

Interactive CardioVascular and Thoracic Surgery

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Abstracts of the 16th European Conference on General Thoracic Surgery,
Bologna, Italy, June 8-11, 2008

European Association for Cardio-thoracic Surgery
Windsor

16th European Conference on General Thoracic Surgery Bologna, Italy, June 8–11, 2008

POSTGRADUATE COURSE Sunday, 8 June 2008, 09:00-17:00 Palazzo Re Enzo, Salone del Podesta

<i>Organisers</i>	<i>P. Thomas & S. Cassivi (Marseille, Rochester)</i>	
	<i>(All talks 15 min presentation + 15 min discussion)</i>	
Session I	Old Topics - New Developments	
<i>Chairmen</i>	<i>T. Grodzki & D. Petrov (Szczecin, Sofia)</i>	
09:00	Surgical treatment of multidrug-resistant and extensively drug-resistant pulmonary tuberculosis	(M. Perelman, Moscow)
09:30	Management of prolonged air leaks	(F. Venuta, Rome)
10:00	Surgery for myasthenia gravis	(S. Cassivi, Rochester)
10:30-11:00	<i>Coffee break</i>	
Session II	An Evolving Professional Environment	
<i>Chairmen</i>	<i>F. Venuta & C. Gebitekin (Rome, Bursa)</i>	
11:00	Are randomized trials needed in the era of rapidly evolving technologies?	(T. Treasure, London)
11:30	Out-patient thoracic surgical programme	(L. Molins, Barcelona)
12:00	Audit and quality control as foundation of future thoracic surgery	(A. Brunelli, Ancona)
12:30-13:30	<i>Lunch</i>	
Session III	Oesophageal Surgery	
<i>Chairmen</i>	<i>J. Jeyasingham & J. Duffy (Bristol, Nottingham)</i>	
13:30	Management spectrum of Barrett's disease	(T.W. Rice, Cleveland)
14:00	Minimally invasive surgery for GERD and short oesophagus	(S. Mattioli, Bologna)
14:30	Minimally invasive oesophagectomy	(R. Berrisford, Exeter)
15:00-15:30	<i>Coffee break</i>	
Session IV	Evolving Strategies in Lung Cancer Management	
<i>Chairmen</i>	<i>F. Detterbeck & P. De Leyn (New Haven, Leuven)</i>	
15:30	Endoscopic staging techniques; state of the art	(V. Ninane, Brussels)
16:00	Genetic profile and clinical practice in lung cancer	(D. Wigle, Rochester)
16:30	Surgical strategy, techniques and results after surgical treatment for T4 lung cancer	(L. Spaggiari, Milan)
17:30-18:30	<i>Opening Ceremony</i>	

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BREAKFAST SESSIONS

Organisers A. Brunelli & G. Varela (Ancona, Salamanca)
 (Topic for each specific speaker will be chosen by the audience at the start of session)

MONDAY, 9 June 2008, 07:30-08:20

- Session 1** Pectus Excavatum: Open techniques vs. Nuss procedure
Salone del Podesta Discussants: P. Thomas & B. Passlick (Marseille, Freiburg)
 Moderator: T. Treasure (London)
- Session 2** Oesophagectomy for Resectable Cancer: Minimally invasive vs. open
Sala degli Atti Discussants: R. Berrisford & R. Flores (Exeter, New York)
 Moderator: T. Lerut (Leuven)
- Session 3** Air Leak after Pulmonary Resection: Sealants vs. no sealants
Sala del Capitano Discussants: U. Anegg & T. Rice (Graz, Cleveland)
 Moderator: W. Klepetko (Vienna)

TUESDAY, 10 June 2008, 07:30-08:20

- Session 1** Bronchial Stump after Pneumonectomy: Routine cover vs. no cover
Salone del Podesta Discussants: S. Cassivi & D. Lardinois (Rochester, Basel)
 Moderator: M. Mueller (Vienna)
- Session 2** Thymectomy for Myasthenia Gravis: Maximal vs. thoracoscopic
Sala degli Atti Discussants: F. Detterbeck & M. Zielinski (New Haven, Zakopane)
 Moderator: F. Rea (Padua)

WEDNESDAY, 11 June 2008, 07:00-07:50

- Session 1** Malignant Pleural Mesothelioma: Pleurectomy vs. EPP
Salone del Podesta Discussants: D. Waller & P. Nafteux (Leicester, Leuven)
 Moderator: R. Flores (New York)
- Session 2** Lobectomy for early stage lung cancer: VATS vs. open
Sala degli Atti Discussants: W. Walker & H. Hansen (Edinburgh, Hellerup)
 Moderator: G. Massard (Strasbourg)

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LUNCH SYMPOSIUM

Monday, 9 June 2008, 13:00-14:00

Palazzo Re Enzo, Salone del Podesta

Organiser *C. Choong (Cambridge)*

Update on Management of Emphysema

Chairmen *C. Choong & D. Van Raemdonck (Cambridge, Leuven)*

13:00	Welcome	(G. Rocco, Naples)
13:02	Introduction	(C. Choong, Cambridge)
13:05	Lung Transplantation	(G.A. Patterson, St Louis)
13:13	National Emphysema Treatment Trial: Summary and Update	(D. Wood, Seattle)
13:21	Bronchoscopic Airway Bypass Treatment of Homogenous Emphysema	(C. Choong, Cambridge)
13:29	Bronchoscopic Treatment of Heterogenous Emphysema using the Emphasys® EBV Valves	(E.A. Rendina, Rome)
13:37	Bronchoscopic Treatment of Heterogenous Emphysema using the Spiration® IBV Valves	(D. Wood, Seattle)
13:45	Discussion	
14:00	Adjourn	

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JOINT ERS - ESTS TASK FORCE SESSION

Monday, 9 June 2008, 17:30-19:00
 Palazzo Re Enzo, Salone del Podesta

Organiser *A. Brunelli (Ancona)*

Fitness for Radical Therapy

Chairmen *A. Brunelli, co-chair ESTS; Anne Charloux, co-chair ERS (Ancona, Strasbourg)*

17:30	Introduction: joint ERS and ESTS Task Forces	(S. Hartl, Vienna) (D. Van Raemdonck, Leuven)
17:35	The Declining Role of Predicted Postoperative FEV ₁	(G. Rocco, Naples)
17:43	DLCO: Evidence for Systematic Measurement	(M.K. Ferguson, Chicago)
17:53	Preoperative Cardiologic Risk Assessment	(L. Goldman, New York)
18:03	Low-tech Exercise Tests	(A. Brunelli, Ancona)
18:11	High-tech Exercise Tests	(C.T. Bolliger, Cape Town)
18:21	Preoperative and Postoperative Physiotherapy	(G. Varela, Salamanca)
18:29	Quality of Life after Treatment for Lung Cancer	(T. Win, Cambridge)
18:37	Selection and Risk Stratification for Definitive Chemoradiotherapy	(R.M. Huber, Munich)
18:45	Results of the ERS-ESTS Task Force Online Questionnaire	(A. Charloux, Strasbourg)
18:50	Discussion	
19:00	Adjourn	

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SYMPOSIUM WOMEN IN THORACIC SURGERY

Monday, 9 June 2008, 17:30-19:00

Palazzo Re Enzo, Sala degli Atti

Organiser

A. End & G. Leschber (Vienna, Berlin)

Training in Thoracic Surgery

17:30	Training and Certification of Thoracic Surgeons in the US	(D. Wood, Seattle)
17:50	Training and Certification in Surgery: Special aspects derived from a European study	(A. End, Vienna)
18:00	Statements from National Representatives	
18:30	Discussion	
19:00	Adjourn	

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THORACIC TECHNO MEETING

Tuesday, 10 June 2008, 8:30-13:00
 Palazzo Re Enzo, Salone del Podesta

Organiser *M. Mueller (Vienna)*

The Pleural Space

Chairmen *M. Mueller & G. Rocco (Vienna, Bologna)*

08:30	Physiology and Mechanics of the Pleural Space What thoracic surgeons always wanted to know	(R. Zannoli, Bologna)
09:00	The 'Venice' Chest Drainage System with 'Volumetric Air Leak Meter' A new perspective in air leak management Early clinical experience	(M. Refai, Ancona) (F. Bruenger, Regensburg)
09:30	Digital Airleak Meter Does it make a difference?	(A. Brunelli, Ancona)
10:00	Smart New Drainage Systems The postoperative drainage flow/pressure relation	(A. Linder, Bremen)
10:30-11:00	<i>Coffee break</i>	
11:00	Prevention of air leaks The surgeons view Next Generation Hydrogel Technology	(Ph. Nafteux, Leuven) (P. Campbell, Salt Lake City)
11:30	Mobile Drainage Systems For outpatient care only?	(G. Varela, Salamanca)
12:00	New Clinical Evidence in Thoracic Surgery The SEAL trial: new evidence for optimising air sealing Management of air leakage and haemostasis in VATS Surgery	(W. Klepetko, Vienna) (H.J. Hansen, Hellerup)
12:30	New Gore Technologies in Thoracic Surgery What is it all about?	(D. Waller, Leicester)
13:00-14:00	<i>Lunch</i>	

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JOINT ERS - ESTS SESSION Wednesday, 11 June 2008, 9:00-10:30 Palazzo Re Enzo, Salone del Podesta

Organiser *G. Rocco (Naples)*

Management of Pneumothorax

Chairmen *G. Rocco, President ESTS; L. Fabbri, President ERS (Naples, Modena)*

09:00	Introduction:	(L. Fabbri, Modena)
	ERS and ESTS	(G. Rocco, Naples)
09:10	Primary Spontaneous Pneumothorax;	
	When to seek a surgical input?	(M. Noppen, Brussels)
09:20	Choosing Size and Technique for Chest Drain Insertion;	
	The existing guidelines	(T. Kiefer, Offenburg)
09:30	Primary Spontaneous Pneumothorax: consolidated and new techniques	
	Traditional VATS	(G. Cardillo, Rome)
	Uniportal VATS	(G. Rocco, Naples)
	The case for awake VATS at the first episode	(E. Pompeo, Rome)
10:00	Secondary Spontaneous Pneumothorax;	
	Surgical challenges	(F. Rea, Padua)
10:10	Discussion	
10:30-11:00	<i>Coffee Break</i>	

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JOINT ESE - ESTS SESSION
 Wednesday, 11 June 2008, 9:00-10:30
 Palazzo Re Enzo, Sala degli Atti

Organiser *S. Mattioli (Bologna)*

Surgery for Primary Motility Disorders of the Oesophagus

Chairmen *J. Tack, President ESE; T. Lerut, Past-President ESTS (Leuven)*

09:00	Introduction: ESE and ESTS	(J. Tack, Leuven) (T. Lerut, Leuven)
09:05	The Background of the Thoracic Surgeon Approaching PMDE	(F.G. Pearson, Toronto)
09:20	New Insights in Pathophysiology of PMDE	(J. Tack, Leuven)
09:35	Surgery for Oesophageal Diverticulae	(T. Lerut, Leuven)
09:50	Surgery for Achalasia	(G. Zaninotto, Padua)
10:05	Surgery for Sigmoid Achalasia	(S. Mattioli, Bologna)
10:20	Discussion	
10:30-11:00	Coffee Break	

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SCIENTIFIC PROGRAMME
SUNDAY, 8 JUNE 2008

09:00-17:00 Salone del Podesta	Postgraduate Course
17:30-18:30 Salone del Podesta	Opening Ceremony
18:30-20:00 Open Courtyard Ground Floor	Opening Reception
08:30-17:30 Rooms 36-38	Sunday Posters <i>Greek Pioneer Prize (500 €) for best poster</i>
S-P1 105-P	LONG-TERM SURVIVAL AFTER VATS AND OPEN PULMONARY METASTATECTOMY D. West, W.S. Walker (<i>UK</i>)
S-P2 106-P	THORACIC METASTASECTOMY FOR THYROID MALIGNANCIES J.R. Porterfield, S.D. Cassivi, D.R. Larson, D.A. Wigle, K.R. Shen, F.C. Nichols, M.S. Allen, C.S. Grant, C. Deschamps (<i>USA</i>)
S-P3 107-P	REACTIVITY OF INTEGRIN-LINKED KINASE AND THE RECURRENCE OF NSCLC AFTER BRONCHOPLASTIC RESECTION S.B. Watzka, I. Pötsch, U. Setinek, H. Cantonati, D. Janakiev, P.H. Hollaus, M.R. Müller (<i>Austria</i>)
S-P4 108-P	LARGE SCALE TISSUE MICROARRAY STUDY OF COPY NUMBER CHANGES OF C-MYC AND EGFR ONCOGENES IN OPERATED ON NSCLC PATIENTS - CLINICAL IMPLICATION R.V. Cherneva, D.B. Petrov, I.I. Dimova, O.B. Georgiev, D.I. Toncheva (<i>Bulgaria</i>)
S-P5 109-P	PREOPERATIVE INTRATHORACIC LYMPH NODE STAGING IN PATIENTS WITH NON-SMALL CELL LUNG CANCER: ACCURACY OF INTEGRATED PET/CT A. Billè, E. Pelosi, A. Skanjeti, V. Arena, L. Errico, P. Borasio, M. Mancin, F. Ardissonne (<i>Italy</i>)
S-P6 110-P	REGULATORY T LYMPHOCYTES (TREG CELLS) IN NON-SMALL CELL LUNG CANCER: PROGNOSTIC ROLE AND THEIR INDUCTION BY TUMOR MASS A. Turna, B. Kiran, A. Yener, A. Gurses, S. Badur (<i>Turkey, Afghanistan</i>)
S-P7 111-P	DIFFERENT ASPECTS OF NEW T DEFINITION IN LUNG CANCER STAGING K. Pawelczyk, M. Marciniak, G. Kacprzak, J. Kolodziej (<i>Poland</i>)
S-P8 112-P	EXAMINATION OF THE SUPRACLAVICULAR NODES IN NON-SMALL CELL LUNG CANCER (NSCLC), COMPARISON OF DIFFERENT DIAGNOSTIC TECHNIQUES L. Hauer, J. Hauer, A. D'Amico, J. Pankowski, A. Szlubowski, J. Kuzdzal, T. Nabialek, M. Zielinski (<i>Poland</i>)
S-P9 113-P	LONG-TERM SURVIVAL OF 114 PATIENTS WITH METASTATIC COLORECTAL CARCINOMA AFTER EXTENDED 1318NM LASER LUNG METASTASECTOMY UP TO 62 METASTASES A. Rolle, A. Pereszlenyi, B. Bis, R. Koch, A. Schilling (<i>Germany</i>)
S-P10 114-P	THE ROLE OF 99M TECHNETIUM-HEXAKIS-2-METHOXYISOBUTYLISONITRILE (MIBI) IN THE DETECTION OF NEOPLASTIC LUNG LESIONS M. Santini, A. Fiorello, G. Vicidomini, P.F. Rambaldi, L. Busiello, P. Sannino, A. Perrone, M.G. Giuliano, G. Messina (<i>Italy</i>)
S-P11 115-P	SLEEVE LOBECTOMY OR PNEUMONECTOMY AFTER INDUCTION CHEMO-RADIOTHERAPY FOR NON-SMALL CELL LUNG CANCER: LONG-TERM RESULTS OF A DOUBLE-CENTRE EXPERIENCE S. Margaritora, A. Marra, G. Cusumano, V. Porziella, E. Meacci, M.L. Vita, A. Piraino, A. Haeussler-Thoele, L. Hillejan, P. Granone (<i>Italy, Germany</i>)
S-P12 116-P	DOES A NEGATIVE PET/CT PRECLUDE N2 DISEASE IN NSCLC? A SINGLE CENTRE EXPERIENCE E. Tasci, A. Orki, S. Patlakoglu, A. Ozdemir, O. Falay, S. Urek, G. Olgac, C.A. Kutlu (<i>Turkey</i>)

