20th European Conference on General Thoracic Surgery

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MONDAY, 11 JUNE 2012
08:30 - 10:30
Session I/ Brompton

B-001

HIGH EMERGENCY WAITING LIST FOR LUNG TRANSPLANTATION: EARLY RESULTS OF A NATIONAL MULTICENTER STUDY

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Objectives
The high mortality rate observed on the regular waiting list (RWL) for lung transplantation (LTx) prompted the French organ transplantation authorities to set up a dedicated graft allocation strategy, so-called "High Emergency Waiting List" (HEWL), for patients with an abrupt worsening of their respiratory function. This study reports on the early results of this new allocation system.

Methods
Among 11 active French lung transplantation programmes, 7 were able to provide full outcome data by 31 December, 2011. The medical records of 101 patients who have been listed on the HEWL from July 2007 to December 2011 were reviewed with an intention-to-treat analysis.

Results
Ninety-five patients received LTx within a mean of 4 days [1-26], and 6 patients died. Conditions were cystic fibrosis (65.2%), pulmonary fibrosis (24.8%) and miscellaneous (10 %). Median age of the recipient was 30 years [16; 66]. Patients listed on the HEWL came from the RWL in 48% of the cases, and were new severe patients in 52%. Forty nine were placed under invasive ventilation, and 32 were assisted with ECMO prior to transplantation among whom six were spontaneously breathing. Eighty-one bilateral and 14 single LTx were performed, with an overall in-hospital mortality rate of 29.4%. One-year and 3-year survival rates were 67.5% and 59%, respectively. At multivariate analysis, the use of ECMO prior to transplantation was the sole independent mortality risk factor (HR = 2.77 [1.26; 6.11]).

Conclusions
The new allocation system aimed at lowering mortality on the RWL but also offered an access to LTx for new patients with end-stage respiratory failure. HEWL increased the likelihood of mortality after LTx but permitted acceptable mid-term survival rates. The high mortality associated with the use of ECMO should be interpreted cautiously as the last identified individuals who otherwise have all died.

Disclosure: All authors have declared no conflicts of interest.

B-002

THE EFFECTS OF LUNG RESECTION ON PHYSIOLOGICAL MOTOR ACTIVITY OF THE ESOPHAGUS

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Objectives
There are several anecdotal reports of patients with altered oesophageal motility after lung resections. Our aim is to investigate if and how the esophageal activity is affected by the different extension of lung resection, considering the no publications investigated such issue

Methods
In the last 5 years, 40 consecutive surgically patients with lung cancer were prospectively enrolled and divided in two groups: Group A (N=20) patients scheduled for elective pneumonectomy, and Group B (N=20) for more limited resections. In addition to routine evaluations, all patients underwent preoperative (within 5 days) and postoperative (6 months) manometry to assess the lower (LES),and upper esophageal sphincter (UES) characteristics and the propreties of esophageal peristalsis. Symptoms scoring questionnaire were recorded for each patient, and the esophageal dislocation was assessed by radiological exams The Mann-Whitney U test, and Fischer exact test were used for statistical comparison as indicated ($p<0.05$ level of significance).

Results
35 (17 of Group A, and 18 of Group B) patients completed the study. The postoperative UES ($p = 0.03$) and LES ($p = 0.01$) pressure of Group A were significantly lower respect to that of Group B (Figure Parts A/B). Group A presented a significant reduction of postoperative peak esophageal contractions at upper ($p <0.0001$), middle ($p = 0.0003$), and lower esophagus ($p = 0.0001$) respect to Group B (Figure Part/C). In 14/17 patients of Group A, and in 3/18 of Group B we found a lack of regular peristaltic movement ($p<0.01$). Shift of the esophagus was radiologically confirmed.in 13/17 and 2/18 patients of Group A and B ($p<0.01$), respectively (Figure Part/D). The manometric alterations were subclinical, and none of patients complained of dysphagia.

Conclusions
Pneumonectomy may cause significant esophageal motility disorders. Thus, esophageal study should be considered in the preoperative exams especially for patients with esophageal disease scheduled for pneumonectomy

Disclosure: All authors have declared no conflicts of interest.

B-003

SERUM CONCENTRATION OF INTEGRIN-LINKED KINASE IN MALIGNANT PLEURAL MESOTHELIOMA AND AFTER ASBESTOS EXPOSITION

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Objectives
Integrin-linked kinase (ILK) is an intracellular protein implicated in chronic inflammation and neoplastic transformation. In a recently accomplished pilot study we showed that ILK can be detected in the serum of patients with benign and malignant chest diseases, including malignant pleural mesothelioma (MPM). Interestingly, average serum ILK concentrations were ten times higher in MPM patients as compared to the rest of the study population, and a diagnostic test solely based on serum ILK concentration could discriminate between MPM and non-MPM with considerable accuracy. This study aimed to investigate whether serum ILK concentration could also be used to discriminate between MPM and asbestos-exposure-only.

Methods
Using a self-developed sandwich enzyme-linked immunosorbent assay (ELISA), we measured serum ILK concentrations in 101 MPM patients, and 96 asbestos-exposed insulation workers. 73 MPM patients had an epitheloid subtype (72.3%), 42 had a stage I or II disease (41.6%).

Results
As compared to asbestos-exposed individuals, MPM patients of all clinical stages had significantly higher (mean ± SD, median) serum ILK concentrations (10.7 ± 13.6, median 7 ng/mL vs. 3.1 ± 4.6, median 1.4 ng/mL; $p<0.001$). Within MPM patients, the serum ILK concentration was considerably higher at advanced disease stages III + IV than at stages I + II (13.7 ± 15.9, median 8.5 ng/mL vs. 6.7 ± 7.8, median 3.5 ng/mL; $p = 0.02$). However, the AUC for a distinction between asbestos-exposed individuals and MPM patients was only 0.69 (95% CI 0.63 - 0.76).

Conclusions
These data show considerable differences between MPM patients and asbestos-exposed individuals concerning their serum ILK concentration. Furthermore, since ILK levels seem to be associated with tumor burden as reflected by clinical stage, we suggest evaluating its potential use as a marker of disease progression in MPM.

Disclosure

H.I. Pass: Specimen collection for the mesotheliomas at the NYU Langone Medical Center was supported by a National Cancer Institute Early Detection Research Network Grant to H.I.P. All other authors have declared no conflicts of interest.

B-004

THE EFFECT OF COMORBIDITY ON STAGE-SPECIFIC SURVIVAL IN RESECTED NON-SMALL CELL LUNG CANCER PATIENTS

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Objectives
TNM classification has been the traditional cornerstone of decision-making in treatment choices of lung cancer. In addition to TNM stage and lung function, there is no other objective information to support this decision. Severe comorbidity affects overall survival, and may be an independent prognostic factor. In this study we quantified the effect of comorbidity on stage-specific survival in resected non-small cell lung cancer (NSCLC) patients in a large population-based setting

Methods
Among 3,152 NSCLC patients from the Danish Lung Cancer Registry who underwent surgical resection between 1st January 2005 and 31st December 2010, mortality hazard ratios were calculated during three consecutive time periods following surgery (0-1 month, 1 month - 1 year and >1 year) according to Charlson comorbidity score (CCS 0, 1-2, 3+), ECOG performance status, lung function, age, sex, pathological T and N stage according to the revised 7th edition TNM lung cancer staging system, using Cox proportional hazard modelling. The Kaplan Meier method was used to describe stage-specific survival according to the Charlson comorbidity score

Results
Increasing severity of comorbidity was independently associated with significantly higher death rates throughout the three periods of follow-up [HR1.18 for CCS 1-2 and 2.06 for CCS 3+ in 0-1 month, 1.13 for CCS 1-2 and 1.57 for CCS 3+ during 1 month - 1 year and 1.14 for CCS 1-2 and 1.84 for CCS 3+ after 1 year]. Stage-specific five-year survival in patients with severe comorbidity (CCS 3+) was significantly lower than in patients without comorbid disease [e.g., 38% (95% CI 23-53%) for pT1 & CCS 3+ vs. 69% (62-75%) for pT1 & CCS 0].

Conclusions
This study shows that severe comorbidity affects survival of NSCLC patients undergoing surgical resection by as much as a single stage increment. As the survival of NSCLC patients after different treatment regiments is mainly based on the TNM classification, further research is necessary to fully identify which patients are most likely to benefit from surgery, but also to provide a basis for developing a better prediction instrument for the survival after combination treatment involving radiotherapy and chemotherapy.

Disclosure: All authors have declared no conflicts of interest.

B-005

REGULATED TAILORED SUCTION VERSUS REGULATED SEAL. A PROSPECTIVE RANDOMIZED TRIAL ON AIR LEAK DURATION

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Objectives
To compare air leak duration of two regulated chest tube modes following pulmonary lobectomy.

Methods
Prospective randomized trial on 100 consecutive pulmonary lobectomies (2010-2011) for lung cancer. A single 24-French chest tube was connected to an electronic system capable of maintaining the pleural pressure at pre-set values (regulated suction mode) or within a physiologic range (regulated seal mode that encourages patient-led negative pressure). Intention-to-treat study. Group 1, regulated individualized suction (range: -11cmH2O to -20cmH2O, according to lobectomy type); Group 2, regulated seal (-2cmH2O, with patient-led negative pressure as air leak resolves). Endpoint: duration of air leak (hours) calculated from end of operation to a value consistently below 20 ml/min. Patients with prolonged air leak (>168 hours) were connected to portable device before discharge. Their air leak duration was considered as 192 hours. Sample size was calculated to detect 1 day difference in air leak duration with a statistical power of 80%.

Results
The 2 groups were well matched for several baseline and surgical characteristics. No crossovers occurred between groups. Average air leak duration (group 1: 28 hours vs. group 2: 22.2 hours, p=0.6), number of patients with prolonged air leak (group 1: 5 vs. group 2: 4, p=0.7) and other complications (group 1: 6 patients vs. group 2: 7 patients, p=0.9) were similar between groups. 16 patients of group 1 and 21 of group 2 had an air leak present immediately after extubation. Among them, patients of group 2 (regulated seal) had an air leak lasting 34.5 hours less than group 1 (regulated suction) (52.9 hours vs. 87.4 hours, p=0.07).

Conclusions
Regulated seal is as effective and safe as regulated suction in managing chest tubes following lobectomy. This information demonstrates with objective data the equality of regulated suction versus regulated seal and may assist in future investigations on regulated pleural pressure.

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

B-006

THYMOMA AND THE AUGMENTED RISK TO DEVELOP AN EXTRATHYMIC MALIGNANCY: A MULTICENTRIC ITALIAN EXPERIENCE

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Objectives
Thymoma patients(TP)have been reported to present an increased risk to develop second tumors(STs). The aim of this study is to assess STs incidence and possible risks in a cohort of TPs

Methods
a retrospective search of our surgical database for patients operated for thymoma in the above mentioned centers between 2000 and 2010,was conducted.The STs incidence(all sites)was compared with the expected number of cancers(ExCs)on the basis of cancer incidence rates(by sex,age and area of residence in Italy)reported by the Italian Cancer registry Network(AIRTUM) for the period 2000-2003.Standardized Incidence ratio(SIR)and 95%confidence intervals(CI) were then calculated.

Results
A total of 305 patients(50.8%females,mean age 54.4 years-range 8-87 years-)were operated at our Institutions. Myastenia Gravis(MG)was observed in 167(54.8%)and other autoimmune syndromes in 50 cases(16.4%).Induction chemo(CT)/radiotherapy(RT)was performed in28(9.2%),adjuvant CT/RT in 157(51.5%)cases.Twenty-five patients(8.2%)received both those treatments.Complete surgical resection rate was 95.2%. Mean follow-up was 5.02 years(range:0.01-11.3 years).At the end of the study,49 patients(16.1%)died.STs were observed in 47 cases:26 were metachronous (8.5%), 6 synchronous (2%), and 15 patients 4.9%) had a cencer before thymectomy.Observed metachronous STs(26)were significantly more frequent than ExCs(14.2; SIR:1.8-95%CI:1.19-2.67).Eight patients had multiple STs.Among synchronous STs,lung cancer(3 cases)was most frequently observed;among metachronous STs,the most frequent were:digestive(8 cases),lung(4),breast(3)and kidney cancer(3).A preliminary analysis has shown an increased, even not statistically significative risk of STs after adjuvant therapy(hazard ratio-HR-1.38;95%CI:0.57-3.35)and in patients receiving both neo and adjuvant therapy(HR:2.06;95%CI:0.66-6.44).

Conclusions

STs are significantly more frequent than ExCs after thymectomy: this can be explained both with an intrinsic biological risk of this particular group of patients,and, possibly, by the effect of pre/postoperative CT/RT treatments. A strict and prolonged follow-up is then mandatory in these high-risk thymoma patients.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 11 JUNE 2012
11:00 - 11:30
Session II/Featured Abstracts

F-007

ANALYSIS OF POTENTIAL QUALITY OUTCOME MEASURES FOR LUNG CANCER SURGERY ACROSS A UK CANCER NETWORK

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Objectives
Measures of quality in thoracic surgical services are under scrutiny to aid service development and revalidation of consultant surgeons in the UK. The aim of this study was to examine potential markers of a quality service based on the individual Lung Cancer MDT.

Methods
Data from the returns to the UK Thoracic Surgery Database for patients first seen between 1/1/09-31/12/10 were analysed. Denominators were taken from the National Lung Cancer Audit returns.

Results

		Unit A	Unit B	Unit C	Unit D	Unit E	p	SCTS
Resection Rate	Histologically confirmed NSCLC Surgical Cases Resection Rate (%)	215 27 12.6	211 34 16.1	416 82 17.1	188 34 18.1	478 119 24.9	<0.01	18.3
Thoracoscore	Median(range)	2.3(0.5-8.41)	1.97(0.61-5.8)	2.29(0.5-9.55)	1.83(0.76-9.55)	2.29(0.38-12.57)	0.22	N/K
Procedure (%)	Pneumonectomy	16.1	20.0	13.0	0	13.8	<0.01	9
	Lobectomy	71.0	60.0	75.0	75.0	67.2	0.11	70.7
	Complex Lobectomy	3.2	0	4.4	5.6	3.4	0.25	2.3
	Segmentectomy	0	2.9	3.3	0	7.8	<0.01	
	Wedge	9.7	17.1	4.4	19.4	9.5	<0.01	18
	Total (n)	31	35	92	36	116		
VATS	%	9.7	2.9	8.7	2.8	9.5	<0.01	14
Systematic Lymph Node Dissection	%	54.8	11.4	51.1	8.3	40.5	<0.01	N/K
Operative Mortality	%	0	0	5.4	2.8	3.4	0.05	2.1
Length of stay (days)	Median(range)	8(3-36)	8(3-32)	9(1-62)	9 (1-22)	8(1-100)	0.47	N/K
1 year post-operative mortality	%	12.9	14.3	14.1	8.8	15.4	0.68	N/K
Complete Resection	% as per 7th Edition TNM Classification	48.4	11.4	46.7	8.3	38.8	<0.01	N/K

Conclusions

There are significant differences between MDTs in resection rates, procedure performed, the number undergoing systematic lymph node dissection, the percentage undergoing video assisted thoracoscopic resection, and in the percentage of complete resections. There are no significant differences in procedure, thoracoscore, length of stay or mortality. Further study is required to determine the implications of these differences for service provision.

Disclosure: All authors have declared no conflicts of interest.

F-008

TWO THORACIC SURGERY CENTERS, TWO COUNTRIES. PERFORMANCE COMPARISON IN EUROPEAN COMMUNITY CONTEXT

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Objectives
The European Community (EC), a heterogeneous politico-economical formation aims at a standardised health-care policy. Thoracic surgical procedures, a high quality low volume profile offers an optimal test field. Established and coherent EACTS/ESTS Guidelines are enabling the international comparison of these data among different centers. We compare the performance indicators of two Thoracic Surgical Units with similar sizes and respective treatment philosophies (EACTS/ESTS Guideline awareness) in two EC countries.

Methods
Thoracic surgery procedure data were compared in the period of 2008-2011 at Evangelismos General Hospital (EGH), Athens, Greece, and Medical School /University of Pécs (MS/UP), Hungary. All standard data (demographics, pathologies, procedures, in-hospital outcome data) were evaluated. Distribution of the pathologies /congenital pathologies, chest wall deformities, inflammatory chest conditions, benign lung lesions, lung cancer, mediastinal lesions, chest, trauma/ were investigated. Surgical procedures were noted and compared. Independent group t-test was used for statistical analysis according to the groups of patients/procedures in the two centers.

Results
Number of treated cases were 1172 (Greece) and 1545 (Hungary) respectively. Chest wall deformities were more frequent in MS/UP (p:0.01). Mediastinal activity was eminent in EGH (350 vs.85 p: 0.01). There were multifactorial significant differences in NSCLC cancer pattern [adeno/squamocellular ratio, age related tumor prevalence and tumor stage]. Squamocellular carcinoma dominated in Athens, adenocarcioma was significantly more frequent in Pecs (p: 0.01). Pecs dominated the neoadjuvant treatment related procedures. At both centers there is a paralel trend for increase of VATS procedures. Thoracic trauma were more commonly operated at UP reflecting to organisational issues.

Conclusions
The similiarities are dominating the overall picture, while the differences need further investigations. International (ESTS) Databases does not replace matched comparations like ours, as special issues need a one-by-one approach. Challenges in order to understand disparities, explore field of improvement contribute to a better patient care within the European Community.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 11 JUNE 2012
11:00 - 11:30
Session III/Interesting Cases

I-009

CHALLENGING POSTERIOR MEDIASTINAL MASS RESECTION

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Objectives
We report a novel surgical strategy for resection of a melanotic schwannoma arising from the thoracic sympathetic chain, adjacent to the origin of the artery of Adamkiewitz (AKA).

Methods
A 19-year-old man presented with left sided thoracic pain. A chest X-ray revealed a left posterior paramedian mass between T8 and T9. Pre-operative assessment included: 1) MRI – Revealing a 6 cm mass in the posterior mediastinum, intimately associated with the spinal cord at theT8-T9 vertebral level (figure 1A). 2) Selective spinal angiography confirming the origin of the AKA from the left 8th intercostal artery, outside the intervertebral foramen and projecting over the lateral aspect of the tumour (figure 1B); and 3) CT guided fine needle biopsy diagnosing a melanotic schwannoma (a rare and benign tumour with unpredictable prognosis). The case was presented at our multidisciplinary meeting, with 2 questions for consideration: Is resection indicated? If 'YES' how best to avoid severe neurological injury?

Results
After weighing the benign histology and significant peri-operative risk of paraplegia against the patient's youth and potential for complication due to slow growth of this already symptomatic tumour, we agreed on tumour resection via videothoracoscopy with spinal evoked potentials (SPE) monitoring. The tumour arose from the left sympathetic chain. Its upper edge was densely adherent to the adjacent 8th intercostal artery, which gave origin to the AKA (figure 1C). A decrease in amplitude of SPE was observed with traction on the mass during dissection, and resolved with reduction in traction (figure 1D).We removed carefully the mass without any other incident. The patient was discharged on the second postoperative morning without complication.

Conclusions
Successful excision of the tumour via a minimally invasive approach without arterial or spinal cord injury was possible with the aide of SPE

Disclosure: All authors have declared no conflicts of interest.

I-010

AN UNUSUAL COMPLICATION FOLLOWING CHEST WALL RESECTION AND RECONSTRUCTION

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Objectives
The use of titanium bars is an acceptable and well known method in the stabilisation or reconstruction of chest wall. When such reconstruction takes place in the posterior chest wall with no rib remnants the bar fixation remains a challenge.We present an interesting case were the posterior part of the plate was fixed on the vertebral body followed by perforation of the oesophagus in the postoperative period.

Methods
A female patient with a right Pancoast tumour underwent neoadjuvant chemoradiotherapy followed by an upper lobectomy, chest wall resection as well as T1 and T2 vertebral bodies. The lower rib was substituted with a titanium bar and fixing screws at each end but the posterior end was allowed to rest on the vertebral body as there was no rib remnant available for fixation. The vertebral column was fused with an expanding peek cage and bone graft. The patient was discharged on the fourth postoperative day with no problems. She was readmitted three weeks later with a dehisced infected wound. A chest CT scan revealed signs of empyema and strong suspicion of an esophageal perforation as a result of bar dislocation.

Results
At esophagoscopy the bar tip was evident within the esophageal lumen. The old incision was revisited, the empyema cavity was evacuated and debrided, and the remaining lung was partially decorticated. The esophageal perforration was identified after removal of the bar and was secured with an intercostal muscle flap. The vertebral fusion was left intact to avoid a spinal collapse and a fenestration was performed with application of a vacuum assisted device. The procedure was completed with a feeding jejunostomy to provide long term nutritional support. The postoperative course was uneventful and she was managed conservatively in the community setting until the esophageal leak sealed off and the fenestration reduced to the extend of being able to cease the negative pressure wound therapy.

Conclusions
Reconstruction of large chest wall defects often require assistance with metal bars to reestablish an almost physiological chest wall mechanics and pleasing aesthetic results. Although the commercially available bars are strong and withstand significant stress they require a substantial osseous substrate for fixation. The vertebral bodies could be an alternative if no rib segment is available but extreme caution should be taken to fix the bar in a manner that minimises the risk of dislocation when the natural rib articulation is lost. Early recognition of dislocation is of paramount importance with aggressive and urgent intervention.

Disclosure: All authors have declared no conflicts of interest.

I-011

SURGERY FOR SYNCHRONOUS RIGHT UPPER AND RIGHT LOWER LOBE TUMOURS

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Objectives
The need for combined resection of the right upper and lower lobes of the lung, but not the middle lobe, arises very rarely. The extraordinary approach of preserving only the middle lobe at the right side may theoretically lead to serious complications such as pleural space problems, atelectasis, or torsion of the middle lobe. However, it may also preserve some lung parenchyma in addition to preventing the complications and adverse affects of a right pneumonectomy.

Methods
Two synchronous tumors—one each in the lower and upper lobes—were found in the right lung of a man. No distant or mediastinal lymph node (LN) metastasis was detected. After a right thoracotomy was performed, frozen-section pathologic examination confirmed no metastasis to the LNs in the hilar, interlobar, and mediastinal stations. We subsequently resected the right upper and lower lobes. We preserved only the middle lobe at the right side and sutured it to the chest wall in its natural position.

Results
Chest radiography during the early postoperative days showed the presence of residual pleural spaces in both upper and lower zones of the right chest. On the second postoperative day, atelectasis developed, and thus, we performed a bronchoscopic aspiration. At discharge, the patient's chest radiograph showed a well-ventilated middle lobe but pleural residual spaces in the upper and lower zones. During his routine follow-up, we found that the middle lobe had gradually expanded to fill most of the right hemithorax. No complication due to the residual pleural spaces was observed. At the 20th postoperative month, the patient had no local recurrence or distant metastasis and good cardiopulmonary functions.

Conclusions
When combined resection of the right upper and lower lobes is required, instead of performing a right pneumonectomy, the middle lobe can be preserved, which will ensure better long-term cardiopulmonary functions.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 11 JUNE 2012
13:00 - 14:00
Session V/Videos

V-012

THE LEFT THORACOTOMY APPROACH FOR SURGICAL EXCISION OF DISTAL TRACHEAL CARCINOMA IN THE PRESENCE OF RIGHT-SIDED AORTA

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Objectives
Tracheal primary carcinoma is a rare malignancy and to find it in a right sided aorta patient we believe has not described before. We report a case of a primary tracheal squamous carcinoma in a patient with a right sided aortic arch: the patient underwent to a tracheal resection by left thoracotomy.

Methods
We present the edited operative video of the procedure. The tumor was approached through a left posterolateral thoracotomy due to the abnormal anatomy. Following identification of phrenic and vagous nerve with the recurrent branch, and subclavian and carotid artery, the tracheal plan was prepared. The tumor was identified intraoperatively by flexible bronchoscopy and a circumferential tracheal resection of 2 cm was performed. A cross-field ventilation was achieved in the distal trachea. Stay sutures were placed laterally two rings above and below the planned resected segment with 3-0 Vicryl, and the completed anastomosis was carried out with interrupted stitches 4-0 Vicryl. Reinforcement of the anastomosis was performed with intercostal muscle flap. Limphadenectomy of stations 2-4L, 6-7 was performed. The patient was successfully extubated without airway compromise in the operative room.

Results
There were no postoperatives complications. Histology confirmed Squamous cell carcinoma of the trachea. The resection margins and lymph node excision were free of malignancy. The clinical follow up including bronchoscopy with biopsies at 3 months was completely satisfactory.

Conclusions
Tracheal primary carcinoma is a rare malignancy and we present a unique case of primary tracheal carcinoma in right sided aorta patient treated successfully.

Disclosure: All authors have declared no conflicts of interest.

V-013

REPAIR OF COMPLETE STERNAL CLEFT ASSOCIATED WITH PECTUS EXCAVATUM

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Objectives
A sternal cleft with pectus excavatum is a rare conjenital and developmental disorder. We present direct repair of congenital complete sternal cleft and pectus excavatum in a 17-years old girl with a dextrocardia, using titanium plates fixed by screws to the manubrium and costal cartilages.

Methods
A 17-years old girl was admitted to the clinic to repair the cosmetic defect and provide a protective shield. She had a midline supraumblical raphe. Computed tomography showed the osseous defects and a dextrocardy. We planned repair of the pectus and the cleft using titanium plates considering rigidity of the chest wall.

Results
Through a midline thoracic incision, the sternal bars were dissected free from the insertion of pectoralis major muscles anteriorly and from endothoracic fascia. Due to the convexity of the costochondral junctions, sternal edges were positioned inward. Four chondrotomies applied to the associated costal cartilages on both sides alined the sternal edges. Three sternal wires were used to approximate the sternal body. Two titanium plates were fixed by screws, one for the manubrium and the other for the xiphoid. Chondrotomies were secured by short titanium plates. The pectoral muscles joined in the midline. No peroperative and postoperative complications occurred. The patient was discharged 6 days after repair.

Conclusions
This method provided excellent protective and cosmetic results. The repair of the developmental pectus present in the patient allowed an extra space for the mediastinum and prevented a possible cardiac compression which could ocur during approximation of the sternal edges.

Disclosure: All authors have declared no conflicts of interest.

V-014

ENDOSCOPIC (VATS) FIRST RIB RESECTION FOR THORACIC OUTLET SYNDROME

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Objectives
Thoracic outlet syndrome causes neurological symptoms in 93% of cases and vascular symptoms in 7% of cases. Surgical resection is curative. Endoscopic transaxillary assisted first rib resection has been previously reported. In this study we report a novel complete endoscopic intrapleural approach.

Methods
A 23-years old woman with neurogenic thoracic outlet syndrome identified as muscle wasting in the left hand underwent a complete endoscopic first rib resection. The patient was placed in the left lateral position. She had double lumen intubation. Three standard left VATS ports were placed after isolation of the left lung. The parietal pleura and periosteum overlying the first rib were stripped avoiding injury to the neurovascular bundle. The rib was transected with an endoscopic rib cutter and resected completely in a "piece meal" fashion using endoscopic bone nibblers .

Results
The patient was discharged within 48 hours.

Conclusions
Complete endoscopic first rib resection using standard VATS ports is a novel alternative surgical approach.

Disclosure: All authors have declared no conflicts of interest.

V-015

FLAIL CHEST SURGERY

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Objectives
Conservative treatment is the commonest way to treat the flail chest. Since the availability of new materials, particularly the titanium, there is an increasing tendency to the surgical management (open reduction and internal fixation, ORIF).

Methods
We present a video showing an open reduction and internal fixation in a 64 years old patient who had a motorbike accident. CT scan on admission shows right hemothorax for a pulmonary laceration, sternal fracture and multiple broken ribs (2 to eleven), been double fractures from 6 to 10. Operative fixation was accomplished using titanium plates and bars (STRATOS System). Through a right thoracotomy the lung laceration is identified and sutured. We make an open reduction of fractured ribs and internal fixation using titanium clips

Results
The patient was extubated in theater. The recovery and follow up was excellent. The patient was discharged 7 days after. Three months after surgery the patient was fully recovered and back to normal life. We perform control CT chest scan and dynamic MRI showing chest wall symmetry and normal lung function tests.

Conclusions
Surgical treatment for flail chest is technically easy. Titanium material is an excellent option for rib osteosynthesis. Using clips we avoid perforate ribs to place screw.

Disclosure: All authors have declared no conflicts of interest.

V-016

SEQUENTIAL THORACOSCOPY AND ANTERIOR CONTRALATERAL THORACOTOMY, A NOVEL TECHNIQUE FOR THYMOMA RESECTION. AN ALTERNATIVE TO STERNOTOMY?

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Objectives
We describe the use of a novel technique of sequential thoracoscopy and contralateral anterior thoracotomy for thymoma resection.

Methods
Between October 2009 and September 2011, 8 patients with thymomas (two with myasthenia gravis), were assessed to undergo sequential thoracoscopy and anterior contralateral thoracotomy for thymoma resection. Thymomas size ranged from 5,5 to 11 cm. We start thoracoscopic dissection from the side where the thymus is less protruding to the mediastinum. The contralateral pleura is opened to introduce the dissected specimen. Being the patient repositioned in the controlateral decubitus position, thoracoscopy allows to perform some steps of the dissection. Sequentially, an anterior thoracotomy through the 4th intercostal space is performed. After a complete standard dissection, the specimen is removed through the thoracotomy.

Results
There were 7 males and 1 female. Their median age was 44 yrs (range: 17-66 yrs). Two patients needed to be converted to sternotomy: one patient presented a thymoma infiltrating the pericardium, and the other showed a tumor of a gel-like consistency. In the six remaining patients the surgical approaches were a right thoracoscopy and contralateral left thoracotomy (n=2) and a left thoracoscopy and contralateral right thoracotomy (n=4). Post-operative WHO histology was B2 (n=4) and B1 (n=2). Pathologically, 5 were Masaoka stage II and one stage III. In all patients a radical resection was achieved. The average operative time was 218 mins (130-250 mins); the average blood loss was 285 mL (200-400 mL). The average hospitalitation was 5 days(4-7 days). There were neither complications nor perioperative deaths. All patients are alive and disease-free from thymoma. The two patients with myasthenia gravis achieved complete stable remission.

Conclusions
Our technique is safe and feasible, it facilitates the contextual radical dissection of the mediastinal fat, mandatory in patient with associated myastenia gravis, furthermore in selected patients it offers an alternative access to median sternotomy.

Disclosure: All authors have declared no conflicts of interest.

V-017

TOTAL PORT-ACCESS LOBECTOMY WITH SUBCOSTAL TRANS-DIAPHRAGMATIC APPROACH FOR LUNG CANCER

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Objectives
Video-assisted thoracic surgery (VATS) has been recognized as an acceptable technique for the treatment of early stage lung cancer. To minimize postoperative pain in VATS, several new approaches have recently been reported. We report successful total port-access video-assisted thoracoscopic lobectomy for stage IA lung cancer via the subcostal trans-diaphragmatic approach.

Methods
Operatve procedure: Three 5-mm thoracoports were placed in the fourth intercostal space on the anterior axillary line, in the fifth intercostal space on the posterior axillary line and in the seventh intercostal space on the middle axillary line for the thocacoscopic camera respectively. Just anterior of the tenth rib, a 2-cm subcostal incision was made. By blunt dissection, the diaphragm was reached and a 12-mm port was placed trans-diaphragmatically into the chest cavity. Insufflation of CO2 introduced through a 15-mm port was maintained until the lung was well deflated. Pulmonary veins, arteries, bronchus, and incomplete lobation were divided usually with endostapler introduced through a 12-mm port. The resected lobe was inserted into a removal bag and was withdrawn trans-diaphragmatically through the subcostal incision. Systematic mediastinal lymph node dissection was performed. Graspers of the lung and endostaplers were introduced through a subcostal port. A roticulated device was useful for encircling the vein, artery, and bronchus. Patients and Methods

We performed this procedure on 13 patients over a recent 1-year period, including right upper lobectomy in 7 patients, right middle lobectomy in 4 patients,right lower lobectomy in 1 and left lower lobectomy in 1 patient.

Results
For the first 2 patients, operation times were 271 min and 230 min, respectively. In the other 11 patients; mean operation time was 186 min (range 129-209 min). Mean blood loss was 10.5 mL. Mean postoperative drainage period was 1.1 days. There were no morbidity and no hospital death. Postoperative pain score by VAS was 0 to 2.

Conclusions
Our results demonstrate the feasibility and safety of this procedure with the possible advantages of minimizing intercostal nerve damage and better handling of staplers.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 11 JUNE 2012
14:00 - 15:30
Session VI/Pulmonary Neoplastic

O-018

EFFECTS OF LOW-DOSE HUMAN ATRIAL NATRIURETIC PEPTIDE FOR PREVENTING POSTOPERATIVE CARDIOPULMONARY COMPLICATIONS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS UNDERGOING LUNG CANCER SURGERY

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Objectives
Lung cancer patients with chronic obstructive pulmonary disease have increased risk for respiratory and cardiovascular complications after pulmonary resection. We recently reported that human atrial natriuretic peptide had a prophylactic effect on postoperative cardiopulmonary complications in elderly patients (aged >75 years). The objective of the present study was to evaluate the clinical effects of low-dose human atrial natriuretic peptide on postoperative cardiopulmonary complications in untreated chronic obstructive pulmonary disease patients undergoing lung cancer surgery.

Methods
Among 824 patients who underwent an elective pulmonary resection procedure for lung cancer in two specialized thoracic centers between 2008 and 2011, 202 consecutive patients who had airflow limitation before surgery were included in this retrospective study. Results were compared between patients who did and did not receive the treatment of human atrial natriuretic peptide during the perioperative period. The primary endpoint was the incidence of postoperative cardiopulmonary complications.

Results
The incidence of postoperative cardiopulmonary complications was significantly lower in the human atrial natriuretic peptide group than in the control group (14% vs. 36%, P=0.002). Furthermore, in the analysis of non-elderly patients (aged <75 years), the incidence of postoperative cardiopulmonary complications was also significantly lower in the human atrial natriuretic peptide group (P<0.05). Table. Postoperative cardiopulmonary complications

Variables	hANP group (N=51)	Control group (N=151)	P value
All cardiopulmonary complications	7 (14%)	55 (36%)	0.002
Cardiovascular complications	6 (12%)	39 (26%)	0.037
Atrial fibrillation	5	34	
Paroxysmal supraventricular tachycardia	1	2	
Acute myocardial infarction	0	3	
Respiratory complications	1 (2%)	19 (13%)	0.028
Pneumonia	1	13	
Acute respiratory distress syndrome	0	4	
Chronic respiratory failure	0	4	

Conclusions

The treatment of human atrial natriuretic peptide during the perioperative period had a prophylactic effect on postoperative cardiopulmonary complications for untreated chronic obstructive pulmonary disease patients in all age groups undergoing lung cancer surgery.

Disclosure: All authors have declared no conflicts of interest.

O-019

BRONCHOPULMONARY CARCINOIDS: LONG-TERM OUTCOME IN A CLINICO PATHOLOGIC AND MIB-1 LABELING STUDY OF A SINGLE-INSTITUTION SERIES

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Objectives
Distinction between typical and atypical bronchopulmonary carcinoids is based on mitotic activity and necrosis; at individual level, none of these features gives a reliable prediction of clinicopathologic outcome. We evaluated the expression of MIB-1 as a potentially better indicator to classify carcinoids into two distinct histological and clinical groups.

Methods
The long-term post-surgical outcome of a single-institution series of 90 radically treated bronchopulmonary carcinoids was correlated with tumor characteristics assessed by combining conventional histology with a panel of immunohistochemical markers (chromogranin, NSE) and cell turnover (MIB-1). Tumor features were obtained by serial sections of paraffin-embedded samples stained with H&E and immunohistochemistry for MIB-1 and independently assessed by two pathologist.

Results
Carcinoids were assessed as typical(TC=61(67%))and atypical(AC=29(32.2%)). Mean follow-up was 8.3 years(range=0-18;median8). All cases expressed neuroendocrine markers. At univariate analysis, tumor recurrence[12/61 TC(19.7), 12/29 AC (41.4%)] correlated with carcinoid histotype(P=0.035), tumor dimension(P=0.011), mitotic index(P=0.017), MIB-1 expression (P=0.020) and synchronous node metastasis (P=0.050). Of these , Cox multivariate analysis confirmed only MIB-1 expression as indipendent predictor of disease recurrence(P=0.009). Best cut-off for MIB-1 expression(calculated by ROC curves) discriminating recurrence vs non recurrence was 4%. By stratifyng patients according to this cut-off, significant differences emerged in the patients' disease-free survival(long-rank test P<0.0001).

Conclusions
MIB-1 expression accurately separated carcinoid tumors into two well distinct histo-prognostic categories with important clinical implication. MIB-1 score resulted a better predictor of survival and recurrence than mitotic count combined with evaluation of necrosis.

Disclosure: All authors have declared no conflicts of interest.

O-020

VIDEO-ASSISTED VERSUS OPEN MEDIASTINAL LYMPHADENECTOMY FOR STAGE-I NON-SMALL CELL LUNG CANCER: RESULTS OF A PROSPECTIVE RANDOMIZED TRIAL

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Objectives
Since the introduction of video-assisted lobectomy for non-small cell lung cancer into clinical practice it is discussed controversially whether the mediastinal lymphadenectomy can be performed as effectively as by an open procedure (thoracotomy). A prospective randomized trial was initiated in order to address this issue.

Methods
In total 66 patients with completely staged clinical stage-I non-small cell lung cancer were included and randomized either into a video-assisted group (n = 34) or into the conventional lobectomy group (n = 32). Lymph nodes were classified according to the IASLC classification. For right-sided tumors lymph nodes no. 2R, 4R, 7, 8, 9, 10, 11, and 12 were dissected and for left-sided tumors lymph nodes no. 5, 6, 7, 8, 9, 10, 11, and 12. For the subsequent analyses lymph nodes were grouped into different compartments as follows: compartment 1 (2R and 4R), 2 (7), 3 (8R, 9R), 4 (10R, 11R, 12R), 5 (4L), 6 (5, 6), 7 (8L, 9L), and 8 (10L, 11L and 12L).

Results
The number of lymph nodes removed (N1+N2)/patient was as follows: VATS (right side) 24.0, open right-sided 25.2, VATS (left side) 25.1, and open left-sided 21.1. With respect to the compartments mentioned above we found the following Results: VATS versus open (median no. of lymph nodes/patient): compartment1: 9 vs. 8.5; compartment2: 6.3 vs. 5.6; compartment3: 2.4 vs. 3.2; compartment4: 6.5 vs. 6.9; compartment5: 0 vs. 0.5; compartment6: 3.2 vs. 3.7; compartment7: 4.6 vs. 3.2, and compartment8: 10.5 vs. 8.9. There were no statistically significant differences between the procedures neither with respect to the overall number of lymph nodes nor with respect to the number of lymph nodes in each compartment.

Conclusions
Mediastinal lymph node dissection can be performed as effective by the video-assisted approach as by the thoracotomy. The video-assisted approach allows a better visualization of different lymph node compartments.

Disclosure: All authors have declared no conflicts of interest.

O-021

VATS LOBECTOMY FACILITATES DELIVERY OF ADJUVANT CHEMOTHERAPY FOLLOWING NSCLC RESECTION

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Objectives
VATS lobectomy for early stage NSCLC is a safe and effective alternative to open lobectomy. Adjuvant chemotherapy is recommended for patients with performance status (PS) 0-1 following resection of NSCLC of stages T1-3 N1-2 M0 and T2-3 N0 M0 (NICE Clinical Guideline 121, 2011). We compared the delivery and toxicity of chemotherapy in patients following open and VATS lobectomy.

Methods
We performed a retrospective study of all patients who had resection of primary NSCLC in a single surgical centre between October 2008 and April 2011. Surgical and chemotherapy databases were reviewed to extract data on patient characteristics, operative details, pathological stage, chemotherapy delivery and toxicity. Statistical comparisons were made by standard parametric, non-parametric, and contingency tests, with $P<0.05$ indicating statistical significance.

Results
Of 125 NSCLC cases identified, 57 (45.6%) underwent VATS resection and 68 (54.4%) had thoracotomy; 14/57 (24.5%) and 16/68 (23.5%) of each group respectively received adjuvant chemotherapy. Patient demographics and tumour stage were similar between VATS and thoracotomy groups; median age [range]: 67.8 [53-83] vs. 69.0 [50-76](P=0.50); sex: 50% vs. 50% male (P=1.0); stage I/II: 71.4% vs. 60% (P=0.70); stage III: 21.4% vs. 40% (P=0.43); pre-chemotherapy PS of 0: 50% vs. 68.8% (P=0.46). All patients received platinum/vinorelbine therapy. Chemotherapy was initiated significantly earlier in the VATS group (median 53 days [30-82] vs. 67 days [35-83], P=0.046). Although dose intensity was similar between VATS and thoracotomy groups (% planned platinum dose: 68.4% vs. 72.8%; % planned vinorelbine dose: 69.2% vs. 71.5%; P=0.66 and P=0.84 respectively) there was a NS reduction in grade 3/4 haematological toxicity in the VATS treated group (30% vs. 60%, P=0.15).

Conclusions
This study shows that VATS lobectomy for NSCLC, compared with thoracotomy, facilitates earlier delivery of adjuvant chemotherapy. The study also provides evidence that VATS lobectomy may be associated with reduced toxicity of subsequent chemotherapy.

Disclosure: All authors have declared no conflicts of interest.

O-022

SIGNIFICANCE OF PREOPERATIVE ENDOBRONCHIAL PHOTODYNAMIC THERAPY IN LOCALLY ADVANCED CENTRAL NSCLC: A RANDOMIZED TRIAL

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Objectives
This report describes the result of prospective randomized trial comparing neoadjuvant chemotherapy with and without endobronchial photodynamic therapy (PDT) followed by surgery for locally advanced NSCLC to determine: (1) efficacy and safety of neoadjuvant PDT, and (2) surgical results.

Methods
From Jan 2008 to Dec 2011, 42 pts with stage III central NSCLC (main bronchus/distal trachea involvement) were randomized to either endobronchial PDT or no PDT. PDT was done with photosensitizer chlorine E6 and 662 nm laser light before each of the three courses of chemotherapy. Patients assigned to PDT (n=21) and no PDT (n=21) were similar with respect to age, sex, tumor stage, and histology.

Results
No PDT complications were observed. After neoadjuvant treatment partial remission revealed in 19 pts (90%) in PDT and 16 pts (76%) in no PDT group, these patients underwent thoracotomy. After thoracotomy tumor was unresectable in 3 pts from no PDT group (19%). 24 pneumonectomies (3 carinal), 8 lobectomies in compromised patients (2 bronchoplastic) were done. There was one postoperative death in each group. Completeness of resection was significantly higher in PDT (R0-89%, R1-11%) vs. no PDT (R0-54%, R1-46%) group.

Conclusions
Combination of chemotherapy with endobronchial PDT increases effectiveness of neoadjuvant treatment and surgical radicalism in locally advanced central NSCLC.

Disclosure: All authors have declared no conflicts of interest.

O-023

CLINICAL OUTCOMES OF VIDEO ASSISTED THORACOSCOPIC BRONCHOPLASTY

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Objectives

Bronchial Origin involvement by endobronchial tumours or direct invasion by tumour or metastatic nodes is a relative contradiction for Vats lobectomy. However selected cases can be resected by Vats bronchoplasty.

Methods

Between 2006 and 2011,21 out of 231(9.1%) Vats lobectomy underwent Vats bronchoplasty. Cases with endobronchial involvement and limited invasion by tumour or metastatic nodes without major vascular invasion were selected for bronchoplasty by preoperative bronchoscopy and CT scan thorax.Patients underwent either a simple/wedge bronchoplasty(bronchus divided at origin and closed flush or transversely),sleeve bronchoplasty or extended bronchoplasty(bronchoplasty requiring other extended resections).All bronchoplasties were done totally endoscopically by directly watching a TV monitor. Bronchial margins were all subjected to intraoperative pathological analysis. Anastomosis was done with interrupted absorbable sutures. Integrity of anastomosis was checked by intraoperaive bronchoscopy. Follow up was done by 6 monthly CT scans and bronchoscopy.

Results

11 were females.Mean age was 64.9years(range,47-83years).Indications were endobronchial tumours in 3,direct invasion by tumour in 6 and metastatic nodes in 12.In 4 cases invasion was detected at time of surgery.Mean hospital stay was 5.2 days(range,3-8days).Mean duration of surgery was 287mins(range,135-540mins). 9 had simple/wedge bronchoplasty,8 sleeve and 4 extended bronchoplasties.Histology was non small cell carcinoma(NSCLC) in 19, carcinoid in 1 and colonic metastasis in 1. In the NSCLC,5 were in stage IB, 5 in stage IIA,2 in IIB and 7 in IIIA. All bronchial margins were negative for malignancy.Mean follow up was 26.2 months(range,6-32mths). No operative mortality but one developed bronchopleural fistula. To date there were no local recurrences. Distribution of bronchoplasties by lobes

	UPPER LOBES	MIDDLE LOBE	RIGHT LOWER LOBE	LEFT LOWER LOBE
SIMPLE/WEDGE BRONCHOPLASTY	3	1	3	2
SLEEVE BRONCHOPLASTY	6	-	-	2
EXTENDED BRONCHOPLASTY	1(Simple bronchoplsty/ chestwall resection	1(Simple bronchoplasty/ angioplasty) 1(Simple bronchoplasty/ bilobectomy)	-	1(Simple bronchoplasty/ intrapericardial ligation ofpulmonary vein)

Conclusions

Selected endobronchial and invasive tumours at bronchial origin can be resected by vats bronchoplasty.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 11 JUNE 2012
14:00 - 15:30
Session VII/Young Investigators

F-024

THE CASE FOR "ANATOMICAL SUBLOBAR RESECTION" FOR ALL STAGE I NON-SMALL CELL LUNG CANCER

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Objectives
Whilst open lobectomy remains the gold standard treatment for stage I NSCLC there is a growing body of evidence supporting segmentectomy for stage IA tumours. There is little evidence, however, for further use of segmental resection but we have continued to avoid lobectomy in larger tumours even with nodal disease and report our initial experience.

Methods
We performed single(38 S6) or multiple(24 S1-3, 14 S4/5, 16 S7-10) segmental resections termed "anatomical sublobar resection" (ASR) in 92 patients (42M:48F, age 68[38-85]years) and carried out long-term clinical follow-up for 32(3-92) months. In all patients macroscopic tumour clearance and systematic nodal dissection were achieved. We compared their clinical outcome with a control group(VL) of similar sized tumours removed in the same time period by VATS lobectomy (50 upper, 6 middle, 28 lower, 2 bilobectomies) in 86 patients (41M:45F, age 71[42-85]years)

Results
Expressed as median(range) There were no significant differences between groups ASR or VL in pT stage : 33 vs 29 T1; 50 vs 53 T2;9 vs 4 T3(p=0.37) or pNstage : 78 vs 76 N0; 5 vs 7 N1(p=0.23). Cell type, preoperative FEV1(62% vs 69% predicted) and resection margins (89 vs 82R0) were also similar. There were no differences in hospital stay (7[2-35] vs 6[2-28] days, p=0.32) or 30 day mortality (4.3 vs 2.3%,p=0.68). Pattern of recurrence was similar : 17local:9 distant vs 11 local:8 distant, p=0.59. There was no significant difference in median survival : ASR 46.2 mo vs VL 43 mo, p = 0.34 and multivariate analysis identified only male gender(HR1.9),pT stage(HR 2.18) and pNstage(HR 1.64) as prognostic factors The use of ASR had no significant effect on survival(HR 1.21 CI 0.77 to 1.90, p=0.42).

Conclusions
Anatomical sublobar resection does not compromise oncological outcome even in larger stage I tumours and is not inferior to lobectomy. Its wider use merits further evaluation

Disclosure: All authors have declared no conflicts of interest.

F-025

THE RISK OF DEATH DUE TO CARDIO-RESPIRATORY CAUSES INCREASES WITH TIME AFTER RIGHT PNEUMONECTOMY; A PROPENSITY SCORE MATCHED ANALYSIS.

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Objectives
To compare hospital, 30-day, and non-cancer related 6 month death rates in a series of right and left pneumonectomy cases matched according functional parameters.

Methods
Retrospective study on a series of 263 NSCLC patients who underwent pneumonectomy. Left and right pneumonectomy cases were matched according to propensity scores using the following variables: age, cardiac co-morbidity and ppoFEV1. After matching, 89 pairs of cases were selected. Hospital, 30-day and 6-month crude and risk-adjusted death rates not related to cancer relapse or distant metastases were calculated for right and left pneumonectomy and compared on 2 by 2 tables using odds ratios. Death hazards were estimated by Cox regression, introducing the following independent variables in the model: age, cardiac co-morbidity, ppoFEV1 and occurrence of any postoperative cardio-respiratory complication or bronchial fistula.

Results
Non-cancer related hospital, 30-day and 6-month death rates were, respectively: 8.4 (3.4 in left and 13.5 in right cases; p=0.015), 11.8 (7.8 in left and 15.7 in right cases; p=0.10) and 18.5% (12.4 in left and 24.7 in right cases; p=0.033). On Cox-regression, right pneumonectomy and the occurrence of postoperative cardio-respiratory complications (but not bronchial fistula) were related to the risk of death at six months (Figure 1).

Conclusions
The risk of death after pneumonectomy increases with time and strongly depends on the side of the operation (it is higher after right pneumonectomy) and on the occurrence of any postoperative cardio-respiratory complication. Neither hospital nor 30-day mortality should be reported as a valid outcome after pneumonectomy since they do not represent the real risk of the operation.

Disclosure: All authors have declared no conflicts of interest.

F-026

LONG-TERM RESULTS IN PATIENTS WITH PATHOLOGICAL COMPLETE RESPONSE AFTER INDUCTION RADIO-CHEMOTHERAPY FOLLOWED BY SURGERY FOR LOCALLY-ADVANCED NON-SMALL-CELL LUNG CANCER

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Objectives
The outcome of locally-advanced NSCLC patients with complete pathological response -pT0N0-(pR0) after induction chemo-radiotherapy (IT) followed by surgery is, to date, only rarely investigated. The long-term results in this highly-selected group of patients were evaluated in order to identify any predictive factors associated with prognosis.

Methods
From 1/92 to 12/09, 195 consecutive locally-advanced (T3-T4/N0-2/M0) NSCLC patients underwent IT and, after clinical restaging, 137 patients underwent complete resection. Among these, 37 patients (19% of the overall and 27% of those subject to surgery) showed a pR0 after surgery and were included in this retrospective analysis. Survival rates and prognostic factors were determined by the Kaplan-Meier, the log-rank and and Cox regression analysis.

Results
Mean age and male/female ratio were 61.8±9.7 yrs and 33/4, respectively. Before starting the IT, the clinical staging was IIb in 3 (8%) patients, IIIa in 19 (51%) patients and IIIb in 15 (41%) patients. Morbidity and 30-day mortality rates were 16% and 3%, respectively. The overall survival (LTS) and disease free survival (DFS) at 3 and 5 years were respectively 68% and 64% (LTS) and 71% and 67% (DFS). Our data suggest that only adjuvant therapy is proved to be a positive prognostic factor in terms of both LTS (5-year: 83% vs 39%, log-rank-p=0.005) and DFS (5-year: 86% vs 39%, log-rank p=0.006) (Table 1). The rate of dying and of recurrence for subjects not undergoing adjuvant therapy, obtained from Cox regression analysis, are, respectively, 5.55 (95%CI:1.47;21.00,p=0.012) and 4.82 (95%CI:1.41;16.45,p=0.001) times higher than subject on adjuvant therapy.

Conclusions
When a pathological complete response (pR0) is achieved after IT followed by surgery, a rewarding long-term survival (68% at 5 years) could be expected. Interestingly, within the pR0-Group patients underwent adjuvant treatment have a better prognosis than those who are not. This observation merits further and deeper investigations.

Disclosure: All authors have declared no conflicts of interest.

F-027

DOES VIDEO-ASSISTED MEDIASTINOSCOPY PROVIDES LOWER FALSE NEGATIVE RATE OF SUBCARINAL LYMPH NODES (#7) COMPARED WITH STANDARD CERVICAL MEDIASTINOSCOPY?

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Objectives
Theoretically, video-assisted mediastinoscopy (VAM) is defined as a method that provides an increase in staging of subcarinal lymph nodes in lung cancer compared to standard cervical mediastinoscopy (SCM). We investigated whether the rates of false negative for subcarinal lymph nodes decreased in VAM compared with the rates reported after SCM.

Methods
Between 1995 and 2011, 1092 patients with NSCLC underwent mediastinoscopy for staging, were retrospectively investigated. The number of the lymph node stations, the complications and false negativity were analyzed. The patients were divided into two groups according to surgical method as; VAM (n=260) and SCM (n=832). These groups were indifferent statistically with respect to demographics, T staging and tumor localization.

Results
The number of nodal stations were higher in VAM (n=4.22±0.83) compared to SCM (n=3.77±1.04) ($p<0.001$). SCM was successful at harvesting one or more subcarinal nodes in 736 patients (88.4%) whereas VAM in 257 patients (98.8%) ($p<0.001$). The complication was reported in 40 patients (3.6%). We observed a high incidence of complication rates in VAM (5.4%) with respect to SCM (3.1%) ($p=0.09$). Mediastinal lymph node metastasis (cN2) was observed in 224 patients by mediastinoscopy. Thoracotomy was performed on 868 patients (VAM=203, SCM=665) due to the absence of mediastinal lymph node metastasis (cN0) via mediastinoscopy. Mediastinal lymphadenectomy revealed the false negative rate of 4.4% in VAM and 9.3% in SCM respectively ($p=0.02$). Patients in SCM showed higher false-negative rate for subcarinal lymph nodes than those patients in VAM (respectively 6.6% and 3%, $p=0.05$). The prevalence rate of subcarinal nodes disease was not statistical significance for SCM and VAM ($p=0.630$).

Conclusions
VAM provides a higher rates of mediastinal lymph node stations exploration. The most common false negative rate was subcarinal lymph nodes, but this ratio decreases with the VAM.

Disclosure: All authors have declared no conflicts of interest.

