosis of trachea remains difficult task of modern thoracic surgery.

Methods

37 y.o. patient with complaints to tracheostoma, dyspnoea, productive cough, chest pains. The general condition was heavy due to heavy dyspnoea with desaturation to 84 %. Chest CT and bronchoscopy revealed cicatricial lesion of trachea from 2 cartilage ring up to last cartilage ring above the carina. In addition on the membrane wall there were several blunt canals to mediastinum. The unique way to help was tracheal replacement. The waiting time of donor was 254 days. Donor was 40 y.o. male dead from severe brain trauma. Approach was cervicotomy with partial sternotomy. Trachea was dissected on level of 1 intercartilage interval and in caudal end left tracheobronchial angle was dissected. Thyreotracheal complex was located in mediastinum and cranial and caudal tracheo-tracheal anastomosis's were performed by Vicril 2/0. Anastomosis between left and right inferior thyreoid arteries and brachiocephalic artery was performed. In lateral wall of left brachiocephalic vein inferior thyreoid vein of donor was implanted. After beginning of blood flow we noted perfect pulsation of all donor thyreoid vessels. In 6 hours after operation patient was extubated.

Results

Patient was discharged with free breathing, without tracheostoma and fever. In 3 years after procedure he had undergone stenting on lower part of donor trachea because of compression from outside probably by donor thyreoid gland. In 4 years after TTR patient breathing well. His immunosuppression regimen include cyclosporine A 200 mg/d, methylprednisolone 2 mg/d, mofetyl mycofelonate 2 g/d. He evaluate quality of life as good.

Conclusions

Replacement of trachea with revascularization remains very difficult task of modern thoracic surgery but if performed successfully this procedure might save and improve quality of life of patients with total incurable lesion of trachea.

Disclosure: All authors have declared no conflicts of interest.

P-141**TRACHEO-INNOMINATE ARTERY FISTULA**

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Retrospective analysis of Tracheo-innominate artery fistula cases in our institute.

Methods

An uncommon and life threatening condition that can happen following tracheal reconstruction surgeries. We present a series of 9 cases out of 402 tracheal reconstructive cases done over a period of 25 yrs at our institute. This condition carries a very high mortality rate – 80 to 100% and this rate remains the same even when prompt surgical treatment has been done. Death results from exsanguination and or asphyxia. The principle of surgery is to maintain cerebral perfusion at all times. This was done using a ringed PTFE graft and a temporary shunt to perfuse the cerebral circulation.

Results

4 cases died due to massive haemorrhage before surgery. Five were successfully operated. All cases were seen in the first half of our series.

Conclusions

Prevention of this complication in high risk individuals seems to be the most appropriate strategy at the moment. Surgical advances and better strategies are the need of the hour since a very high mortality is still seen with all modalities of existing surgeries. High index of suspicion and early initiation of surgical correction has been most important predictor of survival. Attention to wound site infection after tracheal reconstruction surgery is very important. In the latter half of our cases we do not skeletonise the innominate artery and when we anticipated that the anastomosis was close to the artery we used an interposition muscle graft.

Disclosure: All authors have declared no conflicts of interest.

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TRANSSTERNAL VS. TRANSCERVICAL APPROACH IN MANAGEMENT OF LEFT MAIN BRONCHIAL FISTULA – INDICATIONS AND TECHNIQUE

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Objectives

Left primitive bronchial fistula remains a severe complication of left pneumonectomy. Medistinal approach methods use a non contaminated operatory field with an cvasinormal anatomy. Classical method of transsternal transpericardic approach, developed in the 60's is now in a competition with minimally invasive surgery, especially with transcervical approach first described by Azorin, in 1996.

Methods

We performed between 2000-2008, 6 cases (4 males, 2 females) of transsternal transpericardic left primitive bronchial fistula. In one case we have relapse after 6 days and one difficult dissection, and in the last 14 months we performed transcervical approach of the left primitive bronchial fistula in two cases, one female (40 yrs.old) and one male (44yrs.old), both with pneumonectomy for destroyed lung parenchyma. In the female case, the interval between pneumonectomy and closure of the stump, was 6 months; in that time, we performed a Clagett window. After bronhial closure, we have filled the remaining cavity with latissimus dorsi flap. The second case, was a transcervical approach, 10 years after left pneumonectomy, during which his recurrent empyema was surgically drained and cleaned through the drain. Full mobilization of the patient was achieved in the next 6 hours after the operation.

Results

In both transcervical cases, the length of the bronchial stump (more than 1,5 cm) allow stapling, we did not drain the second case, and in the first case we remove the drain at 24 h with under 50 cc ml of blood. Mean operating time was reduced to 70 minutes, related to 150 minutes of the transsternal transpericardial approach. In the transsternal group the recovery post sternotomy was simple and classical with drains removed at 48 hours with median loses of 200 ml of blood. Full mobilization in this category was achieved in the 4 th postoperative day, and pain remain for the next 2-4 weeks.

Conclusions

Transcervical approach of the left main bronchus gain ground for reasons of reduction of the operating time and hospital stay, reduction of mortality and morbidity related to transsternal approach, and being a non-shocking and an anatomical method. Yet, the transcervical approach requires a thorough knowledge of the surgical anatomy and adequate technical equipment (vid-comediastinoscope, endoscopic stapler), being addressed to selected patients.

Disclosure: All authors have declared no conflicts of interest.

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BRONCHIAL FOREIGN BODY RETRIEVAL IN CHILDREN USING A LARYNGEAL MASKMerete Christensen¹, N. E. O. Andersen², K. G. Nielsen³, M. Siemsen¹¹*Dept of Cardiothoracic Surgery, University Hospital of Copenhagen, Rigshospitalet, Copenhagen/DENMARK,*²*Dept. of Anesthesiology, University Hospital of Copenhagen, Rigshospitalet, Copenhagen/DENMARK,*³*Dept. of Pediatrics, University Hospital of Copenhagen, Rigshospitalet, Copenhagen/DENMARK***Objectives**

With focus on the use of the flexible bronchoscope through a laryngeal mask (LM), we describe the epidemiology of children with suspected aspiration of foreign body (FB) to the bronchial system. Traditionally a stiff endoscope is used, a method rarely used in our institution.

Methods

Reviewing our surgical database revealed pediatric patients referred to us with suspected FB of the bronchii during a 15 year period (1994 to 2010). Doublechecking the pediatric database made our retrospective material more complete. We registered symptoms, clinical findings and perioperative care.

Results

142 patients under the age of 16 were admitted with suspected FB. Median age was 19 months (7-187). The symptoms were fever 40%, cough 32% and/or stridor 34%, but 15% were unaffected. Chest x-ray was helpful only in half the cases. The anesthesia was mainly induced by intravenous drugs. Only 10 (7%) were performed with a stiff endoscope. A FB was found in 76%. The FB's were located equally in the bronchial system (47% right, 46% left), 6% tracheal. 46% were nuts, 22% were carrots or other inhaled foods. 7% were hairpins (older children). Four patients needed thoracotomy due to impacted FB, and one child suffered perforation from the retrieval basket through the lung. One patient had a minor pneumothorax. Two patients (15 and 18 months) had cardiac arrest, and was braindead and braindamaged on arrival. Seven patients examined with LM were intubated and transferred to ICU : 1 due to laryngeal spasms, 6 due to prolonged awakening, to long procedure or pneumonia. 9 patients were intubated when received or from the start. Length of in-hospital stay was 2.5 days (median, 1-42 days).

Conclusions

We present the largest single center material where the laryngeal mask is first choice when retrieving bronchial foreign bodies, and we find it safe in this setting.

Disclosure: All authors have declared no conflicts of interest.

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MOUNIER-KUHN SYNDROME

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Objectives

Mounier-Kuhn syndrome (tracheobronchomegaly) is a rare clinical entity characterized by marked dilatation of the trachea and central bronchi. Severe atrophy of the longitudinal elastic fibers with thinning of the muscularis mucosa cause tracheobronchial tree enlargement. It presents as recurrent respiratory infections, bronchiectasis and scars in lung parenchyme. We report a case of Mounier-Kuhn syndrome, diagnosed by demonstration of abnormal dilatation of the trachea and main bronchi by thorax CT and fiberoptic bronchoscopy.

Methods

A 53-year-old male patient with renal amyloidosis was admitted to our clinic because of respiratory symptoms. The patient had a history of recurrent lower respiratory tract infections since childhood. Physical examination revealed cutaneous paleness and diffused bronchial rales. A chest computed tomographic scan revealed an abnormal dilatation of the trachea and main bronchi with transversal diameters of the trachea of 50 mm. There was bilateral bullous emphysema and consolidations in the lower lobes. A fiberoptic bronchoscopy was performed and large trachea and main bronchi were seen with a collection of secretion.

Results

The patient received oral antibiotics and expectorant treatment.

Conclusions

The Mounier-Kuhn syndrome has a wide spectrum of clinical abnormalities ranging from minimal disease to respiratory insufficiency. Symptom based treatment should be planned. Conservative management is enough almost all cases.

Disclosure: All authors have declared no conflicts of interest.

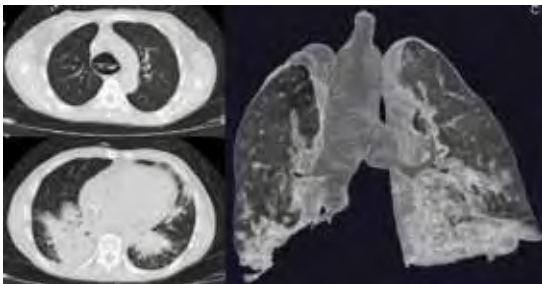


Figure: Axial and 3D reconstruction image of tracheobronchomegaly

P-145**TREATMENT OF LARYNGOTRACHEAL STENOSIS**

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Objectives

The aim of the study is the presentation of own experience in treatment of laryngotracheal stenosis.

Methods

In 2000-2009 at General Thoracic Surgery Department of Medical University in Lodz fifty patients with stenosis of laryngotracheal area were treated. There were 39 men and 11 women (aged 16 to 62 years old, mean 42). In retrospective analysis the reason of intubation, location and length of stenosis, degree in Cotton's scale, treatment's method and results were analysed.

Results

Stenosis was a result of: intubation in 28 patients, tracheostomy in 19, strumectomy in 2 and coagulation of papilloma in 1 patient. The main causes of intubation or tracheostomy were: coronary disease - 25, injury - 14, central nervous system disease - 6, other - 5 cases. All patients had third or fourth stenosis degree in Cotton's scale. It's length was from 15 to 40 mm. Sixty three intervention were carried out. There were 51 operations and 12 endoscopic interventions. Resection of stricture and primary anastomosis was done in 28 cases, resection of stenosis and Montgomery T tube insertion was done in 12 cases. In 2 patients tracheostomy was performed. Cutting of thyroid cartilage and Chamberlains's manoeuvre was carried out in 2 cases additionally. Dilatation in 7 patients and argon coagulation in 5 patients were performed. The results of management were good in most patients. There was one case of recurrence and 2 cases of anastomotic dehiscence. All that patients were reoperated and treated with use of Montgomery T tube. There was one perioperative death related to main illness (myocardial infarction).

Conclusions

1. The best treatment method of laryngotracheal stenosis should be chosen individually with consideration of patient's clinical condition
2. The multistage medical procedures are sometimes needed in management of laryngotracheal stenosis.

Disclosure: All authors have declared no conflicts of interest.

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ABOUT INDICATIONS TO SURGICAL TREATMENT OF PATIENTS WITH POSTINTUBATION RUPTURES OF TRACHEA

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Damages of tracheal membrane remain rare, but terrible complications of tracheal intubation. Meanwhile, now there are no uniform tactical principles of management of such pathology. On the basis of the retrospective analysis and the review of the literature to study efficiency of surgical and conservative tactics at the iatrogenic isolated ruptures of a trachea and to prove indications to operation.

Methods

37 patients with isolated postintubation ruptures of a trachea were managed. Female 29, male - 8. The age varied from 27 till 74 years. The main diagnostic method was bronchoscopy. The cervical department has been damaged in 10 patients, chest - at 21, total lesion - at 6. Extent of defect varied from 0,5 sm to full longitudinal rupture. Surgically ruptures of a trachea have been eliminated in 11 cases. It was applied right lateral or posterior thoracotomy, longitudinal closing of defect by Vicryl, in 2 cases in addition strengthened muscular flap was used. Conservative tactics was used in 26 cases. It included emergency endoscopy with installation of intubation tube distally of defect, preventive antibacterial and antiinflammatory therapy, the periodic endoscopic control.

Results

After surgical elimination of tracheal rupture 1 patient died. In group of conservative treatment 2 patients died. The reasons of lethality: 2 cases - progressing multiorgan insufficiency on a background of accompanying disease, 1 case - shock in an outcome of a gastrointestinal bleeding. Other patients were discharged without complications and in long terms period after operation all patients are alive and breathing free.

Conclusions

Surgery is needed in case of impossibility and inefficiency of conservative therapy, greater sizes and intraoperative revealing of tracheal ruptures. The satisfactory short term and long term results of medical tactics in tracheal ruptures treatment speak well for expediency and safety of such approach.

Disclosure: All authors have declared no conflicts of interest.

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POSTINTUBATION TRACHEAL INJURIES

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Postintubation tracheal injuries (PTI) are among the most serious iatrogenic complication. It comes to them, both during an emergency and elective intubation. May occur in patients after insertion single (SLET) and double lumen endotracheal tube (DLET) . The aim of this study was to analyze the diagnosis and treatment of patients with PIT

Methods

We treated 21 patients. In this group, 13 lesions occurred after thoracic surgery and 8 after surgery. In 11 cases, the rupture was after DLET in 10 after SLET. In 9 cases the diagnosis was placed intraoperatively and 12 were diagnosed after surgery, including 10 within 24 hours and 2 within 2-3 days. Tracheal injury during surgery suggested symptoms of mediastinal emphysema (4), air leak (1) and the visible wounds of the trachea (2). After the operation, tracheal damage suggested increasing subcutaneous emphysema (11) and the characteristics of mediastinal emphysema in x-ray (4). In all cases the diagnosis was confirmed by bronchoscope. Damage occurred in the membranous part of trachea and their length ranged from 4 to 1 cm. Treatment was conservative (11) and surgical (12).

Results

Most deaths (4 cases) occurred in patients treated with tracheal suture wounds and all were the result of a deep rupture diagnosed postoperatively. In the group treated conservatively there was 1 death of a patient with severe cardiopulmonary respiratory failure.

Conclusions

In cases of minor damage to the trachea in patients diagnosed postoperatively in good general condition, in which there were no signs of respiratory failure, conservative treatment can be applied. In cases of deeper injuries treated conservatively should aim to decompress the damaged section of the trachea through the setting of balloon endotracheal tube or tracheostomy. Injury identified intraoperatively obtain surgically as soon as possible and lead to patient extubation.

Disclosure: All authors have declared no conflicts of interest.

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SIGNIFICANCE OF ANTI-HLA IMMUNIZATION IN LUNG TRANSPLANTATION

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Objectives

HLA immunization is triggered by pregnancy, blood transfusion or organ transplantation. It is recognized factor for graft dysfunction after kidney transplantation. This study explores influence of HLA antibodies on occurrence and severity of Bronchiolitis Obliterans Syndrome (BOS), and survival after lung transplantation (LT).

Methods

Retrospective study from January 2004 to June 2010 including 99 LT in 96 patients. We determined 3 groups: specifically immunized against their pulmonary graft (group 1, n=16), non-specifically immunized (group 2, n=19), non-immunized (group 3, n=64). We compared FEV1 evolution curves at 1, 3, 6 months and every 6 months, survival with and without BOS (Kaplan Meier and Log rank), incidences of acute cellular rejection (ACR), lower respiratory infections and bronchial stenosis (Chi-2 and ANOVA).

Results

Specific immunization (group 1) appeared 15 months (+/- 14) after LT. Non-specific immunization (group 2) was detected 9 months (+/- 32) before LT. A decrease of FEV1 was observed in group 1 at 24 and 30 months after LT (compared to group 3: p inf 0,05). There was a linear relationship between antibodies rates and FEV1 decrease in group 1. Mean delays between LT and BOS diagnosis were 20 (+/- 14), 14 (+/- 13), and 25 (+/- 11) months for group 1, group 2, and group 3 respectively. Incidences of BOS 0p and ACR were increased in group 2 compared to group 3 (p inf 0,05).

Conclusions

Anti-HLA immunization is related to early onset of BOS. Specific antibodies probably lead to humoral rejection. Non specific antibodies indicated sensitized status with increased incidence of ACR.

Disclosure: All authors have declared no conflicts of interest.

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LUNG TRANSPLANTATION: TWENTY-YEAR EXPERIENCE AT A SINGLE CENTER WITH 500 CONSECUTIVE PROCEDURESIker Lopez¹, A. Jauregui¹, M. Deu¹, L. Romero¹, A. Ojanguren¹, V. Monforte², J. Sole¹, M. Canela¹¹*Thoracic Surgery, Vall D'Hebron Hospital, Barcelona/SPAIN,*²*Pulmonology, Hospital Vall D'Hebron, Barcelona/SPAIN***Objectives**

The purpose of this study was to review a single institution's long-term experience with lung transplantation.

Methods

We performed a retrospective review from our database after adult and pediatric lung transplantation. Between august 1990 and february 2010, 500 consecutive lung transplants were performed in 495 patients (5 retransplants). Indications were chronic obstructive pulmonary disease (n = 172), pulmonary fibrosis (n = 159), cystic fibrosis (n = 60), primary pulmonary hypertension (n = 27), bronchiectasis (n = 35), lymphangiomyomatosis (n = 22) and miscellaneous end-stage lung diseases (n = 25). Two hundred (40%) were transplanted on Eurocollins[®] solution and 300 under Perfadex[®].

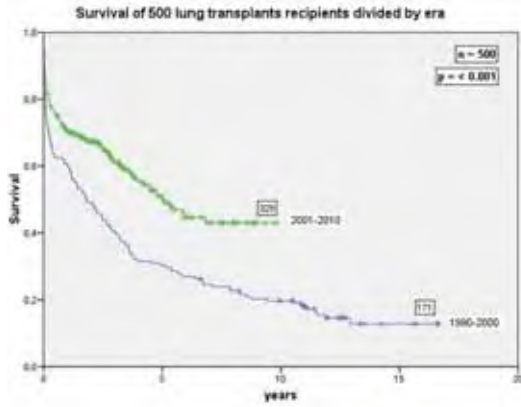
Results

There were 457 (91.4%) adult transplants (recipient age > 18 years) and 43 pediatric lung transplants. Mean age of the recipients was 44.8 (r = 0,4 – 67) years. Bilateral and unilateral lung transplant were 348 (69.6%) and 152 respectively. The global survival was 67.1%, 42.4% and 29.5% at 1, 5 and 10 years. One month survival with Eurocollins[®] solution and Perfadex[®] was 78% vs. 86.3%. One, 5 and 10 year survival divided by indication was 67.3, 38 and 18.7% for COPD, 63.9, 39 and 28.3% for PF, 71.7, 49.5 and 37.2% for CF, 55.6, 35.7 and 28.6% for PH. After division of patients by era (1990 – 2000 vs. 2001 – 2010), the number of patients in the older group (45 – 67 years) has increased from 59% to 66%. The median survival time at the first and second era was 4.5 and 5.4 years respectively (p < 0,001) with a five years survival of 30.4% vs. 50.1%.

Conclusions

In the evolution of our lung transplant program over the last 20 years we have observed a significant improvement in long term survival during the last decade.

Disclosure: All authors have declared no conflicts of interest.



P-150

STAPLERLESS LUNG VOLUME REDUCTION SURGERY PERFORMING BY LIGASURE SYSTEM

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One of the familiar complications after Lung Volume Reduction Surgery (LVRS) is air leak. Within NETT, 90% of patients experienced some air leak with a median duration of 7 days. We proposed the LigaSure Vessel Sealing-System for staplerless pulmonary resection to reduce postoperative air leak after LVRS.

Methods

Experimental study: resistance measuring of the sealing line performed by LigaSure System. The Force Triad Standard handset has been used for lung wedge resections ex tempore after lobectomies or pneumonectomies. We carried out measuring of sealing line resistance using the air flow meter ("JKB Tool Company Milford, Ct") by gradually increasing of intrabronchial pressure until the detection of an air leak. In clinical phase we performed 8 LVRS using LigaSure only. In 3 cases operation was done by VATS. We used standard NETT's inclusion criteria for patients selection. Lung parenchyma resection was done using LigaSure System (instruments: LigaSure Impact and Atlas with seal length of 34 mm and 22 mm conformably).

Results

Experimental phase: we performed 49 measurements of sealing line resistance. Average sealing line burst pressure was 460 ± 60 mm Hg. Clinical phase: in spite of extent and polysegmental type of lung resection aero- and hemostasis obtained by LigaSure was effective. Median duration of thoracic drainage was 2 ± 1 days in all cases. No prolonged air leaks were detected. The postoperative stay was 10 ± 3 days respectively.

Conclusions

Minimal registered burst pressure of sealing line performed by LigaSure is significantly higher than maximal physiologic airways pressure. LVRS using LigaSure for lung resection avoids the difficulty encountered in manipulating the stapler within the thoracic cavity and avoids the use of multiple reloadable cartridges thus reducing operation trauma and the costs of the operation without increasing risk of complications.

Disclosure: All authors have declared no conflicts of interest.

P-151

ANATOMICAL CORRELATION BETWEEN COLLATERAL VENTILATION AND INTERLOBAR FISSURES

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Objectives

Bronchoscopic lung volume reduction (BLVR) with unidirectional valves is under evaluation as a therapeutic option in patients with heterogeneous emphysema. It has been demonstrated that the presence of interlobar collateral ventilation (ICV) and the absence of interlobar fissures (IF) show a negative impact on outcome. Neither pulmonary function tests nor computed tomography (CT) seem to reliably predict ICV. A new bronchoscopic device (Chartis™ Pulmonary Assessment System) specifically designed to measure ICV is now available.

Methods

Thirteen patients (predicted FEV₁ < 80%) undergoing pulmonary lobectomy were recruited. After intubation, with the patient breathing spontaneously, fiberoptic bronchoscopy was performed and an occlusive catheter able to measure ICV was advanced through the working channel. A registration time of at least 3 minutes for each lobe on the side undergoing surgery was performed. The chest was subsequently opened and the presence of IF was recorded; the number of stapler's shots required to create IF was considered as a measure of IF absence/presence (0-3). ICV was recorded again after the creation of IF with staplers; intraoperative ICV measurements were correlated with the anatomical presence of IF and preoperative CT findings.

Results

No morbidity related to the procedure was observed. No tumors invaded IF. Nine patients (69.2%) showed ICV and the absence of IF was graded from 1 to 3; ICV disappeared after the surgical creation of IF. In the other 4 cases IF were complete and no ICV was recorded. Pre-operative CT showed the presence of IF only in 5 patients with ICV (55.5%); conversely, in 2 cases (50%) without ICV IF were visible.

Conclusions

The absence of IF strictly correlates with the presence of ICV measured with the Chartis™ catheter; this system looks more reliable than CT and should be used to assess patients before BLVR in order to optimize results.

Disclosure: All authors have declared no conflicts of interest.

P-152

UTILITY OF NOVEL THREE-DIMENSIONAL ANGIOGRAPHY CREATED BY 320-ROW AREA-DETECTOR COMPUTED TOMOGRAPHY IN THORACOSCOPIC LUNG RESECTIONHideki Itano¹, T. Takeda², M. Saito²¹*Department of Thoracic Surgery, Uji Tokushukai Hospital, Uji-shi/JAPAN,*²*Department of Pulmonology, Uji Tokushukai Hospital, Uji-shi, Kyoto/JAPAN***Objectives**

The objective of this study was to attempt a clinical trial of video-assisted thoracoscopic surgery (VATS) segmentectomy and lobectomy using distinguished three dimensional (3D) computer tomography (CT) pulmonary artery (PA)/ pulmonary vein (PV) angiography obtained by the state-of-the-art 320-row area-detector CT (ADCT).