- S-P13 117-P **EVALUATION OF PLEURAL LAVAGE CYTOLOGY AT THORACOTOMY AS A PROGNOSTIC FACTOR**
R. Nakahara, H. Suzuki, Y. Ishikawa, H. Mstsuguma, S. Igarashi, K. Yokoi (*Japan*)
- S-P14 118-P **THORACOSCOPIC INTRAPLEURAL PERFUSION HYPERTHERMIC CHEMOTHERAPY FOR PLEURAL DISSEMINATION WITH NON-SMALL CELL LUNG CANCER**
H.R. Kim, S.K. Cho, S. Jheon, S.W. Sung (*South Korea*)
- S-P15 119-P **POSTOPERATIVE PULMONARY REHABILITATION: ITS ROLE AFTER LUNG RESECTION IN COPD PATIENTS**
S. Margaritora, V. Porziella, E. Meacci, M.L. Vita, A. Piraino, S. Cafarotti, G. Cusumano, P. Granone (*Italy*)
- S-P16 120-P **IS THERE A ROLE FOR LUNG METASTASECTOMY IN THE ELDERLY?**
F. Leo, R. Gasparri, F. Petrella, D. Galetta, A. Borri, P. Scanagatta, G. Veronesi, P. Solli, L. Spaggiari (*Italy*)
- S-P17 121-P **THROMBOCYTOSIS, AS A NEGATIVE PROGNOSTIC VALUE IN LUNG CANCER, SIGNIFICANTLY CORRELATES WITH SMOKING HABITS**
J. Furák, A. Bársony, A. Wolfárd, I. Troján, E. Nagy, I. Németh, L. Tiszlavicz, G. Lázár (*Hungary*)
- S-P18 122-P **REPEATED METASTASES SURGERY WITH THOROUGH GOING TECHNICAL RADICALITY CAN ENHANCE SURVIVAL OF PATIENTS WITH PULMONARY METASTASIZING OSTEOSARCOMA**
K.D. Diemel, J. Halberstadt, C.M. Albrecht, M. Nakashima, D. Branscheid (*Germany*)
- S-P19 123-P **LONG-TERM RESULTS AFTER SURGICAL RESECTION OF BONE SARCOMA PULMONARY METASTASES**
C.E.G. Franco, A.T. Ezkurra, W. Torre, L. Sierrasesumaga, M.S. Julian, J. Pardo, F. Guillen, S.M. Algarra (*Spain*)
- S-P20 124-P **INFLUENCE OF THE AGE ON ACCURACY OF FDG-PET IN MEDIASTINAL STAGING OF NON-SMALL CELL LUNG CANCER**
H. Melek, M.Z. Gunluoglu, A. Demir, H.V. Kara, B. Medetoglu, S. i Dincer (*Turkey*)
- S-P21 125-P **THE ROLE OF FDG-PET IN PREOPERATIVE EVALUATION ON INDETERMINATE PULMONARY LESIONS**
G. Cavallesco, P. Maniscalco, F. Quarantotto, F. Acerbis, C. Brombin, C. Bottoli, M. Santini, G. Azzena (*Italy*)
- S-P22 126-P **THE ROLE OF MUSCLE FLAP IN PREVENTING BRONCHUS STUMP INSUFFICIENCY AFTER PNEUMONECTOMY FOR MALIGNANT PLEURAL MESOTHELIOMA IN HIGH RISK PATIENTS**
M. Beshay, G. Carboni, R.A. Schmid (*Switzerland*)
- S-P23 127-P **SUB-LOBAR LUNG RESECTIONS OF PERIPHERAL STAGE I NSCLC DOES NOT AFFECT LOCAL RECURRENCE RATE**
T. De Giacomo, F. Venuta, E.A. Rendina, M. Di Stasio, M. Anile, D. Diso, F. Federico, G.F. Coloni (*Italy*)
- S-P24 128-P **COMPARISON OF POSITRON EMISSION TOMOGRAPHY IMAGING AND MEDIASTINOSCOPY IN STAGING OF NON-SMALL CELL LUNG CANCER: ANALYSIS OF 815 LYMPH NODES**
A. Kir, I. Iskender, A. Kosar, A.K. Misirlioglu, S.Z. Kadioglu, M. Demir, A. Atsalihli (*Turkey*)
- S-P25 129-P **PROGNOSTIC MARKER FOR MALIGNANT PLEURAL MESOTHELIOMA**
I. Opitz, A. Soltermann, A. Schramm, P. Vogt, H. Moch, R. Stahel, W. Weder (*Switzerland*)
- S-P26 130-P **PNEUMONECTOMY FOR BRONCHOGENIC CARCINOMA: ANALYSIS OF FACTORS PREDICTING SHORT AND LONG-TERM OUTCOME**
E. Veen, M. Janssen-Heijnen, E. Ritchie, B. Biesma, R.J. Bolhuis (*The Netherlands*)
- S-P27 131-P **CLINICAL SIGNIFICANCE OF TUMOUR CELLS IN THE PULMONARY VEINS FROM RESECTED SPECIMENS OF PATIENTS WITH NON-SMALL CELL LUNG CANCER**
G. Pirozzi, V. Tirino, C. Marzocchella, R. Franco, F. Scognamiglio, C. La Manna, A. La Rocca, G. Botti, G. Rocco (*Italy*)
- S-P28 132-P **LOCALLY ADVANCED NON-SMALL-CELL LUNG CANCER (NSCLC) - DO INTRAPULMONARY SATELLITE NODULES FIT IN THIS CATEGORY?**
C. Aigner, B. Ghanim, C. Roth, M.A.R. Hoda, S. Taghavi, G. Lang, G.M. Marta, W. Klepetko (*Austria*)
- S-P29 133-P **LONG-TERM SURVIVAL FOLLOWING COMBINED MODALITY MANAGEMENT OF PATIENTS WITH NON-SMALL CELL LUNG CANCER (NSCLC) AND SYNCHRONOUS SOLITARY BRAIN METASTASIS**
W. Sienel, S. Dango, B. Cucuruz, A. Kirschbaum, C. Stremmel, B. Passlick (*Germany*)
- S-P30 134-P **LONG-TERM RESULTS OF LUNG CANCER AFTER HEART TRANSPLANTATION: SINGLE CENTER 20-YEAR EXPERIENCE**
M. Torre, S. Conforti, G. Bruschi, C. Russo, S. Fieschi, A. Santi (*Italy*)

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SCIENTIFIC PROGRAMME

MONDAY, 9 JUNE 2008

07:30-08:20 Salone del Podesta	Breakfast Session 1 - Pectus Excavatum 'Traditional Techniques vs. Nuss Procedure'
07:30-08:20 Sala degli Atti	Breakfast Session 2 - Esophagectomy for Resectable Esophageal Cancer 'Minimally Invasive vs. Open'
07:30-08:20 Sala del Capitano	Breakfast Session 3 - Airleak after Pulmonary Resection 'Sealants vs. No Sealants'
08:25-08:30 Salone del Podesta	OPENING REMARKS G. Rocco, President
08:30-10:30 Salone del Podesta	Session 1 - Brompton Session (Mixed) <i>Brompton Prize (1000 €) for Best Abstract by first author ESTS member</i>
	Oral Session (10' presentation + 5' discussion)
Chairmen	G. Rocco, President; D. Van Raemdonck, General Secretary (Naples, Leuven)
08:30	001-O DOES PREVIOUS FUNDOPLICATION ALTER THE SURGICAL APPROACH TO ESOPHAGEAL ADENOCARCINOMA? A. Casson, K. Madani, S. Mann, B. Reeder, H. Lim (<i>Canada</i>) Discussant: S. Mattioli (<i>Bologna</i>)
08:45	002-O SURVIVAL AFTER RESECTION OF SYNCHRONOUS BILATERAL NSCLC P. De Leyn, J. Moons, J. Vansteenkiste, E. Verbeken, D. Van Raemdonck, P. Nafteux, W. Coosemans, H. Decaluwé, G. Decker, T. Lerut (<i>Belgium</i>) Discussant: R.R. Porta (<i>Barcelona</i>)
09:00	003-O PROFITABILITY OF OUR LUNG RETRIEVAL PROGRAM FROM NON-HEART BEATING DONORS E. Fernández, J. Calatayud, J.R. Jarabo, F. Hernando, O. Rodríguez, A.M. Gómez, A. Soria, F.D. Rio (<i>Spain</i>) Discussant: S. Cassivi (<i>Rochester</i>)
09:15	004-O DATA FROM A NATIONAL LUNG CANCER REGISTRY IMPROVES OUTCOME AND QUALITY OF SURGERY - DANISH RESULTS E. Jakobsen, T. Palshof, K. Østerlind, H. Pilegaard (<i>Denmark</i>) Discussant: A. Brunelli (<i>Ancona</i>)
09:30	005-O EFFECT OF BILATERAL MEDIASTINAL LYMPHADENECTOMY ON THE RISK OF THE SUBSEQUENT PULMONARY RESECTION J. Kuzdzal, M. Zielinski, L. Hauer, A. Szlubowski (<i>Poland</i>) Discussant: B. Passlick (<i>Freiburg</i>)
09:45	006-O STRUCTURAL LUNG DAMAGE AFTER CHEMOTHERAPY. FACT OR FICTION? F. Leo, G. Pelosi, A. Sonzogni, M. Chilosì, F. Petrella, D. Galetta, L. Spaggiari (<i>Italy</i>) Discussant: G. Varela (<i>Salamanca</i>)
10:00	007-O COMPARISON OF SINGLE OR DOUBLE CHEST TUBES APPLICATIONS AFTER PULMONARY LOBECTOMIES E. Okur, V. Baysungur, C. Tezel, G. Sevilgen, G. Ergene, M. Gokce, S. Halezeroglu (<i>Turkey</i>) Discussant: M. Mueller (<i>Vienna</i>)
10:15	008-O PARTIAL LEAST SQUARES (PLS) PATH MODELLING FOR THE EVALUATION OF PATIENTS SATISFACTION AFTER THORACIC SURGICAL PROCEDURES G. Rocco, C. Lauro, N. Lauro, M. Sarnelli, G. Olivieri, S. Gatti, A. La Rocca, A. Renzi (<i>Italy</i>) Discussant: M. Allen (<i>Rochester</i>)