F-028

COMPARATIVE ANALYSIS OF VATS THYMECTOMY VERSUS OPEN RESECTION FOR EARLY-STAGE THYMOMA

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Objectives
Video-Assisted thoracic surgery (VATS) thymectomy has evolved significantly over the last decade. However, a VATS approach for thymoma remains controversial. We present a study to evaluate the feasibility of VATS thymectomy for the treatment of early-stage thymoma and to compare the outcomes with those after open resection.

Methods
A comparative study of 59 patients who underwent surgical resection for early stage thymoma (VATS: 44 and open resection: 15) between 1993 and 2011 was performed. Data of patient characteristics, morbidity, length hospital stay, recurrence, and survival were collected for statistical analysis using the software package SPSS 13.0 for Windows.

Results
Thymomas were classified according to Masaoka staging system: 38 in stage I (VATS group: 29 and open group: 9) and 21 in stage II (VATS group: 15 and open group: 6). The mean tumor size in the open group was 7.02 cm (13 cm- 4.2 cm) and in the VATS group 6.91 cm (14cm-2,5 cm). The median length of hospital stay was shorter in the VATS group (3.6 days) than in the open group (7.2 days) ($p< 0.001$). No significant differences were found in the estimated recurrence-free and overall 5-year survival rates (97.7%-100%) between the 2 groups.

Conclusions
VATS thymectomy for early-stage thymoma is technically feasible and is associated with a shorter hospital stay. The oncologic outcomes were similar in the open and VATS groups during intermediate-term follow-up.

Disclosure: All authors have declared no conflicts of interest.

F-029

ANTI-REFLUX SURGERY AFTER CONGENITAL DIAPHRAGMATIC HERNIA REPAIR

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Objectives
To evaluate the incidence of gastroesophageal reflux disease (GERD) in patients treated for congenital diaphragmatic hernia (CDH).

Methods
We retrospectively reviewed our CDH database. Demographics, prenatal treatment, type of repair, intra-operative findings and incidence of medical and surgical treated GERD were recorded.

Results
Between July 1993 and November 2009, transthoracic CDH repair was performed in 77 infants. Eight died. Seven were lost to follow-up. 22 out of 62 patients were prenatally treated with fetoscopic endoluminal tracheal occlusion (FETO). GERD was diagnosed in 31 patients. A herniated liver is significantly more seen in patients with GERD (61% vs 23%, p=0.0042). Birth weight was significantly lower in patients with GERD (2667 ± 560 vs 3035 ± 701 grams, p=0.027). One year after starting GERD treatment, 42% of GERD patients were still taking medication. 13 patients underwent ARS with hernia recurrence in six of them. Two of these needed redo-surgery. ARS patients have a significantly earlier gestational age at birth (35.3 ± 3.1 vs 37.4 ± 2.2 days, p=0.007) and the incidences of previous FETO-repair and a herniated liver are significantly higher in this group (54% vs 13%, p=0.0042 and 75% vs 33%, p=0.0257, respectively). In the subgroups of CDH patients with a patch repair, a herniated liver or previous FETO, the incidences of GERD and ARS are 61% and 32%, 73% and 38%, and 71% and 43%, respectively.

Conclusions
Routine ARS at the time of CDH repair seems not justified despite raised incidences of GERD and ARS in certain subgroups. A herniated liver and a lower birth weight are risk factors for the development of GERD. Risk factors for subsequent ARS are early gestational age at birth and a herniated liver. FETO creates a new cohort of survivors who have a higher risk for undergoing ARS.

Disclosure: All authors have declared no conflicts of interest.

F-030

ROBOTIC ASSISTED MINIMALLY INVASIVE VERSUS THORACOSCOPIC LUNG LOBECTOMY: COMPARISON OF PERIOPERATIVE RESULTS

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Objectives
Minimally invasive lung lobectomy was introduced in the late 1990s. Since that time various different approaches have been described. At our institution two different minimally invasive approaches, a robotic and a conventional thoracoscopic one were performed for pulmonary lobectomies. This study compares perioperative outcome of the two different techniques in a learning curve setting.

Methods
Between 2001 and 2008, 26 patients underwent lung lobectomy with a robotic assisted thoracoscopic surgery (RATS) technique. In 2009, the minimally invasive approach was changed to a conventional video assisted thoracoscopic surgery (VATS) technique. Perioperative results of the first 26 VATS patients were compared to the results of the robotic group.

Results
There were significantly more patients with clinical stage >IA in the VATS group than the robotic assisted group (23.1% vs. 0). Otherwise, demographic data showed no differences between the groups. Operative time was significantly longer in the robotic group (215 min vs 183 min, p=0.0362). Difference between preoperative hemoglobin levels and levels on postoperative day one was higher in the RATS group indicating a higher blood loss. No difference was found in chest drain duration, length of hospital stay, conversion rate, postoperative morbidity and mortality and acute phase protein levels (C-reactive protein). Procedural costs were higher for the robotic approach (difference: € 770.55, i.e. 44.4%).

Conclusions
Shorter operative times, a lower drop of postoperative hemoglobin levels indicating less blood loss and lower procedural costs suggest a benefit of the VATS approach over the robotic approach for minimally invasive lung lobectomy.

Disclosure: All authors have declared no conflicts of interest.

F-031

PREOPERATIVE QUALITY OF LIFE PREDICTS SURVIVAL FOLLOWING PULMONARY RESECTION IN STAGE I NON SMALL CELL LUNG CANCER

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Objectives
To assess the prognostic role of preoperative quality of life (QoL) in patients operated on for early stage non-small cell lung cancer (NSCLC).

Methods
Observational analysis on 131 consecutive patients (2003-2008) submitted to pulmonary lobectomy plus systematic nodal dissection for pathological pT1N0 or pT2N0 stages NSCLC and with complete follow-up (median 40 months). QoL was measured by the Short Form 36v.2, a multidimensional survey assessing 8 domains and 2 composite scales (Physical and Mental Composite Scores, PCS and MCS). Survival was calculated by the Kaplan Meyer method. The log-rank test was used to assess differences between groups. The relationships between survival and QoL composite scales were determined by Cox's proportional hazards regression analysis adjusting for the effect of several baseline and clinical variables. PCS and MCS were categorized according to their values greater or lower than 50 percentiles (general population norms).

Results
40% of patients had PCS<50 and 54% had MCS<50. Physical Functioning (p=0.03) and General Health (p=0.03) scales resulted directly associated with survival. Multivariable regression showed that significant factors associated with overall survival were age>70 (HR 2.4, p=0.01) and PCS>50 (HR 0.45, p=0.01). MCS, pT stage, histology, FEV1, DLCO were not associated with prognosis. Patients with PCS>50 lived longer than those with PCS<50 (5-year overall survival 79% vs. 49%, p=0.01) (Figure), in both pT1 (80% vs. 49%) and pT2 stages (78% vs. 48%). Cancer-specific 5-year survival was better in patients with a preoperative PCS>50 compared to those with PCS <50 (89% vs. 73%%) (p=0.05). Deaths due to cancer recurrence were similar in patients with PCS<50 and PCS>50 (55% vs. 53%, p=0.9).

Conclusions
The physical component of QoL was associated with overall and cancer-specific survivals in patients operated on for early stage NSCLC. Supportive interventions aimed at improving perception of physical wellbeing may improve long-term prognosis after lung cancer surgery.

Disclosure: All authors have declared no conflicts of interest.

F-032

ISCHEMIC PRECONDITIONING PREVENTS LIVER INFLAMMATORY RESPONSE TO LUNG ISCHAEMIA/REPERFUSION IN A SWINE LUNG AUTO-TRANSPLANT MODEL

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Objectives

The liver is an important regulator of body homeostasis and is also involved in excreting the toxic products of metabolism and exogenous drugs. Any injury to tissue may affect the liver, in fact various investigators have reported that renal ischaemia-reperfusion (IR) causes distant-organ injury such as liver damage. Ischemic preconditioning (IP) has been proved to protect several organs from IR injury. The present study was designed to investigate a possible protective effect of IP against liver inflammatory response to lung IR.

Methods

Two groups (IP and control group-C) of ten large-white pigs were submitted to a lung autotransplant (left pneumonectomy, ex-situ superior lobectomy and lower lobe reimplantation). Before pneumonectomy was performed in the study group, IP was induced with two 5 minutes cycles of left pulmonary artery occlusion with a 5 minutes interval of reperfusion between the two occlusions. Blood samples and liver biopsies were obtained during surgery: 1) pre-pneumonectomy; 2) pre-reperfusion; 3) 10 minutes post-reperfusion of the implanted lobe; and 4) 30 minutes after reperfusion. Expression of IL1, IL-10, TNFα and NOS in liver samples were analyzed by Western blotting. Caspase 3 activity was determined by ELISA. Nonparametric tests were used to compare differences between groups.

Results

Lung IR markedly increased the expression of TNFα ($p<0,01$), IL-1 ($p<0.05$) and caspase activity ($p<0.05$) in C group livers compared with pre-pneumonectomy levels, whereas interleukin 10 expression only changed after 30 minutes post-reperfusion ($p<0.05$). In IP group livers, TNFα ($p<0.01$) and IL-1 ($p<0.01$) expression and caspase 3 activity ($p<0.05$) were found to be lower after reperfusion compared to C group. IP reverted the observed decrease of IL-10 expression ($p<0.05$) induced in liver tissue by lung IR. No changes were found for iNOS expression.

Conclusions

IP could prevent liver injury induced by lung IR through the reduction of proinflammatory cytokines and hepatocyte apoptosis.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 11 JUNE 2012
16:00 - 17:30
Session VIII/Pulmonary Non-Neoplastic

O-033

A RANDOMIZED PROSPECTIVE STUDY OF ANALGESIC QUALITY AFTER THORACOTOMY: PARAVERTEBRAL BLOCK WITH BOLUS VERSUS CONTINUOUS INFUSION WITH ELASTOMERIC PUMP

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Objectives
Paravertebral block (PVB) is an effective alternative to epidural analgesia in the management of post-thoracotomy pain. Our objective was to evaluate the effectiveness of PVB comparing the administration of the local anaesthetic (LA) in bolus versus continuous infusion.

Methods
Prospective randomized study of 80 patients submitted to thoracotomy. Patients were divided in two independent groups (anterior thoracotomy –AT- and posterolateral thoracotomy –PT-). At the end of surgery a catheter was inserted under direct vision in the thoracic paravertebral space at the level of incision and all patients received a bolus of 20 ml of LA. In each group patients were randomized to receive postoperatively levobupivacaine 0.5% every 6h ("bolus" group) or in continuous infusion at 5ml/hour through an elastomeric pump ("continuous infusion" group). All the patients in both groups received the same dosage (300mg/day). Methamizol (every 6 h) was administered as complementary analgesia. Subcutaneous meperidine was employed as rescue drug. The level of pain was measured with the visual analogic scale (VAS) at 1, 6, 24, 48 and 72 h after surgery.

Results
Thirteen patients (16.2%) needed meperidine as rescue drug (8 with continuous infusion and 5 with bolus). Mean VAS values were the following: all the cases (n=80):5.1±2.0, AT (n=44):4.4±2.1, PT(n=36):5.9±1.8, bolus (n=40):4.7 ± 2.1, continuous infusion (n=40):5.6±1.9, AT with bolus (n=22):4.0±2.1, AT with continuous infusion (n=22):4.9±2.0, PT with bolus (n=18):5.6 ±1.7, PT with continuous infusion (n=18):6.1±1.6.

Conclusions
Post-thoracotomy analgesia combining paravertebral catheter and a nonsteroidal anti-inflammatory drug is a safe and effective practice. Patients submitted to AT experienced less pain than those with PT (4.4 vs 5.9, $p < 0.01$). Bolus infusion of LA got better VAS values than continuous infusion (4.7 vs 5.6, $p < 0.05$) both in PT and AT. PVB with LA in bolus and in higher concentrations seems to provide a better analgesia than continuous infusion.

Disclosure: All authors have declared no conflicts of interest.

O-034

LONG-TERM SEQUELAE AND RISK BEHAVIOUR IN PATIENTS OPERATED FOR SPONTANEOUS PNEUMOTHORAX

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Objectives
Spontaneous pneumothorax (PTX) is a common diagnosis in specialized thoracic surgery units. It may arise in adolescents with healthy lung tissue (primary PTX) or in elder patients with preexisting lung disease (secondary PTX). Videothoracoscopic surgery has become the surgical standard for recurrence prevention and there is broad consensus regarding indications and techniques of PTX surgery. Disagreement exists regarding essential medical advice for risk avoidance in postoperative life to minimize recurrences. Furthermore, our knowledge regarding postoperative long term sequelae and patient satisfaction in this patient cohort is fragmentary.

Methods
Single-centre cohort time series: Patients operated for PTX by videothoracoscopic surgery over a time period of 10 years were sent a questionnaire. It queried recurrence prone lifestyle activities (smoking status, flying habits, scuba diving), long-term sequelae associated with surgery (pain, sensation of numbness, limited physical capability) and the occurrence of recurrences.

Results
For this study, 670 patients were contacted (follow up-time 66±34 months). Of these, 306 returned the questionnaire (feedback 46%). The recurrence rate was 5% (16/306). Postoperative sequelae were: chronic postoperative pain in 46% and (subjective) limited physical capability in 31% of patients. Only 19% of patients felt impaired by these aftermaths in their daily living. Regarding postoperative risk behavior: 29% of patients were active smokers (in average 15±7 cigarettes/day), 58% travelled repeatedly by plane, and only 1 patient did scuba diving (0,3%). Multivariate analysis identified smoking status as the only parameter associated with PTX recurrence (p=0.001).

Conclusions
While videothoracoscopic surgery is successful in preventing PTX recurrences in 95% of patients, 19% of patients feel impaired in their daily living by perceptions they attribute to surgery. Cigarette smoking after PTX surgery favors PTX recurrences.

Disclosure: All authors have declared no conflicts of interest.

O-035

THORACIC SURGERY IN ADULT PATIENTS RECEIVING EXTRA CORPOREAL MEMBRANE OXYGENATION (ECMO): A 16 YEAR EXPERIENCE

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Objectives
Patients on ECMO are at risk from thoracic complications such as bleeding or pneumothorax, which may subsequently necessitate thoracic surgical intervention.

Methods
We reviewed a prospective database of 550 adults put on ECMO between 1995 and 2011. We aimed to 1) analyse the indication and nature of thoracic surgical intervention in these patients and 2) to analyse the effect of a change in ECMO circuit from roller pump to centrifugal pump on transfusion requirements pre and post thoracotomy.

Results
Fourty thoracotomies were performed in 18 patients [61% male, age 31 (14-56) years, one bilateral procedure]. The indications for ECMO included : pneumonia 14/18 (78%), trauma 2/18 (11%), and other 2/18 (11%). ECMO was continued in total for 13 (1-257) days and first thoracotomy was required after 10 (1-183) days. The indications for thoracotomy were: 11/19 (58%) excessive bleeding post chest drain insertion 11/19 (58%); uncontrolled air leak (9/19, 47%) and pleural effusion (4/19, 21%). The primary operations were 12/19 (63%) evacuation of haemothorax, 3/19 (16%) lung repair, 2/19 (11%) diagnostic lung biopsy, and other 2/19 (11%). Ten patients needed a further 21 thoracotomies (3 lobectomies); 2 (1-5) per patient. In total, 30/40 (75%) thoracotomies were performed for bleeding complication. The change from roller to centrifugal pump reduced post-op transfusion requirements in these patients (roller: 11.5 [0-63] vs centrifugal: 4 [0-29], p=0.14). The in-hospital mortality was 7/18 (39%) patients. Poor prognostic indicators included: dialysis (10/18, $p<0.01$), intestinal bleeding or ischaemia (3/18, p=0.04).

Conclusions
The need for thoracotomy whilst on ECMO is 3.3% in this large series. Intervention may be complicated thus either ECMO specialists should have thoracic training or thoracic surgeons should be on-site. Potential mortality is high and coagulopathy and the type of circuit predispose to excessive transfusion requirements in this group of patients.

Disclosure: All authors have declared no conflicts of interest.

O-036

ACUTE LUNG ABSCESSES AND LUNG GANGRENE, WITH OR WITHOUT SEVERE PULMONARY HEMORRHAGE – WHEN TO OPERATE?

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Objectives
Surgical management at patients with acute lung abscesses and lung gangrene based on destruction sizes, presence or absence of complications, degree of SIRS, efficacy of therapeutic methods, particularly severe pulmonary hemorrhage (blood loss more than 500 ml). The main question for surgeon at these patients is - when to perform operations for prevent of fatal complications.

Methods
We have carried out an analysis of our experience of treatment of patients with lung abscesses and gangrene. There were 1842 patients with lung abscess and 176 patients with lung gangrene from 1985 till 2011 years. The main strategical line at this kind of patients was maximal application of conservative methods in acute period for regress of inflammation and performing the operation in stage of pneumofibrosis. But such complication as severe pulmonary hemorrhage is the indication for urgent operation independently of phase of disease. We have observed severe pulmonary hemorrhage at 45 patients (2,4%) with lung abscess and at 23 patients (13,1%) with lung gangrene.

Results
From 1797 patients with lung abscess without severe pulmonary hemorrhage therapeutic methods of treatment were effective at 1490 patients (83,0%), chronicity of disease - at 274 patients (15,2%). We have performed 3 pneumonectomies, 121 lobectomies, 102 wedge resections. Mortality - 33 patients (1,8%). At 153 patients with lung gangrene without severe pulmonary hemorrhage regress of inflammation was achieved in 117 cases (76,5%). We performed 8 pneumonectomies, 69 lobectomies, 16 wedge resections. Mortality - 6 patients (3,9%). From 68 patients with severe pulmonary hemorrhage 10 dead before operation. To another 58 patients at first we perform roentgenoendovascular embolization of bronchial arteries, then 16 pneumonectomies, 42 lobectomies. General mortality - 26 patients (38,2%).

Conclusions
At patients with acute lung abscess and lung gangrene operation had to be performed at period of pneumofibrosis or at appearance of severe pulmonary hemorrhage.

Disclosure: All authors have declared no conflicts of interest.

O-037

THORACOSCOPIC SURGERY FOR CONGENITAL PULMONARY AIRWAY MALFORMATIONS

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Objectives
Congenital pulmonary airway malformations(CPAM) such as congenital cystic adenomatoid malformation, lobar emphysema bronchogenic cyst or pulmonary sequestration are often discovered on prenatal sonography, postnatal imaging or recurrent respiratory symptoms in adult. CPAM may expand to severe lung infections and degenerated malignancies if the lesion were untreated and left. Therefore, surgery should be the treatment of choice even if asymptomatic. Video-assisted thoracoscopic surgery(VATS) has been successfully performed world wide and is currently an accepted procedure, but there is very few reports abut VATS for CPAM , especially in children.

Methods
Since April 1997, 14 patients (2days-24 years old) underwent operations for CPAM. Among them,complete VATS(cVATS) lobectomy or Hybrid VATS(h-VATS) lobectomy were performed for 6 patinets. Postoperative diagnosis included congenital cystic adenomatoid malformation (n = 3) ,an pulmonary sequestration(n=2), and one pulmonary sequestration+lobar emphysema. Surgical technique:Single lung ventilation and controlled low pressure pneumothorax were used in every case. One or two 10mm ports and 1 utility window (Woundretractor or Lap-protector about 3cm) were used. A 5mm thoracoscope was introduced through 7th intercostal space at midaxillary line. Naruke's forceps were used for ligation of the major vessels(PA,PV) and bronchus was closed with sutures.JMS swabs were effective for the stripping of pulmonary vessels sheaths. A bipolar sealing device was the preferred mode of vessel ligation. A chest tube was left in all cases.

Results
There was no intraoperative complications in all patients .Operating times ranged from 65min to 220min.Chest tubes were left in place 1-5days. c-VATS could be performed in some infants but h-VATS were needed in some aged patients because of long-term inflammation .

Conclusions
cVATS lobectomy in small infants is a feasible and safe technique but is difficult in some aged patients because of extensive inflammation. Thoracoscopic approach is safe and effective for CPAM patients.

Disclosure: All authors have declared no conflicts of interest.

O-038

IS "GROUP AND SAVE ONLY" POLICY SAFE FOR PATIENTS UNDERGOING ELECTIVE LOBECTOMY?

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Objectives
The standard practice in our Institution has been routine cross matching of two units of blood for all patients undergoing elective lobectomy. We recently changed our policy to group and save only for patients who had low likelihood of peri-operative transfusion requirement. This study was designed to establish the safety and feasibility of this practice.

Methods
Group and save only policy was applied to patients undergoing first time elective lobectomy with Hb of more than 11 g/dl, aged less than 70 years, no clotting abnormality and no history of neoadjuvant therapy. A retrospective analysis of prospectively collected data was made of 208 consecutive patients undergoing elective lobectomy from November 2009 to October 2010. The patients who were only group and saved (Group GS, n= 87) were compared with those who had preoperative cross matching (Group XM, n=121). The perioperative characteristics, transfusion requirements and outcomes were compared between the two groups.

Results
Preoperative characteristics of two groups were similar except that XM group were significantly older in age with lower mean preoperative haemoglobin levels (table 1). Postoperative complications and hospital mortality were similar between the two groups (0% and 0.8% in GS and XM respectively). 16 patients (13%) required transfusion in XM group. 6 patients in GS group were cross matched out of which only 3 (3.4%) actually required transfusion. The mean postoperative Hb levels in XM were also significantly lower (11.36 vs 10.88 gm/dl, p=0.01) and they required significantly longer hospital stay (median 5 vs 6 days, p=0.04). In the XM group 260 units of blood were unnecessarily cross matched and had to be returned to blood bank compared to zero units in GS group. There was no delay in availability of blood at the time of clinical need.

Conclusions
It is safe and feasible to adopt a policy of group and save only in selected patients undergoing elective lobectomy who have low likelihood of transfusion requirement.

Disclosure: All authors have declared no conflicts of interest.

MONDAY, 11 JUNE 2012
16:00 - 17:30
Session IX/Innovative/Experimental

F-039

INDOCYANINE GREEN FLUORESCENCE IN THE ASSESSMENT OF THE QUALITY OF THE PEDICLED INTERCOSTAL MUSCLE FLAP – A PILOT STUDY

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Objectives
Pedicled intercostal muscle flap is a high quality vascularized tissue commonly used to buttress the bronchial stump after pneumonectomy or bronchial anastomosis. An objective assessment of the viability of the muscle flap is difficult. Indocyanine green (ICG) fluorescence has recently been introduced to estimate tissue vascularization. The aim of the study was the assessment of a quality of the pedicle intercostal muscle flap using ICG fluorescence.

Methods
The study included 16 patients, 10 male and 6 female with mean age 64,1 yrs old (range 47-77). The muscle flap was harvested with intention of covering the bronchial stump after pneumonectomy in 4 patients ant in 12 after lobectomy. The technique of harvesting included a meticulous muscle dissection from the rib on the level of thoracotomy before the use of the rib spreader . The length and thickness of the intercostal muscle flap was measured. Before the covering of the bronchial stump 2.5 mg of ICG dye was injected intravenously and ICG fluorescence imaging was performed with a near-infrared camera system.

Results
The mean length and thickness of the harvested intercostal muscle was 21,0 ±2,1cm (range 17-24cm) and 2,4cm ±0,8m (range1,0-3,5) respectively. No macroscopic symptoms of the muscle ischemia were observed. The ICG fluorescence was easily detected at 1 min after injection. In all cases the distal part of the muscle showed severe ischemia. The median length of the ischemic part was 5cm (range 1cm-20cm) . The ischemic part of the muscle flap was cut off. In three patients with the longest ischemic muscle (11cm-20cm) other tissue had to be used to cover the bronchial stump.

Conclusions
Our preliminary results confirmed the simplicity and high efficacy of indocyanine green fluorescence in the assessment of the intercostal muscle blood perfusion. The ICG assessment of the muscle perfusion is superior to macroscopic evaluation and influence surgical proceeding.

Disclosure: All authors have declared no conflicts of interest.

F-040

THE VALUE OF MATRIX METALLOPROTEINASE 9 AND VASCULAR ENDOTHELIAL GROWTH FACTOR RECEPTOR 1 (MMP9/VEGFR1) PATHWAY IN DIAGNOSING INDETERMINATE PLEURAL EFFUSION

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Objectives
Recent publications showed the MMP9 induction by VEGFR-1 is involved in lung-specific metastases. Our goals are to determinate 1) if MMP9/VEGFR1 pathway mediates the pathogenesis of malignant pleural effusion (MPE) and 2) its diagnostic value in differentiating PE of different origin, not been investigated before.

Methods
In the last 2 years, 55 consecutive patients with undiagnosed unilateral PE were enrolled. In all patients, MMP9 levels, and VEGFR1 were measured (pg/ml) using ELISA and Western-blot. The results were then correlated with the aetiology of PEs, obtained by cytology or pleural biopsy findings. Intergroup difference, diagnostic value of MMP9 and VEGFR1, and their correlations were assessed using Mann-Whitney test, ROC curve, and Spearman test, respectively ($p<0.05$ level of significance)

Results
There were 40 malignant and 15 benign PEs. MMP9 and VEGFR1 levels were significantly higher in malignant than in benign PEs (1200 [979-1423] versus 171 [145-872]; p=0.0001-Figure 1/A; and 1187 [1095-1445] versus 130 [103-168]; $p<0.0001$-Figure 1/B, respectively). Western-blot for VEGFR1 resulted negative in 3/40 MPEs and positive in 2/15 benign PEs (Figure 1/C). In diagnosing MPEs, for MMP9 and VEGFR1 ROC curve showed a sensitivity, specificity, PPV, and NPV value of 95%; 73%; 90%; 84% (cut-off value >639; AUC: 0.8-Figure 1/D), and of 92%; 93%; 97%; 82% (cut-off value >852; AUC: 0.9-Figure 1/E), respectively. Combined MMP9 and VEGFR1 we had a sensitivity, specificity, PPV, and NPV value of 95%; 93%; 97%; 82%. In MPEs there is a significant correlation between MMP9 and VEGFR1 levels ($r = 0.5$; $p<0.0001$). Yet, 26/28 (92%) patients with cytology negative but malignant PEs were correctly identified by combined MMP9 and VEGFR1

Conclusions
Our data suggest that the pathogenesis of malignant PE may be regulated by MMP9/VEGFR1 pathway; in diagnostic work-up the measurement of MMP9/VEGFR1 may select patients with negative pleural cytological analysis who deserve confirmatory pleural biopsy.

Disclosure: All authors have declared no conflicts of interest.

F-041

STABILIZATION OF FLAIL CHEST USING THORACOSCOPIC TECHNIQUE

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Objectives
Flail chest is one of the most life threatening conditions resulting from chest trauma. Surgical rib stabilization is preferable to prolonged lung ventilation, but open operations may be associated with suppurative complications. We describe a mini-invasive method for surgical stabilization of flail chest using thoracoscopy, which further allows to check the pleural cavity for associated injuries.

Methods
From January 2003 to December 2009, 34 patients were treated. The mean age was 44,3 + 14,4 years with a male predominance (29/5). Paradoxical respiration (24 cases) was the main indication for surgery. Other inclusion criteria were as follows: clotted hemothorax (12), lung (9) and diaphragm (3) injuries. Our technique: we insert trocars outside the fracture zone. After exploration we perform hemostasis, suture lung or diaphragm disruptions. Than, using special created devices we insert wires subfascially – above the fractured segment. After that, we put pericostal sutures on the both stable fragments and floating segment under thoracoscopic control. Then we suture the wire to the stable fragments, perform the reposition of floating segment and fix it to the wires.

Results
We performed 18 right-sided, 12 left-sided and 4 bilateral fixations. Two patients died because of cerebral injury (overall mortality 5,8 %). The mean duration of ventilation was reduced from 5.8+0.7 days to 2.9+0.8 days in comparison with previous techniques. Twenty-one patients were extubated on the 1st day after operation and in 5 patients with polytrauma prolonged ventilation was needed. In all other cases we didn't observe postoperative complications. Median hospital stay was 14+1,4 days. We removed wires after 30-40 days in outpatient department.

Conclusions
This innovative method allows minimally invasive stabilization of the chest wall. This method is simple, gives the opportunity to simultaneously care for intrapleural complications and ensures early recovery.

Disclosure: All authors have declared no conflicts of interest.

F-042

INTRAPLEURAL POLYMERIC FILMS CONTAINING CISPLATIN FOR MALIGNANT PLEURAL MESOTHELIOMA: PRELIMINARY PHARMACOKINETIC DATA IN AN OVINE MODEL

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Objectives
To investigate the pharmacokinetic profile and tolerability of intrapleural polymeric films containing cisplatin for malignant pleural mesothelioma in an ovine model.

Methods
Hyaluronate films loaded with cisplatin (100mg/m2) previously characterized were produced for the local delivery of anticancer drug. Female sardinian sheep weighing 40-50kg were chosen for in vivo experiments. After general anaesthesia the sheep were placed in a right lateral decubitus: a left pneumonectomy was carried out through a lateral thoracotomy. Thereafter, the adjuvant treatment was randomly administered: intravenous cisplatin, intrapleural cisplatin, intrapleural hyaluronate-cisplatin. Controls were used for comparison. Blood samples were taken as scheduled. The animals were euthanatized on postoperative-day 7: serum, parietal, diaphragmatic pleura, pericardium, kidneys and liver were considered for analysis. Primary endpoint was plasmatic cisplatin concentration evaluated by IPC-mass spectrometry. Secondary endpoints were treatment-related toxicity and tissue drug concentration. Data are given as mean. The study was approved by the veterinary committee.

Results
Two animals per group were treated so far. Mean operation time was 106 minutes (range, 90-120). After 30' from intravenous administration, plasmatic drug concentration was much higher (2300ug/ml) than after intrapleural cisplatin solution (644ug/ml). In animals receveing intrapleural hyaluronate-cisplatin, cisplatin reached a plasmatic level of 232ug/ml after 30' that reflects the controlled release of the drug. At seven days, plasmatic cisplatin concentration was higher (3700ug/ml) after intrapleural hyaluronate-cisplatin in comparison to intrapleural cisplatin solution (1450ug/ml). Once intravenously administered, plasmatic drug levels progressively decreased as expected. No haematological toxicity was registered.

At seven days, creatinine levels was much higher after intrapleural (25,2mg/dl) and intravenous (19,7mg/dl) treatment than hyaluronate-cisplatin (1,3mg/dl). Severe degeneration in tubular cells and glomerular congestion was microscopically found after cisplatin solution, while a mild injury was present after hyaluronate-cisplatin.

Conclusions

Preliminary data showed that intrapleural polymeric films containing cisplatin assured higher plasmatic drug concentration than cisplatin solution without increasing systemic toxicity after seven days.

Disclosure: All authors have declared no conflicts of interest.

F-043

TOTAL PLEURAL COVERING TECHNIQUE CAN PREVENT RECURRENT PNEUMOTHORAX WITHOUT ADHESION OF THE LUNG IN LAM PATIENTS TO REQUIRE LUNG TRANSPLANT IN THE FUTURE

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Objectives
LAM (lymhangioleiomyomatosis) is a disorder characterized by recurrent pneumothorax. Talc is effective in stopping recurrent pneumothorax, but the severe and broad adhesion of the lung to the intrathoracic wall is a serious issue when undergoing lung transplant in the future. Therefore, chemical pleurodesis should absolutely be avoided to prevent recurrent pneumothorax in LAM patients. We have created a non-adhesive thoracoscopic surgery called 'Total Pleural Covering technique(TPC)' for LAM patients. Clinical and experimental studies were performed.

Methods
For 25 LAM patients (20-51 years old), fibrin glue was thinly dropped on the surface after covering the whole visceral pleura with regenerated oxidized cellulose mesh (ROC;Ethicon) through video-assisted thoracoscopic surgery. This covers the whole visceral pleura completely. The CT scan for lung surface was tested in order to judge the thickend pleura after thoracoscopic surgery. Experimental studies with beagles were performed to estimate the best material suited for covering the lung surface. Two materials; ROC and Vicril Mesh (VIC;Ethicon) were studied in regard to the effect of preventing adhesion.

Results
There was no recurrence of pneumothorax in 23 of 25 cases (92%) over a period of 86 months after TPC. There was a recurrence of limited pneumothorax in two cases (8%). There were four cases which underwent bilateral TPC. There was no significant difference in lung function before and after bilateral TPC. The CT scan showed the pleural thickness after TPC. From the experimental data, ROC alone and ROC coated with fibrin glue were not adhesive to the thoracic wall whereas uncoated VIC was severely adhesive. ROC coated with fibrin glue appears not to invade fibroblasts into the thoracic wall.

Conclusions
Therefore, TPC using ROC is the best choice to prevent recurrent pneumothorax in LAM patients who may require lung transplant in the future.TPC can create the whole pleural thickness without adhesion.

Disclosure: All authors have declared no conflicts of interest.

F-044

CHANGES IN PULMONARY HEMODYNAMIC VALUES AND PULMONARY DAMAGE SCORE AFTER MAJOR LUNG RESECTIONS USING INTRAOPERATIVE PROTECTIVE SINGLE LUNG VENTILATION; EXPERIMENTAL STUDY IN A LARGE ANIMAL MODEL

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Objectives

Preventing and treating idiopathic edema after major lung resection (MLR) required a study focusing on profile change of pulmonary hemodynamics, in relation to histological parameters of lung injury after MLR.

Methods

A left pneumonectomy was performed in 15 female large white pigs (25+/-1,9 kg). Pulmonary haemodynamic data [Mean pulmonary artery pressure (MPAP), pulmonary artery occlusive pressure (PAPO) and cardiac output (CO) have been recorded - Pulmonary vascular resistance (PVR) was calculated], and lung tissue samples [Pulmonary damage score (PDS)] were evaluated. After volume controlled double-lung ventilation (Vt=8 ml/kg, PEEP=4 cm H2O, FIO2=50%), the animals were randomly allocated to two groups in regard to the insuflated tidal volume during OLV: low volume (LV) and high-volume (HV) groups. Measurements were made after induction (T0), after pulmonary exclusion (T1), just after pneumonectomy (T2) and 2 or 7 days after (T3H48 – T3H168).

Results

The sub groups were strictly identical regarding the systemic haemodynamic (CO, CVP) and blood gaz exchange (SVO2, EtCO2) at each time points. In the LV group, MPR caused a precapillary pulmonary artery hypertension (32.6+/-6.2 mmHg) which is delayed (+44.8%+/-16% at H48 p= 0.0081 LV H48 vs LV T2), temporary (p=0.034 LV H48 vs LV H168) and directly related to the increase in PVR (p=0.034 LV H48 vs LV T2). It was not consecutive to OLV neither to the section of the left pulmonary artery. On the opposite the mechanism initiating pulmonary artery hypertension in the HV group immediately followed the setting up of OLV (p=0.04 HV T1 vs HV T0; p=0.018 LV vs HV at T2). Interstitial edema varied with the level of the MPAP regardless of the tidal volume used (p<0.005). In contrast, interstitial inflammatory infiltrates were unmatch with the hemodynamic pulmonary variations.

Conclusions
The delayed precapillary pulmonary hypertension demonstrates the limits of adaptation of the pulmonary vascular bed to brutal overflow following a MPR. It is contemporary with the first sign of a lesional interstitial pulmonary edema. These findings suggest the systematic monitoring of pulmonary artery pressure in patients with risk factors for post pneumonectomy edema.

Disclosure: All authors have declared no conflicts of interest.

F-045

PROSPECTIVE COMPARISON OF COMPUTER AIDED DETECTION-ANALYSIS BEFORE SURGERY FOR METASTASECTOMY AND HISTOPATHOLOGICAL PROOF

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Objectives
Patients with extrathoracic malignancies often develop pulmonary metastases. Surgical therapy has proven benefit and computer tomography (CT) is the modality of choice to identify suspicious nodules. It is well known, that radiologist overlooked a high percentage of nodules and therefore surgeons frequently palpate more nodules than described. Usage of computer-aided detection (CAD) improves the preoperative assessment as shown before on retrospective data. This prospective analysis was aimed to affirm the retrospective results comparing radiological, surgical and pathological findings to improve surgical therapy for patients with lung metastases.

Methods
Between May and December 2011 41 patients scheduled for metastasectomy were enrolled in this prospective study. Multislice CT scans were analysed and described pulmonary nodules were reported labelling and using a CAD system (Median LMS 6.0). During surgery all radiologically detected pulmonary nodules were thoughtfully searched, palpated and resected. All palpated nodules were correlated with the CT findings and labelled accordingly. Histopathological proof was obtained for all resected nodules. Standardised documentation included detection by radiologist, detection by CAD, radiologist's judgement of malignancy (5 point scale), palpation by surgeon and histopathological finding.

Results
41 mostly male patients underwent 50 surgical procedures. 267 nodules were resected. 116 (43%) were proven metastases. 214/267 were preoperatively identified by CT/CAD. 17 CT/CAD-detected nodules were not detectable intraoperatively. 20 unpalpable nodules could be resected because of the radiological guidance. 53/267 were additionally found during palpation. 4 of them were proven metastases. Only 4/116 metastases (3.4%) occurred unexpected.

Conclusions
The combination of CT and CAD analysis identified almost all lung metastases preoperatively and has a good sensitivity with 96.6%. CAD can define target zones especially for small nodules with the tendency of being non-palpable. Therefore CAD-guided surgery for lung metastases has the potential to ensure an optimum rate of complete resections.

Disclosure: All authors have declared no conflicts of interest.

F-046

CORD BLOOD PLATELET GEL AND PLEURAL TISSUE REPAIR

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Objectives
Prolonged air leaks (PAL) are the major cause of morbidity after pulmonary surgery. In clinical setting, various attempts have been made to prevent or reduce this incidence without significant improvements. In this study we tested an innovative approach based on the use of the platelet gel (PG) derived from human umbilical cord blood (CB) and we evalueted the effects in tissue repair after pleural damage.

Methods
First of all, a stratch assay was performed using human primary mesothelial cells and testing the soluble factors released by CBPG. In this vitro setting, we highlighted a faster tissue repair capability mediated by CBPG compared to the standard culture approaches. The gel was then experimentally tested in 54 Wistar rats, divided into a treated group (TG: n=31) and a control group (CG: n=23). Following a standardized iatrogenic injury on the left lung, the platelet gel was placed on the damaged area of the treated animals only. At different time, we sacrificed the rats in order to observe and analyze histological changes (Hematoxylin-Eosin, PAS, Alcian blue), and presence of pleural adhesions and infections.

Results
The formation of the new mesothelial tissue was already visible at 45 hours (TG) vs 121 hours (CG) with a 60% reduction. Complete recovery was obtained after 71 hours (TG) compared to 166 hours (CG), with a 57% improvement. There was direct evidence of pleural adhesions in 43% of treated (TG) compared to 17% of controls. The gel was not associated with the development of any complications.

Conclusions

These preliminary results suggest the use of the cord blood platelet gel because significantly reduces the duration of the repair after pleural damage and stimulates the development of pleural adhesions, particularly useful in the management of prolonged air leaks. Further studies are in the process to investigate the role played by soluble factors released by CBPG .

Disclosure: All authors have declared no conflicts of interest.

F-047

PROSPECTIVE STUDY OF NEW TECHNIQUE OF SEGMENTECTOMY FOR DETECTING AN INTER-SEGMENTAL PLANE USING INDOCYANINE GREEN DYE

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Objectives
[Purpose] Segmentectomy is one on the mainstay of resectable lung tumors. But it is difficult to detecting an inter-segmental plane of segmentectomy. For performing the currect segmentectomy and detecting an inter-segmental plane, we devised the new segmentectomy for detecting an inter-segmental plane using indocyanine green dye. The method for detecting the inter-segmental plane remains controversial. Using the resecter segments inflation method, we can recognize the inter-segmental plane on the pleural surface, but we can't recognize it in the pulmonary parenchyma.

Methods
[Methods] From Jan, 2009 to Dec, 2011, we performed a segmentectomy for 104 lung tumors. Of 104 patients, consecutive 32 patients were undergone a segmentectomy for detecting an inter-segmental plane using indocyanine green dye. This study was approved by the institute review board and ethic committee of Juntendo University School of Medicine. We informed consent for all patients about this study. This procedure was that after cutting the pulmonary artery, vein and bronchus, we inject indocyanine green dye into a peripheral bronchus. The segment turns green following the injection. After recognizing the inter-segmental plane, we cut the inter segmental plnae.

Results
[Results] Between ICG method and non-ICG method, there was significant in an operation time (200 vs. 172, $p=0.0148$), suture devise (4 vs. 6.2, $p<0.0001$), procedure of electrocautery or not (32 vs. 15, $p<0.0001$), sealant (31 vs.58, $p=0.0288$), respectively. But there was no significant in mortality rate ($p=0.0683$).

Conclusions
[Conclusions] This procedure was safely and esse for a segmentectomy to detect an inter-segmental plane. This new segmentectomy may become more and more prevalence.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 12 JUNE 2012
13:00 - 14:00
Session XI/Videos

V-048

TECHNIQUE OF LEFT SIDED VATS PNEUMONECTOMY

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Objectives
VATS (Video Assisted Thoracoscopic Surgery) lobectomy has been gaining broader acceptance as an alternative surgical therapy for early stage NSCLC (Non Small Cell Lung Cancer). Recently, for stage IA NSCLC, even anantomical segmentectomies have been increasingly performed. VATS pneumonectomies for NSCLC, however, have sofar been performed in very few centers only and published data are extremly rare

Methods
Video presentation of a left sided pneumonectomy with detailed description of the surgical technique.

Results
Totally minimally inasive / thoracoscopic left sided pneumonectomy with mediastinal lymph node dissection and bronchial stump buttressing with a pericardio-phrenical fat pad. Operating time was 170 minutes, blood loss was less than 150cc.

Conclusions
VATS left sided pneumonectomy is technically feasible in a safe manner. Indications, however, are rare and a parenchymal preserving type of resection is preferably, whenever possible.

Disclosure: All authors have declared no conflicts of interest.

V-049

THE USE OF BRONCHUS-FIRST TECHNIQUE IN CLOSED THORACOSCOPIC PNEUMONECTOMY; PERSONAL EXPERIENCE

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Objectives
We present a preliminary experience of totally closed thoracoscopic pneumonectomy (TCTP) performed with bronchus-first technique.

Methods
From January 1998 to April 2011, 19 non consecutive patients with lung cancer underwent totally closed thoracoscopic pneumonectomy and mediastinal lymphoadenectomy using the bronchus-first technique. Conventional straight thoracoscopic instruments were used through four trocars. The pulmonary vessels and bronchus were closed using a stapler. At the end of the procedure an incision of 4-7cm was made at the VIII-IX intercostal space to remove the specimen. Indication for surgery was limited to tumors infiltrating the fissure, double tumors, tumors at the secondary carina not amenable to a broncoscoplasty procedure and restricted to patients with carcinomas of less than 9cm without mediastinal involvement.

Results
There were 13 men and 6 women. Their median age was 58,5 years (43-72 years). Preoperative staging of the tumors was IIB (n=6) and IIIA (n=13). In two patient postoperative course was complicated by pneumonia. In all cases a TCP (eleven right, eight left) was performed except in one patient where the procedure was converted to a video-assisted pneumonectomy through a 6cm subaxillary utility incision. Median operative time was 165mins (135–210 mins); Median blood loss was 305mL (150–500mL). Chest tube was removed after 1,6 days (1-7 days). Median length of hospitalitation was 6,5 days (4–12 days). No mortality was observed for 30 days after surgery. All patients had a rapid postoperative course and a reduced postoperative pain compared with that usually associated with a standard posterolateral thoracotomy. The cosmetic result was excellent in all cases. After a mean follow-up of 31.9 months, 4 patients (21%) are alive and without recurrence.

Conclusions
TCTP can be performed safely in highly selected patients with bronchogenic carcinoma. This technique induces less post-operative pain, allows for a prompt return to daily activities and a prompt beginning of adjuvant chemiotherapy.

Disclosure: All authors have declared no conflicts of interest.

V-050

THORACOSCOPIC PLICATION OF DIAPHRAGMATIC EVENTRATION IN AN ADULT

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Objectives
Eventration of the diaphragm is uncommon in adults and does not require treatment unless it produces symptoms. This video demonstrates thoracoscopic plication of eventrated left hemi-diaphragm in a symptomatic adult.

Methods
An 18-year-old man presented with episodes of dyspnoea and left upper abdominal discomfort. The past history was unremarkable. His chest x-ray revealed an elevated left hemi-diaphragm diagnostic of an eventration. A previously performed barium enema had shown the hepatic flexure of the colon to be placed high up under the left hemi-diaphragm. Pulmonary function tests revealed reduced FEV1 and FCV.

Results
Thoracoscopy was performed under general, double-lumen endotracheal anaesthesia and one 10-mm and two 5-mms ports were placed. The central portion of the elevated diaphragm was initially plicated with two running polypropylene sutures, the knots of which had to be tied extracorporeally and snugged down using an instrument. Multiple other running polyester sutures were placed and tied intra-corporeally to plicate the hemi-diaphragm. An intercostal drain was placed. The patient recovered uneventfully and was discharged on day 3. His pulmonary function tests performed 3 months after surgery showed substantial improvement and he remains asymptomatic five years after surgery.

Conclusions
Thoracoscopic plication is an excellent minimally invasive option for the treatment of diaphragmatic eventration. Although the plicating sutures are challenging to place due to the tension of the diaphragm, simple maneuvers as demonstrated in this video enable the surgeon to duplicate the steps of an open plication. By avoiding a thoracotomy incision the thoracoscopic procedure has the potential to result in a faster recovery and shorter convalescence.

Disclosure: All authors have declared no conflicts of interest.

V-051

THORACOSCOPIC COMPLETE RESECTION OF THYMIC CARCINOMA

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Objectives
The minimally invasive, video-assisted thoracoscopic surgical (VATS) thymectomy is commonly accepted for patients with non-thymomateus miastenia gravis (MG) or with small and well encapsulated thymomas. VATS approach for malignant thymic tumors remains controversial. We present the video case of the radical, extended VATS resection of thymic carcinoma.

Methods
71 years old patient was admitted to the Thoracic Surgery Department due to mediastinal mass of the anterior mediastinum. On the CT scan 5 for 6cm tumor in the anterior mediastinum was revealed. The tumor was located at the level of ascending aorta, without great vessels involvement. The patient has no symptoms related to the mediastinal mass. No other severe comorbidities were found and patient with good lung function was qualified for VATS resection.

Results
Right sided three ports VATS approach was used with enlarged subaxilary incision. The tumor in anterior mediastinum was found with infiltration of right upper lobe of the lung and pericardium. The complete radical en block tumor resection was carried on involving adjacent lung parenchyma, pericardium and residual thymic and mediastianal fatty tissue. The time of surgery was 90 minutes and intraoperative blood loss was 100ml. There were no postoperative complications. The chest tube was removed on the second postoperative day and the patient was discharged home on the fourth postoperative day. The histopathologic examination and immunohistochemistry revealed the thymic squamous cell carcinoma with local infiltration of the lung and pericardium and with clear surgical margin of the specimen. All the technical details of the procedure are presented on the attached video clip.

Conclusions
The radical extended minimal invasive VATS resection of the malignant thymic tumors is feasible and can be a good alternative to sternotomy in very selected patients. The main contraindications for this approach are the size of the tumor and suspicioun of the mediastinal main vessels infiltration.

Disclosure: All authors have declared no conflicts of interest.

V-052

MEDIASTINOSCOPIC ULTRASOUND – HOW IT WORKS

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Objectives
The pre/paratracheal space created during mediastinoscopy can be used to introduce a sterilizable ultrasound probe. Thus, all mediastinal structures adjacent to this artificial space can be explored by ultrasound technique, thereby extending the view of the mediastinoscopist.

Methods
This video shows the examination procedure that we use in performing mediastinoscopic ultrasound. During the examination a special holding device maintains the position of the scope. A longitudinal and a radial sterilizable ultrasound transducer (5-10 MHz) are introduced subsequently and provide a two-plane visualization of critical mediastinal structures. Standard ultrasound planes are defined.

Results
Sonomorphological properties of mediastinal structures, i.e. the borderlines of the vessel walls, mediastinal pleura and pericardium, real-time pulsating movement of the vessels, as well as total reflection of ultrasound by air-filled lung parenchyma are demonstrated.

Conclusions
Mediastinoscopic ultrasound can clearly visualize important mediastinal structures (great vessels, pleura, pericardium). In our institutional experience it can help to differentiate compression and infiltration of these structures by centrally located lung tumors.

Disclosure: All authors have declared no conflicts of interest.

V-053

RECURRENT DUPLEX GIANT FIBROVASCULAR POLYP OF THE OESOPHAGUS

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Objectives
Giant fibrovascular polyp of the oesophagus is a rare benign intraluminal tumour. Its origin is in most of the cases in the cervical oesophagus and it is a peduculated mass. Diagnosis is not easy and these polyps may be overlooked by the endoscopist because they usually have normal, intact oesophageal mucosa covering.

Methods
A 59-year-old male patient with mild dysphagia and a pedunculated polyp that occasionally regurgitated out of his mouth was sent to our department. After swallowing study, upper endoscopy and chest CT, a left cervical oesophagotomy was performed. Resection of the polyp was done and there was an uneventful recovery.The patient did not come for a check-up, though he was asked to.Two years later he had severe dysphagia, 25 kg weight loss and aspiration pneumonia.A new chest CT revealed a giant oesophageal mass (4,5 x 5,5 x 13 cm) occluding the oesophagus lumen. Endoscopy could not localize its origin.Suspecting a recurrence, again from a left cervical oesophagotomy, two polyps were found, one protruding the pharynx and the larger one distally. The latter was not possible to remove from this incision and a right posterolateral thoracotomy with a large longitudinal oesophagotomy on the lower third of the oesophagus was necessary to pull it out.Histology diagnosed fibrovascular oesophageal polyp, the smaller was 6 cm and the larger 22 cm.In the postoperative period the patient had fever, only small right sided hydrothorax was found and antibiotic therapy was administered.

Results
3.5 years after the operation the patient is free from symptoms, barium oesophagography was negative during a check-up and he had gained 40kg.

Conclusions
To diagnose an intraluminal ,giant fibrovascular oesophageal polyp it can be difficult as it is covered with normal mucosa. The routine diagnostic algorithm sometimes fails to properly describe this entity.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 12 JUNE 2012
14:00 - 15:30
Session XII/Chest Wall/Pleura

O-054

CHANGES IN PULMONARY FUNCTION TESTS PREDICT RADIOLOGICAL RESPONSE TO CHEMOTHERAPY IN MALIGNANT PLEURAL MESOTHELIOMA (MPM)

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Objectives
Response to chemotherapy in MPM is usually evaluated by radiological criteria, but no common agreement exists on their validity, yet. The cytoreductive effect of chemotherapy on pleural thickening may make the lung more expansible reducing the restrictive ventilatory impairment. The aim of this study was to evaluate the changes in pulmonary function following chemotherapy in patients with MPM and to correlate these findings with radiological changes.

Methods
Between 2004 and 2011, 62 consecutive patients (74% males, median age 63 years) were prospectively investigated. Modified RECIST criteria were used for radiological evaluation of response to chemotherapy. All patients underwent pulmonary function test before and after three cycles of platinum-based chemotherapy. Changes between baseline and post-chemotherapy pulmonary function values (Δ) and their differences were assessed by means of Student's paired and unpaired t-test, respectively. Receiver Operating Characteristic (ROC) curve analysis was performed on spirometric parameters significantly associated with response.

Results
30 (48.4%) patients had a radiological stable disease (SD), 23 (37.1%) a partial response (PR) and 9 (14.5%) a progressive disease (PD). ΔFEV1%pred (PR: 18.1±18.5%; SD: 0.5±9.3%; PD: -11±13.5%; p<0.0001), ΔFVC%pred (PR: 16.1±11.8%; SD: 0.4±11.2%; PD: -9.2±14.6%; p<0.0001) and ΔVC%pred (PR: 12.9±15.7%; SD: 1.5±12.1%; PD: -6.1±13.2%; p=0.001) were significantly associated to radiological response. A significant correlation was observed between ΔFEV1%pred (r=0.46, p=0.01), ΔFVC%pred (r=0.43, p=0.02) and % change in linear tumor measurement. ROC curve analysis (fig. 1) using dichotomized radiological response (PD/SD vs PR) as classification variables showed AUC=0.88 (95%CI: 0.77-0.95) for ΔFEV1% pred (optimal cut-off value: +7%, sensitivity: 83%, specificity: 82%, PPV: 73%, NPV: 89%) and AUC=0.86 (95%CI: 0.75-0.94) for ΔFVC%pred (optimal cut-off value: +6%, sensitivity: 82%, specificity: 74%, PPV: 64%, NPV: 88%).

Conclusions

Dynamic lung volumes and radiological changes after chemotherapy seem directly related. The lung function changes could be an additional tool to better evaluate response to chemotherapy in MPM.

Disclosure: All authors have declared no conflicts of interest.

O-055

EFFECTIVENESS OF OCTREOTIDE IN THE TREATMENT OF ADULT CHYLOTHORAX

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Objectives
Chylothoraces (CTX) represent a rare clinical entity in thoracic surgery. They are caused by intrathoracic malignancies (primary) or previous thoracic trauma or surgery (secondary). Anecdotal case reports suggest that the additional administration of Octreotide, a somatostatin analogon, may alleviate chylous leakage and improve therapy.

Methods
Retrospective single-center cohort analysis of all patients treated for CTX in the period 2000 to 2010. Patients were treated either by surgical therapy and fat free diet alone (controls) or additionally were administered 100 µg Sandostatin (Novartis, Basel, Switzerland) every 8 hours. The APACHE II score was modified and applied to compare patient groups. The success of Sandostatin treatment and its effect on patient hemodynamics, laboratoray tests and gastrointestinal function throughout therapy were analyzed to identify potential side effects.

Results
Within the study period, 35 cases of CTX therapy were identified. Ten cases had to be excluded from analysis due to aberrant treatment or insufficient data documentation. For the remaining 25 cases, 14 patients did not receive Sandostatin (OCT-) and 11 patients did (OCT+). In both groups, 64% of patients had secondary CTX. The modified APACHE II score was similar in both groups (8±5 and 7±4). Average OCT therapy was 14±8 days. The administration of OCT tended to result in prolonged fat free diet (16±9 vs 11±6), tube durations (18±10 vs 14±8), and hospital stays (21±10 vs 18±10) without reaching statistical significance. OCT-therapy had no effect on patient hemodynamics, temperature, or gastrointestinal functions.