Methods

A total of 22 patients with lung lesions investigated for the past 8 months (21 with primary lung cancer, 2 with precancerous lesions, and 1 with metastatic lung tumor). 7 underwent VATS segmentectomy and 15 VATS lobectomy with lymphnode dissection. Distinguished 3D-CT PA/PV angiography was preoperatively obtained by a two-phase dynamic volume scan protocol using 320-row ADCT system in all patients. According to these 3D images, all VATS were performed exclusively with one mini-thoracotomy and another 11.5-mm scope port.

Results

3D-CT angiography by this protocol could distinguish detailed branching pattern of both PA and PV and facilitated identification of pulmonary vessel anatomy including variant vessels in all patients. Preoperative identification of intersegmental PV anatomy and simulation of parenchymal division for intraoperative navigation was possible in 6 among 7 segmentectomy patients (Figure 1). Variations of vessel anatomy were identified in 4 among 15 lobectomy patients. The mean size of mini-thoracotomy was 5.5 ± 1.1 cm (range 4.5-8.0 cm). There was no postoperative air leak and the mean duration of chest tube drainage was 3.0 ± 0 days in segmentectomy and 2.1 ± 0.3 in lobectomy. Patients discharged home in 13.6 ± 4.5 days (range 8 – 30 days) after surgery.

Conclusions

Only in using 320-row ADCT system that affords multiphase dynamic volume scan can 3D-PV angiography be reconstructed in distinction from PA angiography. It was helpful for parenchymal division along the targeted intersegmental PV in simulated and actual VATS segmentectomy. This method might have the potential to increase the safety and efficacy of surgical procedure especially in VATS that is associated with a limited view.

Disclosure: All authors have declared no conflicts of interest.

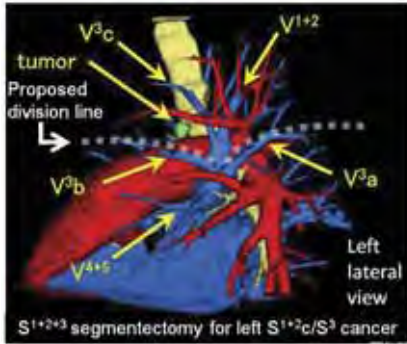


Figure 1: Determination of intersegmental division plane based on a novel 3D-CT PA/PV angiography

P-153

EFFECTIVE TREATMENT OF POST-PNEUMONECTOMY BRONCHOPLEURAL FISTULA BY CONICAL FULLY-COVERED SELF-EXPANDABLE STENTC. Andreotti¹, Antonio D'Andrilli², A. M. Ciccone², M. Ibrahim², F. Venuta¹, E. A. Rendina²¹*Thoracic Surgery, University LaSapienza - Policlinico Umberto I, Rome/ITALY,*²*Thoracic Surgery, University LaSapienza - Sant'Andrea Hospital - Rome, Rome/ITALY***Objectives**

The aim of the study was to assess feasibility, efficacy and safety of the use of a conical self-expandable stent for the treatment of post-pneumonectomy bronchopleural fistula.

Methods

Between April 2008 and November 2010, 6 patients (4 males, 2 females) underwent treatment of post-pneumonectomy bronchopleural fistula by the placement of a tracheo-bronchial conical fully-covered self-expandable nitinol stent (Tracheobronxane Silmet®, Novatech SA, France) with the aim of excluding the bronchial dehiscence from the air flow. Five patients presented with a bronchial fistula larger than 5 mm following right (4) or left (1) pneumonectomy. One patient had an anastomotic dehiscence after right tracheal sleeve pneumonectomy. Drainage of the pleural space was performed by a chest tube in all the patients showing absence of empyema.

Results

There was no complication related to the procedure. Immediate resolution of the bronchial air leak was obtained in all the patients. Permanent closure of the bronchial dehiscence without recurrence was achieved in all the patients at a mean follow-up time of 13 months (range 3-32). The bronchial stent was successfully removed in all patients without sequelae 71 to 123 days after its implantation.

Conclusions

The use of the conical self-expandable Silmet® stent has proved as an effective, safe and fast method to treat also large post-pneumonectomy bronchopleural fistulas.

Disclosure: All authors have declared no conflicts of interest.

P-154

**RISK STRATIFICATION IN THORACIC SURGERY:
DO WE REALLY NEED TWO SCORES?**

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Objectives

Thoracic surgeons are looking for the right tool to predict the mortality risk of patients undergoing lung resection. This study investigates the suitability of two of the existing risk stratification systems available for predicting mortality in lung resection patients.

Methods

Data of the 288 consecutive patients [165 male and 123 female, median age of 69 (range 37-91) years and median PpoFEV1 of 56 (range 19 to 116) %] who underwent lung resection between 2008 and 2010 under a single surgeon was extracted from a prospective clinical data base. In-hospital mortality risk scores are calculated for by using Thoracoscore and ESOS . We compare this data with actual in-hospital mortality. ROC curve was used to establish how well the systems rank for predicting patients' mortality.

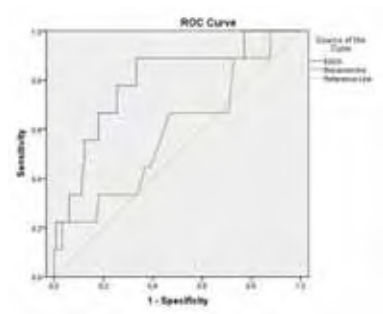
Results

Surgery was performed for primary lung cancer (82%), metastasis (8%) and non-malignant disease (10%) The operative procedures were pneumonectomy (12%), sleeve resection (9%), lobectomy (48%), segmentectomy (11%).and wedge excision(19%). The overall median hospital stay was 7 (range 3-65) days. Actual in-hospital mortality was 3.1% (n=9), with 4 patients requiring admission to ITU to step-up care (1.4%) ESOS and Thoracoscore values of mean±SEM were 4.93 ± 0.32 and 4.08 ± 0.41 respectively. Area under receiver operating characteristic curve (AUC) values for ESOS and Thoracoscore were 0.8 and 0.6 respectively. ESOS was reasonably accurate at predicting overall mortality (Sensitivity 88% and Specificity 67%) while Thoracoscore was a weaker predictor of mortality (Sensitivity 67% and Specificity 53%).

Conclusions

Both scoring systems have significance in mortality prediction. Despite requiring less data to be calculated, the ESOS score had better predictive values in our patient population. Because of their low specificity, the use of these scores should be limited to the assessment of outcomes of surgical cohorts, but are not designed to predict risks for individual patients.

Disclosure: All authors have declared no conflicts of interest.



ROC Curve

P-155

SIMULTANEOUS SCREENING FOR LUNG CANCER AND CARDIOVASCULAR RISK

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Objectives

Over eight thousands people with a high risk of developing lung cancer (LC) and cardiovascular disease were enrolled to the pilot screening trial between February 2009 and March 2010. The purpose of this report is the preliminary analysis of early results.

Methods

The risk group was defined as : age 50-75 years, smoking history of at least 20 pack-years without symptoms of the disease. People with family history of lung cancer and occupational exposure to carcinogens were enrolled with a history of 10 pack years. 8028 patients underwent low dose computed tomography (LDCT) with coronary artery calcification score (CACS), and 724 people was additionally assessed for cardiovascular risk. Blood pressure, cholesterol and glucose level, as well as anthropometric measurements were performed. Patients with a positive LDCT results were subjected to consecutive LDCT examinations based on tumor diameter.

Results

A high rate (53% - 4257) of positive CT results was observed Eighty six lung cancer patients were diagnosed. 61 patients was accepted for surgery. Fifty (84,75 %) operated patients were in stage I, 4 (6,78%) in stage II, 5 (8,47%) in stage III CAC Score was elevated in 22% of participants, blood pressure in 71% and 45 % had hypercholesterolemia. Based on the results we estimate that nearly 10 % of patients will die from cardiovascular disease within 10 years.

Conclusions

The incidence of pulmonary nodules detected in LDCT is relatively high. LDCT allows to detect lung cancer in early, curable stage. Cardiovascular risk assessment among lung cancer screening participants enhances the value of both screenings Modification of cardiovascular disease risk factors may save more than 60% people.

Disclosure: All authors have declared no conflicts of interest.

P-156**A PRE AND POST OPERATIVE REHABILITATION PROGRAMME FOR LUNG RESECTION SURGERY REDUCES POST OPERATIVE COMPLICATIONS AND HOSPITAL READMISSION RATES**

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Objectives

Chronic Obstructive Pulmonary Disease (COPD), smoking, and exercise capacity are potentially modifiable independent risk factors for developing postoperative pulmonary complications (PPC) after lung resection. This pragmatic enriched cohort study examines the effect of a multidisciplinary pre and postoperative complex intervention and its effect on patient and health care outcomes.

Methods

Based on a COPD type rehab template, the programme consists of an exercise programme, targeted smoking cessation therapy, dietary assessment and intervention, and patients' self-management education sessions. Patients identified as potential candidates for curative lung surgery from 2 referring hospitals to a regional thoracic unit were invited into the programme. Patients referred for surgery from 8 other hospitals to the same unit served as control. Surgery was not delayed by the programme, hence the time spent in rehabilitation varied. Post-operative care was carried as per unit protocol. On discharge, the intervention group returned to the programme for up to 6 months.

Results

All but one of 29 patients enrolled, completed the programme. A further 2 patients enrolled but did not receive surgery because subsequent investigation demonstrated disease was more advanced. Patients in the intervention group (n=29) were significantly older than those who did not receive the intervention (n= 138); 69(±6) Vs 65 (±12) years (P<0.001). The groups were matched for lung function, COPD, comorbidities, smoking history and nutritional status. The interventional group received an average of 6 preoperative rehabilitation and 7 educational sessions in the average of 29 days waiting for surgery. Primary outcome measures of PPC and hospital readmission rate were significantly better in the intervention group. Secondary outcome measures eg exercise capacity also improved.

Conclusions

A COPD type rehabilitation programme for patients undergoing curative lung resection is feasible and shows promising results and a large multicentre randomised controlled trial is warranted to test efficacy, mechanism and subgroups.

Disclosure: All authors have declared no conflicts of interest.

	Intensive care (n=21)	Non-intensive care (n=21)
*Postoperative pulmonary complications 30d %	7	18
30d mortality rate %	3	2
HDU median LOS (days)	1	2
ICU median LOS (days)	4	5
*Mortality rate %	8	13

Table 1: Primary Outcomes
 LOS=Length of stay, HDU= High Dependency Unit,
 ITU= Intensive Care Unit, *= (p<0.05 Chi square)

P-157

IDENTIFYING GENOMIC BIOMARKERS OF RECURRENCE IN STAGE I LUNG SQUAMOUS CELL CANCER USING NEXT GENERATION SEQUENCING

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Objectives

Disease stage still remains the best prognostic factor for patients with localized non-small cell lung cancer. The TNM staging system however does not address the heterogeneity of this disease. Sub-classification and identification of distinct prognostic sub-groups within each stage may allow the optimization of clinical trial design and potentially improve outcome. The aim of this study was to identify potential genomic biomarkers predictive of recurrence in stage I squamous cell lung cancer by using copy number (CN) data obtained by next-generation sequencing.

Methods

We identified 50 patients who underwent radical surgery with systematic lymph node dissection or sampling for stage I squamous cell carcinoma of the lung between 1998 and 2002 at Leeds Teaching Hospitals, UK. This cohort included 25 patients (M/F 17/8, median age of 68 years), who experienced disease recurrence and 25 patients (M/F 13/12, median age 65 years) who remained disease free at 5 years after surgery. DNA was extracted from tumour tissue and DNA libraries were prepared. Samples were sequenced and the frequency of CN gain and loss along the entire genome was compared between the recurrent and non-recurrent cancers.

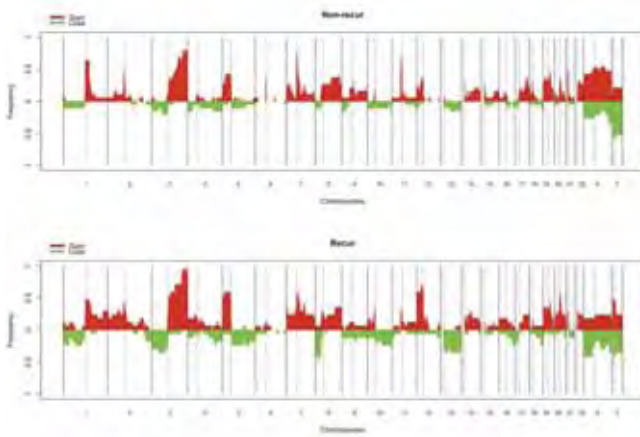
Results

DNA libraries were prepared and successfully sequenced in all cases. In the recurrent group CN loss was more evident on chromosome 8p and CN gain was more common on chromosome 12 (Figure 1).

Conclusions

Merging techniques for genomic, gene-expression, epigenetic, and proteomic profiling are changing the clinical approach to the disease by helping to identify practical molecular markers of risk stratification, early detection, prognosis, and treatment sensitivity. Expanding this study and comparing other histological subtypes (adenocarcinoma, large cell cancer) will help determine their role in clinical practice.

Disclosure: All authors have declared no conflicts of interest.



Summary of the copy number gain (red) and loss (green) along the entire genome of the two groups. Both groups showed significant amplification in 3q, characteristic of squamous cell cancer.

P-158

FIRST EXPERIENCE OF INTRAOPERATIVE PHOTODYNAMIC THERAPY OF RESECTION MARGINS IN STAGE III NSCLC

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Objectives

Incomplete resections for locally advanced lung cancer remain an important problem that needs to improve options for combine treatment. To increase the radicalism we proposed an intraoperative photodynamic therapy (PDT) of resection margins.

Methods

16 patients with central non small cell lung cancer (12 men, 4 women) were prospectively included in the study (10 - IIIB stage, 6 – IIIA stage). Hystological types were: squamous cell – 10, adeno - 4, large cell - 2. At the time of diagnosis all patients were considered as inoperable, main reasons were tracheal involvement (7), functional intolerance to pneumonectomy (7) and N3 disease (2). Preoperative treatment included three cycles of chemotherapy and two courses of endobronchial PDT. During operation, after lung resection (pneumonectomy – 8, carinal pneumonectomy – 3, lobectomy - 5) intraoperative PDT of resection margins (bronchial and vascular stumps, mediastinum) was done. Water-soluble chlorine e6 complex (Photoditazin) was used as a photosensitizer in dose of 2 mg/kg. The interval between the injection and illumination was 2 hours. Red light at 662 ± 1 nm wavelength was used to achieve a total illumination dose of 250 j/cm².

Results

After preoperative treatment partial response of tumor was achieved in all cases and patients underwent surgery with radical intent. No skin photosensitivity, post PDT complications have been marked. 14 operations were R0, 2 – R1. No major postoperative complications noted except arrhythmia in 3 patients (23%). Average period of follow-up was 17 months (6 to 29 months), all patients are alive without any signs of recurrence.

Conclusions

The first experience of the combination of neoadjuvant chemotherapy with intraoperative PDT for locally advanced NSCLC have shown safety and effectiveness. Additional studies are needed to proof the value of intraoperative PDT.

Disclosure: All authors have declared no conflicts of interest.

P-159

PREOPERATIVE ASSESSMENT OF TUMOURS INVADING THE MEDIASTINUM BY CINE-MAGNETIC RESONANCE (CMR) IMAGING

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Objectives

Tumours invading the mediastinum can often be resected en-bloc with neighbouring structures, however extensive invasion of the superior vena cava (SVC), pulmonary artery (PA) trunk, aortic wall, atria or ventricular wall require adequate preoperative planning and are often considered a limit. As the identification of a surgical resection plane is often doubtful on CT scans, we tested if cine-Magnetic Resonance (CMR) would allow for a better differentiation between contact and infiltration of vital structures.

Methods

Sites of contact between tumour and mediastinal structures on CT scans were individually assessed by CMR. The CMR study protocol included 3 orthogonal stacks of Steady State Free Precession (SSFP) sequences after administration of contrast medium. We defined infiltration as absence of sliding motion and/or absence of chemical shift (seen as a dark line) between tumour and adjacent structures. Surgical findings (presence or absence of a resection plane) were reported postoperatively for each individual site.

Results

12 patients with mediastinal tumours (8 males and 4 females, age 23-72), in whom a total 59 contact sites were identified by CT scans, were preoperatively assessed by CMR. Histology was lung cancer in 5, thymoma-thymic carcinoma in 5, sarcoma in 1, and teratoma in 1. Surgical procedures were: pneumonectomy 5, mediastinal mass resection 5, extrapleural pneumonectomy 1, and exploratory thoracotomy 1 in one. The negative predictive value was 0.94, positive predictive value 0.80, sensitivity 0.91, specificity 0.86, and accuracy 0.88. CMR imaging always correctly anticipated or excluded invasion of SVC (6 cases), supra-aortic vessels (2), aortic wall (7), PA trunk (2), atrial wall (7), ventricular wall (3), oesophagus (2), and pericardium (9) but was less reliable for intrapericardial pulmonary vessels and left anomalous vein.

Conclusions

Preoperative CMR imaging allows for an accurate selection and planning of complex resections in patients with advanced tumours involving mediastinal structures.

Disclosure: All authors have declared no conflicts of interest.

P-160

PREPARATION OF THE MEDICAL STUDENT FOR CARDIOTHORACIC SURGERY TRAINING: SIGNIFICANT IMPACT OF A NOVEL SIMULATION-BASED COURSE

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Objectives

As initiatives to broadly implement integrated training programs for cardiothoracic (CT) surgery take place, educational approaches toward the modern medical student (MS) trainee must continue to evolve. MSs are currently exposed to heterogeneous training. It is imperative that we prepare students to more effectively care for patients upon residency matriculation. Thus, we developed and evaluated outcomes of a novel simulation-based preparatory course for MSs.

Methods

22 MS matched into surgical residencies and completed a 4-week, simulation-based, preparatory course. This course incorporated didactics, simulation, skills labs, and covered areas essential for care of CT surgical patients. Knowledge base, skill acquisition, and readiness were measured through written tests, performance examinations, and self-assessments of confidence levels (5-point Likert scale). Pre- and post-course comparisons were made using t-tests ($\alpha = 0.05$).

Results

Students possessed significant pre-course measured anxiety related to both cognitive and technical skills needed for management of CT patients. While CT topics were ranked most important by MSs, these were the curricular areas of most substantial weakness. Measured confidence levels rose significantly through course participation. Students demonstrated significant gains in knowledge base. Mean written test scores increased from 54.9% to 86.4% ($p < 0.001$). Performance of technical skills improved with mean scores increasing from 82.7% to 93.2% ($p < 0.001$).

Conclusions

MSs have significant baseline deficits in skills necessary for seamless matriculation into CT surgery residencies. This study demonstrates the efficacy of a novel simulation-based, preparatory course in significantly improving student task-specific confidence, knowledge base, and technical proficiency. Because of its emphasis on simulation, this course has international implications for the modern trainee.

Disclosure: All authors have declared no conflicts of interest.



P-161

USE OF A SEALANT FOR PREVENTION OF PROLONGED AIR LEAKS RECORDED BY A DIGITAL CHEST DRAIN SYSTEM AFTER LUNG RESECTION. A PROSPECTIVE RANDOMIZED STUDY

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Objectives

Pulmonary air leaks are a common complication of lung resection, and result in prolonged hospital stay and greater costs. The purpose of this study was to investigate whether the use of a synthetic polyethelene glycol matrix (CoSeal®) could significantly reduce air leaks, detected by means a digital chest drain system (DigiVent™, Millicore), in patients undergoing lung resections, compared with standard care (sutures and/or staples alone).

Methods

From March 2008 to January 2010, a total of 141 consecutive patients undergone lung resections were enrolled in this study after informed consent. Patients undergoing lung resection showing moderate or severe air leaks (evaluated by water submersion tests) were randomized to receive sutures/staples (group A) or sutures/staples plus CoSeal® (group B). Differences in terms of evidence of air leaks, prolonged air leaks and chest tube removal time were investigated.

Results

Group A consisted of 68 patients; group B consisted of 73 patients. Two (2.9%) patients in the CoSeal® group and nine (14.5%) patients in the control group experienced significant post-operative air leaks. A prolonged air leak, defined as a leakage lasting greater than the fifth post-operative day, due to air leakages and/or pleural effusions, was recorded just in 1 out of 69 cases in group B (1.4%) and in 8 out of 62 in group A (12.9%) (p: 0.013). Moreover, a chest tube withdrawal time later than the 4th post-operative day, was observed more often in group A (59.4%, 41 out of 69 cases) than in group B (25.8%, 16 out of 62 cases) (χ^2 : 15.01, p: <0.0001). Differences between the two groups were significant. Chest drains were removed a mean of 5.5 days after surgery.

Conclusions

The use of CoSeal® may decrease the occurrence and severity of post-operative air leaks after lung resection and is associated with a shorter chest tube removal time.

Disclosure: All authors have declared no conflicts of interest.

P-162

NOVEL TECHNIQUE IN MANAGEMENT OF BRONCHOBILIARY FISTULAS IN ADULTS: ENDOBRONCHIAL EMBOLIZATION USING SILICONE (WATANABE) SPIGOTSEmmanuel Kefaloyannis¹, K. Papagiannopoulos²¹*Thoracic Surgery, St James University Hospital, Leeds/UNITED KINGDOM,*²*Thoracic Surgery Dept., Leeds Teaching Hospitals Trust, St.James 's University Hospital, Bexley Wing, Leeds/UNITED KINGDOM***Objectives**

Broncho-biliary fistulas(BBF) can complicate primary or metastatic liver malignancies. This is a challenging group of patients, in whom surgery is often contraindicated. We present our experience in using endobronchial silicone spigots for palliating such patients with a complex or complicated treatment background, limited reserves and prognosis.

Methods

Two patients were successfully treated both following treatment for liver malignancies. A 49-year-old female, with a previous liver resection for cholangiocarcinoma, presented a year later with bileoptysis and was diagnosed with BBF. Due to large air-leak through the intercostal drain she required ventilation in the intensive care unit (ICU). She underwent bronchoscopy twice, followed by insertion of silicone Watanabe spigots. She had a slow but steady progress and was gradually weaned from ventilator and discharged from ICU. A 62-year-old female was admitted to our institution with significant coughing spells and bile expectoration. She had a long history of colonic cancer with synchronous liver metastases 4 years ago complicated with a bile leak from the previous hepatico-jejunostomy, treated initially with ERCP and stent insertion. Due to persistent abdominal wall bile leak and coughing spells, a HIDA scan was performed which confirmed the presence of BBF consistent with her symptoms. She required three successive bronchoscopic sessions with multiple spigot applications in order to treat successfully her fistula and resolve her symptoms.

Results

Although both patients eventually succumbed from their primary disease, 12 and 4 months following bronchoscopy, they enjoyed complete resolution of respiratory symptoms with subjective improvement of the quality of their remaining life span.

Conclusions

Patients who present with BBF following complex surgery for liver malignancies have often poor reserves, are critically ill and have a guarded overall prognosis. Surgical intervention carries an extreme risk and symptom palliation is impossible. The endoscopic management with endobronchial Watanabe spigot insertion offers excellent results with limited surgical risk.

Disclosure: All authors have declared no conflicts of interest.

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VATS MAJOR LUNG RESECTION: DOES MORE ADVANCED CLINICAL STAGE LEAD TO A HIGHER CONVERSION RATE? PRELIMINARY RESULTS OF AN ONGOING COHORT STUDY

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Objectives

VATS lobectomy is recommended for early clinical stage Non Small Cell Lung Carcinoma (NSCLC) (cT1a, N0, M0). However in high volume thoracic mini-invasive surgical department, VATS anatomic lung resection is advocated for all resectable NSCLC with the exception of proximal tumours. We tested the hypotheses that (1) conversion rate is higher in more advanced stages and (2) complication rate is higher in the group converted to thoracotomy.

Methods

A retrospective review of a prospectively maintained, single institution surgical database was performed. 95% confidence intervals using ML-methods and RR were used for statistical analyses.

Results

From January 2009 to December 2010, 54 consecutive patients were identified with average: age 62 years (Q1-Q3=52-74), operative time 180 minutes (Q1-Q3=100, 260) and length of stay 7 days (Q1-Q3=6-9). There were 10 conversions (19%) and one death within 30 post-operative days. Conversion was more common in patients with stage cIB or higher as compared to cIA, RR=2.61 (95% CI: 0,76 – 9,03). Conversion resulted from vascular issues and ventilation difficulties. At least one complication within 30 post-operative days occurred more commonly in the conversion group as compared to non-converted group, RR=2.15 (95% CI: 1,19-3,88).