11:00-11:30 Salone del Podesta	Session 2 - Interesting Cases (Mixed) <i>Covidien Prize (Free VATS Masterclass Elancourt) for Best Presentation</i>
	Case Session (3' presentation + 2' discussion)
Chairmen	G. Leschber, M. Garcia-Yuste, J. Wang (<i>Berlin, Valladolid, Beijing</i>) This session is sponsored by Covidien
11:00	009-C MULTIDISCIPLINARY MANAGEMENT OF A PATIENT WITH LIFE-THREATENING IMPENDING PARADOXICAL EMBOLUS AND ACUTE PULMONARY EMBOLI SECONDARY TO A GIANT FIBROID C.K. Choong, Y. Abu-Omar, D. Appleton, R. Mathur, R. Crawford, F. Falter (<i>UK</i>)
11:05	010-C ECTOPIC THYROID ADENOMA OF THE TRACHEA I. Cordos, C. Paleru, C. Bolca (<i>Romania</i>)
11:10	011-C AN UNUSUAL CASE OF THORACIC CALCIFYING FIBROUS PSEUDOTUMOR A. Mazzeo, A. Bobbio, L. Ampollini, P. Carbognani, M. Rusca (<i>Italy</i>)
11:15	012-C 'TO STENT OR NOT TO STENT?', THAT IS THE QUESTION A. Menon, A. Sachithanandan, R. Dhillon (<i>UK</i>)
11:20	013-C DISCONNECTION OF FISTULA BETWEEN A TRACHEA AND AN ARTIFICIAL ESOPHAGUS WITH REPEATED ESOPHAGOPLASTY WITH COLON GRAFT USING V.D. Parshin, D.V. Ruchkin, D.V. Bazarov, M.A. Vyjygina, K.A. Abdumuradov, S.V. Golovinsky (<i>Russian Federation</i>)
11:25	014-C PRIMARY SYNOVIAL SARCOMA OF THE LUNG PRESENTATION OF 2 RARE CASES AND REVIEW OF THE LITERATURE A. Olcmen, M.Z. Gunluoglu, H.V. Kara, B. Medetoglu, A. Demir, N. Buyukpinarbasili, S.I. Dincer (<i>Turkey</i>)
11:30-12:00 Salone del Podesta	PRESIDENTIAL ADDRESS 'A view from above' G. Rocco
Introducer	L. Molins, President-elect ESTS
12:00-13:00 Salone del Podesta	INVITED LECTURE 'TB or not to be, that is the surgical question' J.A. Odell, Professor of Surgery, Mayo Clinic in Florida, Jacksonville, FL
Introducer	G. Rocco, President ESTS
13:00-14:00 Salone del Podesta	LUNCH SYMPOSIUM 'Update on Management of Emphysema'
13:00-14:00 Sala degli Atti	KCI SATELLITE SYMPOSIUM
14:00-15:30 Salone del Podesta	Session 3 - Pulmonary Neoplastic
	Oral Session (10' presentation + 5' discussion)
Chairmen	D. Wood, L. Molins (<i>Seattle, Barcelona</i>)
14:00	015-O DUAL TIME POINT F-18 FDG PET IN DISTINGUISHING BETWEEN PRIMARY AND METASTATIC LUNG ADENOCARCINOMA H.K. Kim, S. Kim, S.Y. Lee, K.H. In, Y.H. Choi, K.T. Kim (<i>Korea (South)</i>)
14:15	016-O THE ACCURACY OF 18F-FLUORODEOXYGLUCOSE POSITRON EMISSION TOMOGRAPHY IN THE EVALUATION OF METASTATIC PULMONARY NODULES D. Fortes, M. Allen, C. Deschamps, F. Nichols, S. Cassivi, D. Wigle, S. Robert (<i>USA</i>)
14:30	017-O THE SIGNIFICANCE OF SUVMAX IN PATIENTS WITH STAGE I PULMONARY ADENOCARCINOMA H.R. Kim, S.C. Lee, S. Jheon, S.W. Sung (<i>Korea (South)</i>)
14:45	018-O MID-TERM RESULTS AND FACTORS FOR SURVIVAL IN TRIMODALITY THERAPY FOR LOCALLY ADVANCED STAGE III LUNG CANCER V. Steger, T. Walles, B. Kosan, S. Veit, T. Walker, W. Spengler, T. Kyriss, G. Friedel (<i>Germany</i>)
15:00	019-O BRONCHOPLASTIC PROCEDURES VS. PNEUMONECTOMY AFTER INDUCTION CHEMORADIOTHERAPY FOR STAGE IIIA/IIIB NSCLC: A COMPARATIVE ANALYSIS OF MORBIDITY, MORTALITY, SURVIVAL AND RECURRENCES G. Stamatidis, T. Krbek, S. Welter, W. Eberhardt, C. Poettgen (<i>Germany</i>)
15:15	020-O ADJUVANT ACTIVE VACCINATION WITH IG101 AFTER RADICAL LUNG CANCER RESECTION IN STAGE IB-IIIA - A PROSPECTIVE RANDOMIZED, DOUBLE-BLIND, MULTICENTER STUDY E. Stoelben, H. Loibner, W. Weder, C. Schmoll, M. Bijelovic, J. Hasse (<i>Germany, Switzerland</i>)

14:00-15:30
Sala degli Atti

Session 4 - Young Investigator Award (Mixed)

Young Investigator Prize (1000 €) for Best Research Paper by first author <35 years

Forum Session (7' presentation + 3' discussion)

Chairmen

M.K. Ferguson, W. Weder (*Chicago, Zurich*)

- 14:00 021-F **REDUCED RECURRENCE OF MALIGNANT PLEURAL MESOTHELIOMA AFTER IMMUNO-CHEMOTHERAPY**
L. Ampollini, A. Soltermann, E. Felley-Bosco, D. Lardinois, S. Arni, R. Speck, W. Weder, I. Opitz (*Switzerland*)
- 14:10 022-F **THERAPEUTIC SURGERY FOR NON-EPITHELIAL MALIGNANT PLEURAL MESOTHELIOMA (MPM)? IS IT REALLY WORTHWHILE?**
D. Trousse, A. Nakas, G. Cardillo, A.M. Ucar, S. Muller, D.A. Waller (*UK*)
- 14:20 023-F **STAGING VALUE OF EXTENDED CERVICAL MEDIASTINOSCOPY FOR BRONCHOGENIC CARCINOMA OF THE LEFT LUNG**
S. Call, R. Rami-Porta, M. Serra-Mitjans, R. Saumench, C. Bidegain, M. Iglesias, G. Gonzalez-Pont, J. Beda-Sanchis (*Spain*)
- 14:30 024-F **IMPACT OF CHEST TUBE MILKING ON POSTOPERATIVE MORBIDITY AFTER THORACOTOMY : RESULTS OF A PROSPECTIVE, RANDOMIZED TRIAL**
S. Dango, W. Sienel, B. Passlick, C. Stremmel (*Germany*)
- 14:40 025-F **STEM CELLS AND BRONCHIAL STUMP HEALING**
D. Gomez de Antonio, M. Zurita, I. Salas, P. Gamez, M. Cordoba, J. Moradiellos, A. Varela (*Spain*)
- 14:50 026-F **INCIDENCE, MANAGEMENT AND CLINICAL OUTCOMES OF PATIENTS WITH AIRWAY COMPLICATIONS FOLLOWING LUNG TRANSPLANTATION**
P. Moreno, A. Alvarez, F.J. Algar, J.R. Cano, D. Espinosa, F. Cerezo, C. Baamonde, A. Salvatierra (*Spain*)
- 15:00 027-F **CHANGES OF CIRCULATING ENDOTHELIAL PROGENITOR CELLS (EPCS) IN SCLC AND NSCLC PATIENTS**
K. Nowak, N. Rafat, S. Belle, C. Hanusch, P. Hohenberger, G. Beck (*Germany*)
- 15:10 028-F **PROGNOSTIC FACTORS AND ANALYSIS OF PROTEIN S100A4 IN RESECTED PULMONARY METASTASES FROM RENAL CELL CARCINOMA**
A. Bandiera, G. Melloni, M. Freschi, M. Giovanardi, A. Borri, C. Miggiano, A. Carretta, P. Ciriaco, C. Doglioni, P. Zannini (*Italy*)
- 15:20 029-F **QUALITY OF LIFE IN THE ELDERLY AFTER MAJOR LUNG RESECTION FOR LUNG CANCER**
M. Salati, A. Brunelli, M. Refai, F. Xiume', L. Soggi, L. Di Nunzio, A. Sabbatini (*Italy*)

16:00-17:30
Salone del Podesta

Session 5 - Pulmonary Non-Neoplastic

Oral Session (10' presentation + 5' discussion)

Chairmen

S. Cassivi; A. Brunelli (*Rochester, Ancona*)

- 16:00 030-O **SHORT-TERM PERIOPERATIVE TREATMENT WITH AMBROXOL REDUCES PULMONARY COMPLICATIONS AND HOSPITAL COSTS AFTER PULMONARY LOBECTOMY. A RANDOMIZED TRIAL**
M. Refai, A. Brunelli, F. Xiume, M. Salati, V. Sciarra, A. Sabbatini (*Italy*)
- 16:15 031-O **A PROSPECTIVE STUDY OF ANALGESIC QUALITY AFTER A THORACOTOMY: PARAVERTEBRAL BLOCK WITH ROPIVACAINE BEFORE AND AFTER RIB SPREADING**
J.J. Fibla, L. Molins, J.M. Mier, A. Sierra, G. Vidal (*Spain*)
- 16:30 032-O **REDUCING AIRLEAKS IN LUNG VOLUME REDUCTION SURGERY: IS THERE A DIFFERENCE BETWEEN TWO DIFFERENT BUTTRESSES?**
H. Abunasra, I. Oey, L. Simpson, S. Solly, A. Martin-Ucar, D.A. Waller (*UK*)
- 16:45 033-O **USEFULNESS OF HRCT-SCORE AS A GUIDE IN SELECTION OF THE OPTIMAL SITE FOR LUNG BIOPSY IN DIFFUSE PARENCHYMAL LUNG DISEASES**
A. Szlubowski, K. Sladek, J. Soja, P. Grzanka, B. Papla, D. Wasowski, J. Kuzdzal (*Poland*)
- 17:00 034-O **EXERCISE CAPACITY ASSESSMENT IN PATIENTS UNDERGOING LUNG RESECTION**
A. Bobbio, A. Chetta, E. Internullo, L. Ampollini, N. Fabiano, A. Mazzeo, M. Aiello, S. Bettati, P. Carbognani, M. Rusca (*Italy*)
- 17:15 035-O **IMPUTATION TECHNIQUES AND MODELING OF OUTCOMES FOR MAJOR LUNG RESECTION**
M.K. Ferguson, J. Siddique, T. Karrison (*USA*)

16:00-17:30
Sala Degli Atti

Session 6 - Innovative Techniques - Experimental

Forum Session (7' presentation + 3' discussion)

Chairmen

T. Rice; Erino A. Rendina (*Cleveland, Rome*)

- 16:00 036-F **THE LAPAROSCOPIC MOTOR POINT DIAPHRAGM PACING STIMULATION (DPS) SYSTEM: PROVIDING AND MAINTAINING NATURAL DIAPHRAGM VENTILATION**
R. Onders, A. Ignagni (*USA*)

