17th European Conference on General Thoracic Surgery

31 May – 3 June 2009, Krakow, Poland
Auditorium Maximum, Jagiellonian University

Monday, 1 June 2009
08:30 – 10:30
Session 1 - Brompton Session

001-O ASSESSMENT OF LUNGS FOR TRANSPLANTATION: A STEPWISE ANALYSIS OF 476 DONORS

Antonio Alvarez; Paula Moreno; Dionisio Espinosa; Francisco Santos; Jose Manuel Vaquero; Jose Ramon Cano; Jennifer Illana; Francisco Javier Algar; Carlos Baamonde; Angel Salvatierra
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Background: The purpose of the study was to assess the causes of lung donor refusal to determine which factors are amenable to improve in order to expand the donor pool available for transplantation (LTx).
Methods: We reviewed the charts of all lung donors offered to our Lung Transplantation Unit from Oct. 1993 to Dec. 2007, assessing the causes of unsuitability. For this purpose, we divided the donor lung evaluation into 3 stages: stage 1 (PaO2/FiO2 ratio, chest X-ray, bronchoscopic findings), stage 2 (donor lung inspection and palpation), and stage 3 (assessment of grafts after harvesting). Variables from donors and recipients were analyzed and compared between 1993-2001 (group A) and 2002-2007 (group B).
Results: Four hundred and seventy six potential lung donors were assessed (278M/198F; 29±13 yrs). Causes of death were trauma in 255, cerebrovascular accident in 202 and others in 19. 273 donors were suitable for LTx (57%) (162 DLTx, 94 SLTx and 17 LTx in another Hospital). Acceptability rates were 68%, 58%, and 57% at stages 1, 2, and 3 respectively, and were significantly higher in group B than in group A (overall: 64% vs. 54%; stage 2: 91% vs. 79%; stage 3: 99% vs. 91% respectively), without changes in stage 1. Abnormal bronchoscopic findings precluded LTx in 79 cases (16%). Donors from group B were older (p=0.000), ventilated longer (p=0.07) and with shorter ischemic times (p=0.000) than group A. In the recipients, early graft dysfunction (10% vs. 7%) and 30-day mortality (11% vs. 6%) did not differ between both groups.
Conclusions: Despite the high rate of organ donation in our country, the acceptability rate remains low (57%), mainly due to failure to meet the criteria for acceptance at the early stages of donor lung assessment. In our setting, improvements in multiorgan donor care must be made to expand the lung donor pool.

002-O INTRAPLEURAL POLYMERIC DEVICES CONTAINING CISPLATIN FOR MALIGNANT PLEURAL MESOTHELIOMA IN A RAT TUMOUR MODEL: A PRELIMINARY STUDY

Luca Ampollini[1]; Fabio Sonvico[2]; Rocco Bilancia[1]; Stefano Barbieri[2]; Dionisios Stavroulias[1]; Andrea Cavazzoni[3]; Pier Giorgio Petronini[3]; Anna Maria Cantoni[4]; Michele Rusca1; Paolo Carbognani[1]

[1]*Thoracic Surgery, University Hospital of Parma, Parma, Italy;* [2]*Pharmaceutical Department, Parma, Italy;* [3]*Molecular Pathology and Immunology, Parma, Italy;* [4]*General Pathology and Pathological Anatomy, Parma, Italy*

Background: To investigate the effect of intrapleural polymeric devices containing cisplatin on the local recurrence of malignant pleural mesothelioma in a rat tumour model.

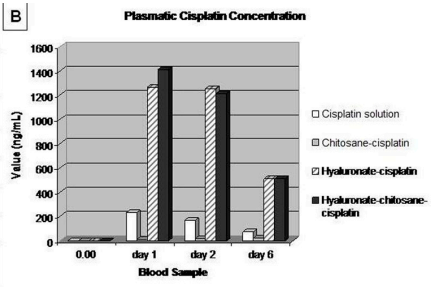
Methods: A well-established orthotopic rat recurrence model of malignant pleural mesothelioma was used. Five animals per group were evaluated. Polysaccharide films (80-100 μm-thickness, 4 cm-diameter) for the local delivery of anticancer drugs were constructed: hyaluronate, chitosan and the combined polymer were loaded with cisplatin at a concentration of 100mg/m2. Six days after mesothelioma cell line inoculation, a pleural tumour of 5.5 mm was resected and a left pneumonectomy and pleural-abrasion were performed. Thereafter, the films were intrapleurally applied according to the randomization (Figure 1A). Six days later, the animals were euthanized and the organs harvested for evaluation. Primary endpoint was the volume of tumour recurrence. Secondary endpoints were the treatment-related toxicity measured by blood samples and organs pathological study. Cisplatin serum concentration was evaluated at day 1, 2 and 6. Anova-test with post-hoc analysis were applied for statistical analysis.

Results: Tumour volume was significantly reduced in animals treated with hyaluronate-cisplatin and hyaluronate-chitosan-cisplatin in comparison to control groups (p=0,019 and p=0,012 respectively). Polymeric films loaded with cisplatin resulted as effective as cisplatin-solution in reducing tumour recurrence. Hyaluronate films dissolved without leaving any residual, while chitosan was always found at the autopsy matched with moderate-severe inflammatory reaction. No toxicity related to the different intrapleural devices was noted. On postoperative day 1 and 2, cisplatin was detected in the serum at a concentration six- and seven-fold higher in the animals treated with hyaluronate-cisplatin and hyaluronate-chitosan-cisplatin respectively, in comparison to cisplatin-solution; and it was maintained over time (Figure 1B).

Conclusions: Hyaluronate- and hyaluronate-chitosan-cisplatin were very effective in reducing tumour recurrence. Polysaccharide films loaded with cisplatin assured higher and prolonged plasmatic drug concentrations than cisplatin-solution without increasing toxicity.

A Intrapleural Treatment	Animals (N°)
Control (no adjuvant therapy)	5
Hyaluronate	5
Chitosane	5
Cisplatin solution	5
Hyaluronate-cisplatin	5
Chitosane-cisplatin	5
Hyaluronate-chitosane -cisplatin	5

B



003-O AN EARLY INFLAMMATORY RESPONSE TO ESOPHAGECTOMY PREDICTS THE OCCURRENCE OF PULMONARY COMPLICATIONS

Xavier B D'Journo[1]; Pierre Michelet[2]; Valérie Marin[3]; Dorothée Blayac[2]; Françoise Gaillat[2]; Christophe Doddoli[1]; Pierre Bongrand[3]; Roger Giudicelli[1]; Pierre Fuentes[1]; Pascal A Thomas[1]
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[3]*Sainte Marguerite University Hospital - Laboratoryof Immunology, Marseille, France*

Background: Respiratory complications are the most frequent concern following esophagectomy. We aimed to assess the postoperative inflammatory response after esophagectomy and to determine its reliability to predict the occurrence of pulmonary complications.
Methods: 97 consecutive patients were enrolled in this prospective observational study. All patients underwent a transthoracic esophagectomy for cancer. From D0 to D3, plasmatic cytokine levels (IL1, IL6, IL8, IL10, TNF α), short synacthen test, PaO2/FiO2 ratio and clinical factors determining the systemic inflammatory response syndrome (SIRS) were monitored and compared between patients who experienced pulmonary complications (group I) and those who did not (group II).
Results: Overall in-hospital mortality was 5 %. Postoperative pulmonary complications occurred in 33 patients (34 %). Sputum retention was the first step of pulmonary complications in 26 patients (occurring at a mean of 2.8 ± 1 days after the operation), leading to pneumonia in 22 patients (4.7 ± 1 days) and ARDS in 10 (6.9 ± 3 days). At day 2, group I patients had significantly higher plasmatic levels of IL6, IL10 and TNF α than group II patients. PaO2/FiO2 was impaired accordingly (215 vs. 348; p=0.006). Short synacthen test was negative in 38 % of group I patients and in 30 % of group II patients (p=0.18). SIRS was present in 33 % and 6% of group I and group II patients respectively ($p \leq 0.01$). At multivariate analysis, early occurrence of SIRS was the sole significant predictor of pulmonary complications (p=0.011; OR:12, CI: 2-113) .
Conclusions: The vast majority of postoperative pulmonary complications after esophagectomy occurs beyond the 4th postoperative day. The earlier detection (first 48 hours) of SIRS, high plasmatic cytokine levels and impairment of PaO2/FiO2 predicts the onset of pulmonary complications. This finding suggests that early pharmacological intervention may have a beneficial impact.

004-O THE BENEFITS OF DIGITAL AIR LEAK ASSESSMENT AFTER PULMONARY RESECTION: PROSPECTIVE, RANDOMIZED AND COMPARATIVE STUDY.

José Manuel Mier; Laureano Molins; Juan José Fibla
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Background: Persistant air leak represent the most common pulmonary complication after elective pulmonary resection. Since there are not enough data in the literature regarding variability in the management of postoperative pleural drainages, we have designed a prospective, randomized and comparative study to evaluate if the use of electronic devices to measure postoperative air leak (device A, device B), compared to analoge device (C), varies in deciding when to withdraw chest tubes after lung resection and its influence in clinical practice.
Methods: Prospective, randomized trial was developed in 75 patients that underwent elective pulmonary resection. This study compared two digitals air leak devices (A and B) with the current analogue air leak system (C) in 75 patients. The digital and analogue groups each had 26(A); 24(B) and 25(C) patients. SPSS v13 packed was use for statistical analysis.
Results: Age, sex, pulmonary function, types of resection, diagnosis were not statistically different between the groups. The withdrawal of the chest tube and the hospital length of stay was A:3.5,3.7; B 3.7,4; C:3.8,4.8d. Patients and nurses were subjectibily more confortables with B and A devices. Surgeons obtained a more objetive information with device A and the safety mecanism of this device was also subjectibily better. One patient was discharged home with device A without complications after one week.
Conclusions: The digital and continuos measurement of air leak instead of the currently used static analogue systems reduce the chest tube withdraw and hospital stay by more accurately and reproducibly measuring air leak. Intrapleural pressure curves may also help predict the optimal chest tube setting for each patients. The alarms mecanism of device A are very useful to prevent deficiencies in the mecanism and do not required wall suction.

005-O LEARNING THORACOSCOPIC LOBECTOMY

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Background: Thoracoscopic (VATS) lobectomy is a safe and effective method for treating early lung cancer. Despite this, it is still not widely practiced, which could be due to a steep learning curve. We have evaluated the surgical outcome in a training programme at an institution with an established VATS lobectomy programme. The learning curve is considered by experts to consist of 50 VATS lobectomies to be comfortable with the procedure.
Methods: Data are obtained from a prospectively registered surgical database consisting of 262 consecutively performed VATS lobectomies. 212 VATS lobectomies were performed by a single consultant, of which his first 50 procedures were excluded as they were considered to be his learning curve. 50 VATS lobectomies were performed by a consultant, in a training programme for VATS lobectomies. He was the primary surgeon operating either under supervision by the experienced consultant or alone. The surgical outcome between the 50 procedures performed by the consultant in training were compared to the 162 procedures performed by the experienced consultant using statistical analysis.
Results: There were no significant differences between complications, conversion rate, bleeding, need for transfusion, chest tube duration or mortality between the 2 groups. The operation time was significant longer for the consultant in training ($p<0.0001$).
Conclusions: VATS lobectomy can be taught safely in a surgical institution experienced in VATS lobectomies. The surgical outcome was acceptable and not statistically different between the consultant in training and the experienced consultant. The consultant in training did spend more time in the operating theatre ($p<0.0001$), and we recommend to take that in to account when planning future training programmes in VATS lobectomy.

Complications and outcome in VATS lobectomy

Complications	Consultant in training	Experienced consultant	P value
MOF	0%	3%	NS
Redo-thoracotomy	0%	3%	NS
Redo-VATS due to bleeding	4%	1%	NS
Empyema	2%	6%	NS
Pneumonia	2%	3%	NS
Prolonged air leak > 7d	15%	31%	NS
Patient outcome			
Conversion rate	6%	7%	NS
Bleeding (median, range)	220ml (50-800ml)	200ml (10-1500)	NS
Transfusion	13%	11%	NS
Operation time (median, range)	210min (120-360min)	160min (40-330min)	0.0001
Chest tube duration (median, range)	4d (1-21d)	5d(1-101d)	NS
Length of stay (median, range)	4d (2-21d)	6d(2-51d)	0.008
30d mortality	2%	0%	NS

006-O PROMISING OUTCOME WITH NEOADJUVANT CHEMO- AND RADIOTHERAPY IN PATIENTS WITH OPERABLE STAGE III B NON-SMALL CELL LUNG CANCER. A PROSPECTIVE MULTICENTER TRIAL BY THE SWISS GROUP FOR CLINICAL CANCER RESEARCH (SAKK 16/01).

Hans-Beat Ris
Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland

Background: Outcome of patients with locally advanced NSCLC is poor due to both local and distant tumor recurrence. Advances in surgery allow considering resection in selected patients with advanced tumor stages, in particular after prior neoadjuvant therapy.
Methods: This multicenter phase II trial aimed at evaluating a tri-modality concept of neoadjuvant chemotherapy (3 cycles of cisplatin/docetaxel), followed by accelerated concomitant boost radiotherapy (44 Gy/22fractions) and definitive surgery. Fit patients up to age 75 years with technically operable, stage IIIB NSCLC were eligible.
Results: Forty-six patients were enrolled, median age was 60 years (range 28-70), N3-disease was present in 28%, T4 stage in 78% of patients. The response rate after chemotherapy was 48% (exact 95% c.i. 33-63%), after additional RT 59% (43-73%). Thirty-five patients (76%) underwent surgery, pneumonectomy was required in 17 patients. A complete (R0) resection was achieved in 27 pts (78% of operated patients, 59% of all patients). Perioperative complications occurred in 14 patients, including 2 patients dying from ARDS and a cerebro-vascular event, respectively. Seven patients required a second surgical intervention. The event-free survival at 1 year was 54%. After a median follow-up of almost 5 years, the median overall survival is 29 months with corresponding 1-, and 3-year survival rates of 67% and 47%.
Conclusions: This combined modality treatment strategy including neoadjuvant chemo- and radiotherapy followed by surgery is feasible. Toxicity is considerable but manageable. Overall survival compares favorably to the best reports of combined modality treatment of less advanced stage IIIA disease.

Table

	median	1-year	2-years	3-years
Event-free survival(95% c.i. interval)	12.7(6.3-58.8)	54%(39-67)	41%(27-55)	39%(25-52)
Overall survival(95% c.i. interval)	28.7(16.1-NA)	67%(52-79)	52%37-65	47%(32-61)

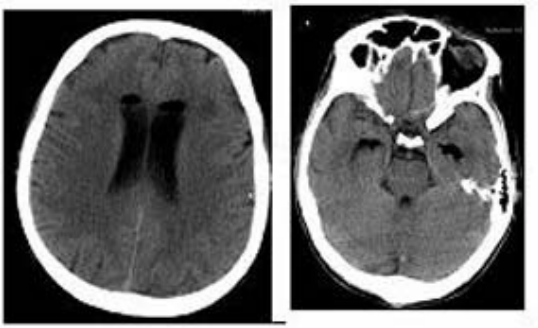
Monday, 1 June 2009
11:00 – 11:30
Session 2 – Interesting Cases

007-C TENSION PNEUMOCEPHALUS AND PNEUMOCOCCAL MENINGITIS: AN UNUSUAL POST-OPERATIVE COMPLICATION OF THORACIC SURGERY

Michel Gonzalez; Sandra Asner; Thorsten Krueger; Hans-Beat Ris
Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland

Background: Fulminant deterioration of the neurological status after thoracic surgery might suggest a pneumocephalus resulting from cerebrospinal fistulisation.
Methods: We report the case of a 62-year-old man diagnosed with a pulmonary adenocarcinoma who underwent thoracic surgery.
Results: Post-operatively he developed a tension pneumocephalus and ascending pneumococcal meningitis, that required antibiotherapy and reintervention.
Conclusions: Figure 1: Axial CT of the head at the level of the frontal horns of the lateral ventricules (a) and the temporal horns of the lateral ventricules (b). There is a bifrontal pneumocephalus initially localised in the frontal horns of the lateral ventricules and migrating to the temporal horns of the lateral ventricules

Figure 2: CT of the thorax showing an infected apical residual space after lobectomy adjacent to one of the radiotherapy clip markers



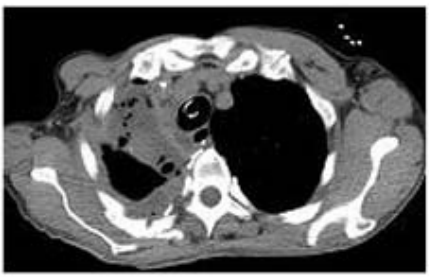


Figure 1,2

008-C CASE REPORT: LESSON LEARNED ON A CASE OF THREE SYNCHRONOUS NSCLC'S

Matteo Mandrioli[1]; Luca Ferruzzi[1]; Maurizio Zompatori[2]; Piero Candoli[3]; Maria Rosaria Aprile[4]; Sandro Mattioli[1]
[1]*Division of Esophageal and Pulmonary Surgery Villa Maria Cecilia and San Pier Damiano Hospitals, University of Bologna, Bologna, Italy;* [2]*Department of Radiology, Policlinico S.Orsola-Malpighi, Bologna, Italy;* [3]*Department of Pneumology, Lugo Hospital, Ravenna, Italy;* [4]*Department of Patholgy, Faenza Hospital, Faenza, Italy*

Background: In order to raise discussion on the management of multiple pulmonary nodules, we describe the unusual case of a 70 years old man affected by three synchronous NSCLC's
Methods: Past medical history was significant for 40 pack year smoking, hypertension, COPD, type II diabetes mellitus and gout arthropathy, previous gastric resection for peptic ulcer. An incidental chest CT scan revealed: 1) a 0,5 cm very small non calcified nodule in the middle lobe; 2) a 2.5 cm nodule in the apical segment of the right upper lobe presenting irregular margins, a pleural tail and a mixed density; 3) a 2.5 cm nodule, solid and rounded, with irregular borders, in the posterior segment of the right lower lobe; 4) a 2 cm nodule, solid and irregular, located in the apical-dorsal segment of the left upper lobe. Trans-bronchial biopsy of the right upper lobe nodule was positive for bronchiolar-alveolar carcinoma , PET showed ipermetabolic activity in correspondence of the three bigger nodules. The clinical staging was T1N0M1 (Stage IV).
Results: Considering the impossibility to discriminate among primary or metastatic lesions on the basis of fine needle biopsies, through mid sternotomy the wedge resection of the nodules was uneventfully performed. Histology and immunohistochemistry provided diagnosis of synchronous right lung adenocarcinomas and left lung neuroendocrine carcinoma. The 0,5 cm nodule was benign. Pathological staging was pT1NXMX. After 24 months the patient is disease free.
Conclusions: When radiological imaging supports the possibility of multiple synchronous NSCLC's, an aggressive surgical approach is recommended not to exclude patients from effective cure.

009-C HAEMOPTHYSIS DUE TO UNRESECTABLE LUNG CANCER SUCCESSFULLY TREATED WITH RADIOFREQUENCY ABLATION.

Federico Raveglia[1]; Andrea Leporati[1]; Angelo Maria Calati[1]; Maurizio Cariati[1]; Gianpaolo Cornalba[2]; Alessandro Baisi[2]
[1]*Azienda Ospedaliera San Paolo, Milano, Italy;* [2]*Università degli Studi di Milano, Milano, Italy*

Background: Percutaneous Radiofrequency Ablation (RFA) is a minimally invasive therapeutic option recently achieving a meaningful role for lung cancer treatment. We report the case of an advanced lung cancer determining severe and recurring haemoptysis treated successfully with RFA.
Methods: In a 80 years-old woman a right lung cancer was complicated by severe and recurring haemoptysis. The tumour was 6 x 6 cm sized, in the peripheral parenchyma of the lower lobe, with pathological hilar and mediastinal lymph nodes. Three months before she was excluded from both surgery and medical treatment because of the tumour stage (IIIB) and the respiratory and cardiac co-morbidities. In the last two months the clinical course was complicated by a serious haemoptysis, inducing progressive anaemia and requiring several blood transfusions. Three bronchoscopies were performed showing blood in the airways without any evident endobronchial source of the bleeding. It was the neoplastic involvement of the distal bronchial tree determining a diffuse bleeding. Endobronchial cauterization by argon-plasma was therefore excluded. At arteriography no bronchial or pulmonary vessels supplying the mass were identified and embolization was also impossible. In the hope of controlling the bleeding by sclerosing the tumor we attempted a percutaneous RFA, despite the size of the mass and the tumor stage. The CT guided procedure was performed by a multitined expandable array, starting from 30 up to 160 watts and repeated from 30 to 120 watts.
Results: A minimal pleural effusion without pneumothorax occurred. The haemoptysis was successfully controlled immediately after the procedure up to a 6 months follow-up. At a 3 months control by CT scan the lesion was reduced to 5 x 5 cm and stable at 6 months.
Conclusions: Our experience shows that RFA can be helpful in the management of haemoptysis complicating lung cancer and not suitable for other treatments like endobronchial coagulation or embolitazion.

010-C LEFT PLEURAL CAVITY MASS IN A YOUNG PREGNANT WOMAN

Dionisios Stavroulias; Eveline Internullo; Francesca Gussago; Paolo Carbognani; Michele Rusca
Unit of Thoracic Surgery, University Hospital of Parma, Parma, Italy

Background: Thymoma is an uncommon malignant tumour. Surgery is the cornerstone of treatment in most patients. These tumours have been observed extremely rarely in pregnancy, generally with poor outcome, and the optimal management in these cases is unclear. We present the case of a pregnant patient who was diagnosed with a chest mass, which turned out thymoma.
Methods: A 23-year-old primagravida at 15 weeks' gestation with unremarkable medical history presented complaining moderate pain on the left hemithorax associated to dyspnea. The chest X-ray revealed massive left pleural effusion. Bacterial cultures and cytologic tests performed via thoracentesis were negative. A magnetic resonance pointed out a capsulated, multiloculated cystic mass in the upper anterior part of the left pleural cavity. No abnormalities were noted in the mediastinum. The fibrobronchoscopy showed an ab-extrinseco compression of the left main bronchus. Transbronchial biopsies and US-guided transthoracic fine needle aspiration were not able to achieve diagnosis.
Results: At thoracotomy, an extrapulmonary mass (15x10x10 cm) was found in the upper part of the chest with a "pedicle" coming from the mediastinal pleura. A macroscopically complete resection of the mass was obtained. Final pathology surprisingly revealed B1 cystic thymoma (WHO 2004), extensively necrotic, stage I, R1 for microscopic infiltration of the resected "pedicle". Completion thymectomy was planned after the delivery, that took place at term without complications. Five months later, a CT-scan of the chest showed neither mediastinal masses nor relapse in the pleural cavity. Therefore, an extended thymectomy was carried out. Pathologic specimen was negative for residual disease. A year after diagnosis the patient is disease-free.
Conclusions: Thymomas are exceptionally encountered in pregnants. Defining timing and aggressiveness of the treatment is a challenge. Pregnancy-related hormones have been described as possible promoters of various lymphoepithelial tumours. Hence, surgical resection should not be delayed in this subset of patients.

011-C DELAYED PULMONARY EMBOLISM CAUSED BY A WANDERING BULLET AFTER ABDOMINAL SHOOTING INJURY - CASE REPORT

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Background: Late missile embolism is a rare complication of penetrating gunshot injuries, and arterial pulmonary embolism is exceedingly rare event caused by foreign bodies. There might be a difficulty in diagnosis. The bullet in a pulmonary vasculatory system may cause complications as intimal erosion, bleeding, thrombosis, sepsis, and eventually occlusion.
Methods: We report a rare operated case of bullet-embolism. A 43 year old woman had previously an abdominal shooting injury caused by a blowgun. The x-ray showed a metal foreign body in the left pelvic region. An explorative laparotomy had been performed at another institute, but no bullet was removed. Twenty months later the patient was admitted to our chest surgery department electively, because of a chest foreign body. The preoperative chest x-ray and CT scan confirmed a metallic foreign body in the central region of left lung. We made left thoracotomy: the bullet was removed from the basal-anterior segment branch of the left pulmonary artery by arteriotomy.
Results: There was no need for resection of lung parenchyme. The postoperative period was uneventful. There are no rest symptoms six months after the operation.
Conclusions: This case suggests that we have to think about the unusual possibilities of the migration of the missile after penetrating gunshot injuries. The bullet was migrated from the systemic circulation through inferior vena cava to the right atrium, right ventricle and through left pulmonary artery to the pulmonary circulation loop. The unique of this case is the delayed way of embolism. The appropriate surgical technique for removing the bullet embolus was uncomplicated and safe.

Bullet in the left basal ant. artery

012-C PRIMARY SYNOVIAL SARCOMA OF THE LUNG: A RARE NEOPLASTIC DISEASE

Stefan B. Watzka[1]; Ulrike Setinek[2]; Dantcho Janakiev[1]; Franz Lax[1]; Michael R. Mueller[1]
[1]*Karl Landsteiner Institute for Thoracic Oncology, Division of Thoracic Surgery, Otto Wagner Hospital, Vienna, Austria;* [2]*Division of Pathology, Otto Wagner Hospital, Vienna, Austria*

Background: Synovial sarcoma of the lung is a very rare, but aggressive primary lung tumor. Due to its unusual histological features, it can easily be misdiagnosed, especially, if only small biopsies of the tumor are investigated. Here we review two cases of primary synovial sarcoma, which have recently been diagnosed and treated in our institution.
Methods: The clinical and histopathological features of the two cases are reviewed, and important case features are discussed.
Results: The first case was a 37-years-old male with a round nodule of 1,5 cm diameter in the right lower lobe, who underwent a lobectomy after proof of malignancy. Post-operative course was uneventful, and the patient is alive and disease-free since 45 months following surgery. Histologically, the nodule resembled at the first look an epithelial tumor, but contained also spindle cells, focal cystic structures and was highly vascularized. A translocation t (X; 18) could be found, and the diagnosis of primary synovial sarcoma could be established. The second case was a 41-years-old male with a cystic lesion of 4 cm in the right lower lobe, which was removed by VATS segmentectomy. The post-operative course was uneventful, and the patient is alive and disease-free since 11 months following surgery. In the tumor tissue, spindle cell-rich and cystic structures could be found, together with epithelial elements. After consultation of three external reference centers, it has finally been diagnosed as monophasic synovial sarcoma of the lung. The tumor contained also a translocation t (X; 18).
Conclusions: Since rare diseases of the lung may present as subtle and focal changes, for the sake of correct histological diagnosis complete removal of suspect pulmonary lesions is always advisable.

Monday, 1 June 2009
11:30 – 11:45
Featured Abstract

013-O TRAINING, CERTIFICATION, AND PRACTICE OF CARDIAC AND THORACIC SURGEONS IN EUROPE: A COMPARISON OF THE MEMBERS OF THE EUROPEAN ASSOCIATION OF CARDIO-THORACIC SURGERY AND THE EUROPEAN SOCIETY OF THORACIC SURGERY

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University of Washington, Seattle, United States

Background: There is little knowledge about training and certification for general thoracic surgeons, and the relationship between thoracic surgery and cardiac surgery around the world. Examination of the membership of EACTS and ESTS can clarify the training, practice, and academic activity of European thoracic surgeons, as well as the similarities and differences between these two professional societies.
Methods: A 38 item survey was designed to assess training, practice, demographics, and relationships of general thoracic and cardiac surgeons in EACTS and ESTS.
Results: 515 respondents were tabulated from the EACTS (N=306) and ESTS (N=209). 33% of ESTS members were also members of EACTS, while 22% of EACTS members were members of both societies. ESTS members were younger and more likely to be women (6% EACTS vs 9% ESTS). ESTS members self-designated as exclusive general thoracic surgeons (80%) compared to 33% of EACTS members ($p<0.001$), although 42% of EACTS members had practice patterns consistent with a dominant general thoracic practice. ESTS members are board certified in cardiac (29%) or thoracic surgery (83%) compared to 72% and 71% for EACTS members, respectively. ESTS members were more likely to perform esophageal surgery as a significant portion of their practice (46% vs 26%, respectively, $p<0.001$). Median total length of surgical training was 6 years and specialized cardiac and thoracic training 4 years for both society memberships. Practice in an academic setting and number of peer-reviewed manuscripts was similar amongst membership in both societies.
Conclusions: Members of EACTS and ESTS are very similar in length of training, board certification, and academic practice and activity, although have expected practice variation given the different membership focus and demographics. Both societies provide important education and advocacy services for their members. Increased cooperation may further propagate improvements in cardiothoracic education, and improve patient access and outcomes through shared specialty advocacy.

NOTES

Monday, 1 June 2009
14:00 – 15:30
Session 3 – Pulmonary Neoplastic

014-O LUNG CARCINOID TUMORS: METASTASIS AND LOCAL RECURRENCE IN PATIENTS SURGICALLY TREATED

José María Matilla[1]; Mariano García-Yuste[1]; Ignacio Muguruza[3]; Miguel Angel Cañizares[4]; Pedro Rodriguez[5]; Begoña Gregorio[1]; Members EMETNE-SEPAR[2]
[1]*University Hospital Valladolid, Valladolid, Spain;* [2]*EMETNE-SEPAR, Barcelona, Spain;* [3]*Ramon y Cajal Hospital, Madrid, Spain;* [4]*Xeral Hospital, Vigo, Spain;* [5]*Dr. Negrin Hospital, Las Palmas, Spain*

Background: Studying the incidence and prognosis of metastases and local recurrence in patients surgically treated of lung carcinoid tumors.
Methods: From 1980 to 2008, 862 patients -745 Typical Carcinoid (TC) and 117 Atypical Carcinoid (AC)- were surgically treated. Variables considered: tumor size, T factor, nodal affectation (N), pathologic stage, surgical resection and survival. Statistical analysis (SPSS 15.0): Kaplan-Meier method and Chi2, Student´t and Log-rank tests were carried out. Significant $p<0.05$.
Results: Among 745 patients with TC 19 (2.55%) (hepatic 7, cerebral 1, bony 3, lung 1, spread 7) -Stages: IA 4, IB 8, IIA 2, IIB 2, IIIA 2, IIIB 1- and 22 of 117 (18.8%) (hepatic 6, cerebral 2, lung 1, suprarenal gland 1, spread 12) with AC -Stages: IA 3, IB 5, IIB 2, IIIA 6, IIIB 2, IV 4- had metastases at distant sites (p=0.0000). Local recurrence was detected in 8/745 TC (1.1%) and 7/117 AC (6%); (p=0.0001). Standard vs Conservative surgical resection: patients with metastases: TC 14/5, AC 18/4; patients with local recurrence: TC 4/4, AC 3/4. Survival at 5 years without/with metastases (%): TC: 96/81 (p=0.0000); AC: 94/43 (p=0.0000); patients without/with local recurrence: TC 96/87 (p=0.0443); AC 84/71 (p=0.3684). Alive during the follow-up after treatment of metastases: TC 10/19 (52.6%), AC 8/22 (36.4%); alive after local recurrence: TC 6/8 (75%); AC 5/7 (71.4%). Significance of prognostic factors in the presence of metastatic and local recurrence (Table 1).
Conclusions: 1) Gradual loss of histological pattern has statistical significance in the incidence of metastases. 2) Factors influencing the presence of metastases in TC: size, T, N and stage; in AC: stage. N Factor influences the local recurrence in both TC and AC, and standard vs conservative surgical resection in AC. 3) A significant difference in long term survival between patients without /with metastases was observed in both TC and AC .

TC	Size	T	N	Stage	Resection standard/conservative
Metastases	0.0000	0.03	0.0001	0.0013	0.85
Local recurrence	0.68	0.94	0.0015	0.333	0.26
AC					
Metastases	0.661	0.071	0.32	0.014	0.88
Local recurrence	0.966	0.37	0.0086	0.32	0.002

Table 1

015-O RESULTS OF AGGRESSIVE LYMPH NODE DISSECTION IN THE ERA OF MODERN IMAGING AND INVASIVE STAGING FOR LUNG CANCER

Anand Ramasamy; Lavinia Magee; Mohammed Edamma; Cliff Choong; Francis Wells; Aman Coonar
Papworth Hospital, Cambridge, United Kingdom

Background: Lung cancer staging is improving but remains variable. In our unit patients for radical treatment systematically undergo staging CT, PET-CT and brain imaging. Enlarged and/or PET positive nodes undergo invasive evaluation to establish N status. This is performed by EBUS/EUS, mediastinoscopy, mediastinotomy, VATS or open surgery.
Assuming that this contemporary practice of detailed pre-op staging may yield a lower rate of stage change after surgery we were interested to determine the results of our aggressive lymph node dissection at the time of surgical resection.
Methods: We retrospectively analysed a database that prospectively captured information on all patients assessed and treated for lung cancer in our unit. We reviewed data from 2006-2008 so as to reflect contemporary practice.
Results: Results are summarised in the table below. Despite thorough pre-op evaluation, 26% of patients still had a change in N status after lung resection and aggressive lymph node dissection.
Conclusions: Despite systematic intensive radiological and invasive staging there continues to be a high rate of N status change following radical surgical resection with aggressive lymph node dissection.

N status change after surgery

surgical resection, n=	182
age range	42-83
male	103 (57%)
Data complete	170 (93%)
N status change 44 (26%)	44 (26%)
Upstaged by surgery	25 (15%)
Downstaged by surgery	19(11%)
pN2	24 (14%)
pN2 newly identified by surgery	13 (8%)
cN2 downstaged after surgery 12 (7%)	12 (7%)
pN1	33 (19%)
pN1 newly identified by surgery	12 (7%)
cN1 downstaged after surgery	7 (4%)

016-O INDUCTION TREATMENT DOES NOT INCREASE THE RISK OF MORBIDITY AND MORTALITY AFTER PNEUMONECTOMY FOR LUNG CANCER: A MULTICENTER CASE-MATCHED ANALYSIS

Majed Refai1; Alessandro Brunelli[1]; Mark K Ferguson[2]; Gaetano Rocco[3]; Sergio N Fortiparri[4]; Antonello La Rocca[3]; Michele Salati[1]; Kenji Kawamukai[4]
[1]*Umberto I Regional Hospital, Ancona, Italy;* [2]*University of Chicago, Chicago, United States;* [3]*National Cancer Institute Pascale Foundation, Naples, Italy;* [4]*Bellaria-Maggiore Hospital, Bologna, Italy*

Background: The objective of this investigation was to compare postoperative mobidity, early and late mortality in patients after pneumonectomy for non small cell lung cancer (NSCLC) with or without induction neoadjuvant therapy.
Methods: This is an observational study performed on a prospectively collected data at four tertiary referral centers (2000-2007). Of 225 pneumonectomies for NSCLC, 81 patients underwent neoadjuvant chemotherapy. Several preoperative and operative variables were used to construct a propensity score and match pairs of patients with and without induction treatment. The matched groups were then compared in terms of morbidity, early (30 days or in-hospital) and 90-days mortality.
Results: Overall cardiopulmonary morbidity, early mortality and 90-days mortality rates were 30% (67 cases), 7.1% (16 cases) and 9.8% (22 cases), respectively. Propensity score analysis yielded 56 well-matched pairs of patients, with and without induction chemotherapy. The two groups had similar early and late mortality rates: 4 and 4 (p=1), 7 and 7 (p=1), respectively. Moreover, the incidence of cardiopulmonary morbidity and broncopleural fistula were also similar in both groups:19 and 17 (Fisher's exact test p=0.7), 2 and 3 cases (Fisher's exact test, p=0.7), respectively. Twenty-one patients with induction chemo-radiotherapy were analyzed separately and compared with well-matched counterparts without any induction treatment. Even in this case, no significant differences were obtained in terms of early mortality (1 and 0, p=1), 90 days mortality (1and 0, p=1), cardiopulmonary complications (5 and 5, p=1), and bronchopleural fistula (1 and 1, p=1).
Conclusions: Current regimens of induction treatment do not seem to increase risk of morbidity, early and late mortality after pneumonectomy in properly selected patients. This study warrants confirmation from future multicenter prospective randomized trials powered on early outcomes.

017-O IS THE LYMPHADENECTOMY ON PULMONARY METASTASECTOMY OF COLORECTAL CANCER NECESSARY?

Tamas Szöke[1]; Ariane Kortner[2]; Rainer Neu[1]; Christian Grosser[1]; Zsolt Sziklavari[1]; Karsten Wiebe[2]; Hans-Stefan Hofmann[1]
[1]*Dept. of Thoracic Surgery, KH Barmherzige Brüder, Regensburg, Germany;*
[2]*Dept. of Cardiovascular and Thoracic Surgery, University Regensburg, Regensburg, Germany*

Background: To investigate the pattern of mediastinal lymph node metastases in patients with colorectal cancer metastasis.
Methods: 24 pulmonal metastasectomy with mediastinal lymphadenectomy were performed on 19 patients (14 unilateral and 5 bilateral operations). The mean number of removed lymph nodes was 11,2 (SD 6,5) and of removed lung metastases was 2,3 (SD 2,0). The metastases localized in 9 cases centrally, and the primary tumor was colon cancer in 15 patients and rectal cancer in 9 cases. The number and the localisation of metastases were recorded, and the clinico-pathological data of the primary tumors, respectively. The results were compared with the pattern of metastases in mediastinal lymph nodes. The data were subjected to statistical processing with the chi-square test and ANOVA.
Results: Mediastinal lymph node metastases were confirmed in 8 cases (33,3%). The proportion of positive lymph nodes is significant higher for centrally metastases (62,5% vs. 18,8%, p=0,032). In event the more advanced pathological stage of the primary tumor the proportion of lymph node metastases displays a discrete, but statistically not significant increase. Correlation with disease-free intervall, the diameter of the greatest pulmonary metastasis was not seen. The pattern of lymph nodes metastases not correlated with the localisation of lung metastases.
Conclusions: The proportion of lymph node metastasis is relatively high, mainly in centrally localised the lung metastases, therefore the mediastinal lymphadenectomy on the operation of colorectal cancer metastases is necessary.

018-O THE EFFECT OF SEASON OF OPERATION ON THE SURVIVAL OF RESECTED PATIENTS WITH NON-SMALL CELL LUNG CANCER

Akif Turna[1]; Atilla Pekcolaklar[1]; Muzaffer Metin[1]; Ilhan Yaylim[2]; Atilla Gurses[1]
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Department of Molecular Biology, Istanbul, Turkey

Background: Stage has been defined as the major prognostic factor in resected non-small cell lung cancer. However, there is some evidence that indicates season of operation could play a role in survival of patients.
Methods: Between January 1995 and June 2008, 698 (621 men, 57 women) patients who had undergone pulmonary resection for non-small cell lung cancer were evaluated. Patients were analyzed according to surgical-pathologic stages and month of the year in which they were operated. Vitamin D Receptor polymorphism was also analyzed. The mean follow-up time was 25 months. Survivals were calculated using Kaplan-Meier survival analysis. Univariate and multivariate analyses were performed with log-rank and Cox-proportional hazard test respectively.
Results: The median survival time in all patients was 60±6 months (95% confidence interval: 44-81 months), 5-year survival time was 48.7%. The 5-year survival rates in patients with T1, T2 and T3 tumors were 71.6%, 52.9% and 47.0% respectively. The survival of patients who underwent resection in winter was statistically significantly shorter than those operated in summer (p=0.03). In stage I patients, the difference was found to be highest (p=0.01). When patients were analyzed according to T, N and season, resection time of the year was calculated to be an independent determinant of survival (p=0.04).A vitamin D genotype was also associated with better prognosis
Conclusions: Season of the year of operation seemed to have an effect of survival of operated non-small cell lung cancer patients. Further studies are warranted in order to elucidate the mechanism of this effect, however, vitamin D receptor polymorphism may play a role in this relationship.

019-O IMPACT OF NEOADJUVANT RADIOCHEMOTHERAPY ON BRONCHIAL TISSUE VIABILITY

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[2]*Fraunhofer Institute Interfacial Engineering and Biotechnology (IGB), Stuttgart, Germany*

Background: In treatment of advanced stages of lung cancer increasingly more multimodality approaches applying radiotherapy and/or chemotherapy in a neoadjuvant setting are introduced. There are concerns, that these aggressive neoadjuvant protocols might increase the rate of postoperative bronchial insufficiencies due to a deteriorated wound healing.
Methods: In 2008 we determined the tissue viability of bronchial segments obtained during surgery in 50 consecutive patients – including patients after neoadjuvant radiochemotherapy (RCTX). Bronchial tissue viability was analyzed by histology, life-dead assay and cell sprouting in tissue specific culture media. Clinical variables abstracted for analysis included patient age and sex, tumor entitiy and site of lung resection. Biomedical findings were compared with the clinical course of the patients.
Results: Tissue samples of 48 patients were included into this study. 14 patients (29%) had undergone neoadjuvant RCTX (group I), the rest has been operated without previous treatment (group II). Histology and life-dead assay did not demonstrate meaningful differences between groups. While patient age, sex, tumor entity, and site of resection had no influence on cell sprouting in vitro, previous RCTX resulted in a decrease of 46% in bronchial tissue viability ($p=0.01$). However, this effect was not mirrored by the clinical course of the operated patients. In both groups, there was 1 postoperative bronchus insufficiency, representing 8 and 3%, respectively.
Conclusions: Neoadjuvant RCTX significantly impacts bronchial viability. This impairment translates into an increased rate of bronchial insufficiencies. Standard histological work-up is not sensitive enough to characterize changes in bronchial tissue viability following RCTX.

Monday, 1 June 2009
14:00 – 15:30
Session 4 – Young Investigator Award

020-F COMPLEX SPACE-FILLING PROCEDURES FOR INTRA-THORACIC INFECTIONS - PERSONAL EXPERIENCE WITH 76 CONSECUTIVE CASES

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Surgical Clinic 4 University of Medicine and Pharmacy, Targu-Mures, Romania

Background: The objective of our paper is to analyse the results of complex space-filling procedures for chronic intrathoracic suppurations.
Methods: We performed a retrospective analysis of 76 consecutive patients operated in our unit between 01.01.2003-31.01.2008 who presented pleural and/or pulmonary suppurations not amenable to decortication or resection; 36 patients (46,7%) had TB lesions (28 with positive cultures at the moment of surgery, 7 with MDR infections), 13 patients (17,1%) had postoperative empyema, 18 patients (23,7%) presented with frank intrapleural rupture of a pulmonary cavity and bronchial fistula was present in 26 patients (34,2%). In these patients we performed a combination of thoracoplasty (5,3 +/- 1,3 resected ribs) and intrathoracic transposition of extrathoracic muscles – 148 flaps (60 serratus anterior, 55 latissimus dorsi, 27 pectoralis and 6 subscapularis) with an average of 1,9 flaps/patient; in all patients we used a closed-circuit irrigation-aspiration system and primary closure of the wound.
Results: Overall mortality was 5,3% (4 patients) and other 4 patients (5,3%) presented recurrence of infection requiring a modified open-window; other local complications included minor skin necrosis solved through excision (3 cases) and external thoracic fistula closed through local lavages (2 cases). Postoperative hospitalization ranged between 4 and 180 days, with an average of 40,5+/-2,5 days; all patients were discharged with healed wounds. Mild impairment of shoulder function was encountered in 5 patients. A comparative evaluation of the pre- and postoperative VC and FEV1 showed no statistically significant difference (Wilcoxon test – $p>0,05$).
Conclusions: Patients with complex intrathoracic suppurations not amenable to decortication or lung resection require complex space-filling procedures to achieve complete obliteration of the infected space. The association between thoracoplasty and intrathoracic muscle transposition is a safe and simple solution allowing a quick recovery with good functional and aesthetic postoperative outcome.

021-F COMPARISON OF 18FDG PET AND 99M TC MIBI-SPECT IN THE DIAGNOSIS OF INDETERMINATE LUNG LESIONS

Alfonso Fiorelli[1]; Filomena Napolitano[1]; Paolo Laperuta[1]; Pier Francesco Rambaldi[2]; Luigi Mansi[2]; Giovanni Vicidomini[1]; Mario Santini[1]
[1]*Thoracic Surgery Unit, Naples, Italy;* [2]*Medicine Nuclear Unit, Second University of Naples, Naples, Italy*

Background: To compare F-18–2- fluoro-2-deoxyglucose (FDG) positron emission tomography (PET) and Technetium-99m Hexakis-2-Methoxyisobutyl Isonitrile (99mTc-MIBI) single-photon emission computed tomography (SPECT) in the diagnosis of indeterminate lung lesions.
Methods: We prospectively studied 52 consecutive patients with indeterminate radiologically lung lesion (mean size ± Standard Deviation of lesion: 3.3 ± 1.29 cm). All patients were examined by both 18FDG PET and 99m Tc-MIBI SPECT before invasive diagnostic procedure. Lung lesion was analysed visually and semi-quantitatively using the ratio of tumour-to-normal radioactivity (T/N ratio) for 99m Tc-MIBI SPECT and standardized uptake value (SUV) for 18FDG PET. Finally, the scintigraphic findings were correlated to the definitive diagnosis obtained by surgical resection and invasive procedure or confirmation of instrumental exams.
Results: 38 patients had a malignant lesion whereas, 14 patients had a benign disease. Visual analysis for lung lesion showed that the diagnostic sensitivity and specificity of PET were 92% and 71% respectively, while those of SPECT were 86% and 92% respectively. FDG uptake and MIBI uptake of malignant lesion was significantly higher than benign lesion (9.8 ± 3.77 vs 4.3 ± 2.78 [$p<0.0001$] and 4.3 ± 2.78 vs 1.1 ± 0.14 [$p<0.0001$], respectively). ROC analysis using peak SUV FDG uptake (cut-off point of 5.7) and T/N MIBI uptake (cut-off point of 1.3) provided, sensitivity and specificity values of 92% and 85% of 86% and 100% for PET and SPECT, respectively. However, it did not show statistically significant differences between both methods (comparison of ROC curve Figure 1). For lymph nodes staging, PET and SPECT showed sensitivity and specificity values of 88% and 80% of 66% and 92% respectively.
Conclusions: Despite the limited number of patients, our experience shows that MIBI-SPECT is similar to PET in the detection of malignancy of indeterminate lung lesion and represents an alternative when PET is not available

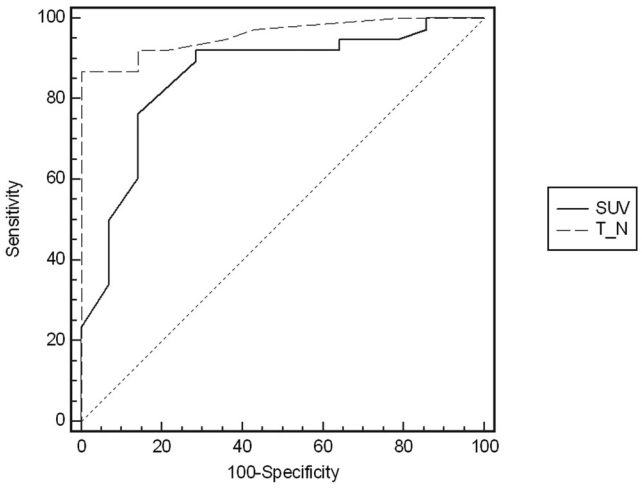

Figure 1

022-F LUNG SEALING USING THE TISSUE WELDING TECHNOLOGY IN SPONTANEOUS PNEUMOTHORAX.

Oleksandr Linchevskyy; Anatoliy Makarov; Vadym Getman
Clinical Hospital # 17, Kyiv, Ukraine

Background: Welding of lung tissue is a new radiofrequency surgical method that allows sealing pulmonary tissue without overheating and damaging the tissue. The objective of the research was to study results of sealing the lung tissue and ablation of bullae via VATS in a nonresectional procedure for spontaneous pneumothorax.
Methods: We present a series of 133 consecutive patients with primary spontaneous pneumothorax, which were operated on during the last three years. Among 133 patients 123 were men and 10 were women; average age 26 years (from 14 to 59 years). Indications for surgery were pneumothorax recurrence (59 patients), contralateral occurrence (13 patients), bilateral pneumothorax (1 patient), haemopneumothorax (2 patients), prolonged air leakage for more than 2 days was observed in 58 patients. We used the tissue welding technology and an original bipolar handpiece for bullae electroablation and lung sealing. Conventional apical pleural abrasion was done in all cases. Chest tubes were removed 48 hours postoperatively by protocol.
Results: Intraoperatively, emphysema-like changes and blebs under 1 cm were seen in 29 patients (22%), bullae of 1-2 cm - in 48 patients (36%), in 56 cases (42%) the size of bullae exceeded 2 cm. In all cases lung sealing was achieved using the tissue welding only, without use of staplers, sutures, glues and sealants. Operating time depended on adhesions presence, and number of bullae, but never exceeded 65 min. Postoperative air leakage for 4 days (1 – 6 days) was observed in 6 patients. Neither mortality nor major morbidity was observed. There were 7 recurrences (5,2%).
Conclusions: The tissue welding procedure is easy to perform through VATS and is efficient for ablation of bullae of any size. Leakproof sealing is achieved allowing us to repair the pulmonary-pleural fistula thus being a nonresectional alternative to wedge resection. No conventional wound-closing devices are needed.