Conclusions

In our series: (1) conversion was more common in patients with more advanced clinical stage, and (2) post operative complication was more common in patients converted to thoracotomy. Thus advanced clinical stage (known from the literature to be associated with postoperative complication) may confound any analysis of the association of conversion and postoperative complication. VATS anatomic lung resection is safe in selected cases regardless of clinical stage. Conversion may be necessary for safe and oncologically satisfactory resection. Longer term follow up is required to assess recurrence and survival rates. Future studies may address the 'learning curve' and whether greater surgical experience leads to lower rates of conversion.

Disclosure: All authors have declared no conflicts of interest.

P-164

VIDEO-AXILLAROSCOPY (VAXY) A NEW MINI-INVASIVE TECHNIQUE FOR SURGICAL EXPLORATION OF THE AXILLARY REGION

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Objectives

Access to the sub-clavicular lymph node station by standard approach is deleterious through open surgical approach. We present a new non-invasive technique for axillaries lymph node exploration using a videomediastinoscope through axillary access.

Methods

Patient is installed in bedside position with a small pillow under his shoulder with his arm in 90° abduction. A 5 cm incision is performed in the axillary region parallel to the major pectoralis muscle. Penetration in the axillary region is beginning by finger blunt dissection. Then, videomediastinoscope is pushing down and dissection is performed by aspiration canula and dissectors. Progression is performed with clavi-pectoro-axillary fascia, serratus anterior and axillary vein as landmarks to reach the subclavicular lymph node group beneath the axillary major vessels and nerves in the top of axillary region. Lymph node biopsies as well as lymphadenectomy are possible.

Results

Two patients were operated by VAXY : - A 57 year old woman treated for a Hodgkin disease presented as a parasternal inflammatory mass. The PET/CT scan performed 6 month at the end of treatment (chemotherapy) showed hyperactivity on a sub-clavicular lymph node group beneath the axillary vessels. It was an inflammatory lymph node on biopsy and the patient is free of relapse for 15 months. The second patient was a 68-year-old woman suffered from left upper arm phlebitis due to a soft tissue 2 cm mass in the top of the axillary region. Biopsy was performed by VAXY. It was a single node metastasis of breast carcinoma treated 9 years ago. Medical treatment was applied.

Conclusions

VAXY is a non-invasive reliable technique for targeting biopsy of lymph node in axillary region. It is safer and more accurate than radio-guided techniques. Exploration of this region might increase for treatment of lymphoma and breast cancer and applications might emerge for thoracic outlet syndromes.

Disclosure: All authors have declared no conflicts of interest.



P-165

CELL TRANSFER BETWEEN ARTIFICIAL MEDIA VIA SURGICAL STAPLING

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Objectives

Transferring cells from primary tumor sites to secondary sites via surgical stapling may play a role in the reoccurrence of tumors; thus, preventing the transfer of any cells or tissue to a secondary site is of great importance. This study compared the potential of two endoscopic surgical staplers (Endo GIA™, Covidien; Echelon™, Ethicon) to transfer cells between a primary and a secondary artificial medium to model cell transfer during surgery.

Methods

Two endoscopic staplers were compared: Covidien Endo GIA™ Universal stapler; Ethicon Echelon™60 Endoscopic Linear Cutter. In vitro cell culture and testing. J774A.1 monocyte/macrophage cells were labeled with CFSE membrane stain (Invitrogen) and visualized using a Zeiss Axiovert 200M microscope equipped with appropriate filters. A porcine gelatin was prepared as previously described¹ and used as a control (without cells) or as a cell-seeded (test) artificial stapling medium. Stapler IFUs were followed explicitly; immediately following stapling, control and test groups were assessed.

Results

These experiments demonstrated 0% incidence of cell transfer for the Covidien stapler and 100% incidence of cell transfer for the Ethicon stapler. The average number of cells transferred by the Ethicon device was 38 (SD ± 15, n = 10). As predicted, all control samples (without cells) showed 0% cell transfer upon microscopic inspection (representative results, Figure 1).

Conclusions

This study demonstrated that the Ethicon Echelon™ surgical stapler transferred cells from a donor matrix to a recipient matrix 100% of the time when used according to the manufacturer's IFU; in contrast, the Covidien stapler showed 0% cell transfer when the manufacturer's IFU was followed. The differences in the observed cell transfer rates, which may have clinical implications, are a direct result of instrument design and instructions for use.

Disclosure: All authors have declared no conflicts of interest.

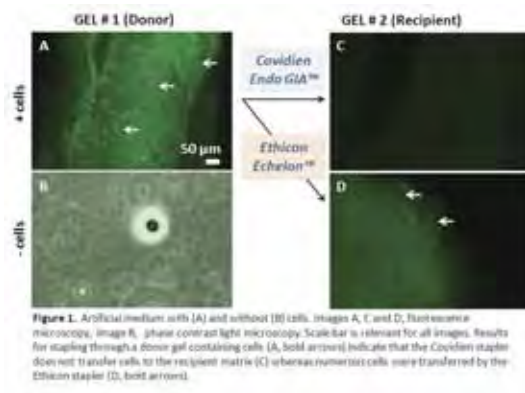


Figure 1. Sigma Aldrich. (2008, November).
 Product Information: Porcine Gelatin Type A. St. Louis.

P-166

MALIGNANT PLEURAL MESOTHELIOMA: LEUKOCYTE RECRUITMENT IS NOT REQUIRED FOR DRUG DELIVERY INDUCED BY PHOTODYNAMIC THERAPY IN A HUMAN MESOTHELIOMA XENOGRAFT MODEL

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Objectives

The pre-treatment of tumor neo-vessels by photodynamic therapy (PDT) was shown to improve the distribution of chemotherapy administered subsequently. However, the precise mechanism by which PDT modifies the tumor vasculature is unknown. We have recently shown that leukocyte-endothelial cell interaction was essential for PDT induced drug delivery to normal tissue. Our purpose was to determine if PDT could enhance drug distribution in malignant mesothelioma and if a comparable role for leucocytes existed.

Methods

we grew human mesothelioma xenografts (H-meso-1) in the dorsal skinfold chambers of nude mice (n=28). The rolling, sticking and recruitment of leucocytes was assessed in tumor and normal vessels following PDT (Visudyne[®] 400mg/kg, fluence rate 200mW/cm², fluence 60J/cm²) using intravital microscopy. In parallel, the distribution of a macromolecule (FITC dextran, 2000kDa) administered after PDT was determined. We compared these variables in control (no PDT), PDT+IgG (non specific antibody) and PDT + pan-selectin antibody (monoclonal P-E-L selectin antibody).

Results

PDT significantly enhanced the distribution of FITC dextran in mesothelioma xenografts compared to controls. Interestingly, PDT enhanced the leukocyte-endothelial interaction significantly (rolling and recruitment) in tumor and surrounding normal vessels compared to controls. Leukocyte recruitment was significantly down-regulated by pan-selectin antibodies in tumor tissues. However, the extravasation of FITC-dextran in tumor tissue was not affected by suppression of the leukocyte-endothelial cell interaction.

Conclusions

PDT pre-treatment of the mesothelioma vasculature can enhance the distribution of macromolecular drugs administered subsequently. However, unlike normal vessels, leukocyte-endothelial cell interaction is not required for PDT induced leakage.

Disclosure: All authors have declared no conflicts of interest.

P-167

ABLATION METHOD OF BRONCHIAL MUCOSA AS BRONCHIAL STUMP REINFORCEMENT

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*Department of Surgical Oncology Research Institute for Radiation Biology and Medicine, Hiroshima university, Hiroshima City/JAPAN***Objectives**

To prevent bronchial fistula,lethal complication of postpneumonectomy,we investigated ablation method of bronchial mucosa as bronchial stump reinforcement.

Methods

Female beagles were used for this study. Left thoracotomy was performed under general anesthesia.We used four different bronchial closure techniques.They were sacrificed at two weeks,and were evaluated the histological findings of bronchial stumps(H.E staining, α SMA staining and VEGF staining). Bronchial stumps closure technique were devided (1>manual suture(3-0PDS),(2)bronchial mucosal ablation+manual suture,(3)Linear stapler+manual suture,(4)Liner stapler+bronchial mucosal ablation+manual suture.

Results

In all method,all animals were alive and didn't occur bronchial stump dehiscence.All bronchial stump were covered by fatty tissue.In no bronchial mucosal ablation group(1,3),opposite bronchial mucosa didn't conglutinate together even at the site of staple or suture. In bronchial mucosal ablation group(2,4),opposite bronchial mucosa completely conglutinate together correspondently at the site of ablation. And the ablation site created thick granulation layer including a lot of neo-vascular vessels and myofibroblasts.VEGF highly expressed in the granulation layer.

Conclusions

In no bronchial mucosal ablation group,even though they were not observed bronchial dehiscence,the sealing methods seemed unstable,because they were only mechanically reinforced by suture and staple. On the other hand,in bronchial mucosal ablation group, they seemed more robust sealing method,because they have not only mechanical reinforcement but also bronchial mucosal conglutination.

Disclosure: All authors have declared no conflicts of interest.

P-168

NON-SMALL CELL LUNG CANCER SUPPRESSES ACTIVITY OF DENDRITIC CELLS TO ESCAPE FROM IMMUNE SURVEILLANCE

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Objectives

Despite introduction of new adjuvant methods, the results of treatment for non-small cell lung cancer (NSCLC) remain unsatisfactory. Immunotherapy is hoped to improve overall outcomes in NSCLC, however the immune surveillance mechanisms are based on proper function of dendritic cells (DCs). The aim of our study was to assess the influence of NSCLC cell lysate on the DCs maturation process and on the ability of autologous DCs to trigger cytotoxic immune response against lung cancer cells *in vitro*.

Methods

Tumour fragments collected from operative specimens of 24 NSCLC patients were cultured with growth factors to obtain tumour cell lysate. Immature autologous DCs were generated from peripheral blood mononuclear cells (PBMCs) in cultures supplemented with plasma, IL-4 and GM-CSF. DCs maturation was conducted in cultures containing DCs, lymphocytes and macrophages incubated in TNF- α and tumour cell lysate (A) or only-TNF- α (B). Cancer cells stained with carboxyfluorescein succinimidyl ester (CFSE) were added to cultures to assess DCs phagocytic activity as well as lymphocytes activation and cytotoxic features using flow cytometry, confocal microscopy and fluorometry.

Results

CFSE fluorescence level, CD69⁺ lymphocytes count and percentage of cells producing IFN- γ was significantly higher in only-TNF- α cultures than in tumour cell lysate ($p = 0.007$; $p = 0.042$ and $p = 0.027$ respectively). However, the percentage of CD83⁺ on DCs was significantly higher in tumour cell lysate culture than in only-TNF- α culture ($p = 0.041$).

Conclusions

To avoid immune surveillance, NSCLC induces excessive maturation of DCs and inhibits DCs' phagocytic abilities, which results in profound suppression of tumour-specific immune response. Such inhibited mature DCs are able to activate cytotoxic T lymphocytes, however the overall anti-cancer efficacy of the immune system becomes severely impaired. Therapies enhancing DCs function may become a promising way to improve outcomes in combined treatment of NSCLC.

Disclosure: All authors have declared no conflicts of interest.

P-169

PLATELET RICH PLASMA (PRP) IMPROVES THE HEALING PROCESS AFTER AIRWAY ANASTOMOSISA. Gomez-Caro¹, P. Ausin², David Sanchez¹, E. Cladellas³, M. Boada¹¹General Thoracic Surgery, Hospital Clinic, Barcelona/SPAIN²Respiratory Medicine Department, Hospital del Mar-IMIM, Ciberes, Barcelona/SPAIN**Objectives**

To investigate whether platelet rich plasma (PRP) promotes healing and reduces anastomotic complications following airway surgery in a pig model.

Methods

Platelet concentrate was obtained by spinning down the animal's own blood (60ml) and collecting the buffy coat containing concentrated platelets and white blood cells. Fifteen adult pigs were randomized into three groups of five animals: 1) sham (cervicotomy alone), 2) non-PRP group (50% trachea resection and end-to-end anastomosis) and 3) PRP group (50% trachea resection and end-to-end anastomosis and PRP application over the anastomosis). Blood samples were taken at baseline and at 1, 6 and 24h to determine platelet-derived growth factors. All animals were carefully monitored for anastomotic complications, infection or local reactivity. Laser Doppler fluxmetry was performed intraoperatively and at 30 days to assess differences in pre (Δ pre) and post (Δ post) anastomotic blood flow. Anastomosis tensile strength test was also evaluated.

Results

All but one animal (non-PRP, pneumonia, 9-day survival) remained alive at study end-point. No local complications were detected. Platelet level in PRP fluid was higher than baseline blood sample ($638 \pm 56 \times 10^9$ vs. $176 \pm 37 \times 10^9/L$, $p < 0.002$). TGF β 1 was the most prevalent growth factor in PRP (0.92 ± 0.12 vs. 0.50 ± 0.04 ng/ml, $p < 0.05$). VEGF, TGF-b1, EGF immunoassay showed a peak at 1 and 6h in the PRP group ($p < 0.05$) (figure 1). The PRP group had significantly increased transanastomotic flow (Δ intraoperative- Δ 30th) compared to non-PRP group (+15.6% vs. +3.8% units, $p < 0.05$) at 30 days and higher stress-strain resistance ($p < 0.05$).

Conclusions

PRP accelerates the onset of the healing process in airway surgery by promoting earlier release of platelet-derived growth factors that stimulate transanastomotic angiogenesis.

Disclosure: A. Gomez-Caro: Biomet Europe financed with a research Grant this investigation about Platelet Rich plasma and airway surgery. P. Ausin: Biomet Europe financed with a research Grant this investigation about Platelet Rich plasma and airway surgery. D. Sanchez: Biomet Europe financed with a research Grant this investigation about Platelet Rich plasma and airway surgery. E. Cladellas: Biomet Europe financed with a research Grant this investigation about Platelet Rich plasma and airway surgery. M. Boada: Biomet Europe financed with a research Grant this investigation about Platelet Rich plasma and airway surgery.

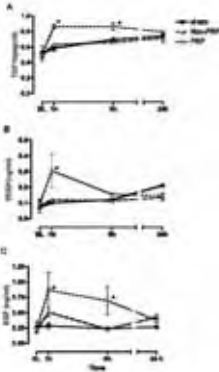


Figure 1: Platelet-derived growth factors chart.

TGF-β1, VEGF and EGF levels in blood at baseline, 1, 6 and 24h after surgical procedure.

A) Transforming growth factor (TGF-β1) concentration was significantly higher ($p < 0.05, *$) in the PRP group at 1 and 6 hours after baseline, and was then similar in all groups.

B) Vascular endothelial growth factor (VEGF) showed a significant increase at 1 hour after baseline in the PRP group ($p < 0.05, *$).

C) Epidermal growth factor (EGF) levels were significantly higher at 1 and 6 hours after baseline and then decreased.

Tuesday, 7 June 2011

13:00 - 14:00

Session XI/ Videos

V-170

PEARSON'S OPERATION FOR POST-TRACHEOTOMY SUBGLOTTIC STENOSIS

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Universitat de Barcelona (UB), Barcelona/SPAIN*

Objectives

This video shows a Pearson's operation for post-tracheotomy subglottic stenosis reparation in a 72 years-old male.

Methods

Past medical history was unremarkable except the tracheotomy performed 20 years ago for severe thoracic trauma with difficult weaning. Patient suffered from short of breath and stridor during light exercise during the last two months. Bronchoscopy showed a subglottic stenosis placed 2 cm beneath the vocal cords. This stricture was 2.5 cm of length. Cervicothoracic CT scan showed a 2-3 cm stenosis beneath the vocal cords affecting the anterior arch of the cricoid, with a predominant ossification of the cartilage in cricoid and tracheal rings.

Results

Single-stage resection and reconstruction was carried out following the Pearson operation. Anterior cricoid arch was extirpated repairing the narrow of the subglottic space. This anterior cricoid arch was dissected respecting the anterior tracheal mucosa, undamaged in this case, and preserving the cricoid plate. A small distal membranous flap was used for anastomosis in the posterior wall performed by a running suture. Afterwards end-to-end anastomosis was performed, placing the interrupted stitches between the thyroid cartilage in the front face and the tracheal rings.

Conclusions

Bronchoscopic follow-up showed a normal trachea caliber 3 weeks after operation.

Disclosure: All authors have declared no conflicts of interest.



V-171

DIAPHRAGMATIC METASTASIS FROM SOFT TISSUE SARCOMA

Alberto Oliaro, P. Filosso, C. Mossetti, E. Ruffini

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Objectives

The presence of diaphragmatic metastasis from soft tissue sarcoma is extremely rare.

Methods

We present an extensive diaphragmatic resection for metastasis by a left thoraco-phreno-laparotomy in the IX^o intercostal space.

Results

This surgical approach allowed an easier resection of the diaphragm up to inferior vena cava. A Gore-Tex dual mesh was used for the diaphragmatic reconstruction.

Conclusions

The thoraco-phreno-laparotomy access allows a complete exposure of the diaphragm and permits an easy reconstruction.

Disclosure: All authors have declared no conflicts of interest.

V-172

BRONCHIAL RECONSTRUCTION SURGERY WITHOUT PULMONARY RESECTION

Joaquín Pac, M. A. Rodríguez, J. Casanova, R. Rojo, J.C. Rumbero, N. Uribe-Etxebarria, M. Lorenzo, U. Jiménez, L. Hernández
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Objectives

Woman, 66 years old, was diagnosed of pulmonary tuberculosis in 1999. She starts with repeated episodes of pneumonia ten years later. Circumferential 3 mm stenosis of the proximal third of the main left bronchus was shown in bronchoscopy. We show the film of the resection of the post-tuberculosis stenosis of the main left bronchus, and its reimplantation on the trachea.

Methods

We performed a median sternotomy, opening the left pleura and identifying the stenosis. Then, left superior pulmonary vein, left pulmonary artery, pericardium, superior cava vein, right pulmonary artery and carina were identified and exposed. After that, main left bronchus was transected and reimplanted on the left inferior third of the pars cartilaginosa of the trachea, being sutured with PDS 0000. Previously, we closed the original left upper lobe bronchus with the same kind of suture. Two drainages were left, mediastinal and pleural, and metal sutures were used for the sternal closure.

Results

Patient spent 7 days in the Reanimation unit with antibiotherapy. She was discharged on the 16th postoperative day. After six months, the patient remains asymptomatic, and TC shows no stenosis in the region of anastomosis.

Conclusions

Surgical treatment of the stenosis of a main bronchus can be performed in a safe way without extracorporeal circulation and avoiding the inconvenience of lung resection.

Disclosure: All authors have declared no conflicts of interest.



V-173

CHRONIC EMPYEMAS: USE OF VACUUM-ASSISTED CLOSURE (VAC) THERAPY IN CONJUNCTION WITH A FENESTRATIONShah S. S. Begum¹, K. Polyzois², K. Papagiannopoulos²¹*Department of Thoracic Surgery, St James's Hospital, Leeds/UNITED KINGDOM,*²*Thoracic Surgery Dept., Leeds Teaching Hospitals Trust, St.James's University Hospital, Bexley Wing, Leeds/UNITED KINGDOM***Objectives**

Conventional treatment of chronic empyemas in patients who are unfit for a decortication or thoracoplasty requires a fenestration. Fenestrations require frequent often painful dressing changes and are associated with prolonged hospitalisation. We assessed the value of utilising vacuum-assisted closure (VAC) therapy in conjunction with a fenestration in managing a persistent infected pleural space.

Methods

Five patients underwent open drainage and fenestration of their empyema cavity. A VAC therapy system was inserted the day after surgery. The patients then went on to have the VAC dressing replaced every 7-10 days. Patients were discharged home with the VAC therapy system in-situ with the dressing being changed by nurses in the community. Over a period of time the pleural space was cleaned and the residual space obliterated.

Results

The use of VAC therapy avoids the needs for daily dressing changes and facilitated early discharge and rehabilitation. Overall the length of hospitalisation was shorter and the VAC therapy facilitated closure of the empyema cavity.

Conclusions

Our observations suggest that VAC therapy used in combination with a fenestration facilitates early discharge and recovery and improves patient satisfaction.

Disclosure: All authors have declared no conflicts of interest.

V-174

THORACOSCOPIC LOBECTOMY AND MEDIASTINAL LYMPH NODE DISSECTION IN PATIENTS WITH EARLY STAGE NSCLC

Arif K. Allakhverdiev, K. K. Laktionov, M. M. Davydov, A. K. Chekini
Thoracic Surgery, Blokhin Cancer Research Center, Moscow/RUSSIAN FEDERATION

Objectives

Many thoracic surgeons are now advocating the use of minimally invasive thoracoscopic surgery to perform lobectomies for early-stage primary NSCLC, with the objective of lessening postoperative morbidity while still providing a good oncologic outcome. This series is reviewed to assess these issues.

Methods

Between 2008 and 2009, we performed 51 thoracoscopic lobectomies in 19 women (37,2%) and 32 men (62,8%), with a mean age of 55.3 years. All operated patients had clinical stage I or II of lung cancer. Right upper lobectomy met 14(27,5%), midell &ndash 8(15,7%) and lower &ndash 17(33,3%) from the total number of operated patients. Left completed 8(15,7%) lower and 4(7,8%) upper lobectomy. Of the primary lung cancers, 39 (76,5%) were adenocarcinoma. All patients with primary lung cancer performed hilar and mediastinal lymph node dissection. There are some discussions over approach to VATS. Some authors perform VATS using minithoracotomy in the beginning of an operation, whereas others prefer using exclusively 4-5 ports. In our research we have made minithoracotomy only for removal of a lung at the end of an operation. The mediastinal lymph node dissection is mandatory and integral part of lung cancer surgery.

Results

Thoracoscopic lobectomy and mediastinal lymph dissection was successfully performed in 47 patients (92,1%) 4(7,9%) patients required conversion to thoracotomy to control bleeding in the setting of dense hilar adenopathy. There were no intraoperative and perioperative deaths. Complications included pneumonia - 4 patients and prolonged air leak - 2 patients. Median time to chest tube removal was 3 days, and median length of stay was 6 days.

Conclusions

Thoracoscopic lobectomy has been proven to be an adequate surgical approach to lung cancer and should be considered as a viable approach to treating selected patients with early-stage NSCLC.

Disclosure: All authors have declared no conflicts of interest.



V-175

UNIORTAL VATS REMOVAL OF BULLET FROM CHEST

S. Khandelwal, Ali Zamir Khan

Minimally Invasive Thoracic Surgery, Medanta, The Medicity, Gurgaon/INDIA

Objectives

We present a video of Uniportal VATS removal of a bullet from a patient who sustained this injury in Afghanistan.

Methods

Uniportal VATS was performed on a bystander who got shot with a stray bullet which pierced his left chest, injured the vertebrae and spinal cord and got lodged into the right chest wall. He had paraplegia and needed a MRI of the spine prior to Neurosurgical Intervention. Due to the presence of a metallic bullet he could not undergo an MRI and hence he was taken up for Uniportal VATS removal of the bullet.

Results

We had a successful outcome of removal of the bullet by Uniportal VATS with good healing of the chest wound. The patient had a postoperative MRI which enabled him to undergo neurosurgical intervention.

Conclusions

Uniportal VATS must be considered as a treatment of choice. Uniportal techniques should be learnt by surgeons performing three ports VATS.

Disclosure: All authors have declared no conflicts of interest.

Tuesday, 7 June 2011**14:00 - 15:30****Session XII/ Chest Wall / Diaphragm / Pleura****O-176****FLAIL CHEST MANAGEMENT: CONSERVATIVE VERSUS SURGICAL TREATMENT, EARLY AND LATE OUTCOMES**

Pablo Moreno de la Santa Barajas¹, M.D. Polo Otero¹, C. Delgado Sánchez-Gracián², P. Magdalena Lopez¹, M. Choren Durán¹, C. Trinidad², S. Leal Ruiloba³, M. Lozano Gómez¹
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²*Radiology, Hospital POVISA, Vigo/SPAIN,*
³*Hospital POVISA, Vigo/SPAIN*

Objectives

Flail chest is one of the most serious forms of blunt thoracic trauma. The outcome of flail chest injury is a function of associated injuries. Non-operative treatment approaches are usually preferred for the flail chest cases. Surgical stabilization is associated with a faster ventilator wean, and shortening ITU stage.