16:10	037-F	C-JUN N TERMINAL KINASE INHIBITION DOES NOT DECREASE LUNG INJURY AFTER ISCHEMIA-REPERFUSION INJURY IN RODENTS C. Cheng, T. Krueger, F. Mithieux, I. Letovanec, H.B. Ris, J.D. Aubert (<i>Switzerland</i>)
16:20	038-F	THE ROLE OF CD133 IN THE IDENTIFICATION AND CHARACTERIZATION OF TUMOUR INITIATING CELLS IN LUNG CANCER G. Pirozzi, V. Tirino, R. Camerlingo, R. Franco, G. Botti, F. Scognamiglio, C. La Manna, A. La Rocca, G. Rocco (<i>Italy</i>)
16:30	039-F	COMPARATIVE EFFECT OF HYPERTHERMIA VS. HYPERTHERMIA-CISPLATINUM IN THE DEATH INDUCTION OF THE PLEURAL MESOTHELIAL CELL J.-M. Matilla, F. Heras, S. Cabanyes, B. Gregorio, N. Fernández-García, M. Sánchez-Crespo, A. Cilleruelo, G. Ramos, M. García-Yuste (<i>Spain</i>)
16:40	040-F	PATIENT-DERIVED XENOGRAPHS OF NON-SMALL CELL LUNG CANCER: A PRECLINICAL MODEL TO EVALUATE ADJUVANT CHEMOTHERAPY? J. Merk, J. Rolff, R. Soong, S. Lee, M. Becker, G. Leschber, I. Fichtner (<i>Germany, Singapore</i>)
16:50	041-F	MINIMALLY INVASIVE RADICAL LYMPHADENECTOMY FOR EARLY STAGE LUNG CARCINOMA B. Witte, S. Groß, M. Wolf, W. Neumeister, M. Huertgen (<i>Germany</i>)
17:00	042-F	STEREOTACTIC RADIOSURGERY FOR PULMONARY MALIGNANCIES: A SINGLE INSTITUTION EXPERIENCE S.N. Krishnan, K. Bastin, C. Thomasen, K. Willis (<i>USA</i>)
17:10	043-F	ROBOTIC-ASSISTED THYMECTOMY ? REPORT OF 134 PATIENTS J.C. Rückert, M. Swierzy, M. Ismail, P. Rogalla, A. Meisel, R.I. Rückert (<i>Germany</i>)
17:20	044-F	NAVIGATION-ASSISTED MEDIASTINOSCOPY WITH 3D-VIRTUAL MOVIE BASED ON PET-CT H. Itano, K. Takauchi, Y. Hirokawa (<i>Japan</i>)
17:30-19:00 Salone del Podesta		JOINT ERS-ESTS TASK FORCE SESSION 'Fitness for Radical Therapy'
17:30-19:00 Sala degli Atti		SYMPOSIUM WOMEN IN THORACIC SURGERY
08:30-17:30 Rooms 36-38		Monday Posters <i>Greek Pioneer Prize (500 €) for best poster</i>
M-P1	135-P	MODIFIED NUSS REPAIR OF PECTUS EXCAVATUM IN ADULTS - SINGLE INSTITUTION EXPERIENCE W. Zurek, P. Chwirot, A. Sternau (<i>Poland</i>)
M-P2	136-P	QUALITY OF LIFE AFTER OESOPHAGECTOMY FOR CARCINOMA. DOES IT IMPACT THE ELDERLY MORE? A.E. Martin-Ucar, S.E. Deacon, L. Beggs, E.A. Black, J.P. Duffy, D. Beggs (<i>UK</i>)
M-P3	137-P	TRANSBRONCHIAL NEEDLE ASPIRATION UNDER DIRECT ENDOBRONCHIAL ULTRASOUND GUIDANCE OF PET POSITIVE ISOLATED MEDIASTINAL ADENOPATHY IN PATIENTS WITH PREVIOUS MALIGNANCY M. Nosotti, L. Rosso, D. Tosi, A. Palleschi, P. Mendogni, A. Stanzi, S. Rossi (<i>Italy</i>)
M-P4	138-P	TIMING OF ESOPHAGECTOMY AFTER COMPLETION OF NEOADJUVANT THERAPY AFFECTS ANASTOMOTIC LEAK RATES K. Parekh, T. Fairchild, T. Van Natta, W. Lynch, M. Iannettoni (<i>USA</i>)
M-P5	139-P	IS ARDS/ALI COMMON AFTER OESOPHAGECTOMY IN A SPECIALIST THORACIC UNIT? AN AUDIT OF RESPIRATORY COMPLICATIONS S. Rao, A.E. Martin-Ucar, L. Beggs, D. Beggs, E.A. Black, J.P. Duffy (<i>UK</i>)
M-P6	140-P	CRITICAL APPRAISAL OF LYMPH NODE MAPPING FOR STAGING ESOPHAGEAL ADENOCARCINOMA A. Casson, K. Madani, S. Mann, H. Lim, B. Reeder (<i>Canada</i>)
M-P7	141-P	SENSIBILITY AND SPECIFICITY OF FDG-PET/CT FOR PREOPERATIVE STAGING OF ESOPHAGEAL CANCER A. Ruffato, S. Mattioli, V. Pilotti, S. Fanti, P. Castellucci, A. Golemi, R. Galassi, A. Moretti (<i>Italy</i>)
M-P8	142-P	SURGICAL MANAGEMENT OF INTRA-THORACIC GOITERS J.R. Matilla, J.R. de Almeida, T.M. Godinho (<i>Portugal</i>)
M-P9	143-P	THE USE OF TRANSCERVICAL APPROACH WITH ELEVATION OF THE STERNAL MANUBRIUM FOR SURGERY OF MEDIASTINAL TUMOURS M. Zielinski, J. Pankowski, L. Hauer, J. Kuzdzal, T. Nabialek, A. Szlubowski (<i>Poland</i>)
M-P10	144-P	A MOUSE MODEL OF ORTHOTOPIC, UNILATERAL LUNG TRANSPLANTATION W. Jungraithmayr, S. Korom, S. Hillinger, W. Weder (<i>Switzerland</i>)
M-P11	145-P	MEDIASTINAL DISONTOGENETIC CYSTS: ROLE OF VATS M. Vaccarili, W. Di Francescantonio, S. Di Tommaso, D. Duilio, R. Crisci (<i>Italy</i>)
M-P12	146-P	PARADOXICAL EFFECT OF COSEAL® IN THE PREVENTION OF POST-SURGICAL LUNG ADHESIONS F.J. Moradiellos, D. Gómez de Antonio, J.L. Campo-Cañaverl, P. Gámez, M. Córdoba, A. Varela (<i>Spain</i>)
M-P13	147-P	PHYSIOLOGICAL EFFECTS OF A LUNG RECRUITING STRATEGY APPLIED DURING ONE LUNG VENTILATION M. Cacciapaglia, F. Sollitto, G. Cinnella, C. Mirabile, D. Loizzi, A. Caso, N.P. Ardò, F. Pagano, G. Mincoletti, M. Dambrosio (<i>Italy</i>)

M-P14	148-P	CANCER STEM CELL STRATEGY TO REFINE PROGNOSIS IN EARLY HUMAN NON-SMALL CELL LUNG CANCER P. Macri, N. Malara, S. Merola, D. Foca, F. Givigliano, M. Lugara, G. Viglietto, R. Savino (<i>Italy</i>)
M-P15	149-P	IN-VIVO ASSESSMENT OF ANGIOGENESIS IN HUMAN MESOTHELIOMA XENOGRAFTS T. Krueger, E. Debeve, C. Cheng, S. Schaefer, J.-P. Ballini, H. van den Bergh, H.-B. Ris (<i>Switzerland</i>)
M-P16	150-P	SURGICAL STAPLERS VS. BIPOLAR FUSION TO COMPLETE THE FISSURE DURING LUNG MAJOR RESECTION O. Tiffet, F. Tronc, L. Brouchet, M. Filaire, F. Bertin, D. Kaczmarek, F. Dipalme, O. Nuiroy, P.Y. Brichon (<i>France</i>)
M-P17	151-P	INCISIONAL SYMPATHECTOMY FOR POST THORACOTOMY PAIN, THE CONCEPT, SURGICAL TECHNIQUE, INITIAL RESULTS J. Wellinger (<i>Switzerland</i>)
M-P18	152-P	AUTOFLUORESCENCE BRONCHOSCOPY IN PATIENTS CANDIDATES TO AND IN FOLLOW-UP AFTER RESECTION FOR LUNG CANCER F. Sollitto, A. De Palma, R. Quercia, E. Spada, G. Garofalo, N.P. Ardò, D. Loizzi (<i>Italy</i>)
M-P19	153-P	COMPUTED TOMOGRAPHY VOLUME RENDERING EVALUATION OF PARENCHYMAL HYPERINFLATION BEFORE AND AFTER BRONCHOSCOPIC LUNG VOLUME REDUCTION A. D'Andrilli, L. Vismara, S. Annibali, A.M. Ciccone, C. Andreetti, M. Ibrahim, F. Venuta, T. De Giacomo, E.A. Rendina (<i>Italy</i>)
M-P20	154-P	COMPARATIVE STUDY OF NEW DRAINAGE DEVICE (DRAINAGE BAG) AND CHEST BOTTLE FOR PLEURAL CAVITY DRAINAGE H.R. Kadkhodaie (<i>Iran</i>)
M-P21	155-P	POST-DISCHARGE WOUND SURVEILLANCE IN GENERAL THORACIC SURGERY A.D. Sihoe, L.-C. Cheng (<i>China</i>)
M-P22	156-P	RADIOFREQUENCY ABLATION IN THE TREATMENT OF PULMONARY METASTASES J. Joosten, F. Van den Wildenberg, A. Molenaar, M.K.-V. Gels, W. Barendregt (<i>The Netherlands</i>)
M-P23	157-P	SINGLE ACCESS TECHNIQUE: AN EFFICACIOUS PAINLESS WAY OF CHEMICAL PLEURODESIS BY VATS S. Margaritora, M. Letizia Vita, E. Meacci, V. Porziella, M. Teresa Congedo, A. Parisi, M. Filotico, P. Granone (<i>Italy</i>)
M-P24	158-P	VO₂ MAX AND CARDIOVASCULAR RISK EVALUATION IN PATIENTS SUBMITTED TO THORACIC SURGERY F. Sollitto, D. Loizzi, N.P. Ardò, M. Angiolillo, M. Punzo, E. Spada, A. De Palma (<i>Italy</i>)
M-P25	159-P	RESECTION OF CHEST WALL TUMORS AND RECONSTRUCTION WITH AN ORIGINAL MESH: SEVEN-YEAR EXPERIENCE E. Memu, O. Burlacu, C. Tunea, V. Voiculescu, G. Cozma, I. Miron, L. Girleanu, C.-A. Kerti, A. Nicodin (<i>Romania</i>)
M-P26	160-P	VIDEOTHORACOSCOPIC ULTRASOUND LUNG RESECTION - NEW SURGICAL TECHNIQUE FOR PERIPHERAL OBJECTS ABLATION A. Pismenny, E. Korimasov (<i>Russian Federation</i>)
M-P27	161-P	THE ROLE OF THORACOSCOPY IN THE MANAGEMENT OF HYDATID CYST OF LUNG? PRESENT AN EXPERIENCE? H.R. Kadkhodaie (<i>Iran</i>)
M-P28	162-P	EFFECTIVENESS OF SYMPATHETIC BLOCK BY CLIPPING IN THE TREATMENT OF HYPERHIDROSIS AND UNCONTROLLABLE FACIAL BLUSHING J.J. Fibla, L. Molins, J.M. Mier, G. Vidal (<i>Spain</i>)
M-P29	163-P	PHOTODYNAMIC DIAGNOSIS IN MANAGEMENT OF METASTATIC LUNG CANCER H.W. Eid, M.A. Al-sayegh, N.M. Alkhaja (<i>Dubai, UAE</i>)
M-P30	164-P	UNIORTAL VATS: SINGLE SURGEON'S EXPERIENCE WITH THE FIRST 23 CASES C.K. Choong, P. Bhinda, Y. Abu-Omar (<i>UK</i>)

**16th European Conference on General Thoracic Surgery
 Bologna, Italy, June 8–11, 2008
 Palazzo Re Enzo**

**SCIENTIFIC PROGRAMME
 TUESDAY, 10 JUNE 2008**

07:30-08:20 Salone del Podesta	BREAKFAST SESSION 1 - Bronchial Stump after Pneumonectomy 'Routine vs. No Cover'
07:30-08:20 Sala degli Atti	BREAKFAST SESSION 2 - Thymectomy for Myasthenia Gravis 'Maximal vs. Thoracoscopic Thymectomy'
08:30-13:00 Salone del Podesta	THORACIC TECHNO MEETING 'The Pleural Space'
13:00-14:00 Salone del Podesta	Covidien Satellite Symposium
14:00-15:30 Salone del Podesta	Session 7 - Airway and Transplantation
	Oral Session (10' presentation + 5' discussion)
Chairmen	G.A. Patterson, P. Thomas (St Louis, Marseille)
14:00	045-O WHENCE THE LUNGS? A REVIEW OF CURRENT LUNG DONOR PROFILE AND ACCEPTANCE RATE C. Meers, D. Van Raemdonck, G. Verleden, L. Dupont, W. Coosemans, H. Decaluwe, P. De Leyn, P. Nafteux, G. Decker, T. Lerut (Belgium)
14:15	046-O AIRWAY COMPLICATIONS AFTER LUNG TRANSPLANTATION: RISK FACTORS, PREVENTION AND OUTCOME W. Weder, I. Inci, S. Korom, P. Kestenholz, D. Schneiter, S. Hillinger, D. Lardinois (Switzerland)
14:30	047-O INSTITUTIONAL EXPERIENCE WITH PULMONARY RETRANSPLANTATION D. Van Raemdonck, G. Verleden, L. Dupont, W. Coosemans, H. Decaluwe, G. Decker, P. De Leyn, P. Nafteux, G. Walther, T. Lerut (Belgium)
14:45	048-O A REVIEW OF THE LUNG TRANSPLANT PROGRAMME IN IRELAND 2005-2007 W.R. Bartosik, J.J. Egan, A. Soo, L. Nolke, J.F. Mc Carthy, A.E. Wood (Ireland)
15:00	049-O MANAGEMENT OF RESPIRATORY INSUFFICIENCY FOLLOWING THORACIC SURGERY: OUTCOME IN PATIENTS WITH INVASIVE AND NON-INVASIVE VENTILATIONS J.Y. Perentes, R. Jean-Pierre, R. Hans-Beat (Switzerland)
15:15	050-O 60 TRACHEAL RESECTIONS, SINGLE CENTER EXPERIENCE I. Cordos, C.N. Bolca, C. Paleru, R.D. Posea (Romania)
14:00-15:30 Sala degli Atti	Session 8 - Pulmonary Neoplastic
	Forum Session (7' presentation + 3' discussion)
Chairmen	G. Varela, P. Pafko (Salamanca, Prague)
14:00	051-F DO BONE MARROW ISOLATED TUMOR CELLS INFLUENCE LONG-TERM SURVIVAL OF NSCLC? A. Ruffato, S. Mattioli, N. Daddi, F. D'Ovidio, S. Pileri, V. Pilotti (USA, Italy)
14:10	052-F PROGNOSTIC SIGNIFICANCE OF INTRAOPERATIVE PLEURAL LAVAGE CYTOLOGY FOR LUNG CANCER PATIENTS WITHOUT MALIGNANT PLEURITIS: LONG-TERM FOLLOW-UP RESULTS M. Higashiyama, K. Oda, J. Okami, J. Maeda, K. Kodama, A. Takenaka, T. Nakayama, G.-i. Yoneda (Japan)
14:20	053-F EXPRESSION LEVELS OF ANTIOXIDANT AND RECEPTOR GENES IN PATIENTS WITH EARLY STAGE NON-SMALL CELL LUNG CANCER G. De Palma, P. Mozzoni, E. Internullo, O. Acampa, M. Corradi, A. Mutti, P. Carbognani, M. Rusca (Italy)
14:30	054-F 68GA-DOTA-NOC PET FOR THE EVALUATION OF PULMONARY NEUROENDOCRINE TUMORS: PRELIMINARY EXPERIENCE V. Ambrosini, P. Castellucci, V. Allegri, A. Musto, G. Montini, C. Nanni, R. Franchi, S. Fanti, S. Mattioli (Italy)