Conclusions
In our retrospective analysis, additional Sandostatin therapy is not superior to surgical therapy and perioperative fat free diet alone. Therefore, Sandostatin cannot be recommended for treatment of adult CTX. This is the most comprehensive study on the effect of somatostatin analoga in the treatment of adult CTX.

Disclosure: All authors have declared no conflicts of interest.

O-056

TUBERCULAR EMPYEMA IS NOT A CONTRAINDICATION FOR VATS DECORTICATION

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Objectives
A retrospective case-matched analysis of clinical/Radiological outcomes of VATS drainage of empyema and decortication of patients with tubercular and non-tubercular empyema

Methods
62 patients with CT scan showing simple/ loculated early and late stage empyema were referred for surgical treatment from June'09 to Jan'11. All patients underwent VATS drainage of empyema and Decortication. Group A: 31 patients with tuberculous empyema and group B: 31 patients with pyogenic empyema. Postoperatively patients had culture directed intrapleural antibiotic washouts till culture negative. Samples were sent for AFB cultures, histopathology, Adenosine-deaminase and TB PCR. Clinical and radiological data was analysed using SPSS.

Results
Both groups had similar age, gender, duration of illness, & clinical comorbidities. The age: Group A: (8yrs to 89yrs) Group B:(11 yrs to 79yrs) Blood loss: Group A: Mean 437 mls; Group B: mean 345 mls Both groups: one conversion to open ($p<0.246$) Mean surgical time: Group A 188 min (60 – 285 mins) Group B:138 mins (66-162) ($p<0.023$) Both groups had negative intrapleural cultures at discharge ($p<0.35$) All patients were symptomatically better at discharge. Group A had antituberculous treatment for 9 months. One patient with MDR-TB needed treatment for 2 years. One patient in group A with additional giant bullous disease underwent resection of bullae. He subsequently had prolonged air leak requiring indwelling drain. There was no statistical difference in hospital stay (mean: 6 days). Radiological improvement in chest X-rays was 96% in both groups at 6 weeks and 99% at 3 months. One case tubercular group had a persistent apical pneumothorax with no adverse consequences.

Conclusions
VATS decortication does have a role in the surgical management of tubercular empyema. Besides slightly longer operative time in tubercular patients, the clinical & radiological outcomes are just as good as patients with pyogenic empyema. Presence of suspected tuberculosis is not a contraindication for VATS decortication.

Disclosure: All authors have declared no conflicts of interest.

O-057

THE EXPANDED ROLE OF EXTRACELLULAR MATRIX PATCH IN THORACIC SURGERY

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Objectives
The extracellular matrix (XCM) biologic tissue is a non-cross-linked 3D matrix derived from porcine dermis. Once implanted it is infiltrated by recipient's cells and becomes incorporated in the repair. We herein describe our initial experience with the XCM patch

Methods
The XCM patch has been developed mainly to provide restoration of chest wall defects. We expanded its use managing diaphragmatic defects, airway defects and as a replacement for infected synthetic materials. It was used either alone or in conjunction with the Synthes Bar system to provide additional support. The decision was made intra-operatively.

Results
Since April 2010, 18 patients (9 females) received the XCM patch. Average age at operation was 49±18 years. Seven patients (39%) had the XCM patch alone whilst 11(61%) received both XCM patch and Synthes titanium system. The original diagnoses were as follows: cancer involving chest wall (n=10), chest wall deformity (n=5), chest wall trauma (n=2), and para-oesophageal herniation (n=1). The XCM patch was used to close chest wall defect in 16 cases. Non chest wall application (n=2) included closure of a post-pneumonectomy persistent large bronchopleural fistula and patching a para-oesophageal hernial orifice. 1 out of the 7 patients (14%) receiving the XCM patch alone developed complication (transient dysphagia requiring oesophageal dilatation) as compared to 6 patients (54.5%) receiving the Synthes bar and XCM combination (p=0.08). These were related to the bar mechanism and included infection (n=4), bar displacement (n=1), and bar fracture (n=1).

Conclusions
The XCM patch is versatile and its application is not limited to chest wall defects in Thoracic Surgery. It can be safely used to provide the strength required for chest wall reconstruction and to replace previously infected reconstructions. A larger cohort of patients is necessary to establish its strength in chest wall reconstructions without the need for metal bars.

Disclosure: All authors have declared no conflicts of interest.

O-058

RADIONUCLIDE-GUIDED BIOPSY OF RIB, CLAVICLE AND STERNUM - A RELIABLE, WELL-TOLERATED TECHNIQUE

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Objectives
In follow up or primary analysis of malignant disease, use of nuclear medicine imaging techniques is increasing. The lesions, detected by these modalities, do not always present with a matching radiological abnormality suitable for radiological biopsy. In bone lesions this rate is more than 50%. A method to confirm, or rule out, metastatic disease in these cases is the radionuclide-guided surgical biopsy.

Methods
We evaluated the combined experience of two teaching hospitals, by conducting retrospective chart review, over a period of 5,5 years. The technique consists of injecting Technecium-99m, performing a bone scan and marking the lesion on the skin; under general anaesthetic, a 3-4 cm incision is made, through which a surgical biopsy is taken, guided by a hand-held gamma-probe. The radioactivity of the specimen and the lack of activity at the biopsy site confirm adequacy of the biopsy.

Results
Between 1.1.2006 and 1.7.2011, 54 (63 biopsies) procedures were performed. The patients previously had breast cancer in 36%, lung cancer in 35%, multiple malignancies in 11%, urological cancer 5%, miscellaneous in 13%. In 84% a rib biopsy was taken, in 10 % a sternum biopsy and a clavicle biopsy in 6%. In 40% metastatic disease was confirmed and in 3 % a new malignancy (M Kahler) was identified. During a median follow up period of 31months (1-69), no signs of malignant disease were found at negative biopsy sites. Apart from local pain in 3% of cases, no complications were mentioned. One patient died 2 weeks after rib biopsy, due to aspiration; except for the relation in time, no apparent causal connection seems to exist.

Conclusions
In conclusion we can state that, in this retrospective series, radionuclide-guided biopsy is a reliable, well tolerated, technique to determine the diagnosis of these lesions with a sensitivity en specificity of 100%.

Disclosure: All authors have declared no conflicts of interest.

O-059

OUTCOME OF PECTUS DEFORMITY REPAIR USING RAVITCH PROCEDURE WITHOUT STERNAL SUPPORT BAR: A 12-YEAR SINGLE CENTRE EXPERIENCE

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Objectives
Chest wall deformity imposes a serious cosmetic problem and can be associated with respiratory and cardiovascular complications. Ravitch procedure is the standard surgical approach with the use of metal bar to eliminate postoperative flail chest and stabilise reconstruction. However, sternal bars have been associated with multiple complications. The purpose of this study is to evaluate the post-operative outcome of metal free Ravitch repair against the use of any metal support.

Methods
Between 1st of September 2009 and 31st of August 2011, 99 patients underwent Ravitch procedure: 49 pectus excavatum and 50 pectus carinatum. Out of the 99, 73 patients did not have a pectus bar (Group 1); instead a gortex patch or marlex mesh fashioned into 'hammock' shape was used. Group 2 patients (n=26) had a pectus bar implanted: 22 pectus excavatum and 4 pectus carinatum.

Results
Group1 patients were younger (20.1±6.5 years vs 23.9±9.2 years, p=NS). Post-operative length of stay was shorter in group 1 but not significant (5.3±1.5 days vs 8.2±8.5 days, p=0.13). 16 group 1 patients (21.9%) developed procedure related complications as compared to 15 (57.7%) from group 2 (x^2=11.4, p<0.001). Pectus excavatum patients requiring metal bar had more complications as compared to those without metal bar (54.5% vs 14.8%, p<0.01). Similar trend was apparent in pectus carinatum patients with metal bar (75% vs 26%, p<0.05, respectively). Three group 1 patients required a redo procedure versus eight group 2 patients (4.1% vs 30.8%, p<0.01). 66 group 1 patients (90.4%) were satisfactorily discharged from the thoracic care with no follow up as compared to 16 (61.5%) patients from group 2 (x^2=11.2, p<0.01).

Conclusions
Pectus repairs without the use of sternal support bars is associated with significantly lower rate of complications, earlier hospital discharge, and reduced rate of redo procedures.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 12 JUNE 2012
14:00 - 15:30
Session XIII/Pulmonary Neoplastic

F-060

QUALITY OF SURGICAL RESECTION FOR NON SMALL CELL LUNG CANCER IS CRITICAL FOR ELIGIBILITY IN CLINICAL TRIALS

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Objectives

Curative treatment of early stage non small cell lung cancer (NSCLC) requires good quality surgical resection (GQR). We sought to quantitatively define the degree of compliance with national recommendations for GQR in a consecutive series of NSCLC resections.

Methods

Chart review of 495 patients having undergone curative-intent resection of stage cI & II NSCLC in the frame of a multicenter phase III trial (NCT00198354) comparing 2 chemotherapy schedules (preoperative vs. perioperative) over a 6-year period. GQR criteria, as potential predictors of R0 resection, were: board certified thoracic surgeon, intraoperative appraisal of the clinical stage, performance of a systematic lymphadenectomy (i.e.,number of examined lymph nodes (LN) >10 & number of mediastinal stations explored > 2), en-bloc resection when needed, pulmonary vein ligature first when possible. Factors associated with achievement of GQR were evaluated, as their impact on overall survival (OS) in univariate and multivariate analyses.

Results

495 patients (396 male, mean age: 60 years) underwent 357 lobectomy, 107 pneumonectomy, 3 infralobar resections. Histology was mainly squamous cell carcinoma (SCC) (n=212) and adenocarcinoma (n=192). 209 patients only (42%) met GQR criteria. On multivariate analysis, clinical stage appraisal (p=0.03, HR: 1.8, 95%CI [1.06-3.17]) board certified surgeons (p=0.04, HR: 1.9, 95%CI [1.02-3.67]) and number of examined LN (p=10-3, HR: 52.2 95%CI [27.2-100.25]) were independent predictors of GQR. 3-year OS rate of GQR patients was 69.5% (95%CI [62.7%-75.3%]), with no significant difference with non-GQR patients (p=0.27). Only SCC subtype (p=0.01, HR: 0.7, 95%CI [0.52-0.92]) and early pathological stage (p<10-3, HR: 0.35 95%CI [0.27-0.47] were independent prognosticators.

Conclusions
The vast majority of curative-intent resections did not achieve GQR standards. The greatest deficit was in a suboptimal lymph node evaluation. Although it had no impact on survival in this series, achievement GQR standards remains critical. Interventions are needed to improve surgical practices for eligibility for clinical trials.

Disclosure: All authors have declared no conflicts of interest.

F-061

INDUCTION TREATMENT WITH CHEMO OR CHEMORADIATION DOES NOT DECREASE EFFICACY OR INCREASE COMPLEXITY OF RESTAGING MEDIA STINOSCOPY IN LOCALLY ADVANCED NSCLC

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Objectives
To assess whether post-chemotherapy/chemotherapy-radiotherapy induction restaging mediastinoscopy is more complex or less profitable than staging mediastinoscopy without prior induction treatment, in NSCLC.

Methods
Retrospective, comparative, non-randomized study of mediastinoscopies performed in NSCLC patients in the last 5 years. We compared demographic, clinical and surgical variables in patients who had not received induction treatment (Native Group) against patients who had received chemotherapy or chemotherapy-radiotherapy (Induction Group). We specifically compared surgical time as a measure of complexity, and number of samples and nodal stations biopsied, as a measure of comprehensiveness. Student´s ´t-test´ was used for the analysis of quantitative variables and Fisher´s exact test for the comparison of qualitative variables.

Results
We performed 32 mediastinoscopies during the study period. Most cases (71.9%) belonged to the Induction Group (chemotherapy:15.6%; chemoradiotherapy:56.3%). This group also included 2 redo-mediastinoscopies after chemoradiotherapy. Mean surgical time for the Native Group was 89.8 minutes (SD 17.7) and for the Induction Group was 79.8 minutes (DS 18.5). No significant differences were detected with the sub-sets of patients who had received chemoradiotherapy vs. chemotherapy-only or with patients receiving 60Gy radiotherapy-induction. Mean number of samples in the native Group was 5.23 against 6.65 in the Induction Group. No differences were noted in the number of nodal stations sampled. No surgical complications were recorded and no significant morbidity. No significant differences were noted between groups, concerning age, gender, tumor type. The only difference was in TNM-stage, with higher prevalence of locally advanced cases in the Induction Group.

Conclusions
According to our data, induction treatment in NSCLC, even with chemoradiotherapy, does not increase surgical time or morbidity in restaging mediastinoscopy. In patients who had undergone induction, mediastinoscopy had a similar diagnostic yield as in non-induced patients. This procedure is both safe and effective in providing an objective ground to propose post-induction lung resection in locally advanced NSCLC.

Disclosure: All authors have declared no conflicts of interest.

F-062

ENHANCED RECOVERY AFTER PULMONARY SURGERY PROTOCOLS HELP REDUCE USE OF RESOURCES WITHOUT COMPROMISING OUTCOMES

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Objectives
To determine the impact of a recently developed Enhanced Recovery After Surgery (ERAS) protocol in postoperative outcomes and use of resources after pulmonary surgery.

Methods
ERAS was introduced in July 2011 in a tertiary centre thoracic surgery unit. A retrospective comparison between two groups (before and after ERAS) was made. ERAS Group: 37 consecutive patients [20 female and 17 male, median age 68 (range 31-85) years] undergoing non-pneumonectomy pulmonary surgery under one Consultant over 4 months (July-October 2011). Control Group: 33 consecutive patients [15 female and 18 male, median age 70 (range 39-85) years] undergoing non-pneumonectomy pulmonary surgery under the same Consultant over 4 months (July-October 2010) Both Groups had similar median FEV1 and Thoracoscore: 78% (38-126) and 2 (0.26-6.30) in the ERAS Group vs 80% (40-143) and 2.25 (0.38-4.11) in the Control Group. The following variables were analysed: postoperative stay, number of chest x-rays performed, number of blood tests, ITU admission, readmission rate and mortality.

Results
There was one death in the Control Group and none in the ERAS Group. One patient was readmitted within 30 days in ERAS Group. There was a significant reduction in Postoperative stay (6 (1-26) days vs. 7 (1-32) days), number of CXRs (4 (2-27) vs. 7 (2-29)) and number of blood tests performed during the postoperative period (3 (0-57) vs 5 (1-32)) in the ERAS Group vs. the control group. There was no significant difference in the number of ITU admissions (12% vs. 19%)

	Control Group	ERAS Group	p Value
Hospital Stay (Days)	7 (1-32)	6 (1-26)	0.03
Number of CXRs	7 (2-29)	4 (2-27)	<0.001
Number of Blood Tests	5 (1-32)	3 (0-57)	0.01
ITU admission	12%	19%	NS

Conclusions
The development of clear protocols of care finalized at enhancing an early recovery after lung surgery reduces the use of resources without compromising outcomes.

Disclosure: All authors have declared no conflicts of interest.

F-063

EFFECT OF EUROPEAN WORKING TIME DIRECTIVE LEGISLATION ON THE QUALITY OF THORACIC SURGICAL TRAINING AND OUTCOMES FOLLOWING LOBECTOMY FOR NSCLC

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Objectives
It had been suggested that the introduction of the EWTD legislation in 2004, which reduced doctors' hours to 56 per week, and the further reduction to 48 hours per week in the amended legislation in 2009 would negatively impact on thoracic surgical training and outcomes. We assessed our experience in a specialist thoracic surgical unit.

Methods
Between October 2001 and September 2011, 1828 lobectomies for NSCLC were performed. These procedures were into three groups: Pre-EWTD1 Aug2004 (n=517), EWTD1 from Aug2004 to July2009 (n=894) and finally EWTD2 from Aug2009 to September 2011 (n=417). The proportion of trainee-led procedures during the three time periods was assessed. We also assessed any differences in key outcomes between the three time periods and between consultant- and trainee-led cases within these groups, using multi-variate analysis to adjust for variations in case mix.

Results
The proportion of trainee-led cases increased significantly (p=0.004) over the 10 years, from 37% (n= 193) in the first period to around 45% in both the second and third periods (n= 414 and 188, respectively). However, the number of trainees performing cases per year reduced over the 10 years. Despite the changes in weekly working hours and a reduction in the overall numbers of trainees, there was no difference in outcomes between consultant- and trainee-led operations before or after risk-adjustment. Nor was there a difference in outcomes between the three time periods, with the exception of post-operative length of stay which reduced significantly from a median of 8 to 6 days ($p<0.0001$).

Conclusions
Lobectomies can be performed safely by trainees. The EWTD has resulted in an increase in the number of lobectomies being performed by trainees, but they are being performed by a small number of trainees. The EWTD will possibly lead to the production of fewer but more experienced trainees.

Disclosure: All authors have declared no conflicts of interest.

F-064

ESTIMATING INTER-RATER VARIABILITY OF OBJECTIVE REPORTING OF POSTOPERATIVE MORBIDITY AFTER LUNG RESECTION

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Objectives
Objective reporting of postoperative complications is paramount for developing surgical quality programs. Recently (Seeley et al. Ann Thorac Surg 2010;90:936) a scoring system for classifying complications after lung resection has been proposed. The scoring classifies the complication severity proportional to the effort to treat it in grades I to V. Grades I and II include minor complications requiring no therapy or pharmacologic intervention only. Grades IIIA and B and IVA and B are major complications that require surgical intervention or life support and Grade V complications result in patient death. The objective of this work was to verify inter-rater variability in classifying the same set of complications using the Clavien-Dindo grading system for postoperative morbidity.

Methods
Four independent raters blinded for each other scores were asked to classify the postoperative complications of a cohort of 140 consecutive patients who underwent major lung resection in a single centre and who had at least one postoperative adverse event. Abstracted anonymous clinical information was sent to each rater with a thorough explanation of the proposed classification of postoperative complications. All three scoring subsets were merged in a spreadsheet and unweighted kappa was calculated for each score level and for the whole series of cases.

Results
Combined kappa for the three raters was 0.49. The lowest agreement was obtained in Grades I to IIIA (kappa 0.46 for Grade I, 0.37 for Grade II and 0.23 for Grade IIIA) while higher agreement was found in the most severe types of complications (kappa 0.92 for Grade IIIB, 0.88 for Grade IVA and 0.66 for Grade IVB) and, obviously, perfect agreement in cases of patient death (Grade V).

Conclusions
With the available objective reporting system, the inter-rater agreement is very good for severe adverse effects but refinements are needed for the less severe types of complications.

Disclosure: All authors have declared no conflicts of interest.

F-065

INFLUENCE OF T1 NERVE ROOT RESECTION ON THE ARM AND SHOULDER FUNCTION AND QUALITY OF LIFE AFTER TRIMODALITY TREATMENT FOR SUPERIOR SULCUS TUMORS

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Objectives
The T1 nerve root is commonly sacrificed in order to obtain a radical resection for Superior Sulcus Tumors (SST). although not much is known about it's. The main objective of this study is to investigate the effect of T1 nerve root resection in patients treated for a SST on the arm and shoulder function and quality of life.

Methods
Patients were selected from a thoracic surgery database. The following arm function tests were used: Nine-hole Peg test, Range of motion and action research arm (ARA) tests. Quality of life was assessed using the DASH and SF-36 questionnaires. Patients with T1 nerve root resection were compared to those in which the T1 nerve could be spared

Results
Nineteen patients were eligible for inclusion (T1 resection n=13 : T1 spared n=6) and consented to participate and filled out the SF-36 and DASH questionnaire. Fifteen patients also underwent the arm and shoulder function tests (T1 resection n=9; T1 spared n=6). No significant differences could be detected in arm function testing between both groups. For quality of life, there was a significant difference in the domain mental health in favour of those patients where the T1 root could be spared.

Conclusions
Resection of T1 nerve root in SST does not lead to significant disabilities in quality of life and worse arm and shoulder function compared to patients in whom the T1 nerve root could be spared.

Disclosure: All authors have declared no conflicts of interest.

F-066

LEFT THORACOSCOPIC EXTENDED MEDIASTINAL LYMPHADENECTOMY FOLLOWING TRANSECTION OF ARTERIOUS LIGAMENT

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Objectives
Arterious ligament is an obstacle during left mediastinal lymphadenectomy around a tracheobronchial connection. To elucidate feasibility of left thoracoscopic extended mediastinal lymphadenectomy following transaction of arterious ligament, operative procedure is demonstrated and surgical outcomes in the patients undergoing an extended lymphadenectomy were reviewed comparing those in the patients undergoing a standard lymphadenectomy. .

Methods
(Thoracoscopic procedures) Anterior mediastinal dissection followed transaction of arterious ligament under 5 port - access surgery. Mediastinal tissue along the lesser curvature of the aortic arch, bifurcation of the pulmonary arterial trunk and carina was dissected as shown in Video. (Analysis) 47 patients with clinical stage I underwent a left thoracoscopic extended mediastinal lymphadenectomy (extended group)and 52 patients with clinical stage I did a standard mediastinal lymphadenectomy (standard group) between September, 2008 and March, 2011 were reterospectively analyzed. Surgical outcome and disease - free survival were reviewed.

Results
Mean operation time was 239 (± 69) minutes in the extended group, and 197 (± 53) minutes in the standard group (statistically significant). There were two major complications as superior mesenteric arterial thrombus in the extended group, and as empyema in the standard group. Permanent vocal cord palsy occurred in one patient of each group. Mean number of dissected lymph nodes was 25.9 (± 12.7) in the extended group, and 12.5 (± 6) in the standard group (statistically significant). Pathologic nodal status showed N0 in 29 patients, N1 in 4 patients, and N2 in 14 patients among the extended group, and showed N0 in 43 patients, N1 in 3 patients, and N2 in 3 patients among the standard group. Disease - free survival 3 years after surgery without mediastinal nodal involvement showed 100% in the extended group and 85% in the standard group.

Conclusions
Left thoracoscopic extended mediastinal lymphadenectomy is feasible and a larger number of mediastinal lymph nodes can be dissected. Survival benefit may be produced in the patients without mediastinal nodal involvement.

Disclosure: All authors have declared no conflicts of interest.

F-067

THE POSSIBILITY OF LIMITED RESECTION FOR STAGE IA NON-SMALL CELL LUNG CANCER BASED ON A STANDARDIZED UPTAKE VALUE (SUV) INDEX

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Objectives
In a previous report we found that a standardized uptake value (SUV) index obtained from positron emission tomography (PET)/computed tomography (CT) results was significantly correlated with prognosis for pathological stage I lung cancer. However, this has not been applied to limited resections for early stage lung cancer patients. In this study, we investigated the possibility of using an SUV index for surgery for clinical stage IA lung cancers.

Methods
We prospectively collected patients' data and conducted a retrospective study in our institution. From May 2004 to December 2010, 210 patients with clinical stage IA non-small cell lung cancer underwent both PET/CT examinations and surgery. A corrected SUV was defined as an SUV index, which was calculated from the ratio of tumor SUVmax to liver SUVmean. We examined the associations between survival and several clinical factors, including the SUV index.

Results
We identified the following pathological stages: stage IA (N = 155; 73.8%); stage IB-IIIA (N = 55; 26.2%). Regarding upstaging factors, T1b ($p < 0.01$) and SUV index ³ 1 ($p < 0.01$) were significant. The 5-year overall survival rate was 81.0%, the 5-year disease-free survival rate was 74.2%, and the 5-year freedom from recurrence rate was 81.2%. Thirty-three patients (15.7%) had recurrences. Multivariate analysis showed that index was a significant predictive factor for recurrence (Risk Ratio = 1.21, 95% CI: 1.06-1.37; $p < 0.01$). No patient with an SUV index < 1.0 had a recurrence ($p < 0.01$).

Conclusions
For clinical stage IA lung cancer patients, the SUV index was a significant predictive marker for recurrence. Patients with SUV indices < 1.0 were less likely to have a recurrence. Thus, stage IA patients with SUV indices < 1.0 should be candidates for limited resections.

Disclosure: All authors have declared no conflicts of interest.

F-068

TREATMENT STRATEGY IN PATIENTS WITH PULMONARY METASTASES OF RENAL CELL CANCER

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Objectives
Renal cell carcinoma (RCC) metastases are more frequently located in the lungs with surgical results better than in other anatomic locations. Historically, cytokine immunotherapy (interferon-α) has been the cornerstone of RCC treatment. Multitargeted antiangiogenic tyrosine kinase inhibitors (TKIs) are now established treatment paradigms in such patients. Our purpose was to improve treatment efficacy in patients with RCC pulmonary metastases (PM) by optimizing surgical and therapeutic strategy.

Methods
From 1998 to 2010, 152 consecutive patients underwent various kinds of treatment for pulmonary metastases of renal cancer. Pulmonary metastasectomy was performed in 90(59,2%) patients. 41 (27,0%) patients were treated with IFN-α in dose 3,0 IU/m² three times a week. 21 (13,8%) patients received targeted therapy (oral sunitinib 50 mg daily for 4 weeks followed by 2 weeks off schedule; oral sorafenib 400 mg daily).

Results
The median overall survival was significantly longer in surgical group (36,3 months) than in TKIs group (30,4 months) and immunotherapy group (18,0 months). Five-year overall survival was not statistically different after resection of solitary and 2-3 metastases: 45,0% and 38,9%, respectively. In patients with multiple metastases the prognosis depends on number of PM and completeness of resection. If number of PM was ≤6, the median survival was significantly longer in surgical group than in TKIs and immunotherapy groups (34,0; 30,4 and 23,0 months, respectively). In patients with ≥6 PM the TKIs treatment provides better results than immunotherapy and surgery (the median survival was 27,9, 16,7 Ð¸ 12,3 months, respectively). Patients in TKIs group reported significantly longer median progression-free survival than immunotherapy: 12,4 and 10,6 months.

Conclusions
Pulmonary metastasectomy is justified in patients with ≤ 6 lesions, while targeted therapy is indicated in case of multiple (>6) metastases. The most important prognostic factors are number of metastases, disease free interval and completeness of resection.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 12 JUNE 2012
16:00 - 17:30
Session XIV/Airway/Transplant

O-069

THE ROLE OF T-TUBE IN THE MANAGEMENT OF AIRWAY STENOSIS

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Objectives
When T-tube is inserted as a temporary stent, it is unclear whether keeping it longer in place, has any benefit on outcome.

Methods
Our database showed 1738 patients with airway stenosis from 1996 to 2011, of them 134 (7.7%) underwent T-tube placement. T-tube was temporarily inserted in 53 patients (group 1) as a bridge while waiting for an appropriate time for surgery, in 27 (group 2) as an adjunct after a complex laryngotracheal resection, and in 43 (group 3) after failure of surgery. It was also permanently inserted in 11 patients (group 4) with unresectable strictures. Fisher's exact test and logistic regression model were used for statistical analysis.

Results
There were 94 (70%) males. The main cause was postintubation/posttracheostomy stenosis in 116 (87%) patients. The stenosis (29.6±14.0mm, 5-80mm) was located in subglottis in 33%, trachea in 47% and both in 20% of cases. The mean duration of T-tube placement was 14.3 months. To assess the effect of T-tube in stabilizing the airway and eliminate the necessity for further intervention after decannulation, 50 patients who still had T-tube at the end of follow-up or for less than 1.5 months were excluded. Of the remaining 84, 31.5%, 91.5%, and 32.5% of patients in groups 1, 2, & 3, were stable at least 3 months after decannulation with no further intervention. Moreover, 70% of those who were decannulated at or before 6 months required another intervention, however 53.7% of those who were decannulated after 6 months underwent another intervention (P = 0.17). The age, sex, cause and site of stenosis, groups, and even duration of T-tube insertion (P = 0.07) showed no significant effect on decannulation outcome.

Conclusions
Although it seems that keeping the T-tube in place for more than 6 months may increase the chance of successful decannulation, it was not confirmed in our study.

Disclosure: All authors have declared no conflicts of interest.

O-070

ECMO SUPPORT FOR COMPLEX TRACHEOBRONCHIAL PROCEDURES

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Objectives
The international experience with advanced bronchoplastic procedures performed with ECMO support is very limited. We examined our results to assess the risks and benefits of this approach.

Methods
We retrospectively analyzed all patients with thoracic malignancies who underwent complex tracheo-bronchial reconstruction under ECMO support in our department between 2001 and 2011.

Results
8 patients (age range 21-63 years, mean 53±8,8 years) underwent complex tracheo-bronchial resections under veno-arterial ECMO support. In 6 patients the underlying pathology was non-small cell lung cancer, in 1 case carcinoid tumour, and in 1 case adenoid-cystic carcinoma. ECMO cannulation was central (n=6) or peripheral (n=2).Mean time on bypass was 120±11 min (range 90-135 min). A complete resection (R0) was achieved in 6 patients (75%). There was no perioperative mortality. Patients were discharged from the hospital after 7-52 days (median 11 days). Median time on ICU was 1 day (range 0-52 days). The only complication related to the use of ECMO was a lymphatic fistula in the groin. Mean follow up time was 71±28 month (range 2-129). The 1-, 3- Kaplan-Meier survival was 100%, 5 year survival was 65%, respectively.

Conclusions
Based on this experience, we consider venoarterial ECMO support as a safe and valuable approach for complex airway surgery.

Disclosure: All authors have declared no conflicts of interest.

O-071

EXTRA-CORPOREAL MEMBRANE OXYGENATION AND SPONTANEOUS BREATHING AS A BRIDGE TO LUNG TRANSPLANTATION

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Objectives
A large number of transplantation Centers consider extracorporeal membrane oxygenation (ECMO) an inappropriate option for bridging critical patients to lung transplantation (LT). Such conviction originates from poor results previously reported; actually, technical improvements such as the introduction of polymethylpentene membrane, new centrifugal pumps and heparin-coated circuits have led to a safer application of ECMO and an increasing number of Centers are reporting their positive experiences. The aim of this report is to review our practice in bridging critical candidates to LT with ECMO maintaining the patients awake without mechanical ventilation.

Methods
The records of the candidates for LT treated with ECMO have been revised. All the patients received heparin to maintain a thromboplastin time ratio between 1.5 and 1.8. The extracorporeal system consisted of the Rotaflow RF 32 Pump and Quadrox PLS Oxygenator.

Results
From June 2009 to January 2012 eight patients listed for LT who experienced an abrupt worsening of their respiratory conditions were treated with ECMO; mean age: 34 years, male/female ratio: 50%, four patients had cystic fibrosis, 2 had chronic rejection after LT, 1 had systemic sclerosis and 1 had pulmonary fibrosis. All the patients had bilateral LT; ECMO mean duration: 10.63 days. Bleeding was the major complication during transplantation and in the early postoperative days: 1 patient died few hours after surgery from incontrollable bleeding and 4 patients needed reoperation for hemothorax. Three patients had pulmonary CMV infection, 1 had pulmonary TBC and 1 experienced common pneumonia. Mean postoperative FEV1 was 67%. Actuarial survival is reported in the graph.

Conclusions
Our experience supports the feasibility of ECMO bridge to LT. Problems related to mechanical ventilation were avoided. The fair results should be improved with a better coagulation control. Our practice has been relevant to establish ECMO as a criterion for LT emergency list in our Country.

Disclosure: All authors have declared no conflicts of interest.

O-072

LONG-TERM OUTCOMES OF BILATERAL LOBAR LUNG TRANSPLANTATION

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Objectives
Lobar lung transplantation is an option which provides the possibility to transplant an urgent listed recipient of small size with a size mismatched donor lung. We report our short and long term results with bilateral lobar lung transplantation with long term outcomes.

Methods
We performed a retrospective analyses of 75 lung transplant recipients who received downsized lungs with a special focus on 23 recipients with bilateral lobar lung transplantation (BLLT) since January 2000. Postoperative surgical complications, lung function tests, late complications and survival were analysed. The decision to perform lobar transplantation was considered during allocation and finally decided prior to implantation.

Results
Cystic fibrosis was the most common indication (43.5%) followed by pulmonary fibrosis (35%). Mean age at transplantation was 39 years (range, 13-66 years). Fifteen were females. Nineteen of the transplantations (83%) were done with ECMO support; 3 of them were already on ECMO prior to transplantation. There was no 30-day or in-hospital mortality. No bronchial complications occurred. The most common early complication was haematothorax (39%) which required surgical intervention. The rate of postoperative atrial arrhythmias was 30%. Forced expiratory volume in 1 second (% predicted) at 1 and 2 years was 82 ± 23 and 79 ± 22, respectively (median ± standard deviation). By 2-years follow-up bronchiolitis obliterans syndrome (BOS) was documented in 3 patients with a median follow-up of 1457 days. Overall survival at 1 and 5 years was 82% and 64% respectively and comparable to 219 other recipients who received bilateral lung transplantation during the same period (Log Rank test, p=0.56).

Conclusions
This study demonstrates that BLLT has a comparable short and long term outcome as standard bilateral lung transplantation. Limitation of lung transplantation due to size-mismatch, especially in smaller recipients could be overcome by utilizing lobar lung transplantation.

Disclosure: All authors have declared no conflicts of interest.

O-073

EARLY LUNG RETRIEVAL FROM TRAUMATIC BRAIN-DEAD DONORS DOES NOT COMPROMISE OUTCOMES FOLLOWING LUNG TRANSPLANTATION

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Objectives

To determine whether lung retrieval from traumatic donors performed within 24 hours of brain death has a negative impact on early graft function after lung transplantation (LT), as compared with those retrieved after 24 hours.

Methods

Review of lung transplants performed from traumatic donors over a 17 year-period. Recipients were distributed into 2 groups: transplants from traumatic donor lungs retrieved within 24h of brain death (group A), and transplants from traumatic donor lungs retrieved after 24h of brain death (group B). Demographic data of donors and recipients, early graft function, perioperative complications and mortality were compared between both groups.

Results

From 356 lung transplants performed at our institution, 132 were from traumatic donors (70%M – 30%F). Group A: 73 (55%); group B: 59 (45%). There were 53 single, 77 double, and 2 combined LT. Indications were emphysema (41-31%), pulmonary fibrosis (31-23%), cystic fibrosis (38-29%), bronchiectasis (9-7%), and others (13-10%). Donor and recipient demographic data, need of cardiopulmonary bypass, postoperative complications, and ICU and hospital stay did not differ between groups. Primary graft dysfunction (A vs. B): 9 (16%) vs. 13 (26%) p=0.17. PaO2/FiO2 (24h post-transplant) (A vs. B): 303 mm Hg vs. 288 mm Hg (p=0.57). Number of acute rejection episodes (A vs. B): 0.93 vs. 1.49 (p=0.01). Postoperative intubation time (A vs. B): 99h vs. 100h (p=0.99). 30-day mortality (A vs. B): 7(10%) vs. 2 (3.5%) (p=0.13).

Conclusions

In our experience, early lung retrieval after brain death from traumatic donors does not adversely affect early outcomes after lung transplantation.

Disclosure: All authors have declared no conflicts of interest.

O-074

INFLUENCE OF DONOR-RECIPIENT GENDER MISMATCH ON EARLY GRAFT FUNCTION AND MORTALITY FOLLOWING LUNG TRANSPLANTATION

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Objectives
Donors and recipients are not matched for gender in lung transplantation. We examined whether donor-recipient (D/R) gender mismatch is related to adverse outcomes after lung transplantation, in terms of early graft dysfunction and mortality.

Methods
Review of 256 consecutive donors and lung transplant recipients. Patients were distributed into 4 groups: group A (D/R: female/female), group B (D/R: male/male), group C (D/R: female/male), group D (D/R: male/female). Donor and recipient variables were compared among groups, including early graft function and postoperative mortality (Chi-square and ANOVA).

Results
Group A: 57 (22%), group B: 99 (39%), group C: 62 (24%), group D: 38 (15%) transplants (p=0.001). Donor age was 29±14, 27±12, 33±13, and 23±12 years for groups A, B, C, and D respectively (p=0.004). Recipient age was 31±15, 44±17, 42±16, and 30±16 years for groups A, B, C, and D respectively (p=0.000). PaO2/FiO2 (mmHg) 24h post-transplant was: group A 276±144, group B 297±131, group C 344±133, and group D 238±138 (p=0.015). Early graft dysfunction developed in 5.3%, 5.3%, 4.1%, and 3.3% of recipients from groups A, B, C, and D respectively (p=0.45). Operative mortality was 4.4%, 6.5%, 5.2%, and 2%, for recipients from groups A, B, C, and D respectively (p=0.66).

Conclusions
Donor-recipient gender mismatch does not have a negative impact on early graft function and mortality following lung transplantation.

Disclosure: All authors have declared no conflicts of interest.

TUESDAY, 12 JUNE 2012
16:00 - 17:30
Session XV/OESOPHAGUS/MEDIASTINUM

F-075

HIGH DOSE PERIOPERATIVE STEROIDAL TREATMENT FOR PATIENTS WITH MYASTHENIA GRAVIS

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Objectives
Given that preoperative stabilization of myasthenia gravis (MG) is essential for a prevention of postoperative MG crisis, we offer perioperative high-dose predonisolone (PSL) therapy followed by extended thymectomy. The purpose of this study was to examine efficacy and safety of this therapy by a retrospective comparison of MG patients with or without the high-dose PSL therapy.

Methods
A retrospective review was conducted on 163 MG patients categorized to the Myasthenia Gravis Foudantion of America (MGFA) classification 0 to IIIb who had undergone extended thymectomy between 1999 and 2011. Eighty two cases in the PSL group received oral administration of high-dose PSL (70-100mg/ alternate day) periopeatively, and eighty one cases in the control group did not received the therapy. These two groups were compared in clinical characteristics, surgical results, incidences of postoperative MG crisis and postoperative complications related to steroidal effect including infection and wound disruption.

Results
Patients with MGFA IIB or above were 49 (59.8%) in the PSL group and 21 (25.9%) in the control group ($p<0.0001$), and patients with concomitant thymoma were 25 (30.5%) in the PSL group and 44 (54.3%) in the control group ($p=0.0021$). The averages of postoperative hospital days were 12.6±0.6 in the PSL group and 18.0±2.3 in the control group ($p=0.0224$). MG crisis was experienced in 2 patients (2.4%) in the PSL group and 9 patients (11.1%) in the control group ($p=0.0273$). There was no significant difference with respect to postoperative complication related to steroid.

Conclusions
It was of note that the PSL group had a lower incidence of postoperative MG crisis than the control despite including severer MG, therefore perioperative high-dose predonisolone would be benefitting the management of surgical MG patients.

Disclosure: All authors have declared no conflicts of interest.

F-076

THREE DIFFERENT TYPES OF THYMECTOMY FOR MYASTHENIA GRAVIS IN ONE INSTITUTE; POSTOPERATIVE AND EARLY NEUROLOGICAL RESULTS

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Objectives
Different methods of open and minimal invasive thymectomies are recommended for myasthenia gravis in the literature. In this study, we analysed the results of the standard transsternal and 2 different types of video assisted thoracic surgery (VATS) thymectomies performed in one department.

Methods
71 patients (60 females, 11 males; mean age: 31 (14-84) years) underwent thymectomy for MG: 23 standard transsternal thymectomies, 22 extended VATS thymectomies and 26 classic VATS thymectomies through right side. Length of surgery and hospital stay, postoperative morbidity (respiratory insufficiency/ventilation, plasmaferesis, infection, chylothorax, bleeding), and improvement of myasthenia symptoms in an early 1-year period were compared. Osserman statuses of the MGs were as follows: I 13, IIA 37, IIB 11, III 7 and IV 3. The preoperative steroid/immunosupression administration was 21.7%, 36.4% and 46.2% (p=0.201), and the plasmaferesis was 26.1%, 9.1% and 11.5% (p=0.226) in the standard transsternal, extended-VATS and classic-VATS groups, respectively. Follow-up period was 12 months.

Results
There was no perioperative mortality. The length of thymectomy were 112, 211 and 116 minutes (p=0.001), and the length of hospital stay were 8.9, 5.6 and 4.0 (p=001) days in the standard transsternal, extended-VATS and classic-VATS groups, respectively. The postoperative morbidities were 26.1%, 31.8% and 7.7% (p=0.097), and the improvement rates were 91.3%, 94.7% and 87.5% (p=0.712) in the standard transsternal, extended-VATS and classic-VATS groups, respectively.

Conclusions
All the three types of thymectomy produced an excellent 1-year-period improvement in myasthenia symptoms, without significant differences. Extended VATS thymectomy caused the best improvement rate, but it had the most frequent postoperative morbidity. Less invasive, classic VATS thymectomy associated with the shortest length of surgery and hospital stay, and the least morbidity. There was no advantage of the standard transsternal thymectomy compared to the VATS methods.

Disclosure: All authors have declared no conflicts of interest.

F-077

EVOLUTION OF SURGICAL APPROACHES FOR THYMOMAS; A SINGLE INSTITUTIONAL EXPERIENCE

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Objectives
To show the evolution of the surgical approaches in thymomas at our department.

Methods
Retrospective single center analysis of all patients with thymoma (n=122) operated on between the 1stof January 1967 to 31stof December 2011 at our institution. In the period 1967-1997 (group 1) upper partial sternotomy and lateral thoracotomy were the preferred approaches and resection of the thymus with thymoma without the surrounding fatty tissue were performed. In the years 1997-2006 (group 2) complete sternotomy approach and extended thymectomy were performed. Starting from 2007-2011 (group 3) complete sternotomy approach has been done selectively only in Masaoka stage III-IV thymomas. The other patients underwent videothoracoscopy-assisted (VATS) extended thymectomy.

Results
Table. Types of surgical approaches

	Group 1 (1967-1996)	Group 2 (1997-2006)	Group 3 (2007-2011)
Upper median sternotomy	21	0	0
Complete median sternotomy	0	26	12
thoracotomy	33	0	1
VATS	0	0	29
Overall	54	26	42

There were no significant differences between 3 groups in regard to the age, women/men rate, proportion of A and AB vs B1-3 and C types according to the WHO classification and association with Myasthenia Gravis . There was a significant difference ($p<0.05$) between group 1 and groups 2 and 3 in regard to the higher number of Masaoka stage III-IV (26/54 (48.1%) vs 5/26 (19.2%) and 10/42 (23.8%) patients, respectively), incomplete resection rate (5/52 (9.6%) vs 1/28 (3.6%) and 1/42 (2.3%) patients, respectively) and the recurrence of thymoma rate (9/54 (16.7%) vs 2/26 (7.7%) and 0/42 patients, respectively).

Conclusions

· The evolution of the surgical approach for thymomas expressed earlier discovery and less advanced stage at presentation and better completeness of operations for groups 2 and 3 in comparison to group 1.

· The introduction of the minimally invasive VATS thymectomy in group 3 had no adverse influence on the quality of resection.

Disclosure: All authors have declared no conflicts of interest.

F-078

UTILITY OF 18F-FDG PET-CT IN THYMIC EPITHELIAL TUMORS

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Objectives
Positron emission tomography using [18F]fluoro-2-deoxy-Dglucose (FDG-PET) currently plays an important role in many oncological settings. In this study, we investigated the utility of 18F-FDG PET-CT (PET-CT) for predicting the histologic type and stage of thymic epithelial tumors.

Methods
We retrospectively analyzed 54 patients with thymic epithelial tumors who underwent PET-CT before surgery, and investigated the relationship between the histologic type based on the WHO classification and the maximum standardized uptake value (SUVmax). We also investigated the relationship between the Masaoka tumor stage and the SUVmax.

Results
There were 27 male and 27 female, ranging in age from 25 to 80 years (median, 62 years). Tumor histology of 42 tumors was thymoma, and that of the remainder was thymic carcinoma (9 squamous cell carcinomas and 3 carcinoids). The tumor stages were stage I in 7 patients, stage II in 23, stage III in 18, and stage IV in 6. All patients were divided into three groups according to a simplified histologic classification: low risk thymoma (type A, AB and B1, n = 23), high risk thymoma (type B2 and B3, n = 19), and thymic carcinoma (n = 12). The SUVmax of each group is shown in Figure. The SUVmax of thymic carcinoma was significantly higher than those of low risk thymoma and high risk thymoma (7.34 ± 2.43, 3.58 ± 1.23 and 4.04 ± 0.97, respectively, $p < 0.001$). There was no significant difference between low risk thymoma and high risk thymoma ($p = 0.206$). The SUVmax of the tumors in stage III and IV was significantly higher than that of tumors in stage I and II (5.77 ± 2.40 and 3.62 ± 1.18, respectively, $p < 0.001$).

Conclusions
PET-CT is a useful modality for predicting the histologic type and tumor stage in thymic epithelial tumors.

Disclosure: All authors have declared no conflicts of interest.

F-079

PROGNOSTIC IMPACT OF THE EXTRACAPSULAR LYMPH NODE INVOLVEMENT ON DISEASE-FREE SURVIVAL ACCORDING TO THE 7TH EDITION OF AMERICAN JOINT COMMISSION ON ESOPHAGEAL CANCER STAGING SYSTEM

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Objectives
The 7thedition of AJCC of esophageal cancer and gastro-esophageal junction has restaged positive nodes into N1 to N3 according to the number of invaded lymph nodes (LN). However this new classification does not consider the potential negative impact of the extracapsular breackthrough on survival. This study aims at assessing prognosis according to whether lymph node involvement is intracapsular (ICLNI) or extracapsular (ECLNI) on disease-free survival (DFS) among the three sub-groups of LN positive patients.

Methods
Four hundred and sixteen consecutive R0 patients who underwent transthoracic esophagectomy for cancer between 1996 and 2011 were retrospectively reclassified using the latest AJCC TNM classification. Among them, 230 (55%) patients received a neoadjuvant radiochemotherapy. Prognostic impact of ICLNI and ECLNI on DFS was assessed according to their new LN status. Multivariate analysis was drawn to determine factors affecting DFS.

Results
There were 138 (33%) patients with positive nodes: 57% (n=79) with ICLNI and 43% (n=59) with ECLNI. Proportion of ECLNI was 21/73 (28%), 21/41 (51%) and 17/24 (70%) in N1, N2 and N3 patients respectively. In N1 patients, median of DFS was 48 months in ICLNI and was 13 months in ECLNI (p=0.068). In N2 patients, median of DFS was 19 months in ICLNI and was 9 months in ECLNI (p=0.07). In N3 patients, median of DFS was not reach in ICLNI and was 6 months in ECLNI (p=0.002). On multivariate analysis, the ECLNI (p<0.001, OR: 2.51) and the post-T stage (p=0.037, OR: 1.5) were the two independent factors affecting the DFS.

Conclusions

Based on our limited study population, existence of an ECLNI seems to have an additive negative impact on DFS whatever the pN stage. This suggests that extracapsular breakthrough status should be added to the new TNM staging system. This information has to be validated by further investigations.

Disclosure: All authors have declared no conflicts of interest.

F-080

COMPLETE METABOLIC RESPONSE IS NOT UNIFORMLY PREDICTIVE OF COMPLETE PATHOLOGIC RESPONSE FOLLOWING INDUCTION THERAPY FOR ESOPHAGEAL CANCER

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Objectives
Positron emission tomography (PET) scanning is used to assess response to induction therapy following treatment of esophageal cancer (EC). A decrease in standardized uptake value (SUV) has been correlated with response to therapy, with an SUV of zero often assumed to indicate complete absence of disease. We hypothesize that a significant number of patients may have residual EC despite complete metabolic response.

Methods
A prospective database was reviewed for EC patients receiving induction therapy followed by esophagectomy on whom both pre- and post-induction PET scans were obtained. Patients with a post-induction SUV=0 (or "no uptake") were categorized as complete metabolic responders. Survival was calculated by KM.

Results
Among 93 patients, 27 (29%) had post-induction complete metabolic response after chemotherapy (18 of 70) or chemoradiation (9 of 14). Sixteen (59%) complete metabolic responders had post-induction biopsy, in whom 7 (44%) were positive. At surgery, 17 patients (63%) with complete metabolic response had residual disease, including 11 (41%) with nodal metastases. Even among patients with a negative biopsy, 4 of 9 (44%) had residual disease. Final pathologic stages of patients with complete metabolic response were yp0 (CPR) in 10 (37%), ypI in 3 (11%), ypII in 8 (30%), and ypIII in 6 (22%). Three-year survival was 83% in the complete metabolic response group versus 40% in the remainder of the cohort (p=0.01).

Conclusions
A complete metabolic response on post-induction PET scan predicts, but should not be assumed to be synonymous with CPR in EC patients. The presence of residual disease should be strongly considered despite complete metabolic response and negative biopsy in patients receiving induction therapy, as well as in patients treated with definitive chemotherapy and/or radiation for EC. Surgical resection remains important in the treatment algorithm of these patients and should be strongly considered, even with apparent absence of residual disease.

Disclosure: All authors have declared no conflicts of interest.

F-081

LONG TERM RESULTS OF THE THORACOSCOPIC COLLIS- LAPAROSCOPIC NISSEN FOR THE TREATMENT OF SEVERE GERD WITH ACQUIRED SHORT ESOPHAGUS

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Objectives
Purpose of this study is to present the long term results of the thoracoscopic Collis + laparoscopic Nissen performed for the treatment of severe GERD associated with short esophagus.

Methods
GERD patients were assessed before surgery with interview based on semi-quantitative scales for grading of symptoms and esophagitis from 0 (no symptoms and esophagitis) to 3 (severe symptoms and esophagitis), global evaluation (excellent, good, fair, insufficient), endoscopy + hysthology, barium swallow, manometry; after surgery every year, alternating interview and tests (same questionnaires as above) except routine manometry, according to a protocol. Intraoperatively the length of the addominal esophagus after maximal mediastinal mobilization of the esophagus was measured with a validated technique; true short esophagus was diagnosed when the submerged segment was <1.5 cm. After surgery, result in patients receiving medical therapy or with recurrent hernia, although asymptomatic, was classified as insufficient.

Results
From 1996 to 2011, 299 minimally invasive procedures for GERD were performed. In 62/299 (20.7 %) short esophagus was assessed. The left thoracoscopic Collis gastroplasty was associated with 1 Toupet and 1 Dor (motility disorders), with the Nissen floppy fundoplication in 60 patients (24 women, 36 men, mean age 55.2 ± 13.7 years, range 20 - 77). 5 procedures were converted at the beginning of the experience. Mortality was 1.7% (1/60), morbidity 11.7% (7/60). The mean follow-up was 58.6 ± 32.1 months (range 12-108).

Conclusions
With the thoracoscopic Collis-laparoscopic Nissen in patients affected by severe GERD and true short esophagus , satisfactory long-term results were achieved in 93.4% of cases.

Disclosure: All authors have declared no conflicts of interest.

F-082

EFFECT OF PPI (RABEPRAZOLE) ON REFLUX ESOPHAGITIS AFTER TOTAL GASTRECTOMY

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Objectives
Esophagitis after total gastrectomy has been associated with biliary and pancreatic reflux into the esophagus. The purpose of this study is to clarify the effect of PPI(Rabeparazole) (Eisai,Tokyo,Japan) on these factors in the esophagitis.

Methods
Sixteen 8-week old male Wistar rats were underwent total gastrectomy and esophagoduodenostomy to induce esophageal reflux of duodenal juice. In 5 rats the sham operation induced a midline laparatomy alone(Sham). One week following surgery, they were treated with control (saline)(n=8),PPI(Rabeprazole)(n=8)(30mg/kg)ip. 3 weeks after operation, all rats were killed and the esophagus was evaluated histologically. Esophageal injury was evaluated by macroscopic ,microscopic findings and expression of COX2 and PGE2. Esophageal washing was aspirated for the evaluation of bile acid activity.

Results
At 3 weeks after surgery, duodenal reflux induced esophageal erosions and ulcer formation as well as marked thickening of esophageal wall. The macroscopic ulcer score and histological ulcer length were significantly reduced by treatment with Rabeprazole. The enhanced expression of COX2 and PGE2 in the control group was also markedly inhibited in the Rabeprazole treated group. The bile acid activity in the esophageal lumen was significantly increased in the control group, and this increase was significantly inhibited in the Rabeprazole treated group.

Conclusions
With this model, we have demonstrated that Rabeprazole significantly reduces inflammation and hyperplasia in the esophageal mucosa. These results indicate that bile acid, which is inhibited by Rabeprazole, plays an important role in the mucosal damage induced by duodenal reflux.

Disclosure: All authors have declared no conflicts of interest.

F-083

CAUSTIC INJURIES OF THE ESOPHAGUS IN AFRICAN COUNTRIES: A FREQUENT BUT HIDDEN SORROW

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Objectives
Caustic lesions of the esophagus in children are common accidents in many African countries. This is related to the common use of caustic soda for different purposes in households.The parent's lack of knowledge of the destructive properties of this product as well as the lack of any preventive measures represents the highest risk factors .These injuries are clearly underreported.Survivors of the acute injury often develop severe stenosis necessitating a feeding gastrostomy.The aim of this study is to present a preliminary experience in treating these children in the setting of developing countries

Methods
A humanitarian program was started in Guinée and The Gambia.This consisted in teaching the local surgeons how to introduce a "endless tread " through the stenotic esophagus and how to dilate the strictures with bougies.

Results
In 2011 twenty six patients were admitted.All had a feeding gastrostomy. Passage of the endless thread and subsequent dilatation was possible in 24 patients.One child died from extreme malnutrition combined with severe leakage of gastric juice along the feeding gastrostomy.All other patients were able to swallow again their saliva and to resume oral feeding with liquids and/or semi-solids.In one patient it was possible to remove permanently the feeding gastrostomy.

Conclusions
Acute corrosive injuries of the esophagus occur frequently in some African countries.Incidence as well as the related mortality are clearly underreported.Late stenoses are usually severe necessitating gastrostomy.Medical support in particular technologic infrastructure to adequately treat these patients is lacking.Nevertheless using a simple technique to dilate these stenotic lesions a substantial number of patients can be successfully treated with a minimum of related mortality.This technique is easy to teach and this teaching can be done amongst local surgeons themselves.However undilatable strictures requiring complex esophageal reconstruction remain a major challenge.

Disclosure: All authors have declared no conflicts of interest.

WEDNESDAY, 13 JUNE 2012
11:00 - 13:00
Session XVI/Mixed Malignant

F-084

ADJACENT LOBE INVASION FROM PERIPHERAL NON SMALL-CELL LUNG CANCER. IMPACT ON SURVIVAL AND LOCAL RECURRENCE AFTER SURGERY

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Objectives
To study the effect of the invasion of the adjacent lobe from peripheral non-small cell lung cancer (NSCLC) on the outcome after lobectomy or bilobectomy.