023-F A SCALE FOR DECISION MAKING BETWEEN WHOLE LUNG TRANSPLANTATION OR LOBAR TRANSPLANTATION

Domenico Loizzi[1]; Clemens Aigner[1]; Peter Jaksch[1]; Axel Scheed[1]; Bruno Mora[2]; Francesco Sollitto[3]; Walter Klepetko[1]
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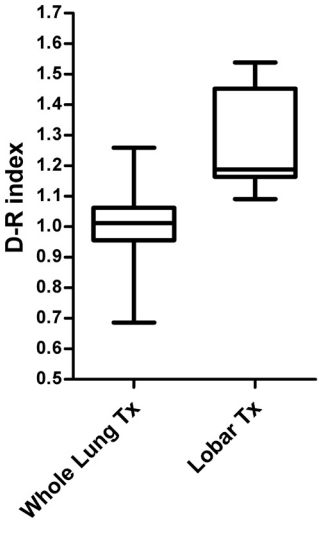
[2]*Department of CTV Anesthesiology and Intensive Care, Vienna, Austria;*
[3]*Cattedra di Chirurgia Toracica, Università degli Studi di Foggia, Foggia, Italy*

Background: In lung transplantation the surgeon has to decide the right match between donor and recipient. Sometime, to overcome size disparities, tailoring of the lung has to be performed. We have analized the ratio between predicted Total Lung Capacity (TLC pr) of Donor and predicted Total Lung Capacity of Recipient as possible index for deciding about tailoring of the lung.
Methods: The Authors retrospectively analized the ratio between TLC pr of Donor and TLC pr of Recipient (D-R index) in a series of 85 consecutive lung transplantations and in a series of 9 consecutive lobar transplantations, performed in a single instituion between 01/01/2008 and 30/11/2008. The TLC pr was calculated on the basis of the formula suggested by the ERS. Sensibility and Specificity of the D-R index were studied. The utility of the D-R index in discriminating lung transplantations and lobar transplantations was studied with the ROC curve.
Results: The D-R index in lung transplantations ranged between 0,69 and 1,26, with a median value of 1,01. The D-R index in lobar transplantations ranged between 1,09 and 1,54, with a median value of 1,19. In the range between 1,12 and 1,14, Sensibility and Specificity are both above 90%. The area under the ROC curve was 0,96.
Conclusions: We conclude that the D-R index shows important differences between lung transplantation and lobar transplantation. The area under the ROC curve is very close to the value of 1, so the D-R index is a very good index to decide for lung transplantation or lobar transplantation.

D - R index



024-F ONE LUNG VENTILATION EXAGGERATES OXIDATIVE STRESS

Tomasz Marjanski[1]; Radoslaw Owczuk[2]; Maria Wujtewicz[2]; Michal Wozniak[3]; Witold Rzyman[1]

[1]*Thoracic Surgery Department, Medical University of Gdansk, Gdansk, Poland;*
[2]*Department of Anesthesiology and Intensive Care, Medical University of Gdansk, Gdansk, Poland;*
[3]*Chair of Medical Chemistry, Medical University of Gdansk, Gdansk, Poland*

Background: Reactive oxygen species might take part in the pathomechanism of complications after lung resection. Pulmonary hypoperfusion during one lung ventilation results in the increased level of reactive oxygen species. The aim of the study was to evaluate the risk factors of increased oxidative stress during lung resection. The influence of oxidative stress on the postoperative complications and postoperative course was recorded.

Methods: Forty patients that has undergone lung resection entered this prospective study. Patients were randomly distributed to one of the two arms of the trial. Patients in study arm underwent one lung ventilation during the resection, patients in second arm underwent two lung ventilation. Blood for biochemical analyzes was collected preoperatively, three times in the determined time points of the surgery and on the first postoperative day. The levels of carbonyl and sulfhydryl remnants (oxidative damage to the proteins), malondialdehyde (oxidative damage to the lipids) and the level of serum albumin were assessed.

Results: The study groups were equal concerning the type of the surgery performed, the time of the resection, histological type of the disease as well as the age of the patients and presence of concomitant diseases. In the multivariate analysis one lung ventilation was independent risk factor of increased oxidative stress expressed by the decreased level of sulfhydryl remnants (p=0,032). The level of serum albumin in the study group was significantly decreased during the surgery comparing to controls (p=0,010). The most common complication was atrial fibrillation (12,5%). The complication rates in both arms of the trial were equal.

Conclusions: One lung ventilation is an independent risk factor of increased oxidative stress. This study did not show the influence of oxidative stress on the complication rate after lung resection. The level of serum albumin was decreased during one lung ventilation.

025-F RISK MODELING IN GENERAL THORACIC SURGERY: THE POSSUM SCORING SYSTEM VERSUS THE THORACIC SURGERY SCORING SYSTEM (THORACOSCORE).

Carlos Martínez-Barenys[1]; Pedro E. López de Castro Alujes[1]; Núria Parra Macías[2]; Javier Pérez Vélez[1]; Esther Fernández Araujo[1]; Miguel A. Mesa Guzmán[1]; Julio Astudillo Pombo[1]

[1]*Servei de Cirurgia Toràcica. Hospital Universitari Germans Trias i Pujol, Badalona, Spain;* [2]*Unitat de Recerca i Desenvolupament Sant Joan de Déu. Serveis Salut Mental, Sant Boi del Llobregat, Spain*

Background: Several scoring systems have been developed in order to stratify patients according to the morbidity or mortality risk following thoracic surgery. The purpose of this study is to evaluate and compare the ability to predict postoperative (30-day) morbidity and mortality of two widely used risk algorithms for general thoracic surgery: The Thoracic Surgery Scoring System (Thoracoscore) and The POSSUM Scoring System.

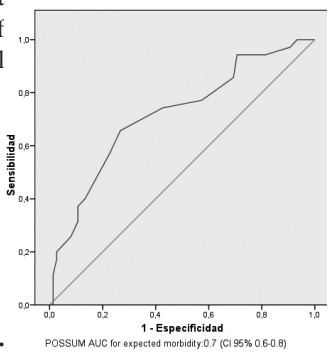
Methods: From September 2007 to October 2008, 110 patients undergoing oncologic lung resection surgery at our University reference Hospital took part in a prospective validation score study. Thirty-day mortality and morbidity were the end-point and their risks were assessed by means of the Thoracoscore and POSSUM scores. Predictive accuracy for both tests was evaluated by using the Hosmer-Lemeshow goodness-of-fit and their discriminatory power was calculated by means of the areas under receiver operating characteristics (ROC) curves (AUC).

Results: The mean age was 63.4 (10.7) years (range 22-83), 80.9% were men and we performed 8 exploratory thoracotomies (7.3%), 29 segmentectomies (26.4%), 61 major resections (55.5%) and 12 (10,9%) extended procedures. The actual 30-day mortality was 4 cases (3.6%) and 35 patients (31.8%) suffered morbidity [mean morbidity rate per patient 1.05 (1.1)]. POSSUM AUC for expected morbidity was 0.7 (CI 95% 0.6-0.8) and 0.67 (CI 95% 0.5-0.8) for expected mortality. Thoracoscore AUC for expected mortality was 0.7 (CI 95% 0.5-0.9) There were no statistically significant differences ($p>0.05$) between the POSSUM and Thoracoscore 30-day mortality discriminatory power.

Conclusions: POSSUM Score is a good and useful clinical predictor of 30-day morbidity in lung surgery. The ability of POSSUM and Thoracoscore to predict 30-day mortality is promising but, regarding to our results, we believe that they are not applicable to daily clinical practice yet; probably this lack of mortality discriminatory power is due to the relatively small number of patients included in the study so far.

Scores mortality discriminatori power comparison

	Area (AUC)	Inferior Limit (95% CI)	Superior Limit (95% CI)
POSSUM predicted Mortality	0.665	0.532	0.798
Thoracoscore predicted Mortality	0.690	0.503	0.876



ROC Curve for POSSUM expected morbidity.

026-F DOES CHRONIC OBSTRUCTIVE PULMONARY DISEASE AFFECT POSTOPERATIVE QUALITY OF LIFE IN PATIENTS UNDERGOING LOBECTOMY FOR LUNG CANCER? A CASE-MATCHED STUDY

Cecilia Pompili; Alessandro Brunelli; Francesco Xiumé; Majed Refai; Laura Socci; Armando Sabbatini
Umberto I Regional Hospital, Ancona, Italy

Background: The objective of this investigation was to assess quality of life (QoL) before and after pulmonary lobectomy in patients with COPD and to compare these values with a case-matched population of patients with normal respiratory function.
Methods: This is an observational analysis performed on a prospective dataset of 220 consecutive patients submitted to pulmonary lobectomy for lung cancer (2006-2008). Patients submitted to extended procedures (chest wall resection, superior sulcus) were excluded from the analysis. Pre- and postoperative (3 months) QoL were assessed in all patients through the administration of the Short Form 36v2 health survey, a generic QoL instrument assessing eight health physical and mental concepts. Propensity score was used to match COPD patients (according to GOLD criteria: FEV1/FVC ratio <0.7 and FEV1 < 80%) with counterparts without COPD. QoL scales were compared between the two matched groups by means of the Mann Withney test.
Results: Propensity score yielded 50 well-matched pairs of patients with and without COPD. Compared to non-COPD patients, those with COPD had a three-fold higher rate of cardiopulmonary morbidity (14 cases vs. 5 cases, 28% vs.10%, p=0.04), lower reduction in FEV1 (4% vs. 11%, p=0.0001), but lower residual postoperative FEV1 values (62% vs. 76%, p<0.0001). Postoperative DLCO (69% vs. 67%, p=0.5) and VO2max (15.3 ml/kg/min vs. 15 ml/kg/min p=0.9) values were similar between the groups. Although most of the preoperative and postoperative QoL domains in both groups resulted reduced compared to normal population (<50), we were not able to find differences between the groups in any of the preoperative and postoperative physical and mental QoL scales.
Conclusions: The evidence of an acceptable quality of life in COPD patients may help both patients and physicians in the surgical decision making process in the face of high rates of complications.

027-F THE PROGNOSTIC RELEVANCE OF EGFR, P27 AND ß1-INTEGRIN PROTEIN EXPRESSION ON MESOTHELIOMA PATIENTS SURVIVAL

Alexandra Schramm[1]; Alex Soltermann[2]; Peter Vogt[2]; Nicole Probst[2]; Holger Moch[2]; Walter Weder[1]; Isabelle Opitz[1]
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[2]*Department of Pathology, University Hospital Zuerich, Zuerich, Switzerland*

Background: Patients with a malignant pleural mesothelioma (MPM) have even with an aggressive therapy a poor survival. Prognostic marker would help to select patients for different treatment concepts. One important oncogenic pathway involves β1-integrin and EGFR signalling to p27. ILK (integrin linked kinase), periostin and p21 are also parts of this pathway. We wanted to investigate the relevance of this axis in patients with a MPM.
Methods: Quadruple punches of 352 MPM were studied for the immunohistochemical expression of EGFR, p27, p21, ILK, periostin and ß1-integrin using respective antibodies. Staining intensity was semi-quantitatively scored (0-3) summed up and divided by 4 to give a global score. This global score was correlated to overall survival and histological subtype.
Results: Clinical data from 206 patients was available. 31% of the mainly male patients got any therapy. The histological subtypes were 31% epitheloid, 17% sarcomatoid and 52% biphasic. Increased EGFR (p=0.0002), β1-integrin (in membrane and core) expression (p=0.03), p27 (p=0.02), periostin (p=0.0002) were significantly more frequent in the epitheloid subtype, whereas no preference for a particular subtype was found for β1-integrin (in the stroma) (p=0.59), p21 (p=0.23) and ILK (p=0.40). For the 126 patients with complete follow-up data survival time was correlated with protein expression. The median survival time was 11.7 months. Histology (epitheloid versus sarcomatoid versus biphasic) (p=0.01), therapy (yes versus no therapy) (p=0.001), age (62 years) (p=0.02), protein expression of p27 (low versus high) (p=0.02), p21 (no expression versus expression) (p=0.006) and ILK (no expression versus expression) (p=0.02) were significant prognostic factors for longer survival in the univariate analysis.
Conclusions: In this large TMA based tissue bank study EGFR, ß1-integrin, p27 and periostin seem to be diagnostic marker for epitheloid global histological type. Independent prognostic marker for better overall survival were histology, therapy, age, protein expression of p21, 27 and ILK.

028-F AN ALTERNATIVE POSTOPERATIVE PATHWAY REDUCES LENGTH OF HOSPITALIZATION FOLLOWING ESOPHAGECTOMY

Sandra Tomaszek; Stephen D. Cassivi; Mark S. Allen; K. Robert Shen; Francis C. Nichols; Claude Deschamps; Dennis A. Wigle
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Background: As part of our on-going quality improvement effort we evaluated our conventional approach to post-esophagectomy management by comparing it to an alternative postoperative management pathway.
Methods: Medical records from 386 consecutive patients undergoing esophagectomy with gastric conduit for cancer (July 2004-August 2008) were analyzed retrospectively. The Conventional pathway involved a radiographic contrast swallow study at 5-7 days after esophagectomy with initiation of oral intake if no leak was detected. In the Alternative pathway, a feeding jejunostomy was placed for enteral feeding and used exclusively until oral intake was gradually initiated at home at 3-4 weeks after esophagectomy. No contrast swallow was obtained in the Alternative pathway group unless indicated by clinical suspicion of an anastomotic leak. Each group was analyzed on an intention to treat basis with respect to anastomotic leak rates, length of hospitalization, readmission, and other complications.
Results: 276 (72%) patients underwent Conventional postoperative management, 110 (28%) followed the Alternative pathway. Patient characteristics were similar in both groups. Anastomotic leak rate was lower in the Alternative pathway with 3 clinically significant leaks (2.7%) versus 33 in the Conventional pathway (12.0%; p=0.01). Among patients undergoing a radiographic contrast swallow examination, a false-negative rate of 6.1% was observed. Six patients developed aspiration pneumonia following their contrast swallow study. There were no significant differences overall in postoperative pulmonary or cardiac complications associated with either pathway. Median length of hospitalization was 2 days shorter for the Alternative pathway (7 days) as compared to the Conventional pathway (9 days; p=0.02). There was no significant difference in unplanned readmission rates with 180 days post-esophagectomy follow-up.
Conclusions: An alternative postoperative pathway following esophagectomy involving delayed oral intake and avoidance of routine contrast swallow is associated with a shortened length of hospitalization without a higher risk of complication after hospital discharge.

Monday, 1 June 2009
16:00 – 17:30
Session 5 – Pulmonary Non-Neoplastic

029-O INFLUENCE OF MAJOR PULMONARY RESECTION ON POSTOPERATIVE DAILY AMBULATORY ACTIVITY OF THE PATIENTS.

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University Hospital of Salamanca, Salamanca, Spain

Background: To describe and compare the daily ambulatory activity of the patients before and one month after lobectomy or pneumonectomy.
Methods: Daily activity was measured using a pedometer (OMROM Walking Style PRO®) given preoperatively in a prospective way to a series of 21 consecutive cases scheduled for lobectomy or penumonectomy through a muscle-sparing mini-thoracotomy. After 10 minutes of continuous walking more than 60 steps per minute, aerobic activity was registered. Data acquisition was performed by downloading pedometer records on a computer. Analyzed variables were age, pulmonary function, BMI, mean number of total and aerobic steps per day and mean daily time of aerobic activity. Activity variables were analyzed individually and as a new differential variable DELTA= ((postoperative variable-presurgery variable) / presurgery variable) x100. Wilcoxon and Mann-Whitney nonparametric tests were used for comparison between groups.
Results: General series data: Age:64.5±10.5y. BMI:24.5±4. FEV1%: 89.43±21.1. DLCO:85.3±21.7 (11 cases had COPD criteria). Type of surgery: 3 pneumonectomies/18 lobectomies. A significant decrease of postoperative activity was found of the mean daily total steps (p=0,002) and the mean daily time of aerobic activity (p=0,039). Mean daily aerobic activity was not significantly decreased (p=0,057). By type of surgery: pneumonectomy patients showed a global decreaseof the activity and a 10 fold decrease in the mean daily time of the aerobic mode. In the lobectomy group, only mean daily total number of steps is significantly decreased (p=0.007). The DELTA of the changes in the mean daily aerobic activity and of the mean time of aerobic activity are significantly decreased (p=0.035 and p=0.017) (See Table I).
Conclusions: Mayor pulmonary resection decreases the time and the quality of the daily ambulatory activity of the patients during the first postoperatory month. Decrease after pneumonectomy is greater and affects all measured activity features.

Summary of activity markers measured

	PRE	OPERATO	RY	POST	OPERATO	RY
	Mean daily total steps	Mean Daily aerobic steps	Mean daily time of aerobic activity (min)	Mean daily total steps	Mean Daily aerobic steps	Mean daily time of aerobic activity (min)
General series data	9847±4108	4030±3860	37±32	7726±4811	3107±4063	29,3±34
Pneumonectomy	4809±828	1642±796	17±7	2491±886	144±125	1.6±1.4
Lobectomy	10686±3814	4428±4035	41±33	8598±4625	3601±4196	33.9±35

030-O STAGED BILATERAL LUNG VOLUME REDUCTION SURGERY-THE BENEFITS OF A PATIENT LED STRATEGY

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Dept of thoracic surgery and respiratory medicine, Glenfield Hospital, Leicester, United Kingdom

Background: Lung Volume Reduction Surgery (LVRS) is conventionally a one-stage bilateral operation. We hypothesized that a more conservative staged bilateral approach determined by the patient would prolong the overall benefit.
Methods: In a population of 111 consecutive patients, suitable for bilateral LVRS, an initial cohort of 26 patients (15 M; 11 F, median age 58y) underwent one-staged bilateral surgery (group OB). A subsequent cohort of 85 patients had initial unilateral LVRS with the contra lateral operation not scheduled until requested by the patient. At a median follow-up of 2.4 (0-8.9) years, staged bilateral LVRS has been performed in 16 patients (10 M; 6 F, median age 59y) at an interval of 45 (7-76) months (group SB). 69 patients (40 M; 29 F, median age 60y) have not proceeded to the second stage (group U): 25 patients have died, 11 have become inoperable and 33 are still undecided. Lung function, health status (SF36) and survival were compared postoperatively.
Results: There were significant improvements in FEV1 for 6 months in all groups, only in group SB was there a second improvement at 4 and 5 years. There were significant reductions in RV and TLC in groups OB and U for 2 years but only in group SB was there a further reduction at 4, 5 and 6 years (table 1). There were significant improvements in physical and social functioning in groups OB and U for 1 year, whereas this improvement lasted for 5 years in group SB. Energy/vitality remained improved in groups OB and U for only 6 months, but in group SB for 4 years. There was no significant difference in 30-day mortality or median survival between groups OB and SB/U.
Conclusions: A staged bilateral approach to LVRS dictated by patients' perception of their condition leads to a more prolonged overall benefit without compromising survival.

Postoperative changes in respiratory physiology

% change from preop (mean+/- SE) (*P<0.05)	Group OB N = 26	Group SB N = 16	Group U N=69
FEV1 @ 6 mo	32+/-11*	36+/-8*	12+/-5*
FEV1 @ 4 yr	3+/-16	33+/-12*	6+/-9
TLC @ 6 mo	-15+/-4*	-13+/-4*	-7+/-2*
TLC@ 4 yr	-7+/-10	-14+/-4*	-2+/-4
RV @ 6 mo	-30+/-18*	-25+/-4*	-15+/-4*
RV @ 4 yr	-6+/-13	-21+/-4*	0+/-6

031-O COMPARISON OF EPIDURAL AND INTRAOPERATIVE PARAVERTEBRAL CATHETERIZATION FOR PAIN CONTROL IN THORACOTOMY PATIENTS

Gultekin Gulbahar[1]; Bulent Kocer[1]; Erkan Yildirim[1]; Serife Nursel Muratli[2]; Koray Dural[1]; Unal Sakinci[1]

[1]*Ankara Numune Teaching and Research Hospital, Dept of Thoracic Surgery, Ankara, Turkey;* [2]*Ankara Numune Teaching and Research Hospital, Dept of Anesthesiology and Reanimation, Ankara, Turkey*

Background: Thoracotomy is a surgical procedure related with severe pain. Operative morbidity rates decrease by effective postoperative pain control. The aim of this study is to compare the effectiveness of the thoracal epidural blockage (TEB) and the paravertebral blockage (PVB) methods in stopping the pain caused by thoracotomy incision.

Methods: We studied 44 consecutive patients who underwent elective posterolateral thoracotomy. Patients allocated into two groups as TEB (n=19) and PVB (n=25). Patients could control bupivacaine infusion and diclofenac sodium was given to the patients as needed in both groups. Groups were compared according to the parameters as analgesic efficacy (VAS), respiratory function tests (FEV1, PEFR and arterial blood gases), stress response (serum cortisol and glucose levels), adverse effects, necessity for additional analgesia, duration of catheter application procedure, mean hospital stay and postoperative follow-up. Results are analysed statistically by Mann Whitney-U, Wilcoxon, Chi-squared and Fisher exact tests and p-value was accepted to be statistically significant if <0.05.

Results: There was no significant difference between two groups according to age, gender, VAS, FEV1, PEFR, serum cortisole and glucose levels, necessity of additional analgesia and hospital staying days. In contrast, adverse effects and duration of catheterization were statistically significantly lower in PVB group ($p=0.001$ and $p=0.000$, respectively).

Conclusions: PVB catheterization can be simply performed and placed in a short span peroperatively. Because of these reasons, it must be prefered over TEB which has high incidence of adverse effects and complication rates.

032-O SURGERY FOR PULMONARY TUBERCULOSIS: A 15-YEAR EXPERIENCE

Ravindra Kumar Dewan
Thoracic Surgery, LRS Institute of TB & Respiratory Diseases,, New Delhi, India

Background: Surgery for pulmonary tuberculosis has become rather limited. However, it is still required for some sequel and complications. It is a 15 year retrospective study of cases operated upon for pulmonary tuberculosis in a center
Methods: A total of 2878 cases were operated upon for various complications of pulmonary tuberculosis over a 15 year long period. 98 were operated for persistent sputum positive status, 740 for recurrent massive hemoptysis or chest infections, 2024 for empyema and 18 for diagnostic reasons. Procedures were 830 lung resections, 12 primary thoracoplasties, 295 space reducing thoracoplasties, 158 decortications, 744 open window thoracoplasties and 837 tube thoracotomies alone.
Results: There were 18 early deaths and 37 late deaths. The cause of death was hemorrhage in 7 cases and respiratory failure in 9 cases and septicemia in 2 cases. Late deaths were mostly because of progressive tubercular disease. There was significant morbidity in terms of BPF in 95 cases, persistent sinus in 37 cases. Milder complications like pneumonia, fever, wound sepsis were noticed in some cases but definite records were not available. BPF was managed by tube drainage followed by either window thoracostomy or thoracoplasty. In MDR cases, persistent documented sputum negativity was achieved in 64 cases out of 86 cases. Results were better in hemoptysis and chest infection group where the desired result was achieved in 699 cases.
Conclusions: Surgery in pulmonary tuberculosis is still relevant in many cases and yields a very gratifying result. It is a challenging surgery and this one is a very large series.

033-O HIGH COSTS OF THE PROCEDURE AS PRESUMABLE SLOW DOWN FACTOR OF VATS LOBECTOMY DEVELOPMENT IN POLAND.

Cezary Piwkowski; Pawel Zielinski; Lukasz Gasiorowski; Piotr Gabryel; Mariusz Kasprzyk; Krystian Pawlak; Bartlomiej Galecki; Wojciech Dyszkiewicz
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Background: The medical literature has shown that VATS lobectomy is technically feasible, safe and oncologically proper operation and does not compromise the long-term survival of patients with early-stage lung cancer. However all the reports come from countries with high financial income. This may reflect that economical factor of this procedure is very important. We present our experience of introducing VATS lobectomy including the financial aspect of the procedure.
Methods: Until 2008 we were the only institution performing VATS lobectomy in Poland. We analyze the data of 70 patients who underwent VATS lobectomy from 2000 to 2008. (42 males and 28 females in mean age 59,9 +/-9,2 years old.) First 35 patients were operated on from the year 2000 to 2006 and second 35 in 2007-2008. The costs of VATS lobectomy and thoracotomy were compared.
Results: In first period of time mean 5 VATS lobectomies was done per year (1,9% of all resections), which is statistically less than in the second when 18 and 17 cases were operated on per year (6,8%). The mean operation time, duration of chest tube drainage and hospital stay were 149 minutes (+/-35), 4 days (+/-2,01) and 8,4 days (=/-3,5) respectively. Upper lobectomy was done in 44 patients and lower in 26 with the mean number of disposable stapling devices 7 (+/-2). All costs of treatment patients after lobectomy in Poland are estimated at about 3000€. The main difference in costs of the procedure was related to the price of staplers and was 1500€ for VATS lobectomy (50% of all amount), and 500€ for thoracotomy. (17%).($p<0,001$)
Conclusions: The learning curve for VATS lobectomy is long and steep. Extremely higher costs of VATS lobectomy compare to thoracotomy can be a strong negative factor which limit the broad use of this technique in high middle and low middle income countries in Europe.

034-O A COST-UTILITY ANALYSIS OF LOBECTOMY: THORACOSCOPIC VS. THORACOTOMY

William Richard Burfeind Jr.[2]; Eric M Toloza[1]; David H Harpole Jr.[1]; Thomas A D'Amico[1]
[1]*Duke University Medical Center, Durham, United States;*
[2]*St. Lukes Health Network, Bethlehem, United States*

Background: Recent evidence suggests that in appropriately selected patients, lobectomy performed either thoracoscopically (TL) or via a thoracotomy (PLT) produces equivalent oncologic outcomes. Advantages of thoracoscopic lobectomy include decreased pain, shorter length-of-stay, fewer postoperative complications, and better compliance with adjuvant chemotherapy. This study evaluates the costs associated with lobectomy performed thoracoscopically or via thoracotomy.
Methods: This is a retrospective analysis of actual costing and prospectively collected health-related quality of life (QOL). Between 2002 and 2004, 113 patients (n=31 PLT; n=82 TL) underwent lobectomy and completed QOL assessments preoperatively and 1 year postoperatively. Actual fixed and variable direct costs from the 30-day preoperative, operative hospitalization, and 30-day postoperative phases were captured using a T1 cost accounting system and were combined with actual professional collections. Cost-utility analysis was performed by transforming a global QOL measurement to an estimate of utility and calculating a quality-adjusted life year (QALY) for each patient.
Results: Baseline characteristics were similar in the two groups. Total costs ($US) were significantly greater for the strategy of PLT vs. TL (p=0.02) (Table). Even when only stage I and II lung cancers were included (n=27 PLT, n=74 TL), total costs for PLT were still greater than TL ($11,834±2,338 vs. $10,397±3,341, p=0.04). The mean QALY for the PLT group was 0.75±0.21 and for the TL group was 0.72±0.18, (p=0.33).
Conclusions: In this retrospective analysis, TL was significantly less expensive than PLT, with savings of approximately $1500 per patient, and an equivalent QALY outcome. Given this equivalence in outcomes, this cost-utility analysis supports a cost-minimization strategy. If TL were utilized for half of the 40,000 lobectomies performed in the US each year, this would represent a savings of over $30 million.

Phase	PLT	TL
Pre-Op	$944±1003	$459±358
Operative	$7808±	$7393±2583
Post-Op	$641±1481	$331±1315
Professional	$2542±1437	$2221±1505
Total Costs	$11,927±2447	$10,404±3333

Monday, 1 June 2009
16:00 – 17:30
Session 6 – Innovative Techniques / Experimental

035-F BETTER LUNG PROTECTION FOLLOWING DEATH DUE TO RAPID EXSANGUINATION IN RATS

Korkut Bostanci[1]; Berna Karakoyun Lacin[2]; Meral Yuksel[3]; Feriha Ercan[4]; Mustafa Yuksel[1]; Hasan Fevzi Batirel[1]

[1]*Marmara University Faculty of Medicine Department of Thoracic Surgery, Istanbul, Turkey;* [2]*Marmara University Nursing School, Istanbul, Turkey;* [3]*Marmara University Vocational School of Health Related Professions Department of Medical Laboratory, Istanbul, Turkey;* [4]*Marmara University Faculty of Medicine Department of Histology and Embryology, Istanbul, Turkey*

Background: Non-heart beating lung donors constitute an important pool to battle donor shortage. Formation of microthrombi in the lungs, prolongation of warm ischemia and macrophage induced inflammation are critically important on graft viability. We investigated the role of rapid exsanguination on the viability of lung tissue.

Methods: The study was performed in Sprague-Dawley rats. In control group (n=7) lungs were harvested following euthanasia. In study groups, lungs were left ischemic for 2 hours inside the dead animal in room temperature with continuous ventilation. Groups were; G1 only ischemia (n=8), G2 division of major abdominal vessels following death (n=8), G3 lung perfusion with physiologic serum (n=8), G4 with Perfadex (n=8) and G5 rapid exsanguination and death via division of major abdominal vessels (n=10). The lungs were analyzed for Luminol, Lucigenin and myeloperoxide activity levels (average ± SEM). 200 cells per area were evaluated and dead cells were counted at 5 different areas in each animal. Statistical analysis were performed with student t-test, Tukey-kramer multiple comparison and chi square tests.

Results: Results are shown in the table 1. * Group 5 was lower than groups 2 and 3 ($p<0.001$). ** Group 5 was lower than group 3 ($p=0.002$). *** Group 5 was lower than groups 2 and 3 ($p<0.001$) and group 4 ($p<0.01$).

Conclusions: Death following rapid exsanguination results in better preservation of lung viability and minimal oxidative injury. This may be due to the loss of inflammatory cells and platelets and shift of extravascular fluid to intravascular compartment. This is a preliminary study on this issue and further studies need to be done to demonstrate the role of rapid exanguination on ischemia-reperfusion injury.

Groups:	Luminol (AUC rlu/mg tissue ± SEM)	Lucigenin (AUC rlu/mg tissue ± SEM)	Myeloperoxidase activity (u/g)	Death Cells/field (average ± SEM)
Control	6.3 ± 0.6	6.8 ± 1.2	12.4 ± 1.5	1.1 ± 2.5
Group 1	11.4 ± 0.7	7.9 ± 0.4	23.2 ± 3.1	21.4 ± 3.7
Group 2	9.1 ± 0.6	10.1 ± 0.7	24.6 ± 3.1	80.5 ± 9.4
Group 3	9.4 ± 1	9.7 ± 0.6	33.6 ± 7	53.9± 7.3
Group 4	7.3 ± 0.7	7.6 ± 0.8	13.9 ± 1	41.6 ± 4.4
Group 5	8.5 ± 0.8	6.5 ± 0.3*	13.9 ± 1.8**	15 ± 3.7***

036-F VASCULAR IMMUNOTARGETING OF CATALASE VIA ANTI-ACE ANTIBODIES ATTENUATES REPERFUSION INJURY AFTER COLD LUNG PRESERVATION

Kai Nowak[1]; Christine Hanusch[4]; Kathrin Nicksch[1]; Grietje Beck[4]; Roman Patrick Metzger[2]; Peter Hohenberger[1]; Sergei M Danilov[3]

[1]*Dept. of Surgery, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany;* [2]*Dept. of Pediatric Surgery, University of Leipzig, Leipzig, Germany;* [3]*Dept. of Anesthesiology, University of Illinois, Chicago, United States;* [4]*Dept. of Anesthesia and Critical Care, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany*

Background: Vascular immunotargeting of catalase via Angiotensin-Converting-Enzyme (ACE) attenuates lung injury in an in vivo model of warm lung ischemia and reperfusion. As this might be a promising modality for extension of the viability of banked transplantation tissue, we tested the hypothesis whether treatment of lung allografts with conjugates of ACE antibody with catalase (9B9-CAT) attenuates lung injury associated with hypothermic preservation.

Methods: Rats were treated for 1 hr with mouse IgG (negative), Catalase only (CAT) or Anti-ACE 9B9 conjugated with catalase (9B9-CAT). Lungs were flushed with LPD solution, excised and stored at 4 C for 4 and 8 hrs. Grafts were isolated and reperfused at 37 C for up to 180min after no cold preservation (negative), 4hrs and 8hrs of cold preservation. Peak inspiratory pressure (PIP), pulmonary arterial pressure (PAP), and lung weight were measured online during reperfusion. Antioxidative capacity, catalase activity, and histochemical detection of 9B9 mAbs were measured in frozen lung tissue.

Results: Cold ischemia time of 8 hrs significantly increased PIP, PAP, and pulmonary edema in IgG and CAT treated lungs compared to 9B9-CAT treated lungs ($p<0.001$). Significantly higher catalase activity and antioxidative status was found in lung tissue of animals conditioned with 9B9-CAT after 4 and 8 hrs of cold storage versus animals treated with catalase (CAT) only or animals treated with IgG ($p<0.01$). 9B9-CAT showed significant and homogenous immunohistochemical stainings of ACE-mAbs within lung capillaries.

Conclusions: These results validate immunotargeting by anti-ACE conjugated with catalase as a prospective and specific strategy to augment antioxidative defenses of the pulmonary endothelium in lung transplantation.

037-F SELECTINE MEDIATED LEUKOCYTE ADHESION TO ENDOTHELIAL CELLS IS NECESSARY FOR PDT INDUCED VASCULAR PERMEABILISATION

François Mithieux[1]; Elodie Debefve[1]; Jean Yannis Perentes[1]; Cai Cheng[1]; Stephan Christian Schaefer[1]; Hans-Anton Lehr[1]; Jean-Pierre Ballini[2]; Hubert van den Bergh[2]; Hans-Beat Ris[1]; Thorsten Krueger[1]
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[2]*Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*

Background: Photodynamic therapy (PDT) can modulate the vascular barrier function and increase vessel permeability. The exact mechanism of this effect is unknown. Here, we investigated the role of leukocyte recruitment for PDT induced vascular permeabilisation.
Methods: Fluorescein isothiocyanate dextran (FITC-Dextran, 2000kDa) was injected intravenously after PDT with Visudyne® in nude mice bearing dorsal skinfold chambers (Visudyne®800µg/kg, fluence 300 mW/cm², light dose of 200 J/cm²). Leukocyte interaction with endothelial cells was inhibited by antibody blockage of P-, E- and L-Selectins (MABS group, n=8); control animals had PDT but no antibody injection (group CTRL, n=11). By intravital microscopy, we monitored leukocyte rolling and sticking in-real time before, 90min and 180min after PDT. The extravasation of FITC-Dextran from striated muscle vessels to the interstitial space was determined in-vivo for up to 45 minutes to assess treatment-induced alterations of vascular permeability.
Results: PDT significantly increased the recruitment of leukocytes and enhanced the leakage of FITC-Dextran compared to non-treated animals. Neutralization of adhesion molecules (P-, E-, L-Selectins) not only reduced the recruitment of leukocytes but also significantly decreased the extravasation of FITC-Dextran as compared to CTRL animals ($p<0.05$). Rolling was 28±13 (mean?SEM, number of WBC/30sec*mm vessel circumference) in CTRL vs. 31±8 in MABS (ns) before PDT, 147±71 vs. 9±6 ($p=0.012$) 90 minutes after PDT and 187±55 vs. 13±9 ($p=0.0012$) 180 minutes after PDT. Sticking was comparable in the CTRL and MABS groups
Conclusions: Leukocyte recruitment is necessary for the permeability enhancement effect of PDT. Our results suggest that a direct phototoxic effect of PDT on endothelial cells alone does not lead to increased vessel permeability.

038-F CHEMORESISTANCE IN NON SMALL CELL LUNG CANCER: CAN MULTIDRUG RESISTANCE MARKERS PREDICT THE RESPONSE OF XENOGRAFT CANCER MODELS TO CLASSICAL AND TARGETED THERAPIES?

Johannes Merk[1]; Jana Rolff[2]; Cornelia Dorn[2]; Gunda Leschber[1]; Iduna Fichtner[2]
[1]*ELK Berlin Chest Hospital, Berlin, Germany;*
[2]*Max Delbrück Center for Molecular Medicine, Berlin, Germany*

Background: In chemotherapy for Non Small Cell Lung Cancer (NSCLC) some patients seem to exhibit an intrinsic resistance or develop an acquired resistance under treatment. Resistance markers for a possible treatment failure could be shown in studies on selected lung cancer cell lines but not in recent clinical trials. These conflicting data require further research, so we created a model between cell culture and clinical need to overcome this problem.
Methods: Our study is based on patient derived NSCLC xenografts in a mouse model, which revealed a high coincidence with the original tumor. Protein and mRNA expression of known resistance markers (BCRP, MDR, LRP and MRP1) were analyzed by real-Time PCR and Immunoblotting in 26 control and short term treated xenografts. Chemosensitivity to etoposide, carboplatin, gemcitabine, paclitaxel and erlotinib was compared to the protein and mRNA expression of the multidrug resistance markers.
Results: We found no significant correlation between the response rates and the protein and mRNA expression levels in our 26 xenografts. The present results indicated, that in the in vivo situation the expression levels of multidrug resistance proteins and their mRNA may not play a comparable role in chemoresistance of NSCLC as pointed out in selected tumor cell lines.
Conclusions: The patient-derived xenografts allowed us a detailed investigation of therapy related markers and their dynamic regulation in a well standardized and clinically related way. In consequence to our investigations, multidrug resistance must be regarded to be a multifactorial phenomenon, in which more than the markers analyzed by the present study could be involved.

039-F THORACIC REGIONAL ANALGESIA AFTER THORACOTOMY. A RANDOMIZED STUDY TO COMPARE THREE DIFFERENT PARAVERTEBRAL APPROACHES

Nicolás Moreno-Mata[1]; Guillermo González-Casaurrán[1]; Leire Perea Azcárate[1]; Carlos María Simón Adiego[1]; Rafael Pascual Peñalver[1]; Maria Teresa Biencinto[2]; Enma Lago Novoa[2]; G. Cusati[2]; Maria del Carmen Benito[2]; Federico González-Aragoneses[1]
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Background: Thoracic paravertebral block (TPVB) is a regional anestesia technique used for the early management of post-thoracotomy pain. Thoracic epidural analgesia is considered the gold standard in thoracic surgery; TPVB is an alternative technique that may offer comparable analgesic effectiveness and a better side-effect profile.The objective is to compare three different postoperative analgesic approaches based on TPVB.

Methods: Between 2006 and 2008, 54 patients undergoing elective posterolateral thoracotomy were randomized to three different postoperative analgesia groups. Group 1: one thoracic paravertebral percutaneous catheter at T5-T6 level, before anesthetic procedure; group 2: the same procedure plus incisional analgesia, based in two catheter places into the surgical wound; group 3: two catheter places under direct vision by blunt extrapleural dissection, reaching the space paravertebral. Paravertebral analgesia was provided with the continuous infusion of 0.25% bupivacaine with an elastomeric pump (4 ml/h). Intravenous PCA was added with a device programmed to deliver morphine in bolus doses of 1 mg. The recorded parameters included the total amount of morphine/kg (PCA consumption), VAS scores for pain at rest, movement and cough, FVC and FEV1. Data were collected 4, 8, 12, 24, 48, and 72 h after surgery. Data were analyzed using using ANOVA techniques and Fisher's exact test.

Results: Eighteen patients were included in each analgesia group. No significant differences were observed between groups on demographic dates and postoperative changes of FVC and FEV1 during first three postoperative days. Analgesic quality was greater in the group 2, founding significant differences in VAS results. Also, group 2 patients needed a fewer postoperative intravenous morphine doses during the two first postoperative days (table 1).

Conclusions: The incisional analgesia based in a continuous delivery of local anesthetics into the surgical wound, added to TPVB, significantly improved postoperative pain control while decreasing the amount of opioid analgesia required.

Table 1

	(n=17)	(n=18)	(n=18)	
VAS at rest. Mean and (standard deviation)				
8h	2.2(1)	1.4 (1)	3.1(2)	NS
12h	2.4(1)	1.0 (1)	3 (2)	p<0.01
24h	2.1(1)	0.7(1)	2 (2)	p<0.05
48h	1.2(1)	0.9(1)	0.6(1)	NS
VAS on coughing. Mean and (standard deviation)				
8 h	4.9 (1)	4.1 (2)	5.7 (2)	NS
12h	5.7 (1)	3.9 (2)	5.9 (2)	p<0.05
24h	6.1 (1)	4.4 (2)	5.7 (2)	p<0.05
48h	5.1 (1)	4.2 (2)	4.2 (2)	NS
Cumulative intravenous morphine (mg/kg). Mean and (standard deviation)				
8h	.088 (.06)	.054 (.05)	.127 (.10)	p=.005
24h	.263 (.18)	.171 (.09)	.308 (.21)	p=.041
48h	.303 (.12)	.236 (.10)	.457 (.26)	p=.011

040-F EVALUATION OF VRI (VIBRATION RESPONSE IMAGING) UTILITY IN THE PREDICTION OF POSTOPERATIVE FUNCTION AFTER LUNG RESECTION SURGERY

Unai Jimenez Maestre; Nuria Marina Malanda; Lucia Hernandez Perez; Naia Uribe-Etxebarria Lugariza-Ares; Monica Lorenzo Martin; Juan Carlos Rumbero Sanchez; Rafael Rojo Marcos; Juan Baltasar Casanova Viudez; Juan Bautista Galdiz Iturri; Joaquin Pac Ferrer
Cruces Hospital, Bilbao, Spain

Background: Preoperative radionuclide studies of regional perfusion together with lung function tests are established diagnostic methods for aiding in predicting pulmonary function after resection for lung cancer. VRIxp is a device that records lung sounds and calculates quantitative regional acoustic energy contributed by each lung area. We analyzed the use of VRIxp in calculations of the predicted post-operative (ppo) lung function results by comparing VRIxp measurements to actual results at 1 months postoperative. Additionally, the results achieved by using VRIxp were compared with results achieved by perfusion scan.
Methods: Fifty-five candidates (10F, age=61yrs±10yrs) for lung resection surgery (lung cancer) were referred for preoperative evaluation and were enrolled in the study. All patients had lung function test before the surgery (baseline) and at follow-up. All the patients were recorded with the VRIXP device (Deep Breeze, Or-Akiva, Israel) at baseline; 20 patients underwent perfusion at baseline. Ppo FEV1 values were calculated by subtracting the percent functional uptake or percent acoustic energy of the lung to be resected from the total.
Results: The ppo values based on VRI (15 pneumonectomy and 40 lobectomy procedures) were 64.61%±16.44% and 1.85±0.67 L for FEV1(%) and FEV1(L), respectively. The actual post-operative results were 64.98%±15.84% and 1.83±0.63L. High correlations were found between the predictions based on VRI and the actual results: 0.920794 and 0.935791 for FEV1(%) and FEV1(L), respectively. In the 20 patients with perfusion at baseline, average ppo values for FEV1(%) were 40.07%±10.61% and 39.94%±8.97%, based on VRI and perfusion, respectively. The correlation between the predictions based on VRI and V/Q scan was 0.805068 for FEV1(%).
Conclusions: Predictions based on lung function testing and VRIxp data demonstrated high accuracy in comparison to the actual postoperative results and high agreement with the perfusion estimations.
Further studies may establish that VRI can be used for estimating ppo when perfusion testing is not available.

041-F VANCOMYCIN LUNG CONCENTRATION IN ACUTE AND HYPERACUTE REJECTION MODELS OF LUNG TRANSPLANTATION IN RATS

Jaroslaw Pierog; Bartosz Kubisa; Marek Drozdzik; Janusz Wojcik; Malgorzata Wojtys; Michal Bielewicz; Dominika Witkowska; Juliusz Pankowski; Krzysztof Safronow; Tomasz Grodzki
Pomeranian Medical University, Szczecin, Poland

Background: To assess vancomycin concentrations in allogenic transplanted rat lung tissue in acute and hyperacute rejection models of lung.
Methods: Left lung allotransplantations were performed from male Brown Norway donors to male Fisher F344 recipients in the group of acute rejection model (animals were sacrificed 5 days after transplantation) as well as male Brown Norway donors to male Wistar recipients in the group of hyperacute rejection (animals were sacrificed 2 days after transplantation). Control rats were sham-operated and sacrificed on day 2 or 5, respectively of the experimental model. Rejection was confirmed by blood gas assesssment and lung histological examination sampled at a day of sacrifice. Single dose vancomycin administration 30 mg/kg/bw ip. was effectuated in all animals on day 2 or 5, respectively of the model. The blood and lung specimens (three samples per time point) were sampled 0,5h, 1h, 2h, 4h and 6h from the drug injection.
Results: Gas blood assessment confirmed rejection: Wistar rats – pO2: 44,33±21,73 mmHg; Fisher rats – 50,67±14,30 mmHg. Vancomycin lung concentration (mean±SD) (μg/ml) is presented in table 1 (# means statistically for the model) Vancomycin lung/plasma ratio(mean±SD) ranged from 0,05±0,006 to 0.61±0.17 in Fisher and Wistar transplanted groups and from 0 to 0.2±0.196 in both sham-operated groups. It was significantly higher in both transplanted groups after 6h.
Conclusions: Both acute and hyperacute lung rejection affect distribution of vancomycin in the lung resulting in higher drug penetration, especially in late post doseage period.

Table 1

Vancomycin concentration	0,5 h	1h	2h	4h	6h
Fisher transplanted#	8.13±1.70	7.68±1.12	4.17±2.53	0.66±0.58	0.45±0.39
Fisher sham-operated	5.90±0.23	4.38±0.99	3.51±1.03	0.77±0.67	0
Wistar transplanted	5.58±0,20	5.94±0,34	4.22±0,59	2.66±0.39	1.57±0.59
Wistar sham-operated	7.74±4.17	7.26±6.26	4.84±3.31	1.04±0.58	4.15±0.26

042-F MANAGING THE PNEUMONECTOMY SPACE AFTER EXTRAPLEURAL PNEUMONECTOMY: POSTOPERATIVE INTRATHORACIC PRESSURE MONITORING

Andrea S Wolf; Francine L Jacobson; W Francis Powell; Yolonda Colson; Tamara R Tilleman; William G Richards; David J Sugarbaker
Brigham and Womens Hospital, Boston, United States

Background: Rapid fluid evacuation of the pneumonectomy space can cause contralateral lung hyperexpansion with acute post-pneumonectomy syndrome, compromise to caval return and precipitous drop in cardiac output. We evaluate the efficacy of intrathoracic pressure monitoring and intermittent fluid aspiration to manage the pneumonectomy space.
Methods: Prior to chest closure, a 14F robnell catheter was placed in the pneumonectomy space and connected to pressure tubing to transduce ipsilateral intrathoracic pressure continuously. Central venous pressure monitoring and serial chest x-rays were performed per intensive care routine. Robnell fluid was aspirated in increments of 150cc for persistently elevated intrathoracic pressure, refractory hypotension, mediastinal shift on chest x-ray, or clinical decline. Postoperative imaging was retrospectively re-reviewed for mediastinal shift by a senior radiologist blind to clinical outcome.
Results: From July to December 2008, 24 patients underwent extrapleural pneumonectomy for pleural mesothelioma (median age 65 years, 92% male). Eighteen (75%) of the patients had right-sided disease and 18 (75%) received intraoperative heated chemotherapy. Total robnell fluid aspirated for the first two days was significantly higher in patients who received heated chemotherapy (mean 463cc versus 130cc, p = .011). Marked fluctuation in central venous pressure occurred in only 2 patients, one of whom required large total aspiration volume and one of whom died of multi-organ failure. Review of patient chest x-rays from this time period revealed that 76% of patients had a stable or improving mediastinal contour on the first day, while 89% had a stable or improved mediastinal contour on the second.
Conclusions: Intrathoracic pressure monitoring can effectively guide intermittent fluid evacuation of the pneumonectomy space prior to onset of clinical signs or symptoms, avoiding the cardiopulmonary risks of rapid fluid removal. Even for patients treated with intraoperative heated chemotherapy, who experienced an in increased need for drainage, monitoring ipsilateral pressure enabled prompt intervention to maintain intrathoracic pressure stability.

043-F METALLOPROTEINASES EXPRESSION MRNA IN LUNG TISSUE OF PATIENTS WITH NSCLC AND BENIGN PULMONARY DISEASE.

Jarmil Safranek[1]; Vladislav Treska[1]; Ondrej Topolcan[2]; Lubos Holubec[2]
[1]*Department of Surgery, Charles University and Faculty Hospital, Pilsen, Czech Republic;*
[2]*Second Internal Clinic, Charles University and Faculty Hospital, Pilsen, Czech Republic*

Background: We compared expression of MMP-7, MMP-9, TIMP-1 and TIMP-2 mRNA among tissue samples of NSCLC, surrounding carcinoma free lung tissue and benign lung disease tissue. We also evaluated the differences of expression in stages of NSCLC.
Methods: Tissue samples were obtained from 91 patients with NSCLC who underwent a surgery in the years 2005-2007. In the ´benign group´ there were 12 patients operated on for bullous emphysema or interstitial lung process. We assessed expression of mRNA using PCR method.
Results: We demonstrated significantly higher expressions of mRNA MMP-7, MMP-9 and TIMP-1 in NSCLC in comparison with normal lung tissue of the same patients ($p=0.0003$; $p<0.0001$ and. $p=0.0018$). Similar results were detected in histological subgroups: squamous cell lung cancer vs. normal tissue ($p=0.0198$; $p=0.0015$ and $p=0.0366$), and adenocarcinoma vs. normal tissue ($p=0.0045$; $p<0.0001$ and $p=0.0140$). Expression of MMP-7 was found significantly higher in tumor tissue vs. lung tissue of benign diseases ($p < 0.02$), Similar, result were recorded in histological subgroups: squamous vs. benign tissue ($p=0.0198$) and adenocarcinoma vs. benign tissue ($p=0.0198$). Expression of MMP-9 was significantly higher only in adenocarcinoma subgroup vs. benign tissue ($p=0.0412$). We did not recorded any differences in expression of mRNA between stage IA and stage IB-IIIB of NSCLC.
Conclusions: Significantly higher expression of MMP-7 and MMP-9 in tumor than in its surrounding tissue and also benign lung disease tissue supports an important role of these metalloproteinases in growth of lung carcinoma. TIMP-1 expression is increased only in carcinoma, but not in lung with benign disease. The expressions of TIMP-2 are increased neither in carcinoma nor benign groups. We did not find the relation between MMP-7, MMP-9, TIMP-1, TIMP-2 and carcinoma stage. Also we did not prove the differences between their expressions in cancer free (normal) tissue and benign lung tissue.

Supported by the grant IGAMZCR9343-3 and VZ 0021620819.

NOTES

NOTES

Tuesday, 2 June 2009
14:00 – 15:30
Session 7 – Chest Wall / Diaphragm / Pleura

044-O REPAIR OF CHEST WALL DEFORMITIES: 10 YEARS OF EXPERIENCE WITH 744 OPERATIONS.