- 14:40 055-F **COMPLETION PNEUMONECTOMY FOR NON-SMALL CELL LUNG CANCER: DOES PREOPERATIVE TREATMENT AFFECT POSTOPERATIVE OUTCOME?**
D. Galetta, P. Solli, F. Leo, G. Veronesi, A. Borri, R. Gasparri, F. Petrella, P. Scanagatta, L. Spaggiari (*Italy*)
- 14:50 056-F **POSTOPERATIVE AND LONG-TERM RESULTS OF PULMONARY RESECTION FOR LUNG CANCER AFTER SOLID ORGAN TRANSPLANTATION**
V. Pichot-Delahaye, B. Guibert, E. De La Roche, P. Boissonnat, M.N. Van, J. Beaulieux, J.P. Gamondes, F. Tronc (*France*)
- 15:00 057-F **SURGICAL MULTIMODALITY TREATMENT FOR STAGE IIIA-N2 NSCLC**
H. Decaluwé, P. De Leyn, J. Vansteenkiste, C. Dooms, Y. Lievens, D. Van Raemdonck, P. Nafteux, W. Coosemans, G. Decker, T. Lerut (*Belgium*)
- 15:10 058-F **TECHNIQUE AND ROLE OF RADICAL VATS SEGMENTECTOMY FOR SMALL SIZE LUNG CANCER**
M. Oda, I. Matsumoto, T. Yachi, Y. Yamamoto, T. Imagawa, K. Saito, G. Watanabe (*Japan*)
- 15:20 059-F **IS PREOPERATIVE AND POSTOPERATIVE RESPIRATORY THERAPY WITH INTERMEDIATE POSITIVE PRESSURE BREATHING NECESSARY IN PATIENTS WITH MAJOR PULMONARY RESECTIONS?**
C. Ludwig, R. Martins, V. Mayer, E. Steolben (*Germany*)
- 15:30-16:00
Salone del Podesta
Invited Extraordinary Presidential Lecture
'Ferrari: the legend lives on'
by Mr L.C. di Montezemolo, Chairman and CEO - Ferrari s.p.a and Scuderia Ferrari
- 16:00-17:30
Salone del Podesta
Session 9 - Oesophagus and Mediastinum
Oral Session (10' presentation + 5' discussion)
- Chairmen S. Mattioli, J. Duffy (Bologna, Nottingham)
- 16:00 060-O **LAPAROSCOPIC ISCHAEMIC CONDITIONING OF THE STOMACH REDUCES GASTRIC CONDUIT MORBIDITY FOLLOWING TOTAL MINIMALLY INVASIVE OESOPHAGECTOMY**
D. Veeramootoo, R. Parmeswaran, S. Wajed, R.G. Berrisford (*UK*)
- 16:15 061-O **EPIPHRENIC DIVERTICULUM: A CLINICAL AND PATHOLOGIC STUDY**
T. Rice, M.M. Yearsley, S.I. Reznik, S.S. Shay, D.P. Mason, S.C. Murthy, J.R. Goldblum (*USA*)
- 16:30 062-O **TREATMENT OF LOCALLY ADVANCED (CT3-4N1M0) CANCER OF THE ESOPHAGUS AND GASTROESOPHAGEAL JUNCTION IN YOUNGER (<55 YEARS) PATIENTS**
P. Nafteux, J. Moons, W. Coosemans, H. Decaluwé, G. Decker, P. De Leyn, D. Van Raemdonck, T. Lerut (*Belgium*)
- 16:45 063-O **EBUS-TBNA IN NSCLC STAGING**
A. Szlubowski, J. Kuzdzal, J. Hauer, L. Hauer, J. Pankowski, A. Obrochta, M. Zielinski (*Poland*)
- 17:00 064-O **THE ROLE OF F-FDG PET-TC IN THE PREOPERATIVE ASSESSMENT OF ANTERIOR MEDIASTINAL MASSES**
L. Luzzi, A. Campione, A. Gorla, G. Vassallo, A. Bianchi, A. Biggi, A. Terzi (*Italy*)
- 17:15 065-O **THYMECTOMY IN MYASTHENIA GRAVIS VIA VIDEO-ASSISTED INFRA-MAMMARY COSMETIC INCISION: LONG-TERM RESULTS IN 180 PATIENTS**
E. Meacci, S. Margaritora, V. Porziella, M.L. Vita, A. Tessitore, S. Cafarotti, A. Piraino, G. Cusumano, A. Evoli, P. Granone (*Italy*)
- 16:00-17:30
Sala degli Atti
Session 10 - Chest Wall and Diaphragm and Pleura
Forum Session (7' presentation + 3' discussion)
- Chairmen M. Allen, D. Waller (Rochester, Leicester)
- 16:00 066-F **AUTOLOGOUS BLOOD PLEURODESIS FOR PERSISTENT AIR LEAK**
K. Athanassiadi, S. Pispirigou, T. Rolf, A. Haverich (*Germany*)
- 16:10 067-F **LONG-TERM OUTCOME FOR TREATMENT OF PRIMARY SPONTANEOUS PNEUMOTHORAX: IMPACT OF APICAL RESECTION**
S. Korom, M. Dietrich, G.L. Carboni, S. Hillinger, D. Schneiter, W. Weder (*Switzerland*)
- 16:20 068-F **RESULTS OF MODIFIED BARONUESKY SURGICAL REPAIR IN ANTERIOR CHEST WALL DEFORMITIES**
M. Conti, L. Benhamed, B.S. Moura, R. Akkad, H. Porte, A. Wurtz (*France*)
- 16:30 069-F **IS THE NUSS PROCEDURE FOR CORRECTION OF FUNNEL CHEST SUPERIOR TO THE OPEN PROCEDURE? A COMPARISON OF DIFFERENT OPERATING PROCEDURES**
R. Luetzenberg (*Germany*)
- 16:40 070-F **CAN ABSORBABLE STABILIZERS BE USED ROUTINELY IN THE NUSS PROCEDURE?**
H.K. Pilegaard, P.B. Licht (*Denmark*)
- 16:50 071-F **EXTRAPLEURAL PNEUMONECTOMY AFTER CISPLATIN/GEMCYTABINE OR CISPLATIN/PEMETREXED INDUCTION FOR MALIGNANT PLEURAL MESOTHELIOMA**
I. Opitz, A. Schramm, N. Schäfer, P. Kestenholz, D. Lardinois, R.A. Stahel, W. Weder (*Switzerland*)

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- 17:00 072-F **TRIMODALITY THERAPY FOR MALIGNANT PLEURAL MESOTHELIOMA: EXTRAPLEURAL PLEURECTOMY/DECORTICATION, SYSTEMIC CHEMOTHERAPY WITH CISPLATIN/PERMETREXED AND RADIOTHERAPY**
S. Bölükbas, T. Bergmann, S. Beqiri, A. Fisseler-Eckhoff, K.M. Josten, N. Zamboglou, J. Schirren (*Germany*)
- 17:10 073-F **EXTRAPLEURAL PNEUMONECTOMY (EPP) IN MALIGNANT PLEURAL MESOTHELIOMA (MPM): TREATMENT RESULTS IN A SINGLE-INSTITUTION SERIES OF 48 CASES**
E. Bottoni, M. Alloisio, M. Infante, A. Testori, G. Ceresoli, F. Inzirillo, U. Cariboni, V. Errico, G. Ravasi (*Italy*)
- 17:20 074-F **MALIGNANT PLEURAL MESOTHELIOMA: A REVIEW OF 83 CONSECUTIVE EXTRAPLEURAL PNEUMONECTOMIES**
D. Trousse, L. Greillier, X.B. D'Journo, J.P. Avaro, C. Doddoli, R. Giudicelli, P.A. Fuentes, P. Astoul, P.A. Thomas (*France*)
- 17:30-18:30
Salone del
Podesta
- 08:30-17:30
Rooms 36 - 38
- ESTS GENERAL ASSEMBLY**
- Tuesday Posters**
Greek Pioneer Prize (500 €) for best poster
- T-P1 165-P **THE COMPARISON OF THORACOTOMY CLOSURE TECHNIQUES IN POSTTHORACOTOMY PAIN CONTROL: 'INTERCOSTAL SUTURES' VS. 'INTRACOSTAL SUTURES FOLLOWING INTERCOSTAL NERVE DISSECTION'**
A.S. Bayram, M. Ozcan, F.N. Kaya, M. Koprucuoglu, M. Aygun, C. Gebitekin (*Turkey*)
- T-P2 166-P **PREVENTIVE LOCAL ANESTHESIA IN VATS SYMPATHECTOMY**
M. Santini, G. Vicidomini, A. Fiorello, P. Laperuta, F. Napolitano (*Italy*)
- T-P3 167-P **IS THERE ANY PREDICTOR OF POOR QUALITY OF LIFE AFTER PNEUMONECTOMY?**
F. Leo, P. Scanagatta, F. Vannucci, D. Galetta, A. Borri, R. Gasparri, F. Petrella, G. Veronesi, P. Solli, L. Spaggiari (*Italy*)
- T-P4 168-P **TACHOSIL VS. STANDARD SURGICAL TREATMENT FOR AIR LEAKAGE IN PULMONARY LOBECTOMY**
G.M. Marta, F. Facciolo, L. Ladegaard, H. Dienemann, A. Csekeo, F. Rea, B. Passlick, L. Spaggiari, V. Tetens, W. Klepetko (*Austria, Italy, Denmark, Germany, Hungary*)
- T-P5 169-P **A RANDOMIZED CONTROLLED TRIAL COMPARING PERICARDIAL BUTTRESS VS. STAPLING WITH BIOGLUE IN PREVENTING AIRLEAKS AFTER LUNG VOLUME REDUCTION SURGERY**
S. Rathinam, B. Naidu, P. Nanjaiah, M. Loubani, M.S. Kalkat, P.B. Rajesh (*UK*)
- T-P6 170-P **DETERMINATION OF INDICATION FOR SURGICAL OPERATION AND ITS SCALE ACCORDING TO CAT EXAMINATION IN CASE OF PULMONARY TUBERCULOSIS**
K. Vacharadze, G. Lursmanashvili, K. Chubabria (*Georgia*)
- T-P7 171-P **EXPERIENCE WITH PULMONARY RESECTION FOR EXTENSIVELY DRUG-RESISTANT TUBERCULOSIS**
Y. Shiraishi, N. Katsuragi, H. Kita, M. Toishi, T. Onda (*Japan*)
- T-P8 172-P **TIMELEY DEBRIDEMENT OF PLEURAL EMPYEMA VIA VIDEOASSISTED THORACOSCOPY**
T. Walles, V. Steger, J. Zoller, G. Somuncuoglu, T. Kyriss, G. Friedel (*Germany*)
- T-P9 173-P **PEDIATRIC PARAPNEUMONIC EMPYEMA: CORRELATION BETWEEN PREOPERATIVE CHEST ULTRASONOGRAPHY AND SURGICAL EVIDENCE**
P. Ciriaco, G. Negri, A. Bandiera, L. Libretti, G. Melloni, A. Carretta, P. Zannini (*Italy*)
- T-P10 174-P **EARLY SURGERY FOR PULMONARY TUBERCULOSIS**
A. Bilal (*Pakistan*)
- T-P11 175-P **THE POSTPNEUMONECTOMY SYNDROME - CLINICAL PRESENTATION AND TREATMENT**
C. Soll, D. Hahnloser, T. Frauenfelder, E.W. Russi, W. Weder, P.B. Kestenholz (*Switzerland*)
- T-P12 176-P **MANAGEMENT OF PULMONARY ARTERY-VENOUS MALFORMATIONS**
Y.V. Birukov, V.D. Parshin, M.V. Puresky, E.V. Kononova, D.V. Bazarov (*Russian Federation*)
- T-P13 177-P **VIDEOTHORACOSCOPY IN PLEURAL EMPYEMA FOLLOWING THE LUNG INFECTION OF MRSA**
D. Divisi, S. Di Tommaso, W. Di Francescantonio, R. Crisci (*Italy*)
- T-P14 178-P **SURGICAL MANAGEMENT OF BRONCHIECTASIS; AN EXPERIENCE OF 100 CASES**
A. Bilal (*Pakistan*)
- T-P15 179-P **CONGENITAL LUNG MALFORMATIONS IN ADULTS: MANAGEMENT AND OUTCOME**
P. Ciriaco, M. Casiraghi, A. Carretta, G. Melloni, A. Puglisi, L. Libretti, P. Zannini (*Italy*)
- T-P16 180-P **LUNG RESECTION IN TUBERCULOSIS? CHALLENGING ISSUES**
C. Paleru, C. Bolca, I. Cordos (*Romania*)
- T-P17 181-P **MINI-INVASIVE THORACIC SURGERY IN DIAGNOSIS AND TREATMENT OF PLEURAL DISORDERS**
G. Cozma, E. Memu, O. Burlacu, C. Tunea, V. Voiculescu, I. Miron, L. Girleanu, A. Nicodin (*Romania*)
- T-P18 182-P **DIFFERENCE OF SURGICAL TACTICS AT SPONTANEOUS PNEUMOTHORAX VS. PROVED BULLOUS EMPHYSEMA**
A. Pismenny, E. Korimasov, I. Fedorin (*Russian Federation*)
- T-P19 183-P **CONTACT CRYOABLATION DECREASES EXPERIMENTALLY CREATED LUNG AIR LEAKAGE**
Y. Izumi, N. Tsukada, M. Kawamura, K. Kobayashi (*Japan*)