Methods

From January 2005 to December 2010, 98 patients with flail chest were admitted in our institution. 4 patients died along the first 5 hours and were excluded from the study. 54 patients (Group I) were treated conservatively and 40 patients (Group II) were treated surgically with open reduction and external fixation (ORIF) with STRACOS System[®] (MedXpert, Heiterheim, Germany). Demographic data, trauma mechanism, ISS, ITU stage, Mechanical ventilation and recovery time to back normal activities were analysed in both groups. All survival patients were following up at least 6 months, recording: needs of analgesia, lung function tests and working days lost for recovery.

Results

Both groups were similar in age, sex, trauma mechanism, extrathoracic injuries, ITU admission, ISS, late mortality and patients with mechanical ventilation. The mean of broken ribs was 11 in both groups, and the mean of ribs stabilized in the surgical group was 6, (16 left side, 11 right and 13 bilateral). The rib fractures were stabilized only with clips in 27 cases and 13 patients need bars and clips for fixation due to chest deformities mainly. 3 patients died in the conservative group, and one treated surgically, the cause of death was multi organic failure. ITU stage was 14 vs 12 days, $z=1,75$. Recovery time to normal life 223 days vs 149 days, $z=1,77$. After 9 months all surgical patients were working back versus only the 68% of conservative patients, $z=1.84$. Patients treated conservatively needs daily analgesia 244 days (89 - 360) vs 84 days (38 - 122), $z=1,89$.



Conclusions

Surgical flail chest stabilization by ORIF reduces the ITU stage, the ventilation period. The ORIF reduce needs of analgesia and allows patients comeback to normal life early in comparison with patients treated conservatively. We recommend the flail chest fixation in patients without severe head trauma.

Disclosure: All authors have declared no conflicts of interest.

O-177

**SOLITARY STERNAL METASTASIS FROM BREAST CANCER:
IS THERE A ROLE OF SURGERY?**

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Bexley Wing, Leeds/UNITED KINGDOM*

Objectives

Carcinoma of the breast is a leading cause of death in women. Metastatic involvement of the skeleton is very common and detection of these lesions has both prognostic and therapeutic sequelae. Sternal involvement is witnessed in 1.9-5.2% of cases with the mainstay of treatment consisting of radiotherapy; however this is often complicated by previous radiation and sternal instability. Surgery seems to have a role in selected patients. We present our experience of partial or total sternal resection of solitary breast metastases.

Methods

Five patients underwent sternal resection for solitary metastases. Preoperative diagnosis was established with scintigraphy, MRI and fine needle aspiration cytology (FNAC). Total or partial sternectomy was performed in 4 and 1 patient respectively. Lymph node dissection was carried out in all cases and the sternum was reconstructed with bone cement layered in Marlex mesh. Primary soft tissue closure was possible in all but one patient. The latter had a vascularised rectus abdominis muscle flap to close the defect.

Results

Complete resection of the metastasis was evident histologically in all cases. Routine follow up revealed one patient with recurrence requiring a completion sternectomy. All patients remained asymptomatic after surgery until they developed distant metastases. Two patients remain alive, 16 and 72 months, after the operation, while the rest died 20, 32 and 61 months later.

Conclusions

Meticulous surgery offers successful management of solitary breast metastases to the sternum. Symptomatic relief from pain and skin ulceration is an added benefit as witnessed in our patient cohort. The prognostic benefit is also apparent with three of the patients surviving more than 2 years and two of them more than 5 years following resection of their isolated sternal metastases. In conclusion, resection should be performed in all patients with solitary sternal metastases offering both prognostic and symptomatic benefits.

Disclosure: All authors have declared no conflicts of interest.



O-178

THE COMBINATION OF PTFE MESH AND HORIZONTAL TITANIUM RIB IMPLANTS : AN INNOVATIVE PROCESS FOR RECONSTRUCTING LARGE FULL THICKNESS CHEST WALL DEFECTS

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²Thoracic Surgery, University Hospital, Strasbourg/FRANCE

Objectives

The reconstruction of large full thickness chest wall defects after resection of T3/T4 NSCLC or primary chest wall tumors presents a technical challenge for thoracic surgeons and plays a central role in determining postoperative outcome. When the defect is large, complications after chest wall reconstruction are common with a 27% mean rate of respiratory morbidity. The following is a review of our experience in the combined use of Titanium implants and PTFE mesh in chest wall reconstructions.

Methods

Since 2006, 21 patients underwent reconstruction for wide chest wall defects using Titanium implants and PTFE mesh . In all patients, the reconstruction was achieved by using a layer of 2mm thickness ePTFE shaped to match the chest wall defect and sewed under maximum tension to re-establish the skeletal continuity. The ePTFE was placed close to the lung and fixed onto the bony framework and onto the Titanium plate, which was inserted on the ribs. The Titanium rib osteosynthesis system was used to re-establish the rigidity of the thoracic wall by bridging the defect.

Results

Eighteen patients underwent a complete R0 resection with the removal of 3 to 9 ribs (mean 4,8), including the sternum in 8 cases and the vertebral bodies in 5 cases. The mean defect area was 198 cm² range [95- 400]. Reconstruction required 1 to 4 horizontal titanium bars (mean 1.9). There were two cases of infection that required explantation of the osteosynthesis system in one patient. Only one patient in our series developed a major complication in the form of respiratory failure.

Conclusions

Our experience and initial results show that titanium rib osteosynthesis in combination with Dualmesh can easily and safely be used in a one-stage procedure for major chest wall defects.

Disclosure: All authors have declared no conflicts of interest.

O-179

FLUORESCENCE THORACOSCOPY IN DETECTION OF PLEURAL MALIGNANCYOleg Pikin¹, E. Filonenko², E. Mironenko¹, D. Vursol¹, A. Amiraliev¹¹*Thoracic Surgery, P.A.Hertsen Moscow Research Institute of Oncology, Moscow/
RUSSIAN FEDERATION,*²*Rehabilitation, P.A.Hertsen Moscow Research Institute of Oncology, Moscow/
RUSSIAN FEDERATION***Objectives**

Conventional thoracoscopy, routinely performed in patients with pleural diseases, is not always conclusive in staging of pleural spread. Fluorescence diagnosis (FD) with 5-aminolaevulinic acid (5-ALA) has been used in the diagnostic purpose for various malignancies. The impact of fluorescence thoracoscopy on diagnosis and staging of pleural malignancies was examined.

Methods

23 patients with nonconclusive pleural effusions were enrolled in the prospective single-institution trial. Eligible patients were administered 25 mg/kg of 5-ALA per os 3 hours before video-assisted thoracoscopy. After conventional inspection with white light, thorough fluorescence investigation of the visceral and parietal pleura was performed (D-LIGHT Auto Fluorescent System; Karl Storz; Germany). Biopsy specimens of both normal and abnormal sites, as determined from white light and FD inspection, were obtained for histologic examination.

Results

There was no morbidity or mortality due to the procedure. A definitive diagnosis was obtained in all cases: malignant mesothelioma in 13 cases, other malignancies (pleural metastases) in 8 cases and non-specific inflammation – in 3 patients. A total of 118 biopsy specimens were available for histologic examination. In 20 patients all pleural deposits (n=60) detected by white light thoracoscopy had bright red fluorescence during FD and were proved to be malignant. Upstaging occurred in 12 patients (57,2%) (unsuspected 21 tumor deposits) due to FD examination. Micrometastases of macroscopically normal pleura were detected only by FD in one patient. Compared the results of histologic examination of specimens detected by conventional and fluorescence thoracoscopy we obtained 82 true positive, 10 – false negative, 23 – true negative, 3 – false positive results. Specificity was 88,4%, sensitivity – 89,1%.

Conclusions

FD using 5-ALA in the pleural cavity is feasible diagnostic tool when used in addition to white light thoracoscopy. It improves visualization of additional lesions or even micrometastases and leads to upstaging in patients with pleural malignancy.

Disclosure: All authors have declared no conflicts of interest.



O-180

WARD-BASED, NURSE-LED, OUT-PATIENT CHEST-DRAIN MANAGEMENT: ANALYSIS OF IMPACT ON COST EFFECTIVENESS AND PATIENT SAFETYPeter Tcherveniakov¹, J. De Siqueira², R. Milton¹, K. Papagiannopoulos³¹*Thoracic Surgery, St. James's University Hospital, Leeds/UNITED KINGDOM,*²*Department of Thoracic Surgery, Leeds Teaching Hospitals NHS Trust, Leeds/UNITED KINGDOM,*³*Thoracic Surgery Dept., Leeds Teaching Hospitals Trust, St.James's University Hospital, Bexley Wing, Leeds/UNITED KINGDOM***Objectives**

Prolonged drainage and air leaks are recognised complications of elective and acute thoracic surgery and carry significant burden on inpatient stay and outpatient resources. Since 2007 we have ran a ward-based, nurse-led clinic, for patients discharged with indwelling chest drains. We demonstrate that a dedicated chest drain service is cost effective and safe.

Methods

We reviewed the clinic activity for 12 months (November 09 - November 2010). Every patient episode was recorded and the data was collected prospectively. At the time of discharge from drain clinic, the whole outpatient care episode was entered into a database. We present a retrospective analysis looking specifically at duration of drain indwelling, the indications, complications and cost efficiency.

Results

The clinic was housed in the thoracic ward with no additional fixed costs. 74 patients were reviewed (53 male, 21 female, mean age of 59 years) and subsequently discharged from the clinic, accounting for 149 care episodes.

Performed surgical procedures

VATS drainage of effusion	7
VATS pleurodesis	7
VATS lung biopsy	4
Thoracotomy and lobectomy	17
VATS lobectomy	9
Thoracotomy and decortication	8
Empyema drainage	9
Bedside drain insertion	8
Other	5

Following hospital discharge the chest drains were removed after a median of 14 days (range 1-82 days). 58% of the patients were reviewed because of a prolonged air leak, 26% for persistent fluid drainage and 16% due to prolonged drainage following evacuation of empyemas. For the care episodes analysed, we estimate the clinic has generated £22,140 of income. Hourly Staffing costs for the service are significantly lower compared to those of the traditional outpatient clinic - £14 vs. £102.

Conclusions

Our results show that a dedicated intercostal drain monitoring clinic is a safe and efficient alternative to formal outpatient clinic review. It can lead to shorter hospital stays and is cost effective.

Disclosure: All authors have declared no conflicts of interest.



O-181

COMPARATIVE STUDY OF TALC POWDRAGE VERSUS PLEURAL ABRASION FOR TREATMENT OF PRIMARY SPONTANEOUS PNEUMOTHORAX

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Objectives

Nowadays gold standard surgical treatment for primary spontaneous pneumothorax is videothoroscopic resection of identifiable bulla and mechanical pleurodesis (often pleural abrasion). Anyways, there is an increasing use of talc poudrage all around the world to avoid recurrences. Controversy remains if it is an adequate indication for this kind of patients. The aim of this paper is to compare abrasion pleural versus talc poudrage for the treatment of spontaneous pneumothorax.

Methods

We have performed a retrospective comparative study from July 1992 to December 2010. Group A (Videothoroscopic bullectomy and pleural abrasion) n= 399; female: 8, male: 391; mean age: 25.2 years; right: 176, left: 195, bilateral: 28. Group B (Videothoroscopic bullectomy and talc poudrage) n= 388; female: 4, male: 384; mean age: 29.4 years; right: 194, left: 189, bilateral: 5. Recurrences, surgical procedure duration, complications and length of stay, were compared using paired t test and Fisher's exact test.

Results

Some differences between both groups were founded: Recurrences Group A: 11 patients (2.76%) and Group B: 4 patients (1.03%) p=0.116. Operation duration: Group A 46±12.3 minutes, Group B 37±11.8 p<0.001. Length of stay: A 4.7±2.5 days, B 4.3±1.8 days p<0.01. Morbidity: (A 49, B 13) Apical residual space A 25, B 4 p<0.001, Prolonged air leak more than 7 days A: 13, B: 8, p=0.378, Pleural effusions A: 6, B: 0, p<0.005, Atelectasis A: 0, B: 1, p=0.493. Reintervention: 24 patients, Group A: 17, Group B: 7, p<0.03.

Conclusions

Talc poudrage is an effective technique for pleural obliteration. When compared to pleural abrasion, talc poudrage has lesser operation duration, shorter length of stay and less range of reinterventions. Talking about morbidity talc was better than abrasion in presence of apical residual space or pleural effusions needing drainage. There were no statistics differences in recurrences, prolonged air leak and atelectasis.

Disclosure: All authors have declared no conflicts of interest.

Tuesday, 7 June 2011**14:00 - 15:30****Session XIII/ Pulmonary Neoplastic****F-182****DIFFERENT MARKERS FOR MINIMAL SYSTEMIC DISEASE DETECTION IN LUNG CANCER PATIENTS**Jiri Klein¹, J. Srovnal², Z. Kolar², J. Skarda², P. Skalicky², J. Chudacek², T. Janaskova³, M. Hajduch⁴¹*Surgery, University Hospital Olomouc, Olomouc/CZECH REPUBLIC,*²*University Hospital Olomouc, Olomouc/CZECH REPUBLIC,*³*Hospital Ostrava-Vitkovice, Ostrava/CZECH REPUBLIC,*⁴*Palacky University Olomouc, Olomouc/CZECH REPUBLIC***Objectives**

Biomarker measurements of minimal systemic disease (MSD) have the potential to monitor the molecular status of tumors without invasive tumor biopsy at the time of treatment selection.

Methods

This is a pilot study to test for the presence of the minimal systemic disease in 69 lung cancer patients undergoing curative surgery. We used real-time RT-PCR method for absolute gene expression quantification of carcinoembryonic antigen (CEA), epidermal growth factor receptor 1 (EGFR1), palate, lung and nasal epithelium associated protein (LUNX) and hepatocyte growth factor receptor (c-met) in peripheral blood, blood from pulmonary veins and samples of bone marrow.

Results

1. CEA and LUNX are characterized by high specificity and sensitivity for MSD detection in lung cancer patients. 2. MSD positivity using CEA in bone marrow samples strongly correlated with histological grading (GI-GIII). 3. In patients with malignant lymphadenopathy (N1, N2 disease), we found higher expression of CEA and c-met in pulmonary vein blood samples in contrast to N0 patients. 4. Higher expression of MSD markers correlated with higher pathological stage (II-III pTNM): a) by the use of CEA in bone marrow, b) by the use of c-met in peripheral blood samples, c) by the use of LUNX in pulmonary vein blood samples.

Conclusions

These pilot study shows that the MSD detection in lung cancer is technically possible and highly specific and sensitive markers for the monitoring of MSD are available. The clinical relevance of MSD is under permanent debate. It is our hope that validation of postoperative persistence or re-appearance of tumor cells may help to identify patients in need of adjuvant systemic therapy. Optimization of the panel of specific tumor markers and evaluation of their validity in monitoring of minimal systemic disease in lung cancer patients need to be investigated in further studies. This study was supported by grant IGA MZCR NS 10285-3 2009.

Disclosure: All authors have declared no conflicts of interest.

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IMPACT OF INTERSTITIAL LUNG DISEASE ON SHORT-TERM AND LONG-TERM SURVIVAL OF PATIENTS UNDERGOING SURGERY FOR NSCLC: ANALYSIS OF RISK FACTORS

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Objectives

To determine the impact of interstitial lung disease (ILD) on postoperative mortality and long-term survival of patients with NSCLC undergoing pulmonary resection.

Methods

We reviewed 775 consecutive patients who had undergone lung resection for NSCLC between 2000 and 2009. ILD, defined by medical history, physical examination and abnormalities compatible with bilateral lung fibrosis on high-resolution computed tomography, was diagnosed in 37 (4.8%) patients (ILD group). The remaining 738 patients were classified as non-ILD.

Results

There was no significant difference between the two groups in terms of age (69 vs 66 years), sex (79% vs 72% male), smoking history (93% vs 90% smokers), FEV1% (89% vs 84%), FVC% (92% vs 94%), types of surgical resection and histology. The hospital mortality was higher in patients with ILD than in patients without (8% vs 1.4%, $p<0.01$). Patients with ILD had a higher incidence of postoperative ALI/ARDS (13% vs 1.8%, $p<0.01$). The overall 5-year survival rate was 49% in the ILD group and 52% in the non-ILD patients ($p=n.s.$). At the median follow-up of 26 months (range, 4-119 months), 19 patients were still alive and 18 had died in the ILD group. The major cause of late death was respiratory failure due to progression of fibrosis ($n=7$). Lower preoperative FVC % (median 72% vs 85%, $p<0.01$) was associated with postoperative ARDS, while no preoperative lung function parameters or operative data were identified as predictors of late death.

Conclusions

major lung resection in patients with NSCLC and ILD is associated with increased postoperative morbidity and mortality. Patients with a low preoperative FVC% should be carefully assessed prior to undergoing surgery. Long-term survival is still possible in a substantial subgroup. Thus, surgical resection should be offered to patients with lung cancer and ILD provided that the risk of respiratory failure is kept in mind during the evaluation of such patients.

Disclosure: All authors have declared no conflicts of interest.

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AWAKE VIDEOTHORACOSCOPIC RESECTION OF STAGE I NON-SMALL-CELL LUNG CANCER IN MARGINAL SURGICAL CANDIDATES

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Objectives

Lung resection through general anesthesia is the treatment of choice of non-small-cell lung cancer (NSCLC) although a number of potentially resectable patients are denied surgery due to advanced age and/or associated comorbidity. Aim of this study is to assess feasibility and outcome of awake videothoracoscopic resection (AVTR) performed by sole epidural anesthesia in marginal surgical candidates.

Methods

This prospective non-randomized trial included 26 patients undergoing AVTR. Eligibility criteria included, peripheral, stage I tumors, age > 75 years and/or comorbid conditions scored by the Charlsson index. Primary objectives were feasibility and safety rates, which given by the proportion of patients in whom the awake resection was possible (feasibility) and without major complications (safety) at an interim analysis including the first 10 operations. A rate $\geq 70\%$ for both factors was deemed necessary to complete the study. Secondary objectives were histologically proven free-resection margin and 3-year survival.

Results

Median age and Charlsson index were 77 years and 5, respectively. Two patients were converted to general anesthesia. One patient died (3.8%). Surgical procedures included 20 wedge resections and 6 segmentectomies. Overall feasibility and safety rates were 77% each. Median hospital stay was 4 days. Median tumor diameter was 22.5 mm. Histologically, free-resection margins were found in 22/24 instances (92%). Actuarial 3-year survival was 66%.

Conclusions

In our study, AVTR resulted in satisfactory feasibility and safety rates; histologically-proven free-resection margins in 92% of patients, and 3-year survival rate of 66%. These results suggest that AVTR can be a reliable surgical option in marginal surgical candidates with stage I NSCLC.

Disclosure: All authors have declared no conflicts of interest.

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NO-BLAME, NO-SHAME ANALYSIS OF ADVERSE EVENTS AFTER SURGERY FOR LUNG CANCER

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Objectives

To diminish complication rates after lung cancer surgery, the underlying causes will need to be revealed. With the PRISMA-method (Prevention and Recovery Information System for Monitoring and Analysis), also used for evaluation of industrial and aviation accidents, adverse events can be described and classified leading to insight and possible patient safety interventions.

Methods

The PRISMA-method consists of three main components. First, the complications are described by means of causal trees. At the top of the tree a short description of the event is stated, as the starting point for the analysis. Below the top event, all direct causes that can be identified are mentioned. By continuing to ask 'why' for each event or action beginning with the top event, the majority of causes are revealed. In this manner a structure of causes arises, until the root causes are identified at the bottom of the tree. In step two, the identified root causes are classified with the Eindhoven Classification Model (ECM) of PRISMA. The ECM taxonomy distinguishes five main categories of causes: technical, organizational, human, patient-related and other factors. In the final step, all classifications of a group of unintended events are added up to make a so-called PRISMA profile, a graphical representation (for example a bar plot) of the relative contributions of the causal factor categories of the ECM. Prevention strategies can be directed at the most frequently occurring (combinations of) root causes.

Results

The Rotterdam Lung Cancer Working Group comprises 15 hospitals in the southwestern part of the Netherlands and consented with the study of adverse events after lung cancer surgery. Adverse events were defined as 30-day mortality (4%), 30-90 day mortality (3%), unforeseen N2 (4%), prolonged hospitalization (7%) and development of bronchopleural fistula or empyema (4%). Hospitals are visited by a multidisciplinary team of clinicians and adverse events are classified according to PRISMA methodology. Based on the experiences in one of the hospitals, the procedure and results will be described. Final results can only be presented after the last hospital has been visited, in accordance with the liability guidelines for this project.

Conclusions

Our first experiences demonstrate that clinical failure analysis using the PRISMA-method is a powerful tool to study causes of error and to motivate clinicians to change their patterns of care.

Disclosure: All authors have declared no conflicts of interest.

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DIFFERENCES IN PSYCHOLOGICAL PERCEPTION OF LUNG CANCER BETWEEN PATIENTS, MEDICAL STAFF AND MEDICAL STUDENTSDariusz Sagan¹, J. Sak², M. Wiechetek³, J. Pawlikowski², E. Olszewska⁴, T. Cieślak⁴¹*Department of Thoracic Surgery, Medical University of Lublin, Lublin/POLAND,*²*Department of Ethics and Human Philosophy, Medical University of Lublin, Lublin/POLAND,*³*Department of Social Psychology and Psychology of Religion, The John Paul II Catholic University of Lublin, Lublin/POLAND,*⁴*Department of Surgery and Surgical Nursing, Medical University of Lublin, Lublin/POLAND***Objectives**

In clinical practice, medical staff is often unaware that what they think about patient's disease differs much from the perceptions and feelings of the patient. The aim of the study was to analyze the differences in psychological perception of lung cancer between patients treated with combined regimen for lung cancer (n = 30), medical staff (n = 94) and medical students (n = 303).

Methods

A total of 427 persons were enrolled in this questionnaire study using Imagination and Perception of Illness Scale (IPIS) by J. Sak. The IPIS scale factors described: loss of motivation to carrying out specific activities (8 items), mental sphere destruction (6 items), physical sphere destruction (8 items), pessimism (4 items), being a burden to others (3 items), loss of control over the illness (3 items). A seven-point scale from "0" meaning the choice of maximum positive feature to "6" meaning the choice of maximum negative feature was used. The higher result obtained within a given factor signified the more negative perception of the illness.

Results

In all IPIS factors the results among patients were significantly lower than among medical staff or students ($p = 0,042$ and $p = 0.001$, respectively; Tab. 1). Medical staff and students perceive lung cancer as causing more profound destruction in patient's mental and physical spheres than patients do.

Conclusions

Patients treated for lung cancer with combined regimen perceive their disease more optimistically than what is imagined by medical staff and students, and may underestimate the threat. It may be explained by psychological adaptation of patients to their disease during prolonged treatment. We believe that detailed informing lung cancer patients about their illness should be recommended to enhance self-awareness and doctor-patient cooperation.

Disclosure: All authors have declared no conflicts of interest.

Table 1. Differences in perception of lung cancer between patients, medical staff and medical students

The PFS factors	Patients treated for lung cancer (1) n = 31		Medical staff (2) n = 94		Medical students (3) n = 312		Kruskal-Wallis Test	p	Post Hoc
	M	SD	M	SD	M	SD			
Loss of motivation to carrying out specific activities	3.54	1.227	4.19	0.891	4.01	0.829	8.182	0.042	1+2
Mental sphere depression	3.95	1.054	4.63	0.852	4.31	1.005	19.294	0.001	1+2 1+3 2+3
Physical sphere dysfunction	4.25	1.214	5.29	0.708	5.11	0.860	19.488	0.001	1+2 1+3 2+3
Pain level	3.33	1.418	4.15	0.848	4.47	1.025	25.526	0.001	1+2 1+3 2+3
Being worried by others	0.69	1.504	1.87	1.388	2.09	1.164	29.884	0.001	1+2 1+3 2+3
Loss of control over the disease	2.95	1.720	3.88	1.220	3.31	1.251	24.827	0.001	1+2 1+3 2+3

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DOES NEOADJUVANT CHEMOTHERAPY INCREASE POST OPERATIVE MORBIDITY AND MORTALITY? LESSONS OF THE STUDY IFCT0002

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Objectives

The hypothesis of an increased incidence of postoperative complications after neoadjuvant chemotherapy for non-small cell cancer remains controversial. It would be particularly associated with subclinical parenchymal damages, promoting respiratory complications. Our objective was to verify if the number of preoperative courses favored the occurrence of postoperative complications.