Jaroslaw Adamczak; Krystian Pawlak; Pawel Zielinski; Cezary Piwkowski; Mariusz Kasprzyk; Wojciech Dyszkiewicz
Department Of Thoracic Surgery, Karol Marcinkowski University of Medical Sciences, Poznan, Poland

Background: To review the one institutional surgical experience with chest deformities repair during a 10-year period
Methods: From 1/1999 to 12/2008, 584 patients underwent surgical correction of chest wall deformities. Patients' mean age was 18.3 years (7 to 49 years), 81% were male and 19 % were female. The majority of them (458 patients) were operated on because of pectus excavatum deformity. The remaining patients because of pectus carinatum (108 patients), combined excavatum and carinatum (40 patients) and the rest secondary to other rare deformities (16 patients). Total of 744 operations were performed. The primary procedures were performed in 551 patients, the secondary in 63 cases, some of them had been operated previously elsewhere. Additionally, 122 patients after the Nuss procedure completed the treatment and the bars were removed. In 8 cases the operations were performed as treatment of complications. The surgical methods used in the treatment were: a modified Ravitsch repair, the Nuss method, combined Ravitsch-Nuss method, silicon implants, shortening of the ribs or our own modifications. The follow-up was performed from one to 60 months after the treatment was finished.
Results: There were no deaths or life-threatening complications. The most often complications observed were: residual pneumothorax, fluid accumulation in pleural cavity and a prolonged pain. Eight patients required reoperations because of large pneumothorax, bleeding, or bar displacement. There was no infection of the metal bar and silicon implants. 95% of all patients showed very good and good correction. The follow-up data revealed a significant improvement of psychosocial and physical well-being after the treatment.
Conclusions: The chest wall deformities can be repaired with a low rate of complications, a short hospital stay, and excellent longterm physiologic and cosmetic results. Modifications of the original method, surgical accuracy, help to increase the number of good results, decrease complication rate and to accelerate acquirement of expertise

045-O SHOULD CHEMOTHERAPY BE GIVEN BEFORE OR AFTER EXTRAPLEURAL PNEUMONECTOMY FOR MALIGNANT PLEURAL MESOTHELIOMA ?

Bram Balduyck; Apostolos Nakas; Antonio E. Martin-Ucar; David A Waller
Thoracic Surgery, Glenfield Hospital, Leicester, United Kingdom

Background: It is widely accepted that extrapleural pneumonectomy (EPP) for malignant pleural mesothelioma (MPM) should be performed as part of a multi-modality therapy program. Chemotherapy has conventionally been given postoperatively but there is recent interest in preoperative chemotherapy. The geographical variability in our oncological practice has allowed us to compare the impact of preoperative versus postoperative systemic chemotherapy in this setting.
Methods: From a prospective database 118 consecutive patients who underwent EPP for resectable epithelioid or biphasic MPM were analyzed, 94 patients (86.1% male, median age 57.0 years) were included. 29 patients received preoperative chemotherapy and 65 were treated in an intention-to-treat basis with postoperative chemotherapy. The choice of regime was dependent on referring oncologist preference. Immediate and late outcomes were compared using the Mann-Whitney U test, Kaplan-Meier method and the Log-rank test.
Results: The two groups has similar demographics and surgical stage. 2 of 29 (7%) patients progressed on preoperative chemotherapy and became inoperable; 30 of 65 (46%) patients did not proceed to postoperative chemotherapy due to poor health. Both groups received similar cisplatin-based doublet chemotherapy regimes. No significant differences in perioperative recovery could be seen with exception of a significant better 90-day mortality in de postoperative chemotherapy group(20.7% vs 6.2%, p
Conclusions: Whilst the timing of chemotherapy does not compromise perioperative recovery there is no survival evidence to support routine use of pre-EPP chemotherapy.

table

	preoperative chemotherapy n=29	preoperative chemotherapy n=65	p-value ns: non significant
male/female	25/4	56/9	ns
median age (years)	58.0	56.0	ns
IMIG stage I	6.7%	10.8%	ns
stage II	10.3%	7.7%	ns
stage III	44.8%	63.1%	ns
stage IV	37.9%	18.5%	ns
in-hospital stay (days)	25.0	14.5	ns
major complications	34.5%	21.5%	ns
30-day mortality	6.9%	6.2%	ns
90-day mortality	20.7%	6.2%	p<0.05
1-year survival	62.1	70.8	ns
2-year survival	31.0	40.0	ns
median survival (months)	17.9	19.1	p<0.05

046-O USE OF INTRAPLEURAL STREPTOKINASE FOR MAINTAINING BETTER LUNG EXPANSION IN PATIENTS WITH MALIGNANT PLEURAL EFFUSIONS: A RANDOMISED CONTROLLED STUDY

Erdal Okur; Cagatay Tezel; Gokcen Sevilgen; Gokhan Ergene; Volkan Baysungur; Semih Halezeroglu
Sureyyapasa Chest Diseases and Thoracic Surgery Teaching Hospital, Istanbul, Turkey

Background: Malignant pleural effusion deteriorates quality of life significantly due to dyspnea. Although pleurodesis provides an effective palliation, it can be performed only when the lung is fully expanded after drainage of effusion. In some patients, a fibrin deposit on visceral pleural surface prevents lung re-expansion after drainage. The efficacy of intrapleural fibrinolytics which have been successfully used in complicated parapneumonic effusion was investigated in patients with malignant pleural effusion in this study.
Methods: Forty seven patients with malignant pleural effusion were randomly allocated into 2 groups. In fibrinolytic group (n=24), 3 cycles of 250000 U intrapleural streptokinase was administered in 12 h intervals starting on the 2nd or 3rd day after drainage. Only pleural drainage was done in control group (n=23). Pleuredesis with 5 mg talc slurry was performed in all patients who had lung re-expansion after drainage. Characteristics of patients in two groups, as well as the amount of daily pleural drainage, lung expansion assessed on chest X-ray and the success of pleurodesis were compared. The amount of pleural drainage on the days before and after administration of intrapleural streptokinase in fibrinolytic group was also compared.
Results: Patients' characteristics were similar in both groups. No complication occurred due to administration of intrapleural streptokinase. Lung expansion could be maintained in 23 of 24 (96%) patients in fibrinolytic group and 17 of 23 (74%) patients in control group (p=0.035). In fibrinolytic group, the mean amount of daily pleural drainage was 425 ml before administration of streptokinase and it increased to 737.5 ml after the administration (p=0.011). Although the recurrence rate of effusion was lower in fibrinolytic group (26% versus 44%), the difference was not statistically significant.
Conclusions: Intrapleural administration of streptokinase is advisable when the adequate lung re-expansion for pleurodesis could not be achieved after pleural drainage in patients with malignant pleural effusion.

047-O STAGING ALGORITHM FOR DIFFUSE MALIGNANT PLEURAL MESOTHELIOMA

Jolanta Hauer; Lukasz Haue; Juliusz Pankowski; Tomasz Nabialek; Artur Szlubowski; Artur Szlubowski; Marcin Zielinski
Pulmonary Hospital, Zakopane, Poland

Background: A value of the algorithm of preoperative mediastinal nodal staging with EBUS/EUS and transcervical extended mediastinal lymphadenectomy (TEMLA) combined with laparoscopy/peritoneal lavage and cytology is analyzed to establish the realistic criteria for radical multimodality treatment of Diffuse Malignant Pleural Mesothelioma (DMPM).
Methods: A proposed algorithm included imaging studies (CT, PET/CT), thoracoscopy with multiple pleural biopsies and talc pleurodesis, EBUS/EUS and one-stage TEMLA and laparoscopy/peritoneal lavage and cytology of the fluid.
Results: 42 patients with DMPM were diagnosed from 1.1.2004 to 31.12.2008. There were 16 women and 26 men in age 43-77 (mean 57.8). There were 31 epithelioid, 2 sarcomatoid and 9 biphasic type DMPM patients. 21/42 patients were considered possible candidates for multimodality treatment. EBUS/EUS was performed to stage the mediastinal nodes. In 3/21 patient's metastatic nodes were discovered. In the rest of 18 patients simultaneous TEMLA and laparoscopy/peritoneal lavage and cytology of the fluid were performed. In 3 patients there were metastatic mediastinal nodes, in 6 patients there were malignant cells in peritoneal fluid and in 2 patients both metastatic nodes and malignant peritoneal cells were found. Finally, 7/42 (16.7%) patients were referred for thoracotomy. There were 3 exploratory thoracotomies (chest wall infiltration) and 4 pleuropneumonectomies with the subsequent chemo- and radiotherapy.
Conclusions: The proposed algorithm of detailed preoperative staging with CT, PET/CT, thoracoscopy, EBUS/EUS, TEMLA and laparoscopy/peritoneal lavage spared majority of patients from futile surgery.

048-O AWAKE VIDEOASSISTED PLEURAL DECORTICATION FOR EMPYEMA THORACIS

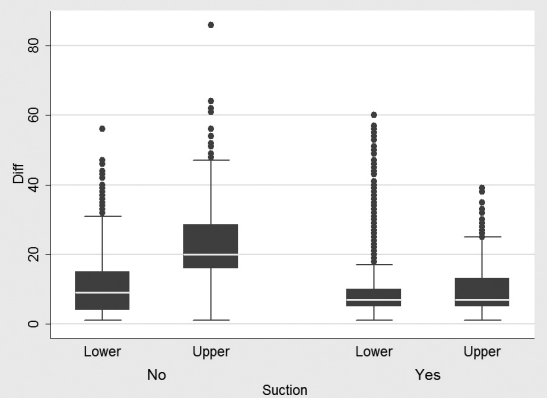
Federico Tacconi; Eugenio Pompeo; Tommaso Claudio Mineo
Tor Vergata University-Thoracic Surgery Division, Rome, Italy

Background: We describe technical features and results of videoassisted pleural decortication for empyema thoracis performed in awake patients.
Methods: This retrospective analysis entailed a cohort of 19 patients (mean age: 59±13 years) undergoing awake video-assisted thoracoscopic pleural decortication under epidural anesthesia (N=15) or paravertebral blocks (N=4) between 2004 and 2008. Baseline and perioperative data including the degree of postoperative lung re-expansion at 48 hours were recorded.
Results: Origin of the empyema was parapneumonic (N=14), post-traumatic (N=3) and neoplastic (N=2). All patients underwent previous conservative management. Symptoms duration averaged 36±10 days. Comorbidities included COPD (N=4), HIV-infection (N=1), diabetes mellitus (N=2), and cirrhosis (N=1). Operation was performed via a 3-trocar approach in 15 patients whereas 4 patients with major pleural thickening underwent video-assisted lateral thoracotomy. Operative time averaged 53±15 minutes. Perioperative data analysis showed no deterioration in arterial oxygenation (Δ-mean PO2/FiO2: 1.1 mmHg, P=0.6). Transient permissive hypercapnia (<55 mmHg) developed in 3 patients with no need of conversion to general anesthesia. Mean pain level assessed by a Visual Analog Score within 1 hour postoperatively was 4±1, and it was significantly reduced on postoperative day 1 (P=0.03). There was neither mortality nor major morbidity. Hospitalization averaged 6±1 days. At postoperative chest x-ray, lung re-expansion was rated as complete in 16 patients, satisfactory (>80%) in 2 patients and unsatisfactory in one 86 years-old patient with pleural mesothelioma who has the chest drain still in place 5 months after surgery. No patient had recurrence of the empyema.
Conclusions: In our study, awake video-assisted pleural decortication proved feasible and resulted in satisfactory lung re-expansion in 95% of patients. We hypothesize that spontaneous ventilation facilitated both identification of the correct plane for dissection thus resulting in a lesser surgical injury on the underlying lung.

049-O CHEST DRAINAGE SUCTION DECREASES DIFFERENTIAL PLEURAL PRESSURE AFTER UPPER LOBECTOMY AND HAS NO EFFECT AFTER LOWER LOBECTOMY

Gonzalo Varela[1]; Alessandro Brunelli[2]; Marcelo F Jiménez[1]; Luca Di Nunzio[2]; José Luis Aranda[1]; Michele Salati[2]; Nuria Novoa[1]
[1]*Thoracic Surgery Service Salamanca University Hospital, Salamanca, Spain;*
[2]*Unit of Thoracic Surgery Umberto I Regional Hospital, Ancona, Italy*

Background: Improving knowledge of pleural physiology in the postoperative period could lead to better postoperative care. The aim of this investigation is to evaluate the effect of postoperative suction on inspiratory, expiratory and differential pleural pressures after upper or lower lobectomy.
Methods: Records of intrapleural pressures from 24 lobectomy patients were selected for study. All patients had normal preoperative pulmonary function tests (FEV1>80% and FVC/FEV1>70%), and neither postoperative air leak nor any other postoperative complication. We selected 6 cases of each type of lobectomy (RUL, RLL, LUL, LLL). In 3 cases of each group, no suction was indicated, while in the other 3 cases, chest tubes were placed under 20 cmH2O suction, according to standard local perioperative care protocol in each participating centre. Inspiratory and expiratory pleural pressures were measured at 2 minutes intervals by an electronic device using a DigiVent® suction chamber. Recording started 5-10 hours after closing the chest, and included 5 consecutive hours during the first postoperative night, with the patients at rest in 30-45º sitting position. No evidence of pneumothorax existed during the recording time. The influence of lobectomy site (upper or lower) and suction on inspiratory, expiratory and differential pressures were evaluated by ANOVA tests.
Results: In the group of cases under no suction, upper lobectomy patients had larger differential pressures (22.6 in upper vs 11.5 cmH2O in lower lobectomy cases, p<0.001), differential pressure decreased in patients under suction (9.1 in upper vs 11.1 cmH2O in lower lobectomy cases, p<0.001), (Figure 1) and the effect was mainly due to a less negative inspiratory pressure.
Conclusions: Pleural suction leads to a large decrease of differential pleural pressure after upper pulmonary lobectomy. The evidence of changes of intrapleural pressures according to different chest tube settings and its possible influence on postoperative work of breathing warrant future trials on active pleural management.



Tuesday, 2 June 2009
14:00 – 15:30
Session 8 – Pulmonary Neoplastic

050-F T2 NON SMALL CELL LUNG CANCER: PROGNOSTIC SIGNIFICANCE OF VISCERAL PLEURAL INVASION AND TUMOR SIZE .10 YEAR EXPERIENCE FORM RETROSPECTIVE SINGLE CENTRE STUDY

Bassel Al-Alao; Eilis McGovern; Kenneth O'Byrne; Vincent K Young
St. James Hospital, Dublin, Ireland

Background: The study was conducted to analyse the influence of size, visceral pleural level of invasion and other clinical and pathological variables on long-term survival and its prognostic significance in AJCC T2 non-small cell lung cancer group.
Methods: 350 T2 NSCLC patients were identified from our database form January 1998 to December 2007. Patients were analysed retrospectively and grouped into three different groups based on size (T2S = 176), visceral pleural involvement (T2P = 163) or other T2 definitions not based on size or pleura (T2C = 11). 116 T1 NSCLC patients were identified and used for comparison. Visceral pleura level of invasion was analysed in the same study and three groups were generated based on level of invasion: through visceral pleura (n = 49), into visceral pleural but not through (n = 113) and no involvement of pleura (n = 188). Differences among groups were analysed by univariate analysis using log rank test, and prognostic factors influencing long-term outcome were analysed by multivariate Cox regression model.
Results: Median Survival (3.22) years and 2, 5 and 10 years survival were 52%, 36% and 32% respectively. No significant difference in median survival was identified between T2 groups in terms of size, pleura or neither (p = 0.2). No difference in outcome was seen between patients with tumour size <=3.0 cm from T2P & T2C groups combined (n=52) when compared to T1 group (n = 116)(p = 0.187). No significant difference among the three visceral pleural groups was noticed based on level of invasion by tumour (p = 0.863). Univariate analysis identified differences in long term outcome in gender (p = 0.001), age (p=0.005), smoking groups (p = 0.002), histology sub-types (p = 0.021), number of lymph nodes removed (p < 0.0001), tumour size (p = 0.001), extensive mediastinal involvement (p = 0.048), post-operative pathological staging (p = 0.005) and type of surgical resection (p = 0.042). Multivariate Cox regression model identified gender (p = 0.023), age (p=0.001), tumour size (p = 0.001), number of lymph nodes removed (p
Conclusions: Although T2 Descriptor currently differentiates between size and pleural involvement, our study showed that there is no such impact on outcome from that difference and small size tumours should stay as T1. Visceral pleural level of invasion by tumour dose not influence outcome. Female gender, younger age, smaller tumour size, maximum number of lymph nodes removed and early AJCC stage were all independent predictors of better prognosis.

051-F WHAT IS THE SHELF LIFE OF PET/CT STAGING OF THE MEDIASTINUM IN NON-SMALL CELL LUNG CANCER?

Karen Booth[1]; Gerard Hanna[2]; Niall McGonigle[1]; James McGuigan[1]; Kieran McManus[1]; Joe O'Sullivan[3]; Tom Lynch[4]; Jonathon McAleese[1]
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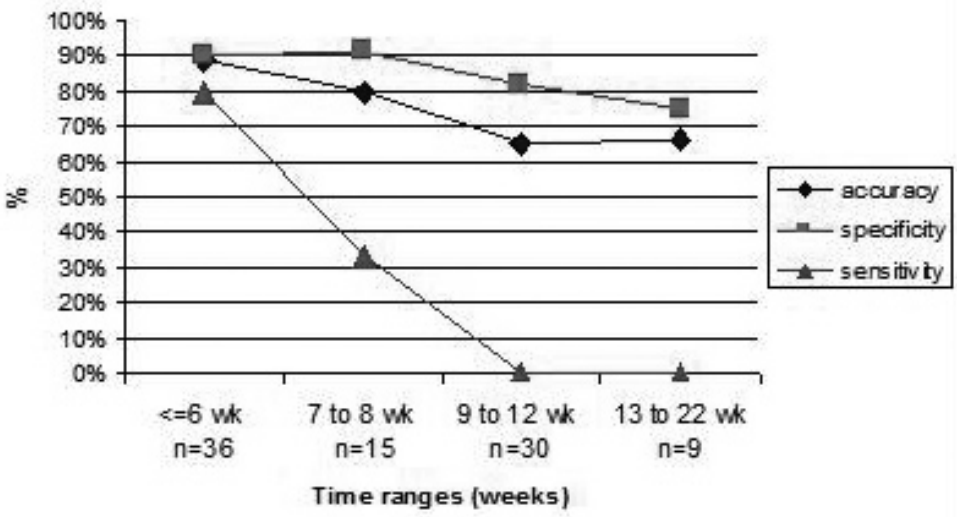
[2]*Department of Clinical Oncology Belfast City Hospital, Belfast, United Kingdom;*
[3]*Centre for Cancer Research and Cell Biology Queens University, Belfast, United Kingdom;*
[4]*Department of Nuclear Medicine Belfast City Hospital, Belfast, United Kingdom*

Background: Staging PET-CT scans can determine suitability for curative intent surgery. We report a two year retrospective series assessing the accuracy of PET-CT staging in NSCLC compared to pathological analysis post-operatively.
Methods: All patients with NSCLC attending our regional referral centre (excluding those who had induction chemotherapy) who had staging PET-CT scans and pathological nodal sampling between June 2006 and June 2008 were analysed. In total 85 patients with 90 mediastinal (N2) and 80 hilar (N1) nodes were included in the analysis
Results: The sensitivity of PET-CT scans was 23%, with specificity 83% and overall accuracy 77%, which was lower than expected from the literature. However, those scans taken ≤ 6 weeks before pathological sampling were significantly more accurate (Fisher exact test p=0.024) with sensitivity 80%, specificity 90%, and accuracy 88%, compared to 10%, 84% and 70% in scans older than 6 weeks.
Conclusions: We recommend that if a PET-CT scan is older than 6 weeks management would be altered by the presence of N2 nodes, therefore re-staging of the mediastinum should be undertaken.

Accuracy by timing - PET-CT to Surgery



052-F STAGE IIIA (N2) NSCLC: THE NEED OF A NEW CLASSIFICATION WITH THERAPEUTIC AND PROGNOSTIC IMPACT.

Felipe Braga[1]; Juliana Guarize[1]; Giulia Veronesi[1]; Piergiorgio Solli[1]; Domenico Galetta[1]; Fernando Vannucci[1]; Patrick Maisonneuve[1]; Gilberto Perez Cardoso[3]; Lorenzo Spaggiari[1]
[1]*European Oncoligic Institute, Milan, Italy;* [2]*University of Milan, Milan, Italy;*
[3]*Federal Fluminense University, Nietroi, Brazil*

Background: The last ACCP guideline states that for all N2 patients chemoradiation therapy is the gold standard treatment. However, stage-IIIA (N2) NSCLC is a heterogeneous disease with different therapeutic and prognostic impact.
Objective: To analyse survival and prognostic factors of 325 consecutive pN2 patients treated from 1998 to 2007 to create a sub¬classification with therapeutic and prognostic significance.
Methods: pN2 patients were divided into three groups: group 1 (G1), "occult" N2 disease: diagnosed after surgery for supposed clinical stage I and II (n=157); group 2 (G2), "clinical" N2 disease: confermed by preoperative mediastinoscopy, treated with induction chemotherapy and surgery (n=89) and, finally, group 3 (G3) "bulky or not resectable" N2 disease: diagnosed by mediastinoscopy, and medically treated (n=79).
Results: The 5-year probability of survival were 40% (G1), 30% (G2) and 10% (G3) respectively ($p<0.001$). In G1, type of resection, number of mediastinal metastases (1 vs >2), adjuvant radiotherapy were not significant, whereas T status (T1 vs T2 vs T3) was borderline ($p=0.052$). The 5-yrs survival of pT1, pN2 patients was 60%. In G2 all variables were not significant, and the down staging (N2 vs N0-N1) did not influence survival. G3 presented worse prognosis. Adjuvant radiotherapy did not influence disease free-survival or overall survival in both groups (1 and 2). Recurrences were mainly systemic in all groups; suggesting, in this way, the systemic and not local nature of such an advanced disease.
Conclusions: N2 NSCLC should be classified according the heterogeneous clinical presentation of the disease, and treatment individualized. G1 should be included in stage II and initially treated by surgery, G2 included in Stage IIIA and treated by induction chemotherapy and surgery, and G3 included in stage IIIB and treated by chemoradiation therapy. Given the systemic nature of the disease, adjuvant chemotherapy (+/- target therapy) instead radiotherapy should be used in G1 and G2.

053-F FACTORS ASSOCIATED WITH UNEXPECTED MEDIASTINAL LYMPH NODE INVOLVEMENT AT SURGERY FOR NON SMALL CELL LUNG CANCER: RESULTS FROM THE DANISH LUNG CANCER REGISTRY

Ole Dan Jørgensen
Dept. of Heart-, Lung-, and Vascular Surgery, Odense, Denmark

Background: Treatment and survival of patients with Non Small Cell Lung Cancer (NSCLC) is strongly dependent on the TNM classification at the time of diagnosis. Ideally, the correct TNM classification should be established before surgery to ensure that the proper treatment is selected. In this study we identify factors associated with unexpected mediastinal lymph node involvement at surgery.
Methods: We identified 2.348 consecutive patients nationwide who had surgery for NSCLC in the period 2004-2007. Surgery was performed at 7 centers. All patients were staged with CT followed by invasive mediastinal examination if enlarged lymph nodes were detected. Factors examined were: age, sex, year of surgery, invasive mediastinal examination, surgical risk, type of thoracotomy, type of resection, histological subtype, number of lymph node stations samled, and T-classification.
Results: Unexpected mediastinal lymph node involvement was detected in 300 of 2.348 patients (12.8%). The risk was increased in patients having explorative surgery only (OR = 4.03 (2.16-7.52)) and in patients having pneumonectomy (OR = 1.70 (1.21-2.39)). Patients having thoracoscopic surgery had a decreased risk (OR=0.52 (0.27-0.99)). The risk increased with more advanced T-classification ($p<0.01$) and varied significantly between the centers ($p<0.01$).
Conclusions: The number of patients with unexpected mediastinal lymph node involvement is in accordance with similar figures reported in the literature. The increased risk in patients having explorative surgery and pneumonectomy can be explained by these types of patients often having relatively large central tumors. Decreased risk in patients having thoracoscopy can likewise be explained because these patients often are having small, peripheral tumors, but it is also possible that lymph node sampling is less adequate using this operative technique. The variation between centers is of some concern, since the difference most likely is caused by variations in the quality of the preoperative invasive assessment of the mediastinal lymph nodes.

054-F DOES ANATOMICAL SEGMENTECTOMY ALLOW AN ADEQUATE LYMPH NODE (N) STAGING FOR NSCLC?

Alberto Ruffato[1]; Sandro Mattioli[1]; Luca Ferruzzi[1]; Vladimiro Pilotti[1]; Piero Candoli[2]; Frank D'Ovidio[3]

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Background: Anatomical segmentectomy is again under evaluation for cure of T1 N0 NSCLC. Whether segmentectomy does permit or not an adequate resection of nodal stations for staging or cure is still pending.

Methods: We compared 36 (67% male) anatomical segmentectomies (S) and 58 (76% male) lobectomies (L), performed for T ≤ 2cm N0 M0 at the preoperative work up. Dissection of N stations number 4/5/6/7 was identical in (S) and (L), stations number 10, 11 and 12 with the segmental 13 were also dissected carefully during (S).

Results: Number and type of surgical procedures, histology, p Stage, follow up are detailed in table 1.The mean size of the resected lesions was 1.7 ± 0.7 cm in (S) and 1.8 ± 0.47 cm (p=0.409) in (L). (S) resection margins were free in 100%. Mean number of dissected lymph nodes was 9.6 ± 3.4 in (S) compared to 17 ± 7 in (L) (p=0.001), for N1 it was 5 ± 1.8 in (S) versus 10.2 ± 4.2 in (L) (p=0.001), for N2 was 5.2 ± 2.9 in (S) versus 6.8 ± 4.7 in (L) (p=0.078). In (S) 100% was N0, in (L) 86,4% was N0, 6.8% N1, 6.8%N2 (4pts). Actuarial 24 months free from recurrence survival was 100% for (S) and 96% for (L) , p=0.889).

Conclusions: If compared to standard lobectomy, anatomical segmentectomy for T ≤ 2cm N0, NSCLC provides a lower number of N1 and the same number of N2 nodes for pathological examination, 7% of patients may be under-staged (for N1), but the 24 months free from recurrence survival is equivalent.

	Right Lung		Left Lung		
Lobe	**Segmentectomies**	**Lobectomies**	**Segmentectomies**	**Lobectomies**	
Upper Lobe	6 S1-2 5 S1 3 S3	24	9 S1-2 3 S4-5	20	
Middle Lobe	1 S5 2 S8-9	1			
Lower Lobe	1 S10 1 S6	10	5 S7	3	
Total	**19**	**35**	**17**	**23**	**36 58**
Histology	**Segmentectomies**		**Lobectomies**		**p**
Adenocarcinoma	19 (53%)		35 (60%)		0.493
Squamous cell carcinoma	12 (33%)		14 (24%)		
Miscellaneous*	5(14%)		9 (16%)		
Follow up (median)	24 (r. 1-87)		34 (r. 3-137)		
Morbidity - Mortality	13.8% (5/36) - 0		15,5% (9/58) - 0		0.941
p Stage	Ia 36/36 (100%)		Ia 47/58 (81%) Ib (pleural inv.) 3/58 (5%) IIa 4(T1N1Mx)/58 (7%) IIIa 4 (2T1N1-2Mx, 2T1N2Mx/58 (7%)		

*Miscellaneous represents 11 bronchioloalveolar carcinomas 2 typical carcinoid and 1 undifferentiated NSCLC.

Table 1

055-F THE REQUIREMENT OF MEDIASTINOSCOPY ON STAGING OF NSCLC PATIENTS WITH NEGATIVE MEDIASTINAL LYMPH NODE UPTAKE ON PET-CT IMAGING

Altan Kir; Ilker Iskender; Aysun Kosif Misirlioglu; Hakan Sonmez; Hasan Oguz Kapicibasi; Salih Zeki Kadioglu; Altug Kosar; Tulin Esin Sevim; Ali Atasalihi
Süreyyapasa Chest Diseases and Thoracic Surgery Training and Investigation Hospital, Istanbul, Turkey

Background: In this study, the requirement of invasive mediastinal staging in the evaluation of occult N2 disease in non-small cell lung cancer (NSCLC) patients potential resectable with negative mediastinal lymph node uptake of F-18 fluorodeoxyglucose (FDG) marked integrated positron emission tomography-computerised tomography (PET-CT) is investigated.
Methods: PET-CT and mediastinoscopy or thoracotomy is performed on consecutive 270 NSCLC patients between September 2005 – September 2007. One hundred and forty-five patients with positive mediastinal lymph nodes on PET-CT (n:125), receiving neoadjuvant chemotherapy (n:11) and time interval longer than 6 weeks between PET-CT and mediastinoscopy (n:9) were excluded from the study. Patients with negative mediastinoscopy result over 125 of the examined patients underwent surgical resection. The pathological results were correlated with CT and PET-CT findings.
Results: The incidence of N2 disease in NSCLC patients with negative mediastinal lymph node uptake on PET-CT was 4.0% (5 of 125). The highest incidence of occult N2 involvement were in right lower paratracheal stations (n:3) and subcarinal stations (n:3). Mean SUVmax value of primary tumour were found 14.3 ± 6.9. In univariate analysis, low FDG uptake of the primary tumour ($p = 0.04$) were significant for occult N2 disease. However patients with centrally located tumours, PET-CT positive uptake in N1 nodes and enlarged lymph nodes (> 1 cm) on CT scan were not statistically significant.
Conclusions: We recommend preoperative cervical mediastinoscopy in NSCLC patients with negative mediastinal lymph node uptake of positron emission tomography on low FDG uptake of the primary tumour in order to rule out occult N2 disease.

056-F LUNG CANCER IN WOMEN - PROGNOSTIC DIFFERENCE IN GENDER DIFFERENCE

Kenji Suzuki; Kazuya Takamochi; Shiaki Oh
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Background: Recently biological difference between men and women has been reported as to lung cancer. However there have been few studies on clinicopathological feature and prognosis for lung cancer in women.
Methods: Retrospective study was performed on 804 surgically resected lung cancers at our institute between 1996 and 2007. Lung cancer in women was found in 266 (33%) patients. Age ranged from 23 to 86, with a median of 64. We investigated the difference of clinicopathological features between men and women. The following features were evaluated using uni- and multi-variate analyses; age, smoking status, preoperative carcinoembryonic antigen (CEA) titer, maximum tumor dimension, histological typing, status of lymph node metastasis, the grade of differentiation, vascular invasion and lymphatic invasion by tumor cells.
Results: Significant difference was found in preoperative CEA, histological typing, and smoking status between men and women. Adenocarcinoma was found in 232 (87%) out of 266 lung cancers in women, and this difference was statistically significant ($p<0.0001$). Among adenocarcinoma of the lung well differentiation was more frequently found in female lung cancer (men 44% vs. women 59%: $p=0.0007$). Prognosis of lung cancer in women was significantly better than that in men (5 year survival: 75% vs. 65%: $p=0.0116$). Based on multivariate analysis, well differentiation of tumor and vascular invasion were selected to be significant prognostic factors in female lung cancer (Table 1).
Conclusions: Prognosis of lung cancer in women was significantly better than that in men, and adenocarcinoma was dominant in lung cancer in women. There were significant relationship between gender and the grade of differentiation in adenocarcinoma. The grade of differentiation was also one of the significant prognostic factors in lung cancer in women. This might explain the better prognosis of lung cancer in women.

Multivariate analysis in lung cancer in women

variables	hazard ratio	95% CI
well differentiation	3.554	1.887 - 6.695
vascular invasion	0.206	0.072 - 0.590

057-F SURGICAL TREATMENT OF SYNCHRONOUS MULTIPLE LUNG CANCER LOCATED IN A DIFFERENT LOBE OR LUNG: GOOD SURVIVAL IN NODE-NEGATIVE SUBGROUP

Luca Voltolini; Cristian Rapicetta; Luca Luzzi; Claudia Ghiribelli; Piero Paladini; Giuseppe Gotti
Thoracic Surgery Unit, University Hospital of Siena, Siena, Italy

Background: The IASLC Staging Committe proposes for the next revision of TNM, that additional nodules in a different lobe of the ipsilateral lung moves from an M1 designation to T4, while additional nodule(s) in the contralateral lung should be classified as M1a, because of poorer survival. We analysed the survival after surgery of patients presenting with synchronous lung cancers located in a different lobe or lung.
Methods: A database of 1551 patients operated on for NSCLC between 1990 and 2007, was evaluated for unilateral (other lobe) (n=15) and bilateral (n=28) synchronous multiple primary lung cancers. The relationships among the location of tumors, histology, date of surgery (before and after 2000), lymph node metastasis, type of surgery, adjuvant therapy and survival were analyzed.
Results: The 5-year survival for all synchronous multiple primary lung cancers (n=43) was 34%, with a median survival of 32 months. Postoperative mortality was 7%.
On univariate analysis, only lymph node metastasis and surgery before the year 2000 affected the overall survival adversely, and both prognostic factors manteined a statistically significance on multivariate analysis. The 5-year survivals were 57% and 0 for patients without (n=25) and with (n=18) lymph node metastasis, respectively (p=0.004), and were 43% and 18% for patients operated on after (n=27) and before (n=16) the year 2000, respectively (p=0.01), probably reflecting a better selection process related to the extensive use of PET scanning. The 5-year survival was not different between bilateral (43%) and unilateral (27%) synchronous lung cancers (p=n.s.).
Conclusions: Our data support complete surgical resection of synchronous multiple lung cancers in patients with node-negative NSCLC.
Even patients with bilateral lung cancer should not be treated as metastatic disease. Provided there is no evidence of node and distant metastasis, after an extensive preoperative work-up, including PET scanning and mediastinoscopy, bilateral surgical resection should be performed in fit patients.

058-F NON-SMALL CELL LUNG CANCER RESTAGING WITH THE TRANSCERVICAL EXTENDED MEDIASTINAL LYMPHADENECTOMY

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Background: To analyze a diagnostic yield of the transcervical extended mediastinal lymphadenectomy (TEMLA) in restaging of the mediastinal nodes after neoadjuvant chemo- or chemo-radiotherapy for non-small cell lung cancer (NSCLC).
Methods: 58 patients were restaged from 1.1.2004 to 31.12.2008. There were 10 women and 48 men in age 43-71 (mean 57.8). There were 41 squamous cell carcinoma, 11 adenocarcinoma, 1 pleomorphic carcinoma and 5 NSCLC. 50 patients underwent neoadjuvant chemotherapy and , 8 - chemo-radiotherapy. 7 patients had mediastinoscopy before neoadjuvant therapy.
Results: There were no serious complications or mortality after the TEMLA. Metastatic nodes were found in 21 patients, including 7 patients with N3 nodes and 14 patients with N2 nodes. Stations 7, 4R, 2R and 4L were most prevalent. 34/37 patients with negative result of the TEMLA and 4 patients with positive N2 nodes underwent subsequently thoracotomy. There were 38 pulmonary resections including 17 pneumonectomies (7 right, 10 left), 18 lobectomies, 2 sleeve lobectomies and 1 exploratory thoracotomy (respectability 89.2% for negative TEMLA). There were 34 R0 and 4 R1 resections. There was no postoperative mortality and 2 bronchial fistulas were developed (after inferior bilobectomy and right pneumonectomy; the second one healed spontaneously) and no other serious complications after pulmonary resections were observed. 3 patients with negative nodes were not operated on – 1 for cerebral metastases and 2 for poor general state. During thoracotomy with completion lymphadenectomy 1 false negative result was found (single node in station 8). Sensitivity of the TEMLA in discovery of N2-3 nodes during restaging was 95.5 %, specificity 100%, accuracy 98.3%, NPV 97.4 % and PPV 100%. During follow-up a local recurrence was noted in 6/37 (15.7%) patients after pulmonary resection.
Conclusions: The TEMLA might be considered as a gold standard for mediastinal nodal restaging due to very high diagnostic yield and safety of the procedure.

Tuesday, 2 June 2009
16:00 – 17:30
Session 9 – Airway / Transplantation

059-O BRONCHO-ARTERIAL FISTULA: A RARE, BUT USUALLY FATAL AIRWAY COMPLICATION AFTER LUNG TRANSPLANTATION

Dirk Van Raemdonck[1]; Geert M Verleden[2]; Lieven Dupont[2]; Willy Coosemans[1]; Herbert Decaluwé[1]; Georges Decker[1]; Paul De Leyn[1]; Philippe Nafteux[1]; Marc Decramer[2]; Toni Lerut[1]
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Background: Airway anastomotic problems occur in up to 15% of lung transplant (LTx) recipients manageable conservatively or by bronchoscopic or surgical reintervention. A fistula formation between the bronchial tree and the pulmonary artery (BAF) is a rare, but nearly universally fatal complication. We reviewed the incidence, risk factors and outcome in our transplant cohort.
Methods: From July 1991 till December 2008, 422 isolated LTx (276 DL - 146 SL [74 R - 72 L]) were performed in 410 recipients (233 M - 175 F; median age 53 [14-69] years) for emphysema: 205, pulmonary fibrosis: 93, cystic fibrosis: 61, pulmonary hypertension: 16, or miscellaneous: 47. Transplant database and patient records were reviewed to identify BAF patients.
Results: Seven recipients (6 M - 1 F; 49 [31-66] years) developed a BAF for an incidence of 1.7%, 1.6%, and 1.0% of all patients, procedures, and bronchial anastomoses at risk, respectively. The incidence did not differ according to the pre-LTx diagnosis (emphysema:4 - fibrosis:2 - cystic fibrosis:1) nor LTx type (DL: 4 - SL: 3). There was a significant difference in the side of the BAF (R: 7 versus L: 0; $p<0.01$). In 5 patients fungi (Aspergillus: 2 - Candida: 3) were present and in 2 patients a stent was inserted prior to BAF. Five patients were initially discharged from the hospital, all with a documented anastomotic problem. The median time to BAF was 4 [1-8] months. Six patients (85.7%) died, five following sudden massive bleeding (1 on the ward, 1 during bronchoscopy, 2 during surgical exploration, 1 at home) and one patient from hypoxic brain damage following a succesfull salvage pneumonectomy. Finally, one patient is alive after successful BAF closure using a pleural flap.
Conclusions: BAF is a rare, but highly fatal complication after LTx that presents more often on the right side. A high index of suspicion is needed in patients with known anastomotic problem, fungal infection or stent inserted. Hemoptysis should immediately wave a red flag and these patients should be surgically explored with manoeuvres initiated to immediately control the pulmonary artery.

060-O DOES DONOR CAUSE OF BRAIN DEATH HAVE AN IMPACT ON OUTCOME AFTER LUNG TRANSPLANTATION?

Shana Wauters[1]; Dirk Van Raemdonck[2]; Caroline Meers[1]; Geert Verleden[3]; Lieven Dupont[3]; Willy Coosemans[2]; Herbert Decaluwe[2]; Paul De Leyn[2]; Philippe Nafteux[2]; Toni Lerut[2]
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Background: It remains uncertain whether donor cause of brain death (DCBD) affects early and late outcome after lung transplantation (LTx). Therefore we conducted a retrospective analysis of 400 lung transplants.
Methods: Medical charts of 400 consecutive transplants (July 1991 - August 2008) were reviewed (142 SLTx-258 SSLTx; 228 M-172 F; median age: 52 years [14-69 yrs]). Indications for LTx were emphysema (n = 193), pulmonary fibrosis (n = 74), cystic fibrosis (n = 60), pulmonary hypertension (n = 13), and others (n = 60). Donors were classified according to DCBD: 185 traumatic (T), 190 vascular (V), 18 hypoxic (H), 7 others (O). Donor variables (age, gender, length, time to brain death, PO2/FiO2, cold ischemic time) and recipient variables (age, gender, length, diagnosis, PO2/FiO2 T0-T12-T24-T48, duration of mechanical ventilation, ICU and hospital stay, freedom from BOS and survival) were compared between donor groups.
Results: T donors were more likely to be male ($p < 0.0001$), whereas V donors more female ($p < 0.0001$). V donors were older (mean: 46 years) than T donors (mean: 33 years; $p < 0.001$) and H donors (mean: 34 years; $p < 0.01$). No donor differences were found in time to brain death (median: 6h20 [0h-383h30]), PO2/FiO2 (median: 490 mmHg [140-692 mmHg]) and cold ischemic time (median SLTx: 245 min [122-432 min]; median SSLTx: 329 min [200-551 min]). No recipient differences were observed in duration of mechanical ventilation (median: 3 days [1- 48 days]), ICU (median: 6 days [1-158 days]) and hospital stay (median: 30 days [1-328 days]), freedom from BOS (mean: 92.9 %, 80.7%, 70.1%) and survival (mean: 87.3%, 72.4%, 65.2%) 1, 3 and 5 years after LTx, respectively.
Conclusions: Significant differences were observed in donor demographics according to cause of brain death. No differences were seen in early and late recipient outcome after lung transplantation.

061-O URGENT SEGMENTAL RESECTION AS THE PRIMARY STRATEGY IN MANAGEMENT OF BENIGN TRACHEAL STENOSIS - A SINGLE CENTRE EXPERIENCE IN 164 CONSECUTIVE CASES

Tibor Krajc[1]; Miroslav Janik[1]; Roman Benej[1]; Martin Lucenic[1]; Ivan Majer[2]; Juraj Demian[2]; Svetozar Harustiak[1]

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[2]*2nd Department of Pulmonology and Phthiseology, Comenius University Bratislava, Bratislava, Slovak Republic*

Background: A retrospective review of 238 benign tracheal stenosis cases of various etiology dealt with in a single institution between 1991 and 2008 (table 1).
Despite continuous educational efforts the incidence of postintubation and postttracheostomy stenosis in our country remains high. We believe critical tracheal stenosis requires an emergent and definitive treatment, i.e. segmental resection with end-to-end anastomosis, whenever possible; if the patient is unfit for surgery or an immature stenosis is present, we prefer inserting a temporary, modified T-tube with oval-shaped horizontal arm.
Methods: We employed standard resection techniques with anterolateral mediastinal tracheal mobilization, single-suture monofilament absorbable anastomosis and neck flexion. All patients were extubated on-table under tracheoscopic vision. Of the 238 benign stenoses, primary segmental resection was performed in 164 (68.9%), including 15 cases with concommitant tracheoesophageal fistula. T-tube as an initial treatment suited the remaining 74 patients.
Results: No intraoperative deaths were noted. In 3 patients bleeding from major arteries required partial sternotomy. We encountered 3 serious anastomotic disruptions following subglottic resections: 2 partial, treated by T-tube insertion and costal cartilage tracheoplasty, and 1 complete, resulting in permanent T-tube insertion. 4 patients required short-term orotracheal intubation for post-operative respiratory failure. The restenosis rate in segmental resection was 3.04%. 2 patients underwent re-resection of the stenotic anastomotic site, the remaining 3 were treated by T-tube insertion. Of the 74 patients initially treated with T-tube insertion, 3 underwent definitive segmental resection and 19 costal cartilage tracheoplasty within 4-45 months.
No permanent recurrent nerve palsy ocurred following segmental resection. There were 2 bilateral and 19 documented unilateral transient palsies which subsided in 3-14 weeks post-operatively.
Conclusions: Urgent segmental resection without prior rigid bronchoscopy dilation is our strategy of choice whenever possible. As an alternative to dilation in patients unfit for resection for various reasons, we prefer temporary insertion of modified T-tube, with favourable results.

table 1

stenotic site	treatment	etiology of stenosis *)					
		PI	*BT*	*TR*	*IN*	*TEF*	***all***
subglottic	cricoid arch resection	17		1			18
	Pearson's technique	11					11
	Pearson's technique + temporary T-tube	10					10
	posterior flap resurfacing (Grillo)	7				3	10
	posterior flap resurfacing (Grillo) + T-tube	3					3
	T-tube only	15					15
	T-tube followed by costal cartilage tracheoplasty	4					4
neck	segmental resection	57	2		2	11	72
	T-tube only	29			3	5	37
	T-tube + later resection	3					3
	T-tube followed by costal cartilage tracheoplasty	14				1	15
intra-thoracic	partial sternotomy	34	1			1	36
	right thoracotomy	3	1				4
	all	207	4	1	5	21	238

*) etiology of stenosis:
PI - post-intubation/-tracheostomy, BT - benign tumor, TR - trauma, IN - inflammation, TEF - concomitant tracheo-esophageal fistula

062-O EXCESSIVE DYNAMIC AIRWAY COLLAPSE IS ASSOCIATED WITH POOR OUTCOME IN SLEEVE RESECTIONS IN THE ELDERLY.

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[1]*Department of Thoracic Surgery, Dr. Horst Schmidt Kliniken, Wiesbaden, Germany;*
[2]*Institutes for Pathology and Cytology, Dr. Horst Schmidt Kliniken, Wiesbaden, Germany*

Background: We evaluated the short and long-term results of sleeve resections in a cohort of elderly patients with centrally located non-small cell lung cancer.
Methods: We retrospectively reviewed our prospective database of all patients aged ≥ 70 years who underwent sleeve resection for non-small cell lung cancer. Clinical data, morbidity, mortality and survival were analyzed.
Results: Thirty-one consecutive patients (26men) with mean age of 72.8 ± 2.4 years (range 70 – 78) underwent bronchial (n=21) and bronchovascular (n=10) sleeve resections between January 1999 and Dezember 2005. Negative bronchial and vascular margin was achieved in all. No bronchial or vascular complications arised. Morbidity and mortality were 41.9% and 6.2 %, respectively. Caliber mismatch (p=0.890), laterality (p=0.222) and previous induction chemotherapy (p=0.282) was not important with regard to morbidity. The overall 5-year-survival-rate was 56%. The nodal status did not influence the long-term survival in this study (p=0.405). The type of sleeve resection (bronchial or bronchovascular) had no impact on survival (p=0.620). Excessive dynamic airway collapse was associated with higher morbidity (0.016) and poorer survival (p=0.037).
Conclusions: In the hands of experienced thoracic surgeons bronchial and bronchovascular sleeve resections to avoid pneumonectomy can be performed safely, even in elderly patients. Excessive dynamic airway collapse can lead to poor outcome. These data may influence preoperative assessment and postoperative therapy in event of indicated sleeve resection and pre-existing excessive dynamic airway collapse in the elderly.

063-O CHALLENGING PROBLEMS IN ANTERIOR MEDIASTINAL TRACHEOSTOMY. INADEQUACES AND DIFFICIENCES.

Zeno Popovici
Lucian Blaga University, High School of Medicine, Sibiu, Romania

Background: The chief purpose for this presentation, was to discuss the indications of this rare approach, described first by Orringer, in involvment of superior aerodigestive tract by malignancy based on our personal experience.
Methods: We present our series of 28 patients who underwent a mediastinal tracheostomy since August 1981 to August 2005. Indications are various according to multiple primary diseases involving the cervicomediastinal area. The great majority was determined by parastomal recurrences after total pharyngolaryngectomy, complications of pharyngolaryngeal carcinoma and/or malignant cervicomediastinal goiter. Far less indications were involvement of paratracheal lympnodes in subglottic carcinoma (Harrison) and supraaortic esophageal carcinoma (Nissen). Giant malignant fibrous histocytoma of the neck with mediastinal extension (one case) remains an extremely rare condition (See Table I). Mediastinal tracheostomy was associated with total pharyngo-laryngectomy (22), total thyroidectomy and para-thyroidectomy (`17), radical neck dissection (19), and thoracal esophagectomy (2). Removal of the anterior "breastplate "/ manubriectomy/ (Sisson, 1962) permits unequalled access to the intrathoracic trachea and construction of a mediastinal tracheostomy within several centimeters of the carina (Orringer). Reconstruction after total pharyngolaryngectomy was performed by colic interposition (2), ileal interposition (1), gastric pull-up (1), pectoralis myocutaneous flap (8), anterior chest flap (Conley, 1) and upper bipedicled apron thoracic flap (Grillo, 2).
Results: Immediate postoperative mortality was 6 patients (22%). Postoperative morbidity is analized and the major complication, rupture of innominate artery is stressed (3), but after using the pectoralis major myocutaneous flap this fatal complication droped significantly.
Conclusions: It is a very feasible operation and it is surprising what good long-term palliation can be achieved in some of these desperate cases. Most of these patients were admitted in emergency with acute respiratory distress associated with aphagia. Disease was local advanced nonresponsive to irradiation or chimiotherapy. Surgery of salvation or rescue operation ("chirurgie de rattrapage," Fr.) remains their last resort.

064-O TRACHEAL RELEASE MANEUVERS ? HOW MUCH IS NECESSARY?

Ioan Cordos; Ciprian Bolca; Cristian Paleru; Radu Matache; Codin Saon
1st Clinical Department of Thoracic Surgery, „Marius Nasta" National Institute of Pneumology, Bucharest, Romania

Background: The aim of this study is to report on a series of tracheal resections performed in our department the relationships among length of trachea resected and different releasing maneuvers utilized.
Methods: During 2001-2009 we performed 80 tracheal resections. The range of resected rings was between 1 and 9 cartilages (1.5-4.5cm). Most of the lesions were located in the upper third of the trachea (91%), 4% in the middle third and 5% in the lower third. Pretracheal mobilization was used in all patients. We used only this maneuver in a number of 16 of our last cases and it allowed us to safely perform a 4 cartilages (2cm) resection with tension free anastomosis. Adding cervical flexion, we were able to resect 9 cartilages (4.5cm). We have a number of 11 cases (14%) with resections of 6 or more cartilaginous rings performed only with these specific release maneuvers, but we have to mention that the lesions were in the upper 2 thirds of the trachea. Hilum dissection was performed in one case and pericardial incisions over the inferior margin of inferior pulmonary vein in three patients, when we approached the trachea by lateral thoracotomy. The longest segment resected in the lower third of the trachea had 2 cm. No laryngeal releasing maneuvers were performed.
Results: Anastomotic dehiscence appeared in 2(2.5%) patients, both with 3 resected cartilaginous rings. We consider that the anastomotic failure was not a result of high tension, but of extensive dissection along the trachea with impared vascularisation.
Conclusions: Various tracheal release maneuvers are effective in increasing the length of trachea that can be relatively safely resected. However, these maneuvers are not uniformly effective across subjects. Basic releasing maneuvers allow a good length of the trachea to be resected with no complications. Further experience is needed for the lower part of the trachea.