Methods
Retrospective case-control comparison of 85 patients operated on for NSCLC extended to the adjacent lobe (Group A) with 235 patients operated on for NSCLC limited to one lobe (Group B). The Kaplan-Meier and log-rank test was used to compare groups.

Results
The tumor was in the upper lobe in 56 patients from group A (65.9%) and 161 from group B (68.5%), the middle lobe in 13 patients from group A (15.3%) and 8 from group B (3.4%) ($p = 0.0001$) and lower lobe in 16 patients from group A (18.8%) and 66 from group B (28.1%). There were 26 adenocarcinomas in group A (31%) vs 112 in group B (47.9%) ($p = 0.007$) and 44.6% stage I in group A vs 65% in group B ($p = 0.004$). In group A, there were 64 lobectomies (75.3%) and 7 segmentectomies with wedge resection (8.2%), 8 lobectomies with anatomical segmentectomy (9.4%) and 6 upper-middle lobectomies (7%). Five years survival rate in groups A and B were 33% and 44% (ns : not significant) and 39% and 48.4% for stage I (ns). Five years survival rate for adenocarcinoma in groups A and B were 25.5% and 46% ($p = 0.009$), and 34% and 53.5% for stage I ($p = 0.002$). Five years survival rate in groups A and B were 35% and 63% for T1N0 ($p = 0.015$) and 36% and 39% for T2N0 (ns). The local recurrence rate was 15.7% in group A vs 24.6% in group B (ns).

Conclusions
Tumor extension to adjacent lobe seems to be a worse prognosis factor especially for stage I adenocarcinoma. Changing classification could be proposed.

Disclosure: All authors have declared no conflicts of interest.

F-085

SHOULD INTERLOBAR PLEURAL INVASION BEYOND THE LOBE BE CLASSIFIED AS T2 OR T3?

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Objectives
Visceral pleural invasion (VPI) has been defined in the seventh TNM classification. In this definition, a tumor that is smaller than 3cm in diameter and has parietal pleural invasion (PL1 or PL2) is upstaged to T2, and PL3 is upstaged to T3. The purpose of the present study was to investigate whether interlobar pleural invasion beyond the lobe (PL3int) should be classified as T2 or T3.

Methods
Between 1993 and 2009, 1288 patients underwent surgical resection for non-small cell lung cancer. Of these, 390 patients who had T2N0M0 or T3N0M0 were analyzed retrospectively. PL3int had been classified as T2 if the tumor did not have T3 factors. The survival of patients with PL3int was compared to those in patients with T2N0M0 and T3N0M0. Staging was performed using the seventh TNM classification, and T2 includes T2a and T2b in the present study.

Results
Of 280 patients with T2N0M0, 15 were classified as PL3int. Of 110 patients with T3N0M0, 29 had a tumor larger than 7cm, 30 showed pulmonary metastasis in the same lobe, 39 showed chest wall invasion (PL3), and 12 were classified as other. The 5-year survival rates of patients with PL2, PL3int, and PL3 were 63.7%, 34.6%, and 44.2%, respectively. Patients with PL3int showed significantly worse survival than patients with T2 disease ($p = 0.013$), and survival similar to that in patients with T3 disease ($p = 0.74$). In addition, the difference between PL3int and PL3 was not statistically significant ($p = 0.69$).

Conclusions
According to this survival analysis, interlobar pleural invasion beyond the lobe in N0M0 patients should be staged as T3 rather than T2. However, the number of patients with interlobar pleural invasion was limited, and further studies are warranted.

Disclosure: All authors have declared no conflicts of interest.

F-086

RISK FACTOR ANALYSIS FOR RECURRENCE OF RESECTED SOLITARY FIBROUS TUMOR OF PLEURA BASED ON 33 YEARS EXPERIENCE

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Objectives
Solitary fibrous tumors of the pleura (SFTP) are infrequent neoplasms and surveillance after resection is not well defined. The aim of this study was to review our experience with surgical treatment of SFTP and analyze risk factors to predict recurrence.

Methods
Retrospective review of 59 patients surgically treated for SFTP during 1977-2010. Risk factors for recurrence were analyzed by Kaplan Meier and Cox proportional hazards methods. Pathology slides were systemically re-reviewed and stained for Ki67.

Results
Mean age was 57±14 years. Mean tumor size was 7.3±6.7cm, and 14 (25%) were ≥10cm. SFTP had a stalk in 38(67%) cases and originated from visceral pleura in 40 (68%) cases, from parietal pleural in 16(27%) and intrapulmonary in 3(5%). Paraneoplastic syndromes were observed in 3(5%) cases. On histopathology, 4(7%) presented ≥4 mitosis/10 high-power fields, 8(15%) atypia, 14(24%) hypercellularity and 6(10%) necrosis. After mean follow up of 8.8±7.0 years, we observed 8(14%) recurrences; median time to recurrence was 6 years (range, 2-16). Two(3%) patients received adjuvant therapy. We constructed a predictive score for recurrence by assigning 1 point to each of 6 variables: pleural origin, morphology (sessile vs. pedunculated), size (<10cm vs. >10cm), hypercellularity, necrosis, and mitosis/HPF (<4 or ≥4). The best diagnostic performance was achieved with a cutoff of 3 points (sensitivity:100%, specificity:92%, area under ROC curve=0.966, p<0.0001). Recurrence free survival was 100% at 3, 5, 10 and 15 years with a score <3 compared to 80%, 69%, 23% and 23%, respectively, with a score ≥3. The proposed scoring system was superior in predicting malignant behavior and recurrence compared to England's criteria or dePerrot staging.

Conclusions
The proposed scoring system optimally predicts recurrence in this patient population harboring solitary fibrous tumors of the pleura. It may be used to risk stratify patients and guide postoperative surveillance. The scoring system will need validation across other patient series.

Disclosure: All authors have declared no conflicts of interest.

F-087

POSTOPERATIVE COMPLICATION FOLLOWING SEGMENTECTOMY OF THE LUNG: ATYPICAL SEGMENTECTOMY IS SAFE AS TYPICAL SEGMENTECTOMY

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Objectives
Segmentectomy for lung cancer is increasing for small sized lung cancers tend to be found recently. This procedure is easy for lung cancer located in the left upper division, lingular division, or bilateral superior segment of the lower lobe, i.e. S6. On the other hand, it is hard to complete in case of lung cancer located at other segments, such as S1, S2, S3, S9, S10, and so on. We investigated postoperative complication following segmentectomy by the location of the primary tumor to know the feasibility of the difficult segmentectomy.

Methods
Among 928 resected lung cancers, 126 patients underwent segmentectomy of the lung between February 2008 and September 2011 at our institute. Typical segmentectomy (TS) is defined as segmentectomy for lung cancer located in the left superior, lingular, or bilateral superior segment of the lower lobe. Atypical segmentectoy (ATS) is defined as segmentectomy for lung cancer located in the other segments, such as S1, S2, S3, S8, S9, S10. Inter-segmetnal plane was divided with only mechanical stapler in 66 patients, and with electrocautery in the other 60 patients. Indocyanine green dye (ICG) method was used in 25 patients.The relationship between postoperative complications and clinicopathological features was analyzed by multivariate analysis.

Results
During this period, 94 patients underwent TS, and 32 ATS. Operative time was longer and ICG methods were frequently used for ATS. The preservative rates of FEV1.0 were 89.3% in TS and 91.7% in AS. Overall complications occurred in 26 patients. There were no fatal complications. Postoperative air-leak was most common complication and this was frequent in TS. However TS or ATS was not a predictor for postoperative air-leak on multivariate analysis.

Conclusions
There were no significant relationships between typical/atypical segmentectomy and postoperative complications, lung functions, and the length of thoracic drainage. However operative time of AS was significant longer than TS.

Disclosure: All authors have declared no conflicts of interest.

F-088

MEDIASTINAL LYMPHADENECTOMY IN ELDERLY PATIENTS WITH NON-SMALL CELL LUNG CANCER

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Objectives
The progressive aging of the population goes with an increased incidence of cancer. Our objective was to compare mediastinal lymphadenectomy performed in surgical treatment of non-small cell lung cancer (NSCLC) between patients 70 years and over and patients under 70.

Methods
Retrospective single-centre case-control study including 80 patients ≥70 surgically treated for NSCLC between January 2008 and December 2010 matched 1:1 to 80 younger controls on gender, ASA score, Performance Status and histological subtype of the tumour. We compared the number and type of dissected intra-pulmonary and mediastinal lymph node stations as well as the number of resected lymph nodes between the two age groups.

Results
Type of pulmonary resection was significantly different between the two groups (p=0.03): pneumonectomy 6%(n=5) for patients ≥70 vs 12%(n=10) for patients <70, lobectomy 85%(n=68) vs 65%(n=52), bilobectomy 1%(n=1) vs 2%(n=2) and sub-lobar resection 7%(n=6) vs 20%(n=16). There was no significant difference in type of mediastinal lymphadenectomy (radical vs sampling) (p=0.60). Elderly patients presented a more advanced N status of lymph node invasion than younger controls(p=0.02). The number and type of dissected lymph node stations and the number of resected lymph nodes were not significantly different between the two age groups (p=0.66 and p=0.44 respectively). Mean number of metastatic lymph nodes was higher in patients ≥70 (2.3 vs 1.3 in patients <70; p=0.0001; Table). Lymph node ratio between metastatic and resected lymph nodes was higher in elderly patients (0.11 vs 0.07 in younger controls; p=0.007).

Number of metastatic lymph nodes	Patients <70	Patients ≥70	p
N1	0.9 CI95%[0.6 ;1.3]	1.6 CI95%[0.9 ;2.2]	0.0003
N2	0.4 CI95%[0.1 ;0.7]	0.7 CI95%[0.4 ;1.0]	0.10

Conclusions

Lymph node involvement in surgically treated NSCLC was more important in elderly patients ≥70 years than in younger patients presenting comparable clinical and histopathological characteristics, and undergoing a similar lymphadenectomy.

Disclosure: All authors have declared no conflicts of interest.

F-089

IS VIDEO ASSISTED LOBECTOMY FOR NON-SMALL CELL LUNG CANCER ONCOLOGICALLY EQUIVALENT TO OPEN LOBECTOMY?

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Objectives
The purpose of this study was to compare overall and disease free survival after VATS and open lobectomy for non-small cell lung cancer (NSCLC).

Methods
A retrospective review of a prospective database of all patients undergoing VATS or open lobectomy for clinical stage I or II NSCLC between 2002 and 2010 was performed. Postoperative outcomes, disease free survival and overall survival were compared between the two groups after optimum 1:1 propensity matching for age, gender, tumor histology, and pathological stage.

Results
Over an 8-year period, 608 patients underwent lobectomy for NCSLC by VATS (n= 196, 32%) or open technique (n= 412, 68%). After matching, there were 190 patients in each group. Adenocarcinoma was found in 80% (open: 149, VATS: 152) and 55% of tumors were T1 (open: 108, VATS: 105). Pathological N2 disease was found in 1 patient in each group, and N1 disease in 21 and 19 in the open and VATS group respectively. Overall 5-year survival was 69% for the open group versus 67% for VATS ($p = 0.21$). Five year disease-free survival was 65% in the open group vs. 64% in the VATS group ($p = 0.61$). Operative mortality and postoperative complications were not significantly different between groups. VATS was associated with shorter hospital length of stay (4 days for VATS vs. 6 days for open, $p = 0.06$).

Conclusions
VATS resection for NSCLC offers equivalent overall and disease-free survival compared to open surgery. VATS resection can safely be offered to patients with operable NSCLC without concerns about oncological validity.

Disclosure: All authors have declared no conflicts of interest.

F-090

PHOTODYNAMIC DRUG DELIVERY IS HIGHLY TUMOR SELECTIVE: INTRAVITAL OBSERVATION IN A RODENT TUMOR MODEL

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Objectives
The effect of PDT at relatively low light doses may be exploited to increase the uptake of systemically circulating drugs to tumor and other target tissues. Here we assess the tumor selectivity of this new treatment concept termed “photodynamic drug delivery”.

Methods
Human mesothelioma xenografts (H-meso-1) were grown in dorsal skinfold chambers of 25 nude mice. Visudyne®-mediated PDT (fluence rate 100 mW/cm2, wavelength 689nm and drug dose 400 µg/kg) was concomitantly performed on mesothelioma xenografts and surrounding striated muscle. By intravital microscopy, the fluorescently labeled macromolecular dextran (FITC-D, MW 2000kDa) inside dorsal skinfold chamber was visualized and quantified one hour after PDT. Study groups included: no PDT (control group), PDT at a fluence of 5 J/cm2, 10 J/cm2, 30 J/cm2 and 50 J/cm2.

Results
Low-dose PDT at a fluence of 10 J/cm2 significantly enhanced the extravascular accumulation of FITC-D inside mesothelioma xenograft, but not the normal tissue ($p<0.05$). Conversely, PDT at higher doses (30 J/cm2 and 50 J/cm2) significantly increase FITC-D leakage in normal tissue as compared to mesothelioma xenograft ($p<0.05$) where microcirculatory arrest was observed. No accumulation of FITC-D in normal and tumor tissue was observed after PDT at the lowest applied fluence (5 J/cm2) and in control group.

Conclusions
A therapeutic window exists, where low-dose PDT efficiently enhances targeted delivery of macromolecular drugs to human mesothelioma xenograft in a tumor-selective way.

Disclosure: All authors have declared no conflicts of interest.

F-091

COMPARATIVE EFFECT OF HYPERTHERMIA VERSUS HYPERTHERMIA-CISPLATINUM IN THE INDUCTION OF APOPTOSIS IN MALIGNANT AND INFLAMMATORY PLEURAL HUMAN CELLS

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Objectives
Determination of the response of the malignant and inflammatory pleural human cells (apoptosis) to the application of hyperthermia versus hyperthermia plus cisplatinum.

Methods
Design: 12 patients with pleural effusions (6 inflammatory and 6 malignant), who underwent videothoracoscopy. Diagnosis of inflammatory or malignant disease was confirmed by pleural biopsy. Liquid collection and immediate preservation at 4ºC. Osmotic shock with RBC-Buffer to delete red blood cells. Cellular re-suspension in DMEM supplemented with antibiotics. Cells culture during 120 minutes under the following temperature conditions with and without cisplatinum (33 microg/ml): 37ºC, 40ºC and 42ºC. Incubation with CD-11b and DC-SING antibodies to mark macrophagic, polimorphonuclear and dendritic cells respectively in order to differenciate inflammatory versus tumoral cells. Determinations: Cell apoptosis using fosfatidil-anexin serine V-FICT. Analysis of samples: Gallios Flow Cytometer (Beckman Coulter) using Kaluza Flow Cytometry Analysis Software. Statistical treatment: GLM Repeated Measures and non parametric Friedman test.

Results
Table 1. An increase in the percentage of cellular apoptosis was observed in the different temperature conditions with and without cisplatinum. For the inflammatory cells significant statistical differences were reached for the hyperthermia alone and hyperthermia plus cisplatinum. For the malignant cells statistical differences were reached for the hyperthermia plus cisplatinum and a positive increasing trend for the hyperthermia alone.

Conclusions
The temperature increase induces the production of apoptosis from 40ºC on pleural inflammatory cells. The synergic action of hyperthermia and cisplatinum increases the production of apoptosis from 40ºC on pleural inflammatory and malignant cells.

Disclosure: All authors have declared no conflicts of interest.

F-092

ENDOTHELIAL PROGENITOR CELLS IN PATIENTS WITH LUNG CANCER: THE EFFECT OF SYSTEMIC INFLAMMATION AND SURGICAL TUMOR RESECTION

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Objectives
Endothelial progenitor cells (EPCs) are believed to play a role in vascular repair and might promote abnormal vascularisation in neoplastic sites. The clinical implications of EPCs in patients undergoing surgical treatment for NSCLC is lacking. Aim of the study was to compare in the time course of two group of patients undergoing thoracic surgery, the number of EPCs circulating and the influence of C-reactive protein (CRP) levels, a marker of systemic inflammation on such expression.

Methods
The number of circulating EPCs and CRP concentration were measured by FACS analysis and nephelometry, respectively, in 30 patients with lung cancer undergoing lobectomy and in 12 patients undergoing pulmonary resection for benign diseases (Controls). Measurement of EPCs was repeated 48 hours after thoracic surgery and at the patients' discharge.

Results
Patients with lung cancer had lower median (25th-75th percentile) EPC levels than Controls [183/mL (103-334/mL) vs 278/mL (109-467/mL), $p<0.05$]. Higher plasma CRP levels were in patients with cancer than in Controls (0.53±0.15 mg/dL vs 0.35±0.12 mg/dL, $p<0.05$). CRP levels were negatively associated with the number of circulating EPCs in patients with lung cancer but not in Controls. Forty-eight hours after surgical resection, the number of EPCs decreased in both groups of patients, the EPC number being lower in patients with lung cancer. At hospital discharge the number of EPCs rose both in patients with lung cancer and Controls, reaching higher levels than those measured at baseline.

Conclusions
Patients with lung cancer have a reduced number of circulating EPCs, possibly as a consequence of the over-activation of the inflammation cascade sustained by lung cancer. Surgical resection leads to a transient decrease, followed by a later increase in the number of circulating EPCs. Further studies are required to demonstrate if the EPC increase post-surgery has a detrimental effect on the prognosis of the patients.

Disclosure: All authors have declared no conflicts of interest.

F-093

SURGICAL TREATMENT OF MALIGNANT PLEURAL MESOTHELIOMA. MESOTHELIOMA AND RADICAL SURGERY (MARS) TRIAL REVISITED

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Objectives
The interpretation of clinical outcomes of the MARS trial that "radical surgery in the form of extrapleural pneumonectomy (EPP) within trimodal therapy offers no benefit and possibly harms patients" has caused further uncertainty within an already very controversial scenario. Aim of this work is to take our experience as a starting point for making a comment about MARS conclusions.

Methods
Data of patients who underwent radical surgery for malignant pleural mesothelioma (MPM) between 2000 and 2011 have been retrospectively reviewed. Kaplan-Meier curves and log-rank test, and a Cox regression model were used for statistical analysis.

Results
From January 2000 to June 2011, 56 patients (45 males, 11 females, median age 63.5 years) underwent surgery for MPM with a radical intent. 44 patients had EPP and 12 patients had extended pleurectomy/decortication (P/D). Overall morbidity and mortality were 71% and 5.3%, respectively (30 days mortality rate after EPP was 4.5%). Induction chemotherapy and adjuvant chemo- and/or radiotherapy were performed in 33 and 34 patients respectively. After a median follow-up of 11.1 months (range 0.13 – 79.8), 37 patients had died and 19 were still alive. No significant differences for age, sex, side of operation and tumor stage were evident between patients who underwent P/D or EPP (Chi-Square test, p 0.266-0.949). Median survival and 2 years overall survival for patients who underwent P/D or EPP were 15.4 e 14.7 months, respectively, and 51.6% and 28.3%, respectively (p=0.257) (figure 1). The risk of death in the EPP group was 1.9 higher compared to the P/D group (p=0.217) (not significant).

Conclusions
Even though conclusions of the MARS trial are not supported by the necessary epidemiological and methodological bases, perplexities about EPP are understandable. P/D with a radical intent and EPP seems to be equivalent with regard to indications and results.

Disclosure: All authors have declared no conflicts of interest.

F-094

ALLOGRAFT STERNOCHONDRAL REPLACEMENT: A NOVEL PARADIGM FOR THE RECONSTRUCTION OF ANTERIOR CHEST WALL?

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Objectives
Surgical excision with safety margins, prevention of respiratory impairment and protection of surrounding organs, are primary goals in the resection and reconstruction of chest wall. Various techniques and materials have been used for sternal replacement. We describe our preliminary experience in the use of sternal allograft to reconstruct anterior chest wall.

Methods
Six patients affected by tumors originating from or involving the sternum underwent surgery. Three primary chondrosarcomas, a metastasis from breast cancer, a metastasis from hepatocarcinoma in a patient with previous liver transplantation and a soft tissue sarcoma were the indications for sternectomy. In all cases the tumors presented as osteolytic lesions. The defect was reconstructed by using a cadaveric allograft sternum with costal cartilages harvested aseptically, treated with antibiotic solution and cryopreserved at -80 °C. This process guarantees the sterility of the graft and the absence of immunogenic capacity. The graft was tailored to perfectly fit the defect and fixed with titanium plates and screws.

Results
In four cases a partial sternectomy with preservation of manubrium was done, in one case a partial sternectomy involving the manubrium, clavicles and part of the body was carried out, while one patient underwent a total sternectomy. In the postoperative course one patient had prolonged fever due to systemic Candida infection. A patient required removal of a screw, four months after operation because of partial dislocation, without consequences for stability of graft. At a median follow-up of 37.5 months, nor infection neither rejection of graft occurred; four patients are alive without disease, one patient is alive with pleural recurrence from breast cancer, one patient died of metastatic hepatocarcinoma.

Conclusions
Cadaveric allograft sternal replacement has proven to be safe, providing optimal stability of chest wall and protection of surrounding organs. The allograft was biologically well-tolerated allowing a perfect integration into the host.

Disclosure: All authors have declared no conflicts of interest.

F-095

FACTORS PREDICTING POOR SURVIVAL AFTER LUNG-SPARING RADICAL PLEURECTOMY OF IMIG-STAGE III MALIGNANT PLEURAL MESOTHELIOMA

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Objectives
The role of radical pleurectomy (RP) in the management of IMIG-stage III in malignant pleural mesothelioma (MPM) remains controversial. The aim of the study was to investigate the feasibility and outcome as well as to determine factors predicting poor survival.

Methods
Patients having IMIG-stage III MPM were identified within a prospective multimodality treatment study (RP followed by chemoradiation) between 2002 and 2010 at a single institution. Kaplan-Meier analyses, log–rank test and Cox regression analyses were used to estimate survival and to determine predictors of survival.

Results
78 patients underwent RP followed by chemoradiation. For the complete patient cohort, median survival (MS) and 5-year-survival (5YS) were 32 months (Mo) and 25%, respectively. 42 out of 78 patients (66.3±2.5 years, 65 males) had IMIG stage III. Mortality and morbidity were 4.8% and 31%, respectively. MS and 5YS were 21 months and 28% at stage III. Progression-free-survival was 11 Mo. The sites of failure were locoregional (20/42, 47.6%), distant (6/42, 14.3%) and both (6/42, 14.3%). Median time between disease progression and death was 7 Mo. Pathological detection of tumor spread at the resected thoracoscopy incisions (MS 12 vs. 35 mo, $p<0.001$), incomplete resections (MS 13 vs. 35 mo, $p=0.01$) and male gender (MS 12 vs. 35 mo, $p<0.001$) were associated with significant inferior survival in the univariate analyses. Histology, lymph node metastases, type of additional resections, laterality and age had no significant impact on survival. Tumor spread at the resected thoracoscopy incisions remained the only significant prognostic factor (hazard ratio = 4.3; $p=0.027$) in the multivariate analysis.

Conclusions
Lung-sparing RP for IMIG stage III MPM is feasible and offers promising long-term survival. Tumor spread at the resected thoracoscopy incisions might be a negative prognosticator for long-term survival. High rate of locoregional failure warrants further investigation of locoregional control of the disease.

Disclosure: All authors have declared no conflicts of interest.

WEDNESDAY, 13 JUNE 2012
11:00 - 13:00
Session XVII/Mixed Benign

F-096

IMPACT OF BELIEFS ABOUT PAIN CONTROL ON PERCEPTIONS OF ILLNESS IN SURGICAL PATIENTS

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Objectives
Adequacy of pain management in surgical patients is a major contributor to overall treatment outcomes and positive illness perceptions. However, it may be subjectively predetermined by patient's beliefs about pain control. In this study we assessed the relationships between beliefs about pain control and perceptions of illness in thoracic surgical patients.

Methods
A total of 135 patients (72 women and 63 men at mean age 58.4±14.25y) were enrolled in the questionnaire study based on Beliefs about Pain Control Questionnaire (BPCQ) by S. Skevington and Multidimensional Essence of Disease Illness Scale (MEDIS) by J. Sak. Analyses were conducted with use of k-means clustering technique and one-way ANOVA.

Results
Applied classification revealed three different clusters of patients in regard to their beliefs about pain control: weak undifferentiated pain control type (1), intensified influence of random pain control type (2) and strong undifferentiated pain control type (3). Significant differences in illness perceptions between clusters were disclosed in three MEDIS dimensions: self-realization constraints ($F=4.70$; $p=0.01$; 1 vs. 3), mental dysfunction ($F=3.44$, $p=0.04$; 1 vs. 3) and physical dysfunction ($F=3.10$, $p=0.05$; 1 vs 2)(Tab. 1). Patients in cluster 3 demonstrated greater feeling of self-realization constraints and mental dysfunction than in cluster 1, whereas patients in cluster 2 perceived physical dysfunction as a greater distress than those in cluster 1.

Conclusions
Beliefs about pain control significantly influence illness perceptions, and thus may affect results of treatment in surgical patients. Psychological modelling of beliefs about pain control may offer a valuable way to improve overall clinical outcomes.

Disclosure: All authors have declared no conflicts of interest.

F-097

PATIENTS WHO DO NOT REACH THE DISTANCE OF 500 METERS DURING 6-MINUTE WALK TEST HAVE INCREASED RISK OF POSTOPERATIVE COMPLICATIONS AND PROLONGED HOSPITAL STAY AFTER LOBECTOMY

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Objectives
Standard physiologic qualification for radical pulmonary resection due to primary malignancy consists of measuring FEV1 and diffusing capacity of the lung for carbon monoxide. Abnormalities in performed tests are indication for exercise testing. Cardiopulmonary exercise test allows calculation of maximal oxygen consumption and reliably stratifies risk of postoperative complications and death. There is lack of evidence for routine implementation of simple physiologic tests in preoperative evaluation.

Methods
Between April 2009 and October 2011, 253 patients who underwent lobectomy entered this study. All the patients were qualified for resection on the basis of standard evaluation protocol. Additionally on the day before the surgery patients performed 6-minute walk test (6MWT). Patients were categorized depending on the result of 6MWT in order to stratify their operative risk.

Results
There were 148 men and 105 women in the mean age of 63 years. All the patients underwent lobectomies due to primary lung cancer. The patients were divided to groups considering 3 cut off lines of 6MWT: 500 meters, 100% of the predicted 6MWT, and together 500 meters and 100% of the predicted 6MWT. Patients in the groups: below 500 meters, below 100% of predicted 6MWT, and below together 500 meters and 100% of predicted 6MWT had higher risk of postoperative complications. The cut off line of 500 meters occurred to separate groups with increased risk of postoperative complications (60,6% vs. 36,8% p=0,001 OR 2,631 95%CI 1,423-4,880) and median hospitalization time (7 vs. 6 days p=0,010). Incidence of atrial fibrillation (21,2% vs. 11,7% p=0,059 OR 2,019 0,904-4,484) and requirement for blood transfusion (18,1% vs. 9,0% p=0,046 OR 2,222 95%CI 0,928-5,289) fairly reached the level of statistical significance. There were no postoperative deaths in analyzed groups.

Conclusions
Patients who walk less than 500 meters during 6MWT before lobectomy are in increased risk of postoperative complications and prolonged hospital stay.

Disclosure: All authors have declared no conflicts of interest.

F-098

COMPERATIVE OUTCOMES OF T3 AND T4 SYMPATHICOTOMY FOR PATIENTS WITH PALMAR HYPERHIDROSIS

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Objectives
Introduction: Endoscopic thoracic sympathectomy is the most effective treatment for patients with palmar hyperhidrosis. However; the discussion point is now related with its side effects (compensatory sweating) instead of its efficacy. And all the efforts in this area are decreasing compensatory hyperhidrosis. In this study, we aimed to compare the results of T3 and T4 sympathicotomy for palmar hyperhidrosis.

Methods
A total of 131 patients underwent T3 (n= 85) or T4 (n=46) sympathicotomy for palmar hyperhidrosis between July 2010 and November 2011. The efficacy of sympathicotomy level, incidence of recurrence, occurrence of compensatorys weating (CS) and satisfactory rate of the patients were collected via telephone.

Results
A total of 89 patients, T3 (n= 43) and T4 (n=46),were included to our study. The compensatory sweating according to the T3 and T4 groups were summurized at table 1. Nobody reported severe CS in T4 group, however 8 patients in T3 group. Postoperative CS was significantly lower in the T4 group when compared with the T3 ($P<.05$). The recurrens was reported one patient of T3 group and 2 patients of T4 group. Despite severe CS, only one patient said I did not accept the operation again.

Conclusions
When we compared the T4 sympathicotomy with T3 sympathicotomy, T4 sympathicotomy decreases the compensatory sweating without any compromise on the therapeutic effects. We recommed the level T4 sympathicotomy as a treatment of choice

Disclosure: All authors have declared no conflicts of interest.

F-099

QUALITY OF LIFE BEFORE AND AFTER PULMONARY ENDARTERECTOMY IN CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION

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Objectives
Pulmonary endarterectomy (PEA) is a well established procedure for the treatment of chronic thromboembolic pulmonary hypertension (CTEPH). Aim of this study is to assess the improvement of quality of life (QOL) of CTEPH patients following PEA.

Methods
Between September 2009 and September 2011, all patients who underwent PEA surgery were evaluated for their QOL with an instrument, consisting of a health-status questionnaire and a visual analogue scale (VAS). This instrument questions mobility, self-care, usual activities, pain/discomfort, anxiety/depression and health state of the patients. It was used both preoperatively and three months after PEA. The results of the questionnaires and VASs were compared with Stuart-Maxwell Test and paired T-test respectively.

Results
A total of 47 patients (24 Female) with a mean age of 45.6 completed the study. Preoperative mean pulmonary vascular resistance (PVR) was 815.4 dynes.s.cm-5 and mean mean pulmonary artery pressure (mPAP) was 53.2 mmHg. Responses to all six questions of the instrument showed statistically significant improvement in mobility, self-care, usual activities, pain/discomfort, anxiety/depression and health state of the patients ($p<0.0001$, $p<0.05$, $p<0.05$, $p<0.05$, $p<0.001$ and $p<0.000$ respectively).

Conclusions
Pulmonary endarterectomy offers a better quality of life in patients with chronic thromboembolic pulmonary hypertension.

Disclosure: All authors have declared no conflicts of interest.

F-100

THE ROLE OF AIR LEAK FLOW AND INTRAPLEURAL PRESSURE IN THE FIRST POSTOPERATIVE DAY AS RISK PREDICTORS OF PROLONGED AIR LEAK AFTER PULMONARY LOBECTOMY

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Objectives
The aim of this study was to investigate the prognostic role of air leak flow and intrapleural pressure, registered in the first postoperative day after pulmonary lobectomy, on prolonged air leak (PAL).

Methods
A prospective observational analysis of 51 consecutive patients undergoing pulmonary lobectomy. All patients were managed with the chest tube placed on suction (-20 cm H2O) until cessation of air leak (airflow <10 ml min-1 during 8 consecutive hours). Twenty-four hours after surgery digital measurement of maximal and minimal air leak flow and intrapleural pressure was registered in each case, with patient at rest, during 2 hours. Univariate analysis was used to test independent association of variables with PAL (air leak > 5 days).

Results
The mean air leak flow in the first postoperative day was 88 ml min-1 (0 – 786 ml min-1). The mean maximum and minimum pleural pressure in the first operative day were -20.5 cm H2O and -22.2 cm H2O, respectively. Univariate analysis showed that mean air leak flow at the first operative day is associated with risk of PAL ($p<0.0001$), but not the mean differential pressure (ΔP: maximum – minimum pleural pressure) ($p = 0.35$). ROC analysis showed an AUC of 0.96 [95% confidence interval (CI) (0.906-1.016)] for mean air leak flow and 0.60 [95% CI (0.43-0.774)] for mean differential pleural pressure. Although we observed an increased frequency of PAL in patients with COPD history, low FEV1 and right upper lobectomies these differences were not significative.

Conclusions
Air leak flow in the first postoperative day is an independent reliable risk factor associated to PAL. Furthermore, our data suggest that risk prediction using intrapleural pressure might not be useful 24 hours after pulmonary lobectomy.

Disclosure: All authors have declared no conflicts of interest.

F-101

LATERAL INTERNAL THORACIC ARTERY - FORGOTTEN IN RECENT FAMOUS TEXTBOOKS - DESCRIBED MORE THAN 130 YEARS AGO

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Objectives
The 4th or 5th intercostal space of the anterior axial line is the site of chest drainage or a port for video-assisted thoracic surgery (VATS). We encountered a case of VATS for hemothorax after chest drainage, and found a bleeding artery at the 5th intercostal space on the anterior axial line. The artery arose from internal thoracic artery across the ribs. Recently, VATS is common, and we thoracic surgeons may often find a branched artery along the anterior axial line apart from the internal thoracic artery. Although, this artery was reported by Henle in 1876 as a "lateral internal thoracic artery", it is not described in recent famous English textbooks of thoracic surgery. There are a few reports of this artery just as "branch" of the internal thoracic artery causing the steal phenomenon after coronary artery bypass grafting using the internal thoracic artery.

Methods
We examined the lateral internal thoracic artery in 200 consecutive video-assisted thoracic surgeries, along with the origin, sites, and length. Moreover, we performed 3-dimensional computed tomography (3D-CT) of the lateral internal thoracic artery by employing multi-detector computed tomography.

Results
The lateral internal thoracic artery was found in 22 patients (11%); 16 males and 6 females. This artery ran from the internal thoracic artery along the anterior axial line from the 3rd to 6th intercostal space. 3D-CT well-described the running site of the lateral internal thoracic artery.

Conclusions
The lateral internal thoracic artery is found in 11% of cases, and we thoracic surgeons should recognize this artery, and be careful in cases of thoracic drainage.

Disclosure: All authors have declared no conflicts of interest.

F-102

A PROSPECTIVE, RANDOMIZED COMPARISON OF THREE DIFFERENT ESTABLISHED PAIN THERAPIES ON POST-THORACOTOMY PAIN – PRELIMINARY RESULTS

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Objectives
Post-Thoracotomy pain is one of the most severe types of postoperative pain and pain prevention is a main goal after thoracotomy. Thoracic epidural analgesia is considered the "gold standard" for post-thoracotomy analgesia, but it is not suitable for every patient. Thus we developed a prospective study to compare three different pain therapies on post-thoracotomy pain and present the first results of our ongoing study.

Methods
In a prospective, randomized way three groups of patients undergoing a thoracotomy were compared: Group A patients received a combined oral and intravenous pain medication, group B patients received a continuous infusion of a local anesthetic by an extrapleural placed indwelling catheter and group C patients received a thoracic epidural analgesia. Included were all patients after thoracotomy regardless of the underlying disease. Pain was assessed by the patients themselves several times per day by using a Visual Analog Scale . Furthermore drug dose, vital parameters and side effects were documented.

Results
Since september 2011 20 patients were treated in group A, 25 patients in group B and 13 patients in group C. In group A the total pain score value was 2,97±1,51 standard deviation, in group B 2,89±1,55 and in group C 3,19±1,73. This was statistically not significant. The mean dose of oxycodon was 198,5 mg±84,99 in group A, 10,83 mg±25,69 in group B and 66,15 mg±67,64 in group C. The main side effects were catheter dislocation in group B and C and obstipation in group A.

Conclusions
The implantation and handling of an extrapleural indwelling catheter for a continuous infusion of a local anesthetic is easy and safe. The efficiency of the three different pain therapies after thoracotomy is similar. Thus our preliminary results suggest that a continuous extrapleural analgesia might be a effective alternative to thoracic epidural analgesia for pain control after thoracotomy.

Disclosure: H. Hendrix: single lecture fee of the Pajunk company for a lecture at a customer meeting of the Pajunk company in Dresden Germany september 2011. All other authors have declared no conflicts of interest.

F-103

COMPARATIVE STUDY OF STAPLE-LINE BUTTRESS TO PREVENT AIR LEAK

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Objectives
Air leaks are a common complication of pulmonary resections and significantly contribute to morbidity after thoracic surgery. The aim of this paper is to study the effectiveness of staple-lines buttress for prevention of air leaks after lung resections

Methods
We have performed a comparative randomized study including patients undergoing major lung resection by VATS in our Department. We distribute them into two groups. Group A: (Buttress with Bioabsorbable Seamguard. W.L. Gore & Associates Inc. Flagstaff, AZ) n= 51. Mean age: 65.27 years (32-84). Gender: 43 male and 8 female. Group B: (No buttress) n=50. Mean age: 60.86 years (16-78) 47 male and 3 female. The same surgeon did all procedures. Severe emphysema and hard pleural adhesion cases were excluded. Variables: prolonged air leak, duration of air leak, chest drain removal, length of stay and morbidity. We have used unpaired Student's t-test and Chi2 test to compare variables. (SSPS.17 Software).

Results
We have found prolonged air leak in 10 patients of group A (19%) and 12 of group B (24%), p= 0.59 (NS [Non significant]) Mean of air leaks duration was 10.40 and 11.83 days respectively p= 0.65 (NS). Mean of chest drains removal: group A 5 days and group B 5.96 days, p= 0.69 (NS). Mean length of stay: group A 5,78 days and group B 7.80 days, p=0.083 (NS). Morbidity group A: 21.5 % and group B: 18 % p= 0.68 (NS).

Conclusions
The use of bioabsorbable buttress doesn't prevent the air leaks after major lung resection by VATS. According with our data there are not differences statistical significant between both groups in the presence of air leaks, duration of the air leaks, time to removal of drainage and presence of complications. Only difference in length of stay is near to be significant.

Disclosure: All authors have declared no conflicts of interest.

F-104

PEDIATRIC LUNG TRANSPLANTATION: 14 YEARS EXPERIENCE

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Objectives
To review the long term outcomes of pediatric lung transplantation in a single institution.

Methods
We conducted a retrospective study of all consecutive pediatric (0-17 years old) lung transplants performed at our center from june 1997 to july 2011. The study population was divided according to age (<1, 1-11 and 12-17yr) and time (two eras 1997-2003 and 2004-2011). Data were analyzed considering the main demographic aspects, as well as postoperative outcomes and long term survival.

Results
Forty-eight pediatric lung transplants were performed (31 in the second era). The mean age of recipients was 10.6 yr (range 0.4-17). Twenty-four (50%) were male. Fifty-eight percent of the recipients belongs to the group of 12-17 yr. Forty-six (95.8%) were double lung transplants. Lobar transplantation was performed in 5 cases. Cystic fibrosis was the most frequent indication with 56.3% of the cases. The 30-day mortality was 12.5%. Overall survival for 1, 3, 5 and 10 years was 81.3%,69.8%, 66% and 37.4% respectively. Five years survival was 59.3% for cystic fibrosis. One, 3 and 5 years survival for the first era was 64.7, 58.8, 58.8 % versus 90.3, 74.3, 65% for the second era (p=NS).

Conclusions
In the evolution of our program, data shows, that cystic fibrosis is the most frequent indication. Improved survival and a tendency to perform more transplants was observed over the second era of the program.

Disclosure: All authors have declared no conflicts of interest.

F-105

RISK FACTORS FOR THE DEVELOPMENT OF AIRWAY COMPLICATIONS IN LUNG TRANSPLANT PATIENTS

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Objectives
Airway complications are a significant problem in lung transplantation. The purpose of the study was the investigation of the risk factors involved in the development of bronchial complications in transplant patients.

Methods
We performed a retrospective review of 144 consecutive lung transplant adult patients between January 1, 2005 and December 31, 2008. There were 95 double and 49 single lung transplants. Mean follow-up was 31.6 months. A Cox regression model was used for the univariate and multivariate analysis.

Results
We evaluated 239 bronchial anastomoses in 144 patients, 55 women and 89 men with a mean age of 50.5 years. We found 27 patients (19%) with bronchial complications. Nineteen patients (13%) received specific treatment. The most frequent airway complication was stenosis (56%). In-hospital mortality accounted for 31 patients (21%), airway complication was de cause of death in 6 of them. Respiratory culture was positive for fungi in 40 patients (28%) and Aspergillus sp. was the most frequent. Twenty five of the patients (17%) had diaphragm paralysis. In the univariate analysis, recipient age or sex, donor age, primary graft dysfunction, acute rejection, type of transplant, lung resection, ischemic time or mechanical ventilation was not significant risk factors. The diaphragm paralysis (HR: 2,5 CI95% 1,1-5,6), respiratory bacterial infection (HR: 3,65 CI95%1,2-10,7) and fungal respiratory infection (HR: 5,02 CI95% 2,1-11,7) were significant risk factor for development of airway complication. In the multivariate analysis, fungal airway infection (HR: 6,04 CI95% 2,3-15,2), diaphragm paralysis (HR: 4,6 CI95%1,7-11,9), donor age over 50 years (HR:0,14 CI 95% 0.028-0.76), acute rejection (HR: 0,14 CI 95% 0.024-0.81) and lung resection (HR: 0,30 CI 95% 0.003-0.26) were significant and independent risk factors.

Conclusions
The donor age, acute rejection and lung resection were protective factors. The presence of fungal airway infection and diaphragmatic paralysis, have a significant influence in the development of bronchial complications.

Disclosure: All authors have declared no conflicts of interest.

F-106

NEW LUNG INFILTRATES IN OUTPATIENTS AFTER LUNG AND HEART-LUNG TRANSPLANTATION

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Objectives
The major complications following lung transplantation comprise rejection and infection. Differential diagnosis of new lung infiltrates is dependent on the period of time after transplant surgery. The aim of the present study was to describe those outpatients with new lung infiltrates.

Methods
From all lung and heart-lung transplantations performed in our institution, those outpatients who reached the follow-up between September 2006 and October 2011 were retrospectively analyzed. In this period there were 857 outpatients, 13.156 visits, and 3.912 brochoscopies were performed. Inclusion criteria were presence of new lung infiltrate in chest x-ray and having received a bronchoscopy simultaneously.

Results
Among 857 outpatients, 78 (9%) showed a new lung infiltrate and received a bronchoscopy simultaneously. Patients were median of 15 (5-39) months after transplantation, 48 males (62%), median age of 47 (29-57) years. The main indication for transplantation was cystic fibrosis (37%) and the main approach was double-lung transplantation (89%). The etiology of lung infiltrate was pneumonia in 63 cases (81%), whereas it was chronic lung allograft dysfunction (CLAD) in 6 (8%), acute rejection in 5 (6%), and toxic pneumonitis in 4 (5%). Among infections dominant pathogens were P. aeruginosa, S. aureus and S. pneumoniae but also CMV and Aspergillus fumigatus.

Conclusions
The appearance of new pulmonary infiltrates during our follow-up period after lung transplantation favours an infective etiology. P. aeruginosa was the main pathogen responsible for pneumonia in our study.

Disclosure: All authors have declared no conflicts of interest.

F-107

PROPHYLACTIC MINI-TRACHEOSTOMY: A SAFE ADJUNCT TO PULMONARY TOILET IN HIGH-RISK PATIENTS UNDERGOING LUNG RESECTION

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Objectives
Respiratory complications after pulmonary resections are a significant problem in high-risk patients, and delivering standardized postoperative pulmonary physiotherapy to these patients is challenging. We hypothesize that prophylactic percutaneous mini-tracheostomy (PPMT) can safely aid pulmonary toilet after lung resection in at-risk patients. Our objectives are to describe our experience with PPMT in this patient population and spark interest in this intervention.

Methods
We conducted a chart review of all patients who underwent lung resection and PPMT (1/2007-7/2010). We prospectively collected data on comorbidities, risk factors for pulmonary complications (age >70, FEV1<60% predicted, smoking <3 weeks pre-surgery, neoadjuvant therapy), resection type, and hospital stay. We identified pulmonary complications (atelectasis, pneumonia, reintubation, and respiratory failure) and PPMT-related complications. We report continuous variables as mean±standard error and categorical variables as number and percent.

Results
We placed 74 PPMTs in patients undergoing lung resections. Pulmonary resections included 13 (17.6%) sublobar, 52 (70.3%) lobectomies, and 9 (12.2%) pneumonectomies. Comorbidities/risk factors included: diabetes, 11 (14.9%); coronary artery disease, 14 (18.9%); neoadjuvant therapy, 20 (27.0%); smoking, 27 (36.5%); and age >70 , 29 (39.2%). Nine patients (12.2%) had 1 risk factor, 49 (66.2%) had 2-3 risk factors, and 16 (21.6%) had > 4 risk factors. Mean FEV1 was 67.3%±2.1%; 35 patients (47.3%) had FEV1 <60%. Hospitalization was 10.4±0.6 days (3-52), with 3.0±0.3 ICU days (0-17). Pulmonary complications occurred in 23 (31.1%) patients, and PPMT-specific complications in 3 (4.1%; infection: 1[1.4%], displacement: 3[4.1%]). We also found that the development of pulmonary complications depended upon extent of resection and number of risk factors present (Table).

Conclusions
PPMT is a safe adjunct to pulmonary physiotherapy in high-risk patients undergoing lung resection and may facilitate standardized pulmonary toilet in this patient population. A comparative prospective trial to evaluate PPMT-aided pulmonary physiotherapy in high-risk patients undergoing lung resection is warranted.

Disclosure: All authors have declared no conflicts of interest.

POSTER
Display time: Sunday - Tuesday, 10-12 June 2012 from 08:30 to 17:30

P-108

IMPACT OF THE REGIONAL LOW DOSE COMPUTED TOMOGRAPHY SCREENING PROGRAM ON SURGICAL PROFILE IN THE THORACIC DEPARTMENT

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Objectives
Recent studies have shown that lung cancer screening with low dose computed tomography (LDCT) might become a standard procedure. The implementation of such a program would change the profile of thoracic departments. The aim of the study was to evaluate exact impact of the regional LDCT screening program on the surgical profile of the thoracic surgery department.

Methods
Between 2009 and 2010 8649 patients underwent open access LDCT screening program in Pomeranian Region in the North of Poland. All the patients recruited for screening were controlled, followed up and operated in one center – University Thoracic Surgery Department. Seven hundred and five consecutive patients who underwent curative resections for NSCLC between 2007-2010 entered this study. The study group was compared with the control group of 7845 patients operated in 22 thoracic departments in Poland, where lung cancer screening program was not performed then.

Results
The structure of surgical activity and it's evolution was analyzed between the years 2007-2008 (before the screening) and 2009-2010 (during the screening). The increase in lobectomies performed in the years 2009-2010 was higher in Gdansk (11,80%) than in Poland (5,89%) ($p<0,001$). In the screening years the decrease in the number of pneumonectomies in Gdansk (-34,00%) was more significant than in the rest of the country (-13,90%) ($p=0,001$). The increase of IA patients in Gdansk (109,5%) was over 2 times higher than in Poland (41,9%) ($p<0,001$). Implementation of LDCT screening program caused significant decrease in the number of resected squamous cell NSCLC what was not observed in the rest of Poland ($p=0,015$).

Conclusions
The implementation of LDCT screening program in Gdansk resulted in significant increase of IA non-squamous patients, suitable for a lobectomy. Extensive procedures such as pneumonectomies tend to be eliminated in departments treating patients recruited from lung cancer screening program.

Disclosure: All authors have declared no conflicts of interest.

P-109

EARLY LUNG CANCER DETECTION PROGRAMME – ITS IMPACT ON ACTIVITY OF THE LOCAL THORACIC SURGERY DEPARTMENT

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Objectives
The impact of the massive early lung cancer detection programme on patients` profile and surgical activity of the local thoracic surgery department is analyzed.

Methods
Early lung cancer detection programme was run in a single city of 400000 inhabitants from 2008 till 2011. Enrollment criteria included both sexes aged 55-65 years with 20 packyears of tobacco smoking. All detected lesions were followed up in accordance with IELCAP protocols including referrals to the local thoracic surgery serving for the population of appr. 2 million people (10% of them are aged 55-65). Following data were analyzed: number of NSCLC detected and resected, number of stage I resected patients, histology, type of surgery.

Results
15020 patients were screened (7.5% of the population of people aged 55-65 in our region, 0.75% of the entire population). 6240 pulmonary lesions were detected, majority (59%) smaller than 5mm. 445 lesions (7.1%) were bigger than 15mm. 182 patients (2.9% of all detected lesions) were referred to the local thoracic surgery. 925 NSCLC were resected at our department in 2008-2011. 232 (25%) of them were stage I. Number of pneumonectomies was 166 (18%). Dominant histology was squamous cell (52%) 247 metastatic lesions were resected in the same period. The early detection group delivered 77 NSCLC resections (8.3% of all resections). 53/77 (69%) were stage I (significant difference versus the entire group). Number of pneumonectomies was 2/77 (2.5%, significant difference). Dominant histology was adenoca (50%). 33 metastatic lesions (13.3% of all metastases resections) were treated surgically. 15 small cell lung cancers were diagnosed.

Conclusions
The patients with NSCLC detected by the early lung cancer detection programme are treated surgically in earlier stages in comparison to the entire population of patients referred to our department. They require pneumonectomy less frequently than the entire group.

Disclosure: All authors have declared no conflicts of interest.

P-110

CLINICOPATHOLOGICAL CHARACTERISTICS AND PROGNOSTIC SIGNIFICANCE OF PREDOMINANT SUBTYPES IN SMALL-SIZED INVASIVE LUNG ADENOCARCINOMAS

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Objectives
In February 2011, IASLC/ATS/ERS proposed a new classification of invasive lung adenocarcinoma, in which five major predominant subtypes (lepidic, papillary, acinar, solid with mucin, and micropapillary) are listed. We aimed to investigate clinicopathological characteristics and prognostic significance of predominant subtypes in small-sized invasive lung adenocarcinomas.

Methods
Between January 2002 and December 2007, 1,561 patients underwent pulmonary resection for primary lung cancer at our institution. Among them, we reviewed 441 patients undergoing lobectomy or greater and systematic node dissection for lung adenocarcinoma 3cm or less in diameter, excluding atypical adenomatous hyperplasias, adenocarcinomas in situ, and minimally invasive adenocarcinomas. A single pathologist examined resected specimens for the percentage of each histological subtype, and a predominant subtype was determined.

Results
There were 219 men and 222 women with a median age of 64 years. Predominant subtypes were lepidic in 111, papillary in 203, acinar in 50, solid with mucin in 72, micropapillary in 1, and variant in 4. Node involvement was significantly more frequent ($p<0.01$) in acinar and solid predominant tumors (28 and 31%, respectively) than in lepidic and papillary predominant tumors (5 and 15%, respectively). Lymphatic permeation, vascular invasion, and pleural invasion were also significantly more frequent in acinar and solid groups. In p-stage I patients, five-year overall survival rates were 94.3% in lepidic, 90.7% in papillary, 78.0% in acinar, and 79.6% in solid groups, respectively, with a median follow-up period of 68 months. There were no significant survival differences between lepidic and papillary or between acinar and solid groups, but overall survival was significantly poorer in acinar and solid groups than in lepidic and papillary groups ($p<0.01$).

Conclusions
Acinar and solid predominant tumors had a more malignant nature compared with lepidic and papillary predominant tumors. These subtypes were predictive of significantly poorer outcome in p-stage I invasive lung adenocarcinoma patients.

Disclosure: All authors have declared no conflicts of interest.

P-111

THE GROUND GLASS OPACITY COMPONENT CAN BE ELIMINATED IN THE ASSESSMENT OF T FACTOR IN LUNG ADENOCARCINOMA

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Objectives

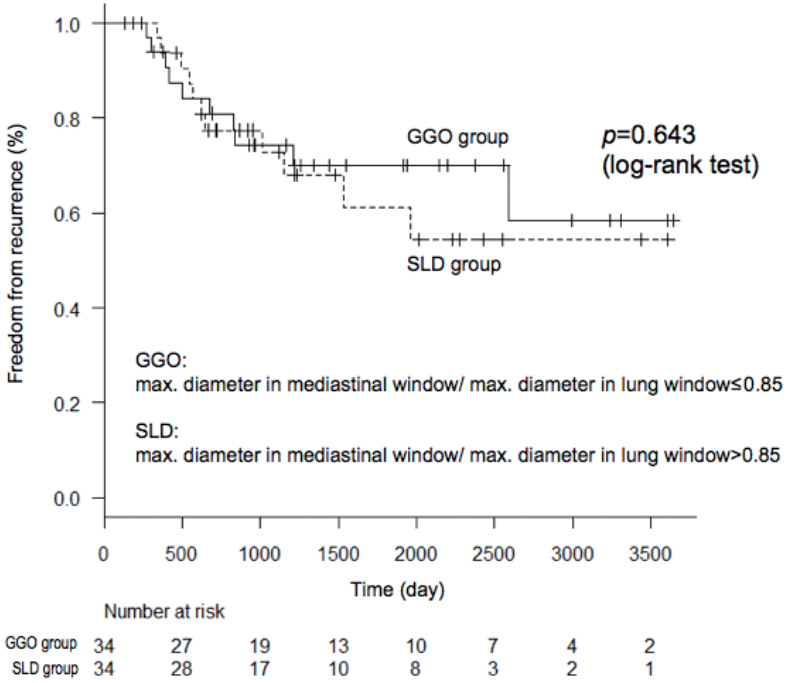
The radiological ground glass opacity (GGO) component of an adenocarcinoma reflects non-invasive bronchioloalveolar carcinoma pathologically. Measuring the tumor diameter including GGO may overestimate the T factor. In this study, we evaluated the effect of the GGO component on recurrence.

Methods

The study design was retrospective. We reviewed patients who underwent a surgical resection of the lung adenocarcinoma and were pathologically proven to be T1-2N0M0 from 1999 to 2009. The data set was limited to those patients whose preoperative high-resolution computed tomography was available. The prognostic cofactors for recurrence-free survival were examined by univariate and multivariate analyses. The continuous variables were categorized by assessing their correlation to recurrence by receiver operating characteristic (ROC) curve analysis. The propensity score-matched pairs with similar solid component sizes from the GGO predominant group (GGO group) and from the solid component predominant group (SLD group) were extracted and compared by the log-rank test.

Results

The study included 241 patients, and there were 34 recurrences. Sixty-eight bronchioloalveolar carcinoma cases showed 100% recurrence-free survival. The areas under the ROC curve for the maximum tumor diameter in the lung window (maxDinLW) and the mediastinal window (maxDinMW) were 0.710 and 0.805, respectively (p=0.0009). A univariate analysis revealed that maxDinLW, maxDinMW, preoperative high CEA, positive pleural lavage cytology, pathological vessel invasion, and pathological pleural invasion were independent prognostic factors. A multivariate analysis revealed that maxDinMW, preoperative high CEA, and pleural invasion were independent prognostic factors (hazard ratio: 2.08, 2.55, 3.11, respectively). There was no difference in survival between the GGO and the SLD groups (Figure 1).