T-P20	184-P	EVALUATION OF THORAQUIK®: A NEW DEVICE FOR THE TREATMENT OF PNEUMOTHORAX AND PLEURAL EFFUSION S. Rathinam, D. Quinn, S. Ghosh, P. Wall, P.B. Rajesh, R.S. Steyn (<i>UK</i>)
T-P21	185-P	OUTPATIENT MANAGEMENT OF MALIGNANT PLEURAL EFFUSIONS WITH AN INTRAPLEURAL SUBCUTANEOUS DRAINAGE SYSTEM F.J. Moradiellos, J.L. Campo-Cañaveral, D.G. de Antonio, M. Córdoba, P. Gámez, A. Varela (<i>Spain</i>)
T-P22	186-P	THE EFFECT ON QUALITY OF LIFE AND PHYSICAL DEVELOPMENT AFTER BAR REMOVAL IN THE NUSS PROCEDURE FOR PECTUS EXCAVATUM H.K. Kim, Y.H. Choi, O.H. Woo, M.-J. Baek, Y.-s. Sohn, H.J. Kim (<i>Korea (South)</i>)
T-P23	187-P	CAUSES OF FALSE POSITIVE RESULT OF FDG-PET IN MEDIASTINAL STAGING OF LUNG CANCER H. Melek, M.Z. Gunluoglu, A. Demir, B. Medetoglu, H.V. Kara, E. Cetinkaya, S. i Dincer (<i>Turkey</i>)
T-P24	188-P	THORACOTOMY AFTER PREVIOUS CURATIVE THORACIC RADIOTHERAPY H. Eryigit, A.K. Misirlioglu, A.S. Bayram, C. Gebitekin, C.A. Kutlu (<i>Turkey</i>)
T-P25	189-P	PNEUMONECTOMY IN NON-SMALL CELL LUNG CANCER - DOES IT WORTH? W. Rzyman, A. Gibas, A. Sternau (<i>Poland</i>)
T-P26	190-P	IS SURGICAL RESECTION OF RECURRENT AND SECOND PRIMARY LUNG CANCER SAFE AND EFFECTIVE? G. Cavallesco, P. Maniscalco, F. Quarantotto, F. Acerbis, C. Brombin, M.C. Bottoli, M. Santini, G. Azzena (<i>Italy</i>)
T-P27	191-P	FOLLOW-UP STRATEGIES IN SOFT TISSUE SARCOMA FOR EARLY DIAGNOSIS OF PULMONARY METASTASES Y.P. Acklin, G. Gadiant, R. von Moos, M. Furrer (<i>Switzerland</i>)
T-P28	192-P	EFFECTIVENESS OF MEDIASTINAL LYMPH-NODE DISSECTION L.C. Hartog, H. Rijna (<i>The Netherlands</i>)
T-P29	193-P	ULTRASOUND GUIDED BIOPSY FOR PULMONARY MASSES I. Hadas-Halpern, S. Silberman, M. Deeb (<i>Israel</i>)
T-P30	194-P	RELAPSE PATTERN IN COMPLETELY RESECTED STAGE I-IIIa NSCLC REVISITED: PROSPECTIVE STUDY ON 88 PATIENTS D.R. Subotic, D.V. Mandaric, L.G. Andric, J.M. Stojic, G.D. Radosavljevic (<i>Serbia and Montenegro</i>)

**16th European Conference on General Thoracic Surgery
 Bologna, Italy, June 8–11, 2008
 Palazzo Re Enzo**

**SCIENTIFIC PROGRAMME
 WEDNESDAY, 11 JUNE 2008**

07:00-07:50 Salone del Podesta	BREAKFAST SESSION 1 - Malignant Pleural Mesothelioma 'Pleurectomy vs. EPP'
07:00-07:50 Sala degli Atti	BREAKFAST SESSION 2 - Lobectomy for Early Stage Lung Cancer 'VATS vs. open'
08:00-09:00 Sala degli Atti	Session 11 - Best Posters (Mixed) Poster Session (3' presentation + 2' discussion)
Chairmen	R. Berrisford, K. Athanassiadi (Exeter, Athens)
08:00	105-P LONG-TERM SURVIVAL AFTER VATS AND OPEN PULMONARY METASTATECTOMY D. West, W.S. Walker (UK)
08:05	106-P THORACIC METASTASECTOMY FOR THYROID MALIGNANCIES J.R. Porterfield, S.D. Cassivi, D.R. Larson, D.A. Wigle, K.R. Shen, F.C. Nichols, M.S. Allen, C.S. Grant, C. Deschamps (USA)
08:10	107-P REACTIVITY OF INTEGRIN-LINKED KINASE AND THE RECURRENCE OF NSCLC AFTER BRONCHOPLASTIC RESECTION S.B. Watzka, I. Pötsch, U. Setinek, H. Cantonati, D. Janakiev, P.H. Hollaus, M.R. Müller (Austria)
08:15	108-P LARGE SCALE TISSUE MICROARRAY STUDY OF COPY NUMBER CHANGES OF C-MYC AND EGFR ONCOGENES IN OPERATED ON NSCLC PATIENTS - CLINICAL IMPLICATION R.V. Cherneva, D.B. Petrov, I.I. Dimova, O.B. Georgiev, D.I. Toncheva (Bulgaria)
08:20	109-P PREOPERATIVE INTRATHORACIC LYMPH NODE STAGING IN PATIENTS WITH NON-SMALL CELL LUNG CANCER: ACCURACY OF INTEGRATED PET/CT A. Billè, E. Pelosi, A. Skanjeti, V. Arena, L. Errico, P. Borasio, M. Mancin, F. Ardissonne (Italy)
08:25	130-P PNEUMONECTOMY FOR BRONCHOGENIC CARCINOMA: ANALYSIS OF FACTORS PREDICTING SHORT AND LONG-TERM OUTCOME E. Veen, M. Janssen-Heijnen, E. Ritchie, B. Biesma, R.J. Bolhuis (The Netherlands)
08:30	134-P LONG-TERM RESULTS OF LUNG CANCER AFTER HEART TRANSPLANTATION: SINGLE CENTER 20-YEAR EXPERIENCE M. Torre, S. Conforti, G. Bruschi, C. Russo, S. Fieschi, A. Santi (Italy)
08:35	136-P QUALITY OF LIFE AFTER OESOPHAGECTOMY FOR CARCINOMA. DOES IT IMPACT THE ELDERLY MORE? A.E. Martin-Ucar, S.E. Deacon, L. Beggs, E.A. Black, J.P. Duffy, D. Beggs (UK)
08:40	137-P TRANSBRONCHIAL NEEDLE ASPIRATION UNDER DIRECT ENDOBRONCHIAL ULTRASOUND GUIDANCE OF PET POSITIVE ISOLATED MEDIASTINAL ADENOPATHY IN PATIENTS WITH PREVIOUS MALIGNANCY M. Nosotti, L. Rosso, D. Tosi, A. Palleschi, P. Mendogni, A. Stanzi, S. Rossi (Italy)
08:45	165-P THE COMPARISON OF THORACOTOMY CLOSURE TECHNIQUES IN POST-THORACOTOMY PAIN CONTROL: 'INTERCOSTAL SUTURES' VS. 'INTRACOSTAL SUTURES FOLLOWING INTERCOSTAL NERVE DISSECTION' A.S. Bayram, M. Ozcan, F.N. Kaya, M. Koprucoglu, M. Aygun, C. Gebitekin (Turkey)
08:50	166-P PREVENTIVE LOCAL ANESTHESIA IN VATS SYMPATHECTOMY M. Santini, G. Vicidomini, A. Fiorello, P. Laperuta, F. Napolitano (Italy)
08:55	167-P IS THERE ANY PREDICTOR OF POOR QUALITY OF LIFE AFTER PNEUMONECTOMY ? F. Leo, P. Scanagatta, F. Vannucci, D. Galetta, A. Borri, R. Gasparri, F. Petrella, G. Veronesi, P. Solli, L. Spaggiari (Italy)

08:00-09:00	Salone del Podesta	Session 12 - Video (Mixed)
		Video Session (7' presentation + 3' discussion)
	Chairmen	J. Furak, K. Papagiannopoulos (Szeged, Leeds)
08:00	075-V	PERSONAL EXPERIENCE IN THORACOSCOPIC SPLANCHNICECTOMY FOR PALLIATING THE PAIN IN PATIENTS WITH CHRONIC PANCREATITIS A.M. Calati, F. Raveglia, S. Meda, A. Leporati, A. Baisi (<i>Italy</i>)
08:10	076-V	CERVICO-MANUBRIAL-THORACOTOMIC APPROACH FOR REMOVAL OF A LEFT 'ANTERIOR PANCOAST' TUMOR G. Di Rienzo, C. Surrente, C. Lopez (<i>Italy</i>)
08:20	077-V	THORACOSCOPIC REPAIR OF DIAPHRAGM INJURY USING 4 PORTS WITHOUT WORKING THORACOTOMY D.H. Kim, J.J. Hwang, K.D. Kim (<i>Korea (South)</i>)
08:30	078-V	TECHNIQUE AND RESULTS OF THORACOSCOPIC FIRST RIB EXTIRPATION (TFRE) IN THORACIC OUTLET SYNDROME (TOS) E.I. Sihvo, J.V. Räsänen, J. Jokinen, T. Peräkylä, J.A. Salo (<i>Finland</i>)
08:40	079-V	A CASE OF SPONTANEOUS HEMOTHORAX AS UNUSUAL PRESENTATION OF THORACIC ENDOMETRIOSIS SYNDROME: RADICAL SURGICAL TREATMENT BY VIDEO-ASSISTED THORACOSCOPY (VAT). S. Margaritora, E. Meacci, V. Porziella, M.L. Vita, A. Tessitore, M.T. Congedo, P. Granone (<i>Italy</i>)
08:50	080-V	TECHNIQUE OF RIGHT VIDEOTHORACOSCOPIC THYMECTOMY: BEST MINIMALLY APPROACH FOR THYMECTOMY M. Congregado, R. Jimenez-Merchan, G. Gallardo, A. Triviño, J. Ayarra, J. Loscertales (<i>Spain</i>)
09:00-10:30	Salone del Podesta	JOINT ERS - ESTS SYMPOSIUM 'Management of Pneumothorax'
09:00-10:30	Sala degli Atti	JOINT ESE - ESTS SYMPOSIUM 'Surgery for Primary Motility Disorders of the Oesophagus'
11:00-13:00	Salone del Podesta	Session 13 - Mixed Malignant
		Forum Session (7' presentation + 3' discussion)
	Chairmen	G. Daddi, J. Kuzdzal (Rome, Zakopane)
11:00	081-F	VALIDITY OF IASLC PROPOSALS FOR THE REVISION OF THE N DESCRIPTORS IN LUNG CANCER J.G. Lee, C.Y. Lee, I.K. Park, D.J. Kim, K.Y. Chung (<i>Korea (South)</i>)
11:10	082-F	BORDERLINE BETWEEN HILAR AND MEDIASTINAL LYMPH NODES IN SUBCARINAL ZONE: AN ANALYSIS OF DEEPLY-LOCATED HILAR NODES IN RIGHT LUNG CANCER M. Isaka, T. Okumura, S. Takahashi, S. Saisho, K. Nakagawa, Y. Ohde, H. Kondo (<i>Japan</i>)
11:20	083-F	SURVIVAL AFTER TRIMODALITY TREATMENT FOR SULCUS SUPERIOR TUMOURS AND CENTRAL T4 NON-SMALL CELL LUNG CANCER P. De Leyn, J. Vansteenkiste, Y. Lievens, D. Van Raemdonck, P. Naftoux, W. Coosemans, H. Decaluwe, G. Decker, J. Moons, T. Lerut (<i>Belgium</i>)
11:30	084-F	N2-LYMPH NODE METASTASES OF NSCLC IN THE AORTO-PULMONARY WINDOW: REALLY A BETTER PROGNOSIS? A. Marra, G. Richardsen, A. Haeussler-thoele, O. Koch, W. Wagner, L. Hillejan (<i>Germany</i>)
11:40	085-F	INDUCTION THERAPY IN ELDERLY NON-SMALL CELL LUNG CANCER (NSCLC) PATIENTS: A DANGEROUS CHOICE? S. Margaritora, E. Meacci, V. Porziella, A. Tessitore, A. Piraino, M.T. Congedo, M.L. Vita, P. Granone (<i>Italy</i>)
11:50	086-F	SURGICAL RESECTION OF ADRENAL METASTASIS FROM RESECTED LUNG CANCER - ABOUT 69 CASES P.-Y. Brichon (<i>France</i>)
12:00	087-F	SURGICAL TREATMENT OF NEUROGENIC TUMORS OF THE MEDIASTINUM. A SINGLE INSTITUTION REPORT ON 93 CASES G. Cardillo, F. Carleo, A. Raffaella D. Massimi, L. Carbone, S. Treggiari, L. Salvadori, A. Forcione, M. Martelli (<i>Italy</i>)
12:10	088-F	ISOLATED LUNG PERFUSION VS. INTRAVENOUS DRUG ADMINISTRATION: COMPARISON OF FREE AND LIPOSOMAL DOXORUBICIN DISTRIBUTION IN A SARCOMA MODEL C. Cheng, A. Haouala, T. Krueger, F. Mithieux, J.-P. Ballini, S. Peters, S. Andrejevic-Blant, L.A. Decosterd, H.-B. Ris (<i>Switzerland</i>)
12:20	089-F	EFFECTS OF HYPERTHERMIA ON PLEURAL MESOTHELIAL CELLS: EXPRESSION OF INFLAMMATORY PROTEINS AND CELLULAR DEATH B. Gregorio, F. Heras, J.-M. Matilla, S. Cabanyes, N. Fernández-García, M. Sánchez-Crespo, A. Cilleruelo, G. Ramos, M. García-Yuste (<i>Spain</i>)
12:30	090-F	FDG-PET SUVMAX AND SURVIVAL CORRELATIONS WITH TUMOR MARKERS IN ESOPHAGEAL CANCER M.D. Taylor, P.W. Smith, W.K. Brix, M.R. Wick, N. Theodosakis, B.R. Swenson, B.D. Kozower, C.L. Lau, D.R. Jones (<i>USA</i>)
12:40	091-F	SEMIMECHANICAL ANASTOMOSIS VS. HANDSEWN ANASTOMOSIS AFTER ESOPHAGECTOMY WITH GASTRIC TUBULISATION AND CERVICAL ANASTOMOSIS L. Dedrye, J. Moons, W. Coosemans, H. Decaluwé, G. Decker, P. De Leyn, P. Naftoux, D. Van Raemdonck, T. Lerut (<i>Belgium</i>)
12:50	092-F	QUALITY OF LIFE AFTER THORACIC SURGERY IN THE ELDERLY: A CENTER-BASED PROSPECTIVE CONTROLLED TRIAL J. Jacobs, B. Krebs, S. Welter, G. Stamatis (<i>Germany</i>)