Tuesday, 2 June 2009
16:00 – 17:30
Session 10 – Oesophagus / Mediastinum

065-F RADICAL SUPERIOR MEDIASTINAL LYMPH NODE DISSECTION WILL IMPROVE THE POOR PROGNOSIS FOR THORACIC ESOPHAGEAL SQUAMOUS CELL CANCER

Yasuaki Nakajima; Yutaka Miyawaki; Akihiro Hoshino; Tomoyoshi Suzuki; Shigeo Haruki; Kenro Kawada; Tetsuro Nishikage; Kagami Nagai; Tatsuyuki Kawano
Department of Esophago-Gastric Surgery, Tokyo Medical and Dental University, Tokyo, Japan

Background: Here, we demonstrate the frequency of lymph node metastasis, and the contribution of the radical lymph node dissection for the prognosis of thoracic esophageal squamous cell cancer.
Methods: From 1985 to 2008, 803 esophageal squamous cell cancer patients underwent surgery by right thoracotomy as the primary treatment were enrolled. Tumor location were classified according to TNM classification. Since 1998, surgical technique for radical cervical and superior mediastinal lymphadectomy was established in our institute. Therefore, patients performed operation after 1998 were classified into the 2000s' group, and analyzed.
Results: Lymph node metastasis was observed in 533 (66.4%) patients. Cervical node metastasis was in 180 (22.4%), mediastinal was in 437 (54.4%), and abdominal was in 316 (39.4%) patients. According to the tumor location, the frequency of lymph node metastasis showed no significant difference. However, upper thoracic esophageal cancer developed significantly frequent cervical and superior mediastinal node metastasis, and lower showed significantly frequent superior gastric node metastasis. Overall 5-year survival rate was 49.9%, and the 5-year survival rate in the group of upper thoracic esophageal cancer was significantly poorer. The 5-year survival rate in the 2000s' group was significantly better, though the 2000s' group included patients with more advanced stage. Especially, in the group of the upper and lower thoracic esophageal cancer, significant prognostic improvement was achieved, and this was considered by the established radical cervical and superior mediastinal lymph node dissection.
Conclusions: As for the treatment of the thoracic esophageal cancer, control of the lymph node metastasis is the key factor for good prognosis. En bloc lymphadectomy of cervical and superior mediastinal lymph nodes has a risk to injure recurrent nerve and cause severe morbidity. However, radical lymphadectomy of these lesions is considered to develop curative and prophylactic effect, and and will improve the poor prognosis of thoracic esophageal squamous cell cancer.

066-F MULTIMODALITY THERAPY FOR THE CURATIVE TREATMENT OF ADENOCARCINOMA OF THE ESOPHAGUS AND GASTROESOPHAGEAL JUNCTION: IS IT REASONABLE BEYOND 70 YEARS?

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[3]*Timone Hospital-Department of Digestive Oncology, Marseille, France*

Background: An increasing number of patients with adenocarcinoma of the esophagus are currently treated by neoadjuvant chemoradiotherapy. Despite an ageing population, little data exist regarding the feasibility of multimodality treatment strategies in patients aged beyond 70 years.
Methods: Between 1996 and 2008, 199 consecutive patients underwent transthoracic esophagectomy for adenocarcinoma of the esophagus and gastroesophageal junction at our institution. Outcomes of patients aged beyond 70 years who underwent preoperative therapy (n=20; group I), were compared to those of similar patients who did not (n=32; group II) and to those of younger patients who received preoperative therapy (n=66; group III).
Results: Mean ages were 73, 75 and 56 years, respectively ($p < 0.001$). Group I patients had a clinically more advanced disease ($p < 0.001$). There were no differences in performance status, comorbidities, or preoperative symptoms between the 3 groups. Ivor-Lewis esophagectomy was the standard surgical approach in group III patients (90 %) whereas a tailored surgery including a left thoraco-abdominal approach or a hybrid-laparoscopic esophagectomy was applied in group I (37 %) and group II (50 %) patients. The in-hospital mortality rates were 10%, 12.5% and 7.6 %, respectively (NS). There were no differences in the incidence of postoperative pulmonary, cardiac, renal or surgical complications. Compared with group III patients, group I patients had higher length of hospital stay ($p=0.08$) and received more blood transfusions ($p=0.05$). Quality of life was similar in group I and II patients. 5-year survival rates were 34%, 31% and 49 %; respectively (NS).
Conclusions: Multimodality treatment for the curative therapy of adenocarcinoma of the esophagus and gastroesophageal junction in patients aged beyong 70 years is feasible. However, it is associated with a less favourable risk/benefit ratio than in younger patients.

067-F LONG-TERM RESULTS OF SURGICAL TREATMENT OF NON-AXIAL GASTRIC HIATUS HERNIA (NAHH)

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[2]*Division of Cardiothoracic Surgery, Columbia University, New York, United States*

Background: Surgery for type II (para-esophageal), III (mixed), IV (organoaxial volvolus) hiatus hernias produces up to 44 % (mean 25 %) anatomical or GORD relapse in long term. In the last 30 years we based the surgery for NAHH on three pillars: complete resection of the sac and fat pad, Collis gastroplasty in case of short oesophagus, reinforcement of the hiatus plasty. We assessed the long term results of this surgery.
Methods: Between 1980 and 2008, 95 patients affected by NAHH were operated upon: type II 10.5%, type III 69.5%, type IV 20%. Fifty one laparotomic Nissen, 15 laparoscopic Nissen, 2 Pearson, 7 Belsey MK4, 6 laparotomic Collis-Nissen, 14 thoraco-laparoscopic Collis-Nissen were performed. The reinforcement of the hiatoplasty was performed in 76.1%. The Collis procedure was performed on 0% of type II, on 28.7% of type III and on 15.8% for type IV. Mortality was 3.1% (1 MI, 1 PE,1 Collis fistula) and morbility was 16.3%. Patients were periodically followed to date with clinical interview, UGI tract endoscopy and barium swallow, manometry, ambulatory pH recording according to clinical patterns.
Results: The median follow up was 73.5 months (range 6-444). Results were excellent and good in 81.6%, fair (mild GORD symptoms but no oesophagitis) in 9.8% and poor (GORD symptoms and or dysphagia + erosive oesophagitis and /or hernia relapse) in 8.6%. Hiatus hernia relapse occurred in the whole in 6/92 cases (6.5%) all operated on of laparotomic Nissen, in 17.6% of not reinforced hiatoplasty, in 4% of reinforced hiatoplasty ($p = 0.001$).
Conclusions: Tailored surgery for NAHH achieves very good results in long term. Hiatus plasty reinforcement and Collis gastroplasty when needed are essential. The minimally invasive techniques appear valid but need further follow up.

068-F A COMBINED APPROACH OF ENDOBRONCHIAL AND ENDOSCOPIC ULTRASOUND-GUIDED NEEDLE ASPIRATION IN THE RADIOLOGICALLY NORMAL MEDIASTINUM IN NON-SMALL CELL LUNG CANCER STAGING

Artur Szlubowski[1]; Jerzy Soja[2]; Marcin Kolodziej[1]; Jolanta Hauer[1]; Lukasz Hauer[1]; Witold Sosnicki[1]; Juliusz Pankowski[3]; Anna Obrochta[3]; Magdalena Jakubiak[3]; Marcin Zielinski[1]

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Background: The aim of the prospective study was to assess a diagnostic yield of the combined endobronchial (EBUS) and endoscopic (EUS) ultrasound-guided needle aspiration (CUS-NA) in the radiologically normal mediastinum in non-small cell lung cancer (NSCLC) staging.
Methods: The CUS-NA was being performed under local anaesthesia and sedation in consecutive NSCLC patients with not enlarged mediastinal nodes on CT (stage IA-IIB). All patients with negative CUS-NA underwent the subsequent transcervical extended bilateral mediastinal lymphadenectomy (TEMLA) as a confirmatory test.
Results: From 01.01.2008 to 31.12.2008 in 120 NSCLC patients who underwent CUS-NA there were 318 mediastinal nodes biopsied (158 EBUS-NA – stations: 2R – 2, 2L – 1, 4R – 34, 4L – 33, 7 – 88; 160 EUS-NA – stations: 4L – 57, 7 – 101, 9 – 2). The mean diameter of the punctured nodes was 7.4/8.6 ±2.2 (95% CI) mm. The CUS-NA revealed metastatic lymph node involvement in 19/120 patients (15.8%) and in 31/318 biopsies (9.8%). A prevalence was 21.7%. In 101 patients with negative CUS-NA, who underwent the TEMLA metastatic nodes were diagnosed in 9 patients (7.5%) in 11 stations: 2R – 2, 4R – 4, 4L – 1, 5 – 3, 7 – 1; in all but one patient there were "minimal N2" only. A diagnostic sensitivity, specificity, accuracy, PPV and NPV of CUS-NA were 67.9%, 97.8%, 90.8%, 90.1% and 90.9%, respectively. The sensitivity of CUS-NA was significantly higher comparing with EBUS-NA alone ($p = 0.011$) and EUS-NA alone ($p = 0.023$). The NPV of CUS-NA was not significantly higher comparing with EBUS-NA alone ($p = 0.08$) and EUS-NA alone ($p = 0.09$). No complications of CUS-NA were observed.
Conclusions: The CUS-NA is highly effective and safe technique in the radiologically normal mediastinum in NSCLC staging and if negative – a surgical diagnostic exploration of the mediastinum may be omitted.

069-F RADICAL OESOPHAGEAL RESECTION CAN USUALLY BE SAFELY MANAGED IN THORACIC SURGERY ENVIRONMENTS WITHOUT ADMISSION TO INTENSIVE CARE UNITS

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Background: To study the effects of introducing a policy avoiding routine post-operative ventilation in patients undergoing total thoracic oesophagactomy (TTO).
Methods: From operative records all patients undergoing oesophageal resection during a two year period were identified.
Results: There were 78 consecutive oesophagectomies with 55 cases (70%) [Median age 65ys] transferred directly to the ward without post-operative ventilation. Nine had planned admissions to ICU and 14 were sent to an intermediate unit. Three ward patients required later admission to ICU for respiratory failure. All had subsequent uneventful recoveries. There was one sudden death in a patient due for discharge. Median time to discharge was 11 days (7-83). Two patients required re-operation for chylothorax, 8 patients developed pulmonary infection, 7 had cardiac arrhythmias and 1 CVA. There were two temporary anastomotic leaks which healed without sequelae.
Conclusions: Selective planned ventilation was used less often as we gained experience. Intensive care admission is usually unnecessary and most oesophagectomy patients can be safely managed by trained staff in a thoracic surgery environment.

ASA classification of patients

ASA	1	2	3	Total
n	2	36	17	55

070-F SUPERIOR VENA CAVA RESECTION IN THORACIC MALIGNANCIES. IS PROSTHETIC REPLACEMENT AT HIGHER RISK ?

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Background: After Superior Vena Cava (SVC) resection, the need of reconstruction varies between tangential resection, pericardial patch repair and prosthetic replacement. Patients undergoing complete prosthetic replacement often require a different surgical approach, intraoperative SVC cross-clamping and anticoagulation when polytetrafluoroethylene (PTFE) prosthesis are used. This study tested the hypothesis that PTFE replacement may interfere with perioperative outcome.
Methods: Clinical records from a series of 72 consecutive SVC resections performed by one surgeon between 1998 and 2008 have been reviewed. Patients were divided into two groups, those who underwent total SVC resection with PTFE prosthetic replacement (n=28, group A) and those who underwent partial resection, in which direct repair or pericardial patch was used (n= 44, group B). Postoperative complications were classed into 5 categories: surgical (bronchial fistula, hemorrhage, chylothorax, air leak), respiratory (respiratory failure, recurrent atelectasis, pneumonia, ARDS), cardiac (cardiac failure, atrial fibrillation, pulmonary embolism), SVC system thrombosis and nerve damage.
Results: Two patients died postoperatively (2.8%), one in each group (3.5% versus 2.2%). Major postoperative complications occurred in 6 patients in group A and in 7 patients in the groub B (21.4% versus 15.9%, p= 0.54). No significant difference between groups was detected in terms of surgical, respiratory and cardiac complications. One case of venous thrombosis occurred in each group and was successfully treated by medical treatment. Major respiratory complications occurred in 9 cases (4 in group A and 5 in group B) and were more frequent in mediastinal disease as compared to lung cancer patients (17.8% versus 9.1%, p= 0.2). Clinical consequences of nerve damage were more frequent in group A (10.7% versus 2.2% in group B, p= 0.15)
Conclusions: Complete prosthetic replacement does not increase overall postoperative morbidity in patients undergoing SVC resection and can be safely performed when other reconstruction techniques preclude sufficient tumor-free resection margin or compromise adequate blood flow.

071-F COMPARISON OF COMPLETE REMISSION RATES AFTER 5-YEARS FOLLOW-UP OF THREE DIFFERENT TECHNIQUES OF THYMECTOMY FOR MYASTHENIA GRAVIS

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Background: Analysis of effectiveness of treatment of myasthenia gravis with three different techniques of thymectomy.
Methods: Results of complete remission rates after 5-year follow-up of 60 patients who underwent basic transsternal thymectomies (group A) from 1.11996 to 31.12.1997, 75 patients who underwent extended transsternal thymectomies (group B) from 1.1.1998 to 30.6.2000 and 301 patients who underwent transcervical-subxiphoid-videothoracoscopic “maximal”thymectomy (group C) from 1.9.2000 to 31.1.2009 were compared.
Results: There were no differences between groups according to patient’s characteristics and postoperative complications rate. Ectopic foci of the thymic tissue were discovered in the fat of the neck and the mediastinum in 50.7% of patients from the group B and in 62% patients from the group C. After 1, 2, 3, 4 and 5 years of follow-up complete remission rates were 8.3%, 11.7%, 15.0%, 16.7% and 20.0% respectively in the group A, 29.3%, 37.9%, 41.4%, 46.6% and 51.2% , respectively in the group B and 26.3%, 36.5%, 42.9%, 46.8% and 50.2%, respectively in the group C. The differences between group A and the groups B and C after 1, 2, 3, 4 and 5 years were statistically significant. There were no significant differences between groups B and B.
Conclusions: 1. The results of complete remission rates after 5-year follow-up were statistically better in patients with MG who were operated on with extended transsternal thymectomy and transcervical-subxiphoid-videothoracoscopic “maximal”thymectomy in comparison to the patients who underwent basic transsternal thymectomy. 2. The difference can be explained by the removal of ectopic foci of the thymic tissue from the neck and the mediastinum in these patients.

072-F PREDICTORS OF SURVIVAL IN PATIENTS WITH LOCALLY ADVANCED THYMOMA (MASAOKA STAGE III AND IVA)

Giuseppe Cardillo; Francesco Carleo; Luigi Carbone; Alessia Raffaella De Massimi; Daniele Forcella; Lorenzo Salvadori; Stefano Treggiari; Massimo Martelli
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Background: We sought to evaluate factors influencing long-term survival of patients with locally advanced thymoma (Masaoka stage III and IV A) treated by immediate surgery or induction therapy plus surgery
Methods: From January 1991 to April 2007, we surgically treated 61 patients with locally advanced thymoma (Masaoka stage III and IVa). Staging included total body CT scan and Chest MRI in all patients. All patients had histological confirmation before surgery. Thirty-one patients (Group A) underwent induction chemotherapy followed by surgery. Thirty patients (Group B) underwent immediate surgery. Thirty-four patients (group A:13; Group B: 17) with R1 resections received postoperative radiation therapy.
Results: No intraoperative mortality was reported. WHO histological classification included 19 AB, 4 B1, 7 B2, 13 B3 and 18 C. Thirty-four patients were Masaoka stage III (group A:18; group B: 16) and 27 patients were stage IVa (group A: 13; group B: 14). After a median follow-up of 77 months, 6 patients of group A and 7 patients of group B died of disease. The overall 9-year survival rate was 59.48%. The 9-year survival rate was 69.49% in group A and 38.18% in group B (p: 0.02). Multivariate analysis showed complete resection (p: 0.02), Masaoka stage (III vs IVa) (p: 0.008), induction chemotherapy (group A vs group B) (p: 0.001) and histological WHO subtype (AB and B1 vs B2 and B3) (p: 0.01) to be statistically significant independent predictors of survival. Sex, age and adiuvant radiation therapy had no relation with prognosis
Conclusions: Complete resection, Masaoka stage, induction chemotherapy and histological WHO classification showed to be independent predictors of survival in locally advanced thymoma.

073-F VIDEO ASSISTED THORACOSCOPIC (VAT) VERSUS OPEN THYMECTOMY FOR EARLY STAGE THYMOMA

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Glenfield Hospital, Leicester, United Kingdom

Background: Our increasing experience with VAT thymectomy for myasthenia gravis (MG) has encouraged us to extend this treatment to early stage thymomas and challenge conventional teaching.
Methods: We have compared the first 15 consecutive patients (10M; 5F); median age 66 (range 40-81) years who underwent VAT thymoma excision (Group V) with 20 matched patients (11M; 9F), median age 59.5 (range 34-89) years who underwent open thymoma excision by sternotomy (Group O). VAT excision was performed via three 3cm incisions using electrocautery to remove all mediastinal tissue. Perioperative, histological and long-term oncological data were recorded. Follow-up was complete for all patients.
Results: All patients had non-invasive tumours on preoperative CT staging; 4 patients in Group O and 5 patients in Group V had concomitant MG. There was no significant difference in tumour size (median; 7.5 cm in Group V vs 10.0 cm in Group O, p = 0.07), Masaoka stage or complete resection (R0) between groups. However, more patients in Group O underwent adjuvant radiotherapy (Table). There was no significant difference in median operating time (115 min Group V vs 120 min Group O) or duration of tube drainage (p=0.3) but Group V patients had significantly less volume of drainage; 150 ml vs 593 ml (p During follow-up (mean 34.4 months) there were 3 deaths in Group O at 3, 24 and 76 months and one in Group V at 48 months. There was no difference in estimated tumour-specific 5-year survival or tumour recurrence between the groups
Conclusions: The use of videoassisted thoracoscopic resection for early stage thymoma is both feasible and safe, with shorter hospitalization.

Histology and Outcome Data

	VAT Thymectomy (n=15)	Open Thymectomy (n=20)	P Value
Stage I	5 (33.3%)	9 (45.0%)	0.48
Stage II	9 (60.0%)	9 (45.0%)	0.38
Stage III	1 (6.6%)	2 (10%)	0.72
R0 Resection	11 (73.3%)	13 (65.0%)	0.59
Adjuvant Radiotherapy	4 (26.6%)	13 (65.0%)	0.02
Median Length of Stay (Days)	4	7	<0.001
Recurrence	1 (6.6%)	2 (10.0%)	0.72
Estimated Overall 5-Year Survival	93.3%	90.0%	0.38

NOTES

NOTES

Wednesday, 3 June 2009
08:00 – 09:00
Session 12 – Video

074-V RESECTION OF THYMOMA WITH TRANSCERVICAL-SUBXIPHOID VATS MAXIMAL THYMECTOMY

Marcin Zielinski; Juliusz Pankowski; Tomasz Nabialek; Artur Szlubowski
Pulmonary Hospital, Zakopane, Poland

Background: Presentation of the operative technique of resection of thymoma with myasthenia gravis (MG) with use of transcervical-subxiphoid-VATS maximal thymectomy
Methods: Four incisions were performed: a transverse 5-8 cm incision in the neck, a 4-6 cm subxiphoid incision and two incisions for 5 mm videothoracoscopic ports. The cervical part of the procedure was performed with an open technique, the intrathoracic part of the procedure was performed with the videothoracoscopy assisted (VATS) technique. The whole thymus including the thymoma with the surrounding fatty tissue containing possible ectopic foci of the thymic tissue was removed. The thymoma capsule was not violated
Results: There were 6 thymoma resections performed with the presented technique. There were 4 women and 2 man, the age of patients was 27-74. All patients had associated MG. Four patients had Masaoka stage I tumors, one patient had Masaoka stage II tumor and one patient had Masaoka stage III tumor with infiltration of the right lung. WHO type A was found in 2 patients, type AB in 2 patients and type B2 in 2 patients. En-bloc resection without tumor violation was performed in all patients including the patients with Masaoka stage III, in whom marginal middle lobe resection with use of endostapler was performed. The time of operations was 90-150 min. There was no intraoperative or postoperative complications.
Conclusions: Transcervical-subxiphoid-VATS maximal thymectomy is a safe and effective treatment modality for Masaoka stage I-III thymoma

075-V VESSEL-LIGASURED LOBECTOMY FOR LUNG CANCER

Carlo Curcio; Maurizio Valente
AORN Monaldi UOC I° Thoracic Surgery, Naples, Italy

Background: The Ligasure vessel sealing system is a unique energy-based ligation method. Complete hemostasis is achivied by reforming the collagen and elastin in vessel walls to form an autologus seal. Vessel up to and including seven mm. in diameter can be sealed with the Lygasure system. It is common opinion that pulmonary lobectomy cannot be performed by Ligasure because the diameter of vessels overcomes the range of the system. This study to showed the vessel sealed lobectomy for lung cancer is feasible by Ligasure system.
Methods: The AA have performed ten cases of vessel sealed upper right lobectomy for lung cancer by Ligasure system in mini invasive thoracic surgery (M.I.T.S.) without ligature of vessel. Emostasis has been performed to level of branch of Boyden and posterior and anterior upward branch of upper pulmonary artery. And pulmonary vein has been sealed before the common trunk preserving the middle pulmonary vein. The bronchial stamp has been performed by continous manual suture by adsorbable 0000 or 000. We have performed only right upper lobectomy because pulmonary vein can be sealed only before the common trunk preserving the middle pulmonary vein and the flow of middle in the upper vein common trunk prevent clotting and embolus. In other lobectomy this is maybe the cause of a remnant long pulmonary vein sealed and that is considered a high risk of blood clot and pulmonary embolus.
Results: We have obtened a perfect hemostasis without haemorrhage in all ten cases. But the aerostasis by Ligasure system hasn‘t been perfect, because in three cases we have had air laik.
Conclusions: The vessel sailed lobectomy is feasible by Ligasure but only upper right because in otehr lobectomy the remnant pulmonery vein sealed is long and that maybe is an high risk of blood clot and pulmonary embolus.

076-V LAPAROSCOPIC/THORACOSCOPIC SURGERY FOR COMPLEX NON AXIAL HIATUS HERNIAS

Sandro Mattioli; Alberto Ruffato; Marialuisa Lugaresi; Vladimiro Pilotti; Luca Ferruzzi
Division of Esophageal and Pulmonary Surgery, Villa Maria Cecilia and San Pier Damiano Hospitals, University of Bologna, Italy, Bologna, Italy

Background: In order to demonstrate the feasibility and the corner stones of the minimally invasive surgical technique for the treatment of paraoesophageal and massive incarcerated hiatus hernia we show the case of a 66 years old woman with 20 years history of GORD symptoms, dyspnoea with orthopnea, erosive oesophagitis and recurrent sideropenic anaemia. Barium swallow shows a paraoesophageal hiatus hernia. We present a second case of a 56 years old man complaining severe GORD symptoms since 6 years with painful dysphagia, erosive oesophagitis. Barium swallow shows a non-reducible 10 cm diameter massive incarcerated hiatus hernia.
Methods: The steps of the surgical procedure are: 1) complete resection of the hernia sac and fat pad with preservation of the vagus nerves, 2) localization of the position of the GO junction with respect to the apex of the hiatus with a combined endoscopic–laparoscopic procedure, 3) measurement of the length of the esophageal submerged segment, 4) isolation of the mediastinal oesophagus, 5) Collis gastroplasty in case of short oesophagus , 6) hiatus alloplasty, 7) Nissen floppy fundusplication.
Results: After maximal oesophageal mobilization , in the first patient the GO junction was placed 2,5 cm below the hiatus and a standard fundusplication was performed , in the second case the GO junction was placed across the hiatus and a combined laparoscopic-left thoracoscopic Collis gastroplasty was necessary.
Conclusions: The minimally invasive approach for complex hiatus hernias appears feasible. 15 patients (mean age 65.8 ± 11.7 years) underwent laparoscopic Nissen and 14 (mean age 66.5 ± 11.7 years) thoraco-laparoscopic Collis-Nissen. Median follow up was 21 months (r. 6-58) with 1 mortality in each group (pulmonary embolus and Collis fistula). Results were excellent and good in 93%, and fair or poor in 7%.

077-V CHEST WALL AND DIAPHRAGM RESECTION AND RECONSTRUCTION FOR EXTENSIVE CHEST WALL CHONDROSARCOMA

Alberto Oliaro; Claudio Mossetti; Pier Luigi Filosso; Riccardo Carlo Cristofori; Maria Cristina Bruna; Enrico Ruffini
University of Torino - Department of Thoracic Surgery, Torino, Italy

Background: The curative treatment of primary chest wall tumors sometimes also includes the diaphragmatic resection.
Methods: We present an extensive chest wall and diaphragmatic resection for chest wall chondrosarcoma. The Gore-Tex dual mesh was used for diaphragmatic reconstruction and the patch was fixed to the thoracic wall to restore the costo-diaphragmatic angle.
A latissimus dorsi flap was interposed between the Gore-Tex mesh and the skin.
Results: This approach can be performed safely and can be curative.
Conclusions: The benefits to the patient in terms of comfort and survival justifies an aggressive approach.

078-V ENDOMETRIOSIS-RELATED PNEUMOTHORAX AFTER F.I.V.E.T. PROCEDURE

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Background: Catamenial pneumothorax is a unique entity occurring in ovulating women at the onset of menses. The video reports the case of spontaneous pneumothorax in a woman following hormonal treatment before Fertilization in Vitro Embryo Transfer (F.I.V.E.T.).
Methods: A 32 years-old woman presented with right pneumothorax. She referred right back noise and cough every menses. She underwent unsuccessful F.I.V.E.T. two weeks before. At thoracoscopy we detected on dorsal pleura and diaphragm some tiny blue brown nodules of endometriosis, as confirmed by histology. No holes were present on diaphragm. Some open blebs were found in the apex of the inferior lobe and removed. No endometriosis was identified on this specimen. Endometrial foci were coagulated. Pleural abrasion was also performed.
Results: No recurrence of pneumothorax or back noise occurred at a 22 months follow-up. The patient underwent a new successful F.I.V.E.T. 8 months after surgery.
Conclusions: Different theories explain thoracic endometriosis: a retrograde menstruation with implantation on diaphragm, a coelomic metaplasia of endometrial tissue or a metastatic spread in the lungs. We found endometrial foci on diaphragm and parietal pleura supporting the implantation theory. Many hypothesis have been proposed for the relation between endometriosis and pneumothorax: trans-fallopian ascent air passing thorough diaphragmatic fenestrations, rupture of blebs due to the bronchial constrictor prostaglandins F2, or visceral pleura perforation due to subpleural endometriosis proliferating during menses. In our case no diaphragmatic fenestrations were found, so the blebs rupture, due to hormonal storm preparing the F.I.V.E.T., was the unique explanation for pneumothorax. Surgical blebs resection, endometriosis coagulation and pleural abrasion were appropriate to prevent relapse and control thoracic pain related to pleural endometriosis during menses. We conclude that there are different mechanisms for catamenial pneumotorax and, in some cases, blebs resection and pleural abrasion are enough to prevent relapses.

079-V DEMONSTRATION OF DIFFERENT LUNG RESECTION TECHNIQUES WITH THE NEW 1318 NM DIODE LASER (ERASER) IN ONE PATIENT WITH 25 METASTASES OF COLORECTAL CANCER.

Axel Rolle; Beata Bis
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Background: The video film demonstrates the advantages of a new 100 watt high power 1318 nm laser with different parenchymal resections (segmental resection, precision metastasectomy, separation of inter lobar bridges , metastasectomy close to central vessels).
Methods: A 59 year old female with metastatic colorectal carcinoma after colorectal resection and hemihepatectomy due to liver metastasis is presented. Despite several series of chemotherapy CT scans detected progressive bilateral lung metastases. The patient was accepted for two staged bilateral laser metastasectomy. In 7/2008 right anterolateral thoracotomy was performed with complete laser resection of 28 metastases.
Results: The video demonstrates the swift and bloodless 1318 nm diode laser resection of 25 large metastases on the left side. The video starts with the resection of 2 centrally located metastases with a diameter of 2 cm on the deflated lung. The laser is used with a power output of 60- 70 watt with a hand piece guided bare fiber in contact to the tissue. To reach interlobar metastasis the large parenchyma bridges between segment 2 and 6 and between the lingula and the lower lobe are completely separated by this laser. A great centrally located metastasis is resected by typical segment 5 resection. Furthermore the video shows the laser resection of another metastasis of 3 cm diameter very close to the central vein of the lower lobe. Finally an overview of all resections is demonstrated and the closure of the resection areas is shown.
Conclusions: The video shows the advantages of a new 1318 nm high power diode laser with different and extended parenchymal resections in one patient with a complete resection of a total of 53 metastases.

Wednesday, 3 June 2009
11:00 – 13:00
Session 13 – Mixed Malignant

080-F QUALITY OF LIFE ASSESSMENT OF PATIENTS 6 MONTHS AFTER LOBECTOMY FOR LUNG CANCER VIA VATS OR THORACOTOMY

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Sureyyapasa Chest Diseases and Thoracic Surgery Teaching Hospital, Istanbul, Turkey

Background: Health related quality of life (QOL) has become an important standpoint in clinical trials. Studies have shown objective measurements to suggest that QOL improves with VATS; however, data on this subject is limited. The aim of this study is to compare the QOL scores of patients who had undergone VATS-lobectomy or conventional lobectomy for early stage NSCLC.
Methods: Both the "Medical Outcomes Study Short Form 36 (SF-36) Health Survey" and "European Organization for Research and Treatment of Cancer (EORTC) QOL Questionnaire–C30" with lung cancer specific module LC-13 were used to assess the heath related QOL. Two groups were set on cross-sectional bases. Questionnaires were prospectively recorded in both groups. Group 1 consisted of patients with clinical stage I NSCLC who had undergone VATS lobectomy (n=18) were compared with the group of patients in the same clinical stage who had undergone lobectomy via thoracotomy (Group 2, n=20). All patients were asked to answer the questionnaire after 6 months of surgery in the clinic.
Results: Both groups had no statistically significant difference in preoperative characteristics of age, marital status, educational level, laterality, pulmonary functions, histological type, and resected lobe. No local recurrence or distant metastasis was present in any patient who has completed the survey. Stage of the disease, complication rates, and the number of lymph nodes sampled during the operation in two groups were not significantly different. Patients in VATS group had higher scores in physical functioning (p=0.001) and role emotional (p=0.016) in SF36 questionnaire, and pain in the chest (p=0.019) and arm/shoulder pain (p=0.001) in QOL-LC13 questionnaire.
Conclusions: This study shows that the patients who have undergone VATS lobectomy for NSCLC have a better QOL than thoracotomy patients in respect to reduced postoperative pain, increased physical functioning, and better emotional status in the 6th postoperative month.

081-F PULMONARY METASTASECTOMY: THORACOTOMY OR VATS?

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Thoracic Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea (South)

Background: VATS approach has been increasing for pulmonary metastasectomy, but its role is still controversial. This study aims to evaluate the value of VATS metastasectomy compared to open thoracotomy.
Methods: Retrospective data was collected for 553 cases of pulmonary metastasectomy from October 1994 to March 2008 at a single institute. They were median 55 years old(3-82 years) and 39% was female. Primary tumor site was colorectal(47%), sarcoma(13%), liver(9%), kidney(9%), and others. Open thoracotomy group was 378 cases(including 15 median sternotomy) and VATS group was 165 cases. Ten patients underwent combined approach for bilateral metastasectomy. VATS was indicated for peripheral lesions resectable by wedge resection or central lesions amenable to complete resection by intended anatomical resection. Extent of resection included wedge resection/segmentectomy in 80%, lobectomy in 18%, and pneumonectomy in 1%. We reviewed residual or missed lesions and recurrence at or adjacent to resection area on post-metastasectomy CT scans.
Results: There was no significant difference for occurrence of residual or missed lesions between open thoracotomy(5.0%) and VATS group(4.2%). Recurrence of tumor at or adjacent to resection area was not either different between open thoractomy(5.6%) and VATS group(4.8%).
Conclusions: VATS is comparable to open thoractomy for therapeutic metastasectomy in well-selected patients with pulmonary metastasis.

082-F LONG TERM RESULTS AFTER 1318 NM LASER RESECTIONS IN 415 PATIENTS WITH LUNG METASTASES.

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Background: The results of an open prospective study with 1318 nm laser resections in patients with uni- and bilateral lung metastases of different primary tumors are demonstrated.
Methods: Between 3/96 and 4/08 415 Patients (196 man, 219 women) with a mean age of 64 years (19- 83 years) could be enrolled in this study. Patients with any primary tumor without local recurrence, with completely resectable lesions, no extrathoracic metastases, unilateral resectable N2 status and adequate lung function were eligible. All parenchymal resections were performed by 1318 nm lasers, starting with an Nd: YAG laser with 40Watt power output. Recently a 100 Watt high power Diode Laser was used reducing significantly operation time and postoperative tissue edema due to shorter time of photo thermal heat exposure.
Results: 415 patients had 3655 metastases (mean 9 / patient) resected without mortality. 343 patients (83%) had complete resections with 43% survival at 5 years and 21% at 10 years. 72 patients (17%) had incomplete resection followed by significantly poorer outcome of 7% 5 year survival. 91 patients (27%) remained without recurrence . In this group up to 58 metastases (mean of 5 metastases per patient) were removed in one patient and 5 year survival of 92% was observed. The 5 year survival for patients with solitary metastasis, 2-9 metastases and over 10 metastases was 55%, 37% and 21% respectively.
Conclusions: 1318 nm laser resections should become “gold standard” for lung metastasectomy because the resections are safe, parenchyma saving, lobesparing and using 100 Watt diode laser even swift. Regarding the presented results only this technique allows the potential curative resection of a high number of metastases.

083-F THE ROLE OF INTRATHORACIC, CERVICAL AND RETROCRURAL RESIDUAL TUMOR RESECTION IN THE MANAGEMENT OF NONSEMINOMATOUS GERM CELL CANCER OF TESTICULAR ORIGIN.

Joachim Schirren[1]; Stephan Trainer[1]; Thomas Bergmann[1]; Rebekka Schirren[1]; Annette Fisseler-Eckhoff[2]; Servet Bölükbas[1]
[1]*Department of Thoracic Surgery, Dr. Horst Schmidt Kliniken, Wiesbaden, Germany;*
[2]*Institutes* for Pathology and Cytology, Dr. Horst Schmidt Kliniken, Wiesbaden, Germany

Background: To assess the role intrathoracic, cervical and retrocrural residual tumor of residual tumor resection performed after high-dose chemotherapy (HDCT) in patients with testicular nonseminomatous germ cell tumors (TNSGCT).
Methods: All patients who underwent resection of residual disease for TNSGCT after HDCT. Clinical data, surgical procedures, histological results, morbidity, mortality and survival were investigated.
Results: The basis of this study are 134 consecutive patients (median age 33 years) with residual masses who underwent 210 surgical procedures. Morbidity and mortality rates were 11.4% and 0.5%, respectively. Complete resections of residual masses were achieved in 203/210 procedures (96.6%). Histology was as follows: solely necrosis in 116/210 (55.2%), mature teratoma with or without necrosis in 66/210 (31.4%), and malignant disease (persistent TNSGCT or degeneration into non–germ cell cancer) with or without additional necrosis or mature teratoma in 28/210 (13.3%). The sites of residual tumor were as follows: intrathoracic (n=177, 84.3%), cervical (n=17, 8.1%), retrocrural (n=12, 5.7%) and others (n=4, 1.9%). 59 of 134 patients (44.0%) required interventions at two or more residual tumor sites. In these cases 12/59 patients (20.3%) had different histological results compared to the other residual tumor sites. Overall 5-year-survival was 87%. Patients with resected malignant disease ($p<0.0001$), incomplete resection ($p<0.001$) and age $\geq$ 34 years ($p=0.0326$) were associated with poorer survival in the univariate analysis. Viable cancer in the resected specimen was the only predictive variable in multivariate analysis ($p=0.003$, hazard ratio 11.8).
Conclusions: Surgery can be performed safely with low morbidity and mortality after HDCT in selected patients. Patients pathologically demonstrating necrosis in the residual mass after HDCT have excellent long-term survival. Patients with viable cancer in the resected specimen have poorer but possible long-term survival, which justifies an aggressive surgical approach in operable patients. Resections of all residual tumors at all sites should be attempted because of possible different histological differentiation.

084-F OBESITY IS NOT ASSOCIATED WITH ADVERSE OUTCOME FOLLOWING SURGICAL RESECTION OF ESOPHAGEAL ADENOCARCINOMA

Koroush Madani; Ronghua Zhao; Alan G Casson
University of Saskatchewan, Saskatoon, Canada

Background: To explore whether the recently described "obesity survival paradox" also applies to patients who undergo surgery for esophageal adenocarcinoma (EADC), we studied the impact of obesity on postoperative morbidity and outcome.
Methods: Between February 1991 and 2006, 142 patients underwent esophageal resection for primary EADC, defined according to strict criteria. No patient received induction therapy. From a prospective database, body mass index (BMI) was calculated from measured height and weight. We compared clinicopathologic findings (age, gender, surgical approach, tumor differentiation, stage), postoperative mortality, morbidity, length of hospitalization, disease free survival (DFS) and overall survival (OS) between obese (BMI ≥30 mg/kg) and non-obese (BMI below 30 mg/kg) patients.
Results: In this consecutive series, there were 118 male and 24 female patients with a median age of 63 years (range 36 to 85 years). For all patients, 5-year OS was 26.9%. As expected, significant predictors of reduced DFS and OS included poor tumor differentiation and advanced tumor stage. 39.4% (56/142) of patients were obese at the time of esophageal resection. No statistically significant differences were found between obese and non-obese patients with respect to age, gender, surgical approach (transthoracic vs. transhiatal), pT-stage, duration of hospital stay, postoperative mortality or morbidity. However, compared with non-obese patients, DFS and OS at 5 years was increased for patients who were obese at the time of esophageal resection (P=0.013 DFS; P=0.008 OS, Fig 1).
Conclusions: Obesity is not associated with increased postoperative complication rates or adverse outcome following esophageal resection, and should therefore not be considered a relative contraindication to the surgical management of EADC. The improved survival of obese patients who underwent esophageal resection for EADC suggests that further investigation of the so-called "obesity survival paradox" is now warranted for patients with esophageal malignancy.

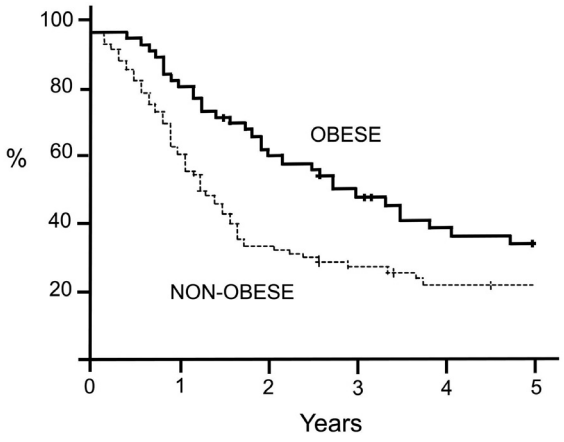

Fig 1 Overall Survival

085-F MEDIASTINAL STAGING FOR LUNG CANCER: THE INFLUENCE OF BIOPSY VOLUME

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Background: Mediastinal staging is of paramount importance before surgery for NSCLC to identify patients with N2-disease. Mediastinoscopy remains the gold standard and it is generally recommended to sample from at least three lymph node stations. There is no knowledge if biopsy volume has any influence on the result of mediastinoscopy. In this study we investigated the influence of biopsy volume and number of lymph node stations biopsied during mediastinoscopy and the probability of demostrating N2-disease in patients with NSCLC.
Methods: We identified 678 consectutive patients who underwent mediastinoscopy for staging of NSCLC during an 8-year period (1999-2007). All patient charts and pathology reports were reviewed retrospectively. Demographics and number of lymph node stations biopsied were recorded and for each biopsy the volume was calculated.
Results: Multivariate logistic regression analysis demonstrated that larger biopsy volume was significantly associated with increased probablity of demostrating N2-disease ($p<0,001$). However, sampling from several lymph node stations was significantly associated with decreased probability of demonstrating N2-disease ($p=0,015$) and volume was significantly larger per station if fewer stations were sampled ($p<0,001$).
Conclusions: Biopsy volume of lymph nodes during medistinoscopy significantly affected the probability of demonstrating N2-disease, but contrary to common belief sampling from several lymph node stations decreased the probability of N2-disease. Although purely speculative, these findings may be explained by perioperative clinical decision making by the surgeon: large volumes are secured from macroscopically suspicious lymph nodes which are typically enlarged with low risk of bleeding. Consequently, further dissection and possible complications are avoided.

086-F A DIAGNOSTIC YIELD OF ENDOBRONCHIAL ULTRASOUND-GUIDED NEEDLE ASPIRATION IN NON-SMALL CELL LUNG CANCER RESTAGING

Artur Szlubowski[1]; Jerzy Soja[2]; Jolanta Hauer[1]; Lukasz Hauer[1]; Joanna Figura[1]; Maciej Narski[1]; Juliusz Pankowski[3]; Anna Obrochta[3]; Magdalena Jakubiak[3]; Marcin Zielinski[1]

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Background: The aim of the prospective study was to assess a diagnostic yield of the endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) in non-small cell lung cancer (NSCLC) restaging in patients after neoadjuvant chemotherapy.

Methods: In a consecutive group of NSCLC patients with N2 disease pathologically confirmed using EBUS-TBNA primarily, who underwent neoadjuvant chemotherapy, the restaging EBUS-TBNA was performed. Regardless of the results of the restaging EBUS-TBNA all patients underwent the subsequent transcervical extended bilateral mediastinal lymphadenectomy (TEMLA) as a confirmatory test.

Results: From 01.06.2007 to 31.12.2008 in 61 patients who underwent restaging EBUS-TBNA there were 85 mediastinal lymph nodes biopsied (stations: 2R – 2, 2L – 1, 4R – 24, 4L – 18, 7 – 40). EBUS-TBNA revealed metastatic lymph node involvement in 18/61 patients (29.5%) and in 22/85 biopsies (25.9%). All patients underwent the subsequent TEMLA and metastatic nodes were diagnosed in next 9/61 patients (14.8%) in stations: 2R – 1, 4R – 5, 7 – 4, 5 – 2. The false negative results of EBUS-TBNA were obtained only in small nodes 7.3 ±2.1 (95% CI) mm/4.8 ±1.8 (95% CI) mm. There were 4/61 patients with false positive results of EBUS-TBNA in stations: 4R – 1, 4L – 1, 7 – 2. A diagnostic sensitivity, specificity, accuracy, PPV and NPV of the restaging EBUS-TBNA calculated on the per patient basis were 66.7%, 85.7%, 80.3%, 91.2% and 77.5%, respectively. If calculated on the per station basis these figures were 68.8%, 84.6%, 83.5%, 92.5% and 83.1%, respectively and results were comparable for stations 4R, 4L and 7. No complications of the restaging EBUS-TBNA were observed.

Conclusions: Because of high effectiveness and safety EBUS-TBNA might be considered as a method of the first choice in NSCLC restaging.

In patients with negative results of restaging EBUS-TBNA, a surgical diagnostic exploration of the mediastinum might not be mandatory.

087-F PRIMARY NEUROENDOCRINE TUMORS OF THE THYMUS (THYMIC CARCINOID) : A CLINICOPATHOLOGIC AND PROGNOSTIC STUDY IN 19 PATIENTS

Giuseppe Cardillo[1]; Paul Marinus[2]; Stefano Treggiari[1]; Michele Giovanni Lopergolo[1]; Alessia Raffaella De Massimi[1]; Francesco Carleo[1]; Massimo Martelli[1]
[1]*Unit of Thoracic Surgery, S. Camillo-Forlanini Hospital, Rome, Italy;*
[2]*Departments of Surgery, VU University Medical Center, Amsterdam, Netherlands*

Background: We sought to evaluate factors influencing long-term survival in 19 patients with primary neuroendocrine tumors of the thymus.
Methods: From 1/1990 to 12/2004, 19 patients (14 male, 5 female; mean age 48.6 years) were surgically treated for a primary neuroendocrine tumor of the thymus
Results: All patients underwent radical R0 thymomectomy and were followed-up for a total of 1459 months (median:69 months; range: 8-180). Nine patients had associated paraneoplastic syndrome. No operative mortality occured. Two patients underwent redo-surgery because of local recurrence respectively 25 and 35 months after surgery. Five patients died of disease, respectively 51, 70, 95, 131 and 153 months after surgery. One patient died of myocardial infarction with no evidence of disease. Thirteen patients are alive, of which 10 are disease-free and 3 with disease. Overall 5-year and 10-year actuarial survival were 90% and 67.50% respectively (median survival 153 months). Ten-year survival was evaluated according to grading (grade 1: 80%; grade 2: 66.67%; grade 3: 0%), Masaoka staging (stage I: 100%; stage II: 50%; stage III: 66.67%; stage IV: 0%), presence of paraneoplastic syndrome (no: 85.61%; yes: 0%) and postoperative radiotherapy (yes: 33.33%; no: 83.33%).
Conclusions: The prognosis of primary neuroendocrine tumors of the thymus is related to the grading of the neoplasm, the presence of a paraneoplastic syndrome, and to the Masaoka staging but not to the postoperative radiotherapy.

088-F EXTENDED SURGERY FOR LOCALLY ADVANCED MASAOKA STAGE III AND IVA EPITHELIAL THYMIC TUMORS

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Roger Giudicelli; Pierre A Fuentes
Sainte Marguerite University Hospital - Department of Thoracic Surgery, Marseille, France

Background: Locally advanced epithelial tumors of the thymus (ETT) raise multiple therapeutic problems among which the selection of the candidates for surgery, the technical challenge of extended resections, and the role of multimodalities strategies.
Methods: From 1990 to 2007, 50 patients (30M & 20 F) with a mean age of 53 +/- 16 years underwent an extended resection for a locally advanced Masaoka stage III (n=45) and stage Iva (n=5) ETT. Most patients received first-line surgery; 3 underwent induction chemotherapy, and 3 preoperative curative radio-chemotherapy. Surrounding resected structures were the pericardium (n=36), the phrenic nerve (n=16), the lung (n=25), the superior vena cava (n=9), and the diaphragm (n=5). There were 41 thymomas with the following WHO types: A (n=1), AB (n=3), B1 (n=7), B2 (n=13) and B3 (n=17), 8 thymic carcinomas and 1 carcinoid tumour.
Results: There were 2 in-hospital deaths. Forty patients received adjuvant therapies: radiotherapy (n=12), chemotherapy (n=1), radio-chemotherapy (n=27). Overall 10-year survival rate was 57,9%, corresponding to a median survival of 128 +/- 16 months. Median of survival were 100 +/- 31 months for B3 thymomas, 89.2 +/- 22.5 months in cases of R1 resection, and 60.3 +/- 21 months for stage IVa ETT. Presence of myasthenia gravis (n=15) did not impact survival negatively. Six on the 7 patients who experienced a pleural recurrence during follow-up were re-operated on. Five on the 8 patients with thymic carcinoma, as well as the one with a carcinoid tumour experienced disease progression within the first year having followed completion of their treatment.
Conclusions: Local treatment, i.e. surgery + radiotherapy, had a pivotal role in the treatment of patients with locally advanced ETT, including those with pleural droplets. Metastatic progression of the disease was mainly encountered in patients with B3 thymomas and tumorsT of other histological types. Perioperative chemotherapy should target this subset of patients.

089-F POSTOPERATIVE ONCOLOGY REFERRAL PATTERNS AND ADJUVANT TREATMENT OF PATIENTS UNDERGOING CURATIVE RESECTIONS FOR NON SMALL CELL LUNG CANCER IN A REGIONAL THORACIC CENTRE

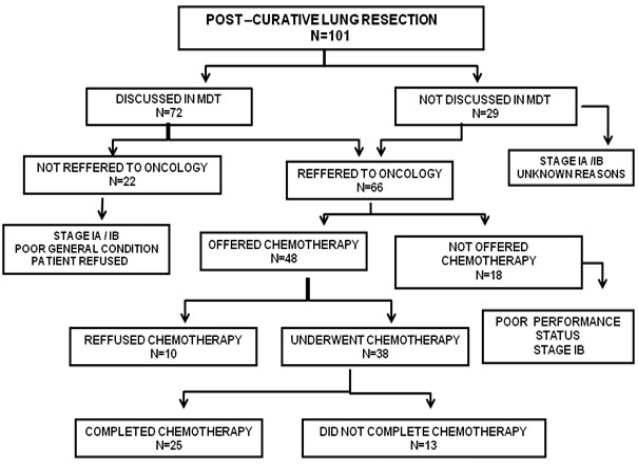
Remananda Krishnanand Pai; Sridhar Rathinam; Vishnu Sharma; Ehab Bishay; Richard Steyn; Pala Babu Rajesh; Maninder Kalkat
Birmingham Heartlands Hospital, Birmingham, United Kingdom

Background: The Heartlands hospital provides services for 12 hospitals in the Pan Birmingham and Three Counties Lung cancer network. After surgery for lung cancer, patients are referred for adjuvant chemotherapy. The referral patterns, and follow up of patients differs between the various trusts.