Methods

We reviewed data from 525 patients included in the french national prospective randomized multicenter trial IFCT0002, on preoperative chemotherapy in non-small cell lung cancer. Two groups were formed based on the number of cycles of neoadjuvant chemotherapy administered: group 1 who received 2 courses, group 2 who received 4 courses. The type of resection, the side of surgery, and the data concerning operative morbidity and mortality at 30 days were recorded for all patients. Excluded were patients with 0, 1 or 3 courses, and patients who underwent lobectomy or segmentectomy. Appropriate statistics tests were used to compare groups.

Results

The population consisted of 100 women and 425 men. The mild age was 60 years (min: 35 years old, max: 76 years old). Group 1 consisted of 370 patients, group 2 of 129 patients. A total of 370 lobectomies were identified including 254 in group 1 and 94 in group 2. In addition, 118 pneumonectomies, 88 in group 1 and 27 in group 2 were identified. The postoperative mortality in group 1 (3.5%, n=12) was not significantly higher than in group 2 (2.5%, n=3). Post operative morbidity in group 1 (20.2%, n=69) was significantly higher than in group 2 (14%, n=17), p=0.01. Postoperative morbidity and mortality were not significantly different in groups 1 and 2 for patients who underwent a lobectomy (respectively, p=0.07 and p=0.2), or a pneumonectomy (respectively p=0.8 and p=0.4).

Conclusions

The number of courses of neoadjuvant chemotherapy does not appear to increase 30 days operative morbidity and mortality in selected patients, such as those included in the trial IFCT0002.

Disclosure: All authors have declared no conflicts of interest.

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ATYPICAL CARCINOID TUMOR OF THE LUNG: PROGNOSTIC SIGNIFICANCE OF NODAL INVOLVEMENT AND RECURRENCE

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Objectives

To analyze the prognostic behaviour of atypical carcinoid tumors of the lung regarding to nodal involvement and recurrence status.

Methods

923 patients were operated from 1980 to 2009 with a diagnosis of carcinoid tumor (796 typical –TC–, 127 atypical –AC–) and collected for our cooperative group. Clinical variables considered to comparative analysis were: N status, pathological stage, local recurrence, distance recurrence, disease-free survival, survival. Survival and disease-free survival were calculated by the Kaplan Meier method. Chi squared for categorical variable comparison was carried out. Log-rank tests were used when comparing functions of survival between factors. A p value ≤ 0.05 was considered significant. Statistical analysis was performed using SPSS 15.0 for Windows (Statistical Package for Social Sciences).

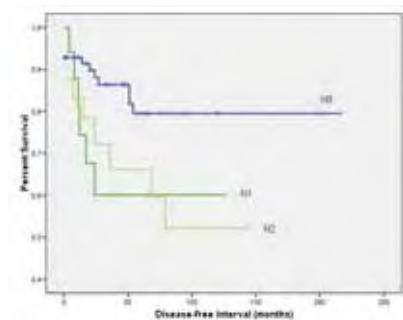
Results

33.9% of AC were affected by any kind of nodal involvement (14.2% N1, 18.9% N2 and 0.8% N3). These percentages were significantly different from those for TC (5%, 2.8% and 0%, respectively; $p=0.000$). Survival of patients N0 was significantly better than those N+ ($p=0.012$). Local recurrence depending on N status was 3.6% for N0, 5.6% for N1, 8.3% for N2 and 100% for N3 ($p=0.000$). Distant metastases for every N status were 14.%, 27.8%, 33.3% and 0% respectively ($p=0.147$). Disease-free survival was significantly better for N0 than N+ ($p=0.000$). Sublobar resection presented significantly higher local recurrence than standard resections ($p=0.03$). As expected, survival of patients was affected by recurrence status ($p=0.000$).

Conclusions

Nodal status is an important prognostic factor to predict recurrence in atypical carcinoid tumors of the lung. As survival of these patients is conditioned by disease-free status, standard surgical resection with radical lymphadenectomy is mandatory.

Disclosure: All authors have declared no conflicts of interest.





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THE ROLE OF SYSTEMATIC MEDIASTINAL LYMPH NODE DISSECTION IN RESECTED NON-SMALL CELL LUNG CANCER REVIEWED FROM AN EPIDEMIOLOGICAL POINT OF VIEW

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Objectives

International Guidelines on non-small cell lung cancer (NSCLC) suggest the systematic ipsilateral lymph node dissection in curative resected patients (pts). Regardless other factors (e.g. pT-stage, tumor location), this dissection should be done systematically and not selective. But practice patterns among surgeons vary widely.

Methods

In collaboration with the Association of German Tumor Centers (ADT), pseudonymous data from 136.502 pts with lung cancer were integrated into a single database, and data from 11.714 pts (documented and resected stage I-III NSCLC) were selected for the study. Survival rates were studied as a function of mediastinal lymph node assessment.

Results

In 6.437 pts (55%), out of the 11.714 pts studied, a systematic ipsilateral lymph node dissection was performed. 372 Pt (3.2%) had a lymph node sampling, 854 Pt (7.3%) had no lymph node dissection at all and in 4.051 Pt (34.6 %) all data on lymph node dissection is missing. The 5-year survival rates for these groups of pts are shown below:

stage	systematic	sampling	none	docum.missing
I	59%	35%	44%	41%
II	31%	25%	20%	24%
III	21%	19%	13%	15%

Conclusions

Our retrospective data suggest that mediastinal lymph node dissection has important therapeutic implications for NSCLC pts. Therefore, clinical data of cancer registries in connection with a systematic evaluation can be helpful to determine the role of treatment modalities in the management of NSCLC. And as a consequence of this study, an increase in the rate of systematic lymph node dissection should lead to an improvement in survival rates.

Disclosure: All authors have declared no conflicts of interest.

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BRONCHOVASCULAR VERSUS BRONCHIAL SLEEVE RESECTION FOR NON-SMALL CELL LUNG CANCER

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Objectives

Bronchovascular sleeve resections are considered to be technically more demanding and to be associated with higher morbidity and inferior long-term survival compared to bronchial sleeve lobectomy in the treatment of centrally located non-small cell lung cancer (NSCLC). Thus the aim of this study was to analyze comparatively the short-term and long-term results of both procedures.

Methods

We retrospectively reviewed our prospective database of all NSCLC-patients undergoing bronchovascular (BVSR) or bronchial (BSR) sleeve resections between January 1999 and December 2008. Patients' characteristics, morbidity, mortality, survival and possible prognostic factors were analyzed.

Results

The indication was NSCLC for 170 sleeve resections (BSR: n=105; BVSR: n=65) out of 213 consecutive sleeve resections. Both groups were statistically equal with regard to age (BSR: 62.4±9.0, BVSR: 60.2±9.8 years; p=0.2), gender, co-morbidities, prevalence of induction chemotherapy, number of dissected lymph nodes (BSR: 38.5±12.0 vs. 40.0±14.4), histology and completeness of resection (BSR: 96.7%, BVSR: 98.5%; p=0.7), respectively. The short-term results were comparable with regard to morbidity (BSR: 34.3%, BVSR: 41.5%; p=0.4), secondary pneumonectomy (BSR: 3.8%, BVSR: 0%; p=0.3) and mortality (BSR: 3.8%, BVSR: 7.7%), respectively. In the subgroup analyses, BVSR in patients aged ≥ 65 years was associated with high mortality (age<65: 0% (0/39) vs. age ≥ 65: 19.2% (5/26); p=0.008). In the long-term follow-up, 5-year-survival rates (BSR: 52%, BVSR: 51%) and mean survival (BSR: 77.8±6.9 vs. BVSR: 66.2±7.7 months; p=0.5) were comparable in both groups.

Conclusions

Bronchovascular sleeve resections are as safe as bronchial sleeve resections for the treatment of NSCLC. Both surgical procedures have similar short- and long-term results. Patients aged ≥ 65 years should be selected very carefully for bronchovascular resections.

Disclosure: All authors have declared no conflicts of interest.

Tuesday, 7 June 2011**16:00 - 17:30****Session XIV/ Oesophagus / Mediastinum**

F-191

LONG-TERM OUTCOMES AFTER VIDEO-ASSISTED THORACIC SYMPATHECTOMY FOR PALMAR HYPERHIDROSIS: A PROSPECTIVE STUDY COMPARING T3 AND T2-T4 ABLATION

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Objectives

Video-assisted thoracic sympathectomy is a definitive treatment for palmar hyperhidrosis (PH). Different non-surgical therapies exist, but they are usually temporary. This prospective study was conducted to compare long-term efficiency and side effects of single T3 versus T2-T4 sympathectomy.

Methods

We randomized 100 patients with PH to receive either T3 (n=50) or T2-T4 sympathectomy. All patients were examined preoperatively and were followed-up at 1, 6, 12 and 24 months postoperatively. The two groups were evaluated for comparison of symptom resolution, postoperative complication, severity of compensatory sweating (CS), incidence of symptom recurrence, and satisfaction rate.

Results

There were 71 males and 29 females. The mean age was 29.7 years. The two groups were comparable in gender, age, and severity of sweating. There were no postoperative severe complications or mortality. After 1 and 6 months, all the patients confirmed a complete symptom resolution. After 6 months, 22 T3 patients (44%) presented some degree of CS versus 26 T2-T4 patients (52%), with no difference in the satisfaction rate. After 12 months, the frequency of severe CS was lower for T3 group (4% versus 10%, $p < 0.05$) with a superior satisfaction rate in the T3 group (94% versus 84%). After 24 months, two unexpected recurrences were found in the T3 group (4%); the rate of severe CS was still lower in the T3 group (2% versus 10%), but the satisfaction rate was similar in the two groups (92% versus 90%).

Conclusions

The single-level T3 video-assisted sympathetic denervation is a safe and effective procedure to treat primary PH. This method reduces the incidence of severe CS postoperatively without compromising the patient's satisfaction. However, in our series few unexpected cases of late symptom recurrence have been noticed after T3 sympathectomy. More series with very long-term follow-up are needed to confirm the satisfactory therapeutic effects of the procedure.

Disclosure: All authors have declared no conflicts of interest.

F-192

ECTOPIC THYMIC TISSUE IN THE MEDIASTINUM: LIMITATIONS FOR THE OPERATIVE TREATMENT OF MYASTHENIA GRAVISWiesława Klimek-Piotrowska¹, E. Mizia¹, J. Kuzdzał², A. Lazar³, M. Lis⁴, J. Pankowski⁴¹*Department of Anatomy, Jagiellonian University, Cracow/POLAND,*²*Thoracic Surgery, John Paul II Hospital, Cracow/POLAND,*³*Jagiellonian University, Cracow/POLAND,*⁴*Sokołowski Hospital, Zakopane/POLAND***Objectives**

The aim of the study was to investigate the distribution of the ectopic thymic tissue in mediastinum and to evaluate its possible relevance to the therapeutic yield of thymectomy in patients with myasthenia gravis.

Methods

In this prospective autopsy study mediastinal dissection was performed in 50 cadavers without any known intrathoracic pathology. The initial dissection was done in the same way as during the maximal transsternal-transcervical thymectomy. At the second stage of dissection fatty tissue located in the sites being out of the reach of surgery was removed: perithyroid, peritracheal, retrotracheal, adjacent to the right and left phrenic nerve, adjacent to the right and left recurrent laryngeal nerve and periaortic. Each specimen was examined pathologically for ectopic thymic tissue.

Results

There were 41 (82%) male and 9 (18%) female cadavers, the mean age was 44.3 years (range: 15-75). Ectopic thymic tissue was detected in 31 of them (62%): in 17 (34%) in locations accessible for surgery and in 22 (44%) in inaccessible locations (in 8 of them there was thymic tissue in both locations). The incidence of thymic tissue in the individual locations were: retrothyroid - 4 (8%), peritracheal - 6 (12%), retrotracheal - 2 (4%), right phrenic nerve - 2 (4%), left phrenic nerve - 15 (30%), right recurrent laryngeal nerve - 2 (4%), left recurrent laryngeal nerve - 2 (4%) and periaortic - 0.

Conclusions

Incidence of the ectopic thymic tissue in mediastinum is high. Although some improvement of the results of thymectomy may be expected with more aggressive dissection of the left phrenic nerve, the frequent presence of the thymic foci in anatomical locations being out of the reach of surgery may be the limitation for surgical treatment of myasthenia.

Disclosure: All authors have declared no conflicts of interest.

F-193

FALSE NEGATIVE RATE AFTER 18FDG PET-CT FOR MEDIASTINAL STAGING IN CLINICAL STAGE 1 NSCLC: A PROSPECTIVE STUDY

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Objectives

To assess the false negative(FN) rate of 18FDG PET-CT in clinical cIA and cIB NSCLC for mediastinal staging.

Methods

Between January 2007 and December 2010, 153 patients(cIA patients (n=79) and cIB patients(n=74)) surgically treated were included prospectively in this study. A thoracic CT scan and 18FDG PET-CT were performed preoperatively for mediastinal staging and extrathoracic metastases detection. CT scan was considered negative if lymph nodes were <1cm in smaller diameter. 18FDG PET-CT was considered negative when the Suvmax uptake was <2.5. No invasive surgical staging was carried out in this group and curative resection plus systematic mediastinal dissection was performed except in the event of unexpected oncological contraindication.

Results

Composite non-invasive staging(CTscan &18FDG PET-CT) showed a negative predicted value(NPV) of 92%(CI[83.6-96.8] in cIA group and 85%(CI[74-92]) in cIB. There were 6/79(7.6%) FN in cIA and 11/74(14.8%) in cIB. Multilevel pN2 were detected in 4 cases all of them in cIB group. The most frequently involved N2 was subcarinal(2 cases) in cIA and 4R and 7(5 cases) in cIB. Occult (pN2) lymph nodes were more frequent in tumor size ≥ 5 cm(T2B, 15 cases. 4 FN , $p<0.045$), but no other risk factors for mediastinal metastases were identified(sex, age, clinical stage, histology, tumor location, central or peripheral, $p>0.05$). Multilevel pN2 was significantly most frequent in cIB group($p<0.03$). In $T\leq 1$ cm(T1A), NPV was significantly better(NPV=100%) than the other subgroups studied(IA >1cm and IB), ($p<0.05$).

Conclusions

Composite results for non invasive mediastinal staging(CT scan &18FDG PET-CT) showed a 7.6% of FN in cIA stage. In tumours ≤ 1 cm negative predictive value makes unnecessary surgical staging. However, in cIB the high rate of false negatives(14.8%, 5% multilevel pN2) makes necessary invasive staging, particularly in cT2B to decrease the incidence of unexpected pN2 in thoracotomy.

Disclosure: All authors have declared no conflicts of interest.

F-194

VIRTUAL MEDIASTINOSCOPY: A NEW DIAGNOSTIC TOOL FOR THORACIC SURGEONS

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Objectives

Cervical mediastinoscopy is the gold standard for staging of patients with suspected or proved lung cancer with enlarged or/and positive mediastinal lymph-nodes at enhanced computed tomography (CT) and position emission tomography (PET) scan. We conduct a pilot study to determine technical feasibility of virtual mediastinoscopy (VM) and to examine clinical utility of this technique.

Methods

VM was based on images obtained by integrated PET scan and helicoidal CT images with a slice thickness of 2.5 mm. Virtual endoscopic images (VI) and virtual VM movies obtained by a specific computer software were used in the cranio-caudal direction to reveal locations of lymph-nodes and great vessel during cervical video mediastinoscopy (CVM).

Results

Virtual images from 28 patients with lung cancer and enlarged mediastinal nodes positive at PET were obtained and accurately evaluated before CVM. Patient group included 18 men and 10 women., aged 48-76 years (median, 67 years). The maximum standard uptake value (SUVmax) of the mediastinal lymph-nodes ranged from 1.8 to 6.5. In all patients the VM enabled better understanding of the spatial and positional interrelationship between the PET positive mediastinal nodes and mediastinal anatomy allowing in all the cases but one a systemic biopsy in mediastinal stations. Based on the detailed virtual simulation on the nodal location, mediastinoscopic biopsy was performed by a Chamberlain's procedure in one case. A nodal biopsy was performed in a single representative station in 13 patients, in two stations in 10, and in 3 stations in 5. N2 disease was mediastinoscopically identified in 10 patients. 18 patients had a benign disease (5 sarcoidosis).

Conclusions

This study showed the feasibility of generating 3-D virtual mediastinoscopic images offering a best preoperative knowledge of the mediastinal anatomy providing the surgeon to make this invasive procedure safer and resulting more accurate.

Disclosure: All authors have declared no conflicts of interest.



F-195

MINIMALLY INVASIVE RESECTION OF THYMIC TUMORS WITH DA VINCI® SURGICAL SYSTEM

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Objectives

Resection of thymic tumors require being complete for oncological reasons and may be technically challenging due to the anatomical proximity of delicate mediastinal structures. An open approach preferentially by sternotomy is still recommended in many cases. Video assisted thoracoscopy (VATS) is feasible but limited by the two-dimensional vision and the impaired mobility of instruments. We evaluated the Da Vinci® Surgical System (RATS) for resection of various mediastinal pathology especially thymic tumors.

Methods

20 patients (10 males, median age 52.5 y) with thymoma well circumscribed on CT and a diameter less than 6cm were resected by RATS alone, those (n=4) with a diameter of 6-22cm combined in a hybrid procedure with a contra lateral thoracotomy on the side of the main tumor extension. Regular follow-up with chest CT scans was performed every 6 months.

Results

Thymoma resection was complete in all, included extended resection of pericardium and/or lung parenchyma in 6 and no intraoperative complications occurred. Pathology included thymoma type AB (7), B1-2 (6), B3 (2) and thymus carcinoma in 2 patients. All B3 thymoma and thymic carcinoma received adjuvant radiotherapy. Median hospitalization time was 5 days (2-13 d). None of the patients had a tumor recurrence or died during this 6 year observation period.

Conclusions

Well circumscribed thymomas can be safely and completely resected with the Da Vinci® Surgical System with excellent short and long term outcome. Selected tumors with large diameters may be resectable using a hybrid procedure with RATS and a thoracotomy.

Disclosure: All authors have declared no conflicts of interest.

F-196

RESPIRATORY COMPLICATIONS AFTER ESOPHAGECTOMY FOR CANCER DO NOT AFFECT DISEASE FREE SURVIVAL

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Objectives

Recent studies have suggested that postoperative complications could have a potential negative effect on long-term outcome after esophagectomy for cancer. Because respiratory failures represent the most frequent postoperative complication, we have investigated the prognostic impact of these complications on disease-free survival (DFS).

Methods

From a prospective single-institution database of 404 consecutive patients who underwent transthoracic esophagectomy for cancer, we retrospectively analyzed medical charts of all patients with microscopically complete resection (R0, n=383 patients). Complications were graded according to the modified Clavien classification. Respiratory complications were defined as atelectasis, pneumonia or Acute Respiratory Distress Syndrome in the absence of early surgical complications. Patients with grade 5 (postoperative mortality, n=43, 11%) were excluded from the analysis. The remaining 341 patients were analyzed for estimation of DFS according to Kaplan-Meier method. Logistic regression analysis was conducted to discriminate predictive factors affecting DFS.

Results

According to the modified Clavien classification, postoperative complications rates were grade 0: 147 (44%), grade 1: 7 (2%), grade 2: 56 (16%), grade 3: 69 (20%), and grade 4: 62 (18%). Five-years DFS rates were not significantly different between grade 0 (no complication, 38%, n= 147) and other grades (grade 1, 2, 3 and 4 (64%,45%, 56% and 48% respectively)). Respiratory complications occurred in 107 patients (31 %) and the 5-years DFS in this subgroup was 47% compared to 38 % observed in grade 0 patients (p=0.75). Clavien classification and respiratory complications did not come out in the univariate analysis of factors affecting DFS. On logistic regression, only three variables affected DFS: pT, pN, and the extracapsular lymph node involvement.

Conclusions

When postoperative mortality is excluded, postoperative complications do not affect DFS in patients with complete resection. This deserves substantial information regarding subgroup of patients in critical situations where salvage intensive care is questionable.

Disclosure: All authors have declared no conflicts of interest.



F-197

WORLDWIDE ESOPHAGEAL CANCER COLLABORATION GUIDELINES FOR LYMPHADENECTOMY ARE RELEVANT FOLLOWING NEOADJUVANT THERAPY FOR ESOPHAGEAL CANCER

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Objectives

The Worldwide Esophageal Cancer Collaboration (WECC) reported recommendations for number of lymph nodes removed during esophagectomy based upon patients undergoing surgery alone. We sought to determine whether these recommendations are relevant in EC patients receiving neoadjuvant therapy.

Methods

Patients undergoing neoadjuvant chemotherapy followed by transthoracic esophagectomy were reviewed. Patients were grouped by optimal vs. suboptimal lymphadenectomy (LAN) per WECC recommendations (pTis/T0/T1≥10; pT2≥20; pT3/T4≥30). Cohorts were compared for factors predicting optimal LAN by multivariate analysis and for overall survival (OS) by KM.

Results

135 patients (adeno=100, squamous=35) met study criteria. 94 patients (70%) had optimal LAN (median=30 nodes). Optimal LAN was more likely for tumors with lower ypT (p=<0.001) and with dissection of the superior mediastinal and cervical nodes (n=94), compared to dissection of only the lower fields (73.4 % vs. 61.0%, p= 0.149). On MVA, squamous histology (HR 0.46, CI 0.22-0.95) and optimal LAN predicted OS (HR 0.62, CI 0.36-1.07), although LAN was dependent upon ypT. Patients not downstaged in ypT (n=66) experienced improved 5yrOS with optimal LAN, while downstaged patients (n=69) had similar 5yrOS no matter the extent of LAN (Table). Similarly, of all patients with ypT3-4 (n=64), those with optimal LAN (n=33) demonstrated a trend towards improved 5 year OS (45% vs. 34%, p=.268) compared to those with suboptimal LAN (n=31).

Survival stratified by adequacy of lymphadenectomy

ypT classification	Extent of LAN by WECC	N (percent)	5 yr OS	p-value
Downstaged (n=69)	Optimal	58 (84%)	54.6%	0.68
	Suboptimal	11 (16%)	64.6%	
Not downstaged (n=66)	Optimal	30 (45%)	47.4%	0.11
	Suboptimal	36 (55%)	29.2%	

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Conclusions

WECC recommendations regarding LAN for esophageal cancer are applicable to patients undergoing esophagectomy following neoadjuvant therapy, particularly those who are not downstaged by T classification. Techniques to enhance extent of LAN should be pursued in this patient population to optimize surgical staging and potentially survival.

Disclosure: All authors have declared no conflicts of interest.



F-198

MINIMALLY INVASIVE ESOPHAGECTOMY: DECUBITUS OR PRONE POSITIONM. Feng¹, Lijie Tan²¹General Thoracic Surgery, Zhong Shan Hospital, Shanghai/CHINA,²Thoracic Surgery, Zhong Shan Hospital, Fu Dan University, Shanghai/CHINA**Objectives**

Minimally invasive esophagectomy (MIE) has performed at a few experienced center, it is still a technical challenge for surgeons. Most reports of MIE used left decubitus position, recent studies showed prone position is a safe and effective method. We compared MIE in decubitus position with MIE in prone position to find whether operative position will affect the technical difficulty of the procedure.

Methods

From June 2008 to June 2010, MIE was performed in 88 patients , including 52 patients in prone position and 36 patients in decubitus position. Data for all patients were collected prospectively and stored in a relational database.