11:00-13:00
Sala degli Atti

Session 14 - Mixed Benign

Forum Session (7' presentation + 3' discussion)

Chairmen

Y. Sohara, S. Halezeroglu (Shimotsuke, Istanbul)

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| 11:00 | 093-F | THORACIC INJURIES IN SEVERELY INJURED PATIENTS: A PROSPECTIVE STUDY BY THE UK NATIONAL CONFIDENTIAL ENQUIRY INTO PATIENT OUTCOME AND DEATH
N. Smith, G. Findlay, I. Martin, T. Treasure, M. Utlely, D. Weyman (<i>UK</i>) |
| 11:10 | 094-F | ANALYSIS OF 4205 PATIENTS WITH THORACIC TRAUMA: 10 YEARS EXPERIENCE
R. Demirhan, K. Oz, B. Onan, I. Sancakli, S. Halezeroglu (<i>Turkey</i>) |
| 11:20 | 095-F | INTRAPLEURAL VACUUM ASPIRATION CLOSURE FOLLOWING THORACOSTOMY IS A HIGHLY EFFECTIVE THERAPY IN STAGE III PLEURAL EMPYEMA
J. Halberstadt, K.D. Diemel, C. Albrecht, M. Nakashima, D. Branscheid (<i>Germany</i>) |
| 11:30 | 096-F | FAILED DECORTICATION AETIOLOGY TREATMENT OPTION AND OUTCOME
A. Bilal (<i>Pakistan</i>) |
| 11:40 | 097-F | SURGICAL TREATMENT OF PURULENT DISEASES OF LUNGS AND PLEURA
S. Pushkin, E. Korimasov, A. Pismenny, A. Reshetov, O. Pesneva, A. Benyan, Y. Syzrantsev, Y. Mzhelsky (<i>Russian Federation</i>) |
| 11:50 | 098-F | EARLY AND AGGRESSIVE PULMONARY RESECTION FOR MYCOBACTERIUM AVIUM COMPLEX LUNG DISEASE
M. Watanabe, N. Hasegawa, A. Ishizaka, M. Kohno, Y. Izumi, M. Kawamura, H. Horinouchi, K. Kobayashi (<i>Japan</i>) |
| 12:00 | 099-F | CHANGES IN VENTILATORY CAPACITY, EXERCISE CAPACITY, AND PULMONARY BLOOD FLOW AFTER LOBECTOMY IN PATIENTS WITH LUNG CANCER
K. Kushibe, T. Kawaguchi, M. Kimura, T. Tojo, S. Taniguchi (<i>Japan</i>) |
| 12:10 | 100-F | FACTORS INVOLVED IN GASTRO-OESOPHAGEAL REFLUX CONTROL AFTER ANTIREFLUX SURGERY
V. Porziella, S. Margaritora, M. Marchese, M.T. Congedo, E. Meacci, M.L. Vita, P. Granone (<i>Italy</i>) |
| 12:20 | 101-F | THE ROLE OF INTERCOSTAL NERVE PRESERVATION ON POSTOPERATIVE PAIN CONTROL AFTER THORACOTOMY; A DOUBLE CENTER
M. Beshay, A. Gries, B. Hokschi, R. Schmid (<i>Germany, Switzerland</i>) |
| 12:30 | 102-F | 10-YEAR FOLLOW-UP OF ENDOSCOPIC THORACIC SYMPATHECTOMY
G. Somuncuoglu, T. Walles, V. Steger, S. Veit, G. Friedel (<i>Germany</i>) |
| 12:40 | 103-F | SIDE EFFECTS, COMPLICATIONS AND OUTCOME OF THORACOSCOPIC SYMPATHICOLYSIS FOR PALMAR AND AXILLARY HYPERHIDROSIS IN 406 PATIENTS
P. Rodriguez, J. Freixinet, M. Hussein, R. Gil, J. Herrero, A. Artalejo (<i>Spain</i>) |
| 12:50 | 104-F | PARENCHYMA SAVING SURGICAL TREATMENT OF GIANT PULMONARY HYDATID CYSTS
M. Dakak, H. Caylak, K. Kavakli, A. Gozubuyuk, O. Yucel, S. Gurkok, E. Sapmaz, O. Genc (<i>Turkey</i>) |

Abstracts

Monday A.M.
Abstracts 001-O-014-C

Session 1 - Brompton Session (Mixed) Monday, 9 June 2008 08:30-10:30

001-O

DOES PREVIOUS FUNDOPLICATION ALTER THE SURGICAL APPROACH TO ESOPHAGEAL ADENOCARCINOMA?

A. Casson, K. Madani, S. Mann, B. Reeder, H. Lim
University of Saskatchewan, Saskatoon, Canada

Objective: To test the widespread assumption that viability of the gastric fundus is compromised by fundoplication, thereby limiting the use of stomach to reconstruct the upper gastrointestinal tract after esophageal resection.

Methods: Between February 1991 and February 2006, a consecutive series of 142 patients with esophageal adenocarcinoma (EADC) underwent esophageal resection. For all patients, a narrow gastric tube (greater curvature of stomach based on the right gastroepiploic artery), was transposed through the posterior mediastinum to the left neck where an anastomosis to the cervical esophagus was performed. From a prospective database, 15 patients were identified to have undergone an open fundoplication (transabdominal Nissen, $n=11$; transthoracic Belsey, $n=4$) from 12 to 23 years earlier. Outcomes were compared between patients with EADC who had undergone previous fundoplication ($n=15$), and patients with EADC who never had anti-reflux surgery ($n=127$).

Results: Gastric transposition and cervical esophagogastrostomy was technically feasible in all patients. No significant differences ($P>0.05$) in outcome were found between patient groups, with respect to age, gender, tumor grade, stage, survival, hospital stay or postoperative complications. Gastric necrosis developed in only one patient, who had not undergone previous fundoplication. Anastomotic leak rates after esophageal resection and reconstruction were not statistically different based on whether patients had undergone previous fundoplication (2/15, 13.3%) or not (16/127, 12.6%; $P=1.0$).

Conclusions: With careful attention to surgical technique, previous fundoplication does not preclude the use of stomach to reconstruct the foregut after esophageal resection, refuting the notion that previous antireflux surgery is a relative contraindication to, or alters the approach to esophageal cancer surgery.

002-O

SURVIVAL AFTER RESECTION OF SYNCHRONOUS BILATERAL NSCLC

P. De Leyn¹, J. Moons¹, J. Vansteenkiste², E. Verbeken³, D. Van Raemdonck¹, P. Nafteux¹, W. Coosemans¹, H. Decaluwé¹, G. Decker¹, T. Lerut¹

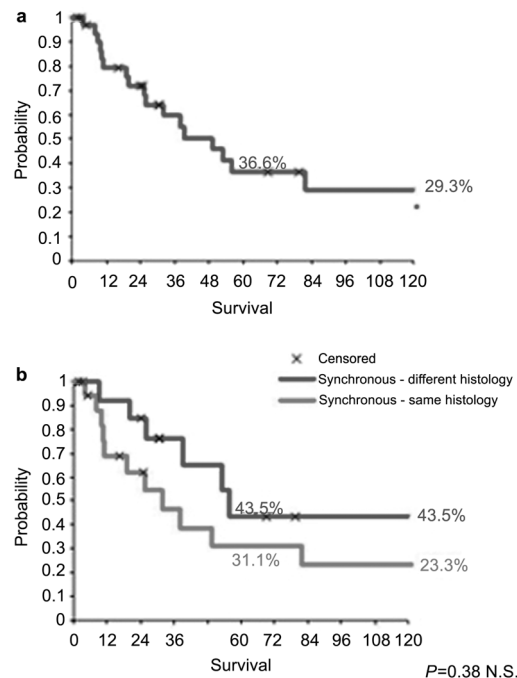
¹Department of Thoracic Surgery, University Hospital Leuven, Belgium;
²Department of Pneumology, University Hospital Leuven, Belgium;
³Department of Radiology, University Hospital Leuven, Belgium

Objective: For the revision of the TNM in 2009, the IASLC Lung Cancer Staging Group proposes that patients with contralateral lung nodules remain classified as M1 disease. Their assumption is based on a small database in this subgroup ($n=362$) with only seven patients (2%) with bilateral surgery. In this retrospective study, the survival after resection of synchronous bilateral NSCLC is evaluated.

Methods: From our database of bronchial carcinoma ($n=3399$) all patients with multiple lung lesions between 1990 and 2007 were retrieved. Fifty-seven patients were found with a synchronous bilateral lung lesion. Twenty-one patients were excluded from this analysis because at least one of the lesions was inoperable or irresectable ($n=16$) or one of the lesions appeared non-neoplastic on final pathology ($n=5$).

Results: The incidence has doubled the last years probably explained by better imaging techniques. Thirty-six patients underwent bilateral resection for NSCLC. In 23 patients, one side was anatomically resected (2 pneumonectomies) and the contralateral side was resected by limited resection. In ten patients a bilateral lobectomy was performed, and three patients had bilateral limited resections. Postoperative mortality was 2.8%. Eighteen patients had a tumour with a different histological pattern, confirmed by comparing both specimens by an experienced senior pathologist. Overall survival (Fig. a) was 72.2%, 36.6% and 29.3% at 2, 5 and 10 years, respectively. There was no significant difference in survival between patients with different vs. same histology (Fig. b).

Conclusions: In selected patients, survival after bilateral resection was much better when compared to stage IV disease. Patients with a single contralateral lung lesion should not be treated as disseminated disease (Stage IV) but should be considered as a candidate for a 'benefit of doubt' approach by means of bilateral surgical treatment with potentially curative intent.



Survival: a) overall; b) by histology.

003-O

PROFITABILITY OF OUR LUNG RETRIEVAL PROGRAM FROM NON-HEART BEATING DONORS

E. Fernández, J. Calatayud, J. Ramó, Jarabo, F. Hernando, O. Rodríguez, A.M. Gómez, A. Soria, F.D. Río

Hospital Clínico San Carlos, Madrid, Spain

Objective: In 2002 the first lung transplantation from non-heart beating (NHB) donors took place in Madrid. Objectives: To analyze our Maastricht type I NHB lung donors retrieval program and to check out its profitability. **Methods:** Based on the NHB lung donors retrieval program carried out at Hospital Clínico San Carlos (Madrid) in association with Hospital Puerta de Hierro (Madrid), all lung donors from the beginning of the program on June

2002-December 2006 have been analyzed. When faced with a case of sudden death, advanced life support manoeuvres are initiated before 15 min. If the patient meets a given set of criteria, code 0/9 is activated. Arrival time to the Hospital cannot exceed 90 min. Femoral artery and vein are cannulated, extracorporeal circulation is started and lungs are preserved. After the relatives' and judicial authorization lungs are retrieved.

Results: Out of a total of 322 occurrences of code 0/9, 43 lung retrievals and 25 implants were reported. Ninety-five percent of donors were male, with an average age of 41 years and 91% with blood group A or O. 2004 saw the highest number of retrievals (14). January, May and December show the highest number of retrievals. Incidence of sudden deaths was higher from 7 to 10 am and from 7 to 10 pm. Twenty-three implants at Puerta de Hierro and three more at H. Marqués de Valdecilla (Santander) were reported. A considerable amount of preserved lungs, valid for transplant, were not retrieved because of a lack of an appropriate recipient at the time being.

Conclusions: 58.1% of preserved lungs were implanted. The ratio of obtained lungs was 11.4% of actual donors and 7.7% of total occurrences. However, this percentage could have been higher if we take into account the number of valid lungs that were not transplanted because of the lack of recipients.

004-O

DATA FROM A NATIONAL LUNG CANCER REGISTRY IMPROVES OUTCOME AND QUALITY OF SURGERY - DANISH RESULTS

E. Jakobsen¹, T. Palshof², K. Østerlind³, H. Pilegaard⁴

¹The Danish Lung Cancer Registry Odense University Hospital, Department of Thoracic Surgery, Odense, Denmark; ²Aarhus University Hospital, Department of Oncology, Aarhus, Denmark; ³Rigshospitalet, Department of Oncology, Copenhagen, Denmark; ⁴Aarhus University Hospital Skejby, Department of Thoracic Surgery, Aarhus, Denmark

Objective: In 1998, The Danish Lung Cancer Group published the first edition of guidelines for diagnosis and treatment of lung cancer. A national registry was implemented in the year 2000. The primary objective was to monitor the implementation of the guidelines and to secure and improve the quality of lung cancer treatment nationwide. With special focus on surgery the result of this work is described.

Methods: Through systematic nationwide registration of all lung cancer patients more than 25,000 patients has been included. Indicators describing staging, surgical procedures, complications and survival have been registered in more than 4000 patients who received surgical treatment. Using an internet based closed circle with a secured program more than 95% of this subgroup of patients have been reported. Each year the results have been audited locally, regionally and nationally and improvements have been proposed, implemented, monitored and consecutively evaluated by the audit-plenary.