Methods: A retrospective review of 115 patients who underwent curative anatomical resection between April 06 and March 07. Sub-lobar resections were excluded. We reviewed the patient's progress following discharge from the surgeons at various defined end points including,Discussion at MDT following surgery, Referral to Oncologist, Oncology treatment acceptance, and Adjuvant treatment completion.

Results: The demographics of the 115 patients mirrored the national trends with the average age being 69 + 9.56 years. The predominant tumours were adenocarcinomas (43.56%) and Squamous cell cancers(43.56%).Four patients died after surgery and data was incomplete in 10. Of the remaining 111 patients, 71% of patients were discussed in a MDT meeting and a further 15% of patients were directly referred to the oncologists for consideration for chemotherapy. 43% of patients with stage 1A were not discussed in the MDT. 66 patients were referred for chemotherapy. 48 patients were offered chemotherapy, 38 patients accepted, and 25 completed the chemotherapy.13 patients could not complete due to drug toxicity. Data collection for the study highlighted many organisational problems with reference to data collection in a electronically retrievable format, and non uniformity in the role of the Lung cancer coordinator nurses. There was a definite disparity in consideration of stage 1B patients for chemotherapy with 6 patients not referred to the oncologist and 8 patients not offered chemotherapy after assessment by oncologist while at the same time 6 were offered chemotherapy

Conclusions: The study recommends a more robust centralised data collection for lung cancer patients and also stresses achieving a consensus regarding role of adjuvant chemotherapy therapy in patients.



Oncological Referral Patterns

090-F ILK-POSITIVE NSCLC PATIENTS BEAR A HIGHER RISK OF DISTANT RECURRENCE

Stefan B. Watzka[1]; Markus Marcher[1]; Irene Rauscher-Poetsch[1]; Ulrike Setinek[2]; Guenter Weigel[3]; Michael R. Mueller[1]

[1]*Karl Landsteiner Institute for Thoracic Oncology, Division of Thoracic Surgery, Otto Wagner Hospital, Vienna, Austria;*

[2]*Division of Pathology, Otto Wagner Hospital, Vienna, Austria;*

[3]*Clinical Biochemistry, Department of Surgery, Medical University of Vienna, Vienna, Austria*

Background: Examining a small historical cohort of NSCLC cases, we have recently shown that the expression of integrin-linked kinase (ILK) be a significant risk factor for the onset of distant metastases. Here we update our initial findings by extending our analysis onto a larger and more recent patient cohort.

Methods: The tumor specimens of radically resected NSCLC patients have been retrieved from the pathology archive, and an immunohistochemistry against ILK has been performed. The slides have been evaluated and scored by two independent observers. Finally, the immunohistochemical result has been correlated by statistical means to basic clinical and follow-up parameters.

Results: Until now, a total of 140 NSCLC patients with a male-female ratio of 3:1 have been examined. The most frequent histological subtype was squamous cell carcinoma, followed by adenocarcinoma, and an admixture of rare subtypes. Stages IA – IIIB were present; stage IB was the most frequent stage. The median duration of follow-up was 5,7 years. Fifty percent of these cases were ILK-positive. ILK-positive patients had a 5-years-survival rate of 44 ± 9% as compared to 54 ± 9% in ILK-negative patients; however, this difference was not significant. More than fifty percent of our patients experienced a recurrence during a five years follow-up period; the recurrence-free survival time was unaffected by ILK status. However, the 5-years incidence of distant recurrence in ILK-positive patients was with 46 ± 9% significantly higher as opposed to 24 ± 8% in ILK-negative patients ($p < 0,05$).

Conclusions: ILK-positive NSCLC cases carry a higher risk of distant recurrence. Positive ILK staining evaluated preoperatively may be suggestive for induction chemotherapy.

091-F LATE IMPACT OF LOBECTOMY FOR NSCLC IN RESPIRATORY FUNCTION OF OCTOGENARIAN PATIENTS WITH COPD

Cristian Rapicetta; Luca Voltolini; Stefano Bongiolatti; Sara Tenconi; Felice Granato; Mariasole Gallazzi; Piero Paladini; Claudia Ghiribelli; Giuseppe Gotti
Thoracic Surgery Unit, Siena, Italy

Background: To assess the effect of standard lobectomy on respiratory function in octogenarian patients with mild or moderate COPD
Methods: We reviewed all octogenarians (n=38) who underwent lobectomy for stage I-II NSCLC from 2000 to 2006. Inclusion criteria were: Tiffenau index < 0.7, no adjuvant therapies, smoking cessation after surgery, spirometric data available after 12±3 months from surgery in absence of relapsing disease
Results: After excluding 12 patients (3 died perioperatively), twenty-six fulfilled the inclusion criteria. The median preoperative FEV1 was 80% (range 56.7-100%). The mean change in FEV1 after lobectomy was a loss of 11% (range -32% - +7% , p=0.004). Considering two groups on the basis of median FEV1 (Group1: FEV1≤80%, Group 2: FEV1>80%), mean FEV1 loss after surgery was -7.9% in Group 1 and -14.9% in Group 2, respectively (p=0.176). No statistical differences were found between the two groups in changes after surgery of FVC, arterial oxygen and carbon dioxide tension. DLCO% loss was significantly higher in group 2 compared to Group 1 (-22.5% Vs +1.5%, p=0.001). Six patients showed an improvement of postoperative FEV1: they all had a preoperative FEV1 less than 60%, an upper or homogeneous pattern of emphysema and received an upper lobectomy. In Group 2 the FEV1 loss was not affected by the type of lobectomy whereas in Group 1 resection of lower lobe was associated to a major FEV1 loss (-14.5% Vs +5.3%, p=0.05)
Conclusions: Octogenarian with FEV1 lower than 80% of predicted have a better late preservation of pulmonary function after lobectomy. Upper lobectomy seems to produce a lung volume reduction effect, leading to an improvement in the expiratory volume in patients with FEV1<60%

Wednesday, 3 June 2009
11:00 – 13:00
Session 13 – Mixed Benign

092-F ENDOTHELIALIZATION OF A POLY-METHYL-PENTENE GAS-EXCHANGE MEMBRANE

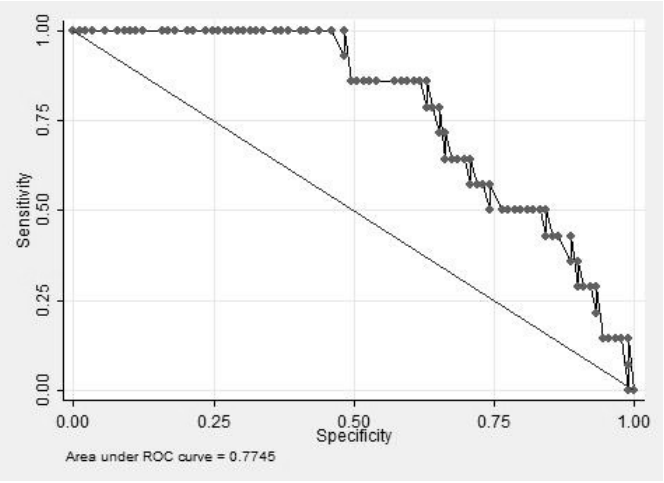
Bettina Wiegmann[1]; Christian Hess[2]; Andres Hilfiker[2]; Ulrich Martin[2]; Axel Haverich[1]; Stefan Fischer[1]
[1]*Departement for Cardiac, Thoracic, Transplant and Vascular Surgery, Hannover, Germany;*
[2]*Leibniz Research Laboratories for Biotechnology and Artificial Organs, Hannover, Germany*

Background: The use of artificial medical devices with blood contacting surfaces is limited by activation of the coagulation system. Aiming towards the engineering of a bioartificial lung, seeding properties and thrombogenic behaviour of endothelial progenitor cell-derived endothelial cells (EPC) on albumin/heparin coated gas-exchange membranes (PMP) used in membrane ventilators were tested.
Methods: EPCs were seeded onto PMP and cultured 8 days. Cell growth and seeding efficiency was verified by fluorescence microscopy, phenotype verification (expression of endothelial cell specific markers) with RT-PCR. Expression levels of activation and thrombogenic state markers were quantified by real-time RT-PCR. Thrombogenicity of the endothelialized PMP was tested using a platelet aggregation assay.
Results: Cell adhesion onto PMP was observed during the culture period. EPCs showed the endothelial phenotype. High expression of thrombomodulin and no expression of tissue factor indicated a non-thrombogenic state, which was underlined by the platelet assay. Expression of ICAM-1 / VCAM-1 were also unaffected by cell-to-PMP contact, but could be induced by TNF-α stimulation.
Conclusions: EPCs seeded onto PMP seem to remain in a non-activated state during culture period but maintain their biologic reactivity. Biologization of artificial surfaces is a promising approach to enable long-term use of artificial lungs in the clinical scenario.

093-F A SIMPLE EXERCISE TEST TO PREDICT POSTOPERATIVE MORBIDITY AFTER ANATOMICAL LUNG RESECTION

Gonzalo Varela; Nuria M Novoa; Esther Ballesteros; Ricardo Oliveira; Marcelo F Jiménez; Jose Luis Aranda
Thoracic Surgery Service Salamanca University Hospital, Salamanca, Spain

Background: Due to their capacity of integrating cardiac and respiratory evaluation, exercise tests are considered the most reliable ones for the preoperative workup of lung resection candidates. Measuring VO2max is expensive and not available in all centres while there is not general agreement on the preferred low technology tests and its accuracy to predict postoperative outcome. The aim of this investigation is to evaluate a simple, standardized incremental bicycle exercise test as a predictor of cardio-respiratory morbidiy after anatomical lung resection.
Methods: A series of 103 lung resection candidates (94 for lobectomy and 9 for pneumonectomy) were included in a prospective observational study. Patients with a known coronary or symptomatic cardiac valve disease or arrhythmia prior to surgery were excluded from the study. All patients underwent a standardized, incremental exercise test on bicycle up to voluntary interruption due to exhaustion. The analysed outcome was the occurrence of postoperative cardio-respiratory complications prospectively recorded and codified. Independent studied variables were: age of the patient, body mass index, preoperative and predicted postoperative FEV1 and DLCO, and recorded distance at the end of the test. After normality and collinearity testing, variables showing influence on the outcome on univariate analysis were introduced in a logistic regression model using resamplig technique by bootstrap analysis; only variables with a $p<0.05$ were kept in the model. Performance of the model was evaluated using ROC analysis.
Results: Mortality of the series was nil. Outcome prevalence was 14%. On logistic regression analysis, distance at the end of the test was the only predictive variable ($p=0.002$). On ROC analysis (Fig.1), C-index was 0.77 (95%CI: 0.66-0.88). The best cut-off point to classify patients was 4200 meters.



Conclusions: Reached distance in a simple standardized exercise test accurately predicts postoperative morbidity after lung resection. Its reproducibility has to be tested in an external validation series of cases.

094-F ROLE OF PREOPERATIVE FUNCTIONAL EVALUATION IN THE SURGICAL TREATMENT OF UNCOMPLICATED BULLOUS EMPHYSEMA

Giovanni Vicidomini; Paolo Laperuta; Luigi Busiello; Anna Perrone; Filomena Napolitano; Gaetana Messina; Alfonso Fiorelli; Mario Santini
Thoracic Surgery, Second University of Naples, Naples, Italy

Background: Bullectomy is always indicated in patients with complicated bullous emphysema. However, its role in uncomplicated cases is still undefined. The therapeutic rationale of bullectomy is based on improvement of lung mechanics and reduction of airways and vascular resistances. We report our experience on bullectomy with functional intention.
Methods: Between 1998 and 2007 we performed 98 bullectomies. Indication was functional improvement in 28 cases and complication in 70 (64 pneumothoraces). Video-assisted thoracoscopy (VAT) was performed in 80 patients and thoracotomy in 27 (9 VAT-conversions).
Results: Mortality: 1.4% (1/80) in VAT-group and 3.7% (1/27) in thoracotomy-group. Air leaks >7 days: 22.5% (16/80) in VAT-group (2 reinterventions) and 22.2% in thoracotomy-group. Mean postoperative hospital stay: 12.6 days (range 4-53) in VAT-group and 14.5 days (range 7-34) in thoracotomy-group. According with the American Thoracic Society classification, in the subgroup of 34 patients without pneumothorax, 10 (29.4%) were in stage 1 (FEV1: ≥50%), 18 (52.9%) in stage 2 (FEV1: 35-49%) and 6 (17.7%) in stage 3 (FEV1 <35%). Furthermore, we analyzed several preoperative functional parameters of this subgroup, including FEV1, FVC, RVpl (measured by pletismography), RVHe (measured by helium dilution), and RVpl-RVHe(%) difference. We observed an improvement of all these parameters at the 6-month follow-up control, that was significant in the overall patients ($p<0.0001$). That improvement was higher in stage 1-2 ($p=0.0001$ and $p=0.0004$, respectively) than in stage 3 patients ($p=0.0142$). Finally, the ROC curve showed that, with a cut-off value of 10.17%, RVpl-VRHe(%) was able to predict a FEV1 improvement >35% (sensibility: 86.7%; specificity: 82.4%; $p=0.0001$).
Conclusions: In the surgical treatment of bullous emphysema with functional purpose, bullectomy may improve respiratory function both in patients with healthy lung or with emphysematous residual lung. RV evaluation with both pletismography and dilution is useful in the selection of surgical patients. Furthermore, VAT is a valid and safe technique.

095-F CATAMENIAL PNEUMOTHORAX: A PUZZLING ENTITY.

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Background: Catamenial pneumothorax remains a challenging and not well-known condition. We aimed to report on a single institution experience with the therapeutic management of catamenial pneumothorax (CP) including the surgical strategy and hormonal suppression therapy.
Methods: Over a 12-year period, we reviewed from our prospectively filled database, 17 consecutive ovulating women operated on for spontaneous recurrent menses-associated pneumothorax. The operative procedures for CP, the intraoperative findings, the referral to gynaecologist and the long-term outcome were analyzed.
Results: Among the 17 women (mean age 32.4 years) seven were smokers and one was suffering from asthma. Pelvic endometriosis was known in one case but infertility was detected in seven (41%). The right side (n=16) was predominant. The current surgery followed a mean of 3 preceding CP. A previous talc pleurodesis failed in 9 patients. Intraoperative findings included diaphragmatic fenestrations (n=16) and apical bullae or blebs (n=5). The VATS procedure involved the closure of diaphragmatic fenestrations by suture or mesh application (n=4), the resection of blebs associated to pleural abrasion (n=8), pleurectomy (n=6) or talc insufflation (n=4). Duration of drainage and in- hospital stay was 6 and 8 days respectively. Postoperative morbidity rate was 23%. Mean follow-up was 34 months. Postoperative recurrences occur in 4 patients (23%). Only two required additional surgery. After gynaecologic examination, ten patients received a six-month period of hormonal suppression therapy.
Conclusions: Catamenial pneumothorax is rare but its misunderstanding constantly led to unsuccessful pleurodesis. The optimal surgical management of CP include the closure of diaphragmatic defects with prosthetic mesh associated to mechanical pleurodesis. Gynaecologic referral and temporary hormonal blockade has probably a key-role.

096-F QUALITY OF LIFE AFTER PULMONARY METASTASECTOMY: A CENTER- BASED PROSPECTIVE TRIAL

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Background: The objective of this study was to assess pre- and postoperative quality of life after pulmonary metastasectomy. Risk of an impaired quality of life (QoL) after surgery is an important consideration for many patients when deciding whether to proceed with surgery. Therefore, the optimum patient counseling should account not only for traditional measures of performance as radical clearance with low postoperative morbidity and mortality rates, but also for the anticipated residual QoL.
Methods: Patients were enrolled chronologically from their income into our department from 06/2007 – 08/2008. Including criteria were pulmonary metastasis, performance of a thoracotomy with pulmonary resection and the patient's formal agreement. Qol was measured by the use of the EORTC QLQ-C30 with appendix LC-13. One day preoperatively the first evaluation was done; three months postoperatively the follow-up was completed by a second questionnaire.
Results: 46 patients (30 man, 16 women, mean age 60 y) were included in the 3-months follow-up. 47 standard and 11 repeated thoracotomies were performed, 12 patients had staged or simultaneous bilateral thoracotomies. The major resection was multiple wedge in 37, single wedge in 9, segmentectomy in 6 and lobectomy in 6 operations.
QoL was rated with 61.96 points in the preoperative score; postoperatively the score reached 57.79 (from 100). Beside QoL, 25 different symptom- and function- scales were scored by the 43 questions. Pre- and postoperative differences in the symptom scales could be detected concerning chest pain (10,87 /23,19), dyspnoea (22,47 /37,2), coughing (27,41 / 38,41) and fatigue (28.5 /46.5), a high score represents a severe symptomatic in this circumstance. Notably, bilaterally operated patients showed a poorer outcome concerning all investigated items.
Conclusions: Pulmonary metastasectomy can be offered with a small impact on the general postoperative course of QoL, but certain symptoms seem to be aggravated.

097-F „STRIPPING“ FOR THE PREVENTION OF PROLONGED AIR LEAK - IS THERE A FUTURE IN THE PAST?

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Background: A number of technical precautions and many synthetic or biologic materials have been suggested to reduce the frequency of prolonged air leak (PAL) following lung resections. Preserving three dimensional properties of the remaining lung parenchyma may prevent this complication to some extent. This study presents our experience with an old fashioned technique called “stripping” for division of incomplete fissures to preserve the original shape of remaining lung hoping that PAL related problems may be minimised.
Methods: Two-hundred and sixty two consecutive patients with incomplete fissures underwent lobectomy or bilobectomy. Stripping was employed for division of incomplete fissures in Group S (n=148) and cut-and-sew technique or staplers were used in Group C (n=114). To evaluate possible learning curve effect of the technique, Group S was further divided into two subgroups which were designated as groups of initial and late experience (Groups SIE and SLE), representing the first 1/3rd (n=50) and remaining 2/3rd (n=98) of patients, respectively. Frequency of PAL and other related morbidities were investigated.
Results: Morbidity and mortality rates were comparable between Group S and C (10% vs 8.7% and 2% vs 2.6%; p=0.83 and p=0.96), as was the frequency of PAL occurring in 12 (8.1%) and 13 (11.4%) patients, (p=0.40) respectively. In comparison of each subgroups with Group C, PAL occurred in 9 (18%) patients in Group SIE (p=n.s) but only in 3 (3%) patients in Group SLE (p=0.03). There were also more postoperative persistent air space in Group C than Group S; however, this did not reach statistical significance.
Conclusions: This study suggests that preservation of the original shape of the remaining lung might decrease the frequency of PAL in patients with relatively healthy lung tissue. Actual favourable effect of stripping over other techniques emerges only if a precise technique can be employed which is possible only with a gained experience.

098-F THE AUTOLOGOUS PLEURAL BUTTRESSING OF STAPLE LINES IN SURGERY FOR EMPHYSEMA AND BULLOUS LUNG DISEASE: A PATIENT-CONTROL STUDY

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Background: Air leak remains the most common complication after the operation for bullous lung disease. Reinforcement of the staple line with either prosthetic material or bovine pericardial strips has been advocated to avoid this problem. We used the patient's own parietal pleural layer to cover the staple lines on the lung and assessed the comparative results.
Methods: A total of 22 patients underwent thoracotomy for either emphysema or bullous disease mainly due to lobe dominance bullae combined with emphysema between November 2007 and November 2008. The surgical data of patients who were operated without using any buttressing (Group I=12) were compared with the group of patients who were operated by using autologous pleural buttressing (Group II=10). Patient characteristics, chest tube removal time and hospital stay were prospectively recorded. Outcomes of two procedures were analyzed based on tube removal time and hospital discharge.
Results: There was no statistically difference in preoperative characteristics including age, sex, co-morbid factors, respiratory functions, heterogeneity of emphysema, intraoperative adhesion density, and length of staple line between both groups. However, autologous pleural buttressing group had significantly shorter chest tube removal time compared with the non-buttressing group ($p<0.05$) (table).
Conclusions: Autologous pleural reinforcement of the staple line on the lung in surgery for emphysema or bullous lung disease is a safe, effective, and cost free procedure and it helps earlier chest tube removal significantly.

Data Summary

	Group I (n=12)	Group II (n=10)	p
Diagnosis (bullous emphysema/ emphysema)	5/7	4/6	0.93
Operation time (min)	100.8±19.7	120.0±19.4	0.03
Adhesions (mild/moderate)	4/8	3/7	0.87
Legnth of staple line (mm)	266.2	324.5	0.35
Drainage (ml)	306.6	338	0.53
Chest tube removal (days)	4.82	2.78	0.049
Hospital stay (days)	5.92	4.20	0.09

099-F THE INTRATHORACIC VACUUM ASSISTED CLOSURE (VAC) DEVICE AS TOOL TO CONTROL THORACIC SEPSIS

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Background: Evaluation of the VAC device for the treatment of intrathoracic infections after lung resection, oesophageal surgery, or infected residual spaces.
Methods: Retrospective analysis of all patients treated by an intrathoracic VAC device between January 2005 and December 2008. All patients underwent surgical debridement and pleural decortication, and if necessary, control of the underlying cause of infection such as treatment of bronchus stump insufficiency, resection of necrotic lung, and closure of esophageal leaks. This was followed by repeated intrathoracic VAC dressings under general anaesthesia until the infection was controlled. The chest wall was temporarily closed after each VAC procedure. All patients had systemic antibiotic therapy.
Results: Twenty-eight patients had intrathoracic VAC dressings (16 male, median age 64, range 37-77). Eleven patients were treated for postresectional empyema (pneumonectomy, n=3; lobectomy n=8), 5 had severe intrathoracic infections and 12 had intrathoracic gastrointestinal leaks (oesophageal perforations (n=3), anastomotic insufficiency (n=8), small bowel perforation (n=1). Median length of VAC treatment was 22 days (range 6-66). Median number of VAC changes per patient was 6 (range 2-16) resulting in a median 4-day interval between VAC changes. In-hospital mortality was 15% (n=4). Control of intrathoracic infection was achieved in all surviving patients, with 1 patient having a second series of VAC dressings after an unsuccessful first attempt of closure. VAC treatment related morbidity consisted of postoperative bleeding in one patient.
Conclusions: The repeated intrathoracic application of the VAC device is an efficient and safe adjunct to treat intrathoracic infections and may replace open window thoracostomy in selected cases. Time intervals in between VAC changes are longer as reported in the literature for the Clagett procedure, resulting in better patient acceptance and reduced operating times.

100-F VATS DEBRIDMENT AND FIBRINOLYSIS IN PARAPNEUMONIC EFFUSION OR EMPYEMAS: SINGLE INSTITUTION EXPERIENCE

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Background: The management and timing of surgical management of parapneumonic effusion or empyema (PE) remains controversial.
The study objective is to review our experience in treatment of this pleural disease by video-assisted thoracoscopic surgery allowed by fibrinolysis.
Methods: Between jenuary 2000 and december 2008, over 765 VATS procedures, 137 were done for treatment of PE.
There ratio M/F is 95/32 (3:1). Median age was 52.9 yrs (range, 15 to 81.Before surgery the patients have had antibiotic therapy, thoracentesis and CT scan. At CT was present pleural fluid free of loculated. The patients were admitted for surgery after a median of median hospital stay of medical teray of 17 days (min 14 max 28). The thoracoscopic access was generally posterior based on CT evidence, after finger debridment, a second access in median axillary line was made under vision. After complete debridment fibrinolisis was made with instillation of Urokinase 100000 U.I every day for 3-5 days with closed drainage for 3 hours.
Results: The median of operation duration was 31.5 minutes (min 10 max 60). Microrganism profile was detected only in 20/137 (14.6%) pts: 4 for B. Koch and these have had antimycobaterium therapy for 6 months the other 16 have had therapy according with abg. Overall complication: no postoperative mortality, no resolution in 5/137 pts (3.6%) with open surgery decortication and pleurectomy. no adverses reaction to fibrinolysis. The patients were discharged after 6.9 days (min 4 max 10 days).
Conclusions: The early VATS and fibrinolysis is effective to control infectious pleural disease and to prevent late pulmonary restriction due encasement of the lung. For evidence of purulent fluid at the thoracentesis of loculated pleural effusion at CT is better and safe to do VATS and fibrinolysis directly without chest tube drainage to prevent a more large number of open surgery.

101-F SURGICAL MANAGEMENT OF PRIMARY EMPYEMA OF THE PLEURAL CAVITY: OUTCOME OF EIGHTY ONE PATIENTS.

Yousef Shahin; John Duffy; David Beggs; Edward Black; Andrzej Majewski
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Background: OBJECTIVE:To review our experience in the surgical management of postpneumonic empyemas (primary empyemas) and to determine the outcomes of patients who underwent different surgical treatment modalities.
Methods: We reviewed 106 patients retrospectively who underwent surgical management of pleural empyema over a period of 3 years from August 2005. Patients' surgical procedures and outcomes were reviewed. We identified 81 patients (76%) (58 males, mean age 52 years) with primary empyema and 25 patients (24%) with empyema secondary to: haemothorax, Oesophageal rupture (Boerhaave's syndrome), post pneumonectomy, chronic drainage of malignant pleural effusion or spontaneous pneumothorax. The first group of patients with primary empyema was analysed.
Results: We identified 29 patients (36%) with stage II empyema and 52 patients (64%) with stage III. Majority of stage II empyema patients underwent thoracoscopic debridement (28 patients) and only one patient had open thoracotomy and debridement. Stage III patients underwent thoracoscopic debridement and decortication (5 patients), thoracoscopic decortication (27 patients) of those 6 patients (22%) were converted to open decortication, open decortication (19 patients) and fenestration (1 patient). Mortality rate was 0% for all procedures. Mean length of hospital stay was 8 days for thoracoscopic debridement, 6 days for thoracoscopic decortication, 12 days for open decortication and 6 days for thoracoscopic debridement and decortication.
Conclusions: Video Assisted Thoracoscopic Surgery debridement/decortication is a safe and effective method of treatment of postpneumonic empyema. Conversion rate to open procedure for stage III empyema was only 22% which encourage us to consider VATS debridement/decortication as a first choice treatment. Patients treated with VATS debridement/decortication spend less time in hospital. The earlier patients are referred for surgical treatment the better the clinical outcome.

102-F THORACOTOMY IN THORACIC INJURIES: RESULTS OF A TERTIARY REFERRAL HOSPITAL

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Background: After thoracic injury, several critically injured patients require thoracotomy. A retrospective study was performed to review our results of thoracotomy in patients suffering from thoracic injury.
Methods: The files of the patients with thoracic injury were retrospectively investigated and those who underwent thoracotomy were included into the study. Demographic data, medical records were reviewed for associated injuries, indications for thoracotomy, intraoperative findings, perioperative blood replacement, and the outcome. Factors that could affect the mortality were analysed using Fisher's exact test or t-test.
Results: Between April 2003 and November 2008, 621 patients with thoracic injury were evaluated and treated in our clinic. Twenty patients (3.2%) underwent thoracotomy. Penetrating type of injury occurred in 15 patients, and blunt type in five. None of them required endotracheal intubation at the scene or in transit, and all were alive with detectable sign of life on arrival at hospital. The overall transport time was 58 minutes. Severe and continuous hemothorax (80%), followed by massive air leak, major vessel injury, and trauma already causing a degree of thoracotomy were indications of thoracotomy. Eigthy-five percent of the patients survived after thoracotomy (86.6% of penetrating, 80% of blunt injury). Mortality was statistically common in patients with lower GSC (p=0.03), and when the transport time (p=0.03), and the time spent on emergency room (p=0.05) were longer.
Conclusions: Following an injury to the thorax, patients with selected indications require thoracotomy. Prognosis of the patients with lower GCS is low. Early transport of the patients to a well-equipped and qualified emergency center and quick attemps to diagnose any indication necessitating thoracotomy play a significant role in improving the outcome in patients.

103-F "CONSERVATIVE" SURGICAL TREATMENT OF LUNG ABSCESS.

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Background: Lung abscess continues to be a significant cause of morbidity and mortality. The prognosis remains poor for elderly, debilitated, malnourished, immunocompromised patients and for those, who acute rupture into the pleural cavity occurred. This study presents our experience in a conservative surgical treatment of these patients, treatment that consist in appropriate drainage with de Pezzar drains.
Methods: We retrospectively reviewed the records of patients with lung abscess who were hospitalized at our department from January 2000 through December 2008 and required surgical treatment.
Results: There were 30 patients (28 men, 2 women) who underwent 32 surgical procedures. Median age was 49,06 years. The mean hospitalization duration was 26,4 days. Twenty two (73.3%) patients underwent typical lobectomy due to large size abscess, massive hemoptysis, acute increase in abscess size, and radiographic evidence of contralateral lung contamination despite prolonged antibiotic treatment. Two (6.6%) patients underwent limited lateral thoracotomy, pneumonotomy and placement of a de Pezzar drain due to abscess caused by inoperable lung cancer. Six patients (20%) underwent urgent thoracotomy due to acute rupture of the abscess into the pleural space. The produced pyopneumothorax precluded the lobectomy and closure of the leaking major bronchioles and drainage of the hemithorax were performed. Two patients were reoperated due to hemorrhage. There was no mortality, but the necessity of prolonged chest drainage with de Pezzar drain (35 to 80 days) occurred in the 8 patients, who were not fit for lobectomy.
Conclusions: There are well defined indications for the operative treatment of lung abscess. The majority of these patients will be treated with percutaneous drainage and typical or atypical pulmonary resections. Our experience shows that the abscess or thoracic cavity drainage, with de Pezzar drain for a long time, seems to be useful and safe in the elderly, debilitated, malnourished, immunocompromised patients.

NOTES

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Sunday, 31 May 2009
08:30 – 17:30
Sunday Posters

104-P SEVERITY OF PECTUS EXCAVATUM INFLUENCE THE CONSUMPTION OF OPIOID ANALGESICS FOLLOWING MINIMALLY INVASIVE CORRECTION OF PECTUS EXCAVATUM - A SINGLE-CENTER STUDY OF 236 PATIENTS

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Background: Minimally invasive correction of pectus excavatum is often associated with pronounced postoperative pain which can be difficult to treat. This study estimates the effect of the severity of pectus excavatum on the consumption of opioid analgesics following MIRPE in order to optimize postoperative pain management.
Methods: A retrospective study was conducted on 236 consecutive patients, who underwent minimally invasive correction of pectus excavatum in the period 2005-2008. The collected data included evaluation of preoperative pectus excavation depth, patient demographics, data for the perioperative and early postoperative period, including postoperative complications and data on the postoperative pain management. The consumption of opioid analgesics was registered in a 24-hour period after discontinuation of thoracic epidural analgesia and the various types of opioid analgesics used during the study period were converted to morphine equivalents.
Results: The total morphine consumption following minimally invasive correction of pectus excavatum ranged between 20 and 370 mg/day. Multiple linear regression analysis showed a significant positive linear relationship between severity of pectus excavatum and the daily consumption of morphine, thus each time pectus excavation depth was increased by one centimeter the morphine consumption was increased by 6% (95% CI: 0.3 to 11%).
Conclusions: This study confirms a significant positive linear relationship between preoperative assessed severity of pectus excavatum and consumption of opioid analgesics following minimally invasive correction of pectus excavatum. We conclude that the postoperative consumption of opioid analgesics is increased by 6% (95% CI: 0.3 to 11%) for each centimeters deterioration in pectus severity. Severity of pectus excavatum can with advantage be involved in the prediction of the expected morphine consumption in the critical transition period going from thoracic epidural analgesia to oral analgesia following minimally invasive correction of pectus excavatum.

105-P EFFECTS OF A LUNG SEALANT SYSTEM ON MORBIDITY AFTER PLEURAL DECORTICATION FOR EMPYEMA THORACIS: A PROSPECTIVE RANDOMISED, BLINDED STUDY

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Background: Prolonged postoperative air leaks (AL) are a major cause of morbidity. Aim of this work was evaluating use of a Lung Sealant System (Pleuraseal™, Covidien, Mansfield, MA, U.S.A.) in pleural decortications for empyema thoracis.
Methods: From January 2008 to December 2008, 46 consecutive patients received pleural decortications for empyema thoracis. Post-procedural and malignancy-related empyemas were excluded. After hydro-pneumatic test and surgical correction of AL (until satisfaction), patients were assigned (23 per group) to Control or Sealant group. Control group underwent no additional interventions. In Sealant group, lung sealant was applied over AL areas. Following variables were measured daily: patients with AL; time to chest drainage (CD) removal; CD drainage volume at removal, postoperative length of hospital stay, postoperative C-reactive protein (CRP), and leukocyte counts. Personnel recording parameters were blinded to intervention. Two-tailed t-tests (normally distributed data) or Mann–Whitney U-test (not-normally distributed data) were used for evaluating significance of differences between group means or medians. Significance of any proportional differences in attributes were evaluated using Fisher's Exact Test. Statistical analysis was carried out using R-software (version 2.8.1).
Results: Results are summarized in Table 1. Groups were similar regarding demographic and baseline characteristics. No patients were withdrawn from study; no adverse effects were recorded. There were no significative differences on CRP and leukocyte levels between two groups. Compared with the Control group, in Sealant group significantly fewer patients had AL (30 versus 78%, p = 0.012), and drains were inserted for a shorter time (medians, 3 versus 5 days, p = 0.05). Postoperative hospitalization time was shorter in Sealant group than in control group, but difference was not significant (0.7 days, p = 0.121).
Conclusions: Pleuraseal™ Lung Sealant System significantly reduces AL following pleural decortications for empyema and, despite of not-increased infectious indexes, is suitable for routinely use, even in procedures with contaminated pleura.

Table 1

Variable	Sealant group	Control group	*p* value
Patients (%) with air leak	7 (30%)	18 (78%)	0.012
Total drainage volume (ml): mean ± SD	534 ± 149	873 ± 257	< 0.001
Days with drain: median (quartiles)	3 (1.5)	5 (1.4)	0.05 *
Postoperative hospitalization (days): median (quartiles)	4 (4.5)	4.5 (4.7)	0.121 *
Postoperative leukocyte level (10^3 g/l) ± SD	10.9 ± 3.2	10.7 ± 3.1	0.95
Postoperative C-reactive protein level (g/l) ± SD	11.3 ± 2.3	10.9 ± 1.7	0.97

SD, standard deviation.
** Data was not normally distributed and was analyzed by non-parametric statistics (Mann–Whitney U-test; exact significance shown).*

106-P TRANSAXILLARY APPROACH THORACIC OUTLET SYNDROME: RESULTS OF SURGERY AND MANAGEMENT OF COMPLICATIONS

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Background: Thoracic outlet syndrome (TOS) is one of the most complicated antities with respect to either diagnosis or treatment in thoracic surgery. Surgical removal of the first rib and cervical rib if present has been suggested as the treatment choice in patients who do not benefit from physiotherapy. In this retrospective study, our surgical experience with TOS and the management of surgical complications were presented.
Methods: A total of 103 cases were operated with the diagnosis of TOS between January 1995 through 2008 December. Ninety of the cases were females (87%) and 13 (17%) were males with a main age of 35.7 (16-58).
Results: A total of 122 operations were performed with 18 bilateral and 1 recurrent operation. The EMG test were consistent with TOS in 32 patients (26%). Diagnosis was neurogenic TOS in 101 (98%) and vascular in 2 (2%) patients. All neurogenic TOS operations were performed via transaxillary route. Posterior thoracoplasty approach was done for recurrent TOS in one case. A total of 22 (18%) cases had a cervical rib. Fibromuscular bands observed in 62 (50%) cases. The rates of favorable and poor surgical outcome were 116 (95%) and 6 (5%) respectively. The most common complication was an apical pneumothorax in 27 (22%) cases, followed by wound infection in 4 (3%), lymphatic leak, axillary hematoma and mild brachial plexus traction palsy in 1 (1%) cases. Mortality was not observed.
Conclusions: Transaxillary route has been the good approach in patients with TOS, which provides an adequate exposure for complete removal of first rib and coexisting pathologies by least morbid manner and perfect cosmetic result.

107-P CIRCULATING TUMOR CELLS (CTCS) IN PATIENTS WHO UNDERWENT LUNG RESECTION FOR LUNG METASTASES

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Background: Circulating tumor cell (CTC) is a surrogate of distant metastasis, and the CTC-test evaluated with an automated system ("CellSearch") has been established as a clinical marker in monitoring blood of metastatic breast and colorectal cancer. However, its clinical significance in patients with lung metastases, especially patients who underwent lung metastectomy, remains unclear.

Methods: Among a total of 342 patients in whom the CTC-test was conducted at our institute from September 2007 through December 2008, 44 patients who underwent lung resection for lung metastases (from colorectal cancer, n=18; from renal cell cancer, n=7, and from others, n=19) were reviewed. For each patient, a 7.5mL of peripheral blood was drawn just before lung resection, and was applied for the CTC-test. CTCs were quantitatively evaluated with the "CellSearch" system without knowledge of clinical characteristics of each patient.

Results: The mean CTC-count in 7.5mL of peripheral blood for patients with lung metastasis was 4.18, which was highest than that for primary lung cancer (n=137; mean CTC-count, 2.17) and other malignant tumors (n=101; mean CTC-count, 0.89). The CTC-count was "0" in 72.4% (37/44) of patients with lung metastasis, whereas the highest CTC-count was "175" which was documented in a metastatic breast cancer patient. Among patients with lung metastasis, there was no significant difference in the CTC-count according to the type of primary tumor.

Conclusions: In patients with lung metastasis, most patients who underwent lung resection were negative for CTC, a surrogate of micrometastasis, which suggest that distant metastasis can be well controlled in candidates for lung resection. Postoperative survival in correlation with the CTC-count will be examined in future to assess its clinical significance.

108-P CLINICAL USEFULNESS OF ALPHA-B CRYSTALLIN ANTIBODIES IN NSCLC PATIENTS PLASMA AS A MARKER OF LYMPHOGENIC SPREAD

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[4]*Medical Academy, Department of Genetics, Sofia, Bulgaria*

Background: The currently applied technologies and methods for lung cancer staging have broadly recognized limitations in giving a complete information for the lymphogenic spread of a molecular pathology as cancer. The aim of the paper is to study the levels of expression of alpha-B crystallin antibodies in the plasma of NSCLC patients with or without mediastinal lymph node involvement and to analyse its clinical usefulness as a marker of lymphogenic spread.
Methods: A total of 38 consecutive NSCLC patients, admitted to the Department of Thoracic Surgery between 2007 and 2008, participated in the study. Age-matched control group (52 volunteers) was used for the comparison of the plasma levels of alpha-B crystallin antibodies. ELISA with primary polyclonal anti-rabbit anti-alpha-B-crystallin antibody was applied. Mann Whitney rank test and ROC curve analysis were performed to describe the specificity and sensitivity of the assay.
Results: Twenty-one (55.3%) of the patients had no mediastinal lymph node involvement and seventeen (44.7%) of them were with lymph node metastases. The mean concentration of alpha-B antibodies in the control group and in the NCSLC patients group was respectively 0.07 and 0.26 (p=0.003). Although the Mann-Whitney rank test showed a borderline statistical significance between the two groups of NSCLC patients with or without mediastinal lymphs nodes metastases (p=0.054), the area under the curve for the metastatic group was 0.687 (95% CI 0.514–0.861). The distinctive cut-off point concentration that stratifies the two groups of patients according to their mediastinal lymph node status is 0.345 with sensitivity of 69% and specificity of 72%.
Conclusions: Alpha-B crystallin antibodies in NSCLC patients plasma are potential biomarkers for the complex evaluation of the metastatic spread of the tumors. Their further validation as diagnostic markers or indicators of disease recurrence is needed.

109-P DEVELOPMENT OF A PORCINE MODEL TO STUDY DONOR LUNG INJURY

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Background: Brain death rapidly results in lung injury by a variety of insults making only 20-30% of cadaveric donors suitable for lung transplantation. A lung injury model would help to study mechanisms to ameliorate the pretransplant graft quality during ex vivo perfusion. The aim of this study was to develop a porcine model of lung injury.
Methods: Specific pathogen free pigs (47±8kg) were divided into 3 groups. In group 1 (n=6), lung injury was induced by bronchoscopical instillation of lipopolysaccharide [LPS] (15mg/50mL saline in each lung). In group 2 (n=5) 50mL saline was administered to both lungs [SAL]. Group 3 (n=5) underwent bronchoscopy only [SHAM]. CT scans of the lungs were taken 17 hours before (T-17) and 31 hours after (T31) instillation to score the percentage of ground glass opacities. Broncho-alveolar lavage (BAL) was performed, and blood gases, hemodynamic and aerodynamic parameters were measured at T0 and T50. Blood samples for cell counting and temperature were taken at all time points. Pigs were sacrificed at time of cold pulmoplegia (T50). Peripheral and central tissue samples from each lobe were collected for histology. Wet lung weight was measured.
Results: Wet lung weight/body weight was higher in LPS vs SAL (p
Conclusions: LPS instillation caused lung injury reflected by inflammatory cells in BAL, ground glass opacities on CT and hemorrhage on histology. Longer intervals after instillation may be needed before physiologic changes can be observed.

Right lung	LPS		SAL		SHAM	
BAL cells x10^6	T0	T50	T0	T50	T0	T50
Total	1.0±0.2	4.5±1.6 **^^^	1.3±0.3	1.7±0.2	1.2±0.4	1.0±0.3
Neutrophils	0.0±0.0	2.8±1.3 **^^^	0.1±0.0	0.2±0.1 **	0.1±0.0	0.1±0.1
Lymphocytes	0.1±0.1	0.4±0.2 *^	0.2±0.1	0.3±0.1	0.1±0.1	0.1±0.0
CT	T-17	T31	T-17	T31	T-17	T31
Ground glass opacities (%)	2.5±2.5	27.5±20.0 *^	2.5±4.0	5.8±4.2	2.0±2.2	5.8±6.4

*** p <0.05, ** p <0.01 for 0h versus 50 h or -17h versus 31h (paired t-test)**
^ p <0.05, ^^^ p <0.001 for LPS versus SAL and SHAM (ANOVA)

110-P IS A THORACIC TUBE LIABLE TO INFECTION: ANALYSIS OF INFECTION PATTERNS AND ANTIBIOTIC USE FOLLOWING CHEST TUBE INSERTION IN 500 PATIENTS IN A MAJOR TRAUMA CENTER

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Background: To determine infection patterns following urgent chest tube placement, compare these with non urgent cases and establish the need for antibiotic coverage.
Methods: We retrospectively analysed hospital records of 500 patients who were treated in our Department, in a Level 1 Trauma Center between 1/2005-12/2008. 250 patients received a thoracic tube urgently versus 250 patients with non urgent tube placement. The 1st group had 160 trauma and 90 non trauma(spontaneous pneumo-hemothorax) patients. In the 2nd group 50 patients had malignancy, 75 scheduled operation, 125 stayed in ICU >48 hrs. All groups received a 2nd generation cephalosporin till tube removal. We cultured pleural fluid in case of infection and all tips of thoracic tubes after removal.Type of infection, length of hospitalisation and chest tube days were recorded.
Results: In group 1 among trauma patients 4/160(2.5%) developed empyema, 2/160(1.25%) pneumonia, 3/160(1.8%) wound infection. Non trauma patients had lower infection rates. Group 2 with malignancy or scheduled operation, 2/125(1.6%) had empyema, 2/125(1.6%) wound infection, no pneumonia case. In ICU 5/125(4.0%) patients developed empyema, 9/125(7.2%) pneumonia, 3/125(2.4%) wound, 12/125(9.6%) blood stream infection. In urgent cases, most antibiotic failures were attributed to Staphyllococcus species. In non urgent, MRSA or nosocomial gram negative species were responsible. Most patients with empyema were treated surgically.
Conclusions: Placing a chest tube urgently for trauma or otherwise is a procedure with low infectious risk. For patients with scheduled operations or malignancy, basic antibiotic coverage is adequate. In ICU patients, full antibiotic coverage for nosocomial strains is mandatory.

111-P OPEN-WINDOW THORACOSTOMY AND THORACOMYOPLASTY IN THE TREATMENT OF EMPYEMA AFTER PULMONARY RESECTION

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Background: The aim of this study is to report our experience in the treatment of empyema complicating pulmonary resection, using open-window thoracostomy (OWT) and thoracomyoplasty (TMP).
Methods: From 1979 to 2007, 31 patients (30 men and 1 woman) ranging in age from 42 to 74, with chronic pleural empyema after pulmonary resection, characterized by residual empiematic cavity, bronchopleural fistula (BPF) and persistent pleural infection, were treated with OWT and TMP.
Results: 27 pneumonectomies, 3 lobectomies and 1 segmentectomy were performed; in 24 patients in order to treat a lung cancer and, in the other 7, due to pulmonary deterioration by chronic infectious disease. Successful control of the pleural cavity infection after OWT was achieved in all cases. 2 to 42 months later (9 months average), when the functioning BPF was eliminated and the pleural cavity estabilised and reduced (less than 250 mL), a TMP was carried out. In order to eliminate the cavity we choose the intra-thoracic transposition of the following skeletal muscles: serratus anterior (SA) in 7 cases; latissimus dorsi (LD), 6; LD and SA, 9; pectoralis major (PM) and LD, 5; PM and pectoralis minor, 3 ; LD and SA and PM, 1. Two patients died 3 and 21 days respectively after the TMP, following a respiratory failure. Results were highly satisfactory in 25 of the cases. A partial necrosis of the muscular flap occurred in the other 4; after a new open drain a myoplasty in 2 patients, and a skin graft in the other one, were curative. The open drain was maintained with the fourth patient because of the poor functional state.
Conclusions: Successful treatment of chronic pleural empyema after lung resection requires logical espacing in the procedure. In our experience, OWT and TMP results a good method to assure both patients survival and elimination of the residual pleural cavity.

112-P THE EXPRESSION OF INTEGRIN-LINKED KINASE AND THE PROGNOSIS OF MALIGNANT PLEURAL MESOTHELIOMA

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Background: Integrin-linked Kinase (ILK) is a recently discovered cell membrane-bound molecule implicated in the metastatic progression of many tumor types. We have recently shown its expression in malignant pleural mesothelioma (MPM). In order to characterize its prognostic role in MPM, here we investigate ILK expression in a historical MPM patient cohort.

Methods: The paraffin specimens of 80 MPM cases treated from 1990 - 2006 (52 surgical cases, 28 conservative cases) have been retrieved from the archive, stained with H&E as well as with anti-ILK, re-evaluated and scored by an external pathologist. Intensity of ILK staining and percentage of staining cells have been statistically correlated with the survival.

Results: The mean age of patients age was 60 years; the male:female ratio was 3:1. Only a minority of patients was treated according identical therapy protocols. One half of the patients had a biphasic, the other half an epitheloid subtype; 90% of the patients were ILK-positive. Surprisingly, within the subgroup of purely conservative treatment, ILK expression conferred significant survival advantage ($p < 0.001$). Conversely, in the surgical subgroup neither ILK staining intensity nor percentage of staining cells was correlated with survival. However, across all treatment modalities only the histological subtype affected significantly the survival ($p < 0.01$).

Conclusions: In certain subgroups of MPM, expression of ILK is associated with prolonged survival. However, in order to shed light on the pathophysiology of ILK expression in MPM, in vitro studies as well as prospective multi-centric trials investigating homogenous patient cohorts are needed.

113-P MANAGEMENT OF RESIDUAL PLEURAL SPACE AND PERSISTENT AIR-LEAK AFTER MAJOR LUNG RESECTION

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Background: Residual space and persistent air leak is the most common complication after lung resection, requiring additional treatment and hospital stay. The aim of this prospective study is to assess an anteriorly placed Petzer catheter for prolonged air leakage and residual pleural space after upper lobectomy/bilobectomy or LVR.
Methods: Out of 317 patients submitted to upper lobectomy/ bilobectomy for NSCLC or Lung Volume Reduction (LVR) for emphysema, 40 (12.6%) experienced pleural space problems associated with prolonged air leak (>5days). Patients were prospectively randomized into 2 homogeneous groups: (A) with anterior Petzer catheter placed in the 2nd intercostal space in the midclavicular line, while chest tubes inserted intraoperatively were removed (n=20) and (B) control group (n=20). All patients were operated by the same surgeon. The multivariate analyses were used to compare the mean duration and quantity of drainage, the length of hospital stay and the need of additional interventions to treat the persistent postoperative alveolar leak.
Results: No 30-day mortality was recorded. The duration of drainage required (8.1. days vs 13.2 days) and the hospital stay (9.7 days vs 14.2 days) were shorter in Group A compared to Group B (p=0.001), while the mean quantity of blood drained in both groups was not found to be statistically significant (726 ml vs 795 ml). Obliteration of the pleural space was observed in all cases of Group A in a mean time of 2 days (range 1 to 4 days, while 3 patients of Group B were discharged with a residual pleural space, one of them complicating with empyema one month after discharge.
Conclusions: Our experience supports the use of an anterior Petzer catheter connected to water seal, whenever a space problem associated with prolonged air leak occurs. It reduces significantly the duration of the intrapleural drainages and the length of the in-hospital stay. The procedure is effective, safe, and easy to perform.

114-P THE USE OF THOPAZ PUMP IN THE MANAGEMENT OF AIR LEAKS. A TRANSITION FROM ANALOGUE TO STANDARDISED DIGITAL SCORING. EXPERIENCE OF FIRST 100 CASES FROM A SINGLE INSTITUTION

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Background: Chest tube drainage principles and technology remained relatively the same until recently. Most systems are analogue, therefore air leaks are scored subjectively. The ideal chest drainage system should be reliable, simplicity, safe, portable, cost efficient and offer real time data to help surgeons manage a chest tube . We have therefore tested and present our initial experience with such a digital portable suction system (the Thopaz Pump-Medela Inc.).
Methods: 100 patients, undergoing elective surgery, were managed and evaluated postoperatively with the Thopaz Pump. They were all placed on suction at 2KPa provided by the pump itself and air leaks were measured by the pump's microprocessor. Decisions to remove drains were based on the data provided by the pump with no visual scoring of underwater seal leaks.
Results: Our results revealed that the pump reduced overall Hospital stay with a financial benefit. Patients were satisfied regarding handling, and ease of use with mobility being the most important advantage of the new device (27 of them had already witnessed the underwater seal bottle system during previous surgery). The pump scored highly amongst the nursing staff regarding safety, ease of use, handling, mobility as well as infection prevention with disposal of consumables. The recorded data proved a significant advantage in making safe decisions for chest tube removal in morning and afternoon ward rounds by the Junior medical team. Hence, an objective management plan was produced regarding chest tube management unifying practices and simplifying ward rounds.
Conclusions: The Thopaz Portable suction pump is compact, safe and easy to use and provides objective recorded data for chest tube management. It offers early and unobstructed mobilisation of patients and could extend it's role in the community setting by allowing early discharge with tubes in situ and offsite decisions with interpretation of recorded data over the internet.