Conclusions

The GGO component showed little influence on recurrence and can be regarded as biologically in situ. The T factor measured by solid component may be a more accurate prognostic parameter.

Disclosure: All authors have declared no conflicts of interest.

P-112

IMPACT OF EXTRATUMORAL LYMPHATIC PERMEATION ON POSTOPERATIVE SURVIVAL OF NON-SMALL CELL LUNG CANCER PATIENTS

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Objectives
Lymphatic permeation (ly) has been reported as a prognostic factor of resected non-small cell lung cancer (NSCLC) patients. However, the survival impact of the extent of lymphatic permeation has not been well investigated. We prospectively evaluated lymphatic permeation extent to identify its prognostic impact.

Methods
We reviewed the records of 1073 consecutive NSCLC patients who underwent complete resections between 2001 and 2006. Lymphatic permeation was examined using hematoxylin and eosin staining and immunohistochemical staining by anti-D2-40 antibody. The extent of ly was classified as follows: ly0, absence; ly1, intratumoral; ly2, extratumoral. We compared the clinicopathologic characteristics and overall survival (OS) of these ly groups.

Results
The numbers of patients with ly0, ly1 and ly2 were 845 (79%), 134 (12%) and 94 (9%), respectively. There were no significant differences between these groups with regard to age, gender, and histological type. Compared with ly0-1, ly2 was significantly more frequently observed in patients with lymph node metastases, advanced p-Stage (II/III), or intrapulmonary metastases. The 5-year OS rates of ly0, ly1, and ly2 groups were 75%, 63% and 34%, respectively. The OS rate of ly2 group was significantly ($p<0.001$) worse than not only that of ly0 group but also that of ly1 group. The 5-year OS rate of p-stage I patients with ly2 was 47%. In multivariate analyses, ly2 proved to be an independent poor prognostic factor (hazard ratio 1.73, $p<0.001$), as well as advanced pT and pN status, pleural invasion, and intrapulmonary metastases. The presence of ly (ly1-2) did not reach statistical significance ($p = 0.07$).

Conclusions
Extratumoral lymphatic permeation was found to be an independent prognostic factor for completely resected NSCLC patients. We recommend evaluating the extent of lymphatic permeation, not only if it exists.

Disclosure: All authors have declared no conflicts of interest.

P-113

FEASIBILITY OF ASPIRIN USE IN THE PERIOPERATIVE PERIOD OF PULMONARY RESECTION IN LUNG CANCER PATIENTS. A RETROSPECTIVE STUDY AT A SINGLE INSTITUTION IN JAPAN

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Objectives
The aim of this study is to evaluate the feasibility of aspirin administration in the perioperative period of pulmonary resection in lung cancer patients with cardiovascular complications.

Methods
A retrospective study was conducted in 45 patients (35 males and 10 females; age range 49-88 years:, mean, 72.3 years) who were taking aspirin and underwent pulmonary resection between 2008 and 2012. Indications for aspirin were coronary artery disease in 26, cerebral infarction in 6, and other reasons in 13 patients. Whether continue or discontinue (1 week before the surgery) taking aspirin was determined based on severity of the cardiovascular or cerebrovascular comorbidity as well as the patient's condition. Intraoperative and postoperative outcomes were compared.

Results
Nineteen patients continued (group C) and 26 patients discontinued (group D) taking aspirin. The operative procedure included lobectomy in 16, wedge resection in 3 patients in group C, and lobectomy in 15, segmentectomy in 7, and wedge resection in 3 patients in group D. Operation time (227±99 minutes in group C vs 189±90 in group D),. intraoperative bleeding (239±237 vs 204±367 gram), the average pleural discharge at postoperative day 1,2,3 (339,237,215 vs 304,210,174 ml/ day) were not significantly different between two groups. Postoperative complications occurred in 17 patients (38%) and 1 patient (2%) died postoperatively. Postoperative complication rates were not significantly different between the two groups (8 patients (42%) in group C vs 9 patients (35%) in group D).

Conclusions
Continuing anticoagulant therapy using aspirin is feasible during pulmonary resection in lung cancer patients with cardiovascular or cerebrovascular comorbidities.

Disclosure: All authors have declared no conflicts of interest.

P-114

DOES LIGASURE® IN MEDIASTINAL LYMPH NODE DISSECTION IMPACT DRAINAGE DURATION? PRELIMINARY RESULTS

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Objectives
Mediastinal lymph node dissection (MLND) in anatomically well defined sites is a standardized procedure and an integral component of lung cancer surgery. However, the excision of lymph nodes implicates the division of lymph vessels which entails the release of lymph. This can make up a significant portion of the daily chest tube output. So far, lymph node dissection has been carried out by conventional means using electrocautery, hemoclips or sutures. Since its advent in 1998 Ligasure® has primarily been used in general surgery for tissue division in dissection of the mesentery. Taking into consideration its tissue sealing capacity we hypothesized that by using this tool for mediastinal lymph node dissection a beneficial effect with regard to shorter drainage duration might be expected.

Methods
In a pilot study including a total of 30 patients we recorded the daily pleural fluid output and compared the drainage periods of patients undergoing formal lobectomy and MLND by an anterolateral approach. In a preoperative randomization patients were allocated either to the Ligasure® (15 pts) or the conventional treatment group(15 pts). Two chest tubes were used. The threshold quantity for tube removal was 300 ml per day. Discharge was one day later.

Results
Our preliminary data revealed a trend suggesting shorter drainage periods in the Ligasure® group. The average period was 4.26 days in the Ligasure®group compared to 4.95 days in the conventional treatment group (p= 0.083).

Conclusions
Ligasure® seems to provide effective tissue sealing including lymph vessels severed in MLND. An advantage related to earlier chest tube removal and shorter length of stay might be achieved.

Disclosure: All authors have declared no conflicts of interest.

P-115

CORRELATION BETWEEN PET SCAN AND PRO-INFLAMMATORY CYTOKINE DETECTED BY A NON-INVASIVE METHOD IN NON-SMALL CELL LUNG CANCER

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Objectives
Systemic and local inflammatory microenvironment may be an important contributor to morbidity and mortality associated with non-small cell lung cancer(NSCLC).Exhaled breath condensate(EBC) is a non-invasive method to collect airway lining fluid for assessing lung inflammation. Interleukin-6(IL-6) is associated with poor prognosis and correlates with debilitating lung-cancer-related symptoms and with stage of disease. High maximum PET scan standardized uptake value(SUV) correlates with poor prognosis in NSCLC. The aim of this study was to assess the possible correlations between systemic and local IL-6 production (detected in serum and in EBC) and SUV in NSCLC.

Methods
Fifteen consecutive patients, receiving a curative resection for NSCLC were enrolled in this study; preoperative workup included PET scan and IL-6 values measurement both in serum and EBC.

Results
There were 12 males and 3 females; mean age was 63.8 years(range:39-82).PET scan was positive in all and mean SUV value was 10.64 ± 4.28(range: 6-18.8). Mean IL-6 value was 1.05 pg/ml ± 1.27in serum and 0.29 pg/ml ± 0.09 in EBC. Close correlation between SUV and IL-6 levels both in serum and in EBC was found ($p<0.001$ and $p<0.05$ respectively)(Figure 1).

Conclusions
The relationship between a clinical marker of metabolic tumor activity(PET SUV)and a biological one of inflammation and carcinogenesis (IL-6) in NSCLC patients has been first demonstrated by this study. EBC, a non-invasive diagnostic tool, could be successfully proposed in the clinical evaluation of patients with NSCLC, both in the preoperative setting and in the follow-up.

Disclosure: All authors have declared no conflicts of interest.

P-116

IS NEO-ADJUVANT CHEMORADIOTHERAPY A CONTRAINDICATION FOR TRACHEOBRONCHIAL SLEEVE RESECTION IN LUNG CANCER PATIENTS?

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Objectives
Sleeve resection has become a standard procedure for treating lung cancer. About a quarter of the patients require some sort of preoperative treatment to reduce the size of the tumor to allow complete resection. Our objective was to determine whether tracheobronchial sleeve resection after neo-adjuvant chemoradiotherapy should be performed.

Methods
Retrospective analysis of 315 patient records after tracheobronchial sleeve resection operated between 01.01.2006 and 31.12.2011. In 42 patients sleeve resection was performed after neo-adjuvant radiotherapy or chemoradiotherapy (CR), in 39 after neo-adjuvant chemotherapy (CH) and in 235 without any treatment prior to surgery (SURG). Patients receiving CR or CH were compared with 235 surgery alone patients in the same interval without neo-adjuvant therapy in terms of radicality, chest tube drainage, hospital stay, morbidity, 30-day mortality.

Results
Complete sleeve resection was performed in 315 patients there were 81 (26%) patients who had received a preoperative therapy. R0-resetion was 95% in the CR group, 92% in the CH group and 88% in the SURG group. Postoperative morbidity was documented in 20 (48%) patients in the CR group, 13 (33%) in the CH group and 85 (36%) in the SURG group. The most common complication was pulmonary in all groups. A critical anastomose (>= grade 3) was documented in 24% in the CR group, 7% in the CH group and 16% in the SURG group. Anastomotic insufficiency occurred in 12% in the CR group, 3.5% in the CH group and 3.7% in the SURG group. Median chest tube drainage duration and hospital stay was similar in all three groups. 30-day mortality was 4.8% in the CR group, 2.5% in the CH group and 1.3% in the SURG group.

Conclusions
Sleeve resection after preoperative chemotherapy, radiotherapy or chemoradiotherapy is feasible. Resection after chemoradiotherapy implies an increased postoperative pulmonary morbidity and mortality, with a R0-resection rate of 94%.

Disclosure: All authors have declared no conflicts of interest.

P-117

SEALING OF BRONCHIAL STUMP AFTER PNEUMONECTOMY WITH TACHOCOMB PATCH

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Objectives
Bronchial stump fistula (BSF) still remains a challenging problem in contemporary Thoracic Surgery giving 4.7-21.5% morbidity level after pneumonectomies.

Methods
Retrospective analysis of 831 patients underwent pneumonectomy or its modifications between 1985 and 2009 at the Center for Thoracic Surgery in Nizhny Novgorod, Russia was done. Patients were divided into control group (623) with staple resection of main bronchus and handmade interrupted or figure-of-eight sutures, and main group (208) with standard procedure supplemented by bronchial stump sealing with TachoComb (Nycomed Austria GmbH, Austria), a fibrinogen/thrombin-based collagen patch. Logistic regression analysis was made to estimate risk factors for BSF development.

Results
Patient were at age 6-77 years (Mean±SD 54.2±11.1); 89.0% were males. Overall postoperative morbidity was 25.1%, mortality 8.3%. BSF occurred in 75 (8.8%) patients. The following risk factors for BSF were identified (odds ratio; p value): male gender (OR 8.92, p=.019), right-sided pneumonectomy (OR 2.2, p=.004), extended pneumonectomy (OR 2.02, p=.02), combined pneumonectomy (OR 2.35, p=.004), lung purulence (OR 1.97, p=.032); for lung carcinoma: T3 stage (OR 1.94, p=.037), N2-3 stage (OR 2.73, p=.002), residual tumor (R1/2) at the resection line (OR 2.45, p=.025). There were no BSFs after standard pneumonectomy in the main group vs 5.7% in control group (p=.01). BSF rates after extended and combined resections were 3.3 and 3.5% in main group and 12.0% (p=.024) and 17.4% (p=.003) in control, respectively. BSF level after surgery for purulent lung diseases declined 4.5 fold in the TachoComb group (3.6 vs 16.9%). For T3 and N2-3 carcinomas stump sealing decreases BSF rates from 17.7 and 13.7% to 4.1 and 3.3% (p=.03 and .01), respectively.

Conclusions

Usage of TachoComb seal for strengthening the bronchial stump allows to decrease BSF rates dramatically, from 9.8 to 3.4% (p=.009), with concomitant 6-fold decrease in postoperative mortality attributed to BSF (35.2 vs 5.9 %, p=.002).

Disclosure: All authors have declared no conflicts of interest.

P-118

COMPARISON OF 30-DAY, 90-DAY AND IN-HOSPITAL MORTALITY AFTER LUNG CANCER SURGERY

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Objectives
Postoperative mortality is the most common outcome measure in studies comparing hospital performance for cancer surgery. However, because various definitions are being used, comparability between series is seriously hampered. Furthermore, in-hospital mortality may be influenced by discharge practice. To assess the numerical impact of those different definitions in case of lung cancer we queried the database of the Rotterdam Cancer Registry.

Methods
This study comprised 2668 operations, performed in the period 1997-2008 in 13 hospitals in the southwestern part of the Netherlands. In-hospital mortality was calculated, as was mortality at 30 and 90 days.

Results
In-hospital and 30-day mortality were quite similar: 4.4% and 4.5%, respectively. Still, 1.0% of patients died after discharge within 30 days and another 0.9% died in-hospital after 30 days. The 90-day mortality rate was 7.5%. Results did not change in the course of the study period (p=0.10).

Conclusions
Conclusions : To avoid bias due to variation in discharge practice, 30-day mortality rates should be considered as the standard for performance measurement. However, the large proportion of postdischarge deaths stresses the importance of gathering follow-up information after discharge. The high 90-day mortality may suggest either late complications or death due to progressive disease, possibly related to insufficient preoperative staging. Therefore, the 90-day mortality may be used as a combined measure of surgical and staging performance.

Disclosure: All authors have declared no conflicts of interest.

P-119

IMPROVING OPERATIVE STANDARDS FOR LUNG CANCER BY AUDIT. WHY SOME PATIENTS DON'T GET THE BEST DEAL

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Objectives
To audit anatomical resection and lymph node excision in patients undergoing lung cancer surgery according to the gold standards defined by the European Society of Thoracic Surgeons working group.

Methods
This is an analysis of all patients with primary lung cancer operated on by a single surgeon between July 2009 and December 2011. The patients are divided into 2 Groups: Initial Audit (100 patients, July 2009-October 2010) and Re-Audit (102 patients, November 2010-December 2011) that completed our audit cycle. Rates of anatomical resection and lymph node excision were measured from data obtained from histo-pathology reports and a surgical database. Uni- and multi-variate analyses were performed to identify reasons associated with diversion from set standards.

Results
202 patients [120 male; 82 female, median age 70 (range 34-90) years] underwent surgery. Median PpoFEv1 was 58.2% (range 16 - 129). Median European Society Objective score (ESOS) was 5.4 (range 0.1 - 37.4) for mortality and 24.3 (range 5.2 - 51.7) for complications. A total of 29 (14.4%) procedures were completed by VATS approach. Anatomical resections were performed in 92% cases (88% in the initial group and 94% after the initial Audit). At least 1, 2 and 3 N2 lymph node stations were obtained in 88%, 69% and 51% respectively. On Multivariate Regression Analyses history of another malignancy ($p=0.01$), VATS approach ($p=0.001$) and high ESOS score ($p=0.02$) were associated with increased use of non-anatomical resections. Initial Audit group ($p= 0.001$) and VATS approach ($p<0.001$) were related to less complete mediastinal exploration on Logistic Regression.

Conclusions
Completing the audit cycle has helped to improve operative standards for lung cancer. Failure to perform extensive lymph node excision was unrelated to poor spirometry, increased ESOS score or advanced age. Our Audit demonstrates the need for attention to mediastinal lymph node dissection, especially during VATS lobectomies, and might reflect the effects of a learning curve.

Disclosure: All authors have declared no conflicts of interest.

P-120

ANALYSIS OF THE COMPLIANCE TO THE EUROPEAN GUIDELINES FOR FUNCTIONAL EVALUATION BEFORE LUNG RESECTION

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Objectives
In this report we prospectively evaluate the compliance to the ERS-ESTS clinical guidelines for functional evaluation before lung resection in 3 Thoracic Surgery departments in different countries. Compliance was assessed prior to validating the predictive capacity of the algorithm in these recommendations.

Methods
Prospective observational study in all cases scheduled for lung resection for cancer in 2010 in 3 different hospitals. All performed preoperative functional studies were recorded in an ad hoc database and the rate of fulfillment at each step of the functional evaluation algorithm was calculated. Overall cardio-pulmonary morbidity and hospital mortality is also presented.

Results
Overall compliance to the algorithm was 86.5% (346/400 cases). At the first step, the rate of failures was 2.5% (DLCO was not measured in 9 cases and neither DLCO nor FEV1 in 1). Failures were due to patient's incapacity in most cases. Exercise tests were indicated in 251 cases, according to the guidelines and performed in 197 (78.5%), in 80 by stair climbing and in 120 by conventional bicycle ergometry. The test was omitted mainly because of medical contradindications, temporary unavailability or patient's incapacity. Estimated postoperative values of FEV1%, DLCO% and VO2max% were calculated in all cases recommended by the ERS/ESTS guidelines. Surgery was performed in all but 15 patients. Overall mortality and cardio-respiratory morbidity were 1.03% and 19%, respectively.

Conclusions
In this prospective evaluation, the overall compliance to the guidelines was very good. The rate of compliance failure in the second step (VO2max calculation) could be decreased by developing lower cost, better standardized, and more reliable low technology exercise tests . The algorithm successfully identified a large group of patients who underwent lung resection with very low mortality and low morbidity. Additional studies are needed to determine the ability of this algorithm to stratify risk and identify patients who are likely to be at excess surgical risk.

Disclosure: All authors have declared no conflicts of interest.

P-121

THE MORTALITY AFTER SURGERY IN LUNG CANCER. SIGNIFICANCE OF CO-MORBIDITY AND SURGICAL COMPLICATIONS ON SURVIVAL

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Objectives

There is limited evidence suggesting, that complications after surgery limit themselves to 30 days. This study focuses on mortality within the first year after surgery for primary lung cancer with respect to gender, age, tumor stage, Charlson Co-morbidity Index score, alcohol abuse, type of surgery and post-surgical complications.

Methods

The Danish Lung Cancer Registry (DLCR) contains patient related data such as gender, age, staging of tumor, presence of postsurgical complications, pathology, risk factors and alcohol abuse. Data concerning the patients vital status, the date of death, and the patients course of treatment, time from diagnosis to treatment and type of surgery is in the registry. 4108 patient reported to DLCR i the period from 2003 to 2009 was analyzed. To estimate the effect of variables of interest on 30, 90, 180 and 360 days mortality we used an extended Cox model and analyzed the variables (gender, stage, Charlsons comorbdity index, alcohol abuse, type of operation, and complications).

Results

Figur: Estimated coefficients, standard errors and p-values

	HR	s.e.	P
Gender	0,78	0,04	0,000
Age	1,34	0,07	0,000
stage30	0,71	0,17	0,160
stage90	1,38	0,30	0,151
stage180	3,75	0,71	0,000
stage360	2,40	0,14	0,000
CCI30	1,49	0,17	0,001
CCI90	1,23	0,15	0,079
CCI180	1,17	0,13	0,162
CCI360	1,14	0,04	0,000
Abuse	1,33	0,10	0,000
OPtype30	2,73	0,56	0,000
OPtype90	1,33	0,28	0,183
OPtype180	1,11	0,21	0,570
OPtype360	0,97	0,06	0,600
Compl30	2,91	0,34	0,000
Compl90	2,24	0,28	0,000
Compl180	1,48	0,19	0,002
Compl360	1,13	0,05	0,004

Conclusions

The analysis showed that high age, male gender and high degree of co-morbidity all worsened the prognosis. There is an association between tumor stage and mortality and between type of surgery and mortality. We found that post-surgery complications play a large role in the mortality of patients, not only 0-30 days post-surgery, but far beyond this.

Disclosure: All authors have declared no conflicts of interest.

P-122

SURVIVAL AFTER BILATERAL LUNG RESECTIONS OF PRIMARY LUNG CANCER WITH CONTRALATERAL SATELLITE NODULES: SHOULD A SMALL NUMBER OF CONTRALATERAL NODULES BE TREATED AS M1A DISEASE?

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Objectives
In the 7th version of the TNM classification, lung cancer with contralateral satellite nodule (CSN) is classified as clinical M1a disease (stage IV). However, a limited number of CSNs might be synchronous multiple primary lung cancers. The aim of the study is to evaluate the surgical outcomes after resection of synchronous bilateral lung lesions.

Methods
We retrospectively reviewed consecutive 44 lung cancer patients who underwent synchronous resections of CSNs judged to be probable malignancy on chest CT scans between 1992 and 2007. The median follow-up period was 7.5 years (range, 4-13).

Results
There were 28 men and 16 women. The median age was 68 (range, 49-77). Thirty-seven patients underwent bilateral lung resections as sequential procedures. In 26 patients, one side was resected by lobectomy and the contralateral side was resected by limited resection. Three patients underwent bilateral lobectomies, and 15 underwent bilateral limited resections. The number of resected CSNs was one in 34 patients, two in 6, and more than three in 4. There was no postoperative mortality. Among 40 patients with CSNs having lung cancer histology, 32 had tumors showing the same histology as the main tumor. Thirty-one (78%) patients had synchronous multiple lung cancers. The 5-year overall survival rates for 40 patients with CSNs showing lung cancer histology were 59.6%. Univariate analyses revealed that female gender ($p<0.001$), multiple adenocarcinomas ($p=0.025$), and pathological N0 ($p=0.003$) were favourable prognostic factors. Nine (23%) patients developed a solitary intrapulmonary recurrence including a cut-end after limited resection, and 4 underwent re-thoracotomy with curative intent.

Conclusions
Operation for primary lung cancer with a limited number of CSNs can provide long-term survival. Patients with a limited number of CSNs and adequate pulmonary reserve are indicated for surgical resection, and should not be treated as disseminated M1a disease. Close follow-up may be recommended for detection of metachronous lung lesions.

Disclosure: All authors have declared no conflicts of interest.

P-123

THORACOSCOPIC LOBECTOMY: IS A TRAINING PROGRAM FEASIBLE WITH LOW MORBIDITY?

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Objectives
Objective: To evaluate the feasibility of a training program in video assisted thoracic surgery (VATS) lobectomy we compared the intraoperative and postoperative data of patients operated by an established consultant fully trained in VATS lobectomy and trainees.

Methods
Method: A retrospective analysis of 75 consecutive patients (53 males; median age 70.8, range 46-88 year old) who underwent VATS lobectomies between May 2008 and December 2011. 52 patients were operated on by an established consultant (Group A) and 23 by trainees (Group B). Chi square test and t student test were utilised where appropriate for the comparison.

Results
The two groups were comparable for clinical charactheristics and pathological staging (p=0.7). The mean operating time in Group 1 was 125 ± 30 min and in Group 2 was 133 min ± 29 (p=0.28). The rate of conversion was similar in both groups: 7.7% in Group A and 13.6% in Group B (p=0.4). The complication rate was comparable in the two groups (p=0.7): 28.8% (prolonged air leak n=8, chest infection n=5, atrial fibrillation n=5 and bleeding n=2) in group A and 21.7% (prolonged air leak n=3, chest infection n=2,) in group B. The median time to drain removal and the median length of hospital stay were 3 days (range 1-26 days) and 5.5 days (range 2-76 days) in group A and 3 days (range 1 – 18 days) and 5 days (3-19 days) in group B respectively. There were no statistical difference in the time to drain removal and in the length of hospital stay between the two groups (p=0.7 and p=0.3).

Conclusions
Conclusion: Our study showed that a training program in VATS lobectomy is feasible, without increasing the operative time, the conversion rate, the postoperative complication, the time to drain removal and the length of hospital stay.

Disclosure: All authors have declared no conflicts of interest.

P-124

IS VATS MAJOR RESECTION (VATS-MR) APPROPRIATE FOR LOCALLY ADVANCED NON SMALL CELL LUNG CARCINOMA (NSCLC)?

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Objectives
VATS-MR for clinical stage I NSCLC (cI) is well accepted. There is concern that peri operative morbidity and mortality may be increased in patients with more advanced disease (cII-III) undergoing VATS-MR. Little data supports extending the indication for VATS-MR to include cII-III. The aim of this study was therefore to compare morbidity and mortality in cI to cII-III patients after VATS-MR.

Methods
We retrospectively reviewed our prospectively maintained database to identify NSCLC patients undergoing attempted VATS-MR with curative intent (anatomical resection and lymphadenectomy). Pre-operative, intra-operative and early post-operative variables were analysed. Fisher's exact and Wilcoxon's tests were used as appropriate. Analysis was based on intention to treat principles.

Results
From December 2008 to December 2011, 84 (44 cI and 40 cII-III) consecutive VATS-MRs were attempted. The two groups were similar with respect to sex, lung function and cardiac co-morbidity. There was no difference in operative time (155 vs. 180min), bleeding (180 vs. 200mls) or conversion [(7/44(16%) vs. 8/40(20%)]. Overall conversion rate was 17%. Of these, 40% were for vascular injury. Less nodes were cleared in the cI group (7 Nodes vs 11,p<0,048). There were no intraoperative deaths. There was no difference in cardiac, respiratory (pneumopathy, air leakage > 7days) complication (9 vs. 12); length of stay (6 vs. 7days); pain-score at discharge (2 vs. 2); or 30-day mortality [(2/44(5%) vs. 2/40(5%)].

Conclusions
Within the limits of this cohort, patients with locally advanced disease had similar rates of perioperative morbidity and mortality after attempted VATS-MR when compared to cI patients. Our results do not support precluding patients with locally advanced disease from attempted VATS-MR based on fear of increased perioperative morbidity and mortality. Long-term results are mandatory to resolve this controversial discussion.

Disclosure: All authors have declared no conflicts of interest.

P-125

IS LIMITED RESECTION APPROPRIATE FOR RADIOLOGICALLY "SOLID" TUMOR IN SMALL-SIZED LUNG CANCER?

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Objectives
Small-sized lung cancers with a wide area of ground-grass opacity (GGO) on thin-section computed tomography (CT) are considered to be a good candidate for limited surgical resection, because of its minimally invasive nature. On the other hand, the validity for limited resection of radiologically "solid" tumors is still controversial in small-sized non-small cell lung carcinoma.

Methods
Between 2008 and 2010, 680 consecutive patients underwent pulmonary resection for lung cancer. The findings obtained by preoperative CT scan were reviewed for all 680 patients and categorized as pure GGO, mixed GGO, or pure solid. All patients were evaluated by positron emission tomography (PET) and the maximum standardized uptake value (SUVmax) was recorded. Several clinicopathological features were investigated to identify predictors of hilar or mediastinal lymph node metastasis using uni- or multivariate analyses.

Results
227 patients with lung cancer showed a solid or mixed GGO appearance on thin-section CT scan. Among them, nodal involvement was found pathologically in 42 (26%) patients with pure solid tumors, but in only 4 (6%) patients with mixed GGO tumors (p=0.0002). Among 131 T1a patients, 94 (71.8%) had solid tumor, and nodal involvement was observed in 15 (16.0%). Multivariate analysis elucidated the following predictors for lymph node metastasis: solid tumor, absence of air bronchogram, high CEA level and high SUVmax. Among 94 pure solid T1a tumors, the CEA level and SUVmax were significant predictors of lymph node involvement by tumor based on multivariate analysis (p=0.0148, 0.0177). The frequency of lymph node metastasis was approximately 27% for patients with pure "solid" lung cancer and high SUVmax, even for T1a tumor.

Conclusions
Lymph node metastasis is frequently observed for pure "solid" lung cancer, especially for tumors that show a high SUVmax. If limited surgery is indicated for solid lung cancer, a thorough intraoperative evaluation of lymph nodes is needed to prevent locoregional failure.

Disclosure: All authors have declared no conflicts of interest.

P-126

PEDIATRIC PATIENTS WITH RECURRENT PULMONARY METASTASES OF OSTEOSARCOMA - IMPACT OF REPEATED SURGERY

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Objectives
Despite multimodal treatment concepts and complete surgical resection, prognosis in pediatric patients with pulmonary metastases from osteosarcoma has remained limited due to frequent relapse of disease. We investigated the results of an aggressive surgical approach.

Methods
In a retrospective study, procedures and outcomes of pulmonary metastasectomy in the pediatric age group (up to 18 years) at our institution were analyzed over a period of 10 years (1999-2009). Resection of the primary osteogenic tumor and chemotherapy (CROSS-96-protocol and EURAMOS-1-protocol) were performed prior to thoracic surgery.

Results
Forty-five pediatric patients (20 females) underwent pulmonary metastasectomies via sternotomy or sequential anterolateral thoracotomy at a mean age of 14 (6-18) years. At primary surgery, a mean number of 7.9 (1–53) palpable suspicious lesions were resected per patient. Histo-pathological evaluation revealed 3.7 (0–40) metastases per patient. Mean total duration of surgery was 152 (46–323) minutes. Mean hospital stay was 10 days (3–33). In-hospital and 30-day mortality was 0%. The overall survival at 1 and 5 years was 97.8% and 77.3%, respectively. Mean disease-free-survival was 12.2 (3.2-38.0) months. In 19 (42.2 %) patients recurrent pulmonary metastases were detected and re-thoracotomies were required. Up to 7 procedures per patient were performed. Overall survival for patients undergoing more than one surgical procedure for recurrent lung metastases was not statistical different from survival in patients without relapse ($p>0.05$). Survival was significantly better in patients initially presenting with less than 10 metastases (85.3 % vs. 54.1 % at 5 years, $p = 0.028$).

Conclusions
Complete pulmonary metastasectomies are essential in pediatric osteosarcoma patients with lung metastasis. Repeated resections for recurrent relapses improve survival and may allow for long-term event-free-survival.

Disclosure: All authors have declared no conflicts of interest.

P-127

MORBIDITY AND MORTALITY IN A LARGE SERIES OF SURGICAL PATIENTS WITH PULMONARY METASTASES OF COLORECTAL CARCINOMA. A PROSPECTIVE MULTICENTER SPANISH STUDY (GECMP-CCR-SEPAR)

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Objectives
To evaluate the morbimortality and risk factors implicated in a surgical group of patients operate on a first of pulmonary metastases from colorectal carcinoma.

Methods
From 2008 to 2010 data from 35 hospitals was prospectively collected. Those groups of patients with and without complications were compared. Variables from the colorectal carcinoma episode, oncological treatment, comorbidity, demographic data and lung surgery were analyzed. Univariate analysis was performed using Chi-square test, t-student test or U-ManWhitney test depending on type of variable. A multivariate analysis was done with those significant statistical variables. A p value of less than 0.05 was considered significant.

Results
532 patients were included. 83 had complications (15.6%) and 2 died (0.4%) due to a sepsis and a ventricular fibrillation. The median hospital stay for all patients was 5 (4-7) days. 5 (4-6) days in patients without complications in front of 9 (6-13) days, p=0.000. 1050 lung resections were performed, 107 (10.19%) were larger than a segmentectomy. Right lobectomies showed differences between groups 5 % versus 9.14% (p=0.012). Table shows list of complications. Univariate analysis showed differences in the following parameters: comorbidity (p=0.014), respiratory (p=0.05) and cardiovascular (p=0.015) mainly, FEV1 test (p=0.018), major lung right resections (p=0.001) and lesions bigger than 3 cm (p=0.022). No differences have been found regarding to technical aspects of lung resection. In the multivariate analysis after adjusting by sex and age revealed, cardiovascular comorbidity (3.058 (1.30-7.14) and major lung right resections (3.48 (1.72 – 7.075) as independent risk factors of morbidity.

Table: Complications

Morbidity 83p (15.6%) (8p had more than 1)	Afected/%over 532 patients
Atelectasis	13/2.44%
Pneumonia	13/2.44%
Paralytic ileum	12/2.2%
Air leaks > 7 days	18/3.4%
Adult respiratory distress syndrome (SDRA)	4/0.7%
Arrythmias	9/1.7%
Empyema	1/0.2%
Other Complications	30/5.5%
Reinterventions	5/0.93%
Reintervention for air leaks	4/0.75%
Complete losbectomy	1/0.18%

Conclusions

Morbimortality associated to the lung metastasectomy of colorectal carcinoma is low and should be considered a low risk procedure. However, co-morbidities, mainly cardiovascular diseases, or major lung resections increase this risk.

Disclosure: All authors have declared no conflicts of interest.

P-128

COLLAPSE THERAPY FOR DRUG-RESISTANT TUBERCULOSIS: BACK TO ORIGINS?

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Objectives
Global increase of drug resistance in tuberculosis (TB) forces to seek methods improving treatment results especially in patients with multidrug- (MDR) or extremely drug-resistant (XDR) TB. Collapse therapy (artificial pneumothorax and pneumoperitoneum) widely used in clinical practice for over 50 years and ceased with the era of antibiotics is now in interest again. The effectiveness of lung collapse procedures combined with standard chemotherapy was retrospectively evaluated.

Methods
Total of 35 patients (17M/18F) aged 18-58 (M±SD 36.9±1.93 years) were treated with artificial pneumothorax (17), pneumoperitoneum (15), or both (3) at a single institution during 2008-2010. Patients were with infiltrative (25), disseminated (6), fibrocavernous (2), cavernous (1) TB and cavitary tuberculoma (1). Smear-positive were 30 patients. Drug resistance revealed in 46.7% cases (MDR 26.7%, XDR 6.7%). Collapse therapy course continued for 1 to 5 months (M±SD 3.0±0.2).

Results
Overall conversion to smear-negative was obtained in 93.8% drug-susceptible and 92.9% MDR/XDR cases. During first 3 months conversion occurred in 60.0% patients with preserved susceptibility and only 30.8% in MDR/XDR-TB. Closure of cavitary lesions was achieved in 90.5% and 78.6% cases, respectively (without collapse therapy – 63.2 and 63.6%). More rapid closure (before 3 months) registered in 26.3% and 18.2% MDR/XDR cases.

Conclusions
Artificial pneumothorax and pneumoperitoneum combined with chemotherapy may improve outcome in patients with both drug-susceptible and drug-resistant TB, but the real benefit have to be thoroughly appraised in further controlled trials.

Disclosure: All authors have declared no conflicts of interest.

P-129

ECTOPIC HETEROTOPIC MEDIASTINAL THYROID TISSUE MIMICKING LUNG CANCER

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Objectives
Ectopic Heterotopic Thyroid Tissue probably originates embryologically from rudiments of developing thyroid dragged into the chest during the descent of the heart and great vessels with the development of the embryonic neck and the unfolding of the embryo. Ectopic intrathoracic thyroid can be distinguished from the fact that it receives its blood supply from mediastinal vessels rather than the neck and is not connected to the cervical thyroid. We present a series of 9 patients with heterotopic mediastinal thyroid mimicking lung cancer.

Methods
Nine patients, 5 male and 4 female ranging in age between 56 and 79 years were admitted at our hospital. All patients but two were asymptomatic. Chest radiography revealed a mass in the superior middle or posterior mediastinum, in 2 cases with tracheal deviation. CT scan revealed a mass and further investigation took place with MRI in order to assess possible vascular invasion. Preoperative staging was negative for metastatic disease in all cases and ultrasonography, scintigram and I131 uptake precluded the possible existence of thyroid tissue. Thyroid function tests were also normal.

Results
All patients were led to surgery and were submitted either to lateral mini-thoracotomy (n=5), or cervical incision (n=3) or thoracoscopy (n=1). In all cases there was an encapsulated mass with blood supply from intrathoracic vessels and histopathology revealed thyroid. The postoperative course was uneventful and no recurrence was observed in a follow up of 2 months to 4 years.

Conclusions
Although malignant transformation in heterotopic thyroid tissue is extremely rare, these masses should be resected in order to put the diagnosis and to avoid later complications such as progressive enlargement, hemorrhage within the mass causing respiratory failure, and compression of vital mediastinal organs.

Disclosure: All authors have declared no conflicts of interest.

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PROPOSAL TO IDENTIFY THE REAL "CASE-MIX" SEVERITY OF ICU THORACIC SURGERY PATIENTS

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Objectives
To evaluate the real complexity and severity of thoracic surgery patients (TSP) after stratifying the patients according to the relative weight (RW) of Diagnosis-Related Group (DRG) classification system and to propose an optimized clinical management model for TSP.

Methods
Prospective study performed from January to December 2011 in 705 consecutive ICU critical patients (CP). Exclusion criteria were: medical CP, surgical critical patients not submitted to thoracic surgery and TSP submitted to thyroid surgery. "Case-Mix": a) Secondary diagnosis (comorbidities and complications). b) Diagnostic and therapeutic procedures performed. c) DRG version AP-DRG 25.0. d) Case-mix variables: Invasive Mechanical ventilation (IMV), percutaneous tracheostomy, sepsis, acidosis, oncologic history, hemoderivatives consumption, microbial culture, isolation, Advanced Life Support, bronchoscopy, and mortality. e) Severity-of-disease classification system: APACHE II, APACHE IV, MPM 24h, MPM cancer, Portsmouth-POSSUM (P-P) physiologic and operative, Thoracoscore (ThS), SOFA, LODS, number of clinical dysfunctions (acute and chronic). f) Therapeutic intervention scoring system: TISS 28, NAS (Nursing Activity Score), APACHE IV.

Results

	RW	N	Age	Mean Stay	Mortality	Secondary diagnosis	Diagnostic procedures	Therapeutic procedures
DRG 75	2,9408	5	56	1	0	5.7	1.7	5.2
DRG 76	3,2343	14	71	1	1	6.9	3.3	8.9
DRG 538	5,8007	6	59	4.6	0	8.8	2.7	8.2
DRG 539	6,6154	1	78	2	0	7.1	2.3	7.5
DRG 878	29,8146	1	75	32	1	13.4	5.0	10.3

IMV%	P-P phys	P-P op	Predicted Mortality	ThS	APACHE IV total	APACHE IV mean	MPM-cancer%
0.0	19.2	9.8	2.3	3.9	37	1.7	12.7
14.3	22.4	13.0	6.27	7.4	44	2.6	20.1
50.0	22.0	14.0	5.1	3.0	56	4.8	28.9
100.0	22.9	9.0	1.9	5.7	51	3.8	34.0
100.0	24.0	11.0	7.2	15.1	111	8.3	54.8

Conclusions

In this clinical management model, the higher the DRG relative weight, the higher the severity of thoracic surgery patients and resources consumption.

Disclosure: All authors have declared no conflicts of interest.

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COMPLICATIONS OF ANATOMIC PULMONARY SEGMENTECTOMIES

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Objectives
The place of anatomic pulmonary segmentectomies is increasing but there are few data about their complication rate. We have analyzed the postoperative morbidity, mortality and risk factors in a consecutive series of 229 patients who underwent a segmentectomy – whatever the indication- in our department.

Methods
Between January 2007 and December 2011, 229 patients had a segmentectomy. There were 103 women (45%) and 126 men (55%). The mean age was 61.6 years (range 25-83 years). The mean FEV1 was 85.8% and 32 patients had an FEV1≤ to 60%. Fifty-seven patients had a previous history of pulmonary resection. Indications for segmentectomy were: primary lung cancer (110 cases), metastases (71 cases), benign non-infectious (27 cases) and benign infectious (22 cases). The approach was a posterolateral thoracotomy in 144 patients (62.9%) and a thoracoscopy in 83 patients (36.2%). The two groups were homogenous regarding age, gender, indication for surgery and type of segmentectomy.

Results
The mortality rate at 3 months was 1.32% (3 cases). The overall complication rate was 32.4%. Ten patients were reoperated for the following reasons: haemothorax (4 cases), ischemia of the remaining segment (3 cases), active bleeding (1 case), prolonged air leak (1 case), and dehiscence of thoracotomy (1 case). The average duration of drainage was 4.9 days (range 1-34 days) and the average length of stay was 9.4 days (range 3-114 days).On Univariate analysis, FEV1, diabetes, surgical approach, and length of drainage were statistically significant variables. On multivariate analysis only FEV1 ($p = 0.012$) and type of approach ($p= 0.004$), stand out as predictive factors of complications.

Conclusions
Pulmonary anatomic segmentectomies have an acceptable morbidity rate. Post operative complications are more likely to develop in patients with an FEV1 ≤ 60%, and in patients operated by open surgery.

Disclosure: All authors have declared no conflicts of interest.

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TREATMENT OF PERSISTENT POSTPNEUMONECTOMY EMPYEMA BY VACUUM-ASSISTED MANAGEMENT (VAM): ANALYSIS OF NINE PATIENTS

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Objectives
Conventional treatment methods in postpneumonectomy empyemas (PPE)are associated with long stay in hospital, poor patient comfort and high rate of postoperative mortality. Vacuum assisted management (VAM) may be helpful in solving problems related to treatment of PPE. Objective of this study was to evaluate intrathoracic VAM application and its results.

Methods
VAM was performed in 9 patients with PPE in our clinic between July 2010 and September 2011 in order to reduce the duration and frequency of changing the dressing, to provide continuous drainage of empyema in the pouch and to improve empyema with obliteration of the pouch by accelerating of the formation of granulation tissue in the pouch. Pneumonectomy pouch was closed with Clagett method after empyema control in the patients.

Results
All nine patients were male with a men age of 54.5(18-68) years. Empyema resolution and obliteration of the pouch were achieved with VAM in the cases having empyema without fistula (n=7) after the pneumonectomy. In the patients with fistula (n=2), VAM was performed after closure of the fistula with myoplasty. Empyema recurred in one of the patients having PPE with fistula within one and half month of the follow-up, and this patient was treated with thoraco-myoplasty. Mean length of stay in the hospital was 36.5 (12-57) days.The treatment was successful in 8 of 9 patients (88.9%). Mean duration of the follow-up in the patients treated successfully was found as 10.9 (3-17) months. Duration and frequency of changing the dressing were decreased compared to conventional treatment methods.

Conclusions
Intrathoracic VAM is a reliable, efficient and comfortable method in the treatment of PPE.

Disclosure: All authors have declared no conflicts of interest.

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THERAPEUTIC BRONCHOSCOPY IN THE WARD COMPLEMENTS PHYSIOTHERAPY IN TREATING LOBAR COLLAPSE FOLLOWING MAJOR THORACIC SURGERY

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Objectives
Lobar collapse often complicates recovery from major thoracic surgery. We aimed to study if bedside fibre-optic bronchoscopy (FOB) can be performed safely without the use of sedation/anaesthetic agents and could be used as an adjunct to chest physiotherapy in patients following lobectomy for malignancy.

Methods
Fibre-optic bronchoscopy skills were applied to treat post-operative lobar collapse that persisted despite conventional chest physiotherapy. Bronchoscopies were performed 'awake' on patients with the use of 1% Xylocaine topical spray in the oro-pharyngeal cavity and over the vocal cords under direct vision. The procedures were performed in the Thoracic Surgical Ward thus avoiding transfer to emergency theatres or delays. Haemodynamic parameters and oxygen saturations were monitored throughout the procedures. Data was gathered retrospectively on all patients in whom 'awake' FOB was performed following lobectomy/sublobar resections through a thoracotomy between January 2010 and June 2011. These patients were compared (using non-parametric tests) to those who did not develop collapse following lung resection during the same period. (p significant if<0.05)

Results
194 patients underwent lobectomy for cancer during this 18-month period (Median age 68y, males=56.2%). 57 bronchoscopies were performed on 38 patients for lobar collapse (Median age =68y, males =55.3%). No complications were related directly to the procedure. Lobar collapse was more likely to occur in patients with a history of smoking in the 30 days before the operation (36.8% v 19.2%, p=0.03), COPD (44.7% v 16%, p<0.01), lower pre-op FEV1 (68.7% predicted v 83.2%, p<0.01) and higher Thoracoscore (2.5 v 2.09, p<0.01). Length of stay in hospital (14 days v 8, p<0.01) and in-hospital mortality (10.5% v 1.9%, p=0.028) were higher in this group.

Conclusions
FOB can safely augment chest physiotherapy in treating lobar collapse following major thoracic surgery. However, a need for bronchoscopy reflects a higher risk of developing subsequent complications and prolonged stay in hospital.

Disclosure: All authors have declared no conflicts of interest.

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FALSE POSITIVE FDG POSITRON EMISSION TOMOGRAPHY IN BENIGN PULMONARY LESIONS

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Objectives

Fluorodeoxyglucose (FDG) positron emission tomography (PET) is used to differentiate benign lesions from malignant lesions. In this report, we evaluated patients with solid pulmonary lesions who had PET positive results and who ended-up with benign histopathology by surgical resection.

Methods

Between February 2006 and December 2011, records of 82 patients with histopathologically benign pulmonary mass lesions were retrospectively analysed. Diagnosis could only be established by wedge resection either by thoracoscopy or thoracotomy. Of these 82 patients, 40 had PET scans. Standardized uptake value (SUV) threshold of 2.5 is applied to differentiate between benign and malignant lesions. Thirty one patients with SUV >2.5 were analysed.

Results

The study population consisted of 31 patients (11 women, 20 men) with a mean age of 52.3 (range:23-72 years). Predominant symptom was cough (n=15). Four patients had incidentally diagnosed lesions. Lesions were located in the right upper (n=13), left upper (n=9), right lower (n=5), left lower (n=3) and right middle lobe (n=1). On CT scans, lesion diameters were between 10x15 mm and 110x125 mm. SUV range was between 2,70 and 22,60. Diagnosis was established by wedge resection and frozen sectioning during the surgery. Histopathologic findings were necrotizing granulomatous inflammation (n=16), chronic inflammation (n=7), hamartoma (n=2), sclerosing hemangioma (n=1), chronic granulomatous inflammation (n=1), fibrosis (n=1), abscess (n=1), organizing inflammation (n=1) and echinococcus multilocularis infection (n=1).

Conclusions

Pulmonary inflammatory diseases may cause an increase in FDG uptake. Our study suggests that positive FDG-PET results should be interpreted with caution in low-middle income countries where a high prevalence of inflammatory and granulomatous lesions is present.

Disclosure: All authors have declared no conflicts of interest.

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SURGICAL MANAGEMENT FOR PULMONARY HYDATID CYSTS (20 YEARS - ONE INSTITUTIONAL EXPERIENCE)

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Objectives
Medical therapy for hydatid cysts is very limited, the surgical excision is still the treatment of choice, the aim of this study was to demonstrate our experience in the management of hydatid disease .

Methods
We have operated 705 patients with hydatid cysts (740 operations) during the period from 1992 - 2011, males were 48.8% ,females 51.2%, the median age was 27 years (4 - 82), the surgical approachs were : thoracotomy 60% , VATS plus mini-thoracotomy 20%, thoraco-abdominal 19.4% and sternotomy 0.5% .

Results
The patients had single cysts 83.9%, multiple cysts 16%, bilateral 16.1%, combined with : liver cysts 31.4%, heart and pericardium 1.1%, chest wall and diaphragm 2.1%, other organs : spleen, kidney, brain...2.2% . The cysts were intact 45.9%, ruptured to the bronchus 26.2%, ruptured to the pleura 5.3%, multiple intact and ruptured 8.3% and infected 14% . The surgical procedure was : enucleation for intact cysts 33.5%, evacuation 53.2% for ruptured and intact operated by VATS And lung resection 13.2% (segmentectomy, lobectomy) for infected or huge cysts. The postoperative complications were 3% : empyema, lung abscess, persistent air leak and bleeding, mortality rate was 0.6% and recurrence rate 1.2% .

Conclusions
Surgical excision is still the treatment of choice for the vast majority of hydatid cysts, enucleation is the ideal operation for intact cysts, lung resection is preferable for infected or huge cysts, thoraco-abdominal approach throw diaphragm is the best way for combined cysts in the liver and right lung and VATS plus mini-thoracotomy is excellent procedure for single ruptured or intact cysts .

Disclosure: All authors have declared no conflicts of interest.

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TRAUMATIC PULMONARY PSEUDOCYSTS AND HEMATOMAS: REPORT OF 59 PATIENTS

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Objectives
Traumatic pulmonary pseudocysts and hematomas are manifestations of pulmonary contusion in thoracic trauma, and usually resolve spontaneuosly.

Methods
The charts of patients with thoracic trauma and pulmomary pseudocyst and/or hematoma were retrospectively reviewed for clinical and radiologic signs, progress, treatment and outcome. Between February 2000 and December 2011, 990 patients with thoracic trauma (blunt and penetrating) were admitted to our thoracic surgery department.

Results
From February 2000 to December 2011, 59 patients (47 male, 12 female) between the ages of 6 and 72 years were treated for pulmonary pseudocyst and/or hematoma. Penetrating and blunt trauma was present in 18 and 41 patients respectively. Pulmonary contusion was present in all. Pulmonary hematoma, pulmonary pseudocyst and both were present in 22, 29 and eight patients, respectively. Associated injuries included large contusion in 31 patients, hemothorax in 16, rib fractures in 30, hemopneumothorax in 21, pneumothorax in 11, intraabdominal injury in 4, diaphragmatic rupture in 3, flail chest in 3, scapula fracture 2, vertebral fracture one, sternal fracture one, subarachnoid hemorrhage one and hemopericardium in one patient. Symptoms and signs of patients with pseudocyst and hematoma were not clear because of accompanying above mentioned disorders. Thirteen patients underwent surgery because of accompanying indications. Of these, only one patient required thoracotomy for unresolving pseudocyst and organizing hematoma after 6 months. The other pseudocysts and hematomas resolved spontaneosly within 1 to 4 months.

Conclusions
Pulmonary pseudocysts and hematomas are probably underlooked pulmonary lesions with identical clinical appearance and course, and may occur after either blunt or penetrating trauma, and may transform to each other. Traumatic pulmonary pseuducysts and hematomas resolve spontaneously and need no treatment unless they are complicated.

Disclosure: All authors have declared no conflicts of interest.

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INTRA-OPERATIVE INTERCOSTAL BLOCK VERSUS WOUND INFILTRATION FOR POSTOPERATIVE ANALGESIA IN VATS CLIPPING OF SYMPATHETIC NERVE FOR HYPERHIDROSIS AND BLUSHING: A RANDOMIZED TRIAL

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Objectives
Regional techniques of nerve blockade reduce pain from several hours to several days. The objective of this study was to determine if a "camera guided" nerve blockade could provide a better pain control than the usual surgical wound infiltration after VATS clipping of the sympathetic nerve.

Methods
Prospective randomized study on 40 patients submitted to two-ports´VATS for hyperhidrosis and blushing from June 2010 to January 2012. The sample size was calculated to detect one point of minimum pain score difference with 80% statistical power. Patients were randomly assigned to two groups: Group 1 -intraoperative intercostal block (IIB) n = 20–: under camera control, a needle was placed through one of the ports into the area of the intercostal/s nerve/s were clipping had been done and a bolus of 10ml of local anaesthetic (levobupivacaine 0.5%) was infused (image). Group 2 -surgical wounds infiltration group (SWI) n = 20-: patients received infiltration of surgical wounds with 10ml of lebovupivacaine 0.5% per side. In the postoperative period both groups of patients were given metamizol every 6h. Both groups were comparable in terms of age, sex, pathology, and co-morbidity. Pain level was measured with the visual analogue scale (VAS) at 1, 6 and 24h.

Results
No side effects related to any of the two analgesic techniques were noted. VAS scores were the following: Group 1 (IIB): VAS 1h: 2.3±0.7, VAS 6h:4.2±1.1, VAS 24h:5.0±1.1, and mean VAS:3.8±1.3. Group 2 (SWI): VAS 1h:3.6±1.0, VAS 6h:5.7±1.3, VAS 24h:5.4±1.4, and mean VAS:4.9±1.4. VAS scores were significantly lower in the IIB patients ($p<0.01$).

Conclusions
Intraoperative intercostal nerve blockade in VATS surgery for hiperhydrosis and blushing results in significantly less pain in the first postoperative 24 h. With this technique it is possible to visualize under direct camera control the correct infusion of the local anaesthetic for the intercostal block.

Disclosure: All authors have declared no conflicts of interest.

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PECTUS DEFORMITY REPAIR. IS THE WEB-BASED FREE INFORMATION ADEQUATE?

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Objectives
Pectus deformity in children is associated with psychological and medical complications. These problems are commonly amplified by the families who perform a web search prior to the first consultation with a specialist. Our aim is to determine whether the web-based free information is conclusive of the various surgical procedures available, success rates, recovery period, failure rate, and complications of surgical intervention.

Methods
Each of the following four web-search engines (Yahoo, Google, Bing, and Ask) were searched using five key-sentences in every search: pectus carinatum in children, chest deformity in children, pectus surgery in children, pectus excavatum in children, and pigeon chest in children. Search dates were between 28th and 30th of January 2012. The first 25 hits were selected and duplicate results from the same search engine were excluded.

Results
435 hits were counted. 68.5% were institutional websites compared to 13.6% commercial and 12.4% patient forums ($p<0.001$). 80% stated the medical importance of a corrective procedure in view of reducing cardiac related complications whereas 11.7% ($p<0.001$) described corrective surgery for cosmetic purposes only. 58.4% emphasised the availability of various procedures as compared to 39% where the Nuss procedure was the only one mentioned. Success rate was only highlighted in 26.7%. Procedure related complications were eluded to in 32.6% of the websites as compared to 64.8%. Similarly, one-third of the websites reported a recovery period that ranged from 2-6 weeks. Only 10% of the websites reported failure rate of any corrective surgery.

Conclusions
We recommend for each thoracic department with a special interest in pectus surgery to provide a procedure related leaflet during the initial consultation based on local practice and results. This should be followed up by a second consultation prior to deciding on surgery where patients will have the chance to eliminate confusion and concerns.

Disclosure: All authors have declared no conflicts of interest.

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RECONSTRUCTION OF THE CHEST WALL IN CASE OF PRIMARY OR SECONDARY INFECTION OF THE OPERATIVE SITE: IS THERE ANY INTEREST IN THE TITANIUM RIB OSTEOSYNTHESIS?

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Objectives
To describe the management of thoracic reconstructions in the presence of primary (PCWI) or secondary (SCWI) deep infection of the chest wall with a special analysis on the local integration of rib osteosynthesis system.

Methods
Infected chest wall tumors (CWT), infected T3 NSCLC, and open flailchest define PCWI. Deep infection of thoracic wall reconstructions define SCWI. Infection was identified on preoperative bacterial analysis of tumor or of surgical site. In PCWI, a one-step procedure associating extensive resection of the infected tissues and a thoracic reconstruction was performed. The skeletal rigidity was re-established by the use of Titanium implants. In SCWI, we removed all the hardware except Titanium implants. In both groups, a cleaning of the surgical field and a coverage of implants by flaps were performed.