Results

No conversion occurred to thoracotomy in both group. Total operation time and operation time in chest was shorter in prone position group than in decubitus position group(202 versus 217 minutes, $p=0.016$; 77 versus 67 minutes, $p=0.013$) More average lymph nodes were harvested from chest in prone position group than in decubitus group with a mean of 11.6 versus 8.9 ($p=0.033$). Anastomotic leak was less common in prone position group than in decubitus position group (7.7% versus 25%, $p=0.024$). No different between two groups concerning morbidity and mortality.

Conclusions

Thoracoscopic mobilization of esophagus in prone position had advantage of less operative time, more extensive lymph node dissection and decreased pulmonary injury compared with in decubitus position.

Disclosure: All authors have declared no conflicts of interest.

F-199

PN STATUS IN ADENOCARCINOMA OF THE DISTAL OESOPHAGUS AND CARDIA (ADOC)Alberto Ruffato¹, A. D'Errico², B. Aramini¹, M. Lugaesi¹, D. Malvi², G.M. Guiducci¹, S. Mattioli¹¹*Center for the Study and Therapy of Diseases of the Esophagus, Division of Thoracic Surgery, GVM Care & Research, Maria Cecilia Hospital, Alma Mater Studiorum - University of Bologna, Bologna/ITALY,*²*Pathology Division, Department of Oncology and Hematology "Felice Addarii" Institute, Alma Mater Studiorum - University of Bologna, Bologna/ITALY***Objectives**

Adenocarcinoma of the distal oesophagus and cardia (ADOC) are grouped among the thoracic tumors according to the TNM 7th ed., however controversy is pending on the unique or dual pathogenesis (GORD or gastric-like cancerogenesis). We investigated the pathways of lymphatic spreading in two cohorts of ADOC with or without Barrett's metaplasia.

Methods

ADOC + Barrett's (group 1) was diagnosed in 54 (subtotal oesophagectomy and oesophago-gastrostomy at the neck or chest dome); no Barrett's was detected in 140 ADOC (group 2), (oesophagectomy at the azygos vein + total gastrectomy with Roux oesophago-jejunostomy). All 194 cases, were approached through a right thoracotomy and upper laparotomy. Radical lymphadenectomy (stations 4L/R-3-4-7-10-8-9-15-16-17-18-19-20 TNM 7th ed. + pancreatic and pyloric nodes) was identical in both procedures except for the greater curvature stations.

Results

Histology confirmed the preop. Barrett-non Barrett grouping. Groups 1 and 2 were not different ($p>0,05$) for sex, age, mortality, morbidity, R0 resection rate and grading. They were different ($p<0,05$) for the number of patients with positive nodes (27/54 50% in group 1 and 98/140 70% in group 2), stage 1 (13/54 24% in group 1 and 4/140 3% in group 2), stage 3a-4 (5/54 9% in group 1 and 44/140 31% in group 2). Median number (IQR) of resected nodes was 29 (15-36.5) in 1 and 30 (20-40) in 2 ($p=.51$). Distribution of pN+ and site of recurrence are reported in table 1. Survival of group 1 and 2 at 5yrs is 42%, at 10yrs is 41% for group 1 and 36% for group 2 (log-rank $p=0,679$).

Conclusions

ADOC with Barrett's spreads preferentially to the thoracic stations opposite to ADOC without Barrett's which involves mostly perigastric nodes comprising the greater curvature's in 16.5%. The role of total gastrectomy should be questioned. These data deserve further investigation to improve surgery but possibly also surveillance programs.

Disclosure: All authors have declared no conflicts of interest.

pN+ Nodal Stations	Group 1 54 pts.		Group 2 140 pts.		p
	n	%	n	%	
Lesser curvature	0	16.7	49	33.5	0.001
Para-aortic	9	16.7	43	30.7	0.07
Greater curvature	0	0	23	16.5	N4
Pancreatic & Pyloric	0	0	11	7.8	0.07
Spleen	1	1.8	5	3.6	0.66
Celiac trunk	3	5.5	12	8.6	0.67
Hepatic artery	1	1.8	5	3.6	0.85
TNM Stations 5-9	18	33.5	0	0	0.001
TNM Stations 7	2	3.7	1	0.7	0.88
TNM Stations 4-3	2	3.7	0	0	0.13
Site of recurrence	Group 1 16 pts.		Group 2 58 pts.		
	n	%	n	%	
~Anastomosis	2	12	0	0	0.83
~Mediastinal LN	7	44	10	17	0.05
~Lombosacral LN	0	0	13	22	0.04
~Distal	7	44	27	47	0.94

Table 1

Tuesday, 7 June 2011

16:00 - 17:30

Session XV/ Airway / Transplantation

O-200

FIVE CONSECUTIVE AND SUCCESSFULL CASES OF LEFT MAIN BRONCHI APPROACH THROUGH VIDEOMEDIASTINOSCOPY FOR DIFFERENT INDICATIONS

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Objectives

Left main bronchial closure for fistula transmediastinoscopically was seldom used since its first publication in 1996 by Azorin. Same technique used for bronchial step in pneumonectomy for destructed lung associated with empyema or thoracic visiting window was not described till now. The authors reports a 5 cases series made between 2009-2011,with indications difficulties and tricks.

Methods

Five patients, mean age of 41.5 years, two females, three males, underwent videomediastinoscopic approach of the left main bronchi in the last 14 months, 2 for postpneumonectomy bronchopleural fistulas and 3 prior to pneumonectomy in TB compromised lung,one of them with clagget procedure.

Results

The recovery was uneventful in every case, with the patients full mobilization the following day. The mean operative time was 55 min. one single staple insufficiency was sutured. Minimal required lenght of the bronchus is 1,5 cm.

Conclusions

The mediastinoscopic approach of the main bronchus is a facile but not frequently used technique,first described in 1996.Virgin anatomic mediastinum facilitate the dissection of the trachea and left bronchi through its natural route and enables tracheal mobilization. It warrants minimal surgical trauma .Closure of the main left bronchi before pneumonectomy in extremely disabledated patients with poor general status improve the future evolution with minimal surgical stress. Video-mediastinoscopy is an easy alternative to the open methods as it allows approaching the left bronchi via the mediastinum. The VAM technique is our choice in selected cases because its specific morbidity is minimal compared with transpericardial sternotomy or a transthoracic approach. The mediastinoscopic approach before pneumonectomy is a novel option in highly selected patients with destructed lung and poor condition. It warrants minimal surgical trauma; however, one has to be prepared to convert to an open technique immediately.

Disclosure: All authors have declared no conflicts of interest.

O-201

THYROID CANCERS WITH LARYNGOTRACHEAL INVASION

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Objectives

Management of Thyroid cancers with laryngotracheal invasion is controversial.

Methods

A retrospective analysis of our database found 69 patients (38 female, mean age 59.6±11.6) in 15 years, of them 42 (61%) were managed by nonresectional methods due to the extensive airway involvement, severe co-morbidities, diffuse metastases, or patient's preference. Segmental airway resection was performed in 27 (39%) patients; concurrent with thyroidectomy in 17 (Immediate group), and as a delayed procedure in 10 referred patients (Delayed group), who had been previously undergone thyroidectomy with conservative airway management, like shaving procedures. Follow-up was completed in 81% of patients with mean duration of 30 months.

Results

Tracheal or Laryngotracheal resection and reconstruction was performed in 18, Laryngectomy in 8, and Pharyngolaryngectomy in 1 patient. There were two anastomotic dehiscence (7.4%), one resulted in mortality (3.7%). One or a combination of bronchoscopic core-out, laser, tracheostomy, and stent placement was performed in 42 non-resected patients with 2 mortalities (4.7%). Overall 1-, 2-, 3-, and 5-year survival was 85%, 85%, 68%, and 49% in resected group, as well as 56%, 46%, 40%, and 31% in non-resected group (p=0.049). Among resected group, overall 1-, 2-, 3-, and 5-year survival was 92%, 92%, 76%, and 61% in Immediate group as well as 75%, 75%, 56%, and 28% in Delayed group (p=0.43).

Conclusions

Complete segmental airway resection during or even after thyroidectomy could be safely performed, might be curative, and is associated with improved survival.

Disclosure: All authors have declared no conflicts of interest.

O-202**ACQUIRED NON-MALIGNANT TRACHEOESOPHAGEAL FISTULA:
EXPERIENCE IN 39 PATIENTS**

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Objectives

Tracheoesophageal fistula (TEF) secondary to respiratory intensive care have become the commonest type of non-tumoral fistula in adults. Most are diagnosed while patients still require mechanical ventilation. The diagnosis was confirmed by bronchoscopy. Difficulty in treatment results from the need to manage both the consequences of esophago-tracheal communication and those of the illness responsible for the fistula.

Methods

Various carefully selected means may be used to achieve this goal. We use a conservative approach until patients are weaned from ventilation. A tracheostomy tube is placed so that the balloon rests below the fistula, to prevent contamination of the tracheobronchial tree. A gastrostomy tube is placed for drainage and a separate jejunostomy tube for nutrition. Esophageal diversion is rarely required. The active approach to protection against oesophageal-tracheal reflux is done by lower oesophageal exclusion, in some cases. Single-stage repair is accomplished after the patient is weaned from mechanical ventilation.

Results

We have assisted 39 patients with TEF. The defect closed spontaneously in one patient and there were 3 deaths preoperatively. Surgical repair was accomplished in 35 patients. Simple division and closure of the fistula was done in 19 patients and tracheal resection and reconstruction in the remainder. There were three patients with delayed tracheal stenosis, needing second time tracheal resection and reconstruction. There were four postoperative deaths (11%). One patient with a 6.5 cm of affected trachea was repaired by tracheoplasty plus esophageal exclusion and posterior oesophagocolic bypass. One patient with a large destruction of membranous wall, the reconstruction was accomplished by pectoral muscle skin flap. There were 4 deaths (11%). There were no recurrent fistula.

Conclusions

The 31 surviving patients can feed themselves orally and breathe without the need for a tracheal appliance. One patient needs Montgomery tube by incompetence laryngeal secondary to initial trauma.

Disclosure: All authors have declared no conflicts of interest.

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THE METABOLOMICS BY NMR HRMAS IN THE ASSESSMENT OF THE QUALITY OF THE GRAFT AFTER IN SITU COLD PRESERVATION IN NON-HEART-BEATING PIG MODEL OF LUNG TRANSPLANTATION

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Objectives

The aim of this study was to assess the quality of the graft using the metabolomics ¹H high-resolution magic angle spinning (HRMAS) NMR spectroscopy. This original technique allows the characterization of the metabolic profile of intact lung biopsy samples obtained from non-heart-beating pigs perfused with Perfadex® solution using a novel method of preservation in situ.

Methods

A system of selective perfusion is set up 30min on a porcine lung after euthanasia, to perfuse the bi-lung block with Perfadex® at 4°C-8°C. The lung modifications after the cardiac stop will be analyzed according to the duration of the cold ischemia which corresponds at 3, 6 and 8 hours of perfusion with Perfadex®. Lung biopsies allowed the metabolomics analysis using the ¹H NMR HRMAS. The bronchoalveolar lavage fluid helped to identify lung inflammation and injury by measuring lactate dehydrogenase activity, a marker enzyme for pneumocytes type II (alkaline phosphatase), total protein concentration, albumin and Myeloperoxidase. One dimensional ¹H NMR HRMAS permitted to identify 35 metabolites.

Results

The majority of metabolite concentrations increased over time at 4°C without perfusion which means that it would be cellular degradation. Whereas, the metabolite concentrations were stable in presence of perfusion at 4°C. We notice two metabolites which reacted significantly at the instigation of the perfusion: glutathione (GSH) and Uracil. GSH signal is stable throughout the perfusion with Perfadex®, however, it disappears over time in absence of perfusion. On the other hand, Uracil shows a reverse profile as its signal is absent in the perfused samples whereas, it increases over time at 4°C in absence of perfusion.

Conclusions

From these results GSH and Uracil seems to be potential biomarkers of the quality of the lung. This study showed, that this novel technique of an in situ perfusion after cardiac stop, allowed maintaining a good lung quality.

Disclosure: All authors have declared no conflicts of interest.



O-204

500 CONSECUTIVE ISOLATED LUNG TRANSPLANTATIONS; A SINGLE CENTER EXPERIENCE

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Objectives

Center volume was identified in ISHLT registry as an independent risk factor for 1-year mortality after lung transplantation (LTx) with a RR<1.0 with >30 cases/year. The aim of the study was to analyze the time interval elapsed to accrue cohorts of 100 recipients and to compare donor (D) and recipient (R) characteristics, hospital mortality, and survival between 5 centiles.

Methods

Between 01/07/1991-07/07/2010, 500 consecutive isolated LTx (155 single-S - 345 bilateral-B) were performed in 487 recipients (276 M-211 F; mean±SD age 49±13y) for emphysema: 245; pulmonary fibrosis: 123; cystic fibrosis: 71; obliterative bronchiolitis: 21; pulmonary arterial hypertension: 17; bronchiectasis: 12; and miscellaneous: 11 after 220±210 days waiting time. Lungs were recovered from 498 donors (264 M-234 F; age 40±14y; 479 HBD-19 NHBD; 414 national-74 international) who suffered from CVA: 254; trauma: 202; asphyxia: 28; intoxication: 8; brain tumor: 4; and cerebral infection: 2. D-characteristics (age, gender, weight, height, blood group, cause of brain death, oxygenation, ventilation) and R-characteristics (age, gender, weight, height, blood group, diagnosis, waiting time, SLTx/BLTx) as well as hospital mortality and overall survival were compared between 5 centiles (C1-C5).

Results

D-age (p<0.0001) and D-ventilation (p<0.002) increased while D-oxygenation (p<0.0001) decreased between C1-C5. Waiting time (p<0.01) and percentage BLTx/SLTx (p<0.0001) increased between C1-C5. No significant differences were identified for other D & R characteristics. Thirty three patients have died in hospital (6.6%) from infection: 10; bronchial complications: 8; bleeding: 7; neurological problems: 6; cardiac problem: 1; and graft failure: 1. Hospital mortality decreased and overall 1-year, 3-year, and 5-year survival improved between C1-C5.

Conclusions

Early and late outcome after LTx improved with increased annual volume despite use of more extended criteria donors. This may in part result from the preferential use of BLTx compared to SLTx in recent years.

Disclosure: D. Van Raemdonck: supported by grant FWO-Flanders G.3C04.99. All other authors have declared no conflicts of interest.

O-205

SELECTIVE IN-SITU LUNG PERFUSION PRESERVES TRANSPULMONARY OXYGEN DIFFUSION IN AN ANIMAL MODEL OF NON HEART BEATING DONOR

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Objectives

Non-heart beating donor is a possible solution to lung donor shortage. However, organ preservation and functional assessment are unsolved problems. We developed an in-situ perfusion model in pigs with selective pulmonary perfusion and assessed quality of lung preservation by measure alveolocapillary exchanges.

Methods

With institutional approval, 6 white large pigs were studied. Cardiac arrest was induced under general anesthesia using whole blood subtraction. Canulation was performed into the left and right ventricles for anterograde lung perfusion with aortic and caval clamping to achieve selective lung perfusion using cold Perfadex©(Vitrolife© Goteborg, Sweden). The post capillary, systemic oxygen consumption was mimicked using an extra corporeal membrane oxygenator (ECMO,Primo2X, Sorin Group ©,Milan, Italy) ventilated with an hypoxic gas mixture (N₂ 86%, O₂ 7%, CO₂ 7%). Desoxygenated blood substitute (Steen solution ©, Vitrolife ©, Goteborg, Sweden) was then perfused into pulmonary circulation to challenge the alveolocapillary membrane for 30 minutes at 3h, 6h and 8h with a concomitant rewarming of the animal and analysis of pre-capillary and post-capillary blood gas at each sequence. Volume-controlled ventilation with a 50% N₂O and 50% O₂ gas flow was maintained. Pulmonary functional preservation was assessed using pulmonary transcapillary oxygen exchange, with calculation of Arteriovenous Oxygen Content Difference (AVDO₂) and Transpulmonary Oxygen output(tpVO₂): $AVDO_2 = 1.34 * Hb * (SaO_2 - SvO_2) + 0.003 * (PaO_2 - PvO_2)$ (Hb: Hemoglobin content [g/dl]; SaO₂: post-capillary oxygen saturation [%]; SvO₂: pre-capillary oxygen saturation [%]; PaO₂: post-capillary oxygen partial pressure [mmHg]; PvO₂: pre-capillary oxygen partial pressure [mmHg] $tpVO_2 = AVDO_2 * Q * 10$ (Q=ECMO output [L/min]).

Results

Mean±SEM tpVO₂ was 669 ± 282 ml/min at 3 hours, 534 ± 232 ml/min at 6 hours, and 927 ± 285 ml/min at 8 hours.

Conclusions

Persistence of transpulmonary oxygen output outlines functional preservation of the alveolocapillary membrane in this in-situ lung preservation model. This innovative approach could be applied to non-heart beating lung donors.

Disclosure: All authors have declared no conflicts of interest.

Wednesday, 8 June 2011**11:00 - 13:00****Session XVI/ Mixed Malignant****F-206****RAPID PLEURODESIS FOR POTENTIALLY RECURRENT PLEURAL EFFUSIONS: A PROSPECTIVE RANDOMIZED TRIAL**

S. Ozkul, Akif Turna, A. Demirkaya, B. Kilic, K. Kaynak

*Department of Thoracic Surgery, Istanbul University, Cerrahpasa Medical Faculty, Istanbul/TURKEY***Objectives**

Chemical pleurodesis can be palliative for recurrent, symptomatic pleural effusions in patients who are not candidate for a thoracic surgical procedure. We hypothesized that, effective pleurodesis could be accomplished with a rapid method of pleurodesis with superior results.

Methods

Between April 2010 and December 2010, a prospective randomized trial was conducted in 69 patients with symptomatic recurrent pleural effusion. Thirty- five patients were randomly allocated to group 1 (rapid pleurodesis) and 34 to group 2 (standard protocol). A small bore catheter (12 Fr) was inserted percutaneously into the pleural space after radiographic confirmation of free fluid. In group 1, following radiographic confirmation of complete fluid evacuation, talc slurry was instilled into the pleural space. This was accomplished within 2 h of chest tube insertion, unless the drained fluid was more than 1500 mL or if the lung was trapped. After clamping the tube for 30 min, the pleural space was drained for 1 h, after which the chest tube was removed. In group 2, talc-slurry was administered when the daily fluid drainage was lower than 300 mL. The intervention was evaluated as 'successful' if no or minimal evidence of re-accumulation was noted in 1 week.

Results

No-complication developed due to talc-insufflation in two groups. 4 patients (5.7%) died of pleural-effusion causing diseases. In nine patients, bilateral tube insertions were performed. Complete or partial response was achieved in 32 (91.4%) and 31(91.2%) patients in group 1 and group 2 respectively($p=0.649$). The mean total drainage was 2621 mL in Group 1, whereas it was 4242 mL in group 2 ($p=0.018$). The mean drainage time was 42.5 hours and 155 hours in group 1 and group 2 respectively($p<0.001$).

Conclusions

Rapid pleurodesis using talc slurry is safe and effective. It provides quick resolution for recurrent pleural effusions and it can be performed in an outpatient basis.

Disclosure: All authors have declared no conflicts of interest.

F-207

FEASIBILITY OF HYBRID THORACOSCOPIC LOBECTOMY AND EN BLOC CHEST WALL RESECTIONMark F. Berry¹, M. W. Onaitis¹, B. C. Tong², D. H. Harpole¹, T. A. D'Amico²¹*Surgery, Duke University Medical Center, Durham/NC/UNITED STATES OF AMERICA,*²*Division of Cardiovascular and Thoracic Surgery, Duke University, Durham/NC/UNITED STATES OF AMERICA***Objectives**

Lobectomy with en bloc chest wall resection is an effective but potentially morbid treatment of lung cancer invading the chest wall. Minimally invasive approaches to lobectomy have reduced morbidity compared to thoracotomy for early stage lung cancer, but there is insufficient evidence regarding the feasibility of hybrid thoracoscopic lobectomy and chest wall resection. We reviewed our experience of en bloc chest wall resection and lobectomy to better evaluate the feasibility of a hybrid approach using thoracoscopic lobectomy combined with chest wall resection where rib spreading is avoided.

Methods

All patients who underwent lobectomy and en bloc chest wall resection with ribs for primary non-small cell lung cancer from January 2000 to July 2010 were reviewed. Starting in April 2003, a hybrid approach was introduced where thoracoscopic techniques were utilized to accomplish the pulmonary resection and a limited counter incision was used to perform the en bloc resection of the chest wall, avoiding scapular mobilization and rib spreading. Preoperative, perioperative, and outcome variables were assessed using standard descriptive statistics.

Results

During the study period, 79 patients underwent en bloc lobectomy and chest wall resection, including 68 patients with resection via thoracotomy and 11 patients with resection via the hybrid thoracoscopic approach. Complete resection was achieved in all patients in both groups. Tumor size and extent of resection was similar in the 2 groups (Table). There were no conversions and no peri-operative mortality in the hybrid group. Postoperative outcomes were similar, although patients who underwent the hybrid approach had a shorter length of stay ($p=0.03$).

Conclusions

The hybrid approach, combining thoracoscopic lobectomy and chest wall resection, is feasible and effective in selected patients. The use of a limited counter incision without rib spreading does not compromise oncologic efficacy, and it may represent an advantage in outcomes, including postoperative morbidity.

Disclosure: All authors have declared no conflicts of interest.



	Thoracotomy (n=48)	VATS- robotic (n=11)	p- value
Patient Characteristics			
Age (years)	55.0(11.7)	40.0(12.2)	0.79
DSLD (% Predicted)	46.0(17.9)	71.0(18.0)	0.44
FEV1 (% Predicted)	68.1(18.2)	78.0(24.7)	0.52
Induction Chemotherapy	19 (37%)	3 (27%)	0.10
Induction Radiation	4 (8%)	2 (18%)	0.02
Cancer Characteristics			
Tumor Size (cm)	3.4(2.7)	3.9(2.5)	0.53
Number of Resected Lobe	2.4(1.0)	3.0(1.5)	0.24
Pathologic Stage			
Stage I	44 (92%)	10 (91%)	0.16
Stage II	2 (3%)	1 (9%)	0.16
Stage III	2 (4%)	0	1
Operative Outcomes			
Hospital Stay (days)	11.1(17.2)	6.1(3.5)	0.03
Chest Tube Duration (days)	4.4(1.4)	3.0(1.6)	0.20
Peri-Operative Mortality	2 (3.9%)	0	0.97
Overall Morbidity	41 (86%)	4 (36%)	0.13
Respiratory Complications	22 (46%)	2 (18%)	0.20
Technical Complications	23 (48%)	3 (27%)	0.41
Cardiovascular Complications	19 (40%)	1 (9%)	0.24
Wound Complications	1 (2.1%)	0	0.96
Bowel Complications	2 (4%)	0	0.97

F-208

SINGLE CENTRE EXPERIENCE OF THORACOSCOPE IN THE SURGICAL RESECTION OF NON-SMALL CELL LUNG CANCERAnnabel Sharkey¹, J. Downing¹, D. Hopkinson¹, T. Locke¹, J. Rao¹, J. Edwards²¹Northern General Hospital, Sheffield/UNITED KINGDOM,²Cardiothoracic Surgery, Northern General Hospital, Sheffield/UNITED KINGDOM**Objectives**

Calculation of Thoracoscore has been proposed as a useful aid to determine immediate operative outcome in general thoracic surgery. The role of Thoracoscore in assessing primary lung cancer surgery quality outcomes related to the surgeon, including later outcomes, is not clear.

Methods

Data were collected prospectively on 482 consecutive patients undergoing lung resection for primary non-small-cell lung cancer from Aug 2007 – Mar 2010. Thoracoscore (TS) was calculated retrospectively. Differences between four consultant surgeons and survival outcomes were analysed.