115-P OPERATIVE STABILIZATION OF TRAUMATIC RIB FRACTURES BY TITANIUM MATERIAL: ANALYSIS OF 40 CASES

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Background: To remove malunion, dyspnea, persistant pain and respiratory function losses in patients with posterolateral multiple rib fractures.
Methods: Inclusion criteria for rib fracture stabilization were fractures with non-untied (separated-displaced) fracture ends; pain lasting at least 2 weeks and unresponsive to non-narcotic analgesics; fractures leading to postural derangement of patient, and flail chest; organized hematoma and oozing from chest tube. Exclusion criteria were fractures with united (non-displaced) fracture ends, and fractures under the scapula. Fractured tips were approximated in the manner of end-to-end and pierced with perforator. Titanium plates were screwed down by titanium screw. Specifications of all rib fractures and fixed rib fractures were recorded and compared as well as injury severity score (ISS).
Results: Between 2003 and 2008, 216 patients were treated due to rib fractures. Traffic accidents were the leading cause for each group. Operative fixation rate was 18.5% (40/216). Interval from trauma to operation was 4.95 ? 6.1 (range 0-33) days. Mean number of fractured ribs in patients who underwent operative fixation was 2.6 ? 0.7 (range 2-4). Pain and dyspnea resolved in all patients. Postoperative hospital stay was 6 ± 2 days. Titanium materials did not interfered with postoperative BT and MRIs. There was a 15% increase in FEV1 and 19% in FVC, postoperatively. Mean number of rib fractures, percentage of flail chests, mean hospital stay, mean ICU stay, mean ISS, mean duration of chest tube, and the incidence of thoracotomy were higher in patients who underwent fixation ($p<0.05$). Follow-up duration was 25.9 ? 21 (range 2-70) months. Two patients had disposition of un-united ribs and titanium materials (one-week after and 3 months after the operation). Redo needed for one patient.
Conclusions: Surgical stabilization of rib fractures is an effective method, which removes the pain and postural defect and increases the patient comfort. Titanium material has radiological advantage.

116-P CLINIC AND SURGICAL SPECIFICATIONS OF ADULT UNILATERAL DIAPHRAGMATIC EVENTRATION ACCORDING TO THEIR ETIOLOGY IN 20-PATIENTS: IMPORTANCE OF USING DIAPHRAGMATIC PATCH AND MINIMAL THORACOTOMY INCISION

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Background: To extract the differences among various diaphragmatic eventration (DE) etiologies and to compare the operation results relative to diaphragmatic patch use.
Methods: The files of 20 patients operated for unilateral DE (Left/Rigth: 13/7) between 2003 and 2008 were retrospectively investigated. Patients were classified according to etiology: (a) previous operation (neck, thorax, abdomen) or disease, (b) congenital (c) trauma. Two types of operation were performed via minimal lateral thoracotomy incision (12-14 cm): Plication and diaphragmatic patch application (P/P, 13 patients), and Plication alone (P, 7 patients). The results according to etiology and type of operation were compared.
Results: Mean age of 20 patients was 54.2±10.9 years. Dyspnea and chest pain were commonest complaints. High hemidiaphragm (alone or with blunt costophrenic sinus or with wide mediastinum) was the most prominent chest X-ray finding in 17 patients (85%). Postoperative mean FEV1 value (2±0.5) and dyspnea score (4.17±0.9) were significantly better than preoperative values (1.8±0.5 and 1.9±0.7, respectively). Average height of diaphragm (8 ± 3.1 cm) was not correlated with dyspnea score and FEV1 value. Patients with congenital etiology were younger, and had higher diaphragm, earlier operation after symptoms started and better preoperative FEV1 values. In patients who underwent P/P, the diaphragm was more elevated in centimeter. Hospital stay was shorter when P/P method was performed. There was no mortality. Postoperative complications occurred in 4 patients (20%) which were minimal to moderate in degree, excluding one respiratory insufficiency. Mean follow-up time was 25.4 ± 17.3 months. There was no recurrence in patients who underwent P/P, but two diaphragmatic events (one recurrence and one herniation) developed after operations with P method (28.5%).
Conclusions: FEV1 value and the severity of dyspnea can be corrected by plication of elevated diaphragm. Buttressing the diaphragm by patch after plication can protect from recurrence of DE or any diaphragmatic insufficiency.

117-P MAGE-A3 ANTIGEN-SPECIFIC CANCER IMMUNOTHERAPEUTIC (ASCI) AS ADJUVANT THERAPY IN RESECTED STAGE IB/II NON-SMALL CELL LUNG CANCER (NSCLC): FROM PROOF-OF-CONCEPT TO PHASE III TRIAL (MAGRIT)

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Background: MAGE-A3 recombinant protein combined with GSK proprietary immunological Adjuvant System AS02B as adjuvant treatment for completely resected stage IB or II MAGE-A3 (+) NSCLC has been evaluated in a Phase II study (249553/004/NCT00290355). In addition, analysis of gene expression profiling of primary tumors was performed to identify a prognostic/ predictive gene signature that possibly correlates with clinical activity of MAGE-A3 ASCI treatment.
Methods: Patients were randomly assigned to postoperative MAGE-A3 or placebo (2:1) with immunizations q3wx5, followed by q3mx8. Primary endpoint was disease-free interval (DFI); other endpoints were safety, disease-free survival (DFS), overall survival (OS).
Results: 182 patients (122 MAGE-A3, 60 placebo) were randomized: Median age 63 (45-81); 87% male; 67% stage IB; 65% squamous cell carcinoma. After a median follow-up of 44 months, 69 recurrences and 57 deaths were recorded. Group comparisons of DFI, DFS and OS gave a hazard ratio (HR) of 0.75 (95%CI=0.46-1.23, p=0.127), 0.76 (95%CI=0.48-1.21) and 0.81 (95%CI=0.47-1.40) in favor of the MAGE-A3 group, respectively. Treatment was well tolerated. Prognostic markers associated with high risk of relapse were identified. Stage IB patients with tumors not presenting this signature have a very low risk of relapse after surgery (
Conclusions: Conclusions: The 44 month follow-up analysis confirms the positive signal for activity of the MAGE-A3 treatment in adjuvant NSCLC with good tolerability. An efficacy Phase III study (MAGRIT) is ongoing. The primary endpoint of this trial is DFS. Other endpoints are clinical and biological indicators for safety and efficacy. The identified gene signatures need to be prospectively validated in this Phase III study.

118-P WAR AND THORACIC SURGERY: KABUL EXPERIENCE

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Background: To describe the approach and the modalities of treatment that influence the prognosis in patients with penetrating chest injuries.
Methods: From September 2005 to March 2006, 110 patients (medium age 30.1 y) were admitted to the civil hospital of Kabul with thoracic penetrating lesions: 40 stab injuries, 32 street incident, 26 gun shot injuries, 4 mine explosions, and eight other penetrating wounds. Of 110 cases, 32 presented pneumothorax (29.1%), 4 haemothorax, 70 haemo-pneumothorax, and four associated hepatic lesions. The most common symptoms were: dyspnoea, tachypnea, haemoptysis, cyanosis,subcutaneos emphysema and thoraco-abdominal pain. We evaluated the outcome in relation to the time from injury to treatment.
Results: A thoracic drainage was necessary in 74 patients (67.3%), 14 thoracotomy, 2 sternotomy. 12 laparotomies, 4 pleural decortications and four reconstructions of thoracic wall were performed. The medium length of hospital stay was 9,5 days. Drainage time was 4,5days. Thirty patients received haematic transfusions (27.3%). The most frequent complications were: recurrence of pneumothorax, pericardial trauma, empyema, rib fractures, tracheal stenosis, cardiac lesions, and septic shock. Global mortality was 9.1% with deaths due to septic shock (4), cardiac lesions (2), and abdominal lesions (4).
Conclusions: The approach to patients with thoracic trauma in the first hours improves the prognosis: those patients that we treated 12 or more hours after the event died or had a longer hospital stay. Resuscitation, fast diagnosis and timely surgical intervention increased the survival. Shock, infections and mediastinal lesions influenced mortality and morbidity. Therefore, in patients with important aerial and haematic losses, we choose an invasive approach (thoracotomy, sternotomy), always preferring parenchymal suture and minimal resections in order to obtain a better prognostic result. In the rest of patients we recommend an early conservative treatment, through the placement of drainages.

119-P INTRATHECAL MORPHINE: EFFECTS ON INTRAOPERATIVE ANAESTHETIC REQUIREMENTS AND RECOVERY PERIOD IN THORACIC SURGERY

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Background: Intrathecal (IT) opioids have been shown to provide analgesia by depressing the neuroendocrine response during the perioperative period. In this prospective, randomized, double-blinded study we investigated the effect of preoperatively administrated IT morphine on anaeshetic and analgesic requirements during total i.v. anaesthesia and evaluated the the recovery characteristics.
Methods: Thirty ASA I-II patients scheduled for lung resection by a posterolateral thoracotomy were included in this study, after written informed consent and ethics committee approval had been obtained. Patients were randomized to the morphine group (n=15) or the control group (n=15). Patients in the morphine group were given intrathechal 0.5 mg morphine before the induction of anesthesia while the others not. Anethesia was maintained with propofol (administrated according to the bispectral index) and remifentanil (adjusted according to heart rate and arterial blood pressure) infusions. In the recovery room patients were evaluated according to modified Aldrete score and received titrated i.v. tramadol up to 100 mg and meperidine until the verbal rating scale (VRS-0 – 10) was < 3. Perioperative hemodynamic data, propofol and remifentanil consumption and recovery score,VRS and analgesic requirements in the recovery room were recorded.
Results: Heart rates were similar in both groups throughout the study. Although clinically negligible, mean arterial blood pressure was significantly lower in IT morphine group only during the anaesthetic induction period. IT morphine group had a lower intra-operative remifentanil consumption (7.33±3.80 vs 9.73±3.25 μg-1 kg-1 h) ($p<0.05$) and needed significantly less analgesic in the recovery room. Recovery times were longer and pain scores were higher in control group ($P <0.005$ and $P<0.0001$ respectively).Side effects were few and similar in both groups in the early postoperative period.
Conclusions: The administration of IT morphine reduced remifentanil requirement during anesthesia and provided better recovery characteristics with less pain and shorter recovery time.

120-P TREATMENT OF MULTILOCULATED EMPYEMA THORACIS WITH MINIMALLY INVASIVE METHODS

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Background: The purpose of this study was to investigate the results of the minimally invasive treatment modalities in early stage multiloculated empyema thoracis.

Methods: Minimally invasive treatment modalities of 114 patients with class 5 thoracic empyema were retrospectively reviewed. Patient's demographics, symptoms, diagnostic studies, treatment options, and complications were evaluated.

Results: We underwent tube thoracostomy in 47 patients, fibrinolytic therapy with streptokinase in 23 patients and VATS deloculation and debridement in 44 patients. No statistically difference was available in age, gender, gram stain, and antibiotherapy before intervention among the groups. Illnes day before intervention was significantly longer in tube thoracostomy group than those of the others. VATS group had shorter drainage time and shorter hospital stay than the others. VATS and fibrinolytic therapy groups had less complication rate, and less open decortication requirement than tube thoracostomy. Succes rates were 66%, 95%, 100% in tube thoracostomy, fibrinolytic therapy and VATS, respectively. Totally 35 complications occured. Most frequent complication was air space. Two in hospital mortalities were seen.

Conclusions: In patients with early stage multiloculated empyema VATS deloculation and debridement is superior to TT alone and FT in reducing drainage time and hospital stay. It has a pretty high succes rate without a significant morbidity. Therefore, VATS decortication may be recommended as a first line therapy in early stage multiloculated empyema thoracis.

121-P REPAIR BY THORACOTOMY IN 15 PATIENTS WITH TRAUMATIC DIAPHRAGMATIC HERNIA: RESULTS OF USING LIMITED INCISION AND DIAPHRAGMATIC GRAFT

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Background: Exploring the results of traumatic diaphragmatic hernia repair by diaphragmatic mesh application via limited thoracotomy.
Methods: The files of 15 patients who underwent thoracotomy for diaphragmatic hernia following thoraco-abdominal injury between 2002 and 2008 were evaluated retrospectively. None had an intra-abdominal organ injury. Patients who were operated one month after injury were accepted as late-period patients. A limited thoracotomy incision (10-14 cm) was performed for all patients.
Results: There were 9 male and 6 female patients with a mean age of 66.3±13 (range 30-79) years-old, and more than half were older than 70. Type of injury was blunt in 8, and penetrating in 7 patients. Chest pain was the commonest complaint (86.7%). The diagnosis of herniation (right in 8, left in 7 patients) was made with computed tomography of the chest. The mostly herniated intraabdominal organ was the stomach (33.3%). Seven patients (46.7%) were late-period patients. Associated pulmonary, cranial, or bony injuries were present in all early-period, but in none of the late-period patients. Mean time interval between time of injury and surgical intervention was 86 ±181 (range 0.2-720) months. In 10 patients (66.7%) we used a diaphragmatic mesh after reduction of hernia and primary suturation of diaphragmatic defect. Postoperative forced expiratory volume in one second (FEV1) value was higher than preoperative value (1.5±0.6 versus 2±0.3; $p<0.05$). Postoperative morbidity was 20% (fever, pneumothorax, and empyema in three patients). Mean duration of chest tube was 4.7±1.4 (range 3-8) days, and mean duration of hospital stay was 16.4±8 (range 6-37) days. Mean follow-up time was 32.3±17.2 (range 6-67) months. Recurrence was seen only in one patient who did not undergo mesh application.
Conclusions: The repair of diaphragmatic hernia following thoraco-abdominal injury can be easily done via a limited thoracotomy incision and the usage of diaphragmatic mesh is safe and carries low morbidity.

122-P RESULTS OF NUSS RECONSTRUCTION AT YOUNGER ADULTS

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Background: The minimally invasive operative technique of Donald Nuss resulted to a revolutionary change in the reconstruction of pectus excavatum. By this procedure excellent aesthetic results can be reached that could never seen before. The technique is routinely performed at pediatric surgical centers, but we have less experience with operation of aged patients in Hungary. Hereinafter we review the results of the chest corrections at patients over 14 years of age.
Methods: We performed minimally invasive anterior chest wall reconstruction by the method of Nuss for pectus excavatum in 73 cases between 2003 and 2009. The average age was 21.3 (14-48) years. We performed Video Assisted Thoracoscopy technique with modified metal implant. There were primary chest corrections in 64 cases. The indication was unsatisfying cosmetic result after traditional way of chest reconstruction in 6 cases, second recurrence of pectus excavatum in 1 case. We had to implant double metal bars at 5 patients.
Results: There were no severe intra-operative complications. There were 4 dislocations of the metal bar. (12 and 53 days after the chest reconstruction, solved by Nuss-technique, 1 metal-removal on the 13rd day for local septic complication, 1 because of sterile dislocation 14 months after the operation. One bleeding from a small side-branch of the arteria mammaria was solved by VATS technique. One lung injury was treated successfully by pleural drainage, 3 subcutan seromas required punction, one hydrothorax needed drainage. Pectus carinatum developed after one correction. Over than 90 percent of the patients were satisfied with the cosmetic result we reached.
Conclusions: The operative method developed and suggested by Donald Nuss can be performed successfully and safely at younger adults in case of pectus excavatum. The age above 30 years and the previous open chest correction increases the risk of the operation and decreases the possibility of reaching the ideal aesthetic result.

Extremely deep pectus excavatum

123-P PERSISTENT PAIN AND DYSFUNCTION CAN HAVE LONG TERM EFFECTS ON WORK AND LEISURE ACTIVITIES FOLLOWING CHEST TRAUMA.

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Royal Victoria Hospital, Belfast, United Kingdom

Background: Chest wall injuries caused by seatbelts, airbags, agricultural and industrial injuries usually require little surgical intervention, so their severity is often underestimated. Many use the legal process not just for compensation for their ongoing perceived disability, but also in attempt to find the cause of their symptoms. The aim of this study was to document the pattern of long-term symptoms, the implications on work, leisure and domestic activities.
Methods: Between 2004 and 2008 116 self selected patients (68m, 28f) were examined for medico-legal purposes, on average 25.3 months (range 2.7 – 84.2) after injury.
Results: The mean intensity of work (on a scale 0-6) fell from a mean of 3.2 to 2.1 post injury, domestic work 4.7 to 2.8, and leisure grade from 2.8 to 1.8. This was contributed to by an increase in breathlessness from a mean of 1.2 to 1.8 (scale 1 to 5), fatigue/loss of stamina from 1.2 to 2.1, and chronic pain from 1.1 to 2.5. Lateral or shoulder crush injuries resulted in a higher incidence of volume loss, rib mal-alignment and neuralgic pain. Anterior impact caused persistent cartilage related pain: 17/32 (53%) of female car occupants with anterior impact had subsequent mammography, cardiological or gastro-intestinal investigation because of concern over persistent pain.
Conclusions: Post chest trauma symptoms, frequently minimised by doctors, may have major life changing effects for patients. Appropriate early counselling may avoid persistent lifestyle restriction and excessive medical investigations.

124-P LONG-TERM RESULTS OF PECTUS EXCAVATUM REPAIR IN ADULTS USING THE NUSS TECHNIQUE

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Background: The Nuss operation is considered the treatment of choice for children with pectus excavatum(PE). Evidence suggests that good results can also be achieved when treating adult PE patients with this technique but more studies and longer post-bar removal follow-up are needed. We have been routinely performing the Nuss operation in adults since 2001.
Methods: Surgery was indicated when the patient described a thoracic appearance which impacted negatively in his quality of life. This was evaluated by a series of interviews and occasionally psychological assessment and no surgeries were performed by purely cosmetic reasons. We modified the operation by inserting the bar extrapleurally with double videothoracoscopic control.
Results: We have performed 31 PE operations. 26 patiens(84%) were aged 18 years or older. Their median age was 22(range 18-40) and 92% were male. Only 2 patients(4%) reported physical symptoms. Minor EKG anomalies were discovered in 7(26%) while only 2(7%) had pathologic echocardiographies. The average Haller Index was 4.95(SD 2.11). There were 2(7.7%) early bar migrations and 1 hemothorax, all corrected surgically. We also recorded 5(19%) seromas, 2(7.7%) pneumothoraces and 1 pericarditis who was the only case needing early bar removal. 24(92.3%) patients were "satisfied" or "very satisfied" by the operation and reported an improvement in their quality of life. We have removed 11 bars, all without complications, after an per-protocol period of four years. The maximum follow-up period is 45 months and no recurrences have been recorded. Satisfaction with the procedure after bar removal and later was unchanged.
Conclusions: Adult patients with PE are intrinsically different from the pediatric population, mainly because of the increased rigidity of the chest wall. Higher stress over the bar may account for the rate of complications recorded. Nevertheless, the overall satisfaction and the good cosmetic results support, in our opinion, the indication for this operation in adult patients.

125-P MULTIMODALITY TREATMENT OF PANCOAST TUMOR: RESULTS OF A SINGLE INSTITUTION EXPERIENCE.

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Background: Pancoast tumor is a rare neoplasia in which the optimal treatment is controversial. Recently preoperative chemo-radiotherapy (CT-RT) and surgical resection yielded interesting results. We report our mono-institutional experience.
Methods: Between 1994 and 2008, 47 patients (M/F ratio: 42/5, median age: 62 yrs) completed the protocol. Induction therapy consisted of a platinum-based CT: carboplatin AUC 5 on days 1 and 22, with mitomicin-C 8 mg/m 2 on days 1 and 22 and vinblastine 4 mg/m 2 days 1, 8, 22 and 29 (MVC) from 1994 to 1999, or combined with vinorelbine 25 mg/m 2 days 1, 8, 22 and 29 (NC), from 2000 to 2008. RT was administered 5 days/week, 30 Gy in 10 fractions from day 22 to 35 (from 1994 to 1996), or 44 Gy in 22 fractions, from day 22 to 52 (from 1997 to 2008). Surgery was planned after 2-3 weeks from the conclusion of RT.
Results: 17(36.2%) received MVC and 30 (63.8%) NC. 8 (17%) patients received 30 Gy of RT and 39 (83%) 44 Gy. 39 (82.9%) patients underwent R0 resection and 6 (12.8%) had a complete pathologic response (CPR). 28 (59.6%)cases were T3 and 19 (40.4%) T4, 40 (85.1%) were N0 and 7 (14.9%) N+. Perioperative mortality was 6.4%, perioperative complications occurred in 22.8%. 5-year survival was 35% overall, 49% and 13% (p=0.007) for T3 and T4, 39% and 15% (p=0.07) for R0 and R1, respectively. 5-year survival was 52% for patient with stage IIb R0 and 83% for the small group of CPR. On multivariate analysis T status was a predictor of survival (p=0.01). On follow-up of 39 R0 patients 7 (17.9%) recurred locally and 12 (30.8%) distant.
Conclusions: This combined approach is feasible and allows for high rate of complete resection and favourable survival rates, especially for T3 tumors.

126-P THE UNEXPECTED DETRIMENTAL EFFECT OF ISOCAPNIC HYPERPNEA TRAINING PROGRAM BEFORE LUNG RESECTION

Elisa Calabrò; Barbara Conti; Vincenzo Delledonne; Luca Tavecchio; Vittorio Amedeo Bedini; Massimo Guglielmetti; Massimo Francese; Francesco Leo; Ugo Pastorino
Thoracic Surgery Department, National Cancer Institute, Milan, Italy

Background: Chest physiotherapy improves the outcome of patients undergoing lung resection. When the rehabilitation program is started several weeks before surgery, cardiopulmonary performance and exercise capacity increase. We tested the hypothesis that an intensive rehabilitation program by the use of isocapnic hyperpnea (IH) may improve respiratory muscles efficiency and long-term respiratory function after anatomical lung resection.
Methods: Candidates to anatomical lung resection were randomized into 2 different groups stratified for age, smoking status and COPD: a) patients who followed a preoperative program of IH three times/week during 3 weeks (group A) b) patients who had routine preoperative chest physiotherapy sessions withour IH (controls). Spirometry was performed at the time of protocol entry, before operation, at 1 month after surgery. It was planned to include 50 patients in each arm. In order to test patients adherence to the protocol, an interim analysis was planned after inclusion of 10 patients and its results are reported.
Results: Isocapnic hyperpnea did not improve respiratory function during the rehabilitation program, as compared to controls. One month after surgery, a detrimental effect was evident in group A patients. In fact, their FVC decreased from 97.6% at admission to 76.6% at 1 month, meanwhile this effect was less evident in controls (from 90.8% to 80.4, p 0.03). FEV1 impairement was even more evident, with a loss of 23.2% as compared to 7.2% loss in controls (p 0.004). No significant difference in terms of postoperative complications was recorded between groups during the study.
Conclusions: The adoption of preoperative rehabilitation program by the use of isocapnic hyperpnea was detrimental in terms of respiratory function, as shown by spirometric follow-up 1 month after surgery. This effect may be explained by the hyperpnea-induced bronchoconstriction, which has been proved to be dependent on tachykinin-induced cysteinyl leukotriene synthesis in the animal model.

127-P PREDICTING RISK IN PULMONARY SURGERY. DO THORACOSCORE AND ESOS.01 MODELS REFLECT THE OUTCOMES OF A HIGH-RISK SURGICAL PRACTICE?

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Background: 1. To audit results of pulmonary resections performed within a new Consultant's practice. 2. To characterize the patient population according to known predictors of outcome (age over 75years, ppoFEV1. 3. To validate our outcomes against two published risk estimation systems: Thoracoscore and European Society Objective Score (ESOS.01).
Methods: A prospective data collection identified 92 consecutive patients undergoing pulmonary resection under a newly qualified Thoracic Surgeon since appointment in Jan 2008. The patients [53 male and 39 female, median age 69 (range 47 to 87) years] underwent anatomical pulmonary resection for malignant (n=86) or benign disease (n=6). The median ppoFEV1% calculated by segment count was 50% (range 189 to 109). The operations performed were 13 segmentectomies, 51 lobectomies, 10 broncho/angioplasties, 11 pneumonectomies, 4 completion pneumonectomies and 2 patients underwent exploratory thoracotomy. 5 patients required en-bloc chest wall resection and reconstruction.
Results: 3 patients (3.3%) died following surgery (in-hospital or 30-days), two after lobectomy and one after exploratory thoracotomy. 5 patients required admission to Intensive Care Unit for complications. 32.6% of patients were older than 75 years, 29.3% had a ppoFEV1 of less than 40% and 41.3% carried well documented moderate/severe cardiovascular comorbidities. According to Thoracoscore the mean risk of postoperative mortality of this population is 5.58% and according to ESOS.01 risk score is an estimated 3.2%.
Conclusions: Although the Thoracoscore was developed from a larger cohort of patients, the ESOS.01 does predict mortality in our high-risk population more accurately. There is a disparity of risk estimation between the two systems, and therefore we have to ensure that these predictor systems are not used to deny access to surgery to certain patients.

Results

	Our series	Thoracoscore	ESOS.01
Number	92	15,123	3426
Male gender	57.6%	54.6%	72.4%
Age (mean)	69.1	54.6	62 (median)
ppoFEV1 (mean)	52.7%	N/A	N/A
Malignant	93.5%	57.1.%	N/A

128-P EARLY RESULTS FOLLOWING THE MINIMALLY INVASIVE REPAIR OF PECTUS CARINATUM DEFORMITY USING A NEWLY DESIGNED BAR: A TWO INSTITUTION EXPERIENCE

Mustafa Yuksel[1]; Ahmet Onen[2]; Korkut Bostanci[1]; Gun Murat Eyuboglu[2]; Riza Serdar Evman[1]; Nezih Ozdemir[2]
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[2]*Dokuz Eylul University Faculty of Medicine Department of Thoracic Surgery, Izmir, Turkey*

Background: The Nuss procedure has become the treatment of choice for pectus excavatum in the last decade as it is a minimally invasive technique and has been performed with a high degree of success. A modified technique of Nuss procedure for pectus carinatum was defined by Abramson and has started to gain support in the last few years.
Methods: From August 2005 to January 2009 a total number of 151 patients were operated on for pectus deformity in two institutions with the minimally invasive repair techniques. Eighteen of them were pectus carinatum cases. Standard bars for the Nuss procedure were used presternally for the minimally invasive repair of the first 3 pectus carinatum cases. In search of a higher degree of success a new bar and stabilizers for the correction of pectus carinatum were designed with the collaboration of the two institutions, to get a better result in compressing the sternum and stabilizing the bar on both sides of the chest wall on the ribs. Fifteen pectus carinatum cases were operated on in 2008 with the principles defined by Abramson, using this newly designed bar. The median age was 14 years (range 7-22) and 14 of the patients were male. The deformity was asymmetric in 8 patients.
Results: A very satisfactory result was achieved in all patients with using one bar between the 25-34cm size range and two stabilizers on both ends. The average operation duration was 60 minutes (range 50-80). The most common complication was unilateral pneumothorax in 3 patients. The average duration of hospital stay was 5 days (range 4-7). None of the bars have been removed yet.
Conclusions: Minimally invasive repair of pectus carinatum can be implemented with satisfactory results and few complications. Our newly designed bar, together with the stabilizers, is a safe and easy-to use prosthesis for this purpose.

129-P USE OF LACTOSORB® IN THE SURGICAL CORRECTION OF PECTUS CARINATUM.

Hans K Pilegaard; Thais Pedersen
Aarhus University Hospital, Skejby, Aarhus, Denmark

Background: In the the surgical repair of Pectus Carinatum most patients need a transverse osteotomy of the sternum. The osteotomy can be supported by a steel strut, which has to be removed later, but it is also possible to stabilize the sternum by Lactosorb®, which is an absorbable product made by L-lacti and glycolic acids. It is completely absorbed after one year.
Methods: In the period april 2006 to January 2009 a total of 76 patients were corrected for Pectus Carinatum. The main indication for surgery was disabling cosmetic appearance as described by the patient. All were operated by a modified Ravitch technic. Fiftythree patients had bilateral disease and 23 only on one side. All operations were performed by the same surgeon and all patients were seen 6 weeks after surgery in the outpatient clinic. Patient records were reviewed for retrospective analysis.
Results: The median age was 15 years (range 13-42 years) and all but nine were males. There was no operative mortality. Osteotomy was needed in 54 patients and in all cases it was stabilized using Lactosorb®. The median duration of surgery was 131minutes (range 89-194 minutes). The blood loss was median 25 ml (range 20-400 ml). The median postoperative hospital stay was 4 days (range 3-9 days). There were no major postoperative complications. The sternum was totally stable in all patients after 6 weeks. All patients but one had an excellent result.
Conclusions: Lactosorb® can be used to stabilize the sternum after osteotomy following surgical repair of Pectus Carinatum and results in a stable fixation after 6 weeks without increasing morbidity.

Number of osteotomies

	Transversal	Transversal	Transversal	Transversal	Longitudinal
Number of osteotomies	1	2	3	4	1
No. of patients	40	3	1	1	9

130-P USE OF THE REVERSED LATISSIMUS DORSI FLAP FOR SUPPURATED DEFECTS IN THE INFERIOR PART OF THE CHEST

Petre Vlah-Horea Botianu; Adrian Cristian Dobrica; Alexandru Mihail Botianu
Surgical Clinic 4 University of Medicine and Pharmacy, Targu-Mures, Romania

Background: The aim of our paper is to perform an analysis of a personal series of 31 consecutive patients in whom we used the reversed latissimus dorsi flap for suppurated defects located in the inferior part of the thorax.
Methods: Between 01.01.2003-31.01.2008 we used the reversed latissimus dorsi muscle flap in a total number of 31 patients to solve suppurated defects located in the inferior part of the thorax. In all patients the flap was mobilized based on its secondary blood supply (perforator branches from the last intercostals and lumbar vessels). The flap was used alone in 9 patients and in different combinations in other 22 patients (with the serratus anterior in 20 patients, with the serratus anterior and the pectorals in 1 patient and with the upper part of a previously sectioned latissimus dorsi and serratus anterior in one patient). For complete closure of the suppurated space a limited thoracoplasty (average 3,9 resected ribs/patient) was required in 28 patients.
Results: We encountered one postoperative death through cardiac failure. Local morbidity consisted in one recurrence of the empyema and one minor skin necrosis. At late follow-up we encountered no functional sequelae related to the use of this flap; pre- and postoperative values of the VC and FEV1 showed no statistically significant difference ($p>0,05$). We encountered no intraoperative difficulties related to the mobilization of this muscle and no flap necrosis.
Conclusions: As a pure muscular flap, the reversed latissimus dorsi is very easy to mobilize and allows the safe use of this muscle for solving defects located in the inferior part of the thorax.

131-P TRANSTHORACIC APPROACH IN THE REPAIR OF MORGAGNI HERNIA

Johannes Cárdenas-Gómez; Ramón Vicente-Verdú; Yury Bellido-Reyes;
Elena Corpa-Rodríguez; Juan Carlos Vázquez-Pelillo; José Luís Gil-Alonso;
Joaquín Sánchez-García-Girón; Prudencio Díaz-Agero
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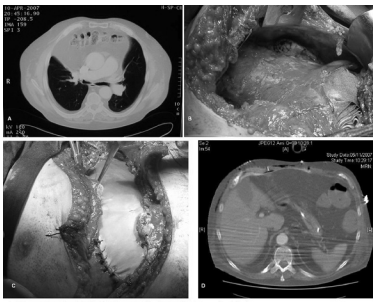
Background: Morgagni hernia (MH) is a diaphragmatic congenital defect originated in the retrosternal muscle-free triangular space called Larrey's space. It leads abdominal content into the thoracic cavity due to an increase of intraabdominal pressure, especially in traumatisms, pregnancy or obesity. It is the rarest of all diaphragmatic hernias (
Methods: A retrospective descriptive analysis of our patients with MH treated by transthoracic approach (Jan/1994-Aug/2008) was performed. MH was diagnosed by means of simple chest X-ray or CT scan. Thoracic cavity was accesed through 5-7th intercostal spaces. All patients were followed-up at 3 and 6 months with chest X-ray.
Results: Eleven patients with a median age of 52.3±18 years; 4 males (36%) and 7 females (64%) were included in the study. Postero-lateral thoracotomy was performed on the right side in seven patients, on the left side in two, and in two case anterior bilateral subxiphoid thoracotomy was preferred. The herniary sac was identified, opened and completely resected. Its content was transverse colon with major omentum in four (36%) cases, only transverse colon in another four (36%), only major omentum in two (18%) and in one (9%) stomach and major omentum were found. In eight (74%) cases the defect was closed by direct suture plicature. In three (27%) cases the defect was repaired with prosthetic meshes (2 polypropylene and 1 polytetrafluoroethylene). MH recurred in one case.
Conclusions: Transthoracic approach of MH is effective and safe. It permits easier liberation of pleural adhesions in big and long time defects.



A. CT scan showing big MH. B. Green cloth shows diaphragmatic defect.
C. Hernioplasty with Polytetrafluoroethylene mesh. D. Control CT

Study population **Morgagni Hernia Repair**

No.	Age	Gendre	Symptoms	Approach	Herniary Content	Location	Reparation Technique	Admission Days	6mo Recurrence
1	45	F	Dyspnea	Right posterolateral thoracothomy	Transverse colon and major omentum	Right	Diaphragmatic plication	5	No
2	66	F	Right hemi-thorax pain	Right posterolateral thoracothomy	Transverse colon	Right	Poplypropylene mesh	10	No
3	68	M	None	Left posterolateral thoracothomy	Transverse colon and major omentum	Left	Polypropylene mesh	13	No
4	46	F	None	Right posterolateral thoracothomy	Transverse colon and major omentum	Right	Diaphragmatic plication	11	No
5	35	M	Pain	Left posterolateral thoracothomy	Transverse	Left	Diaphragmatic plication	8	No
6	51	F	None	Right posterolateral thoracothomy	Major omentum	Right	Diaphragmatic plication	7	No
7	60	F	None	Anterior bilateral subxiphoid thoracotomy	Major omentum and stomach	Bilateral	Diaphragmatic plication	13	Yes
8	49	F	None	Right posterolateral thoracothomy	Major omentum	Right	Diaphragmatic plication	7	No
9	61	F	Dyspnea	Right posterolateral thoracothomy	Transverse	Right	Diaphragmatic plication	11	No
10	65	M	Chronic asthma	Anterior bilateral subxiphoid thoracotomy	Transverse	Right	Polytetrafluoroethylene mesh	21	No
11	30	M	Chest pain	Right posterolateral thoracothomy	Transverse	Right	Diaphragmatic plication	8	No

132-P MINIMALLY INVASIVE REPAIR OF RECURRENT PECTUS EXCAVATUM FOLLOWING UNSUCCESSFUL OPEN SURGICAL PROCEDURES

Mustafa Yuksel; Korkut Bostanci; Riza Serdar Evman; Bedrettin Yildizeli
Marmara University Faculty of Medicine Department of Thoracic Surgery, Istanbul, Turkey

Background: The classical technique for the correction of pectus excavatum is the Ravitch procedure and its modifications. The Nuss procedure has become the treatment of choice for this deformity in the last decade as it is a minimally invasive technique and it can be performed with a high degree of success. It is also possible to correct the reccurent pectus excavatum with this technique.
Methods: From August 2005 to January 2009 a total number of 80 patients were operated on at our institution for pectus excavatum and 5 of the cases had reccurent pectus excavatum following unsuccesful open surgery. For these 5 patients the median age was 16.5 years (range 7-25) and 4 of them were males. The deformity was symmetric in 4 patients. Nuss procedure was performed for all 5 cases.
Results: A satisfactory result was achieved by using 1 bar in 2 patients, 2 bars in 2 patients and 3 bars in 1 patient. The average operation duration was 60 minutes (range 30-80). The average duration of hospital stay was 5 days (range 4-8). No complications occured, and none of the bars have been removed yet.
Conclusions: Although the minimally invasive repair of recurrent pectus excavatum following unsuccessful open surgical procedures is technically more challenging than the primary surgery, the Nuss procedure for reoperative correction is a safe, effective and reliable method.

133-P SURVIVAL IN SOLITARY STERNAL METASTASIS FROM BREAST CANCER: SURGICAL APPROACH AND CLINICAL OUTCOME

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Kostas Papagiannopoulos
St James University Hospital, Leeds, United Kingdom

Background: Carcinoma of the breast is a leading cause of death in women. Metastatic involvement of the skeleton is very common and detection of these lesions has both prognostic and therapeutic significance. Sternal involvement has been observed in 1.9-5.2% of cases with the main stay of treatment consisting of radiotherapy however this is often complicated by previous radiation and sternal instability. We present our experience of partial or total sternal resection of solitary breast metastases.
Methods: Five patients underwent sternal resection for solitary metastases. Preoperative diagnosis was established with scintigraphy, MRI and FNAC. In four cases total and in one partial sternectomy were performed. Lymph node dissection was carried out in all cases and the sternum was reconstructed with bone cement layered in Marlex mesh. Primary soft tissue closure achieved to close the sternectomy wound. In one patient we used a vascularised rectus abdominis muscle flap to close the defect.
Results: Complete resection of the metastasis was confirmed histologically in all cases. Routine follow up revealed one patient with recurrence requiring a completion sternectomy. The patients were asymptomatic after operation until they developed distant metastases. Two of the patients are still alive, 16 and 48 months, after the operation, while the rest died 20, 32 and 61 months after sternectomy.
Conclusions: We report the successful management of solitary breast metastases to the sternum. Symptomatic relief from pain and skin ulceration was achieved in all patients. Prognostic benefit is also apparent with three of the patients surviving more than 2 years and two of them more than 4 years following resection of metastatic sternal tumour. In conclusion sternal resection should be performed for all patients with solitary metastases for both prognostic and symptomatic benefit.

NOTES

NOTES

Monday, 1 June 2009
08:30 – 17:30
Monday Posters

134-P SURGICAL TREATMENT OF MULTIORGANIC END-STAGE DISESASE: EXPERIENCE WITH COMBINED DOUBLE LUNG AND LIVER TRANSPLANTATION.

Paula Moreno[1]; Antonio Álvarez[1]; Jennifer Illana[1]; José Ramón Cano[1]; Dionisio Espinosa[1]; Francisco Cerezo[1]; Carlos Baamonde[1]; Pedro López Cillero[2]; Francisco Santos[1]; Ángel Salvatierra[1]
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[2]*Department of General Surgery, Córdoba, Spain*

Background: Combined double lung-liver transplantation (DL-LiTx) is indicated in patients with end-stage respiratory failure and advanced liver disease. No single centre has accumulated a sufficient experience performing this complex operation. The objectives of this study were to analyze the results of combined DL-LiTx in our institution and to assess the applicability of such an infrequent procedure.
Methods: Three patients underwent combined DL-LiTx at University Hospital Reina Sofía between October 1993 and December 2008. All patients had cystic fibrosis with chronic respiratory failure and advanced liver disease. In each case, all thoracic and abdominal organs were obtained from a single donor. In the recipients, a two stage procedure was adopted with completion of the bilateral lung transplantation before the liver operation was done. Standard triple-drug immunosuppression protocol as for isolated lung transplantation was used.
Results: The patients were 13, 15 and 16 year-old boys, respectively. Episodes of acute pulmonary rejection were successfully treated with intravenous steroids. None was associated with liver rejection episodes. Airway complications occurred in two cases and were managed by endoscopic procedures.
Conclusions: Combined transplantation of lungs and liver is a feasible and therapeutically effective procedure in patients with cystic fibrosis complicated by advanced liver disease. Herein we present our experience in 3 of the only 4 cases of combined liver and lung transplantation performed in Spain to date. Patient and graft survival are comparable to isolated liver or double lung transplantation.

135-P 3D-CT VOLUMETRY OF THE LUNG FOR PREDICTING RESIDUAL PULMONARY FUNCTION IN PATIENTS AFTER LUNG RESECTION

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Background: The purpose of this study was to evaluate the utility of measurement of lung volumes reconstructed by 3D-CT compared with the subsegment counting technique for predicting residual pulmonary function in patients undergoing lung resection.
Methods: Sixty patients undergoing anatomical lung resection were enrolled in this study. In all patients, preoperative and postoperative vital capacity (VC), forced expiratory volume in 1 second (FEV1.0), maximal voluntary ventilation (MVV) and carbon monoxide diffusing capacity (DLco) were measured. Postoperative values were predicted with the subsegment counting technique and the 3D-CT volumetry technique. Correlation between actual and predicted postoperative variables was determined by Pearson correlation coefficient. Comparisons within subjects were made by paired t-test.
Results: The subsegment counting technique and the 3D-CT volumetry technique correlated well with postoperative VC, FEV1.0, MVV and DLco. On the other hand, the FEV1.0, MVV and DLco predicted with the subsegment counting technique and the 3D-CT volumetry technique were significantly underestimated compared to the actual postoperative values, although there were no significant differences between the estimated values by the subsegment counting technique and those by the 3D-CT volumetry technique. Especially in cases of lower lobectomy, the FEV1.0, MVV and DLco predicted with the subsegment counting technique were significantly lower than the values predicted with the 3D-CT volumetry technique (FEV1.0: 78 ± 14% vs 85 ± 13%, $P < 0.0001$, MVV: 84 ± 17% vs 92 ± 17%, $P < 0.0001$, DLco: 81 ± 22% vs 88 ± 22%, $P < 0.0001$).
Conclusions: Although there were the good correlation between the postoperative respiratory values estimated by both techniques and the actual postoperative values, their estimated values tended to be underestimated compared to actual postoperative values. Especially in cases of lower lobectomy, the 3D-CT volumetry technique showed more accurate prediction of pulmonary function than the subsegment counting technique.

136-P ASSESSMENT OF CARDIAC FUNCTION BY INTRAOPERATIVE TRANSESOPHAGEAL ECHOCARDIOGRAPHY BEFORE AND AFTER SURGICAL REPAIR OF PECTUS EXCAVATUM

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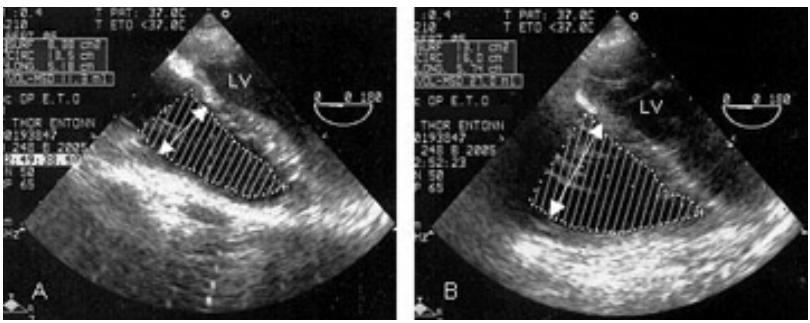
Background: Assessment of en-diastolic right ventricular (RV) dimensions and left ventricular (LV) ejection fraction by use of intraoperative transesophageal echocardiography before and after surgical correction of pectus excavatum in adults.
Methods: Seventeen patients undegoing surgical correction of pectus excavatum according to the technique of Ravitch-Shamberger were prospectively assessed between 1999 and 2004. Intraoperative transesophageal echocardiography was performed under general anesthesia before and after surgery in order to assess end-diastolic RV dimensions and LV ejection fraction. The end-diastolic RV diameter and area were measured in 4-chamber and RV inflow-outflow view and the RV volume was calculated from these data. The LV was assessed by transgastric short axis view and its ejection fraction was calculated by use of the Teichholz formula.
Results: The end-diastolic right ventricular diameter, area and volume all significantly increased after surgery (2.4 ± 0.8 cm vs 3.0 ± 0.9 cm, p=0.00001; 12.5 ± 5.2 cm² vs 18.4 ± 7.5 cm², p=0.0000003; 21.7 ± 11.7 ml vs 40.8± 23 ml, p=0.00003; mean values ± SD). The LV ejection fraction also significantly increased after surgery (58.4 ± 14.6% vs 66.2 ± 6.2%, p=0.00001; mean values ± SD).
Figure 1: Transesophageal 4-chamber view of the right ventricle (RV) before a), and after b), surgical correction (LV : left ventricle)
Conclusions: Surgical correction of pectus excavatum according to Ravitch-Shamberger results in a significant increase in end-diastolic RV dimensions and a significantly increased LV ejection fraction.

Figure 1



137-P LOBECTOMY WITH PULMONARY ARTERY RECONSTRUCTION VS. PNEUMONECTOMY: SURGERY FOR HILAR NON SMALL CELL LUNG CANCER (NSCLC)

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Background: It has been known that lobectomy concomitant with pulmonary artery reconstruction may be a technically feasible alternative to pneumonectomy in patients with hilar NSCLC. The aim of this study was to compare the early and long term results of resections with pulmonary arterial reconstruction with those of pneumonectomy
Methods: We retrospectively reviewed a prospective database of patients who underwent pulmonary artery resection and reconstruction (PARR). Patients with tangential angioplastic resections were excluded. We identified 25 patients with PARR. Then, to account for known prognostic factors such as age (+/- 5 years), operation period (+/- 6 month), FEV1 (+/- 400 ml) and same lymph node stage (N0 to N0, N1 to N1, N2 to N2), and T stage; we used one to one matching out of prospectively recorded data of 198 patients with pneumonectomy. Morbidity, mortality, long term survival, recurrences were compared. Loco regional recurrence was defined as any recurrence within the chest including the chest wall. Mean follow-ups were 27,8 and 28,3 months respectively in patients who underwent PARR and pneumonectomy. Survival was assessed by Kaplan Meier, with significance being estimated by the log rank test.
Results: There was 1 (4 %) postoperative death in pneumonectomized patients but none in PARR patients. Median survival, recurrences, loco regional recurrences, major complication rate, were statistically similar in both groups (Table 1).
Conclusions: Pulmonary vascular sleeve resections and pneumonectomy demonstrated similar results. Although not significant, pneumonectomy was associated with higher rate of complication but fewer rate of recurrences.

Table 1.Data of variables

Variable	PARR (%)	Pneumonectomy (%)	p
Major Complication	20	36	n.s.
All recurrences	60	40	n.s.
Local recurrence	12	12	n.s.
Median survival	28 months	36 months	n.s.
Mortality	0	4	n.s.

138-P NEGATIVE EBUS TBNA - A CHALLENGE TO THE ESTS GUIDELINES

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Background: The guidelines for staging of lung cancer advise to perform medistinoscopy if EBUS TBNA is negative. The aim of this study is to avaluate the guidelines if EBUS TBNA is performed with biopsy of a least 4R, 4L and 7
Methods: EBUS TBNA were performed on all patients referred to staging of the mediastinum either because of lung cancer or changes suspicious of lung cancer. If EBUS TBNA were without metastases in at least station 4R,4L and 7 the patients were referred to surgery (VATS/thoracotomy)
Results: 69 consecutive patients 46 males, 23 females. Mean age 66 years (range 40-85). The sizes of the lymph nodes were mean 17mm (range 4 - 7mm) for station 7. 7mm (range 2-30mm) for station 4R and mean 6 mm (range 2-21mm) for station 4 L. The final diagnose were cancer in 62 patient and benign in 7 patients (Harmathoma, BOOP, infarct). In 3 patients operation showed metastases in 3 lymph nodes, one in station 4 R and 2 in station 5. The NPV was 0.96.
Conclusions: EBUS TBNA is a safe procedure and can be performed in local anaesthesia. If EBUS TBNA follow the guidelines for mediastinoscopy patients with a negative could be referred directly to VATS/thoracotomy

139-P PET SCAN/COMPUTED TOMOGRAPHY AND CONTRAST ENHANCED COMPUTED TOMOGRAPHY: THEIR ROLE IN PREDICTING THE NATURE OF THYMIC NEOPLASMS

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Background: The nature of thymic masses without surgical diagnostic procedures remains a challenging task. We evaluate the role of positron emission tomographic scanning with 18-fluoro-2-deoxy-glucose/computed tomography (FDG-PET/CT) and contrast enhanced computed tomography (CT-CE) in distinguishing benign from malignant thymic lesions (WHO classification) comparing them with pathologic data.
Methods: Patients with thymic mass who had FDG-PET/CT and CT-CE and who were operated on in our institution were retrospectively reviewed. PET scans were analyzed by standardized uptake value (SUV). CT-CE scans were focused on morphologic features and invasiveness characteristics. Correlations among FDG PET/TC, CT-CE and pathological characteristics of thymic mass were evaluated.
Results: There were 27 patients (16 men; median age, 56 years). Pathology revealed benign lesion in 11 patients (5 cysts, 3 hyperplasia and 3 normal parenchyma) and malignant lesion in 16(7 AB, 4 B1, 1 B2, 1 B2/B3, 1 B3 and 2 C). PET/CT exams were positive in 19 cases. Of these, 16 were true positive (sensitivity 100%) and 3 false positive. Specificity was 72.7% (8 true negative/11) while positive and negative predictive values were 84.2% and 100%, respectively. CT-CE in all benign cases correctly identified well-defined margins of masses (specificity 100% and predictive negative value 84.6%). Among malignant lesions CT-CE revealed mediastinum fat or infiltration of adjacent organs in 14/16 patients (sensitivity 87.5%, predictive positive value 100%). Median maxSUV of benign lesions was 2.4 + 1.3 while for malignant lesions was 5.8 + 2.4 ($p= 0.002$).
Conclusions: FDG PET/CT and CT-CE are two complementary and useful techniques to distinguish benign from malignant thymic lesions and to help surgeon for accurate surgery planning.