Results
From 01-2005 to 12-2011, 11 patients (54+/-10,2 years) with either PCWI (3 CWT, 3 T3 NSCLC, 1 open flail-chest) or SCWI (4 reconstructions for CWT , 1 for funnelchest) were treated at our institution. In all but one case the infection was polymicrobial. Bacteria observed in PCWI group were multidrug-resistant. In PCWI, we resected 4,2+/-0,6 ribs en-bloc with the lung (5 cases), the skin and pectoralis major (6 cases). The mean defect was 1154,4 +/- 318 cm3. The reconstruction was achieved using a mesh combined with 2,1+/-1,2 titanium implants (6 cases). Surgical management of SCWI was required in all but one case. We removed the mesh and preserved the Titanium implants in combination with vicryl mesh (4 cases) and omental flap (3 cases). There were 2 postoperative deaths in the PCWI group neither of which was related to the infection. A labeled leukocytes scintigraphy didn't show any infection after surgery.

Conclusions
Our experience indicates the reliability of titanium rib osteosynthesis in two complex and potentially devastating situations: infected CWT or infection of a chest wall reconstruction.

Disclosure: All authors have declared no conflicts of interest.

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MANAGEMENT OF TRAUMATIC STERNAL LESIONS

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Objectives
The use of seatbelt and car airbags explains the increasing frequency of isolated sternal fracture and manubriosternal luxation in road accidents. Aim of this study was to evaluate the procedures of osteosynthesis and the respective costs.

Methods
From January 2006 to July 2011 we observed 624 chest trauma patients, 47 of whom showed a fracture (7.5%) and 18 a dislocation (2.8%) of the sternum necessitating surgical repair. There were 46 males (71%) and 19 females (29%), with an average age of 43 ± 4 years. The indications for treatment were: 1) oblique stumps and unstable non-union of the sternum in case of fracture; 2) respiratory distress and kyphosis of cervicothoracic rachis in case of luxation. Isolated fracture was repaired using the titanium plate in 30 patients (64%), steel plate in 12 (25%) and steel wire in 5 (11%). The sternal stabilization after traumatic dislocation carried out with steel wire in 4 patients (22%) and titanium plate with demineralized bone matrix in 14 (78%). Clinical parameters and costs for each technique were analyzed.

Results
Isolated sternal fracture patients displayed 8 complications (17%), needing the removal of device. Titanium plate showed an inferior time of intervention (30 ± 2 minutes), length of stay (3 ± 1 day) and total cost (2277.10 €) compared to steel plate (2667.70 €) and steel wire (2801.60 €) procedures. In the sternal dislocation, steel wire technique highlighted a deformity of anterior chest wall and pain in all patients after 37 ± 2 moths of intervention although this approach was less expensive than titanium plate with demineralized bone matrix (3553.60 € versus 6047.80 €).

Conclusions
Isolated sternal fracture and manubriosternal luxation require an aggressive approach in specific cases. The rigid titanium plate application ensured a safe and easy management with a good prognosis of patients.

Disclosure: All authors have declared no conflicts of interest.

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ACELLULAR COLLAGEN-MATRIX MESHES FOR STERNAL AND THORACIC WALL RECONSTRUCTIONS

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Objectives
Collagen-matrix materials represent a novel category of remodelable biological materials in thoracic surgery, allowing for rapid incorporation and vascularisation.

Methods
In a retrospective feasibility study, patients undergoing complete chest wall resection and subsequent reconstruction using an acellular bovine pericardium collagen-matrix mesh (Veritas®, Synovis, USA) were analyzed.

Results
A total of 14 patients (7 females/ 7 males) with a mean age of 39 (18–71) years underwent implantation of an acellular collagen-matrix bovine pericardium patch. Indications for surgery were thoracic wall tumors in 12 patients, replacement of an infected synthetic patch (n=1), and replacement of an unstable prolene mesh (n=1). Local conditions were complicated in 3 patients with acute local infection (n=2) and chronic pleural effusion (n=1). Additional resections were required in 4 patients, including partial resection of the diaphragm (n=2), pulmonary wedge resection (n=1) and hemilaminectomy (n=1). In one patient complete resection of the sternum was required. The defects were between 8 x 10 cm and 10 x 25 cm in size. Implantation of the collagen-matrix meshes was uncomplicated in all patients. Mean duration of surgery was 181 (75–339) minutes. Postoperative course and wound healing were uncomplicated in 13 of 14 patients. Temporary negative pressure wound therapy (VAC), placed directly on the mesh was necessary in one case with severe wound infection. Mean hospital stay was 13 (6–36) days. The 30-day mortality was 0%. During follow-up (up to 2 years) chest wall stability was excellent in all patients.

Conclusions
Acellular bovine collagen-matrix meshes are feasible materials for the reconstruction of large thoracic wall defects. Particularly in cases of critical local wound conditions or contaminated areas the strong bio-material provided excellent stability and allowed for uncomplicated wound healing.

Disclosure: All authors have declared no conflicts of interest.

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CARDIAC ENZYME EVALUATION IN STERNAL AND RIB FRACTURE PATIENTS WITHOUT ECG OR US FINDINGS: IS IT NECESSARY TO DETERMINE THEM?

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Objectives
The determination of cardiac enzymes is considered important in sternal and other blunt thoracic injuries especially in cases with electrocardiographic or cardiac ultrasound findings. This study compares the cardiac enzyme elevation in patients suffering sternal and/or rib fractures without such findings.

Methods
Blunt thoracic trauma patients without other extrathoracic injuries were categorized into 3 groups; >3 rib fractures (RF), isolated sternal fractures (ISF) and sternal with rib fractures (SRF) group. Investigations included chest X-Ray, electrocardiogram (ECG), cardiac ultrasound (US), measurement of cardiac enzymes, (creatine-phosphokinase (CPK), myocardial branch of creatine-phosphokinase (CKMB) and Troponin-I) and a chest Computed Tomography. Patients without US and ECG findings were included in the study. Some of these investigations were repeated the next day. Statistical analysis was performed with ANOVA Bonferoni's test.

Results
During the study period, 131 patients sustained blunt thoracic trauma and 116 of them were included in the study having normal ECG and US (50 RF, 36 ISF and 30 SRF). In 80% of RF cases the CK, CKMB and CK/CKMB were abnormal whereas this was observed in only 35% of ISF and 55% of SRF cases. CK and CKMB were higher in RF than in ISF and SRF groups. CK/CKMB ratio was higher in SRF than in RF and ISF while it was higher than 5% in all groups. Troponin was normal in all groups. No myocardial manifestation was diagnosed post-traumatically in all groups.

Conclusions
The cardiac enzymes are elevated in cases with no ECG or US findings being higher and more frequent in RF patients. Despite this, a myocardial manifestation was not verified at presentation or post-traumatically. Therefore, in cases with no ECG and US findings the cardiac enzymes are increased according to the energy of injury, independently of the sternal fracture and should not be correlated with myocardial injury.

Disclosure: All authors have declared no conflicts of interest.

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BENEFIT OF 3-DIMENSIONAL COMPUTED TOMOGRAPHY FOR TRAUMATIC RIB FRACTURES

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Objectives
A rib fracture secondary to a blunt thoracic trauma is an important indicator of the severity of the trauma, including delayed hemopneumothorax. In this study, we compared the number of rib fractures diagnosed by chest radiography (CR), spot ribs radiography (SRR), conventional single-detector computed tomography (CT), and 3-dimensional computed tomography (3D-CT) of ribs reconstructed by multi-detector computed tomography (MDCT) in patients with blunt chest trauma.

Methods
Fifty consecutive patients with blunt chest trauma were studied. All patients underwent CR, SRR, CT, and 3D-CT of the ribs. Gender, age, type of injury, presence of pneumothorax or hemothorax, and need for drainage were recorded. Numbers and sites (anterior, lateral, posterior) of rib fractures were diagnosed by all authors using each method.

Results
The average numbers of rib fractures detected by each method (mean ± SD) were as follows: CR, 1.40 ± 0.44; SRR, 2.32 ± 0.45; CT, 3.00 ± 0.55; 3D-CT, 5.45 ± 0.49, respectively. 3D-CT was able to detect more rib fracture sites than CR, SRR, or CT ($P < 0.01$, $P < 0.01$, $P = 0.04$, respectively). The total numbers of each rib fracture sites (anterior/lateral/posterior) detected by each method were as follows: CR, 1/40/ 13; SRR, 4/88/21; CT, 18/103/34; 3D-CT, 49/179/43. 3D-CT was able to detect more fractures than CR, SRR, or 3D-CT ($P < 0.01$, $P < 0.01$, $P < 0.01$, respectively), and 5 of 11 patients with anterior rib fracture were detected only by 3D-CT, and they needed chest drainage for delayed hemothorax.

Conclusions
3D-CT has proven to be an excellent imaging technique and is useful to detect anterior rib fractures which are difficult to detect employing conventional methods. Moreover, 3D-CT is useful to explain the details of injury to the patients and their families. MDCT is strongly recommended for patients with blunt chest trauma.

Disclosure: All authors have declared no conflicts of interest.

P-144

ABSORBABLE COPOLYMER PLATE FOR THE STABILIZATION OF STERNUM AFTER OPEN SURGERY FOR PECTUS DEFORMITIES

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Objectives
Minimally invasive repair of pectus deformities have become the treatment of choice in the recent years yet open surgery is still being widely performed for deformities where minimally invasive techniques are not feasible, such as mixed deformities or pectus arcuatum. Various materials can be used for stabilizing the sternum after open surgery. Absorbabale copolymer plates have been in use for the stabilization of bony structures. The aim of this study was to investigate our results of open surgery for pectus deformities using absorbable copolymer plates for the sternal stabilization.

Methods
Fifteen patients who had had open surgery for pectus deformities using absorbable copolymer plates between November 2008 and January 2012 were included in the study and they were evaluated retrospectively according to the demographics, type and form of the deformity, operation duration, perioperative and postoperative complications, and recurrence.

Results
Nine patients were male and the median age was 19,5 (range: 14-31). Six patients had pectus carinatum, 5 had pectus arcuatum and 4 had mixed deformity. Deformity was symmetric in 10 patients. All patients had open surgical correction with the principals of modified Ravitch sternoplasy and the sternum was stabilized by screwing a 42x42x2mm absorbable copolymer plate on sternal osteotomy line. The median operation duration was 120 minutes (range: 40-210). One patient had seroma in the postoperative period. No recurrence of the deformity was seen.

Conclusions
Absorbable copolymer plates can be used for the stabilization of sternum after open surgery for pectus deformities as it is a safe and easy-to-use material.

Disclosure: All authors have declared no conflicts of interest.

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LATERAL THORACIC EXPANSION FOR JEUNE SYNDROME USING TITANIUM PLATES

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Objectives
Jeune's asphyxiating thoracic dystrophy is a rare autosomal recessive disorder characterized by typical skeletal dysplasias, such as a narrow thorax. Lateral thoracic expansion is a procedure to enlarge the thoracic cage in patients with Jeune's asphyxiating thoracic dystrophy. The procedure involves division and separation of the ribs and plating them together in an expanded fashion using titanium plates. We report a 16-year-old case who was treated with left and right lateral thoracic expansion.

Methods
The patient admitted to our clinic with dyspnea on exertion. He was treated with resection of the 4 costal cartilages on the right when he was 6 but the symptoms persisted. Physical examination revealed a narrow thorax. Lateral thoracic expansion operation was performed on the left initially. Four sequential ribs were divided and two of them were expanded using titanium plates. Three months later, lateral thoracic expansion operation was performed on the right. Seven sequential ribs were divided this time and five of them were expanded using titanium plates.

Results
The symptoms of the patient were relieved and better pulmonary functions were detected on tests. He was also satisfied with the new appearance of his chest wall aesthetically.

Conclusions
Lateral thoracic expansion is a satisfactory surgical technique which creates additional chest wall on the thorax of the patient relieving the symptoms together with good cosmetic results.

Disclosure: All authors have declared no conflicts of interest.

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THORACOPLASTY IN THE TREATMENT OF MULTIRESISTANT DESTRUCTIVE LUNG TUBERCULOSIS

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Objectives
The peculiarities of tuberculosis in Ukraine is a significant increase in multiresistant lung tuberculosis (LTB) in both chronic and newly diagnosed patients.

Methods
42 ekstrapleural thoracoplasty(ET) were performed in patients with widespread destructive LTB in 1 thoracic department during 2008 - 2011 , aged 24 - 61. Males were 35 (83,3%). These patients were the main group. Indications for performance ekstrapleural thoracoplasty was one-sided or double-faced widespread destructive LTB in several segments of the pulmonary parenchyma and multiresistent to specific chemotherapeutic drugs. 30 not operated patients with multiresistant destructive LTB were in a comparative group.

Results
In the main group, dominated one-sided defeat of the lungs 74%, and in a comparative group of double-headed - 75%. 17 ekstrapleural thoracoplasty were performed at infiltration of multiresistant LTB with destructives, 12 ET were performed at disseminative LTB and 13 were performed at fibro-cavernous LTB. In the 26 patients were performed 7 ribs upper-rear ET, in 2 cases - 8 ribs ET, in 2 patients - 6 ribs ET, in 4 patients - 4 ribs ET. In 11 cases were performed lower-rear thoracoplasty. In one patient seen intramuscular hematoma. Severe violations of cardiovascular activity were in two patients (one of them died, which was performed pulmonectomy 20 years ago). Overall mortality was 2.4%. The effectiveness of postoperative treatment was noted in 36 (85,7%) cases. Termination secrete of bacteria TB was observed in 32 (76,2%) patients. Reactivation tuberculosis was noted in 4 patients (9,5%)

Conclusions
Ekstrapleural thoracoplasty in patients with widespread destructive resistant LTB is an alternative method to outted surgery. Thoracoplasty should be used individually, depending on the localization of pathological process and functional performance.

Disclosure: All authors have declared no conflicts of interest.

P-147

PECTUS EXCAVATUM AND CARDIAC SURGERY - RESULTS OF SIMULTANEOUS CORRECTION

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Objectives
Severe pectus excavatum may become challenging if complicating cardiac disease that requires open heart surgery with cardio-pulmonary bypass. Access to the heart may be impaired by the chest deformity and prolonged operations with anticoagulation for cardio-pulmonary bypass are associated with bleeding complications and infections. The reported experience with simultaneous procedures is very limited.

Methods
In a retrospective analysis patients undergoing simultaneous correction of pectus excavatum and open-heart surgery over a period of 10 years (2001 and 2011) were analyzed.

Results
A total of 10 patients (2 females, 8 males) underwent open-heart surgery and simultaneous pectus excavatum correction. Mean age was 43 (9–70) years. In all patients severe pectus excavatum deformities impairing access to the heart were present. Indications for cardiac surgery were mitral valve regurgitation (n=3), coronary artery disease (n=2), ascending aorta aneurysm with dilatation of the aortic annulus (n=2), pulmonary and tricuspid valve regurgitation and patent foramen ovale (PFO) (n=1), atrial-septal defect (n=1) and aortic valve stenosis (n=1). Pectus excavatum was corrected using a modified Ravitch's technique. The average operation time was 369 (210–495) minutes and the average duration of cardiopulmonary bypass was 125 (54–222) minutes. All procedures were completed successfully. Mean hospital stay was 20 (10–28) days. In-hospital and 30-day mortalities were 0%. Minor postoperative complications observed in 3 patients, including a paralytic ileus and hematothorax (n=1), a sero-pneumothorax and delayed sternal wound healing (n=1) and a parasternal hematoma (n=1). No wound infections occurred. Satisfying cosmetic results were achieved in all patients.

Conclusions
Our series indicates that simultaneous pectus excavatum correction and open heart surgery is feasible and may be performed safely.

Disclosure: All authors have declared no conflicts of interest.

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THE PERCUTANEOUS ASPIRATION AS A SAFE AND EFFECTIVE TECHNIQUE IN THE TREATMENT OF PRIMARY SPONTANEOUS PNEUMOTHORAX

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Objectives
The guidelines offered on guides to treat first episodes or primary spontaneous pneumothorax (PSP) vary greatly from one to another. Our objective is to describe our experience with the percutaneous-aspiration (PA) technique which we have now been using for 10 years.

Methods
Of all patients who are diagnosed with pneumothorax in the Emergency Department only patients suffering first episode of PSP requiring drainage were selected. That is patients with previous episodes, adquired pneumothorax, bilateral pneumothorax or inmunocompromised patients were excluded. Two researchers extracted independently the data. The variables studied were: a) Descriptive variables: Age, sex, smoking status, side of pneumothorax, mean size of the pneumothorax, aspirated air volume. b) Outcome variables: resolution with PA, need of hospitalization, complications, hospital stay, need of readmission, relapse, need of surgery, surgery indications. To evaluate statistically the relationship between variables parametric and nonparametric test have been used. It has been established at $p<0.005$ as statistically significant. The statistical analysis is performed using statistical package SPSS 15.0 (Chicago, IL).

Results
In the period studied 1016 patients were diagnosed with pneumothorax (from 1/1/2001 to 31/12/2010). Of these, following the criteria described previously and in 121 the PA technique was performed. In order to rule out any selection bias, we compared the characteristic of the patients who underwent PA technique with those who did not because of lack of means, and there were not statistically significant differences. There was a clear difference between the two groups with regard to risk of hospital admission (RR 0.697;IC95:0.62-0.78).In the group of PA, no differences were found in terms of readmission and relapse between patients who were discharged or not.

Conclusions
The percutaneous aspiration technique is safe and effective as a first step in the treatment of PSP and reduces hospital admissions without increasing the risk of readmission or relapse.

Disclosure: All authors have declared no conflicts of interest.

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NT-PROBNP AS A USEFUL MARKER FOR THE CARDIAC CONDITION AFTER EXTRAPLEURAL PNEUMONECTOMY FOR MALIGNANT PLEURAL MESOTHELIOMA

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Objectives

Since Extrapleural Pneumonectomy (EPP) is a highly invasive surgery, operative morbidity is extremely high. Postoperative congestive heart failure is one of most common complication after EPP. However, making diagnosis of congestive heart failure is often difficult because postoperative course of EPP is usually involved with other factors such as infection, wound pain, respiratory disorder, bleeding, and so on. N-terminal pro-type B natriuretic peptide (NT-proBNP) is known as a useful marker of congestive heart failure (CHF). We conducted a prospective study to evaluate usefulness of NT-proBNP as a marker for CHF in the patients undergoing EPP.

Methods

From August 2009 to November 2011, 15 patients (5 right and 10 left) undergoing EPP for MPM were enrolled. Measurement of NT-pro BNP was performed before EPP, and 2 and 4weeks after EPP. Patients who manifested postoperative CHF (CTCAE criteria grade 2 or higher) were categorized as heart failure group (HF) and others as non-heart failure group (NHF).

Results

Preoperative value of NT-proBNP of HF (n=5) and NHF (n=10) were similar; 60.4±34.1pg/ml vs 62.0±42.3pg/ml. The value of NT-proBNP was significantly higher in HF than in NHF at 2 weeks after EPP;1976±996.5pg/ml vs 447.7±205.5pg/ml ($p<0.005$), and at 4 weeks after EPP; 933±540.4pg/ml vs 359.1±153.8pg/ml ($p<0.05$).

Conclusions

Preoperative value of NT-proBNP did not predict CHF after EPP.NT-proBNP peaked at 2 weeks after EPP. Patients complicated with postoperative CHF showed significantly higher NT-proBNP value at 2 and 4 weeks after EPP in comparison with patients without CHF. The measurement of NT-proBNP can be helpful in diagnosing CHF after EPP.

Disclosure: All authors have declared no conflicts of interest.

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VARIATION OF POSTOPERATIVE FLUID ABSORPTION ACCORDING TO THE TYPE OF LOBECTOMY

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Objectives
The pleural membrane of the lower pleural cavity exerts more intense fluid recycling ability, event possibly attributed to the greater abundance of ion transporters of the visceral and parietal mesothelial cells. During lobectomy, the visceral pleura is removed alongside with the lobe. This study investigates possible variations of the overall fluid absorption according to the type of lobectomy.

Methods
Consecutive patients undergoing lobectomy were included in the study as follows; 7 patients for each lung (right or left) and 7 for each type of lobectomy (upper or lower). All patients were suctioned until totally dry before closure and 1 chest tube was left in the hemithorax. The amount of fluid drained per day, the duration of chest tube removal, the in-hospital stay and the morbidity were noted. T-test and ANOVA were used for comparison. $P<0.05$ were indicated as statistically significant.

Results
Patients after upper lobectomy had lower fluid drained when compared with patients after lower lobectomy at the 1st (268±75 vs 590±85 ml, p=0.006) and 2nd (250±90 vs 440±88 ml, p=0.046) postoperative day and their tube was removed earlier than the lower lobectomy patients (5.5±1.3 vs 8.8±1.8 days, p=0.048). Patients with right lower lobectomy had lower fluid drained than the left lower lobectomy patients at the 1st (310±65 vs 662±75 ml, p=0.033) postoperative day and their tube was removed earlier (5.25±1.7 vs 7.5±1.2, p=0.056).

Conclusions
More fluid is drained after the removal of the lower lobes (and especially the right lower lobe). One possible explanation for this variation can be that less fluid is absorbed after the lower lobe removal, which may be attributed to the different ability of the pleura according to location within the pleural cavity to recycle fluid.

Disclosure: All authors have declared no conflicts of interest.

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LUNG-SPARING RADICAL SURGERY FOR MESOTHELIOMA: CLINICAL, SURVIVAL, SPIROMETRY AND QUALITY OF LIFE OUTCOMES

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Objectives
Assess outcomes after Radical Pleurectomy Decortication (RPD) for Malignant Pleural Mesothelioma (MPM)

Methods
Analysis of clinical outcomes and survival as well as changes in FEV1, Quality of Life (QoL) Questionaires EORTC C30 and LC13, and volume measurements using CT scan software in 44 patients [38 male and 6 female, median age 66 (range 50 to 76 years] undergoing Radical Pleurectomy/Decortication under a single surgeon from August 2009-January 2012. Patients responded to QoL questionnaires pre and postoperatively at 3 month intervals. Ct scan were performed within 3 months from surgery and patients underwent spirometry 3 months after surgery.

Results
There were 1 hospital; death (2.3%) with another patient dying after re-admission to hospital giving a 3-month mortality of 4.6%. The median hospital stay was 12 (range 5 to 36) days.58 % of patients had epithelioid histology and 48% biphasic. At a median follow-up of 12 months (range 1-30), the median survival for the entire group is 20 months (95%CI of 15-25 months). The median survival of the Biphasic group was 14 months while Epithelioid was over 24 months 9p=0.04). FEV1 was similar before and after surgery (mean of 68% vs 70%, p=0.8). Lung volumes were also similar on CT scan measurements (p=0.9)Lung volumes changed a median of 1%, ranging form loss of 57% to gain of 35% (p=0.9) QoL scores at 3, 6, 9 and 12 months postoperatively showed no changes from preoperative responses

Conclusions
Preserving the lung parenchyma during Radical Surgery for MPM allows preservation of respiratory reserve and lung volumes. Some patients (the ones with a trapped-lung preoperatively) even improve their measurements. Patients reported preservation of QoL scores at 3,6, 9 and 12months.Older patients and with less respiratory reserve that could not tolerate an Extrapleural pneumonectomy can benefit from this surgical approach.

Disclosure: All authors have declared no conflicts of interest.

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MANAGEMENT OF CHEST TUBE WITH DIGITAL DEVICES

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Objectives
Good management of chest tubes is essential. No consensus is known on the timing of removal of chest tubes in the era of digital systems

Methods
During a 3 month period, consecutive patients undergoing elective lung resection were enrolled in a randomized double-blind study. Patients were randomly assigned to have their chest tube removed according to the amount of air flow on the screen of the device. Group I: included patients with chest tube removal when 0 air flow over 24h was observed. Group II: chest tube removal when air flow was once 0. Group III: chest tube removal when air leak was 10ml/min. Group IV: chest tube removal when air leak up to 20ml/min. Critical points were development of pneumothorax which needed re drainage, subcutaneous emphysema, and mediastinal emphysema.

Results
A total of 55 Patients (38 men (70%), mean age of 63 years were enrolled in the study. Surgical procedures included 10 open lobectomy and bilobectomy, 22 open segment and wedge resction. 15 VATS. Surgical diagnosis: 16 bronchial carcinoma (29%), 12 pulmonary metastases (18%), 5 pneumothorax (9%), 4 pleura effusion, 3 heterogeneous emphysema with gaint bullae, t2 sarcoid lesions, 2 localized pneumonia, 2 lymphoma, 3 mesellaneous. No major complications registered. Minor complications occurred in 6 (10%) in all groups: 2 had small pleural effusion (3%), one tachyarrhythmia (1%), one wound infection, one pneumonia, and one urinary tract infection. In group I (n=13) there was one patient (7%) with recurrent pneumothorax which has to be evacuated. In group II (n=15): one has asymptomatic chronic pneumothorax and no drainage was needed, p=0.001). Hospital stay was shorter in group III (n=13) and IV (n=14) (p=0.014, 0.019).

Conclusions
Digital systems for chest drainage are safe and effective in better management of patients after lung surgery. Removal of thoracic drainage with air flow up to 20ml/min. is save cost effective.

Disclosure: All authors have declared no conflicts of interest.

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TUNNELED PLEURAL CATHETERS IN PATIENTS WITH PLEURAL EFFUSIONS: EXPERIENCE IN 281 CASES

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Objectives
The introduction of tunneled pleural catheters (TPC) alleviated the treatment of patients with malignant pleural effusions especially in the presence of trapped lung. Few data exist regarding long-term success and complications. No data have been published regarding the effect of TPC in the treatment of patients with benign pleural effusions.

Methods
Retrospective single-center cohort analysis of all patients treated with TPC for malignant and benign pleural effusions between 2007 and 2010. Epidemiologic patient characteristics, underlying disease including ASA score, comorbidities, perioperative complications, postoperative course, and catheter dysfunction including pleural infection and empyema were analyzed.

Results
The cohort consisted of 281 patients. Of these, 249 (88.6%) were treated for malignant pleural effusions and 32 (11.4%) for benign disease. Their average ASA score was 3.6±0.5. The majority of TPC was implanted on the right side (n=167, 59.4%), only 3 patients (1.1%) were treated on both sides simultaneously. Perioperative complications were recorded in 5 patients (1.8%): 2 bleedings, 2 catheter dyslocations and 1 dysfunction. Following implantation and hospital discharge, 194 patients (69.0%) remained independent and 82 patients depended on nursing care (29.2%). In 144 patients (51.2%), the PleurX catheter was removed after successful pleurodesis. In the group of patients with benign disease, pleurodesis was attained in 81.3% of cases. The average TPC duration was 90.5±118 days, with the longest implantations in patients with benign disease (120.6±195.3 days). During that period, 17 re-interventions (6.1%) had to be performed due to secondary pleural empyema or catheter dysfunction.

Conclusions
TPC implantation is a safe option for the treatment of seriously ill patients with pleural effusions. It affords independency in the majority of patients and is associated with low complication rates (6.1%). Seriously ill patients with benign effusions also benefit from TPC implantation. The average treatment duration in our study is longer than in previous reports of smaller patient cohorts.

Disclosure: All authors have declared no conflicts of interest.

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MANAGEMENT OF POSTPNEUMONIC EMPYEMA THORACIS IN CHILDREN: COMPARISON OF DRAINAGE, FIBRINOLITICS AND SURGERY

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Objectives
Empyema is a well-known outcome of pneumonia and reported to increase in children despite strict managements. Proper diagnosis and treatment modalities are followed by complete resolution and minimal morbidity. The appropriate management remains controversial. The aim of this study is to assess different treatment options in the management of postpneumonic pediatric empyemas.

Methods
Seven hundred nine (394 boys and 315 girls) pediatric patients with postpneumonic empyema were reviewed between 1990 and 2011. A mean age of 4.3 years (15 months to 15 years). Chest tube drainage alone (n: 342), chest tube drainage with intrapleural fibrinolytic therapy (n:117), thoracotomy after chest tubes due to trapped lung on computerized tomography (n:251) and video-assisted thoracoscopic surgery (n:35).

Results
Tube thoracostomy, fibrinolytic treatment and video-assisted thoracoscopic surgery (VATS) had complete response rates of % 48.24, %80.01, and %85.71, respectively. Eight patients after thoracostomy and 1 patient after video-assisted thoracoscopy were died of sepsis, heart failure, pneumonia and pleural hemorrhage (%1.27). Those underwent thoracotomy recovered completely. No deaths occurred. Postoperative complications (%11.14) included wound infection in 22 patients, athelectasis in 40, delayed expansion in 17 patients and reoperation after hemorrhage in 2.

Conclusions
The aim of minimal complications and shorter hospital stays obligates early diagnosis. Although new modalities, thoracotomy is last resorted for cases unresponsive to chemical fibrinolysis and failed thoracoscopy. The best treatment is even in question.

Disclosure: All authors have declared no conflicts of interest.

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EXTENT OF PARIETAL PLEURECTOMY IN PRIMARY SPONTANEOUS PNEUMOTHORAX SURGERY

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Objectives
During surgical treatment of primary spontaneous pneumothorax (PSP) some surgeons perform parietal pleurectomy additional to the wedge resection of the bullous lung area, to reduce the risk of development of recurrence. In this study correlation between the extent of parietal pleura to be removed and development of recurrence was analyzed.

Methods
Between the years 2005 and 2009, 213 parietal pleurectomy with wedge resection of lung apex procedures were done (in 198 patients). The extent of removed pleura was measured. The results of operations were recorded. Correlations between the extent of removed pleura and, operative approaches, morbidity, post-operative duration of the chest tube, length of stay (LOS) and development of recurrence were analyzed.

Results
Median size of the removed parietal pleura was 40 (interquartile range; IQR, 25-75) cm2. Median follow-up time was 44 (IQR, 32-65) months. Only one recurrence was occurred (0.46%). No correlation was found between the size of removed parietal pleura and morbidity, post-operative duration of the chest tube, LOS and development of recurrence ($p=0.473$, $p=0.481$, $p=0.382$ and $p=0.146$, respectively).

Conclusions
There is no correlation between extent of parietal pleurectomy and development of recurrence after PSP surgery. Therefore limited pleurectomy may be preferred.

Disclosure: All authors have declared no conflicts of interest.

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TRANSTHORACIC APPROACH IN SURGICAL MANAGEMENT OF MORGAGNI HERNIA

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Objectives
Morgagni hernia is an uncommon type of diaphragmatic hernias. Numerous approaches have been described and, particularly the significance of laparatomy has been emphasized as an operative technique. We present our experience on patients with Morgagni hernia operated on via transthoracic approach in our department.

Methods
Between January 2000 and December 2010, 21 patients with Morgagni's hernia (15 right, 6 left) were surgically treated at our hospital. Their ages ranged from 16 to 68 years (mean 51.5). Five (23.8%) patients were male, and 16 (76.2%) patients were female. Chest roentgenograms, thorax CT, barium enema roentgenographic studies were used as diagnostic utilities. Operative repair was accomplished with the transthoracic 18 patients or transabdominal approach 3 patients. Basic spirometric tests had been carried out on patients presented for elective surgery. Anterolateral thoracotomy was performed in all patients.

Results
Hernia sac was present in all cases. Exploration revealed omentum in hernia sac in eleven patients (52.4%), colon and omentum in seven patients (33.3%), only colon in three patients (14.3%). Postoperative course was uneventful. The mean follow-up was 5 years. There was no recurrence or symptoms related to the operation. Improvement in lung function can be expected postoperatively.

Conclusions
We advocate transthoracic approach for surgical exposure as it provides wide exposure and easy repair of the hernia sac in Morgagni hernia. Improvement in lung function can be expected postoperatively. Key Words: Morgagni hernia • Diaphragmatic hernia • Surgery • Thoracotomy

Disclosure: All authors have declared no conflicts of interest.

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SURGICAL REPAIR OF THE LIVER DOME ECHINOCOCCOSIS USING THE TRANSTHORACIC–TRANSDIAPHRAGMATIC APPROACH

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Objectives
The aim of our study was to assess the efficacy of the transthoracic–transdiaphragmatic approach of the liver hydatid cysts and to determine his safety.

Methods
We present our experience based on 10 patients (7 male, 3 female) treated during 2005-2011. Hepatic cysts were approached through a right axillary thoracotomy and phrenotomy followed by evacuation of the main cyst and of the daughter cysts, treatment of the billiary fistulaes, drainage of the cystic cavities, suture of the margins of the cyst, and of the diaphragm and pleural drainage.

Results
The age ranged from 14 years to 71 years (45+/-17years); The diagnosis of hepatic cysts was established in all the cases with upper abdominal computed tomography, five patiens appearing with multiple echinococcosis (4 right pulmonary and 1 right and left pulmonary) resolved simultaneously (right pulmory and liver) and the remaining one previously on the left; the mean postoperative stay was 13,5+/- 5,1 days. The Pearson coefficient age-postoperative days was 0,06. There was no in-hospital mortality, no major postoperative complications and no recurrences of the disease.

Conclusions
Right sided thoracotomy with frenotomy provides better access to the liver dome cyst compared to the laparotomy.

Disclosure: All authors have declared no conflicts of interest.

P-158

INTEREST OF PREOPERATIVE ISCHEMIC CONDITIONING BY ARTERIAL EMBOLIZATION BEFORE ESOPHAGECTOMY

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Objectives
To study the feasibility and the results of ischemic conditioning by arterial embolization before esophagectomy with oesophagogastroplasty.

Methods
A group of 14 consecutive patients who received ischemic conditioning since March 2010 was compared with a control group of 14 consecutive patients without conditioning operated on before March 2010. All patients required a gastroplasty with thoracic or cervical anastomosis mainly for oesophageal cancer. Ischemic conditioning was performed 4 weeks before surgery by a selective embolization of the right and left gastric arteries and splenic artery, in order to increase arterial blood supply from the right gastroepiploic artery. Outcome measures included success and complications of embolization, postoperative complications especially anastomotic failure and gastric necrosis, morbidity, mortality and hospital stay.

Results
Embolization was complete in 10/14 cases, with failure of embolization of the right gastric artery in 4 cases. No serious complication occurred. It allowed a decrease of anastomotic failure from 42.9% to 21.4% (Odds Ratio = 2.65, p = 0.420). It mainly concerned anastomotic leaks, which decrease from 42,9% to 14,3% (OR = 4.258, p = 0.209) and severe anastomotic complications or gastric necrosis (OR = 4,917, p = 0.326). Mean hospital stay was lower after conditioning with 15 days versus 18 days. The most common morbidity was respiratory in both with 57,7%, responsible for the only one death of the conditioned patients while all 3 deaths were linked to anastomotic failures in the control group. Intensive use of vasopressive support didn't affect the gastric viability only after conditioning.

Conclusions
Ischemic conditioning by arterial embolization improves the blood supply of the gastric tube, and can be effectively used to decrease the anastomotic morbidity, which is heavily involved in postoperative mortality. It can reduce both the incidence and the severity of the anastomotic failure with no serious complication induced.

Disclosure: All authors have declared no conflicts of interest.

P-159

PERFORATED OESOPHAGUS- LONG TERM SURVIVAL FROM A TERTIARY REFERRAL UNIT

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Objectives
Carrying mortality as high as 41%, perforated oesophagus remains one of the most challenging emergency presentations to the Cardiothoracic Surgical Unit. We present our experience over a 25 year period of 104 patients in a regional tertiary referral centre for thoracic and oesophageal surgery and look at patient survival with follow up to a median of 69.5 months.

Methods
Retrospective case review was performed using operative log books (computerised) which charts prospective data collection, GP records, Northern Ireland Death Registry and patient hospital charts. We collected follow-up data on all 104 (100%) of patients and carried out both univariant and multivariant analysis along with survival statistics.

Results
60 males (58%) were admitted to the unit with perforated oesophagus over the 25 year period. The majority of perforations were iatrogenic (73,70.2%). 82 (78.8%) patients presented with symptoms secondary to their perforation, such as chest pain, vomiting, temperature and abdominal pain. 65 patients were diagnosed by contrast examination (62.5%) and 60 had signs on erect CXR (57.7%). The median length of hospital stay for all patients was 23 days (5-102) and intensive care admission was 3 days (0-65). 14 patients died as a result of their perforation (13.5%). Patients diagnosed > 24 hours were significantly more likely to die as a result (31.8% vs. 8.5%; $p<0.01$) and also were associated with longer length of intensive care admission (24 vs. 9 days; $p<0.01$). This time to diagnosis retained its significance on multi-variant analysis when adjusted for age, gender, symptoms, site of perforation, aetiology, CXR signs, ICU length of stay, method of diagnosis, site of perforation, Mediastinal drainage, nutritional support and complications of perforation (OR=5.5; 1.4-22) ($p=0.016$). 55 of 104 patients were alive on long-term follow-up with a median survival of 16 years for the 55 alive patients (52.9%) of the 104 identified perforations (49 patients dead at follow-up, 47.1%). Median follow-up was 69.5 months (0-355 months).

Conclusions
This study concurs with the literature published and is the largest published series to our knowledge on this topic. The only statistically significant impact on this cohort of patients is time to diagnosis and institution of resuscitative care, with patients diagnosed less than 24 hours having shorter stays in intensive care and were also less likely to die from the perforation.

Disclosure: All authors have declared no conflicts of interest.

P-160

EXPRESSION OF COX2 AND P53 IN RAT ESOPHAGEAL CANCER INDUCED BY REFLUX OF DUODENAL CONTENTS

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Objectives
It is known that reflux of duodenal contents can induce mucosal injury, stimulate cell proliferation, and promote tumorigenesis. Cyclooxygenase (COX2), an inducible form of COX, has been implicated in both inflammation and carcinogenesis. We examined the expression of COX2 and P53 in rat esophageal lesions induced by duodenal contents reflux.

Methods
Thirty 8 week old male wistar rats were exposed to duodenal content esophageal reflux. All animal underwent an esophagoduodenal anastomosis(EDA) with total gastrectomy in order to produce chronic esophagitis. In ten rats the sham (Control).They were sacrified at the 40th week. Their esophagi were examined for HE,COX2,P53 and Proliferating cell nuclear antigen (PCNA).

Results
After 40 weeks of reflux, dysplasia, squamous cell carcinoma(SCC) and adenocarcinoma (ADC) were found. PCNA Labeling index was higher in dysplastic and cancer tissue than that of normal. Overexpression of COX2 were shown in ADC and SCC. Wild type p53 accumulation were found in ADC, not in SCC.

Conclusions
Reflux of duodenal contents into the esophagus led to ADC and SCC in rat. COX2 may play an important role in esophageal cancer by duodenal content reflux. Our present results suggest an association between wild type P53 accumulation and COX2 expression in ADC, with no such relation seen in SCC.

Disclosure: All authors have declared no conflicts of interest.

P-161

CLINICAL SIGNIFICANCE OF INTRATUMORAL LYMPHATICS, INTRATUMORAL AND PERITUMORAL LYMPHATIC VESSELS INVASION DETECTED BY D20-40 IN PATIENTS WITH RESECTED ESOPHAGEAL CANCER

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Objectives
Lymphatic metastasis in esophageal cancer is characterized by early and widespread dissemination. Clinicopathological research has demonstrated that the earliest path for solid tumor metastasis is regional spreading to the lymph nodes through lymphatic vessels. The discovery of markers to lymphatic endothelial cells have generated the progress in the understanding of lymphangiogenesis and cancer metastasis.

Methods
The aim of this study was to evaluate the intratumoral and peritumoral lymphatic vessel density (itLVD and ptLVD), intratumoral and peritumoral lymphatic vessel invasion (itLVI and ptLVI) in resected esophageal cancer detected by D2-40 staining to clarify their significance with nodal metastasis and prognosis. Seventy four patients were analyzed by univariate and multivariate logistic regression analysis, univariate and multivariate survival analysis models.

Results
The pLVD was significantly higher than itLVD ($p<0.001$). The ptLVD and itLVD were correlated positively with lymph node metastasis ($p<0.001$, $p<0.001$), tumor stage ($p<0.001$, $p<0.001$), depth of tumor invasion ($p<0.001$, $p=0.001$) and residual tumor ($p=0.049$, $p=0.027$). Positive itLVI and ptLVI were significantly correlated with lymph node metastasis ($p=0.001$, $p<0.001$), tumor size ($p=0.001$, $p=0.002$), tumor depth ($p<0.001$,$p=0.002$), stage ($p<0.001$,$p<0.001$) and residual tumor ($p=0.001$, $p=0.019$). Multivariate logistic regression analysis identified itLVD ($p=0.019$) and ptLVI ($p=0.046$) as predictors of regional lymph node metastasis. On univariate survival analysis, patients with high ptLVD, itLVD, positive ptLVI, itLVI had a significantly shorter disease free survival, cancer-specific survival and overall survival. Cox regression analysis proved that ptLVI and itLVI diagnosed by D2-40 are an independent prognostic factors of disease free survival ($p=0.021$,$p=0.018$), cancer-specific survival ($p=0.025$,$p=0.016$) and overall survival ($p=0.020$,$p=0.017$) in resected esophageal cancer.

Conclusions

Our study showed that lymphangiogenesis have important roles in the progression of esophageal cancer. Intratumoral lymphatics and peritumoral lymphatic vessels invasion are predictive factors of regional lymph node metastasis. Intratumoral and peritumoral lymphatic vessels invasion are an independent prognostic factors in patients with esophageal cancer.

Disclosure: All authors have declared no conflicts of interest.

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VERY LONG-TERM RESULTS, PROGNOSTIC FACTORS AND CAUSES OF DEATH IN EARLY ESOPHAGEAL ADENOCARCINOMA

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Objectives
Very long-term outcome, overall- and disease specific survival and causes of death are poorly analyzed in early esophageal adenocarcinoma. There is also no consensus of the extent of its curative treatment.

Methods
85 patients (36 women/49 men, median age 72, range 40-94) without neoadjuvant treatment were operated on (hospital mortality 1.2%) because of early esophageal adenocarcinoma (pT1N0-1, M0) 1984-2011. Autopsy records and death certificates were acquired. Medical and pathology reports were reviewed and 79 (93%) specimens were reanalyzed for cancer penetration by two experienced pathologists. Survival was calculated according to Kaplan-Meier and comparisons of survival with the Log–Rank-Test. 39 had transhiatal, 36 transthoracic en-bloc, 5 vagal-sparing esophageal resection and 5 ailing patients solely endoscopic mucosal resection.

Results
Cancer penetration: 35 pT1a and 44 pT1b. Overall survival probability: 67.7% at 5, 49.2% at 10 years. Disease specific survival: 78.3% at 5 and 72.3% at 10 years. Overall incidence of lymph node metastasis: 8% (intramural 3%, sm1 9%, sm2 20%, sm3 19%). In univariate analysis, prognostic factors for shorter overall survival were lymph node metastases ($p=0.009$) and for longer survival en-bloc operation ($p=0.045$). Prognostic factors for disease-specific survival: lymph node metastases ($p<0.0001$) and pT1b/sm2-3 infiltration ($p=0.008$). Cumulative mortality: 33/85 (39%). Causes of death: esophageal adenocarcinoma recurrence 13/33 (39.4%), another primary malignancy 5/33 (15.2%), non-cancer related 11/33 (33%) and unknown 3/33 (10%) of all deaths. Mortality after 5-year follow-up: 10/33 (32.6%) and 80% of deaths were not related to esophageal adenocarcinoma recurrence.

Conclusions

Depth of cancer infiltration has no significant impact on very long-term overall survival. Treatment modalities should be tailored; treatments with minimal morbidity could be preferred in the elderly and those with higher operative risk. However, because esophageal adenocarcinoma recurrence is the most common cause of death even in m-sm1-cancer in fit patients with long life expectancy radical surgery should be considered.

Disclosure: All authors have declared no conflicts of interest.

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RESPONSE 18F-FLUORODEOXYGLUCOSE PET-CT IMAGING IS A BETTER DELINEATOR OF METABOLIC TUMOUR LENGTH COMPARED TO STAGING 18F-FLUORODEOXYGLUCOSE PET-CT IN PATIENTS WITH OESOPHAGEAL CANCER UNDERGOING NEO-ADJUVANT CHEMOTHERAPY AND SURGERY

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Objectives
The aim of this study is to compare the metabolic tumour length between the staging and response 18-Fluorodeoxyglucose PET/CT scans with the resected pathological specimen in patients with oesophageal cancer.

Methods
All patients diagnosed with oesophageal cancer who had undergone staging PET/CT and response PET/CT following neo-adjuvant chemotherapy during the period of June 2002 to May 2008, who where then suitable for curative surgical resection were included in this study. Metabolic tumour length was assessed using both visual analysis and a maximum standardized uptake value (SUVmax) cut-off of 2.5.

Results
Fourty-eight patients proceeded with neo-adjuvant chemotherapy followed by curative surgery. The 95% limits of agreement were demonstrated to be more accurate with the response PET/CT imaging than with the staging PET/CT, with the visual analysis being a superior delineator of metabolic tumour length than SUVmax2.5. The mean difference and 95% limit of agreement for the response PET/CT with the visual and SUVmax2.5 analysis were -0.6cm (-4.28cm; +3.08cm) and +1.58cm (-4.62cm; +7.78cm) respectively. The mean difference and 95% limit of agreement for the staging PET/CT with the visual and SUVmax 2.5 analysis were +1.3cm (-3.9cm; +6.5cm) and +3.08cm (-2.5cm; +8.6cm) respectively.

Conclusions
This study confirms the high accuracy of PET/CT in measuring gross target volume (GTV) length. The response PET/CT imaging is a better delineator of true GTV length than the staging scan, with the visual analysis being superior to the SUVmax2.5 method. This can aid oncogists and surgeons to inform the radiotherapy planning process and extent of surgical resection respectively.

Disclosure: All authors have declared no conflicts of interest.

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PREOPERATIVE CHEMORADIATION BEFORE ESOPHAGECTOMY DECREASES THE NUMBER OF DISSECTED LYMPH NODES WITH NO EFFECT ON LONG TERM SURVIVAL

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Objectives
Lymph node (LN) metastasis is an important prognostic factor in esophageal cancer. Thus the number of dissected LNs affects long term survival. We analyzed the effect of preoperative chemoradiation on the adequacy of LN dissection.

Methods
Patients who underwent esophagectomy for esophageal cancer in 2004-2011 were evaluated for histology, number of dissected LNs, type of preoperative chemoradiation (neoadjuvant/salvage), surgical approach, mortality, recurrence and survival. LNs were dissected from the specimen. Statistical evaluation was performed using T-test, ANOVA and Kaplan-Meier survival analysis.

Results
39 out of 52 patients were included in the study (Age 56 [32-79], 31 females, 37 squamous cell carcinomas). Eighteen patients underwent esophagectomy following chemoradiation (8 curative, 10 neoadjuvant). Types of esophagectomies were three incisional (n=24), Ivor Lewis (n=3) and thoracoscopic three incisional (n=12). In-hospital mortality was 9.6% (5/52). Average number of dissected LNs was 17 ± 10 (1-39). Median survival was 35.5 months (40% 5 year survival). Six patients had complete pathologic response. Lymph nodes dissected were 22 ± 10 in the straightforward, 12 ± 5 in the neoadjuvant and 11 ± 5 in the salvage esophagectomy patients (p=0.001). Number of dissected lymph nodes was significantly less in the esophagectomy following chemoradiation patients (21.7 ± 10.8 vs 11.3 ± 4.7; p=0.001). No difference in recurrence rates (p=0.3) and overall survival between patients who underwent chemoradiation and who did not (28 vs 59% 5 year survival respectively, p=0.4). There was no difference in the number of dissected LNs between thoracoscopic three incisional and open esophagectomies (21 ± 10 vs 15 ± 10, p=0.7), however only one patient had preoperative chemoradiation in thoracoscopic esophagectomy patients.

Conclusions
Preoperative chemoradiation decreases the number of dissected lymph nodes following esophagectomy regardless of the surgical technique used. Overall survival does not seem to be affected from this result.

Disclosure: All authors have declared no conflicts of interest.

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SURGERY FOR CANCER ARISING FROM THE ABDOMINAL ESOPHAGUS

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Objectives
There are some reports from the West concerning surgical treatment for adenocarcinoma of lower esophagus or esophagogastric junction. However, a few studies have been reported from the East where squamous cell carcinoma is histological majority to date to our knowledge. The aim of the present study is to clarify the result and feasibility of surgery for cancer of the lower esophagus.

Methods
Of 353 patients with surgically resected esophageal cancer without preoperative supplement therapy, 44 patients with cancer located mainly at abdominal esophagus were enrolled in this study. Thirty-four males and 10 females, ranged 47 to 82 years old (mean; 67.4 years old), were included. Thirty-six and eight cases were diagnosed as squamous cell carcinoma and adenocarcinoma respectively. Thirteen patients underwent transhiatal esophagectomy, 18 underwent lower thoracic esophagectomy by left thoracotomy, and 13 underwent esophagectomy right thoracic approach by open thoracotomy or thoracoscopy.

Results
Ten cases, including two adenocarcinoma and eight squamous cell carcinoma, involved mediastinal lymph node although lymph node dissection varied in each surgical approach. Five year survival rate was 75% in adenocarcinoma and 31.9% in squamous cell carcinoma respectively, and the cases with adenocarcinoma revealed a more favorable prognosis than the cases with squamous cell carcinoma ($p=0.05$). In contrast, there was no significant prognostic difference between surgical approach ($P=0.34$).

Conclusions
The patients with squamous cell carcinoma revealed unfavorable prognosis because of the higher risk of mediastinal lymph node metastasis. Such cases might require thoracic lymph node dissection in order to improve the prognosis after surgery.

Disclosure: All authors have declared no conflicts of interest.

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GASTROINTESTINAL STROMAL TUMOR OF THE POSTERIOR MEDIASTINUM: A RARE ENTITY

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Objectives
Gastrointestinal stromal tumors (GIST) are rare mesenchymal tumors in the gastrointestinal tract arising from c-KIT (CD117)-positive intestinal Cajal cells, but potentially aggressive. We report a case of a huge esophageal GIST treated preoperatively with Imanitib mesylate.

Methods
A 60-year-old woman due to dysphagia was referred to our department. Endoscopic examination and the endoscopic ultrasound demonstrated a submucosal tumor in the lower esophagus clinically indistinguishable from leiomyoma. The biopsy revealed a tumor to be c-kit gene positive, and we diagnosed the tumor as a GIST. Computed tomography showed a 124 × 64 mm mass with an unclear margin adjacent to the posterior wall of the left atrium and the inferior right pulmonary vein. As we judged the tumor to be locally advanced and unresectable because of its size and invasiveness, we started neoadjuvant therapy with imatinib mesylate in order to achieve downstaging for complete surgical resection. After 4 months of treatment, the size of the tumor was reduced and it was free from the adjacent organs.

Results
Under general anesthesia with a double lumen tube the patient underwent through a left lateral thoracotomy complete surgical resection without proceeding to lower esophagectomy. Postoperative course was unventful and during the follow up the patient is disease free 34 months after surgery.

Conclusions
Primary esophageal GISTs are very rarely seen accounting for approximately 2% of digestive tract GISTs in the esophagus. The standard treatment for GIST is surgical excision with or without esophagectomy. Pretreatment with Imanitib as a targeted therapy decreases the size of the tumor so that esophagectomy can be avoided.

Disclosure: All authors have declared no conflicts of interest.

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ADEQUATE LYMPH NODE SAMPLING IS ACHIEVED WITH A THORACOSCOPIC APPROACH TO ESOPHAGECTOMY

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Objectives
Regional lymphatic spread of esophageal carcinoma is a primary indicator of poor long-term survival following esophagectomy. Adequate lymph node sampling is important to accurately assess disease stage, and the number of lymph nodes removed during esophagectomy correlates with survival. We report our experience with extended mediastinal lymph node dissection in minimally invasive esophagectomy (MIE) for esophageal cancer.

Methods
We retrospectively reviewed all patients who underwent minimally invasive lymph node dissection during esophagectomy between 1/2008 and 11/2011. We obtained lymph node counts by location from pathology reports. We provide descriptive statistics with means+ range.

Results
A total of 20 patients underwent minimally invasive lymph node dissection with esophagectomy during the study period. Laparoscopic lymph node dissection (8 patients) yielded a median of 25 nodes (13-33 nodes); thoracoscopic lymph node dissection (12 patients) yielded a median of 20 nodes (5-33 nodes). In 4 patients who had laparoscopic and thoracoscopic lymph node dissection, the median yield was 46 (40-53). There were no intraprocedural or postoperative complications related to lymphadenectomy.

Conclusions
An extended and oncologically appropriate lymph node dissection can be accomplished with minimally invasive esophagectomy for cancer.

Disclosure: All authors have declared no conflicts of interest.

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IS THERE A CORRELATION BETWEEN POSTOPERATIVE COMPLICATIONS AND TIMING OF ORAL INTAKE AFTER THORACOTOMY?

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Objectives
Possible correlation between the postoperative pulmonary complication (PPC) (pneumonia, atelectasis or acute respiratory insufficiency) incidence and oral intake initiating time after thoracotomy was examined.

Methods
Patients undergoing elective thoracotomy for lung resection between January 2007 and July 2009, for both benign and malignant pathologies, were included in the study. Patients were randomized into 3 groups according to postoperative oral intake starting time: 6th hour, 24th hour, and when the bowel functions are resumed. Groups were then compared in terms of post-operative complication incidences.

Results
107 patients were included in the study. By means of age (p=0,51), sex (p=0,39), smoking (p=0,39), ethylism (p=0,52), hypertension (p=0,52), diabetes (p=0,21), cardiac comorbidities (p=0,99), COPD (p=0,87), resection type (p=0,47), and postoperative analgesics admission method (p=0,28); groups were found to be homogeneous. 20 out of 107 (18,7%) patients developed PPC; 4 (11,1%) in group 1, 8 (22,2%) in group 2 and 8 (22,9%) in group 3. Median oral starting time for group 3 was 47 (range: 27-85) hours. There was no significant difference of pulmonary and cardiac complications between the groups (p=0,358 and p=0,175; respectively). Postoperative psychiatric complications showed statistically significant increase in the 3rd -latest fed- group (p=0,049): None in group I, 2 (5,6%) in group II, and 5 (14,3%) in group III. This complication is found to be directly correlated with increased risk of postoperative pulmonary complication development (OR=14,2).