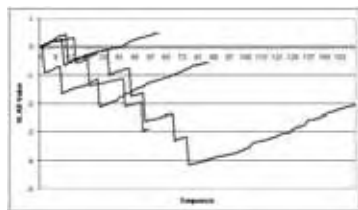
Results

TS was calculated in 362 patients and 120 patients with missing variables were excluded from further study. Median TS was 1.97 (range 0.5 to 12.8), the mean 2.48 (standard deviation 1.94) and the observed in-hospital mortality was 14 patients (3.9%). TS was higher in the 14 patients suffering in-hospital mortality (4.08 vs 2.41, $p=0.002$). TS was higher in patients suffering mid-term mortality at 60, 90, 120 days ($p<0.05$) and at one year ($p=0.045$). The ranges of minimum, median and maximum TS between surgeons were 0.26 to 0.5, 1.83 to 2.3, 9.55 to 12.57 respectively ($p=0.45$). The variation in the surgeon-specific Variable Life Adjusted Display values is shown in the figure.

Conclusions

Thoracoscore was higher in those patients dying at time points up to one year. Further work with co-ordination between centres is required to determine the accuracy of TS in predicting mortality and its potential use as a measure of quality of service provision.

Disclosure: All authors have declared no conflicts of interest.



F-209

EXTRACAPSULAR LYMPH NODE SPREAD: AN UNDERESTIMATED PROGNOSTIC INDICATOR IN NON-SMALL CELL LUNG CANCER (NSCLC)Delphine Trousse¹, G. Brioude², M. Payan-Defais², X.B. D'Journo¹, C. Doddoli¹, P. A. Thomas¹*¹Département de Chirurgie Thoracique et des Maladies de L'Œsophage, Université de la Méditerranée, Assistance Publique - Hôpitaux de Marseille, Hôpital Nord, Marseille Cedex 20/FRANCE,**²University North Hospital, Marseille/FRANCE***Objectives**

Lymphatic spread is the heaviest prognostic factor for NSCLC in surgical cohorts. The current pN staging system does not take into consideration the characteristics of the metastatic lymph nodes itself. We aim to examine the prognostic value of extracapsular lymph node involvement (LNI).

Methods

Tissue samples were obtained from 515 consecutive N+ patients operated on for a NSCLC over a 10-year period. The number of resected lymph nodes, metastatic lymph nodes, and those with extracapsular LNI were determined. Extracapsular spread was defined as infiltration of cancer cells beyond the capsule of the metastatic lymph node.

Results

A mean number of 21 +/-9 lymph nodes per patient was examined, and a mean number of 4 +/-4 was invaded. N1 and N2 involvements were found in 242 and 273 patients, respectively. Extracapsular LNI was reported in 154 patients (30%), either in the N1 (n=33; 13.6%) or N2 (n=121; 44.3%) category. The T categories were distributed as T1, T2, T3 and T4 in 85, 297, 56, 77 patients, respectively. Completeness of the resection was quoted as R0 in 483 patients, R1 in 27, R2 in 5. Median survival and 5-year overall survival rates were 48 months & 43% in the intracapsular LNI patients, and 21 months & 24% in the extracapsular LNI patients ($p < 10^{-3}$), respectively. Outcome of patients with N1 extracapsular LNI (36%) was similar to that of those N2 extracapsular LNI (20%) (Figure). In the multivariate analysis besides other N indicators such as N category ($P < 10^{-3}$, HR: 1.92, 95%CI: [1.40-2.64]), and lymph node ratio ($P = 0.028$, HR: 2.22, 95%CI: [1.09-4.52]), extracapsular lymph node involvement also remained as an independent prognosticator ($P = 0.037$, HR: 1.4, 95% CI: [1.02-1.92]).

Conclusions

Extracapsular lymph node involvement is an independent negative prognostic factor in NSCLC. Therefore, in future staging systems, extracapsular lymph node involvement should be considered.

Disclosure: All authors have declared no conflicts of interest.

F-210

EXPRESSION OF TOPOISOMERASE IIA AND CHROMOSOME 17 INSTABILITY IN INTRAOPERATIVE SPECIMENS IN NSCLC

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Objectives

Intraoperative imprints and FNAs offer a fast and accurate method of diagnosis and also a qualitative substrate for immunocytochemical and molecular studies. Aberrations of chromosome 17 are common in cancers including NSCLC. Topoisomerase family which includes Topo I (20q11), Topo Iia (17q21), Topo Iib (3p24) are enzymes in the nucleus of living cells, which affect the topological structure of DNA. Cells die when Topoisomerase is inhibited and for this reason is a target of chemotherapy.

Methods

Using Tissue Microarray Technology we created a 40 tumours TMA. 40 NSCLC (20 Adenocarcinomas and 20 Squamous carcinomas) and 10 normal lung epithelia (control group) were obtained and embedded into a single paraffin block. Immunohistochemical stain for anti-Topoisomerase Iia (Ki S1-DACO Corp) combined with CISH for the detection of chromosome 17 instability (Chr 17 Centromeric probe, Zymed kit) and specific gene status was performed in 2 and 5 µm sections and in intraoperative imprints. Finally using a semi-automated Image Analysis System we evaluated the nuclear features of number and optical density and the number of signals of chromosome 17 centromeres and gene copies per nucleus.

Results

Significant proportion of NSCLC showed over expression of the marker (18/40) and CISH application showed Topo Iia amplification (high or low level) or deletion of one allele in 11/18 cases. Co-evaluating chromosome 17 instability we observed that 10/18 only amplification while the last 4/18 displayed deletion. We observed that chromosome 17 instability co-appearing with Topo Iia amplification correlates with low differentiation and poor prognosis ($p < 0,001$).

Conclusions

The results indicate that Topo Iia amplification or deletion is a critical genetic event correlating with biological behaviour in NSCLC and determining chemo sensitivity. Also intraoperative imprints and FNAs appeared to be more accurate at the evaluation of centromeric and specific gene signals because of the nucleus integrity.

Disclosure: All authors have declared no conflicts of interest.

F-211

HIGH DISCORDANCE BETWEEN EBUS-FNA AND TRANSCERVICAL MEDIASTINOSCOPY IN NODAL STAGING OF NON SMALL CELL LUNG CANCERRuoyu Zhang¹, P. Zardo¹, C. Mietchen¹, M. Krüger¹, N. J. Dickgreber², A. Haverich¹, S. Fischer²¹*Department of Cardiac, Thoracic, Transplantation and Vascular Surgery, Hannover Medical School, Hannover/GERMANY,*²*Department of Pneumology, Hannover Medical School, Hannover/GERMANY***Objectives**

No study to date has directly compared endobronchial ultrasound guided fine needle aspiration (EBUS-FNA) and transcervical mediastinoscopy (TM) in mediastinal nodal staging of NSCLC, besides one current study with apparent limitations.

Methods

From April 2008 to December 2009, simultaneous EBUS-FNA and TM were performed by one and the same dedicated surgeon in 36 patients due to mediastinal lymphadenopathy, of which 26 patients had histologically proven or suspected NSCLC (age 64.5±11.3 years, 12 males).

Results

Except for indeterminate finding in one patient, conclusive pathologies of pulmonary lesions included NSCLC in 22 patients, pulmonary metastasis in 2 and benign lesion in one patient. A total of 118 samples (4.5 samples/patient) were obtained by EBUS-FNA (right paratracheal 0.9±1.3, left paratracheal 0.5±1.1 and subcarinal 3.1±1.9 samples), while 155 samples (6.0 samples/patient) by TM (right paratracheal 2.7±2.1, left paratracheal 1.4±1.6, subcarinal 1.9±1.2 samples). Compared to TM, less paratracheal nodes were sampled by EBUS-FNA (right: 46.2% vs. 88.5%, p=0.013; left: 23.1% vs. 65.4%, p=0.013), while sampling rates in subcarinal station were comparable (96.2% vs. 80.8%, p=NS). Non-representative sampling and indeterminate results of EBUS-FNA were found in 2 patients for each. Among the patients with conclusive EBUS-FNA and TM findings (n=22), the prevalence of N2/N3 disease was 50% (n=11) by EBUS-FNA. Diverging nodal stages were found in 6 patients (27.3%). Three patients who were N2 negative in EBUS-FNA were upstaged to N2 or N3 by TM, 2 patients with N2 status in EBUS-FNA were upstaged to N3 by TM. However, 1 patient who was N2 negative in TM was upstaged to N2 by EBUS-FNA.

Conclusions

Our results demonstrate a high discordance between EBUS-FNA and transcervical mediastinoscopy in mediastinal nodal assessment of NSCLC. In most cases, EBUS-FNA resulted in nodal “understaging”, suggesting the limitation of this procedure compared to mediastinoscopy as gold standard.

Disclosure: All authors have declared no conflicts of interest.

F-212

THE IMPACT OF EXTENDED MEDIASTINOSCOPY IN LEFT SIDED NSCLC PATIENTS PRESENTING WITH SUSPECTED N2 DISEASE IN #5 AND/OR #6 STATIONS

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Objectives

Despite recent advances in non-invasive staging tools, mediastinoscopy remains gold standard for pre-operative assessment of mediastinal disease in NSCLC. However, both subaortic (#5) and paraaortic (#6) nodes cannot be accessed via standard cervical mediastinoscopy (SCM). Therefore, optimal invasive staging can only be achieved with addition of extended cervical mediastinoscopy (ECM) in left-sided tumors. Here we report our experience with ECM and its diagnostic yield additional to SCM.

Methods

Eighty-two patients with proven left sided NSCLC underwent SCM followed by ECM using Lopez's technique. Indications for addition of ECM were suspected N2 disease in #5 and/or #6 stations based on PET-CT findings or presence of a cT3-4 tumor regardless of mediastinal involvement. Sensitivity, specificity, accuracy, negative and positive predictive indices of PET-CT, SCM and ECM were calculated in reference to pathological staging as gold standard.

Results

Median number of sampled stations was 5 (Range: 3-7) with most frequent one being #4L (n=75). Thirty-two (40%) and 6 (7%) patients had pN2 and pN3 disease respectively. Addition of ECM has greatly improved the diagnostic yield of SCM (Table 1) and prevented 22 (27%) patients from receiving suboptimal treatment due to unnoticed N2 disease in #5 and/or #6 stations (n=20) or T4 tumor grossly invading mediastinal structures (n=2). One patient required tube thoracostomy owing to a left pneumothorax and one patient died of uncontrollable aortic injury at initial exploration.

Conclusions

Although technically demanding, ECM is a quick and relatively safe in experienced hands and provides valuable information additional to SCM that may guide us to choose the best treatment modality for patients with left sided NSCLC.

n=81	Sensitivity (%)	Specificity (%)	Accuracy (%)	PPI ^a (%)	NPI ^b (%)
PET-CT	79	62	68	52	85
SCM	47	100	75	100	68
	95	100	98	100	96

Table 1.

^a Positive Predictive Index, ^b Negative Predictive Index

Disclosure: All authors have declared no conflicts of interest.

F-213

CORRELATION OF MATRIX METALLOPROTEINASE 9 (MMP9) AND ¹⁸FDG-PET AS DIAGNOSTIC MARKERS OF LUNG CANCER

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²General Pathology Unit, Second University of Naples, Naples/ITALY,

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Objectives

We aimed 1) to evaluate the diagnostic role of MMP9 in detecting lung cancer and 2) to assess MMP9 correlation with ¹⁸FDG-PET standard uptake value (SUV), not been investigated before.

Methods

From January 2008 to October 2010, serum and bronchiolalveolar lavage (BAL) levels of MMP-9 were analysed with ELISA in 60 consecutive patients with suspected lung cancer. All patients were submitted to FDG-PET and SUVs was calculated for each patient. The differences of MMP9 levels between different diagnostic groups (malignant versus benign lesions), histological type of tumor, and stage were analyzed by Mann-Whitney test; yet, Pearson test valuated the correlation of MMP9 levels in plasma and BAL with SUVs.

Results

40 patients had malignant lesions (15 squamous cell carcinomas, 20 adenocarcinoma, 4 large cell carcinoma, 1 microcitoma) and 20 benign diseases. Among malignant lesions, 25 patients were staged as early-disease (I/II), 7 as locally-advanced (IIIA/IIIB), and 8 (35%) had metastatic disease (IV). Serum MMP9 levels were significantly higher in malignant than benign lesions (673 ± 182 versus 309 ± 96 , respectively, $p < 0.0001$; Figure 1/A). Among malignant lesions, serum MMP9 levels were significantly increased in patients with metastasis (metastatic versus locally-advanced, $p = 0.005$; metastatic versus early-disease, $p = 0.001$) but no-difference was found between different histological types. BAL MMP9 levels of malignant lesions were higher than those of benign lesions (673 ± 182 versus 380 ± 196 , respectively, $p = 0.001$; Figure 1/B) but no-differences were found between different stage and histological types. SUV was significantly correlated with MMP9 levels in plasma ($r = 0.6$, $p < 0.0001$; Figure 1/C) and in BAL ($r = 0.3$, $p < 0.01$; Figure 1/D).

Conclusions

Increase of MMP9 is a useful marker of malignancy and in daily clinical practice it may aid to refer patients with suspected cancer for further tumor detection by FDG-PET scan.

Disclosure: All authors have declared no conflicts of interest.

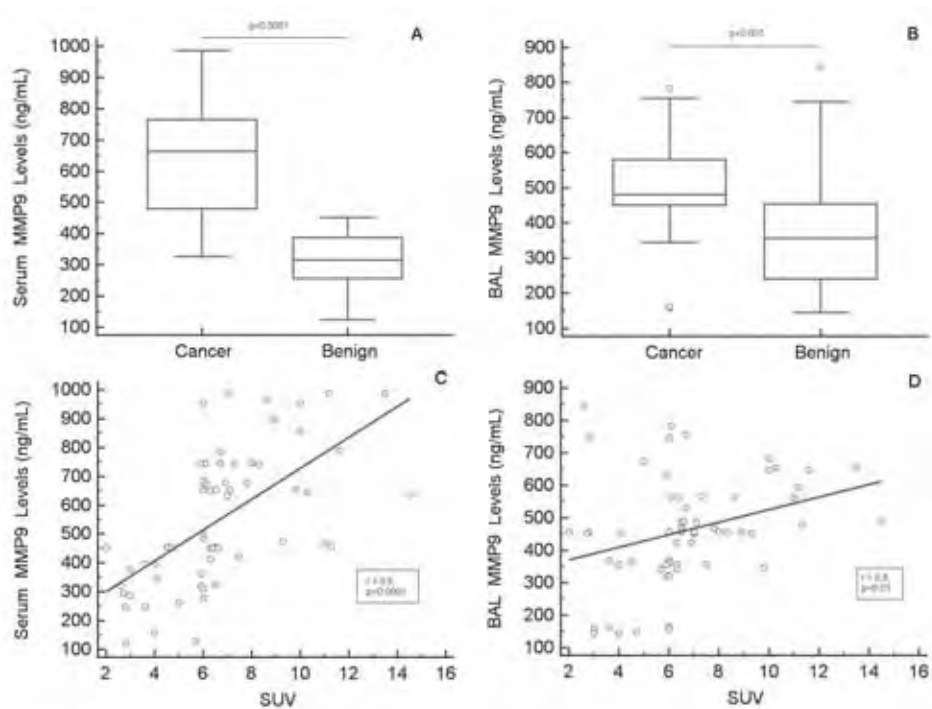


Figure 1

F-214

LONG TERM SURVIVAL AFTER LUNG SPARING TOTAL PLEURECTOMY (LSTP) FOR LOCALLY ADVANCED (IMIG STAGE T3 -T4) NON SARCOMATOID MALIGNANT PLEURAL MESOTHELIOMA

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Objectives

There is a body of opinion that mandates Pleuropneumonectomy (EPP) in the radical treatment of locally advanced (T3/4) Malignant Pleural Mesothelioma (MPM). We tested the hypothesis that Lung Sparing Total Pleurectomy (LSTP) can be as effective as EPP in locally advanced MPM with reduced risk.

Methods

We analyzed prospective data on 165 patients (128 with Epithelioid and 37 with Biphasic MPM) with pT3 (n=108) and pT4 (n=57) tumour. 98 (59.4%) of the patients underwent EPP and 67 (40.6%) LSTP. We compared intergroup differences in : Length of stay (LOS), postoperative complications, survival, pattern of recurrence and disease free interval.

Results

There were significantly more postoperative complications after EPP: 67 (68%) vs 29 (43%) than LSTP, $p=0.002$. 30 day mortality was 7% for EPP and 3% for LSTP ($p=0.31$). LOS was similar (mean 19 days for EPP, 15 days for LSTP, $p=0.19$). A difference in progression pattern was noted. In 33 (51%) of EPP patients disease recurred locally compared to 22 (71%) after LSTP. 17 patients post EPP (26%) had distal recurrence compared to only 3 (10%) post LSTP and synchronous distal and local recurrence was similar : 15 (23%) post EPP vs 19% post LSTP ($p=0.11$). There was no significant intergroup difference in median survival : EPP 14.7 months (SE 1.3, 95% CI 12.2-17.2) vs LSTP 13.4 months (SE 1.9, 95% CI 12-16.4), $p=0.91$ nor in disease free interval (DFI) : EPP 10.7 months (SE 0.8, 95% CI 9-12) vs LSTP 16 months (SE 1, 95% CI 9-13).

Conclusions

We advocate LSTP as the procedure of choice in locally advanced MPM: It offers at least equally good oncological result as EPP in this group of patients with possibly better early mortality rates. Despite a tendency for increased local recurrence in the LSTP group the overall survival is not compromised.

Disclosure: All authors have declared no conflicts of interest.

F-215

TALC PLEURODESIS AS POTENTIAL FAVOURABLE PROGNOSTIC FACTOR IN MALIGNANT PLEURAL MESOTHELIOMA

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*Thoracic Surgery, Royal Victoria Hospital, Belfast/UNITED KINGDOM***Objectives**

The objective in our study was to examine baseline characteristics associated with survival in patients with malignant pleural mesothelioma.

Methods

122 patients with histologically proven malignant pleural mesothelioma, during the period 2000–2010 were studied. Survival was evaluated by the Kaplan-Meier method with the log-rank test. Cox regression analysis was used to estimate the hazard ratio for possible prognostic factors.

Results

105 (86%) patients had complete survival follow up, 91 died and 14 (13.3%) were alive at the end of the observation period starting from the day of diagnosis. The median survival was 286 days (95% confidence interval (CI), 212-359). Talc pleurodesis was performed on 51 patients and sixteen had surgical interventions (2 chest wall resections, 2 extra-pleural pneumonectomies and 12 decortications). Chemotherapy was used in 41 patients, port-site radiation in 68 patients and combined therapy in 26 patients. Cox regression analysis identified the following factors as favourable prognostic factors after adjusting for common confounders (age, gender, histology subtypes, smoking and performance status).

Multivariate Cox Regression of Independent Predictors of Survival

Variables	HR	95% CI	p-Value
Talc Pleurodesis	0.60	0.39 - 0.98	0.04
Chemotherapy	0.12	0.04 - 0.36	<0.001
Port Site Radiation	0.30	0.15 - 0.60	<0.001
Chemo-Port Site Radiation	0.20	0.06 - 0.62	<0.006

Conclusions

Surgical intervention including decortications and extra-pleural pneumonectomy had no effect on survival in this series. Chemotherapy and radiation to port sites independently and in combination were associated with improved overall survival in malignant pleural mesothelioma patients. The important role of talc pleurodesis was a surprising independent determinant of survival and it is the first of its kind highlighting this role but further studies are warranted.

Disclosure: All authors have declared no conflicts of interest.



F-216

VATS SEGMENTECTOMY UNDER INTRAOPERATIVE EVALUATION OF SENTINEL NODES FOR STAGE I NON-SMALL CELL LUNG CANCER

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Objectives

Segmentectomy is a treatment of choice for small-sized non-small cell lung cancer (NSCLC). However, decision making of procedure during operation is difficult because accurate evaluation of hilar lymph node metastasis remain unclear. We here report the outcome between with and without the assessment of sentinel node sampling in VATS segmentectomy.

Methods

Seventy four patients with stage I NSCLC were operated by VATS segmentectomy between January 2003 and December 2010. 20 patients were applied by indocyanine green fluorescence imaging sentinel node biopsy (SNB) and 54 were not. Intraoperative real-time quantitative RT-PCR to determine the expression of CK-19 was used for evaluation of metastasis. Local recurrence rates and survivals were compared in both groups.

Results

Sixteen of twenty patients (80%) in segmentectomy were identified for sentinel lymph nodes. The false negative rate was 0%. Only one of these patients, RT-PCR by CK-19 expression showed positive in sentinel nodes which meant micrometastases, however, segmentectomy was not converted to lobectomy. Six of 54 patients of VATS segmentectomy without SNB and none of SNB group relapsed. In the relapsed patients without SNB, 3 (5.5%) were local recurrences and 3 (5.5%) were distant metastases. Disease-free survival rates between both groups were not significantly different because of short following-up period in SNB group (Figure 1).

Conclusions

Our study demonstrated that VATS segmentectomy with SNB was useful for intraoperative decision making of segmentectomy with accurate lymph node status.

Disclosure: All authors have declared no conflicts of interest.

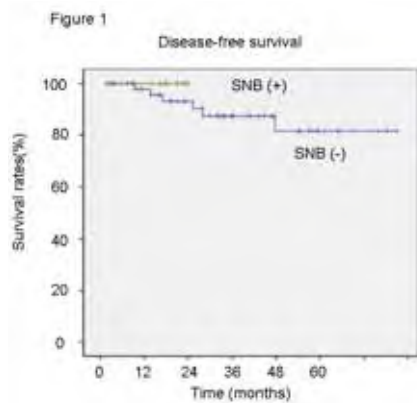


Figure 1. Disease-free survival according to SNB

F-217

CAN EXTRAPLEURAL PNEUMONECTOMY STILL BE OFFERED TO PATIENTS WITH MALIGNANT PLEURAL MESOTHELIOMA AFTER THE MARS TRIAL?

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Objectives

The role of extrapleural pneumonectomy (EPP) has come into question in patients with malignant pleural mesothelioma (MPM). Results of randomised controlled trials (RCT) may be rejected as not applicable to „real world“ outcomes, either because RCT outcomes may not be replicated subsequently in clinical practice or because the RCT reported outcomes are inferior to those previously reported in cohort studies. We compared the outcomes of the Mesothelioma and Radical Surgery (MARS) trial with so called „real world“ data.

Methods

Cohorts reporting median survival for patients undergoing EPP in large studies in the last decade were sought. For non-operated patients, median survival in studies published before or during MARS were retrieved. Outcomes for patients in the non-treated arm of a chemotherapy RCT and a large institutional report were also extracted.

Results

Large studies or phase II trials including 45 to 385 patients reported median survival of 10 to 23 months after EPP. Data superpose on MARS EPP survival data and were inferior to the median survival of non-operated patients in MARS. Survival of non-operated patients in two pilot studies for MARS were 7 and 13 months which bracketed the 10 month survival in two non operated cohorts reported during MARS recruitment.

Conclusions

MARS EPP outcomes are comparable with those reported in cohort studies and therefore the evidence from MARS can be relied upon as applicable to „real world“ practice. Survival of non operated patients is highly dependent on the source of the data and factors such as lead time bias. However, there is no evidence from MARS, cohort studies, or phase II trials that EPP offers a survival advantage over the natural or otherwise treated survival in malignant pleural mesothelioma.

Disclosure: All authors have declared no conflicts of interest.

Wednesday, 8 June 2011**11:00 - 13:00****Session XVII/ Mixed Benign****F-218****T3 VERSUS T3-T4 SYMPATHECTOMY FOR ESSENTIAL PALMAR HYPERHIDROSIS: COMPARISON OF EFFECTS ON CARDIO-RESPIRATORY FUNCTION**

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Objectives

We aimed to compare T3 versus T2-T3 sympathectomy on the hypothesis that a more limited section of sympathectomy chain would have less negative consequence on cardio-respiratory function.

Methods

42 patients with essential palmar hyperhidrosis were enrolled. Videoassisted sympathectomy was performed in one stage bilateral procedure with electrocoagulation of T2-T3 in 21 patients and of T3 alone in 21 patients. Cardio-respiratory function tests were performed before and at 2 weeks and 6 months after sympathectomy. Data before and after sympathectomy in both groups were compared using Mann-Whitney test.