140-P EGFR STATUS OF METASTASES OF NSCLC CORRESPONDS TO THE PRIMARY TUMOR

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Background: EGFR-targeted therapies are a valid therapy option for advanced NSCLC. However, predictive factors for therapeutic response are not entirely recognized. Intrinsic resistance might occur due to loss of EGFR expression during the course of the disease or its treatment.
Methods: Paraffin-embedded tissue obtained from autopsy cases with metastatic NSCLC was retrieved from our institutional archive. Specimens of primary tumor (n=40; median age at death 67,5 years; m/f 3:1; 63% adenocarcinoma) and of all corresponding metastases (n=145) were immunohistochemically (IHC) stained for EGFR expression. Two independent observers scored staining intensity from 0 to 3+ (absent vs. low vs. moderate vs. high) and percentage of positively staining cells.
Results: All primary tumors were EGFR-positive on IHC, with 30% and 40% tumors exhibiting strong and moderate EGFR expression, respectively. The median number of EGFR expressing cells in primary tumors was 100% (10% to 100%). EGFR staining intensity and percentage of positively staining cells were almost identical between primary tumors and metastases obtained from 19 distinct sites: perfect correlation (identical staining intensity and <10% difference in number of staining cells) was observed in the majority of corresponding pairs. Only in 2 cases the metastases were EGFR-negative (liver and kidney metastases).
Conclusions: EGFR status of metastases of NSCLC corresponds to EGFR status in the primary tumor. Thus, intrinsic resistance to EGFR-targeted therapy unlikely results from loss of EGFR expression during disease evolution, local or systemic treatment.

141-P IMPACT OF HISTOLOGICAL GRADING ON SURVIVAL OF LUNG CANCER PATIENTS

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Background: Lung cancer is worldwide the leading cause of death for lung cancer. Despite advances in staging and treatment, mortality is still high also at early stages. Histological grading (G) might be an important and easily valuable parameter to influence the treatment strategy, particularly at early stages.
Methods: One-hundred-nineteen consecutive patients with resected lung cancer were retrospectively evaluated. Mean age was 66.2±9.5 years. Eighty-one patients (68%) were at stage I, 17 (14%) at stage II, 15 (13%) at stage III and 6 (5%) at stage IV. The most frequent histology was adenocarcinoma (40%). Three subgroups of G were considered: G1 in 11 patients (9%), G2 in 57 (48%) and G3 in 51 (43%). Most of the patients at stage I were in the G2 subgroup. Surgical resection ranged from atypical resection to pneumonectomy. Seven patients (6%) underwent induction chemotherapy and 40 (34%) adjuvant therapy. Median follow-up was 38 months.
Results: Ten patients died in the first postoperative year; all the other patients have at least 1 year of follow-up. Survival for stage IA and stage IB were 100%, 87% and 61% and 85%, 55% and 42% at 1, 3 and 5 years, respectively. Overall and stage I G1 survival rate was significantly higher respect to G2-3 (p=0.0003 and p=0.001, respectively). Multivariate analysis showed that the parameter G influences survival at all stages. Five-years disease free survival for stage I was significantly higher in G1 patients when confronted to G2-3 (p=0.05).
Conclusions: Lung cancer long term survival bears on several factors, as staging, completeness of resection and histology. Grade of differentiation of cancer is an easily parameter to estimate and seems to correlate with the risk of recurrence and mortality, particularly at early stages. Because of that, a modification of current strategy of treatment may be considered with adjunctive treatment also at early stages.

142-P PNEUMONECTOMY DUE TO LUNG CANCER RESULTS IN MORE PRONOUNCED ACTIVATION OF COAGULATION SYSTEM THAN LOBECTOMY.

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[3]*Departament of Pathophysiology, Collegium Medicum of Nicolaus Copernicus University in Torun, Bydgoszcz, Poland*

Background: Surgical treatment of lung cancer is associated with an elevated risk of thromboembolic complications. The question is, whether the extent of pulmonary resection in patients operated on due to non-small cell lung cancer (NSCLC) might influence serum coagulation system proteins concentration? The aim of the study was to compare blood coagulation activation parameters between patients undergoing pneumonectomy and lobectomy due to primary lung cancer.
Methods: Prospective study was carried out in 40 patients: 30 who underwent lobectomy and 10 treated with pneumonectomy. Serum concentrations of tissue factor (TF), tissue factor pathway inhibitor (TFPI), tissue factor pathway inhibitor/activated factor X complex (TFPI/Xa), thrombin-antithrombin complex (TAT), L-selectin, E-selectin and P-selectin were measured on the 1st and 7th postoperative days.
Results: On the first day after surgery the results of selected proteins concentrations were similar in both groups. However, on the seventh postoperative day, significantly higher concentrations of TF, TAT complex and E-selectin were found in patients who underwent pneumonectomy (TF: 182.38 vs. 116.6 pg/mL, P=0.0312; TAT: 6.20 vs. 3.92 mg/mL, P=0.0475; E-selectin 40.24 vs. 26.46 ng/mL, P=0.0488).
Conclusions: On the first day after surgery, no significant differences in coagulation parameters and adhesion molecules between patients who underwent lobectomy and pneumonectomy were observed. Pneumonectomy was associated with significantly higher activation of coagulation system on the seventh postoperative day than lobectomy. TAT complex is promising markers of extensive postoperative activation of coagulation and efficacy of antithrombotic prophylaxis.

143-P EFFECT OF ISCHEMIC PRECONDITIONING ON OXIDATIVE STRESS AND NITRIC OXIDE SYNTHESIS IN A LUNG AUTO-TRANSPLANT MODEL

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Background: Ischemic preconditioning (IP) has been proved to protect several organs from ischemia reperfusion (IR) injury; however this has been poorly studied in the lung. Free radicals and nitric oxide (NO) have been established as important mediators in IR injury. NO synthase (NOS), has three isoforms: two constitutive (eNOs, nNOs) and one inducible (iNOs). iNOs rises has been related to graft rejection, septic shock and other inflammatory processes. The aim of this study was to determine the effect of IP against oxidative stress and its relationship with nitric oxide synthesis in a lung auto-transplant model.

Methods: Two groups (ischemic preconditioning-IP and control-CG) of 7 large-white pigs were submitted to a lung auto-transplant (left pneumonectomy; ex-situ superior lobectomy; lower lobe reimplantation). Before pneumonectomy was performed in the study group, IP was obtained by 2 cycles of 5 min. of left pulmonary artery occlusion with a 5 min. interval of reperfusion between the two occlusions. Blood samples and lung biopsies were obtained during surgery: 1) pre-pneumonectomy; 2) pre-reperfusion; 3) 10 min. post-reperfusion of the implanted lobe. Oxidative stress was evaluated by measuring lipid peroxides (LPO), malondialdehyde (MDA) and heme oxigenase activity (HO) in lung tissue. NO blood levels and NOS activity in lung tissue were also measured. Nonparametric test were used to compare differences between groups.

Results: Data expressed as mean (SD) are shown in the table (* p<0,05).

	Group	Pre-pneumonectomy	Pre-reperfusion	Post-reperfusion
LPO (mmol/mg protein)	CG	2,8 (0,09)	3,54 (0,09) *	3,50 (0,2) *
	IP	2,63 (0,1)	2,81 (0,1)	2,86 (0,08)
MDA (pmol/mg protein)	CG	3,25 (0,2)	3,86 (0,1)	4,93 (0,1) *
	IP	3,46 (0,2)	4,33 (0,11)	4,35 (0,12)
HO-1	CG	0,73 (0,04)	0,65 (0,12)	0,76 (0,11) *
	IP	0,74 (0,12)	0,86 (0,1)	1,02 (0,09)
NO (mmol/ml)	CG	41,96 (2,3)	24,13 (2,4) *	29,62 (2,9)
	IP	40,61 (5,4)	36,31 (1,98)	33,64 (5,81
iNOS	CG	1,77 (0,03) *	1,85 (0,11)	1,94 (0,09)
	IP	1,96 (0,11)	1,97 (0,02)	1,87 (0,12)

* p < 0,05; HO-1: Heme oxigenase 1

Conclusions: In this model of lung ischemia reperfusion injury, ischemic preconditioning appears to reduce oxidative stress in lung tissue. These events could be related to iNOS induction by the isquemic preconditioning procedure.

144-P TRANSCERVICAL THYMECTOMY WITH PARTIAL STERNAL SPLIT IN THE TREATMENT OF MYASTHENIA GRAVIS

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Background: Minimal-access thymectomy has become increasingly popular as surgical treatment for patients with non-thymomatous myasthenia gravis(NTMG), because of its low morbidity and mortality, improved cosmesis, lesser degree of access trauma and equivalent efficacy compared with sternotomy.
Methods: A retrospective study was conducted on 507 patients who underwent thymectomy for NTMG from January 1989 to December 2008. During the 20-years period, we operated 507 myasthenic patients: 370 with NTMG, 137 with thymoma-associated MG. 305 of the 370 patients with NTMG underwent transcervical thymectomy with partial sternal split.
Results: Complete follow-up data were available in 239 patients: 166 with NTMG, 73 with thymoma-associated MG. Transcervical thymectomy with partial sternal split was performed on 142 patients with NTMG. Mean duration disease was 107.8 months(range 1-360). Pathology revealed thymic hyperplasia in 65.9%, normal thymus in 7.3% and thymic atrophy in 26.8% of cases. There was non perioperative mortality. After a median follow- up of 9.77 ± 4.44 years(range 1-20),139 patients(97.6%) experienced clinical improvement, with crude Complete Stable Remission(CSR) achieved in 52(36.6%). Univariate analysis revealed that age at operation($p<0.01$), gender($p<0.01$), disease duration($p=0.0012$), postoperative immunosuppression($p<0.001$) and histology($p<0.0015$) significately influenced CSR.
Conclusions: The cervicotomy associated with a partial sternal split, using the same cutaneous incision, offers an excellent ratio of radicality/perioperative risk besides a satisfactory cost/benefit ratio in terms of postoperative hospital stay. If there are no complications, the patient is discharged on the 3rd postoperative day with a small cervicotomic incision and an intradermal suture, cosmetically advantageous.

145-P A NEW METHOD TO AID IN EVALUATION OF PATIENTS WITH LUNG CANCER BEFORE LUNG RESECTION SURGERY- PRELIMINARY STUDY

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Background: For evaluation of patients intended to go through lung resection it is recommended to calculate the predicted post operative lung function by utilizing regional assessment of a perfusion scan. In our study we aimed to evaluate a potential replacement for the perfusion scan, the VRIXP O-Plan (Deep Breeze, Or-Akiva, Israel), which calculates the regional breath sounds intensity of the patient lungs.
Methods: 12 patients (mean ±std age 60 ±11) with lung cancer, who are intended to go through lung resection surgery, were referred for VRIXP and standard evaluations and were enrolled in the study. All patients had Perfusion scans and 5 had lung function results 1 month after the surgery. Patients were recorded with the VRIXP at baseline (pre operative). VRIXP regional quantitative values and pre operative FEV1 values where used to calculate the FEV1 ppo.
Results: The average±std of FEV1 ppo (%) were 57%±13% and 50%±13% by the Q-scan and VRI respectively. In similar, the average±std of FEV1 ppo (L) were 1.7±0.5 and 1.5±0.4 liters. High correlation between the VRIxp O-Plan and Q-scan for the calculation of %predicted FEV1 ppo (%) (R=0.9376) and FEV1 ppo (L) (R=0.9629). A total of 9 cases (75%) had differences less than 10%. Five patients arrived already for 1 month post-operative follow-up. Their FEV1(%) were 49%±10%, 54%±8%and 49%±14% for FEV1 ppo (VRI), FEV1 ppo (Perfusion), and Actual post-op values. In similar, for FEV-1(L), the values were 1.3±0.2L, 1.4±0.2Land 1.2±0.1L.
Conclusions: Initial results suggests that VRIxp based predictions are very similar to Q-scan calculations and are accurate in predicting the actual postoperative results.

146-P LONG TERM RESULTS AFTER VIDEO-ASSISTED THORACIC SURGERY (VATS) THYMECTOMY IN PATIENTS WITH NONTHYMOMATOUS MYASTHENIA GRAVIS.

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Background: For patients with nonthymomatous autoimmune myasthenia gravis (MG), thymectomy is recommended as an option to increase the probability of remission or improvement. Several studies reported better neurological outcomes in long term compare to short term follow-up despite the surgical technique. We present the data of patients after right sided VATS thymectomy performed in our University Hospital.
Methods: We retrospetively analyzed the results of treatment of 76 consecutive patients operated on due to nonthymomatous myasthenia from 1999 to 2007. The data were collected from the medical records and telephone surveys and were completed in 72 patients. 4 patients missed from the follow-up. (13 males, 69 females, mean age 36,5 +/- 13,5yrs.)
Results: The stage of the disease and postoperative status were assessed according to Myasthenia Gravis Foundation of America (MGFA). In 86,1% of patients improvement was confirmed. The complete stable remission (CSR) were observed in 20 patients (20,5%). The remission rate during first 12 months after thymectomy was only 5,5% (4pts). All 72 patients underwent right sided VATS extended thymectomy. The conversion to small thoracotomy were necessary in 4 patients due to technical problems. The mean time of surgery was 111,9 minutes and ranged from 90-180min. The median postoperative stay in hospital was 6,5 days. The mean duration of the disease before surgery was 23,9 months (range 20-170months). There were no postoperative mortality, 4 patients (5,5%) required mechanical ventilation after surgery, no other severe morbidity were observed. Median follow-up was 58,9 months (12-170 months).
Conclusions: VATS thymectomy is safe surgical procedure with no perioperative mortality and low morbidity and high acceptance among the patients. The long term symptoms improvement is similar like in the other studies but the question, is the final rate of CSR is related to thymectomy or postoperative medical treatment is still open.

147-P DIFFERENCES BETWEEN NON-SMALL CELL LUNG CANCER PATIENTS WITH N2 AND N3 METASTATIC NODES

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Background: A comparison of characteristics of patients with (NSCLC) and N2 and N3 metastatic lymph nodes discovered with the transcervical extended mediastinal lymphadenectomy (TEMLA).
Methods: A whole group of 587 consecutive patients who underwent TEMLA for NSCLC staging from 1.1.2004 to 31.1.2009 was analyzed. Patients with N2 and N3 metastatic nodes were compared for age, sex, localization of the primary tumor, histology and number of metastatic nodes levels and the subsequent resectability after neoadjuvant chemotherapy.
Results: There were 128 patients with N2 nodes and 25 patients with N3 nodes. There were no differences regarding as the age and sex between both groups. In N2 group right sided tumors were in 71 patients and left sided in 57 patients. In N3 group right sided tumors were in 4 patients and left sided in 21 patients (p0.05).
Conclusions: 1.In NSCLC with N3 metastatic nodes left sided tumors with non-squamous histology and multi-level metastatic nodal involvement predominated, unlike NSCLC with N2 metastatic nodes. 2.NSCLC with N2 and N3 metastatic nodes probably represents different biologic patterns. 3.There was no significant differences of subsequent pulmonary resectability rate between both groups after neoadjuvant chemotherapy and negative restaging with EBUS/EUS.

148-P FIRST SERIES OF ROBOTIC PULMONARY LOBECTOMY IN AUSTRIA

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Background: Surgical resection is the primary treatment for early stage non-small cell lung cancer (NSCLC). Different minimally invasive approaches have currently been established: In addition to conventional video-assisted thoracoscopic surgery (VATS), the robotic technology with the daVinci System has emerged over the last 10 years.
Methods: 27 patients (12 women, 15 men; mean age 64,48 years) underwent a robotic lobectomy for early stage NSCLC (clinical stage IA or IB).
Results: Distribution of resected lobes were left upper lobes 4, left lower lobes 6, right upper lobes 8 and right lower lobes 9. There were 4 intraoperative conversions to open thoracotomy (one major bleeding, two minor bleedings, one variant course of the pulmonary artery). Postoperative complications included prolonged air leak (6), colonic perforation (1), and intermittend atrial fibrillation (1). Length of hospital stay was median 11 (7-53) days. 30-day mortality was one (3.7%). Overall median operative time was 208 (135 to 390) minutes. After the first seven patients the initial posterior approach was switched to an anterior one, thus enabling an easier hilar dissection. Another technical modification during this first series was the introduction of a new vessel-sealing device (Hem-O-Lok®-Clip) instead of ligation/stapling of the major pulmonary vessels.
Conclusions: A standardized technique of robotic lobectomy has been proven to be feasible and save in our initial series in a learning curve setting. Strict follow up is mandatory to evaluate its oncologic outcome and randomized controlled trials will be initiated to determine its role within the currently established different approaches.

149-P THE INFLUENCE OF ENDOGENOUS INTERLEUKIN-10 ON DENDRITIC CELLS MATURATION AND ACTIVATION OF LYMPHOCYTES IN DIFFERENT TYPES OF HUMAN LUNG CANCER CULTURES

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Background: Dendritic cells (DCs) are potent antigen presenting cells, which play a key role in immune response against lung cancer. Their proper function depends in great extent on cytokines secreted by immune system, including interleukins. Certain DCs subsets are able to produce endogenous interleukin-10 (IL-10), whose impact on DCs biology remains to be determined. To assess the role of endogenous IL-10 in anti-cancer immune response, we investigated DCs capacity to activate lymphocytes, expression of IL-10 receptor (IL-10R) on DCs, and concentration of IL-10 in different types of cell cultures.
Methods: Twenty patients with resected non-small lung cancer were enrolled in the study. Immediately after resection small fragments of tumour were placed in culture dishes containing necessary growth factors. Autologous DCs were generated from peripheral blood mononuclear cells (PBMC) cultured in medium supplemented with autologous plasma in the presence of rhIL-4 and rhGM-CSF. Mature DCs were obtained after incubation with either rhTNF-α and tumour cell lysate or only rhTNF-α. Cultures consisted of DCs, lymphocytes and macrophages. We investigated markers of lymphocyte's activation with flow cytometry, and concentration of IL-10 in supernatants from different types of cell culture with ELISA.
Results: Statistically significant correlation between IL-10 level and percentage of IL-10R-positive DCs was observed both in TNF-only culture, and cancer lysate culture ($p<0.05$ and $p<0.004$, respectively). The level of IL-10 and percentage of activated lymphocytes were significantly higher in TNF-only culture than in cell lysate culture. However, the percentage of mature DCs in TNF-only culture was lower than in cell lysate culture.
Conclusions: Our results suggest that endogenous IL-10 is responsible for maintaining DCs in an immature state. It inhibits DCs maturation but does not reduce the capacity of DCs to activate lymphocytes. Besides, IL-10 promotes differentiation of monocytes into macrophages and not into DCs. This mechanism could explain the more effective phagocytosis in TNF-only culture.

150-P SEQUENTIAL RESECTION OF THE VENA CAVA SUPERIOR TO REDUCE CEREBRAL COMPLICATIONS

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Background: Advanced tumors of the mediastinum may require resection of the superior vena cava (SVC) when infiltrated. Cross clamping of the SVC is commonly performed before resection but leads to intraoperative hypotension and intracerebral hypertension. To reduce the complications such as cerebral edema we would like to describe an alternative technique.
Methods: In 9 patients, 6 men and 3 women, with a mean age of 57 years (range: 44-68 years) we performed sequential SVC resection between 01.2005 and 12.2007. In 6 patients a large central bronchial carcinoma and in 3 patients a mediastinal tumor led to the resection of the SVC. Technique of sequential resection: 1. Bypass between left V. anonyma and the right atrium with a 8mm Gore-Tex prosthesis. 2. En-bloc resection of the SVC and the tumor. 3. Bypass between the right v. anonyma and the right atrium/distal SVC stump with a 8mm Gore-Tex prothesis. Post operative anticoagulation was performed with low dose heparin twice a day.
Results: We observe no cerebral complications after SVC resection with the describe technique. One patient had a postoperative thrombosis of the prosthesis (11%) requiring reintervention. Postoperative in-hospital mortality was zero. Median survival was 10 months.
Conclusions: Sequential resection of the SVC is a safe procedure with a lower rate of cerebral complications and an increased hemodynamic stability of the patient during the operation.

151-P RETROSTERNAL COLONIC REPLACEMENT FOR DIFFUSE CORROSIVE ESOPHAGEAL STRICTURE: LONG TERM RESULTS OF A CLINICAL AND FUNCTIONAL STUDY

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Background: To verify functional long-term results in patients affected by diffuse corrosive esophageal stricture treated by retrosternal esophagocoloplasty. To investigate if long-term metabolic consequences are predictable in each patient.
Methods: From 1/95 to 12/02, 10 patients affected by esophageal stricture related to ingestion of corrosive substance underwent to retrosternal cervical esophagocoloplasty (8 right and 2 left colon replacement). None of these had surgical critical care for perforation. After 3 years, all patients were submitted to clinical examination, blood test, endoscopy, X-ray barium swallow, manometry, pH-metry, hepatic ultrasound, radio-nuclide esophago-colonic study and 51Cr bowel permeability. Results were evaluated by a multidisciplinary staff.
Results: No postoperative mortality was observed. In 3 patients a fistula of the cervical anastomosis was treated with a conservative approach. In 5 patients with dysphagia one or more pneumatic dilatation of the cervical anastomosis was required. All patient had weight gain; no abnormal blood test was observed. In 2 patients ultrasonography revealed an hepatic steatosis. In 3 patients a chronic inflammation of the transposed bowel was present at endoscopy. Just in one patient manometry showed peristaltic-like waves; no pathologic acid reflux was observed at pH-metry. Radio-nuclide esophagocolonic study revealed an increased transit time with a retention index range of 10-100% at 1 minute. In all patients 51Cr bowel permeability showed pathologic results (range: 4.49-9.53%, normal < 3%).
Conclusions: Retrosternal esophagocoloplasty is an effective treatment of corrosive esophageal stricture. However, long term colonic mucous damages are possible, and 51Cr bowel permeability can prematurely detected an higher reabsorption of potentially toxic substances. According to our results, follow-up of these patients cannot be only a simple evaluation of weight gain or of the food transit.

152-P A COMPARISON OF CT/FDG-PET SCAN STAGING WITH FINAL PATHOLOGICAL STAGING IN PATIENTS FOLLOWING LUNG RESECTION

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Background: FDG-PET scanning is an essential part of any pre-operative assessment of operability in lung cancer surgery. We aim to examine T & N staging as defined by CT/FDG-PET and compare with pathological T & N staging results.
Methods: We prospectively studied 210 consecutive patients with lung cancers between February 2007 and September 2008. Each patient underwent a computed tomography (CT) scan of the chest and upper abdomen, other conventional staging studies and had an FDG-PET scan within 1 month before surgery. All patients with N2 disease underwent node sampling of N2 nodes by mediastinoscopy. Patients that were N2 and M1 negative underwent pulmonary resection and selective thoracic lymphadenectomy.
Results: Some results were omitted due to incomplete data.
T stage was correctly identified in 131 patients (69%). In 23 (12%) T stage was over-estimated, in 36 (19%) T stage was under-estimated. N stage was correctly identified in 121 patients (58%). In 40 (19%) N stage was over-estimated, in 33 (16%) T stage was under-estimated. N stage was overestimated in 5 (8% of) adenocarcinoma, 25 (24% of) squamous cell carcinoma CT/FDG-PET scanning incorrectly "over staged" nodal disease as N2 in 24 cases (71% of all cases staged by CT/FDG-PET as N2)
Conclusions: When used in pre-operative assessment, CT/FDG-PET scanning often identifies inoperable disease incorrectly. A result of N2 disease at CT/FDG-PET should lead to diagnostic mediastinoscopy and not arbitrary denial of surgical resection.

153-P THORACOSCOPIC LOBECTOMY AS THE STANDARD OPERATION FOR NON-SMALL CELL LUNG CANCER IN A PUBLIC EUROPEAN HOSPITAL.

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Background: There is much focus on thoracoscopic (VATS) lobectomies and several papers address the benefits and the oncological issues concerning the procedure as a cancer operation. Certain North American institutions use VATS lobectomy as the standard procedure, and the aim with this study is to look at weather it also is possible in a public European setting. The patients are referred to the department by their local pulmonologist and do not seek the hospital because they want a specific surgeon or a specific procedure done.
Methods: Numbers from the years 2003-7 are drawn from The National Danish Lung Cancer Registry, the department's local database and a prospective collected database of the departments VATS lobectomies.
Results: The table shows the numbers by year. In 2006 and 2007 over 50% of the lung cancer lobectomies were done by thoracoscopic approach although only one surgeon mastered the procedure in the majority of the period.
Analysis of the VATS lobectomies from the period 2005-7 shows major co-morbidity by 78% of the patients (cardio-vascular 29%, pulmonary 17%, former other cancer, 22% former cardiothoracic surgery 9% and endocrinological/metabolic disease 20%). This data shows the non-selected character of the population.
Conclusions: This study shows that a thoracoscopic approach can be used as the most common way to perform a lobectomy for non-small cell lung cancer in a public European hospital that undertake an unselected population from a given area.

Surgery by year

	2003	2004	2005	2006	2007
Lung cancer resections	117	106	127	113	145
Lobectomies	79	66	87	84	116
VATS Lobectomies	5	18	34	44	66
VATS % of lobectomies	6	27	39	52	57
VATS Lobectomies in % of all resections	4	17	27	40	46

154-P SURGICALLY TREATED SYNCHRONOUS MULTIPLE PRIMARY NON-SMALL CELL LUNG CANCER PATIENTS: IS IT WORTH IT?

Celalettin Ibrahim Kocaturk; Zeki Mehmet Gunluoglu; Levent Cansever; Adalet Demir; Akif Turna; Ibrahim Seyid Dincer; Mehmet Ali Bedirhan
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Background: Presence of synchronous multiple primary non-small cell lung cancers (SM-NSCLC) is a rare condition and the optimal treatment is not clearly known. In this study, the survival of surgically treated SM-NSCLC patients and the factors affecting the survival were analyzed.
Methods: Between 2001 and 2008, thirty-nine consecutive patients diagnosed as SM-NSCLC and treated surgically were retrospectively evaluated. Patients who had bronchioloalveolar carcinoma or carcinoid tumors were excluded. Prognostic factors were analyzed using univariate and multivariate analyses.
Results: The tumors were ipsilateral in 27 and bilateral in 12 patients. A complete resection was achieved in 37 (95%) patients. Hospital mortality rate was 7,6%. Overall five year survival rate was 45% and median survival time was 50 months. Five-year survival rate was 38% for ipsilateral and 62% for bilateral SM-NSCLC patients (p=0,24). In ipsilateral SM-NSCLC patients, the same or different lobe location of the tumors did not have an effect on survival (p=0,21). There was a trend toward poor survival in the elderly patients (p=0,05). Being the resection as lobar or sublobar did not influence the survival (p=0,3), but, pneumonectomy had a negative impact on survival (p=0,002). Histopathologic tumor type, N1 nodal disease and adjuvant chemotherapy were not determined as prognostic factors. (p=0,4, p=0,6 and 0,2 respectively). The survival of the patients with T2 tumor was better than those with T3 tumor (p=0,06). In the multivariate analysis, only performing pneumonectomy was found as an independent poor prognostic factor.
Conclusions: The survival of SM-NSCLC patients who were treated surgically is satisfactory. Having a pneumonectomy seemed to be a dismal prognostic factor.

155-P COMPOSING AN ADHESION BARRIER USING HYALURONIC ACID AND CARBOXYMETHYLCELLULOSE (SEPRAFILM®) TO PREVENT POST-SURGICAL ADHESION IN RABBIT MEDIASTINUM

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Background: Re-mediastinoscopy is an indispensable procedure to assess mediastinal lymph node metastasis after induction chemotherapy in patients with non-small cell lung cancer. Re-mediastinoscopy can be a difficult procedure because adhesions of a prior mediastinoscopy may reduce surgeon's field of view, and may cause difficulty in diagnosing a lymph node, which causes suspicion about invasion. There are several adhesion barrier procedures, which were used to prevent postoperative adhesions, but none of them provided remarkable results. There are studies including abdominal, gynecologic and neurochirurgic surgery, however, there are few studies regarding mediastinum. In this study, we are going to explore the role of hyaluronic acid and carboxymethylcellulose in preventing mediastinal adhesion.
Methods: In our study, 21 New Zealand-type male and female rabbits – each with a weight of 2500-3500 grams – were used. Three groups – each including seven rabbits – were set up due to randomized sampling method. Mediastinal dissection was performed in the first group and Seprafilm® was used to build adhesion prevention barrier. Mediastinal dissection was performed in the second group and 0.9 % NaCl was used to build adhesion prevention barrier. In the control group, all layers were sutured primarily after mediastinal dissection. The rabbits were sacrificed after 30 days and each group was compared with the control group, using macroscopic and microscopic adhesion criteria.
Results: According to the results of our study, Seprafilm® was found to be statistically efficient in preventing and decreasing adhesion in mediastinum ($p<0.01$ in macroscopic criteria, $p<0.05$ in inflammation and vascular proliferation criteria).
Conclusions: Seprafilm® can be used in mediastinum as an adhesion barrier in the treatment of adhesions, which develop as a result of surgery.

156-P THE CURRENT ROLE OF MEDIASTINOSCOPY IN THE STAGING OF NON-SMALL-CELL-LUNG-CARCINOMA (NSCLC): AN UPDATE

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Background: For patients with lung cancer preoperative evaluation of the mediastinal lymph nodes is important to judge the local operability.
Cervical mediastinoscopy is generally accepted as a safe and highly accurate procedure in the staging of lung cancer and (still?) considered the gold standard for mediastinal lymph node staging in NSCLC. Other techniques however are developed as PET-CT, Endoscopic Ultrasound (EUS) and Endobronchial Ultrasound (EBUS). The latter two are minimally invasive and can theoratically sample all mediastinal lymphnode stations. To asses the incremental value of PET/CT to mediastinoscopy we evaluated our results.
Methods: All the mediastinoscopies and PET-CT scans over the period 2001-2008 were evaluated. 108 mediastinoscopies were performed of which 77 for staging NSCLC. 58 males and 19 females, the avergage age was 67 years.
Results: Mediastinoscopy showed positive mediastinal lymphnodes in 17 patients. In 14 of the 50 patients with a negative mediastinoscopy positive mediastinal lymphnodes were found during surgery, therefore the false-negative rate was 18%. Of the 77 patients there were 56 who underwent PET-CT and mediastinoscopy. PET-CT and mediastinoscopy were both false negative in 5 patients (9%). [table 1} Pet-CT showed a false negative rate of 35% and a false positive rate of 25%. Mediastinoscopy in this group showed 12 metastatic lymph nodes, and had a 18 % false negative rate. When the modalities are combined there is only a 9% false negative rate. Seven complications were seen (6.5%)
Conclusions: In conclusion it can be said that both PET-CT scanning as well as mediastinoscopy have a fixed place in mediastinal lymph node staging. Mediastinoscopy has a higher specificity and PET-CT a higher sensitivity. Severe complications of mediastinoscopy are minimal when performed by experienced surgeons. The high percentage of false negatives in both PET-CT and mediastinoscopies, suggests that there is a place for EUS and EBUS.

table 1

	PET-CT pos	PET-CT neg	Mediast. pos	Mediast. neg
POS LNN	25	6	12	10
NEG LNN	14	11	-	34

157-P VATS LOBECTOMY: TECHNIQUE AND RESULTS IN THREE HUNDRED CASES

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Background: Video-assisted Thoracic Surgery (VATS) has been proved to be a usefulness technique to perform major lung resections. The aim of this paper is to show our technique and results from our experience with 300 VATS lobectomies.
Methods: We have done a retrospective study of three hundred consecutives VATS lobectomies performed in our institution from March 1993 to December 2008. Mean age: 59 years old (range 34-84). Male/female ratio was 7 to 1. Main indication was non-small cell lung cancer in stage Ia and Ib (peripheral tumour T1 o T2 (< 4 cm.) N0M0) but also other stages and benign processes were operated by this approach. Lobectomies: 99 upper right, 18 medial, 45 lower right, 11 upper and 11 lower bilobectomies, 64 upper left and 52 lower left. Technique: We use 3 ports (12 mm) and a assistance minithoracotomy (3-5 cm) in 5th intercostals space without rib spreading. Dissection was always carried on watching only the monitor screen. In lung carcinoma cases the final step was always mediastinal lymphadenectomy.
Results: Length of intervention: median 95 minutes, mean: 145, range (41 to 274) Length of postoperative stay: 4 days. Conversions: (n=31): Bleeding 13, Technical difficulties 17, and unsuspected invasion 1. Morbidity: 14.5%. Perioperative mortality: 1,3% (2 sepsis, 1 acute myocardial infarction and 1 massive pulmonary thromboembolism). Actuarial 5 years survival: 77,7%.
Conclusions: VATS lobectomy performed by experienced surgeons is a safe, viable procedure, which meets oncological criteria for lung cancer surgery. Data suggests that VATS lobectomy is associated with lower morbidity and mortality rates than conventional surgery; postoperative recovery is faster and survival rates are similar to those of open surgery. This procedure should be the treatment of choice for a number of benign lung pathologies and for bronchogenic carcinomas T1-T2 N0 M0. Randomized prospective studies are required to provide further evidence for this recommendation.

158-P THE EFFECT AND OUTCOMES OF NEOADJUVANT THERAPY IN PATIENTS WITH NON-SMALL CELL LUNG CANCER: WHICH PATIENTS DO BENEFIT MOST?

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Background: Surgical resection alone remains suboptimal and unsatisfactory for patients with early (stage I or II) non-small cell lung cancer On the other hand, optimal management of stage IIIA-N2 and IIIB (T4N0-2) non–small cell lung cancer remains controversial. The current study was set up to compare, in patients with non-small cell lung cancer, surgery alone versus platinum-based chemotherapy followed by surgery in terms of overall survival, pathological staging , resectability rates, surgical morbidity.
Methods: This is a retrospective study of consecutive patients with biopsy-proven T1-3 N0-2 M0 lung cancer who underwent induction chemotherapy before surgery(n=80) or surgery alone from January 2001 through June 2008(n=451). Lung resection was performed within 4 weeks of completion of chemotherapy in induction chemotherapy group. Twenty-two patient in the neoadjuvant arm could not be operated due to several reasons.
Results: Two patients died postoperatively in neoadjuvant group(3.4%). Neoadjuvant therapy did not change morbidity or mortality rates (p=0.3). Overall five-year survival rates were 68.9% and 53.1% respectively (p=0.08). In pIIIA patients, neoadjuvant therapy did not significantly increase survival (p=0.18). However, patients with tumoral expression of p53, EGFR and ERCC1 had significantly better survival (p=0.03, 0.03 and 0.001 respectively). ERCC1 expression was found to be a negative predictive factor in patients receiving neoad-juvant therapy (p=0.02). Increased preoperative LDH serum level was calculated to be a risk factor for postoperative complication. Patients who benefited most and had lowest postop-erative complication was found to be the ones with lower LDH (<320 IU/l) and stage IB or IIA patients without p53, ERCC1 and EGFR expressing tumors (p<0.001).
Conclusions: Induction chemotherapy does not cause increased morbidity and it is effective in early stage patients attaining complete resection. Patients with normal serum LDH levels and tumors without ERCC1, EGFR and p53 expression appeared to have lower predicted complication rate with higher survival.

159-P THE USE OF THE LIGASURE™ IN ESOPHAGECTOMY

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Background: This study aimed to evaluate the efficacy of the LigaSure Vessel Sealing System (LVSS) (Valleylab, Boulder, Colorado, USA) when used for esophagectomy.
Methods: In this study, 52 patients (30 male and 22 female, mean age: 55 years), who had undergone esophagectomy in our clinic between January 2005 and October 2008, were retrospectively evaluated. The indications for esophagectomy were esophageal carcinoma and non-dilatable stricture caused by scleroderma in 51 and 1 patient(s), respectively. Esophagectomy was performed using conventional clamping method (Group-1), in 24 patients and LVSS (Group-2) in 28 patients. Both groups were compared for operation duration, amount of intraoperative bleeding, postoperative hospitalization time, and intraoperative complications. In the comparisons, Mann-Whitney U test and Pearson Correlation was used.
Results: In the evaluation of the patients, the two groups had similar distributions of age and gender. The duration of operation (347,08?49 min vs. 287,50?61 min., p=0.001) and the amount of intraoperative bleeding (419,17?146 mL vs. 215,18?114 mL., p=0.000) were significantly lower in LVSS group than in the conventional method group. Between operation duration and intraoperative bleeding correlation is significant at the 0,01 level (2-tailed). There were unimportant three intraoperative complications in the conventional method group. However, there were no differences for hospitalization time between the groups.
Conclusions: LVSS significantly shortens operation duration and decreases the amount of intraoperative bleeding compared with the conventional methods, but doe not provide advantages for hospitalization time and/or intraoperative complications. We believe LVSS is an effective and reliable method for esophagus surgery.

160-P EXPERIENCE OF EXTRACOPOREAL MEMBRANE OXYGENATION FOR RESPIRATORY OR CARDIAC FAILURE ON GENERAL THORACIC SURGERY

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Background: Although several studies reported improved survival with Extracorporeal membrane oxygenation(ECMO) in ARDS patients, the usage of ECMO is currently controversial. This study aims to evaluate our experience with ECMO on general thoracic surgery.
Methods: We retrospectively reviewed the records of 16 patients who required ECMO after general thoracic surgery from January 2004 to July 2008. The operations included pneumonectomies, (bi)lobectomy, segmentectomy, Ivor Lewis operation, and bilateral lung transplantation. Veno-venous bypass was used for pure respiratory failure and veno-arterial bypass for low systemic perfusion pressure.
Results: The mean age was 57.3 years. Eight of 16 (50%) patients had successful weaning off ECMO. Survival to discharge was obtained for 6 out of 8 patients. One patient died of septic shock, the other of multi-organ failure after weaning off ECMO. One of 7 (14.3%) ARDS patients successfully weaned off and discharged. Two of 3 pulmonary thoromboembolism patients successfully weaned off and discharged. Two of 3 cardiogenic shock patients successfully weaned off and only one patient survived. One patient who had hypovolemic shock successfully weaned off and discharged. In 2 bilateral lung transplantations, one patient successfully weaned off and discharged. The other patient weaned off ECMO but died of septic shock. The patients with ARDS had lower weaning off rate than non-ARDS patients. (14.3% in ARDS, 77.8% in non-ARDS, p= 0.041). Six patients were placed on ECMO during cardiopulmonary resuscitation and half of them patients successfully weaned off. Median interval period between operation and starting ECMO support was 4 (0-24) days. Median duration of ECMO application was 6 (1-30) days. The median frequency of oxygenator exchange was 1 (0-5).
Conclusions: ECMO for respiratory or cardiac failure is a successful therapeutic option in some patients who do not respond to conventional treatment on general thoracic surgery. The rate of weaning off is higher in non-ARDS than ARDS patients.

161-P INTRAOPERATIVE SERUM PARATHORMONE MONITORING TO CONFIRM COMPLETE RESECTION IN PATIENTS WITH MEDIASTINAL PARATHYROID ADENOMAS

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Background: Surgical resection is the only curative method of treatment in patients with hyperactive parathyroid adenomas. Despite wide range of preoperative tests, the surgeon often encounters intraoperative difficulties to identify the tissue responsible for hyperparathyroidism and to remove it completely, especially when dealing with lesions deep in the mediastinum. In this study we assessed the efficacy of intraoperative serum parathormone (PTH) measurement performed in order to confirm complete removal of hormonally hyperactive parathyroid tissue.
Methods: Eighteen patients with hyperparathyroidism caused by mediastinal parathyroid adenoma were enrolled in the study. Serum PTH level was measured with Immulite TURBO Intact PTH system before the commencement of the surgical procedure and 10 minutes after removal of the lesion. More than 50% drop in PTH level was assumed as confirming complete resection. If not achieved, search for another location of hormonally hyperactive tissue was carried out and PTH measurement was repeated. In elected cases the search was aided by gamma-probe, after preoperative administration of radionuclide. We analyzed intraoperative course of the procedure to assess if success / failure was correlated with PTH measurement.
Results: In 13 patients adenoma was removed through cervical incision, in 2 – partial sternotomy, in 2 – thoracotomy and in 1 – VATS. In 10 patients (55%) the lesion was correctly identified and removed at first attempt. In 7 cases (39%) lack of PTH drop after first attempt, triggered continued search and led to successful complete resection at second attempt. However, in one case (6%), despite continued search through cervical incision, the procedure failed. After repeated diagnostic tests a previously undiagnosed lesion in the lower posterior mediastinum was detected, and removed through thoracotomy.
Conclusions: Intraoperative serum PTH monitoring is crucial in confirming completeness of parathyroid adenoma resection. It allows to avoid unnecessary reoperations in vast majority of patients.

162-P THE IMPACT OF VIDEO ASSISTED MEDIASTINOSCOPIC LYMPHADENECTOMY ON SURVIVAL IN PATIENTS WITH RESECTED NON-SMALL CELL LUNG CANCER

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Background: Mediastinal lymph node involvement is of great importance in survival of patients with non-small cell lung cancer. Mediastinoscopy has been accepted as a gold standard tool for preoperative mediastinal staging. However, the role of video-assisted mediastinoscopic lymphadenectomy (VAMLA) has been fully elucidated. We aimed to analyze accuracy of VAMLA as a tool for preoperative staging and the impact of the technique on survival after pulmonary resection in non-small cell lung cancer patients.

Methods: Between May 2006 and December 2008, 210 patients who had undergone pulmonary resection for non-small cell lung cancer were analyzed. Of these, 53 patients underwent VAMLA before operation, whereas 157 patients underwent standard mediastinoscopic exploration. The median resected lymph node was 5 in VAMLA group (mean was 4.9), while the median was 4 (mean was 4.1) in mediastinoscopy group. The patients who had negative VAMLA/mediastinoscopy underwent anatomic pulmonary resection and systematic lymph node dissection. The survival rates were calculated using Kaplan-Meier test.

Results: Dysphonia was notified in 5 (9.4%) of patients who had VAMLA while the complication rate was 3.8%(5 dysphonia, 1 pneumothorax) in patients who underwent mediastinoscopy. The difference was statistically significant (p=0.01). VAMLA unveiled N2 and N3 disease in 9 (16.9%) patients and in 1 (1.9%) patient respectively. Mediastinoscopy resulted ipsilateral lymph node involvement in 21 (14.0%) patients, contralateral mediastinal metastasis 6 patients (3.9%). There was no statistically significant difference in accuracy between two methods (p=0.3). However, the 3-year survival rate of patients who had VAMLA and subsequent pulmonary resection (n=42) was 90%, it was 64.8 in patients who underwent mediastinoscopy and pulmonary resection(p=0.01). Multivariate analysis revealed that, having VAMLA was independent good prognostic element in resected patients (p=0.02).

Conclusions: VAMLA seemed to provide longer survival in resected non-small cell lung cancer patients. This effect could be due to complete resection of mediastinal lymph nodes before pulmonary resection.

163-P SERUM VASCULAR ENDOTHELIAL GROWTH FACTOR C(VEGF-C) AND D(VEGF-D) IN PATIENTS WITH ESOPHAGEAL CANCER.

Miroslaw Dariusz Kozlowski[1]; Oksana Kovalczuk[2]; Anetta Sulewska[2]; Grzegorz Lapuc[1]; Wojciech Laudanski[1]; Piotr Dziegielewski[1]; Wieslawa Niklinska[3]; Lech Chyczewski[2]; Jacek Niklinski[1]; Jerzy Laudanski[1]
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Background: Lymph node metastasis is a characteristic of malignant cancers and is observed more frequently in esophageal cancer than in other digestive tract cancers, making it one of the most important prognostic factors. To date, no imaging modality has been proven to be consistently accurate in assessing lymph node metastasis in esophageal cancer Vascular endothelial growth factor C(VEGF-C) and D(VEGF-D) play a crucial role in the regulation of tumor growth and metastasis. The objective of the current study was to determine the correlation between pretreatment serum levels of VEGF-C and VEGF-D and clincopathologic features in patients with esophageal cancer.
Methods: Circulating VEGF-C and VEGF-D were measured by enzyme-linked immunoadsorbent assay (ELISA) on 19 healthy controls, 22 benign esophageal disease, 76 patients with esophageal squamous cell carcinoma and 31 patients with adenocarcinoma of lower esophagus.
Results: Serum (sVEGF-C) and sVEGF-D levels were higher in patients with esophageal carcinoma than in the healthy control ($p<0,0011$ and $p<0,01$, respectively). The highest concentration of sVEGF-C and sVEGF-D were found in patients with advanced cancers. The serum VEGF-C and VEGF-D showed significant positive correlation with nodal metastasis in squamous cell carcinoma. However, there was no significant association between serum VEGF-C and VEGF-D and factor as age, gender, location, histological grade, tumor depth and stage grouping.
Conclusions: High serum levels of VEGF-C and VEGF-D might be associated with lymph node metastases and advanced disease in esophageal cancer.

NOTES

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Tuesday, 2 June 2009
08:30 – 17:30
Tuesday Posters

164-P MAJOR PULMONARY RESECTIONS FOR LUNG CANCER IN PATIENTS OVER 75 YEARS OLD

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Background: Although surgical treatment of lung cancer in elderly are still being discussed, most of the surgeons agree that age alone is not a contraindication for pulmonary resection in those patients. There is no clear criteria for recommendation patients for operations.
Methods: From January 1996 to December 2008, 114 elderly patients over 75 years old underwent antero-lateral thoracotomy and curative pulmonary resection for non small-cell lung cancer. Age ranged from 75 to 89 (mean 77,4). There were 88 males (77,2 %) and 26 females (22,8 %). Lobectomy including VATS lobectomy and bilobectomy were the procedures of preference in both groups (93 cases – 81,4%), pneumonectomy was performed in 17 patients (15,1%) and wedge resections in 4 (3,5%). The most common comorbidity was arterial hypertension (62,5%) and COPD (25%).
Results: Histology was as follows: squamous in 63 (55,1%), adenocarcinoma in 44 (38,0%), large-cell in 7 (6,1 %) and pseudosarcoma in one (0,8%) patient. According to the AJCC classification, 54 tumors were graded as stage I (47,4%), 26 as stage II (22,8%), 32 as stage IIIA (27,2%), 1 as stage IIIB (0,8%) and 1 as stage IV (0,8%). Early postoperative mortality was 4,6 % - 2 patients, one postpneumonectomy and another one postlobectomy. Morbidity was 61,5 %. The most often non – fatal complication were as follows: mental disorders (44,5 %), supraventricular arrhythmias (39 %), prolonged air-leak (7%) and atelectasis required multiple bronchoscopies (7%). Statistical analyses confirmed, that arterial hypertension and pneumonectomy were the most important risk factor for postoperative complications and mortality.
Conclusions: Pulmonary resections for lung cancer in patients over 75 years are feasible after very careful selection of patients. Most of complications are temporary and non fatal. Lobectomy or sleeve resections are the treatment of choice in those patients. Pneumonectomy should be strictly avoided.

165-P COMPARING SLEEVE LOBECTOMY AND PNEUMONECTOMY FOR NON-SMALL CELL LUNG CANCER AFTER INDUCTION THERAPY: A CASE-CONTROL MATCH STUDY

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Background: To evaluate safety, feasibility and oncologic results of sleeve lobectomy (SL) and pneumonectomy (PN) in multimodality treated non-small cell lung cancer (NSCLC). Furthermore, to compare both surgical procedures in treated and untreated patients using case-control matching analysis.
Methods: Between 1999 and 2005, 87 patients with stage IIIA/B-NSCLC were treated with platin-based induction chemotherapy, followed by concurrent radio-chemotherapy, and surgery. Among them, 19 (22%) patients underwent SL and 9 (10%) PN. Treatment results in terms of morbidity, mortality, pattern of relapse, and survival were statistically compared. Thereafter, based on a 1:1 case-control matching process, each patient of both groups was matched on the major clinical characteristics with a subject who underwent the same surgical procedure without previous treatment.
Results: In the neoadjuvant (NAD) population, mortality and major morbidity rates were 6% and 16%, respectively. In the SL(NAD)-group and PN(NAD)-group, these figures were 5% and 14%, and 11% and 18%, respectively (P=ns). Complete resection (R0) rates were 95% and 89%, respectively. Median survival was for the SL(NAD)-group 33 months and for the PN(NAD)-group 17 months. Corresponding 5yr-survival rates were 19% and 0%, respectively (P=ns). The pattern of relapse showed significant differences: locoregional recurrence and metastases arose in 42% and 16% in the SL(NAD)-group, and in 0% and 67% in the PN(NAD)-group (P=.016). As compared with the corresponding match control group, no significant differences were observed for both SL(NAD)-group and PN(NAD)-group according to complete resection rate, mortality and morbidity rates, and pattern of tumor relapse, except for the higher frequence of major complications in the PN(NAD)-group.
Conclusions: Because of high risk of death and poor outcome, pneumonectomy cannot be considered a valid option in multimodality treatment for NSCLC. Although in our series there were not strong differences in terms of morbidity and mortality, sleeve lobectomy – when technically feasible – should be preferred.

166-P MEANING OF SURGERY IN TREATMENT OF RESISTANT FORMS OF LUNG TUBERCULOSIS (TB)

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Background: The emergence of multidrug resistant tuberculosis (MDR-TB) cases represents a serious worldwide threat to the health of mankind. Medical treatment of MDR-TB is generally quite unsuccessful.
Methods: surgical interventions were performed in 52 patients with resistant tuberculosis. 44 (84.6%) of them have MDR-TB and 8 (15.4%) - PDR-TB, respectively. Among them 41 (78.8%) were men and 11 (21.2%) - women. In 18 (34.6%) of patients such complications as: pulmonary bleeding (massive haemoptysis) in 12 patients; spontaneous Pneumothoracs (tropped lung) – 3; and pleural empyema – in 3, were revealed. Three patients with the diagnosis of a caseous pneumonia underwent surgical treatment. Altogether the following surgical interventions (58) have been performed: pulmonoectomy in 14, lobectomy -27, bilobectomy -5, segmental resection – 4, thoracoplasty – 6 and rethoracotomy – in 2 cases, respectivelly. Four of patients underwent the surgery of both lungs. In two cases the subsequent resection of right and left lungs were performed and in the other 2 cases the resection on one lung and thoracoplasty on the other one were performed, respectively.
Results: no rate of intraoperative lethality has been shown. On the second day after pulmonectomy one patient died, developing respiratory distress syndrome. Serious postoperative complications occurred in 6 patients (among them: bleeding - 2 cases, bronchopleural fistula - 2 and bronchopneumonia – 2, respectively). After surgery the total clinical effect was revealed in 94.3% of patients, satisfactory in 3.8% and lethal in 1.9%. In all patients the persistent negative humidity was reached immediately after surgery. During the remote postoperational period (a year of follow-up) a recurrence of disease has been noticed only in 2 patients (3.8%).
Conclusions: High indexes of clinico-epidemiologic effectiveness of surgery at resistant tuberculosis indicate to the meaning and significance of using surgical treatment in complicated contingent of patients.