Conclusions
It has been revealed that psychiatric complications occur more frequently in the late-fed group. From this point, it can be concluded that early (6th hour) postoperative feeding enables rapid recovery of patient's mental and physical condition, prevents from postoperative psychiatric disorders thus may reduce the postoperative pulmonary complication incidence.

Disclosure: All authors have declared no conflicts of interest.

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CLINICOPATHOLOGIC FEATURES IN THYMIC CARCINOMAS

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Objectives
Wide ranges of 5- and 10-year survivals are reported for thymic carcinomas. Difficulties in interobserver agreement might affect prognostic studies. We studied clinicopathologic features of thymic carcinomas diagnosed independently by multiple thoracic pathologists.

Methods
Thymic epithelial neoplasms (1948-2011) were reviewed by three thoracic pathologists blinded to outcome, classified according to current WHO. Medical records were reviewed. Time-to-death was estimated with Kaplan-Meier method. Survival outcomes were compared with log rank test.

Results
In 30 cases pathologists agreed upon thymic carcinoma (WHO-types see Table); clinical data were available in 29. 18 men and 11 women had median age of 59.6 years (range, 19.1–82.0). Table summarizes surgical treatment, Masaoka staging, and F/U. Regional LNs (n=20 patients), were positive in 7. Median F/U-time was 1.5years (range, 18days–8.6years); median time-to-death was 2.8years (Kaplan-Meier-estimate; 95% confidence interval: 1.0-5.5years). Estimated 5-year survival was 35.2% and recurrence/metastasis-free survival 36.9%. 5 patients had metastasis at diagnosis; 12 developed metastasis/recurrence post-treatment. Patients underwent neoadjuvant (n=6), adjuvant (n=11), both (n=5) or no (n=5) therapy.

WHO-carcinoma type (#Patients)	Masaoka Stage (#Patients)	#Complete resection	#Deaths (died of disease)[a]
PD[b] SQCC[c](8)	II(1) III(6) IVb(1)	4	4(1)
MD[d] SQCC[e](5)	II(1) III(2) IV(1)	2	3(0)
Undifferentiated(4)	III(3) IVa(1)	4	2(1)
Sarcomatoid(3)	II(1) IVa(1) IVb(1)	2	2(1)
Small cell(2)	III(1)	0	2(0)
MD adeno(2)	II(1) III(1)	1	(1)
PD adeno(1)	III(1)	1	(1)
Large cell neuroendocrine(1)	III(1)	1	1(0)
Atypical carcinoid(1)	III(1)	1	0
Clear cell(1)	II(1)	1	1(1)
Mucoepidermoid(1)	II(1)	1	0
MD adenosquamous(1)	IVb(1)	0	0

[a]Unknown cause (n=10); [b]Poorly(PD), [d]moderately(MD) differentiated; [c]SQCC, squamous cell carcinoma; [e]No clinical information (n=1). Some statistical findings were identified (e.g., weight loss was associated with death), however, their clinical significance is uncertain.

Conclusions

Thymic carcinomas are rare and their heterogeneity may further hamper prognostic studies. Overall prognosis appears relatively poor. Large, multicenter studies seem necessary to evaluate prognostic factors in thymic carcinomas.

Disclosure: All authors have declared no conflicts of interest.

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OBJECTIVE ASSESSMENT OF PRIMARY PALMOPLANTAR HYPERHYDROSIS AND THORACOSCOPIC SYMPATHECTOMY

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Objectives
The aim of our study is to establish an objective approach to evaluate symptoms and sweat production in patients with primary palmoplantar hyperhidrosis (PPH) and assess their response to bilateral thoracoscopic sympathectomy (BTS).

Methods
We conducted two institutional review board-approved studies. We performed a one-time evaluation of healthy volunteers (controls) with three questionnaires (Hyperhidrosis Disease Severity Scale, Dermatology Life Quality Index, and Short Form-36) and measurement of transepidermal water loss (TEWL; g/m2/h). We evaluated PPH patients with these same tools before, 1 month after and 1 year after BTS, and compared them with controls. We thoracoscopically clipped the sympathetic chain at the upper edge of the 3rdand 4thribs.

Results
We evaluated 50 controls (mean age, 23.8 +/- 3.5 years) and 106 PPH patients (mean age, 26.8 +/- 9.2 years); 32 PPH patients underwent BTS and 1-month postoperative evaluation, and of those, 10 patients had a 1-year evaluation. Hyperhidrosis Disease Severity Scale and Dermatology Life Quality Index scores were higher in PPH patients than in controls ($p < 0.0001$), but normalized after BTS. Short Form-36 scale scores were lower in PPH patients than in controls ($p < 0.05$), but improved significantly after BTS. Compared with controls, preoperative TEWL values were significantly higher in PPH patients (palmar: 161.0 +/- 79.0 PPH vs 110.9 +/- 45.3 controls, $p < 0.0001$; plantar: 102.2 +/-69.6 PPH vs 61.5 +/-28.6 controls, $p < 0.0001$). After BTS, palmar TEWL values were significantly lower (44.8+/- 16.8, $p < 0.0001$), but plantar TEWL values were not significantly different $p=0.52$). There was no significant difference in questionnaire scores and TEWL values between 1-month and 1-year follow-up.

Conclusions
PPH patients should be objectively evaluated with standardized quality-of-life measures and TEWL measurements before and after treatment. This objective practical approach may provide a benchmark for clinical practice and research.

Disclosure: All authors have declared no conflicts of interest.

P-171

THE USE OF VESSEL SEALING SYSTEM (LIGASURE) IN MEDIASTINAL SURGERY

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Objectives
Many previous studies suggested the use of Ligasure in lung resection; the aim of this work is to investigate its apply in mediastinal surgery considering that no publications exist regarding such issue.

Methods
All consecutive patients undergoing resection of mediastinal mass in the last five years were enrolled. The patients operated with use of Ligasure (Group A) were compared with those without its use (Group B) Operating time (minutes), amount (mL) and duration of drainage (days), hospital stay (days), perioperative complications, death during hospital stay were reviewed. The intergroup difference were evaluated using Fischer exact test and Mann-Whitney test as indicated ($p<0.05$ level of significance)

Results
Group A and Group B included 31 (28 thymectomies; 2 paravertebral neurinomas; 1 ectopic thymic tissue), and 30 (24 thymectomies; 4 neurinomas; 1 lymphangioma; 1 teratoma) operations, respectively. The resection was achieved via sternotomy in 48 cases and via thoracotomy in 13 patients. Comparison between the two groups, with regard to preoperative management, pathology and after care operations showed no significant changes. There were no intraoperative complications or surgical mortality. Overall operating time was significantly shorter in group A than in Group B (133±29 versus 196±43; $p< 0.0001$; Figure 1). No significant differences were found regarding the other variables. Drains were removed on postoperative day 2±0.6 in Group A and 2.5±1.7 in Group B, with a mean out put of 190±47 and 197±49 in Group A and B, respectively. Postoperative hospital stay was 5.3±7.3; and 5.9 ±5.4 in group A and B, respectively.

Conclusions
Our data favour the use of Ligasure during resection of mediastinal mass. It simplifies the surgical technique without the added risk of complications. Yet, it leads to relevant shorter operative time, and duration of general anesthesia which may be mostly important for patients with miasthenia gravis undergoing thymectomy

Disclosure: All authors have declared no conflicts of interest.

P-172

HOW TO AVOID LARYNGEAL RECURRENT NERVE INJURY IN SURGERY OF THE MEDIASTINUM?

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Objectives
Injury of the laryngeal recurrent nerve is a well known complication of the surgery of the mediastinum. We present a safe and reliable technique for visualization of the laryngeal recurrent nerves for such procedures.

Methods
The technique of discovery of the nerve includes it's dissection below the level of the thyroid gland. For the right nerve it is necessary to cut the fascia layers covering the right carotid artery to open the space containing the nerve running along line connecting the division of the innominate artery and the cricoid cartilage and to dissect the nerve with a peanut sponge in a blunt fashion. The left laryngeal recurrent nerve lies in the groove between the trachea and the esophagus and is easily and consistently found in this location using blunt dissection with a peanut sponge. It is highly recommended to preserve the last deepest layer of the fascia covering the nerve to avoid it's injury. This technique of nerve visualization can be applied to all thoracic procedures performed through the cervical incision or median sternotomy

Results
There were 1493 bilateral visualizations of the laryngeal reccurent nerves performed in the period 1.9.2000 – 31.12.2011 including 873 Transcervical Extended Mediastinal Lymphadenectomies (TEMLA), 415 transcervival-subxiphoid videothoracoscopic (VATS) thymectomies, 90 resections of the metastatic mediastinal nodes, 62 resections of the mediastinal tumors, 17 esophagectomies performed through the combined transcervical-laparotomy approach and 36 other operations. Temporary laryngeal nerve palsy was 30/873 (3.4%) in TEMLA, in 2/415 (0.5%) in thymectomy and in 36/1493 (2.4%) for the whole group. Permanent laryngeal nerve palsy was 4/698 (0.5%) in TEMLA and 0/415 in thymectomy and 6/1493 (0.4%) for the whole group.

Conclusions
Visualization of the the laryngeal reccurent nerves is a safe procedure allowing avoidance of nerve injury in vast majority of patients undergoing operations of the mediastinal lesions.

Disclosure: All authors have declared no conflicts of interest.

P-173

THORACOSCOPIC SYMPATHICOTOMY IN PRIMARY HYPERHIDROSIS: EVALUATION OF PATIENT SATISFACTION

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Objectives
In primary hyperhidrosis (PH), sweeting occurs in excess with negative effects on social, professional and emotional life. The aim of this study is to evaluate the results and patient satisfaction after endoscopic thoracic sympathicotomy (ETS) for PH.

Methods
Between June 2004 and June 2011, 185 ETS were performed. 100 of them for palmar PH, 16 for axilar PH, 63 for palmar and axilar PH and 6 for facial PH. We performed preoperative evaluation of the impact on quality of life with Hyperhidrosis Disease Severity Scale (HDSS). One month after surgery, Overall Satisfaction was evaluated with a simple 1-10 Scale (1, poor satisfaction; 10 total satisfaction), and patients with compensatory sweating (CS) were reevaluated with HDSS. Wilcoxon signed rank and McNemar's test were used to examine paired HDSS and 1-10 Scale results.

Results
A total of 179 patients were included, with a mean age 28,7 (range 13-66), and were mainly women (67,4%). All of the patients had level 3 or 4 from the HDSS (mean 3,56 ± 0,49). Mean satisfaction after ETS was 8,81± 1,89 (palmar PH 8,94±1,7; axillary PH 8,80 ± 1,76; facial PH 7,44 ± 3,02; combinations of PH 9,02 ± 1,47). CS occurred in 74 patients (41,6%), and HDSS mean in these patients was 1,42 ± 0,67. No statistical relation between level of section of ETS and CS was found. HDSS results showed differences before and after ETS (Z=-7,17, p=0,000). The procedure regret rate was 7,3%. Surgery was uneffective in 10 (5,6%) patients.

Conclusions
ETS is an excellent treatment for PH. HDSS and 1-10 Satisfaction Scale is useful to evaluate ETS outcomes. Compensatory sweating remains main side effect in less than half patients.

Disclosure: All authors have declared no conflicts of interest.

P-174

THORACOSCOPIC THYMECTOMY FOR THE TREATMENT OF THYMOMA

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Objectives
Traditionally, thymectomy for thymic tumors has been performed using either a transcervical approach or a median sternotomy. However, excision of the thymic tissue by thoracoscopic surgery is less aggressive and recovery is faster. The aim of this study was to evaluate the usefulness and outcomes of thoracoscopic thymectomy.

Methods
From 2007 to 2011, we have performed 45 thoracoscopic thymectomies on patients with noninvasive stage I thymoma. This study included 23 women and 32 men, with a mean age of 49.1 years. Right-side (30 cases) or left-side (25 cases) thoracoscopic surgery was performed, with a mean intervention time of 105 minutes (range, 60-180 minutes).

Results
No patient required assisted ventilation for more than 4 hours and the maximum stay in intensive care was less than 24 hours. Mean chest tube drainage time was 1,75 days and mean postoperative hospital stay was 4,55 days. There was no mortality. More than 50 % of patients are observed about 3th years, and given for progressing of disease not received

Conclusions
Thoracoscopic thymectomy is effective in the treatment of thymic tumors and improves patient recovery. Videoendoscopy ensures optimal exposure of the mediastinum, safe and complete bilateral dissection of the thymus as well as the surrounding tissues. Preliminary results of videoendoscopic thymectomy for noninvasive stage I thymoma suggest this may be the treatment of choice. Further data and larger series are needed to evaluate long-term results.

Disclosure: All authors have declared no conflicts of interest.

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VIDEO-ASSISTED THYMECTOMY FOR MYASTHENIA GRAVIS AND THYMOMAS

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Objectives
As experience with VATS-thymectomy is limited and follow-up short, we present single institution experience for purposes of validation of the technique.

Methods
104 patients underwent thoracoscopic thymectomy at St. Petersburg's city hospital from 2000 to 2010. Myasthenia gravis (MG) or/and mediastinal mass were the main reasons for referring to the hospital. There were 65 females and 39 males aged from 12 to 77 years (mean age 41.5±18.9) and 56 of them suffered from MG.

Results
The pain level was scored 0.9±0.3 according to the Visual Analogous Scale at the 4th postoperative day. The mean intra-operative blood loss and operation time decreased after first 2 years of initial period to 69.5 ml and 149.1 min respectively. Postoperative morbidity included 1 case of haemothorax and 3 myasthenic crises. There was no 30-day mortality. Postoperative thymus pathology was expressed by hyperplasia(36%), thymomas(36%), benign thymic tumors(14%), thymic cysts(8%) and thymic Hodgkin lymphomas(6%). 101 patients were followed-up during 14-134 months. There were no tumor recurrences or port-site implantations. All patients with Masaoka stage II and malignant pathology underwent postoperative radiation and chemotherapy for the lymphomas. One case of distant metastases was found 52 months postoperatively. The MG course was followed-up in 50 out of 53 myasthenic patients: 26(52%) achieved complete stable remission, 18 patients (36%) presented clinical and pharmacologic improvement and 6(12%) stabilized. The maximal MG remission rate after thymectomy was reached up to 3 years. The main prognostic factors associated with earlier MG remission rate were male gender (p=0.01), younger age (p=0.022), lower MG stage (p=0.03) and the presence of thymic hyperplasia (p=0.041).

Conclusions
VATS thymectomy should be considered as a primary treatment options for MG and noninvasive thymomas due to its feasibility and safety. Maximal effects of thymectomy should be expected after 3 years postoperatively in young patients with early stage of MG and without thymomas.

Disclosure: All authors have declared no conflicts of interest.

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SUPERIOR MEDIASTINAL PARAGANGLIOMA ASSOCIATED WITH VON HIPPEL-LINDAU SYNDROME

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Objectives
Some patients with pheochromocytomas or paragangliomas show an association with an inherited condition such as von Hippel-Lindau syndrome. We report the extremely rare case of a non-functional superior mediastinal paraganglioma in a patient with von Hippel-Lindau syndrome.

Methods
An 18-year-old man was referred to our hospital due to an abnormal shadow on a chest radiograph for a health check. The patient had no past medical and familial history of interest. Laboratory data were within normal limits. Chest computed tomography (CT) revealed a 36 mm superior mediastinal mass.

Results
Complete resection of the tumor was performed by video-assisted thoracoscopic surgery. Histologic findings showed that the tumor consisted of cells arranged in nests ("zellballen") with a vascular stroma. Immunohistochemistry showed a positive immunoreaction for chromogranin A and synaptophysin. The patient's postoperative course was uneventful. Six months after the first operation, CT for postoperative follow-up revealed a right adrenal gland and pancreatic tumor and para-aortic lymph node enlargement. These tumors were resected, and histopathologic analysis led to the diagnosis of a right pheochromocytoma, para-aortic paraganglioma, and pancreatic endocrine tumor. Genetic analysis revealed a mutation of the VHL gene, indicating von Hippel-Lindau syndrome. There was no sign of recurrence 6 months and 3 years after the first surgery.

Conclusions
Von Hippel-Lindau syndrome is an autosomal-dominant disorder, and mutation of 1 copy of the VHL tumor suppressor gene is associated with the development of the tumors. Recently, it has been reported that de novo mutations seem to play a greater role in von Hippel-Lindau syndrome. In our case, since there was no familial history suggestive of von Hippel-Lindau syndrome, we suspect that the patient had a de novo mutation of the VHL gene. This case highlights that we should be aware of possible sporadic von Hippel-Lindau syndrome in patients with multifocal paragangliomas.

Disclosure: All authors have declared no conflicts of interest.

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ROBOTIC THORACIC SURGERY: EARLY EXPERIENCE WITH ROBOTIC RESECTION OF MEDIASTINAL TUMOURS AND CYSTS

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Objectives
Mediastinal Tumours and cysts are infrequent .We present our initial experience in robotic resection of various mediastinal masses.

Methods
14 consecutive patients with various mediastinal lesions underwent robotic thoracic surgery from July 2011 to December 2011. All patients suitable for VATS surgery were offered for robotic resection. CT scans performed delineated the location and anatomy of the tumours. Parathyroid tumour had additional SPECT and Sestamibi scans.

Results
The mean age was 43 years (range 18 - 78 years). The surgery was performed by Da Vinci Si HDTM 4 arm robot. 6 patients underwent thymectomy for myasthenia gravis. One patient underwent resection of thymic carcinoma. One patient underwent resection of metastases from thymic carcinoma. One patient underwent excision of ectopic mediastinal parathyroid from anterior mediastinum. Three patients had resection of thoracic outlet mass (solitary fibrous and neurogenic tumor). One patient underwent resection of inflammatory mass in middle mediastinum. One patient underwent resection of neurogenic tumor from posterior mediastinum. Whole of thymic tissue from neck to diaphragm in between the phrenics was excised. Drain removed on first postoperative day, followed by discharge next day. Mean Hospital stay was 3 days. One patient had evidence of right phrenic palsy following thymectomy, which resolved during follow up. One patient had tension pneumothorax during robotic thymectomy necessitating conversion to open.

Conclusions
Robotic Thoracic Surgery is an additional option for performing minimally invasive thoracic surgery. There is a learning curve involved in docking and port placement. Robotics provides excellent 3D vision, seven degrees of movement at the Endowrist of instruments and tremor free dissection. It is an ideal tool for resection of Mediastinal masses.

Disclosure: All authors have declared no conflicts of interest.

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BRONCHIAL ANASTOMOTIC STENOSIS AFTER LUNG TRANSPLANTATION: COMPARISON OF INTERVENTIONAL LASER THERAPY WITH STENT IMPLANTION AND ANALYSIS OF RISK FACTORS

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Objectives
Despite advances in surgical techniques and introduction of modern immuno-suppressive drugs, stenosis of the bronchial anastomosis remains a frequent and severe complication after single- and double lung transplantation (sLTX, dLTX) implying considerable morbidity. Aim of this retrospective single-center study was to evaluate short- and long-term results of interventional laser treatment and/ or application of self-expanding nitinol stents and to identify potential risk factors for occurrence of stenosis.

Methods
Between 01.01.2001 and 01.03.2010, 112 sLTX and 207 dLTX were performed in our center. 16 patients after sLTX and 37 after dLTX developed significant (≥ 80%) anastomotic stenoses requiring bronchoscopic intervention (total rate 16.6%). 21 patients were treated by NdYAG laser only, 9 patients received laser therapy for recanalisation prior to stenting. 9 patients underwent primary stent implantation (self-expanding nitinol grafts). Repetitive stent application had to be performed in 6 patients.

Results
Demographic parameters and complication rates were comparable in all treatment groups. A significantly greater improvement of postinterventional VC and FEV1 was observed in patients with primary stent implantation when compared to laser treatment alone. Furthermore, intervention-free interval was significantly longer in patients with primary stenting compared to laser treatment alone, and total number of interventions needed was significantly reduced in these patients. HLA match, duration of cold ischemia time and invasive ventilation after TX did not prove to be independent risk factors for development of stenosis.

Conclusions
Flexible interventional bronchoscopic application of self-expanding nitinol stents with facultative prior laser recanalisation provides an effective and safe treatment option for anastomotic airway stenosis after lung transplantation with favorable short- and long-term results and is superior to laser treatment alone. Further work has to be performed to identify patients at risk for airway stenosis.

Disclosure: All authors have declared no conflicts of interest.

P-179

CRYOTHERAPY PLUS CHEMOTHERAPY OR RADIATION OFFERS INCREASED SURVIVAL AND QUALITY OF LIFE IN ADVANCED STAGE LUNG CANCER PATIENTS WITH ENDOBRONCHIAL OBSTRUCTION: ANALYSIS OF 160 PATIENTS TREATED WITH THE RIGID BRONCHOSCOPE

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Objectives
Most patients with lung cancer (85%) present at diagnosis in a very advanced stage, without option for surgery. When endobronchial obstruction is present survival is (mean) 9 months(7-11) and palliative therapies are considered. The objective of this clinical study is to evaluate the efficacy of Bronchoscopic Cryotherapy plus Chemotherapy or Radiation in quality of life and survival of non operable lung cancer patients with endobronchial obstruction.

Methods
160 non-operable lung cancer patients with diagnosed stage IIIa, IIIb, IV and endobronchial tumor, were included in a protocol of three sessions (every two weeks) of rigid bronchoscopical cryotherapy under general anesthesia. From 2001-2011 142 men (44-82 yrs old) and 18 women (45-66yrs old) were treated in our Department. After each cryotherapy one cycle of chemotherapy or radiation therapy followed because they act in synergy. Patients age, sex, type of tumor, stage, symptoms of dyspnea, cough, hemoptysis, pain, were recorded. Lung functional studies, performance status and survival time, that is time from 1st Cryotherapy to death, were recorded. Follow up was at least two years.

Results
The results showed symptoms of dyspnea, cough, hemoptysis and pain improved significantly in 73%, 68%, 69% and 42% of patients respectively($p<0.001$). Lung function tests improved 15-20%, Fev 1 from 1.41+0.5 to 1.9+0.57lt, Fvc from 1.5+0.6 to 2.24+0.75 lt after treatment($p<0.05$). Performance status increased from 62+/- 5 to 75+/-7 (Karnofsky scale, $p<0.05$)and from 3.15+/-0.9 to 2.3+/-0.5 (WHO scale, $p<0.05$).Survival increased considerably and was 6-42 months (mean 16+) for stages IIIa, IIIb(Kaplan –Meier, 95% interval). For stage IV 6.5+ months. We had 2(1.25%) in hospital deaths and 7.5%morbidity.

Conclusions
Endobronchial Cryotherapy is a safe palliative method for inoperable lung cancer with endobronchial obstruction and combined with chemotherapy or radiation offers better survival. Increased quality of life and sense of well being characterize the efficiency of this method.

Disclosure: All authors have declared no conflicts of interest.

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NON-SURGICAL APPROACH FOR LUNG VOLUME REDUCTION: A SINGLE CENTRE EXPERIENCE WITH ENDOBRONCHIAL VALVES

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Objectives
Lung volume reduction surgery (LVRS) and Transplant can improve quality of life and survival in selected patients but are associated with significant morbidity and mortality. Bronchoscopic approach using a one-way endobronchial valves (EBV) is an alternative less invasive therapy. We report the largest single thoracic centre experience in the UK, surgical pathway and challenges involved with the introduction of this technique.

Methods
Since 1stDecember 2010, 22 patients with emphysema were assessed for EBV or LVRS. Under GA Chartis catheter assessment was used to assess the presence of collateral ventilation. In the absence of collateral ventilation, EBVs were inserted in target bronchii. Immediate and short-term complications were recorded prospectively.

Results
Out of 22, 17 patients (13 males) received EBV. Average age was 58.6±10.9 years. Pre-valve insertion mean predicted FEV1, FVC, and TLCO were 40.4±19.5%, 79.2±13.6%, and 35.5±12.8%, respectively. In total 66 EBVs were inserted in the following lobes (27 RUL, 6 RML, 4RLL, 24 LUL, 5 LLL). Three patients (17.6%) had considerable improvement and had further treatment to other segments. Four had their valves removed due to: excessive endobronchial secretion (1 patient), displacement (2), and no benefit (1); one had his EBV replaced due to mechanical dysfunction; and two developed post-insertion pneumothorax. One patient developed a pneumothorax two weeks post EBV from a ruptured bulla in a non-treated lobe. Average post-insertion length of stay was 2.5±3.5 days (median 1 day, min-max: 0-12 days). There were no deaths. An average of 3.8 valves per patient meant £6,516 direct costs per patient for the valves themselves.

Conclusions
EBVs provide a less invasive intervention for emphysema. Thoracic surgeons are uniquely placed for assessing the potential benefits and cost-effectiveness of this novel therapy in comparison to LVRS or lung transplantation.

Disclosure: All authors have declared no conflicts of interest.

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DOES NOSOCOMIAL INFECTION INFLUENCE THE OUTCOME AFTER TRACHEAL RESECTION WITH END-TO-END ANASTOMOSIS ?

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Objectives
Nosocomial colonization / infection are frequent. Are the postoperative results after tracheal end-to-end resection influenced by colonization with nosocomial bacteria?

Methods
Between 2005 and 2011 we performed end-to-end tracheal resection after tracheaotomy in 49 patients. Prior to the resection bronchoscopy was necessary to document the height of tracheotomy, the extend of the stenosis and to obtain a specimen of tracheal secretions. Data collected was time of occurrence of the stenosis after tracheotomy, type of tracheotomy (percutaneous vs. surgical), distribution of nosocomial bacteria found at bronchoscopy, postoperative tracheal wound healing and post-operative long-term complications.

Results
Surgical tracheotomy (ST) was performed in 24 patients, whereas percutaneous tracheotomy (PT) in 25. Preoperative collection of tracheal secretions showed bacterial colonization in 40%. The most common bacteria found were a multiresistant Pseudomonas aeruginosa (MR) in 27%. After tracheal resection with end-to-end anastomosis, prophylactic tobramycin inhalation was given to all patients to improve anastomotic healing. When there was evidence of tracheal colonization, prophylactic antibiotics were modified according to resistance of bacteria in the tracheal secretions. There was one case of early anastomotic insufficiency. Long-term complications were re-stenosis in 2 patients, of which one required re-intervention, the other could be treated with endoscopic laser resection. In one patient an infection of the sternum with multiresistant Staphylococcus aureus (MRSA) required debridement. Two patients required re-tracheotomy due to a new pneumonia and respiratory insufficiency. In 4 of these 5 patients pre-operative bronchoscopy had shown evidence of bacterial colonization.

Conclusions
Before planning tracheal reconstruction after tracheotomy, bronchoscopy is performed to evaluate the stenosis and to obtain a specimen of tracheal-secretion. Nosocomial colonization of the trachea after tracheotomy has a negative influence of healing of the end-to-end-anastomosis. Although 58% of the patients had evidence of colonization only 4 had long-termcomplications. When there is evidence of nosocomial colonization, prophylactic treatment should be performed to avoid long-term-complications.

Disclosure: All authors have declared no conflicts of interest.

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VASCULAR DEVICE AND RIGID BRONCHOSCOPY IN THE MANAGEMENT OF BRONCHOPLEURAL FISTULA

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Objectives
To show the Amplatzer device, commonly used for transcatheter closure of atrial septal defects (ASDS) and for major vascular occlusion, in combination with biological glue to control the symptoms related to bronchopleural fistula (BPF).

Methods
two patients with BPF were treated using this new technique: the first patient, a 64 year old male with BPF 3 weeks after a left pneumonectomy for squamous carcinoma, and the second patient, a 57 year old female with longstanding BPF and large space infection after right upper lobectomy for tuberculosis performed 15 years before. Under general anesthesia both patients were ventilated with high frequency jet ventilation and an 8.5 mm rigid bronchoscope and a 30 degree 10 mm thoracoscope inserted into the trachea and the pleural space respectively. A 22F Amplatzer vascular occlusion device (AGA medical, Golden Valley, MN) was sided across the fistula under bronchoscopic and thoracoscopic control . A 4F catheter was then used to fill the wire meshwork with bioglue to obtain a complete seal of the BPF.

Results
No postoperative complications were noted. During the follow-up, 12 and 6 months respectively, they showed a normalized voice and breathing capacity. The chest x-ray and the computed tomography showed the correct position of the device.

Conclusions
This technique has been shown to be a safe and effective way to close the BPF with quick recovery times and immediate symptoms improvement. Bioglue alone is only really useful in very small fistulae, and is often coughed out soon after the procedure leading to early failure. Using a double-flanged device anchors the bioglue and allows occlusion of a large fistula. Unlike a muscle flap closure the morbidity is low, allowing its application to much frailer patients.
Diosure

All authors have declared no conflicts of interest.

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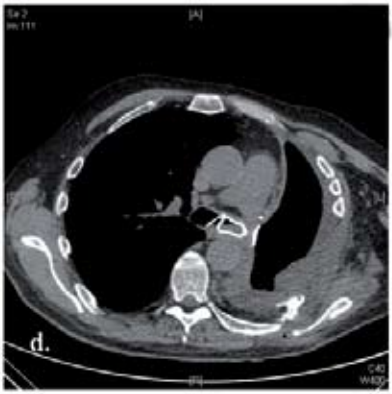

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MAJOR AIRWAYS TRAUMA: ARE WE IN HURRY?

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Objectives
Traumatic injuries of the tracheobronchial tree are considered life-threatening and extremely urgent. Should we repair all those injuries immediately or definitive treatment might be delayed?

Methods
Retrospective study of 20 consecutive patients with major airways trauma acutely managed during the last 20 years in a single Level 1 trauma center. Blunt trauma (falls, rapid chest compression, vehicle crashes) was in 19 patients and stab bronchial injury - in 1. Stab injuries of cervical trachea were not included. Median age was 21 years (3 – 52). Notable, 8 of 20 patients were 16 years old and younger.

Results
Trachea was injured in 6 cases, trachea and one of main bronchus – in 6, right main bronchus – in 5, middle lobe bronchus – in 2 and right upper bronchus in 1 case. Associated esophageal rupture was diagnosed in 2 cases. Surgical repair was performed in 10 patients, resection, end-to-end anastomosis - in 6, lobectomy - in 2, left pneumonectomy in 1 and resuscitative thoracothomy in 1 case. In 8 cases, median time from injury till operation was 185 min (50 – 270). In 12 cases, referred from rural hospitals, time from injury to admission exceeded 24 hours. In 2 of them, failed attempts of bronchial repair were performed in rural setting. Hypotension was noted in 4 patients only on admission. One patient with injury to the middle lobe bronchus died intraoperatively due to massive hemorrhage from ruptured right pulmonary artery, liver, and pelvic fracture.

Conclusions
We believe, despite the obvious life threat in major airways trauma, mortality of those patients depends on associated injuries. In patient's stable condition, when chest decompression achieved and ongoing bleeding ruled out, the patient might be referred to and operated in the most appropriate settings.

Disclosure: All authors have declared no conflicts of interest.

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THE USE OF LASER ABLATION AS A BRIDGE TO SUBSEQUENT RESECTION IN MALIGNANT AIRWAY OBSTRUCTION

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Objectives
Laser ablation of malignant airway obstruction is generally considered to be a palliative procedure. However, in view of the 2011 NICE guidelines on Lung Cancer we have reviewed its use in assessment for curative surgical resection.

Methods
From a prospective database of 153 patients who underwent ablation of malignant airway obstruction using the Revolix thulium laser we analyzed the clinical outcomes of 10 patients (6 M: 4F) with a median age of 63 (45-82)years who underwent potentially curative surgery following the airway intervention. The indications for laser ablation included: central T4 tumours in 5 patients; severe hypoxia (SaO2<90%) in 3 patients and in 2 patients lobar obstruction.

Results
Laser ablation performed with a median total energy delivered of 890 (29-5946) J, resulted in WHO performance status improvement from 2 to 1 point in 7 patients and from 3 to 1 point in 2 patients. Resolution of total lung collapse was seen in 5 patients and relief of severe preoperative hypoxia in all 3 patients. Subsequent resections included: pneumonectomy (1 sleeve) in 5 patients; sleeve lobectomy in 4 and 1 tracheal resection. Histology included: squamous in 5, adenocarcinoma in 4 and 1 carcinoid. All but one patient left the hospital. Pathological analysis included downstaging from cT4 to pT3 in 3 patients and pT2 in 2 patients. R0 resection margins were obtained in 6 patients.

Conclusions
Bronchoscopic laser ablation of malignant central airways obstruction should be considered not only as a palliative procedure but also as an assessment tool for resectability and a facilitator for operability by improving respiratory function.

Disclosure: All authors have declared no conflicts of interest.

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BRONCHIAL FISTULAE MANAGEMENT DURING THORACOMYOPLASTY PROCEDURES - A PLEA FOR THE USE OF MUSCLE FLAPS

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Objectives
The objective of this paper is to analyse the results of closure-reinforcement of the bronchial fistulae using muscle flaps during thoracomioplasty procedures.

Methods
We performed a retrospective analysisof 102 consecutive patients who underwent in our unit (between 01.01.2003–01.01. 2011) thoracomioplasty procedures for different intrathoracic infections. We focused on the management of the bronchial fistulae which were present in 41 patients. Our strategy was to achieve complete obliteration of the infected space and an airtight closure-reinforcement of the bronchial fistulae using neighbourhood flaps: intercostal - 26, latissimus dorsi – 6, serratus anterior – 5, pectoral – 2, subscapularis and omentum 1 each. The main parameters followed were: mortality, intensive-care unit and overall postoperative hospitalization, infection recurrence and incidence of postoperative emphysema.

Results
Statistical analysis performed showed no difference between the patients with and without bronchial fistula in terms of mortality (5% vs 7%), intensive care unit stay (average 4 ± 2 vs 3 ± 2 days), postoperative hospitalization (average 39 ± 5 vs 40 ± 5 days) or infection recurrence (2/41 vs 3/61) - Fischer's exact test, all p values >0,05. For the same parameters we found no statistically significant difference between the patients in whom we used intercostal or other flaps for fistula closure (p >0,05). Mild postoperative emphysema occurred in 5 patients (12%); there was no statistically significant difference between the incidence of this complication and the flap used for fistula closure-reinforcement (intercostal flaps – 12% versus other flaps - 13%, p>0,05). At late follow-up (1 year) we encountered no recurrence of the empyema or fistula.

Conclusions
Bronchial fistulae can be easy and safely solved during thoracomioplasty procedures using neighbourhood flaps, achieving same results as in patients without fistula at the moment of surgery. The flaps used are less important as long as they are well-vascularised and an accurate technique is used.

Disclosure: All authors have declared no conflicts of interest.

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TREATMENT OF POSTINTUBATION TRACHEAL STENOSIS

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Objectives
The aim of the study is the presentation of own experience in treatment of postintubation tracheal stenosis. Postintubation tracheal stenosis is usually due to endotracheal tube ischemic necrosis. The tracheal stenosis is not a rare lesion and its treatment required more complex and sometimes multistaged procedures.

Methods
Charts of 145 patients treated surgically for postintubation tracheal stenosis between 1994 and 2011 were retrospectively reviewed.

Results
The average age of patients was 51 years, there were almost equal numbers of male and female patients. This experience includes the learning curve from the very beginning, where the surgical techniques were not completely developed. All patients were treated with a single-staged tracheal resection. Complications were partial failure in 9, total failure in 1, granulomas in17 and restenosis in 9. There were 10 deaths (6%). One hundred-thirty two (91%) of 145 patients had good to excellent long term results with voice and breathing quality and do not require futher intervention for their tracheal stenosis.

Conclusions
1. Although the etiology of post intubation tracheal stenosis has been well defined and methods for its prevention clarified, the lesions continue to occur and to be the most common indication for tracheal reconstruction. 2. The best treatment method of tracheal stenosis should be chosen individually with consideration of patient´s clinical condition. 3. Surgical treatment of tracheal stenosis is safe and feasible with acceptable respiratory and phonetic results.

Disclosure: All authors have declared no conflicts of interest.

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DETECTION OF ISCHEMIA-REPERFUSION BY MAGNETIC RESONANCE IMAGING USING ULTRA-SHORT ECHO-TIME SEQUENCES IN SYNGENEIC MOUSE LUNG TRANSPLANTS

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Objectives
To test the in-vivo feasibility of magnetic-resonance imaging (MRI) of ischemia reperfusion (I/R) injury in syngeneic mouse lung transplants and the characterization of tissue relaxation properties using ultra-short echo-time sequences at 4.7T.

Methods
Six mice underwent MRI after orthotopic left lung transplantation (Tx). All examinations were performed in a small animal MR imager equipped with a circular polarized 1H mouse whole body RF coil. In addition to a conventional T1w spoiled gradient-echo and a T2w fast-spin-echo sequence, 3D ultra-short echo-time (UTE) sequences with echo-times between TE=50ms - 5000ms were acquired. Colour-encoded parametrical maps of T2* transverse relaxation time were calculated on a pixel-by-pixel manner. Quantitative T2* values of lung transplant parenchyma and relative spin density were compared by region-of-interest analysis. After MRI, Tx lungs were processed for histology.

Results
All mice revealed a ventilated Tx lung with similar low signal intensity in the conventional T1w and T2w sequences. The UTE sequence exhibited signal yield in the lung higher than the noise level. Increased spin density (50.8±26.9%, $p<0.01$) and longer T2* relaxation time (1041±424ms, $p<0.01$) were found in the Tx lung. Best visualization was possible using colour-encoded log-transformed parametrical T2* maps. Small pleural effusion was visible using the conventional T2w sequence. Histological sections revealed I/R injury with an either predominance of cell influx or edema.

Conclusions
I/R injury after syngeneic lung Tx can be visualized and characterized with UTE sequences showing different MRI relaxation properties when compared to normal lung parenchyma.

Disclosure: All authors have declared no conflicts of interest.

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A LESS PAINFUL TECHNIQUE FOR REMOVAL OF CHEST TUBES

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Objectives
Removal of chest tubes can be painful, therefore we investigated different techniques of chest drain removal. The aim of this study was to assess the pain during and after removal in different techniques.

Methods
A prospective randomised study of two different techniques of chest tube removal was performed in 135 (78m/57f) consecutive patients (VATS and open procedures). After preoperative randomisation group A (n=70) was treated traditionally: The wound was closed with an additional suture upon chest tube removal. In group B (n=65) a special hydrocolloid wound dressing was applied which sealed the wound for at least 48 hours without additional suture. The pain level was assessed directly after removal by the Visual Analogue Scale. No additional analgesics were administered before or after the chest tube removal.

Results
The average pain scores measured by the Visual Analogue Scale were 3.0 (3,0m/2,9f) in group A versus 1.8 (1,5m/2,3f) in group B. Due to larger amount of wound effusion the hydrocolloid wound dressing had to be removed earlier than 48 hours in five cases. In each group we noticed one pneumothorax after chest tube removal necessitating reinsertion of a chest drain. With regard to wound healing there was no difference between these two groups, no empyema was noted, cosmetically there was no difference either.

Conclusions
The application of a special hydrocolloid wound dressing after chest tube removal is less painful in comparison to the traditional way of an additional suture. The hydrocolloid wound dressing seals the wound airtight and guarantees equal wound healing.

Disclosure: All authors have declared no conflicts of interest.

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ADVANCED MEDICAL SIMULATION MAY IMPROVE PATIENT OUTCOMES IN THORACIC EMERGENCIES

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Objectives
The demand to improve patient safety has increased the need for high-quality teaching of students. Preparing students to manage emergent clinical situations i.e. decompression of a tension pneumothorax is very difficult. Students may not come into contact with a particular acute clinical scenario during a rotation or if they do it would be unethical to allow them to manage the patient. Simulation provides a safe method to gain experience in managing acute pathologies such as tension pneumothorax.

Methods
96 undergraduate medical students during their thoracic surgery elective were randomized to either practice in a Simulation Center (group A) or complete a traditional rotation (group B). Both groups previously completed an Emergency Medicine rotation where the management of tension pneumothorax was required to pass the course. Group A was divided into subgroups of 4 to 5 students to manage a conscious simulated patient (SimMan 3G, Laerdal, Stavenger, Norway) with a post-cholecystectomy pneumothorax that evolved into a tension pneumothorax and decompensation requiring either emergent needle decompression or chest tube placement. All the students from group A were subsequently debriefed with the video from the scenario. Finally both groups were given an anonymous questionnaire to self-assess their clinical management skills of crisis situations in thoracic surgery.

Results
42% of the students from group A were able to correctly manage this clinical scenario and perform needle decompression. In the self-assessment questionnaire, the students from group A rated confidence in their skills significantly higher then the group B.

Conclusions
Medical simulation is a novel method of teaching in thoracic surgery. It is feasible and can be used both for undergraduate and postgraduate education. Although it cannot substitute real clinical encounters, it appears to be an effective method to expose students to acute clinical scenarios. More studies are needed to see if simulation training improves patient outcomes.

Disclosure: All authors have declared no conflicts of interest.

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HOW EARLY CAN WE DISCHARGE OUR PATIENTS SAFELY FOLLOWING A MAJOR LUNG RESECTION?

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Objectives
Advantages of earlier discharge following a major lung resection cannot be overemphasized. But, how early discharge is justified with an acceptable risk has not been widely implemented yet. This study presents our fast tracking experience in an attempt to define the optimal discharge time for such patients.

Methods
One-hundred and fifty-nine patients underwent a major lung resection over a year. Prolonged (≥24 hours) ICU stays (n=13; 8%) and hospital deaths (n=5; 3%) were excluded. Remaining 141 patients were eligible for the study. All risk factors for postoperative complications were noted. Discharges were planned according to our "Fast Tracking Policy". Patients were divided into early (Group E; hospital stay≤4 days; n=105) and late (Group L; hospital stay>5 days; n=36) discharge groups. Factors independently affecting prolonged hospitalization or hospital re-admissions were investigated using logistic regression analysis.

Results
Overall median length of hospital stay was 3 and 5 days for groups E and L, respectively. Most of the lobectomy patients (n=100; 76%) had a single chest tube inserted and 18 (13%) patients were discharged home with a Heimlich valve. Eleven (8%) patients were re-admitted to hospital with most common reason being pneumonia or ARDS like symptoms (n=6; 55%). Hospital re-admission rates were similar between the groups E and L (8/105 and 3/36 pts, respectively; p=0.9). Although pneumonectomy patients tend to stay longer, this did not reach statistical significance. Logistic regression analysis using well-known risk variables also did not reveal any independent factors that significantly affected frequency of hospital re-admissions.

Conclusions
This study suggests that most patients undergoing major lung resection can safely be discharged home early. The hazard of facing post-discharge problems necessitating hospital re-admission is unpredictable regardless of their preoperative risk factors in most patients. Finally, early discharge is much more safer than unnecessarily prolonged in-hospital care in patients making an uneventful postoperative recovery.

Disclosure: All authors have declared no conflicts of interest.

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THE FEASIBILITY TO DETECT NSCLC IN HUMAN LUNG SAMPLES USING PACAP IMMUNOREACTIVITY

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Objectives
Fast analysis and identification of lung tumor cells during surgery is essential for complete resection. The gold standard for early detection is presently the fast frozen section (FFS) analysis which needs a continuous stand-by of a qualified pathologist. The aim of the present study was to determine the possible use of a personnel independent analyzing technique to detect NSCLC in a clinical setting.

Methods
During resection surgery due to NSCLC (adenocc n=15, squamocellular cc n=15) samples of tumor tissue, peritumoral area (r=2cm) and normal lung were obtained and instantly subjected to PACAP-27-LI and PACAP-38-LI immunoreactivity radioimmunoassay (RIA) observed by a lab technician. Samples were simultaneously presented for conventional FFS analysis. Results were grouped and compared by the two methods respectively. Student t-test was used for statistical analysis.

Results
Both PACAP-27-LI and PACAP-38-LI concentrations show significant elevation in the normal lung tissue compared to tumor (p=0,023, p=0,03) and peritumoral (p=0,014, p=0,025) samples. By comparison PACAP-38-LI levels were significantly higher in the normal and NSCLC tumor samples compared to PACAP-27 in the same tissue origin. There were no detectable significant differences according to the histology of the tumor proven on FFS.

Conclusions
Our preliminary results show that the combined use of PACAP-27-LI and PACAP-38-LI can prove the presence of lung cancer cells among clinical setting and qualitative analysis is performable without the need of high skilled staff. Further investigation is needed to determine the specificity and sensitivity of this method.

Disclosure: All authors have declared no conflicts of interest.

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BRONCHIAL VALVE IMPLANTS IN THE TREATMENT OF DESTRUCTIVE AND COMPLICATED PULMONARY TUBERCULOSIS: PRELIMINARY RESULTS

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Objectives
Destructive forms of tuberculosis (TB) give highest mortality rates and thus remain one of the most acute problems of modern pulmonology. Valvular bronchial blockage with implantable endobronchial valves is the novel procedure in the treatment of cavitary and complicated forms of TB which allows to achieve therapeutic hypoventilation and atelectasis of the damaged parenchima and to prevent blood aspiration while the draining function of bronchus remains preserved.

Methods
We have installed 40 bronchial valves (Medlung Ltd., Russia) in 32 patients with infiltrative TB (12), fibrocavernous TB (8), decay of large tuberculoma (8), and progressive disseminated TB with cavitation (2). Indications were TB empyema (12), lung hemorrhage (1) and postoperative bronchopleural fistulas (BPF) (in 11). Valves were implanted into lobar (25) or segmentary (8) bronchi, and both to intermediate and right upper lobar bronchi in 1 patient. The duration of bronchial occlusion was 7 to 218 (mean 92.1) days. Total of 24 (57%) patients were smear-positive before treatment, and 10 (31.3%) had multidrug-resistant (MDR) TB.

Results
Successful outcome was achieved in 26 (81.3%) patients. Lung reexpansion and closure of BPF occurred in 8 of 13 patients, and in 3 patients fistula remained. Empyema was cured in a half of patients. Significant decrease in infiltration and/or cavity size or full closure of caverna was obtained in 66% cases. Long-term results (1 to 3 years of follow-up) are known in 18 (56.3%) patients. Complete clinical effect was achieved in 14 (77.8%) of them, shrinkage of cavern occurred in 1 patient, residual pleural cavity with chronic empyema persist in 2, and cavitation of tuberculoma was registered in 1 case.

Conclusions
Bronchial valves implantation may improve the results of complex treatment of cavitary and complicated TB (including MDR-TB) making favorable conditions for closure of BPF and thus healing of residual pleural cavity and empyema. At the initial stages of the disease bronchial valves may offer the possibility to avoid surgery, while at the advanced ones they allow to stabilise a patient temporally and to gain time for further procedures.

Disclosure: All authors have declared no conflicts of interest.

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IS BICLAMP® A FEASIBLE OPTION FOR INTERLOBAR FISSURE DIVISION IN PULMONARY LOBECTOMY?

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Objectives
This study aims to review the safety and alternative possibility of a reusable sealing instrument, BiClamp® to the mechanical staple for interlobar fissure division in pulmonary lobectomy.

Methods
A retrospective review was conducted with 95 patients who underwent pulmonary lobectomy performed by a single surgeon between November 2005 and March 2010. The patients are divided into 2 groups according to the period before and after introduction of BiClamp®; 29 patients, who underwent fissure division only with staples (staple group), and 66 patients, who underwent the same procedure mainly with the instrument (BiClamp® group).

Results
Male patients are 60 (63%) and mean age is 67.5±10.8. Comparing the two groups` background, the BiClamp® group had significantly more VATS lobectomy cases and far less completely lobulated lungs: 6 patients (9.1%) compared to 9 (31%) of the staple group. Except for 18 patients who underwent staple division due to thick parenchyma of interlobar fissure, we attempted to divide the fissure of 42 patients in the BiClamp® group. BiClamp® solo use was possible for 25 patients (41.7 %). 8 (13.3 %) needed one staple cartridge in combination with BiClamp®, 5 (8.3 %) needed two, 4 (6.7 %) needed three (Combined use). In most cases except right upper or middle lobectomy, the division of interlobar fissure could be performed by solo use of BiClamp®. Incidence rates of prolonged air leakage and pneumonia show no significant difference between the two groups (6.9% and 3.4% in the staple group vs 10.6 % and 9.1 % in the BiClamp®).

Conclusions
The study results demonstrate the division of interlobar fissure in pulmonary lobectomy with BiClamp® is safe and feasible in most cases. While results point out the limitation that the right upper or middle lobe division may still be a challenge, they show the potential benefit for staple reduction.

Disclosure: All authors have declared no conflicts of interest.

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PREDICTING THE RISK OF PROLONGED AIR LEAK AFTER PULMONARY LOBECTOMY USING INTRAPLEURAL PRESSURES MEASURED DURING THE FIRST 24 HOURS

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Objectives
The aim this study was to evaluate if recording and analyzing pleural pressures during the first 24 postoperative hours helps to predict the risk of prolonged air leak (PAL) after lobectomy.

Methods
Prospective observational study on 136 consecutive patients who underwent pulmonary lobectomy in one center. At completion of the operation the presence of an air leak was tested, if any significant air leak was detected, any attempt was made to reduce it by applying sutures. One single chest tube was left in place without suction. The expiratory, inspiratory and differential intrapleural pressures were recorded during the first 24 postoperative hours using a digital chest drainage device. Patients suffering any kind of adverse postoperative event were excluded from the analysis (16 cases). Individual pressure records were plotted against time and smoothed lines were obtained (fig. 1). Mean inspiratory, expiratory and differential pressures in the first and in the second 12 postoperative hours and also mean standard deviations of the previous values entered in a logistic regression analysis resampled by bootstrap analysis to test the independent association of variables with the binary variable PAL.

Results
PAL was observed in 15 patients. We found that the mean expiratory and differential pressures and the standard deviation of the expiratory (oscillations) pressure during the second 12 hours (between 12-24 hours) after the operation were consistently associated with PAL (p=0.014 and p=0.021 respectively)

Conclusions
Measuring the intrapleural pressures with digital devices in the postoperative period allows PAL prediction and facilitates implementing strategies for early patient's discharge with chest tubes. Mean expiratory and differential pressures and standard deviation of expiratory pressure measured during hours 12th-24th after surgery appear to be the most reliable variables.

Disclosure: All authors have declared no conflicts of interest.

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POSTOPERATIVE THORACIC EPIDURAL ANALGESIA IN THORACIC SURGERY: CONTINUOUS ADMINISTRATION USING AN ELECTRIC SYRINGE PUMP VERSUS ELASTOMERIC PUMP

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Objectives
Thoracotomy causes of severe and prolonged postoperative pain (3-5 days) purveyors of multiple complications mainly respiratory. The thoracic epidural analgesia (TEA) is considered as the "gold standard" analgesic. This technique requires prolonged hospitalization in intensive care unit (ICU) to administer continuous mixing (local anesthetic + opioid) using an electric syringe pump (ESP). If elastomeric pump (EP) has already demonstrated its effectiveness in orthopedics (Ilfeld Anesthesiology 2002) and visceral surgery (Ansaloui, J Clin Anesth 2007), its place in TEA remains unclear.

Methods
We report our experience with its use for the maintenance of TEA in thoracic surgery. All consecutive patients operated from January to March 2011 for lung surgery (lobectomy, pneumonectomy or wedge resection) by thoracotomy were studied prospectively in the early postoperative period (first 5 days) in ICU. The patients were operated on under general anesthesia (GA) and TEA were systematically proposed, the epidural catheter was placed at T4-T5 before induction of GA. Postoperatively, patients were randomized into 2 groups: group A received a mixture containing a local anesthetic (LA) in this case 0.125% of bupivacaine and fentanyl (1 mg / ml of LA). This mixture was continuously administered to the patient using ESP, while Group B received the same mixture using EP. Several parameters were analyzed during the 96 prime hours post-operative : sensory level, Bromage score, complications, intra-venus analgesic consumption, visual analogue scale (VAS) at rest, at coughing and at mobilization as well as overall patient satisfaction.

Results
see Table 1

Setting	Groupe A N : 35	Groupe B N : 35	P
Age (Yr)	57+/- 8	63 +/- 10	0.83
Sexe (M/F)	29/6	27/8	0.52
ASA Score 1 2	75% 25%	68% 32%	0.74 0.68
Surgical procedure Lobectomy Pneumonectomy Wedge resection	83% 12% 5%	79% 14% 7%	0.78 0.69 0.54
VAS at coughin 0mm 0-3 mm >3mm	65% 25% 10%	62% 27% 11%	0.48 0.52 0.42
Complications Hypotension Motor block Urinary retention	10% 2% 1%	8% 3% 0%	0.45 0.42 0.51
Patient satisfaction	88%	94%	0.68

Conclusions

After thoracotomy, continuous administration of a mixture containing 0.125% of bupivacaine associated to fentanyl through an epidural catheter with a PE provides effective postoperative analgesia with few side effects. To reduce the cost of hospitalization in the ICU and reduce consumption of analgesics after surgery, the PE could be used in surgical services subject to rigorous monitoring, and continues with a highly trained nursing staff.

Disclosure: All authors have declared no conflicts of interest.

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COMBINED TRANSBRONCHIAL NEEDLE ASPIRATION (TBNA) AND 99MTC-2-METHOXY-ISOBUTYL-ISONITRILE SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY (99MTC-MIBI-SPECT) FOR DIAGNOSING ENLARGED MEDIASTINAL LYMPH NODES

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Objectives
To evaluate the accuracy of 99mTc-MIBI-SPECT in diagnosing mediastinal lymphadenopathy and if it may increase the diagnostic yield of the traditional "blind" TBNA considering that real-time guidance during TBNA is an expensive procedure and available in few centres.

Methods
61 consecutive patients with enlarged mediastinal lymph node seen on CT scan (> 1 cm) who underwent both TBNA and 99mTc-MIBI-SPECT were included. The MIBI uptake of the mediastinal lymph node (L) was compared with the normal tissue (N), and the L/N ratio was calculated to define the metabolic activity. TBNA of lymph nodes was performed; if no diagnosis was reached, mediastinoscopy was then attended. The results of TBNA and 99mTc-MIBI-SPECT were compared with histology to determinate the diagnostic accuracy of both methods.