Results

Essential hyperhidrosis was completely relieved in both groups. In T3 group FEV₁ and FVC were significantly reduced at 2 weeks (-5%, p=0.01 and -6%, p=0.001, respectively), but returned to preoperative values at 6 months after sympathectomy (89%±3.8 and 88%±4.1, respectively). In T2-T3 group FEV₁ and FVC remained significantly decreased respect to baseline value at 2 weeks (-6%, p=0.0003 and -8%, p=0.0001, respectively), and at 6 months of postoperative course (-3%, p=0.01, and -5%, p=0.005, respectively) (Figure 1 A/B). In T3 group, heart rate was reduced at rest (-2 beats/minute, p>0.05) and at peak exercise (-3 beats/minute, p>0.05) at 2 weeks, but returned to preoperative value at 6 months after (79±4.8 and 169±6.3, respectively). Conversely, in T2-T3 group heart rate at rest and at peak exercise were significantly reduced at 2 weeks (-5, p=0.006, and -8, p=0.002, respectively), and remained significantly decreased respect to preoperative value at 6 months after (-4, p=0.04, and -5, p=0.03, respectively) (Figure 1 C/D). All other parameters including the subjective reasons for cessation of exercise remained unchanged after sympathectomy in both groups.

Conclusions

The changes observed in cardio-pulmonary function after sympathectomy are probably inherent to the thoracoscopic procedure (T3 versus T2-T3) which suggests that cardiac and broncho-motor tone is influenced by sympathetic innervation.

Disclosure: All authors have declared no conflicts of interest.

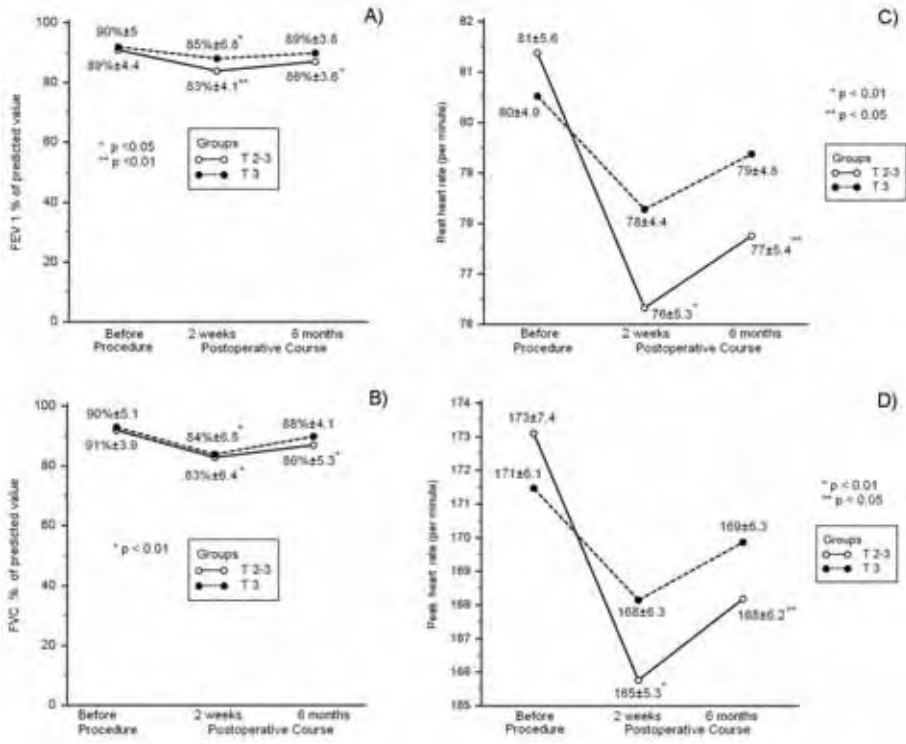


Figure 1

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A COMPARISON OF STANDARD COMBINED ENDOSCOPIC METHODS WITH ENDOECHOSONOGRAPHY IN DIAGNOSIS OF PULMONARY SARCOIDOSIS STAGE I AND II – A PROSPECTIVE STUDY

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Objectives

The aim of the prospective study was to compare the diagnostic yield of standard combined endoscopic methods (SCEM) including endobronchial biopsy (EBB), transbronchial lung biopsy (TBLB) and blind transbronchial needle aspiration (TBNA) with endoechosonography (EE) including endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) and endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) in diagnosis of pulmonary sarcoidosis stage I and II.

Methods

In 79 patients suspected of pulmonary sarcoidosis – SCEM and EE were being performed under conscious sedation. All patients with negative endoscopic procedures underwent mediastinoscopy.

Results

Between 1 October 2009 and 15 January 2011 in 79 patients SCEM and EE were performed. In SCEM group sarcoidosis was confirmed in 39 (49.5%) patients and in EE group - in 62 (78.5%) patients. Only in one patient (1.3%) all bioptic methods were negative and sarcoidosis was confirmed by mediastinoscopy. A diagnostic sensitivity and accuracy of EE was 79.5%, 79.7% and significantly higher than SCEM 50%, 50.6%, respectively ($p < 0.001$). No complications of all bioptic methods were observed.

Conclusions

Although the standard combined endoscopic methods are reasonable approach, endoechosonography seems to be a method of choice in diagnostics of pulmonary sarcoidosis stage I and II.

Disclosure: All authors have declared no conflicts of interest.

F-220

THORACODORSAL PERFORATOR FLAP FOR INTRA AND EXTRA THORACIC RECONSTRUCTION

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Objectives

There are few satisfactory flaps for reconstruction of the thoracic wall and for performing the coverage of the intrathoracic structures. Through our experiences we wanted to highlight the role of the Thoracodorsal Artery Perforator flap (TAP flap) in thoracic surgery especially after carcinological pulmonary resection.

Methods

From June 2008 to June 2010, 22 TAP flaps were performed. There were 4 females and 18 males, 56 years old in average. TAP flap was used 4 times for thoracic wall reconstruction and in 18 cases for reinforcement of the mediastinal structures. 3 patients had previous postero-lateral thoracotomy with section of the latissimus dorsi muscle.

Results

The TAP flap was harvested in all 22 cases even for the 3 patients that had a previous thoracotomy. The mean flap elevation and fixation time was 85 min +/- 15min. The average dimension of the flaps was 4 to 8,5 wide and 20 to 25 long. The complications that occurred were: a hemothorax due to the bleeding of the deepithelialized flap, 2 pulmonary infections treated medically and 1 infection of the pneumonectomy cavity treated surgically. There was no fistula, no seroma.

Conclusions

The TAP flap is a reliable flap in thoracic surgery that can replace and overpass the classical indications of the latissimus dorsi musculocutaneous flap, without having its drawbacks. A multidisciplinary approach is then essential.

Disclosure: All authors have declared no conflicts of interest.

F-221

**ADVERSE EFFECTS OF FIBRIN SEALANTS IN THORACIC SURGERY.
THE SAFETY OF A NEW FIBRIN SEALANT: MULTICENTRE, CONTROLLED,
PROSPECTIVE, PARALLEL GROUP RANDOMISED CLINICAL TRIAL**

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Objectives

The safety of fibrin sealants has been questioned in the light of recent reports of adverse effects, mainly thromboembolic events and fatal anaphylaxis. We evaluated the safety of a new Fibrin sealant (FS) in a randomised controlled trial (RCT).

Methods

Multicentre, prospective, open-label Phase II/III RCT to evaluate the safety of FS . The trial was approved by the Ethic Committee. FS includes two components (component 1: fibrinogen; component 2: thrombin), each of them subjected to two viral inactivation procedures. Out of 200 screened patients, 185 eligible patients (49 female, 136 male), aged between 18 and 75 years, undergoing major thoracic surgery were randomised to receive FS (#91 pts) as an adjuvant for air leak control or no treatment (#94 pts). Safety variables were: percentage of subjects with adverse events associated with the therapy; formation of antibodies against bovine aprotinin; vital signs (blood pressure, body temperature, heart and respiratory rate); laboratory parameters (haematology and blood chemistry).

Results

Adverse effects are shown in Table. None of the adverse events was considered as treatment-related. Atrial fibrillation (5 patients in the FS group and 4 in the Control group) and hyperpyrexia (5 and 7 patients, respectively in the two groups) were the most common adverse events. No patient reported thromboembolic events (pulmonary embolism or deep vein thrombosis) during the in hospital stay or within 1 month from discharge. The formation of bovine aprotinin antibodies was reported in a total of 34 patients (37.4%) in the FS group and was not related to any adverse effect.

Conclusions

The present RCT did not show any increased risk of serious and non-serious adverse events, and of surgical complications, related to the use of FS. The proportion of treated patients that developed bovine aprotinin antibodies was in compliance with literature data.

Disclosure: All authors have declared no conflicts of interest.

	Treated with FS n/N (%)	No treatment n/N (%)
Number of Adverse Events	31	18
Patients considered with Adverse Events	31/213 (14.5%)	22/133 (16.5%)
Number of Adverse Events related to FS	31	0
Patients considered with Adverse Events related to FS	31/213 (14.5%)	0/133 (0%)
Number of Adverse Events not related to FS	0	18
Patients considered with Adverse Events not related to FS	0/213 (0%)	22/133 (16.5%)
Number of Serious Adverse Events	0	0
Number of patients with Serious Adverse Events	0/213 (0%)	0/133 (0%)

F-222

CLINICAL PROFITABILITY OF PULMONARY BIOPSY AMONG PATIENTS WITH INTERSTITIAL LUNG DISEASE

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Objectives

We analyzed whether pulmonary biopsy in patients with interstitial lung disease (ILD) resulted in a change of their medical treatment and/or an inclusion in a clinical trial. Furthermore we evaluated if that potential change affects their overall survival.

Methods

We used data prospectively collected in a multicenter Spanish register of videothoroscopic lung biopsy in patients with ILD (Fibla et al, *Interact CardioVasc Thorac Surg* 2010;11:S26). Data related to changes in treatment after lung biopsy, inclusion of the patient in a clinical trial and overall survival were analyzed. We calculated median survival in patients with and without a change in their treatments. ANOVA procedure was used to compare median survival of both groups.

Results

Data from 178 biopsied patients were collected. Fifty-eight of them (32%) were receiving any kind of medical treatment (44% consisting in steroids and immunosuppressors) when pulmonary biopsy was performed. Findings in the biopsy led to a change in the therapeutic strategy in 133 patients (74%). Thirty-eight patients were offered to participate in a clinical trial. Thirty-five accepted and 33 were finally included (18% of biopsied patients). Median survival among patients with and without changes in their treatments was 13 and 17 months respectively ($p=0.23$).

Conclusions

Thoracoscopic lung biopsy in patients with suspected ILD led to a treatment modification in a high proportion of patients. However this fact was not associated to an increase in survival. Only a few patients were offered to be included in a clinical trial.

Disclosure: All authors have declared no conflicts of interest.

F-223

THE VALUES OF INTRAPLEURAL PRESSURE BEFORE REMOVAL OF CHEST TUBE IN NON-COMPLICATED PULMONARY LOBECTOMIES

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Objectives

To measure the values of pleural pressure immediately before chest tube removal after uncomplicated pulmonary lobectomy.

Methods

Prospective observational analysis on 203 consecutive patients submitted to pulmonary lobectomy (12 months, 2 centers). Multiple pressure measurements were recorded in the last hour before chest tube removal and averaged for the analysis. All patients were seated in a 45° upright position, had a single chest tube (Ch24) and were not on suction at the time of evaluation. Chest tubes removal criteria: no air leak; pleural effusion <400 mL/day.

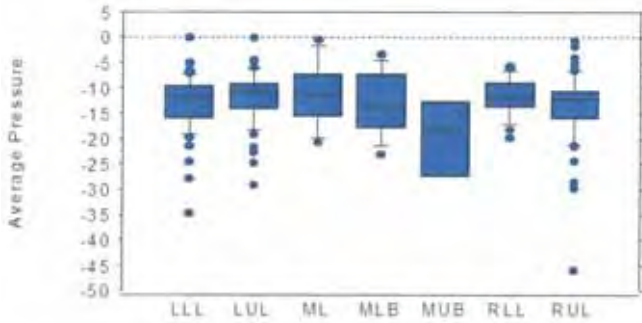
Results

The average maximum, minimum and differential pressures were -6.1cmH₂O, -19.5cmH₂O, 13.3cmH₂O, respectively. Figure 1 shows the box-plot of the average pressures in different types of lobectomies. The average pressures were similar in all types of lobectomies (ANOVA, p=0.2) and ranged from -11cmH₂O to -13cmH₂O, with the exception of right upper bilobectomy (-20cmH₂O, all p-values versus other types of lobectomies <0.05). Similar values were also recorded for maximum pressures (range -4.4cmH₂O to -8.4cmH₂O). Minimum pressures after right upper bilobectomies were significantly lower than all other types of lobectomies (-31.6cmH₂O vs. a range from -15.4cmH₂O to -20.5cmH₂O, all p-values <0.01). The average pleural pressure was not associated with FEV₁ (p=0.9), DLCO (p=0.2) or FEV₁/FVC ratio (p=0.6), when tested with linear regression. Similarly the average pleural pressure was similar in patients with and without COPD (-12.1cmH₂O vs. -13.0cmH₂O, p=0.4). ANOVA test was used to assess differences in pressures between different lobectomies.

Conclusions

The so-called water seal status may actually correspond to intrapleural pressures ranging from -13cmH₂O to -20cmH₂O. Modern electronic chest drainage devices allows a stable control of the intrapleural pressure. Thus, the values found in this study may be used as target pressures for different types of lobectomies, in order to favor lung recovery after surgery.

Disclosure: A. Brunelli: Medela HealthCare consultancy. All other authors have declared no conflicts of interest.



Boxplot of average pleural pressures

RUL: right upper lobectomy

RLL: right lower lobectomy

ML: middle lobectomy

MUB: upper bilobectomy

MLB: lower bilobectomy

LUL: left upper lobectomy

LLL: left lower lobectomy

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RISK OF LUNG VOLUME REDUCTION SURGERY IN AN ESTABLISHED PROGRAMMichaela Tutic¹, E. Ullrich², P. Kestenholz², I. Opitz², E. W. Russi³, W. Weder⁴¹*Thoracic Surgery, Zurich University Hospital, Zurich/SWITZERLAND*²*Pulmonary Division, Zurich University Hospital, Zurich/SWITZERLAND***Objectives**

There is convincing evidence from observational and randomized studies that Lung Volume Reduction Surgery (LVRS) in selected patients with advanced emphysema improves symptoms, pulmonary function, exercise tolerance, quality of life and may prolong survival. 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%) were treated by thoracoscopic LVRS (77 unilateral) and analyzed from our over the last 10 years. All types of emphysema morphology including the non-heterogeneous type were accepted. The combination of DLCO<20% or FEV1<20% with homogeneous disease or elevated pulmonary artery pressure was considered as absolute contraindication.prospective study

Results

The 90-day mortality was 1.2% (3/252). 2 patients died due to cardiac insufficiencies and 1 due to respiratory failure. The median drainage time was 6 days (2-43) and hospitalization was 11 days (4-91). Except one patient who developed cardiac insufficiency, none of the patients had intraoperative complications.143 (57%) had no complications at all. In 88 (33%) patients pulmonary complications occurred: 60 (24%) had prolonged air leaks (>7 days), 30 (12%) were treated with a reoperation, 6 (2%) pneumonia, 10 (4%) were temporarily reintubated, 2 (1%) patients with severe adhesions developed a hemothorax). 13 (5.2%) patients had cardiovascular morbidity requiring medical treatment.

Conclusions

LVRS in selected patients with very 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 especially 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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LVRS FOR NATIVE LUNG HYPERINFLATION FOLLOWING SINGLE LUNG TRANSPLANTATION FOR EMPHYSEMA: WHICH PATIENTS?

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Objectives

Lung transplantation is an established treatment for patients with advanced emphysema. Double-lung transplantation is favoured to avoid complications following single lung transplantation, including native lung hyperinflation. None the less single-lung transplantation continues due to limited donor organ availability. The aim of this study was to evaluate the pre-operative assessment, surgical techniques and outcomes in patients undergoing lung volume reduction surgery for native lung hyperinflation.

Methods

Six patients were identified and retrospective analysis of clinical records performed. Symptoms, pre-operative evaluation, peri-operative morbidity, length of stay, pulmonary function and survival were examined. Mean follow-up was 12.5 months.

Results

Participants underwent HRCT and bronchoscopy with transbronchial biopsy and bronchial washings to exclude alternative causes for deterioration in PFTs. V/Q scan was performed to assess the contribution of each lung to overall function. Measurement of inspiratory airflow resistance in each lung was performed in one case. Five patients underwent multiple wedge resections while the sixth underwent bilobectomy. All patients survived to hospital discharge and mean length of stay was 13.8 days. Functional improvement was demonstrated in all cases at follow-up, with a mean percentage increase of 35.8% in FEV1 and 29.3% in FVC. Symptomatic improvement was also reported by all patients post-operatively.

Conclusions

Lung volume reduction surgery for native lung hyperinflation is an effective treatment strategy with an acceptable level of surgical risk. Patient selection however remains vital. When considering previous reports, the key differences in this study are pre-operative evaluation and surgical approach. The non-anatomical multiple wedge excision technique used here was as effective as anatomical LVRS performed in other series. With regards to pre-operative assessment, the measurement of single lung inspiratory airflow resistance is of particular interest. We feel that this provides a superior method of differentiating between native lung hyperinflation and obliterative bronchiolitis prior to surgery, thus improving patient selection.

Disclosure: All authors have declared no conflicts of interest.

F-226

TRACHEOBRONCHIAL STENOSIS DUE TO WEGENER'S GRANULOMATOSIS: SURGICAL REPAIR AND BRONCHOSCOPIC INTRALESIONAL STEROID THERAPY

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Objectives

To evaluate the results of the surgical repair, bronchoscopy and intralesional steroid therapy in managing subglottic (SGS) and tracheal stenosis (TS) in patients with Wegener's granulomatosis (WG).

Methods

From November 1991 to October 2010 seven patients with WG and airway obstruction who underwent an invasive tracheobronchial procedure were enrolled in a prospective study. In all patients clinical, serological and histopathological data confirmed the diagnosis of WG.

Results

Seven patients (4 females, 3 males) with airway compromise due to WG were treated. The average age at the time of tracheobronchial stenosis presentation was 31+14,42 years. Four patients presented localized WG while the remaining patients had extratracheal manifestations affecting eyes, lungs, kidneys and joints. Within the airway, SGS was observed in 5 patients and distal TS with concomitant bronchial lesions in 2 patients. The median follow-up after the first surgical treatment was 68 + 29 months. All patients underwent rigid bronchoscopy with dilatation as the initial therapy. Three patients underwent elective resection of the stenosis due to mature fibrotic scars; 1 patient required upper tracheal anastomosis precisising transglottic Montgomery stent; 1 patient precisised right pneumonectomy and carina resection, and 1 patient underwent distal trachea resection. There has been no evidence of local disease recurrence during follow-up period among these patients. The remaining four patients required periodical dilatation bronchoscopy for SGS. Airway compromise was treated with intralesional steroid therapy in three patients. Following this therapy, the median intervention free interval was 12 months. There has been no mortality.

Conclusions

Surgery should be directed towards reconstruction of mature airway scars once active WG has been controlled. Dilatation bronchoscopy with intralesional steroid therapy is an effective strategy for subglottic tracheal WG obviating systemic immunosuppression in selected patients.

Disclosure: All authors have declared no conflicts of interest.

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ERGONOMICS IN THORACOSCOPIC SURGERY – RESULTS OF A SURVEY AMONGST THORACIC SURGEONS

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Objectives

Minimally invasive thoracic surgery is becoming more commonly performed. However, the frequent and prolonged use of thoracoscopic equipment raises the ergonomic risk, which may cause physical distress. The relationship between ergonomic issues and physical distress has never yet been investigated amongst thoracic surgeons.

Methods

A questionnaire was designed. Personal-, Product-, and Interaction- factors were collected. The survey was created online. An invitation-mail was sent to all 1071 ESTS-members.

Results

The response rate was 21.15%, the completeness rate 91.7%. 10% were women. 46% surgeons suffer from moderate to severe neck pain, 42% complained about back pain subjectively due to bad monitor-position (44%) more than table-height or instrument-management. 52.4% surgeons use 2 and 40.4% 1 monitor. 74% of the monitors are placed on an instrument- tower. 58.2% of the respondents have a distance of 1,5 arm lengths between the surgeon and the monitor 39,4% even 2 arm lengths. Only 2.4% of the respondents places the monitor below eye level. A majority of 66% places the monitor at eye level. 54.5% have the monitor in the line of sight, but 45.5% have to work with the head rotated > 15 degrees. The majority of the respondents work at a table which is according to ergonomic guideline advises too high. 65.7% had the table at navel height or higher. Respondents with the lower table experience less physical discomfort.

Conclusions

This study represents the opinion of 21% ESTS-members. 99.5% respondents indicate that ergonomics are important. But only 5.6% indicate that they are familiar with ergonomic guidelines. The way monitors and the operating table are used illustrates this lack of guideline-knowledge. Therefore more attention should be paid to ergonomics by surgeons and industry.

Disclosure: All authors have declared no conflicts of interest.

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VALIDATION OF A MODIFIED SCORING SYSTEM FOR CARDIOVASCULAR RISK ASSOCIATED WITH MAJOR LUNG RESECTION

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Objectives

The Revised Cardiac Risk Index (RCRI) has been modified based on factors specific to thoracic surgery (ThRCRI). We explored the accuracy of this modified scoring system in predicting cardiovascular morbidity after major lung resection.

Methods

We analyzed outcomes from a database of patients undergoing major lung resection 1980-2009. ThRCRI score was based on weighted factors for serum creatinine, coronary artery disease, cerebrovascular disease, and extent of lung resection. Missing values were managed using multiple imputation. Adverse outcomes included pulmonary embolism, myocardial infarction, cardiac arrest, pulmonary edema, and cardiac death.

Results

A total of 1255 patients (mean age 61.8 yrs; 649 men) underwent lobectomy or bilobectomy (1070; 85%) or pneumonectomy (185; 15%) for cancer (1037; 83%) or other problems. Severe cardiovascular complications occurred in 30 patients (2.4%), an incidence similar to that in the published derivation group (3.3%). ThRCRI scores in patients without and with CV complications were $0.54 \pm 0.0.81$ and 1.43 ± 1.01 ($p < 0.001$). Score categories yielded incremental risks of cardiovascular complications (0: 0.9%; 1-1.5: 4.5%; ≥ 2 : 12.8%; $p < 0.001$). The Hosmer-Lemeshow test demonstrated no significant difference between expected and observed outcomes ($p = 0.11$).

Conclusions

The incidences of postoperative cardiovascular complications were similar in the published derivation group and the current validation group. The ThRCRI score successfully stratified risk for postoperative cardiovascular events after major lung resection in the validation group. The expected risk in the validation group was similar to the observed risk, indicating that ThRCRI accurately predicted specific risk rather than just relative risk. Further evaluation of the utility of this scoring system is warranted.

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SUCTION VS NON-SUCTION PLEURAL DRAINAGE AFTER PULMONARY RESECTION

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Objectives

To compare efficiency of suction and water-seal pleural drainage after lung resection.

Methods

Prospective randomized trial including patients who underwent partial lung resection for malignant or non-malignant disease. On the day of operation 20 cm H₂O suction drainage was used in all patients. On the 1st postoperative day all patients with fully re-expanded lung were randomized in the 1:1 ratio to the suction or water-seal group.

Results

There were 103 patients in the suction group and 101 in the water-seal group. Groups were comparable regarding age, gender, lung function tests, primary disease, Thoracoscore, as well as ASA, WHO and dyspnea score, and type of resection. In the water-seal group the time of drainage was significantly shorter (4.51 vs 5.6; $p = 0.01$), the volume of drained fluid smaller (841 vs 1127 ml; $p = 0.010$) and full physical activity was regained sooner (2.7 vs 3.4 day; $p = 0.03$). The air-leak time was shorter in the water-seal group (1.09 vs 1.62 days) but the difference did not reach the level of significance. There was no difference regarding pain assessed using the visual analogue scale (3.08 vs 3.31; $p = 0.17$) as well as conversion rate to other type of drainage (8 vs 5; $p = 0.38$). In 5 patients in the suction group additional procedures for persisted air-leak were necessary, compared with 1 in the water-seal group.

Conclusions

In the routine clinical settings the water-seal drainage is superior to the suction drainage.

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