167-P EXPANSIVE EXTRAPLEURAL HEMATOMA AFTER BLUNT THORACIC TRAUMA

David Pérez-Alonso; Enrique Bermejo-Casero; Santiago Quevedo-Losada;
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Background: Expanding extrapleural haematoma (EH) after blunt thoracic trauma is a rare clinical condition wich usually results from bleeding from intercostal or internal mammary vessels when trauma presents with multiple rib fractures. If EH is huge enough it causes ventilatory and circulatory disturbances and severe anemia. When the amount of blood accumulated in the extrapleural space is very large the typical finding in a chest radiograph of an EH (D-shaped opacity) is substituted by a non-specific 'white-out' of the lung. Medially displaced extrapleural fat with thickening of parietal pleura shown on CT can be very usefull in distinguishing EH from hemothorax but this characteristic sign is not easily visualized. Therefore diagnosis of EH can be missed preoperatively. With regard to the therapeutic approach, thoracotomy is mandatory in order to control the bleeding and evacuate the clots.
Methods: A 77-year-old anticoagulated male presented with severe dyspnea and worsening chest pain after a blunt thoracic trauma. Chest radiograph revealed multiple rib fractures and complete "white out" of left lung. Under suspicion of massive hemothorax a closed tube thoracostomy drainage was inserted but no fluid was drained. Further contrast CT scan confirmed the adecuate position of the chest tube and gave no additional significance information. In our patient, clinical and radiologic findings leaded to diagnosis of massive traumatic clotted hemothorax and subsecuently an emergency open thoracotomy was perfomed. Surgery revealed a huge EH wich completely detached the intact parietal pleura collapsing lung.
Conclusions: Huge expanding EH is a rare finding in blunt trauma and might be potentially life-threatening. When the amount of extrapleural blood is large, radiological signs of extrapleural hemorrhage can not be identified and consecuently EH migh be confused with massive hemothorax. An emergency thoracotomy is the best method to evacuate the clots and to control the bleeding.

168-P PLEURO MEDIASTINAL NEUROFIBROMA INVADING VERTEBRAL COLUMN AT T 10 LEVEL

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Background: Neurofibroma are a rare entity of benign neural tumours.When originated from intercostal nerves very close to the vertebral column they can erode the body of the neighbour vertebra and endanger the medulla.
Methods: A 21 y old longilin patient with mandibula hipognata,present a minimal hemoptisis , no other signs or simptoms Medical check put in evidence a masive tumour situated in the posterior mediastinum,which at CT and MRI erode the lateral lamina of the T 10 vertebra,without damaging the medulla.In combined team with neurosurgeon ,author no 2,we proceed with a posterior median incision continued over the posterior body of C 1o.After the paravertebral muscle mobilization and resection of posterior parts of C 10 and 11 ,it was the neurosurgeon task to remove the lateral lamina of T 10 vertebra and remove the medular part of tumour,and thoracic surgeon part to remove the mediastinal 1,2 kg tumour,which was extrapleural and well irrigated from aorta and esophagus.We use no thread to ligate those vessels but instead we use for the first time in Romania a cheap bipolar device with cutting blade incorporated, which seal all the vessels under 5-6 mm diameter.A simple thoracic drain was let in place and the paravertebral and latissimus muscles were put in place.No vertebral consolidation was needed
Results: The recovery course was uneventful ,with a 72 hours drainage of 800 ml,and complete reexpansion of the lung.The neurological aspect of the patient was normal,despite the possible Adamkiewicz artery course T 10 level,left side.The patient was discharged at 6 th postop day. Histologically Neurofibroma.Endobronhial aspect was normal.
Conclusions: A masive mediastinal asimptomatic tumour(neurofibroma) accidentally discovered,with vertebral destruction at T 10.Surgical team work coperation and first time use of a cheap bipolar , cutting device in thoracic surgery in Romania with no ligatures are the characteristics of this rare case

169-P OVERWEIGHT AND WEIGHT LOSS DURING CHEMORADIOTHERAPY ARE ASSOCIATED WITH SHORTER SURVIVAL AFTER SURGERY IN STAGE III NON-SMALL-CELL LUNG CANCER

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Background: Trimodality treatment for stage III non-small-cell lung cancer (NSCLC) consisting of concurrent chemoradiotherapy followed by surgery is associated with treatment-related toxicity, deterioration of nutritional status and postoperative complications. The aim of this study was to identify predictive factors for postoperative complications, postoperative mortality and long term survival in this patient population.
Methods: Retrospective selection (from 2004 – 2007) of stage III NSCLC patients who underwent concurrent cisplatin based chemoradiotherapy followed by surgery in our center. Age, sex, BMI, FEV1 (% of expected), percentage of weight loss during chemoradiotherapy and type of resection were recorded and related to the occurrence of postoperative complications and 90-day postoperative mortality, disease-free survival and overall survival. Correlations between preoperative factors and postoperative complications and mortality were investigated by logistic regression, Cox regression and Kaplan Meier survival analyses.
Results: Thirty-three patients (n=6 (17.6%) stage IIIa and n=27 (79.4%) stage IIIb) were selected. One or more postoperative complications occurred in 17 patients (51.5%). Two patients died within 90 days after surgery (6.1%), one of ARDS and another of sepsis. Median overall survival was 26.3 months. Age, FEV1, sex, type of resection and percentage of weight loss during chemoradiotherapy were not significantly associated with postoperative complications. However, weight loss (>5%) during chemoradiotherapy, in combination with overweight (BMI≥25) was associated with a shorter survival (median 7.5 months, p=0.027).
Conclusions: Weight loss during chemoradiotherapy and overweight are associated with a shorter survival after trimodality treatment. Predicting factors for postoperative complications in this patient population were not identified.

170-P LUNG CANCER IN HEMODIALYSIS PATIENTS: CLINICAL OUTCOME AND LONG-TERM RESULTS AFTER PULMONARY RESECTION

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Background: There are few studies available investigating the clinical outcome and long-term results of the patients on hemodialysis who underwent pulmonary resection for lung cancers. We retrospectively analyzed hemodialysis patients who underwent pulmonary resection for lung cancer to better understand their clinical and long-term outcome.
Methods: We reviewed the clinical history of 24 patients (20 men, mean age, 65.9) on hemodialysis for a variety of reasons, including diabetes mellitus in 13 patients, chronic glomerulonephritis in 6, nephrosclerosis in 2 and 'other' classification in 3.
Results: The mean levels of blood urea nitrogen and serum creatinine were 56.0 mg/dL and 9.1 mg/dL, respectively. Lung cancer histologic diagnoses included squamous cell carcinoma in 12 patients, adenocarcinoma in 9, small cell carcinoma in 2 and adenosquamous carcinoma in 1. The distribution of pathological staging was IA in 9 cases, IB in 5, IIB in 5, IIIA in 3, and IIIB in 2. Twenty-two patients underwent lobectomy, 1 underwent a wedge resection and 1 underwent a segmentectomy. There was no operative mortality, and the overall morbidity rate was 58.3%. There were 7 cases of prolonged air leak, 3 of acute heart failure, 2 of required pleural drainage, 2 of sputum retention, and 1 of chylothorax. Recurrence within 1 year after surgery occurred in 3 patients (12.5%). The median disease free interval was 21 months, ranging from 4 to 102 months. Overall 5-year survival rate was 36.2%.
Conclusions: In patients on hemodialysis who undergo pulmonary resection, there is a high incidence of pulmonary and cardiac complications. Careful postoperative management is therefore mandatory during the postoperative period.

171-P PNEUMONECTOMIES - TO DRAIN OR NOT TO DRAIN - THAT IS THE QUESTION

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Background: The best mode of management of the post pneumonectomy space remains a source of constant debate in thoracic surgical circles. There are no guidelines regarding this and most institutions use a „tried and tested" method based on the experiences of the senior surgeons in post. We routinely used a drain in our hospital. Following the appointment of a new surgeon who did not drain his post pneumonectomy space, we had a captive population to compare the two modalities - drain vs no drain.
Methods: Between May 2003 and January 2009, 387 patients underwent a resection for malignancy at our tertiary referral University Hospital. Of these, 86 (22%) underwent a pneumonectomy. The mean age of these patients was 60.53 years (range 31-84). There were 60 men and 26 women. A total of 62 pneumonectomies (72%) had their spaces drained. The drains were almost always removed on the first postoperative day. The perceived advantages of a „no drain" policy are to eliminate the risk of suction being accidentally attached to the drain and decrease the incidence of infection. The patients with no drains had the space aspirated following closure in theatre. The tracheal position was constantly monitored to obtain an optimal position. Radiological assesment of the degree of mediastinal shift and extent of surgical emphysema, as described in the literature, were used to assess the safety of the two approaches.
Results: In the initial analysis, the degree of mediastinal shift was not significantly different between the two groups. There was no difference in the incidence of severe surgical emphysema between the two groups.
Conclusions: The policy of leaving the pneumonectomy space undrained appears to be safe in our initial analysis. Close monitoring is essential to detect any postoperative haemodynamic instability in this group due to the absence of a chest drain as a guide.

172-P ROLE OF SURGICAL RESECTION IN COLORECTAL LUNG METASTASES: ANALYSIS OF 137 PATIENTS

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Background: To investigate clinicopathologic characteristics and to identify prognostic factors in patients undergoing pulmonary metastasectomy for colorectal carcinoma.

Methods: Single institution retrospective study of 137 consecutive patients (82 men, mean age 63.8 ± 9.1 years) who underwent 158 pulmonary resections for metastatic colorectal carcinoma between January 1989 and June 2008.

Results: Mean disease-free interval between colorectal carcinoma and pulmonary metastasectomy was 36.1 ± 15 months (range 9.8–67.5 months). No perioperative deaths occurred. Follow-up was 100% complete and mean follow-up was 41.6 ± 27.6 months (range 5–126 months). Median survival was 36.2 months. Overall 5-year and 10-year survival rates were 55.4% and 30.8%, respectively, after pulmonary metastasectomy. At univariate analysis of patient survival, number of lung metastases (p=0.0014), disease-free interval of more than 24 months (p=0.015), and absence of residual tumor (p=0.049) were significant prognostic factors. A weak association was observed between survival and presence of unilateral versus bilateral metastases (p=0.09), and adjuvant chemoterapy following pulmonary resection (p=0.08). Age, sex, primary tumor site and stage, preoperative carcinoembryonic antigen, size of lung metastases, lymph node involvement, and type of surgical resection were not found to be of prognostic importance. At multivariate analysis, presence of solitary lung metastasis and disease-free interval of more than 24 months remained significant prognostic factors. There was no significant difference in the 5-year survival for 121 patients undergoing single thoracotomy compared with 16 patients undergoing repeated resection(s) for recurrent colorectal lung metastasis (55% vs 51%; p=0.77). Nor was the presence of hepatic metastasis associated with lower outcome (p=0.74).

Conclusions: Disease-free interval and number of metastases are the most significant prognostic factors for survival after pulmonary metastasectomy for colorectal carcinoma. Recurrent pulmonary disease can benefit from repeated resection. Prior hepatectomy for liver involvement does not influence survival.

173-P INFLUENCE OF THE EXTENT OF LYMPHATIC METASTASIS IN NON-SMALL-CELL-LUNG CANCER ON 10-YEAR-SURVIVAL RATES

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Background: The extent of lymphatic metastasis plays a significant role for the prognosis of patients with non-small-cell- lung cancer (NSCLC). Generally in these studies 5-year-survival rates are determined. But, due to the fact, that tumor-related death may occur after 5 years, we based our study on 5- and 10-year-survival rates.

Methods: We analyzed the extent of lymphatic metastasis (unilevel-/ multilevel infiltration) in patients (pts) with NSCLC in a prospective setting. The exploration based on initially 100 pts with homogenous distribution (50 pts had pN1- and 50 pts had pN2-disease-status) from which 64 pts, 33 with pN1- and 31 with pN2- disease, were followed through the whole period. The survival rates of both groups were attributed to the influence of general factors (gender, age, histologic cell type, extent of pulmonary resection, grading) and the specific factor (unilevel- and multilevel infiltration of the lymph nodes).
Results: Of the 33 pts with pN1-status 22 pts had unilevel infiltration (median survival 55.0 month) and 11 had multilevel infiltration (median survival 55.3 month). Of the 31 pts with pN2-status 17 pts had a unilevel infiltration (median survival 47.9 month) and 14 had a multilevel infiltration (median survival 23.2 month). The 10-year-survival rate was 15.6% for all pts with the best 10-year-survival rate of 22.7% (pN1 unilevel infiltration) and the worst 10-year-survival rate of 7.1% (pN2 multilevel infiltration).
Conclusions: The level of infiltration of lymph nodes is a main factor in terms of the survival prognosis.

174-P POSTOPERATIVE PULMONARY COMPLICATIONS FOLLOWING THORACIC SURGERY: COMPARISON OF THREE SCORING SYSTEMS.

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Background: Scoring systems are used to aid recognition of Postoperative pulmonary complications (PPC) amenable to physiotherapy, however the current scoring systems rely on radiological findings or are not specific to thoracic surgery. We compared a new system, the Melbourne Group Scale [MGS]1 to identify PPCs after thoracic surgery and compared it with two established scoring systems.
Methods: A prospective observational study was performed on thoracotomy/lung resection patients in a regional thoracic centre (October 2007 and April 2008). PPC scoring was performed on a daily basis using the Brooks- Brunn Score [BBS]2 the Gosselink Score [GS]3 and the MGS (Table 1), and results compared.
Results: 129 consequent patients were observed, mean (SD) age 60.9(15.37) years, 75 male (58%), % Predicted FEV1 82.96% (20.0). Surgical procedures included pneumonectomy :15 (11.6%), lobectomy:64(49.6%), Segmentectomy:5 (3.9%) , Wedge resection:38(29.5%), Exploratory thoracotomy:4(3.1%) and sleeve resections:3(2.3%). PPC rate with the MGS was 13.2% (n=17), the GS 6.2% (n=8), and with the BBS 39.5% (n=51). The clinically observed incidence of PPC was 12.4%, these patients requiring antibiotic therapy or bronchoscopy.
Conclusions: MGS best recognises PPC and may be an appropriate tool to identify patients developing a PPC. GS and BBS have a limited role in thoracic surgical practice.

Melbourne Groupd Scale	Gosselink	Brooks Brunn
CXR Atelectasis/Infiltration	Chest X ray Score	Temp >38
WCC>11 or Preoperative Antibiotics	0-NAD	New Cough / Sputum
Temp>38	1- minor unilateral infiltration	Abnormal Breath sounds compared to baseline
+ve Signs on Sputum microbiology	2- minor bilateral infiltration	CXR Atelectasis /Infiltration
Production of purulent (yellow/green) sputum differing from preoperative	3- major unilateral infiltration	Physician documentation of Atelectasis/Infiltration
SpO2 < 90% on room air	4- major bilateral infiltration	
Diagnosis of pneumonia/chest infection by medics	Temp>38	
Readmission to or prolonged stay on the ITU/HDU (over 36 hours)	WCC>12 or positive microbiology	
PPC = >4 positive categories	PPC = Chest X-ray Score of 3+ and positive in all other categories	PPC = 2 categories positive on two consecutive days

Three Scores to identify PPC

175-P OXIDISED CELLULOSE IN THORACIC SURGERY - HUMAN IN VIVO STUDY OF EFFICACY, SAFETY AND ABSORPTION PROPERTIES

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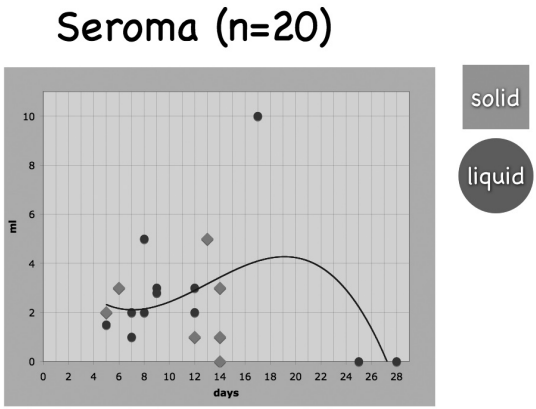
Background: Derivates of oxidised cellulose (Surgicel, Gelitacel, Tabotamp etc.) are widely used in surgery for hemostatic purpose. However, very little is known about the behaviour and resorption properties of this substance after implantation. This study is the first prospective in vivo evaluation of efficacy, safety and resorption of oxidised resorbable cellulose in humans.
Methods: Single centre prospective case control study approved by the Ethics Committee of the „Ärztekammer Rheinland-Pfalz". From 6/2008 to 1/2009 knitted gauze of oxidised cellulose measuring 5x20 cm were placed in the sub-carinal space after completing systematic video-mediastinoscopic lymph-adenectomy (VAMLA) for nodal staging in 25 lung cancer patients. 20 of 25 patients proved to be free of mediastinal disease and underwent mediastinal re-exploration during resection of the primary tumour 5-28 days after implantation of oxidised cellulose gauze. On mediastinal re-exploration residuals of oxidised cellulose or seroma were collected and quantified (see graphic) and the status of the former lymph-adenectomy wound bed surgically assessed and photo-documented.
Results: No adverse events (hemorrhage, hematoma, inflammation or infection) were observed and the desired hemostatic effect was achieved in all cases. The former wound bed was remarkable clean and free of inflammatory signs as compared to prior experience after lymph-adenectomy without oxidised cellulose application. Residuals of oxidised cellulose fibres were already degraded and without solid structure after five days and may be found until day 14 after implantation. After day 14 only seroma or scarring was notified as usual after VAMLA procedures.
Conclusions: The application of significant amounts of oxidised cellulose in the mediastinum is safe and effective. Gauze measuring 5x20 cm quickly dissolves and is completely absorbed within 14 days. The impression of reduced seroma formation, absence of post-surgical local inflammation and adhesion formation is interesting and suggests a comparative randomised follow up study.



Residuals at reexploration

176-P EFFECTS OF THORACIC SURGERY ON CHEST WALL VOLUME REGULATION: EVALUATION BY OPTOELECTRONIC PLETHYSMOGRAPHY.

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Background: In order to investigate underlying mechanisms, we studied the effect of a two-week pulmonary rehabilitation programme (PRP) on the regulation of total chest wall (CW) and compartmental volumes after pulmonary lobectomy (PL) by optoelectronic plethysmography (OEP).
Methods: 14 patients undergoing PL underwent a preoperative evaluation including spirometry, blood gas analysis, 6-minutes walking distance (6-mwd). In order to investigate the changes in CW kinematics, we evaluated the displacements of CW (Vw) and its compartments: the pulmonary apposed rib cage (Vrcp), the abdomen apposed rib cage (Vrca) and the abdomen (Vab), by OEP during both quiet breathing (QB) and hyperventilation (HV). All the tests were repeated 1 week after PL and at the end of the PRP.
Results: After PL, during QB, we had a reduction in Vw (0.258 vs 0.198 L; p=0.002), Vrcp (0.069 vs 0.057 L; p=0.02), Vrca (0.051 vs 0.032 L; p=0.02) and Vab (0,136 vs 0,109; p=0.01) only in the resected hemithorax (RH). During HV we estimated a reduction in every RH compartment (Vrcp: 0.246 vs 0.139 L; p=0.002; Vrca: 0.24 vs 0.12 L; p=0.001), Vab: 0.355 vs 0.237 L; p=0.009), in Vab belonging to untreated hemithorax (UH) (0.347 vs 0.266 L; p=0.04) and in the total Vw (1.681 vs 1.17 L; p=0.001), according to a loss of ventilatory reserve. After the PRP, during QB, we observed an improvement in Vab RH (0.109 vs 0.129 L; p=0.06). During HV improved total Vrcp (0.351 vs 0.456;p=0.06) and Vab RH (0,273 vs 0.319; p= 0.06). 6-mwd and Inspiratory Capacity improved significantly after PRP (p=0.008 and p=0.004 respectively). Previous abdominal or thoracic surgery led to a poorer outcome during post-operative and post-rehabilitative period (P=0.01).
Conclusions: OEP, measuring subdivision between the three different compartments of the chest wall has important therapeutic implications towards the design of optimised rehabilitation paradigms.

177-P EFFECTIVENESS OF PET SCAN IN POSTOPERATIVE LONG TERM FOLLOW UP OF PATIENTS WITH NONSMALL CELL LUNG CANCER

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Background: There is very few data about the use of positron emission tomography (PET) in the long term follow up of patients operated for lung cancer. We aimed to evaluate the effectiveness of PET scan in detecting distant metastases in the long term follow up of asymptomatic patients operated for non-small cell lung cancer (NSCLC).

Methods: PET scan was performed to sixty five asymptomatic patients. The patients who had a positive PET scan for metastasis underwent MRI and/or biopsy to verify metastasis.

Results: Mean age of the patients was 58.09 ± 8.64 (44-82) years, and 57 (87.7 %) of them were male. Forty eight (73.8%) of the patients had epidermoid cell, 15 (23.1%) had adeno and 2 (%3.1) had large cell carcinoma. Postoperative stage of 1 (1.5%) patient was 1A, 14 (21.5%) of them were stage 1B, 1 (1.5%) of them was stage 2A, 27 (41.5%) of them were stage 2B and 22 (33.8%) of them were stage 3A. PET scan detected metastasis in 7 (10.8%) patients. In one patient PET scan was proven to be false positive. Sites of metastases in PET scan were lung in 3 (4.5%) patients, vertebra in 3 (4.6%) patients and tibia in 1 (1.5%) patient. In detecting distant metastases accuracy rate of PET was calculated as 98%, sensitivity was 100%, and specificity was 98%.

Conclusions: In asymptomatic patients with NSCLC, PET imaging appears to be useful as an alternative to conventional imaging to rule out unsuspected systemic disease in the postoperative long term follow up.

178-P NOVEL SPLIT CHEST TUBE AND CONVENTIONAL THORACIC DRAIN ? PROSPECTIVE COMPARISON

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Background: Chest drainage is mandatory at the end of almost all thoracic operations. Unfortunately it causes the patient considerable discomfort, including pain during chest tube removal. The aim of this study was to analyze the effectiveness and convenience of novel design split chest tube in comparison to conventional chest drain.
Methods: Between Oct 2006 and Jan 2008 patients with one chest tube placement indication at the end of a thoracic operation were enrolled in the study. Either a conventional silicon tube with 3 side holes or the novel longitudinally split tube with same diameter was randomly chosen. We registered patient characteristics, type of operation, volume of chest tube drainage, air-leak, duration of pleural drainage and pain during chest tube removal (visual scale 0-10).
Results: Forty-four consecutive patients (22 male and 22 female; mean age 54.5 (range 17-78) years) were included in the study. In 34 cases VATS and in 10 patients thoracotomy was used to perform various pleural, mediastinal or lung operations. Conventional chest tube was placed in 19 and split tube in 24 patients. Median volume of chest tube drainage and duration of postoperative pleural drainage was equal in both groups. Pain at chest tube removal was significantly less pronounced when using the split tube versus the conventional drain (median pain score 2.3 versus 3.5; p=0.007). In both groups one patient developed pneumothorax after chest tube removal and a second drain was inserted for treatment. No other complications occurred.
Conclusions: The novel type longitudinally split chest tube is at least as good as the conventional chest drain in terms of draining air and fluid from the pleural space, but causes significantly less pain during chest tube removal.

179-P RESULTS OF PNEUMONECTOMY IN NON-SMALL CELL LUNG CANCER PATIENTS

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Background: Pneumonectomy in non-small cell lung cancer (NSCLC) patients is associated with high morbidity and mortality and thus should be performed in limited patients population but due to late diagnosis still consists 10-30% of all operations.
Methods: Four hundred forty six (31%) pneumonectomies were performed in 1439 NSCLC patients operated between 1993 and 2000 in the Department of Thoracic Surgery of Medical University of Gdansk. Median age was 64 years (36-78 years). Forty patients (6,7%) received perioperative oncological treatment.
Results: Median survival was 16 months while 5-year survival was recorded in 116/446 (26%) patients. Thirty-days or in-hospital death was recorded in 36/446 patients (8,1%). Complications occurred in 177 (39,7%) patients. Pathological stage was the strongest negative predictor of survival ($p<0,0001$). Median survival in months according to pathological stage was as follow: Ib – 41, IIb – 22, IIIa – 14, IIIb – 11. Median survival in patients with large cell carcinoma, adenocarcinoma and squamous cell carcinoma was 6, 12 and 21 months respectively ($p=0,03$). Patients lived longer after left pneumonectomy (21 versus 12 months, $p=0,002$). Neither age ($p=0,45$) and comorbid diseases ($p=0,33$) nor other risk factors ($p=0,34$), had negative impact on survival but had such impact on the rate of postoperative complications ($p<0,0001$).
Conclusions: A man older than 67 years, with right sided large cell carcinoma that has stage higher than IIa is the worst candidate for pneumonectomy concerning complications and long term survival. Pneumonectomy is procedure of high risk of death and complications with a poor long-term survival and thus should be limited to selected patients population.

180-P PULMONARY FUNCTION BEFORE AND AFTER LUNG METASTASECTOMY. A PROSPECTIVE EVALUATION OF 50 CASES

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Background: Lung metastasectomy is an accepted part in the treatment of patients with stage IV cancers. Repeated interventions are common. Despite many publications about loss of pulmonary function after anatomical lung cancer resection few information is available about factors influencing pulmonary function after lung metastasectomy. This study is a prospective evaluation of lung function tests and attendant circumstances on 50 patients.
Methods: With preoperative lung function tests 50 patients with suspected lung metastases were included into the study. Three months after a monolateral or bilateral metastasectomy patients were invited for a second lung function testing. Despite the change of lung function parameters the mode of resection, removal of adhesions, recurrent thoracotomy and chemotherapy 6 months before or after resection were evaluated for their impact on lung function outcome.
Results: Studies of lung function, diffusion capacity and blood gas were prospectively performed preoperative and 3 months postoperatively in 50 patients. Eleven patients had bilateral interventions and 15 patients had a repeated thoracotomy. The major resection was lobectomy in 5, segmentectomy in 11, wegde resection in 6 and multiple wedges (range 5-21) in 28 patients. The mean loss of VC was -0.36l (8.5%), the mean loss of TLC was -0.69l (-10.6%) and the mean change in FEV1 was -0.28l (-8,4%). The median loss of DLCO was -9.7%. While AaDO2, pCO2, pO2 and FEV1/IVC did not change at all, a significant decline of all other parameters were found. Furthermore muliple wedges were significantly correlated with a decline of TLC and FEV1 and ongoing chemo after lung resection lead to a significant reduction of DLCO.
Conclusions: Pulmonary metastasectomy results in a significant loss of all lung function parameters while blood gases are stable. Chemotherapy after resection significantly reduces DLCO and multiple wedge resections reduces TLC and FEV1.

181-P VATS LOBECTOMY BY FLEXIBLE THORACOSCOPY: 111 CONSECUTIVE CASES

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Background: It is generally believed that VATS lobectomy is associated with less postoperative morbidity than open lobectomy. Still, a number of patients report long lasting chest wall pain following the VATS approach, and this may be related to nerve injury from porthole torque. A new flexible thoracoscope has become commercially available which in theory may decrease porthole torque and increase maneuverability in the chest cavity. We report results from routine use of this technique for VATS lobectomy.
Methods: Case series of prospectively collected data from May 2007.
Results: During the last 21 months 111 of 225 consecutive lobectomies (49%) were scheduled as VATS procedures with a new flexible high definition thoracoscope. Five operations (4.5%) were converted to open surgery because of bleeding (n=4) or enlarged hilar lymph nodes (n=1). At least 3 mediastinal lymph node stations were cleared in all patients. There was no hospital mortality. The median duration of the operation was 105 minutes (range 50-210) and median postoperative hospital stay was 4 days (range 2-27). Patients were discharged directly to their private home without pain. At routine follow-up two weeks postoperatively all but three patients were pain free. Three patients complained about minor pain related to a porthole.
Conclusions: VATS lobectomy has become a routine procedure with flexible thoracoscopy. We consider the operation easier and safer compared with rigid thoracoscopic lobectomy. All parts of the operation are better visualized and many surgical pitfalls may be avoided. The duration of the operation is comparable with open surgery and postoperative pain is reduced – possibly because porthole torque is minimized. (No conflicts of interest).

182-P CERVICO-MEDIASTINAL GOITER: IS TELESCOPIC EXPLORATION OF THE MEDIASTINUM (VIDEO MEDIASTINOSCOPY) USEFUL?

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Background: During an operation to remove a large cervico-mediastinal goiter a profound bleeding in the anterior mediastinum developed: instead to perform a median sternotomy we used telescoping imaging to identify the source of haemorrhage, and a metallic clip was used to stop the bleeding. Since then we have prospectively used telescopic imaging to facilitate exposure of the mediastinum during surgery for a large cervico-mediastinal goiter via a collar incision. This report describes the method giving preliminary results.
Methods: The study was initiated in January 2007. Indications were the presence of cervico-mediastinal goiter causing compression of adjacent mediastinal structure associated with the possibility of malignancy, or intraoperative, not massive, bleeding.
Results: Telescopic exploration of the mediastinum was performed in 7 patients; 6 females and 1 male, mean-age 54 years. The goiters were located in the middle mediastinum in 6 patients and in the anterior-middle mediastinum in 1. Small deep vessels can be legated using endoclips under video-control. After the thyroid is removed the telescope is used to explore the empty mediastinal cavity to search for ectopic gland, residual disease or persistent bleeding. The patients were extubated in the operating room and remained stable with no respiratory stridor or airway compromise. Postoperatively, no complications such as transient hypocalcaemia, recurrent laryngeal nerve injury, bleeding, wound infection, or tracheomalacia. The patients were discharged the 2nd postoperative day.
Conclusions: the use of telescope can help the surgeon during the removal of large cervico-mediastinal goiter. The potential advantages are a) the visualization of the intrathoracic tributaries reducing the risk of haemorrhage, b) the research of ectopic or residual thyroid gland, and c) minimizes the risks of complications of a median sternotomy.

183-P HYBRID MINIMAL ACCESS SURGERY FOR OESOPHAGEAL CANCER: AN INTENT-TO-TREAT EVALUATION OF LAPAROSCOPY COMBINED WITH TRANSTHORACIC OESOPHAGECTOMY.

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Background: Postoperative complications after Ivor-Lewis esophagectomy could possibly be reduced if the abdominal phase is performed laparoscopically. To date, less than 150 patients have been reported worldwide with such a hybrid minimal access surgery (HMAS).
Methods: Between 2002 and 2008, 195 patients underwent esophagectomy for cancer at our institution. Among them, a HMAS was attempted in 49 patients by a single surgeon. An intent-to-treat analysis was performed on short and long-term outcomes.
Results: There were 36 M and 13 F whose mean age was 62 ± 11 years. Pathology disclosed adenocarcinoma in 34 patients and squamous cell carcinoma in 15. Pre-treatment clinical stages were: I (n=11), IIA (n=18), IIB (n=4), and III (n=16). Fourteen patients received induction chemoradiotherapy. Conversion to open laparotomy was required in 5 patients (10 %). Mean operative time was 337 ± 66 min and the average blood loss was 395 ± 500 ml. All patients were extubated in the operative room. Postoperatively, p stages were 0 (n=2) ; I (n=15), IIA (n=10), IIB (n=4), III (n=17), and IVa (n=1). Overall 30- and 90-day mortality rates were 6 and 8 % respectively. Median duration of ICU and hospital stays were 5 and 23 days respectively. Pulmonary complications occurred in 17 patients (34%), including pneumonia (n=11) and ARDS (n= 5). Anastomotic leakage occurred in 5 patients (10%). Complete resection was achieved in 46 patients (94%). Mean number of resected lymph nodes was 22 ± 9. Overall and disease-free 5-year survival rates were 47 % and 31 % respectively. Median of disease-free survival was 57 ± 24 months for pN0 patients and 16 ± 5 months for pN+ patients (p=0.05).
Conclusions: Outcomes of HMAS Ivor-Lewis esophagectomy are in line with those following the open procedure. We are now engaged in a large-scale multicentre prospective randomized study to test the relevance of such findings.

184-P HEPATIC HERNIATION THROUGH A DIAPHRAM DEFECT SIMULATING BASAL LUNG NODES

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Background: A resection procedure with a diagnostic goal is indicated depending on the clinical and epidemiological features, and on the radiological features of the lung nodes of the patient. Our objective was to introduce a patient diagnosed with thyroid papilar carcinoma where extensive study showed two lung nodes not visualized previously.
Methods: A 58 years old female smoker, until several months prior to the procedure, who had high blood pressure and chronic venous insufficiency, was diagnosed with thyroid carcinoma. Total bilateral thyroidectomy and linfadenectomy were made. Definitive diagnosis was thyroid papilar carcinoma, stage II (pT2N0). Additional thoracic tests included a CT with contrast showing two adjacent nodes in the right lung inferior lobe, measuring 2.7 cm in diameter anteroposteriorly and 2 cm in diameter transversally. Respiratory function tests were optimal; thus it was decided to achieve a diagnostic-therapeutical surgical procedure of the lung nodes in order to make a differential diagnosis of primary pulmonary tumor or metastasic lesions of papilar carcinoma or of another type of lesion.
Results: A right posterolateral thoracotomy was made. After separating the lung ligament, several holes were observed in the diaphragm. One of them was a defect of several centimeters where bilobulated liver tissue was introduced, which clearly corresponded to the image shown in the CT. The diaphragm defect was sewn and the thorax closed. The patient did not have any history of trauma that might justify the diaphragm injury; thus it was assumed that this was a congenital defect not previously diagnosed.
Conclusions: It is not always possible to diagnose a lung node through non-surgical procedures because CT can mimic diaphragm defects and incisional hernias of intrabdominal organs as lung nodes. Thoracoscopy, as initial step in surgical procedures with diagnostic goals, might help prevent unnecessary and more aggressive procedures.

185-P INFLAMMATORY PSEUDOTUMORS OF THE LUNG: A CLINICAL STUDY IN TWENTY-NINE PATIENTS

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Background: Inflammatory pseudotumors of the lung are a rare benign pathology, whose origin is unknown and whose management is still controversial. In this study, we report the management of 29 consecutive cases of inflammatory pseudotumors.
Methods: Between October 1997 and November 2007, 1311 major pulmonary resections were performed at our institution. In 29 patients (2.2%) an inflammatory pseudotumor was found. Ten were female and 19 male, mean age was 65 years (range: 25 to 77 years). All histological specimens were reviewed by a single pathologist to confirm the diagnosis of inflammatory pseudotumor according to Matsubara criteria. Twelve patients (41.4%) were symptomatic and in the remaining 17 asymptomatic patients (54.6%), the evidence of a nodule was an incidental finding, except for 4 of them who underwent periodical follow-up due to previous neoplasms. A preoperatively cytological diagnosis was performed in 15 patients: 4 chronic nonspecific inflammation, 2 lung cancer and 9 not diagnostic. A positive uptake was found in all patients who underwent PET-TC (4). The remaining 10 patients had radiological findings suggestive for cancer. Surgery was: lobectomy in 11 patients, bilobectomy in 1 and wedge resection in the remaining 17. Morbidity and mortality was nil. The tumors were completely resected in all patients, and the resection margins were confirmed to be tumor-free by frozen biopsy.
Results: Complete follow-up was obtained for all patients. The mean follow-up was 78 months (range: 14 to 141 months). Overall 5-year disease-free survival rates were 100%. Later, 3 patients died of unrelated causes and 1 died of respiratory failure.
Conclusions: Inflammatory pseudotumor of the lung is a rare occurrence. Surgical resection is the treatment of choice, because surgery enables both definitive diagnosis and complete cure. Excellent outcome is achieved by performing complete resection and providing negative margins.

186-P SELF-AWARENESS OF HEALTH STATUS WITH SURGICAL ONCOLOGICAL PATIENTS.

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Background: The aim of the study was to explore the level of health-status self-awareness of oncological patients undergoing thoracic surgery.
Methods: Interviews with 51 patients, suffering of lung cancer, qualified for thoracic surgery in the end of 2006 and beginning of 2007. 30 (59%) of them were men and 21 (41%) women. The average age of patients was 60 (maximum 76, minimum 39). The majority of patients had upper (43%) or lower secondary education, 22% - only primary education and only 8% university education. Patients were interviewed during preoperative period by a single person. The following was asked for: main disease, proposed surgical treatment, understanding of its effects, postoperative treatment, sources of all of the above information.
Results: Most patients knew and understood their medical diagnosis and surgical treatment under consideration. Strong correlation among the level of the patient's education and the level of self-awareness of health status was observed (correlation coefficient 0,98 for patients with high education and 0,286 for those with basic education). Understanding the surgical treatment did not correlate with the education level (correlation rate 0,27). Patients at higher level of self-awareness of health status better knew complications of the treatment (0,62). The primary source (76%) of the disease- and surgery-related information for patients and their relatives was medical staff, but in 24% of cases – other sources.
Conclusions: Level of patient's self-awareness correlates with the level of education. Involvement of medical staff into informing patients qualified for surgery might be inadequate. Lack of knowledge about the full picture of oncological diagnosis is correlated with lack of correct diagnosis before the surgical treatment.

187-P THORACOSCOPIC THYMECTOMY PROVIDES COMPARABLE RESECTION TO SURGERY PERFORMED VIA MEDIAN STERNOTOMY WITH REDUCED PAIN, SHORTER HOSPITAL STAY AND IMPROVED COSMESIS.

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Background: Thoracoscopic (VATS) thymectomy has been advocated as a less invasive procedure than the standard median sternotomy (MS) for non-thymomatous myasthenia and small thymomas, causing less pain, shorter hospital stay and better cosmesis. Questions have been raised about the completeness of the operation compared to open technique.
Methods: A retrospective review of all patients who underwent thymectomy between January 2003 to December 2008. 18 patients who underwent thymectomy by median sternotomy were compared with 15 thoracoscopic thymectomies. There was no significant difference between two groups with regard to age and gender distribution. Patients with tumour invading adjacent structures were excluded from study. Statistical significance was determined by independent sample t- test and Fisher's Exact Test.
Results: There was no perioperative mortality or long term morbidity in either group. There was no significant difference in operative duration, anaesthetic duration and post-operative drop in haemoglobin. Resection margins were all clear, except one patient in each group where tumour cells were present in resection margins. Immediate postoperative pain on a scale of 0-10 in the VATS group was 3.7 compared to 6.1 in the MS group (p
In MS group 3 of the 7 patients who had myasthenic symptoms showed improvement after surgery while all 7 myasthenic patients in VATS group either showed complete resolution or improvement after operation (p=0.07).
Conclusions: Both median sternotomy and VATS are effective approaches for thymectomy with similar operative times. As the VATS approach is associated with less pain, improved cosmesis and earlier hospital discharge, it should be considered in non-thymomatous myasthenia and small thymomas which do not show signs of invasion of adjacent structures.

188-P PATIENT SATISFACTION SURVEY OF A NEW PORTABLE CHEST DRAIN SUCTION DEVICE FOLLOWING LUNG RESECTION.

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Background: Persistent air leak following pleural or pulmonary surgery may delay chest tube removal and hospital discharge. Portable devices to allow ambulation and even discharge with an intercostal drain have been used extensively. However, some patients require negative suction to maintain lung expansion in case of large air-leaks. These patients have traditionally suffered the consequences of being limited by wall suction methods. In order to achieve early mobilisation, new portable suction devices have been developed. We have been using one of these methods and seek the patient‘s opinion and satisfaction levels.
Methods: We developed a 10-item questionnaire measuring patient satisfaction of the portable suction device. Questionnaires were given to consecutive patients that required prolonged suction (more than 5 days) in their intercostal drains following pleuro/pulmonary surgery. 23 patients [21 males and 2 females, median age 58 (range 39 to 75) years] had been on suction a median of 10 (range 5 to 20) days replied to the questionnaire during treatment and after recovery. The questions included portability, size and the mobility of the device, as well as general satisfaction questions.
Results: No adverse events were reported. All patients expressed their satisfaction for the device. Most of the patients (78%) rated the effortless of carrying the device as easy and 16 out of 23 (70%) found that it made their recovery easier. On the contrary 15 out of 23 (65%) of the patients wanted the device smaller and the battery last longer.
Conclusions: The few patients that require prolonged suction on intercostal drain were satisfied with the new method of portable suction. The main benefits as expressed by patients were: earlier ambulation, independence and better quality of life. Suggestions for improvement are to reduce further the size of the device and increase the battery life.

189-P BRONCHIAL STUMP INFILTRATION AFTER LUNG CANCER SURGERY. RETROSPECTIVE STUDY OF 2994 PATIENTS.

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Background: The incidence of lung cancer has been increasing in developed countries since the mid-1990s. The main objective of this study is to determine if bronquial stump infiltration can affect survival in patients with lung cancer. For this purpose we differentiate between carcinoma "in situ" and invasive carcinoma.
Methods: We included patients suffered from non-small cell lung cancer who underwent thoracothomy in order to get cured. The total number of patients was 2994. In this study 80 patients out of the 2994 had bronchial stump affection.10 patients were excluded so in the end 72 patients were included, 52 of them had carcinoma "in situ" and 20 invasive carcinoma.
Results: The global survival was 25 months. Patients with carcinoma "in situ" had a median survival of 25 months as opposed to 21 months in patients with invasive carcinoma. We did not find any statistical significance when we compared the type of bronchial stump affection with the histology. We only found statistical significance when we compared the histology with the type of affection of bronchia stump.
Conclusions: We did not observe statistical significance in survival between carcinoma "in situ" and invasive carcinoma bronchial stump infiltration (p '094). The only variable that is survival predictor is the histology (adenocarcinoma) p 0'0001.

190-P CLINICAL ASSESSMENT OF NUTRITIONAL STATUS OF THORACIC SURGERY DEPARTMENT PATIENTS

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Background: Screening for malnutrition or risk of malnutrition is essential in patients qualifying for thoracic surgery, especially with cancers. It is known that there is high morbidity and mortality rate in malnourished patients in perioperative period. We evaluated nutritional status of 157 consecutive patients admitted to our department to identify groups for nutritional support.
Methods: We qualified 149 of 157 patients for further assessment (41 women and 108 men), mean age 62,9 years (38-75). There were 102 patients with lung cancer, 22 with cancer of the oesophagus, 14 with esophagogastric junction cancer, 7 with mediastinal masses and 4 with chest wall tumours. We analized BMI (dividing it in 4 groups: I- severe malnutrition, II- moderate, III- light, IV- normal), serum albumin level, serum lymphocyte percentage and count, unintentional weight loss within the last 1-6 months and modified SGA score.
Results: General BMI range was from 12 to 40. There were 11 patients (7,4%) in BMI I group (index less than 17), 13 (8,7%) in II group (index 17-17,9), 8 (5,4%) in III group (index 18-18,5) and 117 (78,5%) in IV group (index 18,6 or greater). Serum albumin level was from 2 to 4,9 g/dl, lymphocyte percentage 2,80%-50,5% (mean 22,21%). Unintentional weight loss in the last 1-6 months was 0-37 kg (0-49%), mean 8,12%. Based on modified SGA score in group SGA-A were 9 (6%) patients, SGA-B 83 (55,7%) patients and SGA-C 57 (38,3%) patients.
Conclusions: We conclude that there is no single universal method for nutritional risk assessment. There are indications for nutritional support in 91% of thoracic surgery patients based on SGA scale and in 21,5% based on BMI. Evaluation of other laboratory tests or combination of existing nutrition risk tools needs further investigations to recognize patients for nutritional perioperative intervention.

191-P USEFULNESS OF EXPLORATORY VIDEOTHORACOSCOPIC STAGING TO DETECT T3 DUE CHEST WALL INVASION

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Background: Exploratory Videothoracoscopic (EVT) is an effective tool for the diagnosis and staging of lung cancer. It has been proved its usefulness to explore transfissural invasion, mediastinal infiltration, N status and also to explore the pleural cavity looking for pleural carcinomatosis (M), but we have not consistent data about its role in T3 tumors due chest wall invasion. The aim of this paper is to study the use of EVT in T3 lung cancer.
Methods: We have performed a retrospective study of patients suffering bronchogenic carcinoma undergone surgery in our Department since January 1993 to December 2007 (n= 1277) focus our research in patients suspected T3 due chest wall invasion. 150 patients were staged as cT3. Gender: 137 male, 13 female. Mean age: 51 years old. We have performed an EVT to all these patients as first step of the intervention through three 12 mm ports. In addition of hilar, mediastinal, pleural and lymphatic exploration, special attention was taken to suspected chest wall invasion, performing always pleural dissection and frozen biopsies
Results: Only 36 patients (24%) with stage cT3 (CT/ MR) were confirmed as true T3 after EVT. The accuracy of EVT to detect T3 tumors was 100% in our series. Talking about pT3 patients using image techniques there were 6 cases downstaged (cT2, pT3) and 2 overstaging (cT4, pT3). True T3 patients (n=44), right side: 33 cases (26 upper lobe, 1 Medium lobe and 6 lower lobe) and 11 left sided (9 upper lobe and 2 lower lobe).
Conclusions: EVT is an useful tool in the staging of T3 lung cancer. When there is a doubt about chest wall infiltration, EVT can help to evaluate any invasion and guide the level of the thoracotomy and extent of chest wall resection for a resection of the tumor en block with the invaded chest wall.

192-P OPERATIVE STRATEGY AND CLINICAL OUTCOME IN 222 PATIENTS WITH BRONCHUS CARCINOIDS

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Background: Carcinoids are malignant neuroendocrine neoplasms showing good long term survival after correct oncologic therapy. We elucidate the importance operative strategies and individual decision making aligned in the therapy of this particular tumor entity.
Methods: Between 1994 and 2008 we performed 228 operations on 222 patients with bronchus carcinoids. 165 patients had typical (158 N0, 4 N1, 3 N2) and 57 patients atypical carcinoids (33 N0, 11 N1, 13 N2). All patients underwent preoperative pulmonary function test and bronchoscopy to facilitate surgical decision making. 112 tumours were detected endoscopically, 32 in main and lobar bronchi. In addition to anatomical resections we performed 35 sleeve resections, 8 lobar bronchus resections with complete lobar reinsertion, 3 resections of main bronchi, 2 isolated main carinal resections, 2 VATS lobectomies and 20 segmentectomies and wedge resections, the latter of functional reasons. Systematic mediastinal lymphadenectomy was routinely performed although most patients' CT-Scan showed N0.
Results: There was no intraoperative mortality, hospital mortality was below 2% (1 cerebral insult, 1 pulmonary embolism, 1 septic shock). Actuarial 1, 5, 10-years survival in typical carcinoids is 100%, 97% and 94% up to Ib (according UICC). Atypical carcinoids show similar 1 and 5 years survivals (100%, 93%) but 10-years survival is less than 85% up to Ib, decreasing significantly in higher N-stages. N-stage seems to be most important survival factor but unfortunately extracts itself to frozen section. 33 operations in 27 patients could not be performed as anatomic resections because of central tumor growth, multiplicity of tumor or poor pulmonary function. Outcome of these patients is evaluated separately, but shows no impairment tendency.
Conclusions: Bronchus carcinoids should surgically be treated as lung cancer, anatomic resections and systematic lymphadenectomy are treatment of choice. Availability of bronchoplastic techniques and exact preoperative assessment are essential for individual decision making, focussing predominantly on postoperative quality of life.

193-P QUALITY OF LIFE, EMOTIONAL STATE AND COPING SKILLS IN LUNG CANCER PATIENTS ONE YEAR AFTER THE SURGERY.

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Background: Physical and social functioning, cancer-related symptomatology, and treatment are thought to be predictors of the psychological response to the diagnosis of lung cancer. We tried to identify the differences in the psychological variables as quality of life (Qol), anxiety/depression state and coping skills depending on the time of measurement (before and one year after surgery) in patients with pathologically confirmed non-small cell lung cancer (NSCLC).
Methods: This is a longitudinal prospective study. From November 2007 to April 2008, 40 patients with pathologically confirmed NSCLC were operated The independent variables are time of assessment and age. The dependent variables are quality of life (EORTC QLQ-C30, 1993 and LC13, 1994), anxiety and depressive symptoms (HADS, Zigmond and Snaith, 1983) and coping skills (MAC, Watson y Greer, 1988). Informed Consent and Questionnaires data are obtained from all patients and analysed by two psychologists of the Thoracic Surgery Unit.
Results: Patients showing a lower preoperative global health status experienced lower postoperative global Qol as well as a reduced physical and emotional functions. It is seemed to have a negative correlation between coping skills and anxiety/depressive symptoms. Patients with high scores on fighting spirit and low scores on hopelessness and anxious preoccupation, show low levels of anxiety/depression and better global Qol. The most prominent forms of coping used by lung cancer patients are fighting spirit. Denial as a form of coping is associated with higher anxiety and depression. Data are still under collection. Final data will be obtained on April 2009.
Conclusions: Qol measures reflect the patients' perspective and may have emotional impact on the patient. Investigating the influence of psychological factors on the post-operative residual Qol could be very useful for an early identification of psychological difficulties and bad adjustment to the illness experienced by lung cancer patients and be able to plan a postoperative psychological intervention.

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