Results
55/61 cases had mediastinal metastasis of which 40 were confirmed by TBNA and 15 by mediastinoscopy. 6 patients had benign disease (2 sarcoidosis and 4 reactive lymphadenopathy). No complications were encountered. The L/N value in malignant was significantly higher than in benign lymph nodes (2±0.3 vs 1.2±0.1;$p<0.0002$;Mann-Whitney test; Figure 1/A). Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) to detect malignant lymphadenopathy for SPECT was 94%; 100%; 100%; and 66% (ROC-curve Figure 1/B) while for TBNA was 72% (40/55); 100% (6/6); 100% (40/40); and 28% (6/21), respectively. Applying the approach of combining a negative TBNA and a negative SPECT result (L/N <1.4), mediastinoscopy could be avoided in 6/9 (66%) patients.

Conclusions

TBNA should be considered as a primary method of evaluation of enlarged mediastinal lymph nodes whose yield can be optimised with a proper selection of the target lesion using 99mTc-MIBI-SPECT. In this particular clinical setting, this procedure may reduce the need for more expensive or invasive procedures which are mandatory in case of negative TBNA and high MIBI lymph node uptake.

Disclosure: All authors have declared no conflicts of interest.

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A NOVEL TECHNIQUE FOR IDENTIFICATION OF THE PULMONARY SEGMENT USING PHOTODYNAMIC DIAGNOSIS; AN EXPERIMENTAL STUDY

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Objectives
Anatomical pulmonary segmentectomy requires accurate identification of pulmonary segments. However, it is not always easy to identify the intersegmental plane of the lung. In the present study, we examined a novel technique using photodynamic diagnosis (PDD) in ex vivo porcine lungs.

Methods
The ex vivo lungs obtained from slaughtered pigs were used. To assume a typical and easy segmentectomy in clinical practice, segments of the right cranial lobe were used. To assume an atypical and difficult segmentectomy, segments of the right caudal lobe were used. In the present study, PDD endoscopy set was used (D-Light system and TRICAMTM camera set, KARL STORZ). This set can detect fluorescence using blue excitation light. Flavin adenine dinucleotide sodium (VitB2) was used as fluorescent substance. After identification of the segmental bronchus, the fluorescent substance was injected via its bronchus by syringe. The fluorescent segment was observed by the PDD endoscope, and identified intersegmental plane was cut by scissors. Data were collected on identification rate of pulmonary segments, durability of fluorescence, and brightness of florescence.

Results
A total of 20 segmentectomies were performed, 10 in each lobe. In all segments, it was possible to identify the fluorescent segment (identification rate; 100%). Mean duration of fluorescent retention in the pulmonary segments was more than 1hour (62-90 min). It was able to perform a precise segmentectomy by cutting the fluorescent intersegmental plane in each segment. Leakage of fluorescent substance due to injury of pulmonary parenchyma was little.

Conclusions
The novel fluorescent technique using VitB2 based on PDD makes it possible to identify the target lung segment easily and clearly in ex vivo porcine lung.

Disclosure: All authors have declared no conflicts of interest.

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PLEURAL FLUID RECYCLING VIA ION TRANSPORTATION VARIES DURING INSPIRATION AND EXPIRATION

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Objectives
The lower parts of the pleural cavity interfere more intensely to the pleural fluid recycling. This event is partially attributed to the ion cellular transporters of the mesothelial cells who are more abundant over these regions. Aim of this study is to investigate if this mesothelial cell ability to recycle pleural fluid is different during inspiration and expiration.

Methods
Parietal pleural specimens from the lower parts of the pleural cavity were stripped off from 6 patients subjected to thoracic surgery. The specimens were mounted between Ussing chambers as follows: a) totally stretched (without curve from middle line) imitating inspiration and b) totally relaxed (>1cm curve from middle line) imitating expiration. Amiloride (Na+ channel inhibitor) and ouabain (Na+/K+ pump inhibitor) pretreated specimens were used in order to investigate ion cellular transportation ability. In each group, seven experiments were conducted for each drug. Trans-mesothelial Resistance (RTM) was determined as a permeability indicator.

Results
The control RTM for stretched was lower than the relaxed (17.9±0.3 vs 18.68±0.4 Ω•cm2, p=0.046) specimens. Amiloride increased RTM in both groups (20.28±0.4 Ω•cm2 for the stretched and 19.98±0.4 Ω•cm2 for the relaxed specimens) but in the stretched group this increase was higher than the relaxed (increase of 2.38 Ω•cm2 vs 1.38 Ω•cm2, p=0.022) group. Ouabain had a similar result (19.98±0.4 Ω•cm2 for the stretched and 19.83±0.4 Ω•cm2 for the relaxed specimens) and again the RTM was higher in the stretched than in the relaxed group (increase of 1.98 Ω•cm2 vs 1.15 Ω•cm2, p=0.028).

Conclusions
The stretched specimens imitating inspiration were more permeable and showed higher ion cellular transportation alteration than the relaxed specimens imitating expiration. Therefore it may be assumed that the pleural fluid recycling via the parietal pleura may be conducted more intensely during inspiration.

Disclosure: All authors have declared no conflicts of interest.

P-199

THE RAGE AXIS IN PATIENTS WITH MYASTHENIA GRAVIS

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Objectives
Myasthenia gravis (MG) is an autoimmune disorder with pharmacological and surgical treatment options. The Receptor for Advanced Glycation Endproducts (RAGE) plays a role in various autoimmune diseases. We sought to investigate the RAGE axis in the pathophysiology of MG.

Methods
We enrolled 42 patients with MG and 36 volunteers. We employed immunosorbent assays to determine the concentration of soluble RAGE (sRAGE) and various RAGE ligands, such as HMGB1, S100B, S100A8 and AGE-CML in serum of patients and volunteers.

Results
We found significantly reduced levels of the sRAGE and esRAGE in patients with MG compared to healthy volunteers (sRAGE [pg/ml] 927.22 ± 80.79 vs. 1400.05 ± 92.35; $p<0.001$; esRAGE [pg/ml] 273.5 ± 24.6 vs. 449.0 ± 22.4; $p<0.001$). Further categorization of patients with MG will be shown. There were no statistically significant differences in the concentrations of the ligands between MG patients and volunteers (S100B [pg/ml] 22.5 ± 22.5 vs. 14.4 ± 9.2; $p=0.698$; S100A8 [pg/ml] 107.0 ± 59.3 vs. 242.5 ± 103.6; $p=0.347$; HMGB1 [ng/ml] 1.65 ± 0.12 vs. 2.13 ± 0.23; $p=0.058$; and AGE-CML [ng/ml] 1100.8 ± 175.1 vs. 1399.8 ± 132.8; $p=0.179$).

Conclusions
Our data suggest a role for the RAGE pathway in the pathophysiology of MG. Further studies are warranted to elucidate more about this immunological axis in patients with MG.

Disclosure: All authors have declared no conflicts of interest.

P-200

EFFECTS OF LUNG CANCER SURGICAL TREATMENT ON THE METABOLIC PROFILE OF EXHALED BREATH CONDENSATE AND BLOOD SERUM

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Objectives
The aim of the study was to assess possible changes in the metabolic profile of exhaled breath condensate and blood serum in early postoperative period after radical lung cancer resection.

Methods
Exhaled breath condensate (N=8) and blood serum samples (N=6) were taken from lung cancer patients (stage IB-IIIA) 1 day before and 1 week after surgical treatment. The samples were treated identically and analyzed on a Q-Trap 3200 mass spectrometer to obtain the full spectra of low molecular weight compounds in mass-to-charge ratio 50-1700. Principal component analysis and partial least squares regression, Pearson correlation and paired Wilcoxon and t-tests were used for data analysis.

Results
Several mass-to-charge ratios (e.g.164.88, 199.26 and 481.52) with significant difference ($p<0.001$) between pre- and post-operative samples were discovered. A mass-to-charge ratio (230.16), which abundance was on average more than 10 fold higher in post-operative samples ($p<0.05$), was found. For some signals (564.42 and 199.16) also high correlation ($R > 0.5$) between serum and breath condensate was found.

Conclusions
Lung cancer resection clearly affects the metabolic profile of exhaled breath condensate and venous blood serum. Changes found in metabolite signals are an excellent platform for further studies planned to determine their long-term clinical significance and potential use in lung cancer diagnostics or follow-up.

Disclosure: All authors have declared no conflicts of interest.

P-201

CLOSED CHEST VATS-LOBECTOMY: RESULTS OF 2010-2011

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Objectives
VATS lobectomies using an utility mini-thoracotomy is well accepted world-wide. Since 2009 we perform a new technique without a mini-thoracotomy in a closed chest manner with removal of the specimen by a subxiphoid acces. In case of malignancy, the procedure is always completed with a lymph node dissection according to the ESTS guidelines. We would like to present our technique and experience with its results.

Methods
Patients were operated in decubitus dorsalis position with a pillow under the ipsilateral scapula. The procedure of lobectomy with lymph node sampling was performed using 4 thoracoports in which the specimen was removed with an endobag by extending the subxiphoid incision to 3-4cm. Data were retrospectively collected on patients who underwent a closed chest VATS lobectomy in the year 2010 and 2011.

Results
During this 2-year period a total of 68 patients (39male and 29 female), whom 58 had malignancy, were consecutively operated. Mean age was 63 years. Mean operationtime was 142min with an average peroperative blood loss of 110ml. The mean amount of prelevated N2 lymph nodes was 3.3 stations and lymph node 7 was found in 90% of the cases. Mean tumordiameter was 2.6cm (range: 0.5cm-11cm). One patient needed conversion to mini-thoracotomy due to bleeding. Mean chest tube duration was 6.4 days with a mean hospital stay of 9.3 days. Two patients needed re-VATS for hematothorax and persistent air leakage.

Conclusions
The closed chest VATS lobectomy is a safe surgical technique with similar morbidity. This technique allows a thoroughly lymph node dissection. The avoidance of a mini-thoracotomy gives less postoperative pain and the subxiphoid removal of the specimen allows resection of greater tumorsizes.

Disclosure: All authors have declared no conflicts of interest.

P-202

INCREASED CIRCULATING VEGF2R+ PROGENITOR CELLS ARE ASSOCIATED WITH ANGIOGENIC MOLECULAR CHANGES IN TUMOUR AND LUNG TISSUE IN LUNG ADENOCARCINOMA

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Objectives
VEGF2R+ circulating endothelial progenitor cells (cEPC) are increased in blood of lung cancer patients. It remains unclear whether increased levels of cEPC are associated with changes in molecular pathology of angiogenesis within tumour and lung tissue.

Methods
In n=20 primary lung adenocarcinoma patients cEPC, VEGF and Angiopoetin-2 levels were determined in blood before treatment and compared to molecular expression pattern of HIF-1α, VEGFA, MMP, TIE-2 and CXCL12 in lung and tumour tissue as well as to levels in healthy volunteers. Quantification of EPCs in the mononuclear cell fraction (PBMC) was performed via 4-colour FACS analysis. Tumor and lung tissue have been sampled right after resection for DNA extraction. PCR for HIF-1α, VEGF, MMP, TIE-2 and CXCL12 has been performed and fold change compared to healthy human lung tissue determined.

Results
cEPC have been significantly elevated in lung cancer patients compared to healthy controls ($p<0.01$). In rtPCR a significant increase in expression has been found in both lung and tumour tissue of lung cancer patients compared to control lungs ($p<0.001$). MMP and HIF-1α were higher in tumour compared to lung tissue ($p<0.01$), whereas TIE2 was down regulated in tumour tissue ($p<0.05$). Correlations were found for cEPC with VEGF, VEGFA and HIF-1α ($p< 0.05$). cEPC and rtPCR results have not been associated with clinical outcome.

Conclusions
Elevated cEPC, VEGF and Ang-2 blood levels in lung adenocarcinoma patients are associated with significant molecular expression changes in lung and tumour tissue. Further studies are needed to identify molecular targets related to clinical outcome.

Disclosure: All authors have declared no conflicts of interest.

P-203

PROLONGED AIR LEAK AFTER LUNG RESECTION CAN BE PREDICTED BY AIR LEAK FLOW RATES MEASURED IN THE EARLY POST-OPERATIVE PERIOD USING A DIGITAL CHEST DRAIN SYSTEM

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Objectives
Air leaks frequently complicate lung resection surgery, but predicting which resolve spontaneously and which progress to Prolonged Air Leakage (PAL) has hitherto been difficult.

Methods
Clinical data for 124 consecutive patients who received curative major lung resection by a single surgeon and who had complete chest drainage records were reviewed. All patients had one chest tube connected to either a conventional water seal chest drain system (group WS: n=69, 56%) or a digital chest drain system (group D: n=55, 44%) depending on availability of the latter at the time of operation.

Results
Patients in the two study groups were comparable in all demographic and clinical variables (see Table). Air leak was documented using the integral digital air flow monitor in group D, and a modification of a previously reported air leak severity score in group WS. Overall, 43 patients (34.6%) had some air leak on the morning after surgery, and 27 (21.8%) had PAL persisting >5 days. Considering only patients with an air leak in group D, an air leak rate of >200ml/min on the first post-operative day was associated with a higher rate of PAL (80% vs 20%, p=0.015); while a rate of >200ml/min on the second day was associated with higher rates of both PAL (75% vs 0%, p=0.001) and chest drain duration >7 days (63% vs 11%, p=0.026). A rate of <50ml/min on the second day was predictive of spontaneous resolution before the fifth day (100% vs 45%, p=0.025). Considering only patients with an air leak in group WS, air leak severity scores on all post-operative days failed to correlate with PAL or prolonged chest drain durations.

Conclusions
Using a digital monitor, the air leak rates measured in the first 2 days after lung resection can predict the risk of PAL, potentially allowing pre-emptive intervention in the early post-operative period.

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P-204

TECHNIQUE OF A TOTALLY THORACOSCOPIC LUNG RESECTION AND CHEST WALL RESECTION WITH RECONSTRUCTION WITH EXTRACELLULAR MATRIX PATCH

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Objectives
The use of VATS has long been established as a safe and respected technique in resecting lung cancer in modern Units. As the experience is slowly increasing surgeons have extended the indications for it's safe use form simple lobectomies or wedge resections to more complex and demanding operations including but not limited to sleeve resections and pneumonectomies. When the tumour is large, central or involves the chest wall the procedure becomes challenging or impossible in inexperienced hands. these patients though should not be deprived the opportunity to receive a minimally invasive procedure with all it's inherent advantages.

Methods
We therefore started to produce a strategy for the management of patients requiring a combination of lung resection and chest wall resection with reconstruction with a complete VATS approach without the need to extend an incision. Our initial experience comprises of 2 cases performed recently. the first was a patient with metastatic deposits from a parathyroid carcinoma in the anterior right chest wall and lung. The procedure was performed with 2 ports and a small incision measuring 35mm. Using a tailor made endoscopic set of instruments the chest wall was resected en block with the lesions and delivered with a usual endo bag. The anterior defect was reconstructed with a fashioned XCM patch anchored with interrupted sutures without the need of a metal bar support. Similarly, the second patient was diagnosed with a bronchogenic carcinoma involving the left upper lobe and anterior chest wall. In a similar fashion the VATS lobectomy was performed with 2 ports and one 35mm incision and the chest wall was resected with the endoscopic kit and reconstructed with XCM patch. There was no need to reinforce the defect with metal bars and positive pressure test on the second postoperative day revealed no paradoxical chest wall movement.

Results
Both patients received standard postoperative care and were discharged home without complications related to the chest wall reconstruction. Follow up revealed a complete and physiological chest wall reconstruction with no paradoxical breathing and/or herniation.

Conclusions
Although the experience is limited totally endoscopic chest wall resection and reconstruction is possible with the appropriate endoscopic kit. In generous resections the XCM patch seems to perform well without the need of a metal bar as it has good tensile strength. There are questions

remaining regarding the applicability of the technique in large challenging chest wall resections and the complimentary need of metal bar reinforcement. More cases are required to establish the feasibility of the technique and the development of additional specialised equipment.

Disclosure: All authors have declared no conflicts of interest.

P-205

A NEW SYSTEM OF TELESURGERY: TELELAP ALF-X EXPERIMENTAL STUDY ON ANIMAL MODEL

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Objectives
We report our experience using a new telesurgery system called Telelap Alf-X on the animal model.

Methods
Since February 2010 our surgical equipe is conducting the first experimental study based on a new system of telesurgery called Telelap Alf-X experienced on animal model. This operative system has two innovative peculiarities: tactile perception (similar to tactile feedback of thoracoscopy) and eyetracking (the immediate and perfect synchronization between the surgeon eyes and the robot camera). The major procedures of thoracic surgery have been performed initially on the Swine model and afterwards on the Ovine model.

Results
The Telelap Alf-X system shares a similar mindset with thoracoscopy and moreover it is easy to use, creating a short learning curve. The operative time is similar to the traditional thoracoscopy. The ergonomic cockpit (man-machine interface) offers the operator much comfort. The possibility of re-usable instruments reduces the costs. The Swine model was useful for a preliminary phase of our study, where different parameters of the Telelap Alf-X system were established. In a following phase of the study, the system was optimized on the Ovine model because, in our opinion, it is more similar to the human model as regards to the intercostal area.

Conclusions
The telesurgical system Telelap Alf-X is an evolving platform which is undergoing certifications for its use on humans. However we can already state that it has many advantages such as: versatility, multidisciplinary, short learning curve and lower costs.

Disclosure: All authors have declared no conflicts of interest.

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COMPARISON OF TWO HANG MANEUVERS – MODIFIED TECHNIQUES IN UNIPORTAL VIDEO-ASSISTED THORACOSCOPIC SURGERY FOR PRIMARY SPONTANEOUS PNEUMOTHORAX

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Objectives
Uniportal video-assisted pulmonary resections have been reported increasingly in recent literatures, especially aimed at wedge resections of peripheral pulmonary nodules or bullectomy. After identification of the target lesions, it is critical to create a triangle for using linear stapler to complete resection. In some thoracic surgeons' reports, they use specific instruments for lung retraction. We established two simplified Hang maneuvers to create the triangle for resection. This study was aimed to compare the difference and efficacy between the two Hang maneuvers.

Methods
To create a triangle for bullectomy during uniportal video-assisted surgery, we established two different Hang maneuvers. Both of them use trans-thoracic suture to hang the target lesion. The suture method used straight needle attached to 3-0 prolene suture line to penetrate the chest wall and the bottom of target lesion. The hem-o-lock method used a hemo-lock clip to fix the target lesion and silk suture line concurrently. We compared the operation time and feasibility of intra-operative management of the two groups.

Results
From July 2010 to December 2010, ten patients with primary spontaneous pneumothorax underwent uniportal VATS for bullectomy in our hospital. Among them, Hang maneuver with suture was used in six patients and Hang maneuver with hem-o-lock clip in the other four patients. The mean operation duration was 90 minutes (ranging from 70 to 135 minutes).

Conclusions
Using traditional instruments to complete uniportal VATS bullectomy, it is important to create a triangle to facilitate resection. In our experience, the two simplified Hang maneuvers can effectively create the triangle. However, considering to clear operative field and the possibility of air embolism, we prefer the hemo-lock method to the suture method.

Disclosure: All authors have declared no conflicts of interest.

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PREOPERATIVE STAGING OF NON SMALL-CELL LUNG CANCER: COMPARISON OF WHOLE BODY DIFFUSION WEIGHTED MAGNETIC RESONANCE IMAGING AND 18F-FLUORODEOXYGLUCOSE- POSITRON EMISSION TOMOGRAPHY/COMPUTED TOMOGRAPHY

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Objectives
To investigate the diagnostic value of whole-body Magnetic Resonance Imaging (MRI) including diffusion weighted imaging with background signal suppression (DWIBS) for preoperative assessment of non-small-cell lung cancer (NSCLC) in comparison to 18F-Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography (PET/CT)

Methods
Thirty-three patients with suspected NSCLC were enrolled. Patients were examined before surgery with PET/CTand whole-body MRI including T1w-TSE, T2w-STIR and DWIBS-sequences (b=0/800). Histological or cytological specimens were taken as standard of reference.

Results
Whole-body MRI with DWIBS as well as PET/CT provided diagnostic image quality in all cases. Sensitivity for primary tumor detection: MRI 93%, PET/CT 98%. T-staging accuracy: MRI 63%, PET/CT 56%. N-staging accuracy: MRI 66%, PET/CT 71%. UICC-staging accuracy: MRI 66%, PET/CT 74%. Sensitivity for metastatic involvement of individual lymph node groups: MRI 44%, PET/CT 47%. Specificity for individual nonmetastatic lymph node groups: MRI 93%, PET/CT 96%. Assessment accuracy for individual lymph node groups: MRI 85%, PET/CT 88%. Observer agreement rate for UICC-staging: MRI 74%, PET/CT 90%.

Conclusions
Our preliminrary results show that Whole-body MRI with DWIBS provides comparable results to PET/CT in staging of NSCLC, but shows no superiority. Most relevant challenges for both techniques are T-staging accuracy and sensitivity for metastatic lymph node involvement

Disclosure: All authors have declared no conflicts of interest.

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CANNABIS ABUSE AND PRIMARY SPONTANEOUS PNEUMOTHORAX: COINCIDENCE OR CONSEQUENCE?

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Objectives
There are contradictory data on lung injury caused by marijuana. Anecdotical reports draw attention to an increased rate of primary spontaneous pneumothorax (PSP) among young marijuana smokers. Our previous animal experiments supported the validity of the clinical observations taken by others.

Methods
Retrospective analysis of patients treated for PSP in a tertiary thoracic center in the last two years was performed. Demographics, treatment modality and outcome data, recurrence rate included, were analysed. Chi-square and Fisher-tests were applied for statistical evaluation.

Results
Altogether 56 patients were treated for PSP. (38 male, 18 female, age 40,2±19,0). According to their own declaration, 19/56 were regular cannabis users (CU): 15 males and 4 females, age 26,9±7,8. 14/56 patients had previous history of PSP. Recurrence rate was 7/19 in CU and 7/37 in NCU patients respectively. 1/37 non-cannabis user (NCU) did not require intervention, 24/37 needed thoracic drainage alone. 12/37 NCU patients went through major chest surgery (8 VATS, 4 open thoracotomy). 3/19 CU patients recovered during simple observation, 7/19 needed drainage alone, 9/19 major surgeries were encountered (7 VATS, 2 open thoracotomies). There was a significantly shorter drainage time among NCU (4,3±1,3days vs5,4±1,0, p=0.041). Operative treatment was needed in a higher rate among CU (47,4%vs NCU32,4%, p=0,001) due to impaired lung expansion. Recurrence were seen in 5/56 patients following thoracic drainage, whereof 4 patients were CU (odds ratio 7,8). On histological examination there were no differences between the two groups, 20/21 of operative cases have proven emphysaema pulmonum.

Conclusions
Despite the small sample size, there seems to be a connection in marijuana use and PSP prevalence. It's unclear if marijuana directly contributes to the development of pneumothorax, or just aggravetes a fundamentally fragile lung parenchyma condition. In this group of young patients a more aggressive surgical approach is recommended, considering underlying parenchyma impairement and higher recurrence rate.

Disclosure: All authors have declared no conflicts of interest.

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DIFFUSE IDIOPATHIC PULMONARY NEUROENDOCRINE CELL HYPERPLASIA (DIPNECH) COMPLICATING MULTIPLE PULMONARY METASTASES OF A PELVIC OSTEOSARCOMA

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Objectives
Diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH) is an exceptional disorder and information on the course of this entity is limited. Only a small number of cases has been described in the literature. However, it has become recognized that DIPNECH may be a precursor lesion and may be associated with other malignancies.

Methods
A 71-year-old female with a pelvic osteosarcoma and suspected multiple bipulmonary metastases (n > 30) underwent neoadjuvant treatment with 6 cycles of chemotherapy (EURO-BOSS). Surgery of the pulmonary metastases and the primary tumor was planed. A re-staging CT scan revealed only three suspect lesions remaining in the left and five in the right lung.

Results
A two-staged bilateral sequential antero-lateral thoracotomy with systematic palpation and enucleation of 9 lesions on the left side and 12 on the right side followed. Interestingly, histopathology revealed only 3 metastases, 6 non-malignant lesions and 12 DIPNECH lesions. A comparison of the preoperative CT scan and the resected areas confirmed that both DIPNECH lesions and metastases had been detected in the CT-scan. However, the radiological findings could not be discriminated in their entity, neither a priori nor post-hoc.

Conclusions
This rare case demonstrates evidence of DIPNECH parallel to pulmonary metastatic disease discovered after chemotherapy. The neuroendocrine lesions mimicked metastasis of the sarcoma and interfered with the oncological treatment. Since an increasing incidence of DIPNECH lesions associated with other malignancies has been noted, this report contributes to a better understanding of this neuroendocrine pathology.

Disclosure: All authors have declared no conflicts of interest.

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AN UNEXPECTED COMPLICATION OF MONOPOLAR ELECTROCAUTERIZATION DURING THORACIC SYMPATHECTOMY

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Objectives
Endoscopic thoracic sympathectomy is a minimally invasive procedure providing significant relief for patients with hyperhidrosis. Several complications of throacoscopic sympathectomy are well known in the literature. Spinal cord infarction occuring as a rare complication of thoraco-lumbar sympathectomy has been reported. To our knowledge, this is the first case of paraparesis caused by monopolar electrocauterization during thoracoscopic sympathectomy.

Methods
16 year-old boy underwent bilateral synchronous thoracoscopic sympathectomy for palmar hyperhidrosis. Sympathetic chain has been cutted and cauterized with an L-shaped monopolar hook cautery. Patient had a dropped right foot right after recovering from anesthesia. Magnetic resonans imaging revealed increased signal due to edema in the central spinal cord at the upper thoracic levels, which was reported to be secondary to the procedure.

Results
The patient received anti-inflammatory and anti-edematous therapy immediately after the operation and he was discharged home on the eighth postoperative day without remarkable disability. After a 3 months follow-up period there was no abnormal finding in magnetic resonans imaging of the thoracic spinal cord and we suggest that this complication caused by use of monopolar electrocautery.

Conclusions
Thoracoscopic sympathectomy is generally considered to be a simple and safe procedure. We recommend the use of bipolar electrocautery or clipping in order to avoid such neurological complications.

Disclosure: All authors have declared no conflicts of interest.

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A RARE CASE OF AGENESIS OF THE RIGHT HEMI-DIAPHRAGM IN COMBINATION WITH A SPONTANEOUS PNEUMOTHORAX - TREATED MINIMALLY INVASIVE? - GIVE IT A TRY!

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Objectives
Agenesis of the hemidiaphragm (AHD) is a rare anomaly. Typically it is diagnosed short after birth. AHD in adults is exceedingly rare, and experience in treatment is poor. A 40 year old woman with a spontaneous pneumothorax was presented to our department for surgical treatment. Incidentally we found an agenesis of the right hemidiaphragm. The experience we could gain out of this case is topic of this presentation.

Methods
The patient presented with thoracic pain, coughing and breathlessness. A chest x-ray gave the finding of a right -sided pneumothorax. Despite a chest tube insertion the pneumothorax persisted. As a next step a thoracic CT scan was performed.

Results
The CT scan showed a pneumothorax with a maximum diameter of 3 cm with consecutive atelectasis. The right hemidiaphragm was completely missing, the liver enlarged, having a small cyst in segment V, and was reaching somewhat up into the pleural cavity. Due to the fact that the patient was asymptomatically since years, and therefore had major concerns about a large surgical intervention using prosthetic material, we decided to give a minimal invasive access a try. Via VATS access with three trokars an apical bullectomy of the right upper lobe together with a pleural abrasion was performed, 6 mL of fibrine glue were sprayed on the surface of the liver and two chest tubes inserted. Intraoperatively the lungs expanded well. A PEEP of 8 mm Hg was kept for 24 hours to keep the lungs expanded. Afterwards the patient was extubated and received intermitting high-flow CPAP therapy for another 3 days. Dismission took place after seven days. A CT scan control one and 12 months later showed a fully expanded lung without pneumothorax.

Conclusions
Minimally access seems to be adequate in patients with asymptomatic agenesis of the hemidiaphragm. Prosthetic reconstruction of the diaphragm is not mandatory.

Disclosure: All authors have declared no conflicts of interest.

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WITHDRAWN BY AUTHORS

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RESECTION OF A PHRENIC NERVE NEURINOMA WITH PRESERVATION OF DIAPHRAGMATIC FUNCTION

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Objectives
Among anterior mediastinal masses, neurinomas of the phrenic nerve represent a rare type of tumors. Since malignant degeneration of neurinomas is possible the surgical resection of mediastinal neurinomas is indicated. However, the surgical sectioning of the nerve, due two the subsequent diaphragmatic lack of functionality, can lead to a distinct clinical impairment with respiratory distress.

Methods
A well circumscribed lesion in the anterior right mediastinum was diagnosed in a 51 years old female patient. The 4,8 x 3,5 x 3cm lesion showed contact to the superior vena cava and to the ascending aorta. The radiologic diagnosis was a mediastinal cyst. Due to a small calcification within the lesion a pulmonary hamartoma was the differential diagnosis.

Results
Using a minimally invasive thoracoscopic approach the mediastinal mass was dissected from the mediastinal fat and the pericardium. After clarifying that the phrenic nerve was part of tumor capsule, the conversion to thoracotomy was performed. The capsule of the neurinoma was incised and by means of neurostimulation the nerve fibres within the connective tissue of the capsule were preserved. Only a thin nerve fibre directly entering the tumor was sectioned. Neurostimulation at the end of the procedure and the postoperative X-rays without high stand of the diaphragm proved a maintained function of the phrenic nerve.

Conclusions
The nerve preserving resection of neurinomas is a routine procedure in vestibular schwannomas. In the rare case of a phrenic neurinoma the preservation of diaphragmatic function is desireable, to prevent respiratory impairment. Through neuromonitoring, the preservation of nerve fibres within the tumor capsule is possible, with good functional results. A regular oncologic follow-up is recommended.

Disclosure: All authors have declared no conflicts of interest.

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OPEN HEART WOUND THREE DAYS AFTER A BLUNT CHEST TRAUMA: REPORT OF A CASE

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Objectives
High velocity blunt chest traumas are known to cause a variety of life-threatening conditions and should be promptly managed. In rare situations however, chest wall instability can lead to organ lesion late after initial trauma. Here we report a case of myocardial laceration on a rib spicule three days after initial trauma.

Methods
A 67 year old woman was admitted following a frontal car crash. Her initial workup, including a total body CT-scan, showed serial left rib fractures and a leg fracture. She was hospitalized for analgesia, respiratory physiotherpy and early remobilization. Three days following her admission, she developed a severe shock with a left hemothorax that did not improve with fluid resuscitation and chest drainage. A surgical exploration of her chest cavity by a sternotomy showed a myocardial laceration due to a rib spicule. The patient survived and was discharged from the hospital 32 days after admission.

Results
Open heart wounds following blunt chest traumas are exceptionnal and difficult to predict. A retrospective re-analysis of the initial CT-scan of our patient showed different rib spicules that were located far from the myocardium. Clinically, the chest wall was tested and seemed stable. The patient was mobilized early to avoid deep venous thrmobosis, muscle atrophy and pulmonary atelectasis. This, most likely, favored spicule movement and heart laceration.

Conclusions
Open heart wounds following blunt chest traumas are rare but should be looked for in situations of fast heamodynamic deterioration of patients. Further case studies are necessary to determine if criteria can help predict the risk of these events in order to adapt mobilisation schemes.

Disclosure: All authors have declared no conflicts of interest.

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RARE CASE OF EMPYEMA THORACIS; INDUCED BY A GASTROPLEURAL FISTULA DUE TO A DISLOCATED GASTRIC BAND

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Objectives
We demonstrate a rare case of empyema thoracis, induced by a dislocated gastric band, that caused necrosis of the gastric fundus, resulting in gastropleural fistula.

Methods
A 30 years old woman, in the 31. week of pregnancy was admitted to our clinic. She had gastric banding by obesity, two years earlier. Two weeks before she developed dyspnoe, fever and a left sided pleural effusion, empyema thoracis was diagnosed. Following antibiotic treatment and drainage, the lung failed to expand. Gastroscopy – originally performed to rule out a gastropleural fistula - demonstrated a large perforation of the fundus, leading to the empyema cavity. Since the patient had neither abdominal complains, nor respiratory insufficiency, there was time to wait for completion of the 32. pregnancy week. Then a healthy boy was born via planned caesarean section. Following this computed tomography of the thorax and abdomen was done, demonstrating typical empyema sack, thickened pleura and compressed lung. Abdominal computed tomography demonstrated the dislocation of gastric band.

Results
Laparotomy was performed, the dislocated gastric band was removed and the necrotic part of the fundus was resected. Since this penetrated through the diaphragm, and rests of the necrotic stomach remained in the thorax, the operation was continued with a left sided thoracotomy, the lung has been decorticated, and the diaphragm sutured. Following an uneventful postoperative course, the patient was emitted on the 17. postoperative day.

Conclusions
Here we demonstrated a rare case of empyema thoracis, as the complication of gastric banding in a pregnant woman. Our case points out the importance of good collaboration of abdominal and thoracic surgery, intensive medicine, and obstetrics in the timing of investigations and treatment modalities in order to rescue the newborn and to treat the patient adequately.

Disclosure: All authors have declared no conflicts of interest.

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HAEMOPTYSIS AS LEADING SYMPTOM OF AN AORTIC DISSECTION

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Objectives
Within a thoracic surgical unit diagnosis and treatment of haemoptysis usually follows standard operating procedures. We present the case of a patient with an acute aortic dissection (Stanford B) whose major symptom was haemoptysis, urging us to extend the established procedures within a short period of time to a multidisciplinary approach.

Methods
29 year old male patient with known idiopathic necrosis of the aortic media (Erdheim-Gsell), presenting with hemoptysis. Bronchoscopy revealed diffuse bleeding from the left bronchial system. CT-scan of the thorax followed by aortography diagnosed an acute long dissection of the thoracic aorta, profuse intrapulmonary haematoma on the left and a left haematothorax. No exact exit point out of the dissection could be identified.

Results
An interdisciplinary approach with thoracic, cardiac and vascular surgeonsn as well as interventional radiologists was taken. The patient was treated successfully (replacement of the ascending aorta, endoluminal stenting of the aortic arch and the descending aorta after transposition of the craniobrachial arteries at the arch, evacuation of the haematothorax). Follow up (13 months) was uneventful so far.

Conclusions
Even established operating procedures require a great amount of flexibility if patients with complex pathologies have to be treated effectively. An interdisciplinary approach often is mandatory to achieve the best possible result for the patient.

Disclosure: All authors have declared no conflicts of interest.

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CHALLENGING GIANT RESIDUAL THORACO-ABDOMINAL MASS: PRESENTATION OF AN AGRESSIVE SURGICAL RESECTION WITH EXCELLENT MIDDLE TERM RESULT

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Objectives
In patients with residual mediastinal non seminomatous germ cell tumors of testicular origin, after local surgery and adjuvant therapy, resection with curative intent is commonly advocated. The posterior mediastinum and retro-peritoneum are frequent sites of tumor extension. We report here a case of residual mediastinal non seminomatous germ cell tumors of testicular origin, unique due to its exceptional size (from the right suclavian vein to right iliac vein) and the surgical challenge it presented.

Methods
Challenging case presentation

Results
A 26-year-old man presented in 2008 with metastatic non seminomatous germ cell tumor of the testis. After orchidectomy and chemotherapy large residual masses persisted in the posterior mediastinum, retroperitoneum, left supraclavicular fossa and left upper lobe. In a first stage, a right thoracophrenolaparotomy was performed through the eighth inter costal space, dividing the right rectus abdominis. By the same cutaneous incision, a second thoracotomy through the fourth inter costal space was performed to access the upper posterior mediastinum. Excellent exposure was obtained, permitting a simultaneous resection of residual masses located in the posterior mediastinum and retroperitoneum from the right subclavian vein to the right common iliac vein. All abdominal intercostal arteries were ligated. There were no major perioperative complications. In a second stage, the left upper lobe and supraclavicular masses were excised via two different approaches with no particular difficulty encountered. Histology confirmed mature teratoma. After three years, the patient remains well with no evidence of residual or recurrent disease.

Conclusions
This case shows particuliary challenging surgical management. Right thoracophrenolaparotomy, though rarely proposed, may be the best approach to safely and simultaneously excise residual mediastinal and retroperitoneal germ cell tumor masses. Anterior sterno-laparotomy may be less efficient in such cases.

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IDIOPATHIC CHYLOPERICARDIUM: A RARE ENTITY WITH OBSCURE ETIOLOGY

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Objectives
Idiopathic chylopericardium in the absence of a precipitating factor, is a rare entity with obscure etiology. We present a case of idiopathic chylopericardium managed successfully focusing the attention on the surgical management.

Methods
A 44 years-old women presented with progressive dyspnoea and discomfort two weeks before admission. Echocardiography confirmed a pericardial effusion with hemodynamically relevant compression of the right atrium. At pericardiocentesis 900 ml milky fluid where evacuated and biochemistry confirmed the chylous fluid. For continuous drainage a pigtail catheter was left in place. The woman received initially conservative management with MCT diet followed on the fifth day by total parenteral nutrition. The chylopericardium persisted with a rate of 100 ml/d. The technetium 99m-lymphoscintigraphy showed a retrocardial tracer enrichment on the left side. Therefore a lymphatic malformation with pericardial fistula was suspected.

Results
A left VATS was performed and 200 ml olive oil was administered through a nasogastric tube 2 hours before anaesthesia for a better fistula visualisation. The pericardial inspection revealed no signs of lymphopericardial fistula. The identification of the thoracic duct through the left side approach was difficult because of a fibrinous membrane in the paraaortic region. A mass ligature of the supradiaphragmatic tissue between the aorta and oesophagus was performed and a pericardial window created to allow an adequate drainage in the pleural cavity. A second right VATS was thereafter performed in order to localize and ligature of the thoracic duct. Late follow-up showed no signs of chylopericardium and/or chylothorax.

Conclusions
The optimal treatment of the patients with primary chylopericardium is unclear. Conservative management is initially indicated in all hemodynamic non-compromised. All patients with hemodynamically significant effusions or after failed conservative therapy should undergo a surgical procedure. In our case the pericardial fenestration followed by VATS thoracic duct ligature offered the optimal long term result.

Disclosure: All authors have declared no conflicts of interest.

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DESCRIPTIVE CASE SERIES OF 167 THORACIC PENETRATING INJURIES; A SINGLE INSTITUTION EXPERIENCE

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Objectives
Thoracic penetrating trauma (TPT) is a life threatening condition that challenges emergency surgeons daily. The aim of this study is to make an epidemiological characterization of these patients, and secondarily analyse their treatment and outcome.

Methods
A retrospective analysis of a series of consecutive patients experiencing TPT who presented at Padre Hurtado Hospital, Santiago, Chile was performed from June 1, 2009 to October 31, 2011. Their records were abstracted by personal demographics (age, sex, mechanism of injury), clinical presentation (GCS, blood pressure, temperature), imaging needed, concomitant injuries, procedures performed, intra-operative findings, transfusion requirements, and outcome information (length of stay, need of ICU, complications, and mortality).

Results
Of 167 consecutive patients who presented to the emergency department (ED) with TPT, 157 (94.01%) were male and 10 (5.99%) were female. The median age was 26 (range 15-66) years. Stab wounds accounted for 115 (68.86%) of the injuries, and 52 (31.14%) suffered from gunshot wounds (GSW). 5 (2.99%) had bilateral TPT. As first treatment, pleurostomy was performed in 139 (83.23%) of the patients. Emergent thoracotomy was performed in 14 (8.38%) patients. Observation was performed in 6 (3.59%) cases. Thoracic complications occurred in 19 (11.38%) patients, 6 (3.59%) persistent haemothoraxes, 4 (2.40%) pneumothorax recurrences, and 3 (1.80%) empyemas. The median time of hospitalization was 3 (range 1-81) days. 19 (11.38%) patients died, 16 (84.21%) of them had isolated intrathoracic lesions, 15 (78.95%) occurred due to GSW, and 12 (63.16%) had heart and great vessels lesions involved.

Conclusions
TPT is frequent in our hospital. Chest drain placement was the most frequent first and often exclusive treatment necessary. The majority of the patients who died had cardiac involvement due to GSW. Few thoracic complications were presented and they were minimally invasive, resolved without affecting overall mortality.

Disclosure: All authors have declared no conflicts of interest.

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9-YEARS FOLLOW-UP – PULMONARY GANGRENE AFTER AORTIC SURGERY IN A CHILD

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Objectives
A 9-y-o boy was admitted with sepsis and left postoperatory empiema in November 2003.

Methods
The patient had had a surgical correction of coarctation of aorta with PTFE-patch. In 7 days after surgery, left lung atelectasis, pleural empiema and sepsis developed and the patient was transferred in the Thoracic Surgery Service.

Results
The boy was admitted with fever, malaise, pallor, cough with purulent and haemoptoic sputum, dispneea with polipneea, tachycardia with ventricular extrasystoles, purulent secretions at the left thoracotomy wound. Paraclinical investigations revealed: anemia with leucocytosis, opaque left thorax (chest X-Ray), left hydro-pneumothorax with lung destruction, obliteration of left pulmonary artery and bronchus at the same level (CT-scan and angio-MRI), distal obliteration of the left mainstem bronchus (endoscopy), absence of lung perfusion (radionuclide study). Antibiotherapy and intensive care was instituted. The left pulmonary suprainfected infarction was diagnosed and the surgical intervention was performed. Intraoperatory findings were: pulmonary gangrene and empiema, with intense inflammation and fibrosis; the aortic patch was functional, covered with inflammatory pachypleura. After repeated lavage and debridation, the left intrapericardial pneumonectomy was performed (assumed risk of intrapericardial infection). A single left pulmonary vein was found, with retrobronchial traject (bronchus between artery and vein) – all 3 elements had accidentally been crushed with lung retractor in the previous surgery (coarctation). The bronchial stump was covered with thymus. The thorax was close-drained (risk of chronic empiema, bronchial stump dehiscence, aortic fistula) and the pleural lavage (continuous, then intermittent) was performed for 18 weeks. The recovery was prolonged, but successful.

Conclusions
Periodic 9-years follow-up is excellent, with no infection, normal cardiac, aortic and right pulmonary function, harmonious growth and development of the child. He turned 18 years in November 2011.

Disclosure: All authors have declared no conflicts of interest.

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SURGICAL RETRIEVAL OF PORT CATHETER FRAGMENT AFTER SPONTANEOUS RUPTURE AND EMBOLIZATION TO THE RIGHT PULMONARY ARTERY

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Objectives
To describe an uncommon clinical case of spontaneous rupture of totally implantable subclavian venous catheter and migration to the right pulmonary artery. The port catheter fragment was surgically removed after abortive attempts of endoscopic removal.

Methods
A 47-year-old man, with a history of squamous cell carcinoma of the tongue treated by surgical resection and adjuvant chemotherapy, was admitted for radiological finding of spontaneous rupture of a venous subclavian port-a-cath inserted nine months before. During periodical dressing of the subcutaneous device, a malfunctioning of the catheter was experienced. The chest radiograph showed the disruption of the catheter and the migration of the distal fragment to the right pulmonary artery. The angiography confirmed the presence of the catheter in the inferior branch of the right pulmonary artery. After several abortive attempts of endovascular removal, a surgical exploration has been proposed.

Results
After general anaesthesia and one-lung ventilation, a right posterolateral thoracotomy was performed. Firstly, both pulmonary veins and the main pulmonary artery was controlled. Secondly, the interlobar branch of the pulmonary artery has been isolated: the fragment of the catheter was then palpable in the inferior branch of the pulmonary artery. After having clamped the pulmonary veins and the intermediate trunk of the pulmonary artery, a vertical arteriotomy was performed and a catheter fragment of 8cm was removed. The artery was sutured with running 5-0 Prolene suture. The postoperative course was characterized by controlled with broad-spectrum antibiotics. The patient was discharged on 7th postoperative day.

Conclusions
The rupture of a central venous catheter is a rare event. The most common site of embolization is from the superior vena cava to the right atrium. Endovascular removal of the fragment is the treatment of choice with a high success rate. When it failed, a surgical procedure is recommended.

Disclosure: All authors have declared no conflicts of interest.

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IS CONSERVATIVE MANAGEMENT FEASIBLE IN MULTIPLE THORACIC GUNSHOT WOUNDS?

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Objectives
Multiple gunshot wounds (GSW) is often a life threatening condition with high mortality. The aim of this study is to present a conservative management approach in a patient admitted at Padre Hurtado Hospital in September 2011 with 5 thoracic GSW.

Methods
A retrospective analysis of a patient experiencing multiple thoracic GSW who presented at the hospital Padre Hurtado, Santiago, Chile in August 2011. His records were abstracted by personal demographics (age, sex, mechanism of injury), clinical presentation (GCS, blood pressure, temperature), imaging needed, concomitant injuries, procedures performed, transfusion requirements, and outcome information (length of stay, need of ICU, complications, and mortality).

Results
Case: 30 y/o male patients admitted with 5 thoracic gunshot wounds (GSW) in the Emergency Department of Hospital Padre Hurtado of Santiago, Chile. The patient presented hemodynamically unstable, but immediately recovered his vital signs after bilateral chest drains (CD) placement. Thoracic CT-Angiogram revealed a contained contrast leak close to the apical artery of the left upper lobe (LUL), and other minor lesions. Patient remained stable with no clinical or imaging signs of bleeding. Therefore, conservative management was performed. Thoracic CT-Angiogram control was performed 48 hours later and showed no signs of bleeding or complication. Patient was discharged on day 5. Patient is completely asymptomatic during follow up.

Conclusions
Conservative management is an option for thoracic GSW, even in multiple GSW. Strict follow up is needed because sometimes, conservative management fails. Thoracic CT-Angiogram is a fast, sensible, and sensitive imagining technique that in our experience and supported by the literature is required for a conservative management.

Disclosure: All authors have declared no conflicts of interest.

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VAGAL NERVE NEURINOMA MIMICKING MEDIASTINAL LYMPH NODE INVOLVEMENT DURING VIDEO ASSISTED THORACOSCOPIC LOBECTOMY

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Objectives
Nerve sheath tumors comprise one fifth of all mediastinal tumors. Especially during a video assisted thoracoscopic (VATS) approach for lobectomy and mediastinal lymph node dissection the correct differential diagnosis can be difficult since haptic feedback is limited. We present a case of a vagal nerve neurinoma detected during VATS lobectomy.

Methods
During a VATS left upper lobectomy for clinical stage I non-small cell lung cancer (NSCLC) a 55 year old patient was found to have a mediastinal mass in lymph node region ATS 5. Intraoperative differential diagnosis for the mediastinal mass included occult mediastinal lymph node involvement, lipoma, fibroma or nerve sheath tumors. Careful dissection revealed a neurinoma of the vagal nerve with thickened recurrent laryngeal nerve on the left side (Figure 1).

Results
Mediastinal lymph node dissection was completed carefully around the nerval structure without any obvious damage to the nerve. Postoperative course of the patient was uneventful. The patient was ambulating on postoperative day 1 and discharge would have been possible on pod 7. However, he was discharged on postoperative day 14 due to personal reasons. No laryngeal nerve palsy was clinically evident during the postoperative course. Diagnosis of neurinoma was pathologically confirmed by a biopsy of a bronchial branch of the vagal nerve.

Conclusions
Vagal nerve neurinoma is a rare differential diagnosis in patients with lung cancer and a mediastinal mass. Especially during a VATS approach the correct diagnosis can be difficult since haptic feedback is limited. Careful examination and dissection is crucial in these cases to avoid injuries to the nerval structures. Conversion to open thoracotomy should always be considered if the differential diagnosis is unclear or mediastinal lymph node dissection cannot be performed appropriately.

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THYMIC CARCINOID PRODUCING CUSHING'S SYNDROME

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Objectives
Thymic carcinoid with associated Cushing's syndrome is a rare disease with few reported cases in the literature. We present the case of an ACTH-secreting typical carcinoid tumour of the thymus treated successfully with surgical resection.

Methods
A 49-year-old obese lady presented with shortness of breath, wheeze and poorly controlled type-2 diabetes. Investigation for secondary causes of diabetes confirmed Cushing's syndrome with markedly raised 24-hour urinary free cortisol and plasma cortisol and failure of suppression following oral dexamethasone. Markedly raised Adrenocorticotropic hormone (ACTH) levels excluded adrenal cause. Imaging studies showed normal pituitary gland with bilateral adrenal hyperplasia and an anterior mediastinal soft tissue mass most likely representing thymoma or a thymic carcinoid. Further octreotide scan demonstrated intense focal activity in the anterior mediastinum consistent with an active somatostatin secreting tumour leading to the diagnosis of an ACTH-secreting thymic carcinoid causing adrenal hyperplasia and Cushing's syndrome.

Results
Surgical resection of the tumor was carried out through a transverse sternotomy extended through the 6th intercostal spaces. An encapsulated thymic tumour overlying the pericardium and bulging into the right hemithorax (Figure 1)was resected and a prophylactic tracheostomy was performed for airway clearance. Though she made a rapid biochemical recovery from Cushing's syndrome surgical recovery was slow but steady. Histology was consistent with a paraganglioid variant of carcinoid with a lack of mitotic activity and necrosis, representing a typical carcinoid with clear resection margins. Patient continues to do well one year after surgery.

Conclusions
Carcinoid tumour of thymus with Cushing's syndrome is rare a tumor. Clinical diagnosis can be challenging and involves a combination of biochemical tests and modern imaging techniques. It is feasible to resect it surgically with good outcome.

Disclosure: All authors have declared no conflicts of interest.

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MANAGEMENT OF PENETRATING THORACIC TRAUMA WITH THORACIC WALL DEFECTS FOLLOWING BOLT SHOTS

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Objectives
Penetrating thoracic injuries with extended damage to the chest are dramatic events associated with a high mortality. Accidents with low velocity bolts are rare and may impose an extra challenge.

Methods
Over a period of one year two patients with thoracic bolt shots were admitted via our emergency trauma unit and underwent a trauma CT-scan for initial evaluation. Both cases presented in a stable condition following work accidents with preclinical intubation and placement of thoracic drains.

Results
In the first case a posterolateral penetration wound with multiple destroyed ribs was observed and an 8 cm metal bolt was found stuck inside the upper right pulmonary lobe. The second patient was stamped by a bold machine. The bold went through the complete left upper hemithorax in anterior-posterior direction leaving an open canal of 7 cm in diameter with massive damage of the posterior and anterior thoracic wall. Following rapid evaluation in the emergency room, both patients underwent immediate surgical exploration via antero-lateral thoracotomy. In the first case the bolt could be extracted from the upper lobe. Following hemostais the sharp lung injury was repaired by suturing the canal and reconstruction of the chest wall. No resection of lung parenchyma was necessary. The patient was extubated on the same day and discharged on postoperative day 17 following complete recovery In the second patient a wedge resection of the partially destructed right upper lobe was necessary. Following hemostasis and debridement of the penetrating chest wounds a reconstruction of the thoracic wall without alloplastic materials was performed. The patient was extubated on day 2 and discharged on day 26.

Conclusions
Rapid surgical management is essential. Despite large destruction of the thoracic wall, low velocity bolt shots resulted in only minimal damage of the lung parenchyma.

Disclosure: All authors have declared no conflicts of interest.

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QUANTITATIVE RT-PCR DETECTION OF LUNG CANCER CELLS IN BLOOD AND BONE MARROW: CLINICAL-PATHOLOGICAL CORRELATIONS

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Objectives
Biomarker measurements of minimal systemic disease (MSD) have the potential to monitor the molecular status of lung carcinomas without invasive tumor biopsy at the time of treatment selection. The real-time reverse transcription polymerase chain reaction (qRT-PCR) is a valuable analytical tool for the detection of circulating tumor cells (CTC) in body fluids and bone marrow.

Methods
We used real-time RT-PCR method for absolute gene expression quantification of carcinoembryonic antigen (CEA), epidermal growth factor receptor 1 (EGFR1), lung specific X-protein (LUNX) and hepatocyte growth factor receptor (c-met) in peripheral blood, blood from pulmonary veins and samples of bone marrow in the group of 108 patients with surgically treated lung cancers.

Results
An increasing trend of c-met expression in pulmonary blood ($p<0.044$) in correlation with clinical disease stage was detected. Near-significantly higher LUNX expression in peripheral blood ($p<0.088$) was found in third clinical disease stage than in lower stages. Also the higher c-met expression in the pulmonary blood ($p<0.0023$) of patients with lymph node involvement was detected.Markers LUNX and c-met showed higher positivity in the peripheral blood, pulmonary blood and in the all tested compartments in patients with a higher clinical disease stage. When postoperative control samples positivity in peripheral blood were analyzed, 26 (70,3 %) initially positive samples stayed positive, while 8 (57,1 %) initially negative samples changed their status.

Conclusions
The role of CTC and nucleic acids in prognostication in NSCLC patients is controversial, but may be better defined with advancing technologies of detection of such cells with higher precision, and improved clinical-pathological correlations. Optimalization 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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THE CLINICAL VALUE OF ROUTINE CHEST X-RAYS AFTER LUNG SURGERY

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Objectives
The postoperative care of lung surgical patients varies between centers and even within centers. There is no clear consensus on the timing and the numer of chest X-ray examinations in the postoperative care of lungsurgical patients. Our goal was to evaluate the role of the routine chest X-ray in the management of patients that underwent general thoracic surgery in order to potentially improve patient care and decrease the health care costs

Methods
A retrospective study was carried out among 177 patients who underwent lung surgery during the period January 2010 to April 2011 at the hagaziekenhuis in the Hague, the Netherlands. All postoperative chest X-rays were reviewed for their clinical relevance. The indications noted on the applications form were divided into clinically relevant and routine cases based on clinical symptoms like fever, dyspnea or lab abnormalities.

Results
Over a 16 month period 844 chest X-rays were made in 177 lung surgical patients. This is approximately 4,8 X-ray per patient. According to the above mentioned criteria 30% was clinically relevant. If the remaining 70% would not have been made, this could have resulted in a reduction of radiation exposure of 0,33mSv per patient. In financial terms, approximately 30,000 euros could have been saves, assuming a price of 50 euros per X-ray.

Conclusions
There is no consensus in the literature with regard to the added clinical value of routine post-operative X-rays. Other studies also suggest that the diagnostic value of daily routine chest X-rays is low. As is underlined by this present study. Therefore we would like to propose a post-operative radio diagnostic protocol for lung surgical patients. Of course, this protocol must be validated in asecond study to safely reduce the costs and radiation harm to this group of patients.

Disclosure: All authors have declared no conflicts of interest.

NOTES

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