Results: This effort has had a significant impact on the results in mortality, survival and surgical strategy. Thus 30 days mortality after surgery has decreased from 5% to 3.5% and survival has increased from an overall one and three year survival of 70% and 43% in 2000 to 77% and 49%, respectively. Furthermore there has been improvements in various other indicators in the same period: - lobectomy rate has increased from 53% to 64%; - pneumonectomy rate has decreased from 23% to 14%; - proportion of patients having surgery within 14 days from referral has increased from 69% to 83%. Details and supplementary data will be presented.

Conclusions: Establishment of a national system based on guidelines, a database, public reports, systematic audits and organisational commitment can contribute to significant improvements in the quality of surgical treatment of lung cancer.

005-O

EFFECT OF BILATERAL MEDIASTINAL LYMPHADENECTOMY ON THE RISK OF THE SUBSEQUENT PULMONARY RESECTION

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Objective: To assess if the bilateral mediastinal lymphadenectomy, performed as a staging procedure, is associated with higher risk of the subsequent pulmonary resection than standard cervical mediastinoscopy.

Methods: In the prospective, randomized, double-blind clinical study, NSCLC patients underwent preoperatively mediastinoscopy or the transcervical extended mediastinal lymphadenectomy (TEMLA). Patients with negative

nodes were subsequently scheduled for appropriate pulmonary resection. The operative time, blood loss, postoperative pain, time and volume of chest tube output and all complications were recorded.

Results: Initially, 100 patients were planned to be enrolled. However, due to a significantly greater number of false-negative results of mediastinoscopy comparing with the TEMLA (results published elsewhere), we decided to terminate the enrolment for ethical reasons. So, forty-one patients were randomized: 21 to the TEMLA group and 20 to the mediastinoscopy group. Groups were comparable regarding patients' age, gender, performance status, comorbidity and pulmonary function tests, as well as histological type and location of the primary tumor. There was no significant difference between the TEMLA group and the mediastinoscopy group regarding the operative time ($P=0.92$), blood loss ($P=0.056$), postoperative chest tube output ($P=0.352$), time to chest tube removal ($P=0.552$), air leak ($P=0.617$), postoperative pain ($P=0.998$) and any of the complications ($P=0.087-0.722$).

Conclusions: Using the complete excision of mediastinal lymph nodes stations 1, 2R, 2L, 3A, 4R, 4L, 5, 6, 7 and 8 (TEMLA) as a staging procedure is not associated with greater risk of the subsequent pulmonary resection comparing with standard mediastinoscopy.

006-O

STRUCTURAL LUNG DAMAGE AFTER CHEMOTHERAPY. FACT OR FICTION?

F. Leo¹, G. Pelosi², A. Sonzogni², M. Chilosi³, F. Petrella¹, D. Galetta¹, L. Spaggiari¹

¹Department of Thoracic Surgery, European Institute of Oncology, Milan, Italy; ²Division of Pathology and Laboratory Medicine, European Institute of Oncology, Milan, Italy; ³Institute of Pathology, University of Verona, Verona, Italy

Objective: The hypothesis that chemotherapy increases morbidity after pneumonectomy remains under debate, as results from surgical series are controversial. To further improve knowledge, another possible approach is the pathological evaluation of lung tissue at the time of surgery, investigating the entity and type of lung damage, both in patients who have received preoperative chemotherapy and those who have not. The hypothesis of the study is that patients who have received neoadjuvant treatment may have subclinical parenchymal damage, increasing their risk of respiratory complications.

Methods: The study population was composed of ten patients who underwent pneumonectomy after chemotherapy for lung cancer (cisplatin+gemcitabine), randomly selected from our database and compared with ten other patients who underwent pneumonectomy without previous chemotherapy during the same period. The groups were matched for age, sex, side of pneumonectomy and respiratory function. Healthy lung tissue was obtained from surgical specimens, processed according to standard methods and evaluated on ematossilin and eosin-stained sections. Two pathologists without information on the preoperative treatment were asked to review the slides in order to reach a consensus on the type and extent of lung damage. Relevant information was then compared with functional tests and postoperative outcome.

Results: Severe and diffuse (more than 50% of lung parenchyma) interstitial alterations were detected in the lungs of eight patients, seven of which belonged to the chemotherapy group (70%, $P=0.02$). Six of these patients developed respiratory complications postoperatively. In the chemotherapy group, the patterns of interstitial involvement were: obliterative bronchiolitis (1), bronchiolitis obliterans-organizing pneumonia (4), diffuse alveolar damage (2), DIP-like reaction (1) and UIP-like changes (1).

Conclusions: Preoperative chemotherapy is associated with an increased risk of severe and diffuse pulmonary disease, even in the presence of normal spirometric parameters. These alterations dramatically increase the risk of postoperative respiratory complications. Diffusion capacity for carbon monoxide (Dlco) is probably the only reliable parameter in preoperative detection of these alterations.

007-O

COMPARISON OF SINGLE OR DOUBLE CHEST TUBES APPLICATIONS AFTER PULMONARY LOBECTOMIES

E. Okur, V. Baysungur, C. Tezel, G. Sevilgen, G. Ergene, M. Gokce, S. Halezeroglu

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

Objective: Draining the chest cavity with two chest tubes after pulmonary lobectomies is a common practice. This study aimed to investigate whether double drain was superior to single drain in effectiveness in this situation.

Methods: This prospective randomized study included 100 consecutive patients who underwent lobectomy or bilobectomy for any pathology in between May 2006 to November 2007. Only one 32 F chest tube was applied in 50 patients in single drain group, and two 32 F chest tubes were applied in 50 patients in double drain group. Pre-, intra-, and postoperative variables in both groups were compared.

Results: Preoperative characteristics of patients were similar in both groups. Postoperative pain assessed by visual analogue scores (VAS) in early (second day) and late periods (second week) and mean amounts of drainages from chest tubes were significantly less in single drain group while all other parameters related were similar in both groups (Table).

Conclusions: Double chest tubes application is not superior to single chest tube after pulmonary lobectomies. Moreover, single drain was even superior to classical two-drains in that it causes less postoperative pain and less pleural fluid loss, and reduces the cost without increasing the risk of complications.

Postoperative variables in both groups

Variables compared	Single-drain group	Double-drain group	P-value
Chest tube duration (days)	3.38±1.36	3.90±1.46	0.069
Need for additional chest tube	1	1	1
Prolonged air leaks (>5 days)	5	4	0.72
Residual pleural air space	8	9	0.79
Amount of drainage (cc)	600±43.24	896±56.23	0.001
Other complications	13	16	0.50
Pain score early (1-10)	4.28±1.53	5.10±1.65	0.012
Pain score late (1-10)	1.48±0.13	2.00±0.17	0.019
Hospital stay (days)	4.84±1.20	5.20±1.38	0.17

008-O

PARTIAL LEAST SQUARES (PLS) PATH MODELLING FOR THE EVALUATION OF PATIENTS SATISFACTION AFTER THORACIC SURGICAL PROCEDURES

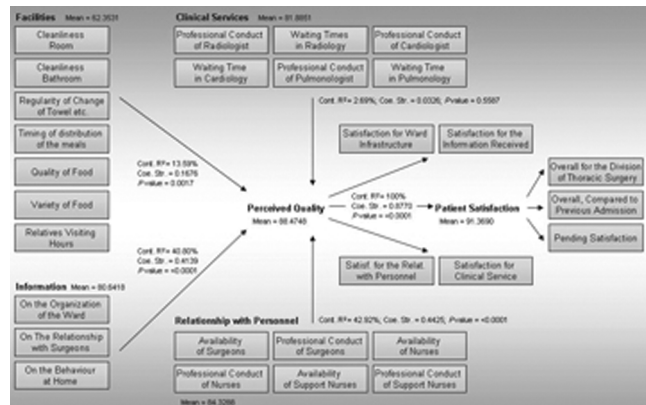
G. Rocco¹, C. Lauro², N. Lauro⁴, M. Sarnelli¹, G. Olivieri³, S. Gatti³, A. La Rocca¹, A. Renzi¹

¹Department of Thoracic Surgery and Oncology, National Cancer Institute, Pascale Foundation, Naples, Italy; ²Department of Mathematics and Statistics, Federico II University, Naples, Italy; ³Department of Health Informatics, National Cancer Institute, Pascale Foundation, Naples, Italy; ⁴IRCSIA Institute for Research and Certification Through Applied Statistics and Informatics, Naples, Italy

Objective: Patient satisfaction can be measured by criteria inspired by currently available marketing research methods. Among the latter, qualitative methods can be performed on limited population samples and be based on latent variables, i.e. variables that are not directly observed but deduced from mathematical analysis (i.e. quality of life). Qualitative research methods include the Partial Least Squares (PLS) path modelling aimed at defining optimal linear relations among latent variables in order to assemble the best set of predictions.

Methods: In the February-May 2007 period, 73 patient discharged from the Division of Thoracic Surgery of the National Cancer Institute at Naples underwent an adaptation of the PLS path modelling by accepting to file an itemized questionnaire on 26 different aspects of hospitalization. The sampled population represented about 30% of all patients operated by a single surgeon and about 21% of all patients admitted to a 12-bed thoracic surgical ward in 2007. Five categories of performance were identified, i.e. Quality of the Facilities, Quality and clarity of provided Information, Quality of relationship with Surgeons and Nurses, Quality of the received Care, Overall Patient Satisfaction.

Results: During the analyzed period, the overall Patient Satisfaction reached 91% (±15). The mean scores were 62% (±33), 80% (±28), 84% (±21), 81% (±19), 88% (±15) for ward facilities, information provided, relationship with personnel, clinical services, and, perceived quality, respectively. In addition, overall perceived quality, relationship with personnel and the provision of information were the variables with greatest positive impact on patient satisfaction. Conversely, waiting times for radiological procedures, quality of meals and duration of visiting hours adversely affected the level of satisfaction (see Fig. 1).



Conclusions: In the setting of a thorough audit of current clinical practice, PLS path modelling may represent another valuable tool to measure quality in the setting of managed health care since it allows for the identification of areas where the service can be improved.

Session 2 - Interesting Cases (Mixed)

Monday, 9 June 2008

11:00-11:30

009-C

MULTIDISCIPLINARY MANAGEMENT OF A PATIENT WITH LIFE-THREATENING IMPENDING PARADOXICAL EMBOLUS AND ACUTE PULMONARY EMBOLI SECONDARY TO A GIANT FIBROID

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¹Papworth Hospital NHS Foundation Trust, Cambridge, UK; ²Addenbrookes Hospital NHS Trust, Cambridge, UK

Objective: Concomitant life threatening impending paradoxical embolus and multiple acute pulmonary emboli (PE) is extremely rare. We described a case that was caught 'red handed' and successfully treated by a multidisciplinary team approach.

Methods: A 47-year-old female who had previously been fit presented to her local hospital following an episode of dyspnoea and syncope. She had



Embolus caught red handed.

been bed-bound for one week following an ankle injury. A chest CT revealed multiple PE and the presence of soft tissue masses in both the right and left atria. She was transferred to our hospital for further management. Echocardiography showed a 9 cm long sausage-shaped mass in the right atrium, traversing through a patent foramen ovale (PFO) into the left atrium. Whole-body CT discovered an unexpected finding of a 23×13×12 cm giant uterine fibroid compressing both iliac veins with extensive thrombi in the right iliac and lower limb veins. Due to the potential risk of either a fatal PE or stroke from embolisation of the atrial clot, urgent operative intervention was indicated. During surgery, the atrial clot was removed intact, pulmonary embolectomy was performed removing a large amount of PE, all four cardiac chambers were carefully inspected to ensure there was no other clot, the IVC was also inspected under a brief episode of hypothermic circulatory arrest, and finally the PFO was closed. After reversal of heparin, an IVC filter was placed by an interventional radiologist, and an ovarian-sparing hysterectomy via a laparotomy was then performed by two gynaecologists.

Results: The entire operation was 7.5 h long. She made a good postoperative recovery, was discharged eight days following surgery and has remained well at 12-month follow-up.

Conclusions: This report not only highlights a complex and interesting clinical scenario, but also the importance of a structured, logical and multidisciplinary approach to a complicated case to achieve a successful outcome.

010-C

ECTOPIC THYROID ADENOMA OF THE TRACHEA

I. Cordos, C. Paleru, C. Bolca

National Institute of Pneumology, Marius Nasta, Bucharest, Romania

Objective: Ectopic thyroid is any thyroid tissue not located in its normal anatomic situation. Intralaryngotracheal thyroid tissue is a rare clinical condition and represents a problem of diagnosis and management. The controversy about the genesis of this tumours remains.

Methods: We present the case of a 41-year-old woman presented with a 2-year history of an endotracheal tumor, dyspnea, wheezing and small hemoptysis. The tumor had rich vascularisation, was implanted in the first two tracheal cartilages, with a 2 cm diameter and it was bleeding very easy making the biopsy impossible. **Diagnosis:** carcinoid tumor, cystic adenoid carcinoma, Benign tumor. We performed cryotracheal resection with primary anastomosis.

Results: The patient recovered with no complications. Histopathological examination - ectopic thyroid adenoma of the trachea. Three year follow-up: no recurrence, normal bronchoscopic aspects.

Conclusions: Intratracheal thyroid is a rare cause of upper airway obstruction. The obstruction may be true ectopic thyroid tissue or may be caused by invasion of the trachea by a malignant process. Intralaryngotracheal thyroid is a rare clinical condition with only about 125 cases described so far in the literature

011-C

AN UNUSUAL CASE OF THORACIC CALCIFYING FIBROUS PSEUDOTUMOR

A. Mazzeo, A. Bobbio, L. Ampollini, P. Carbognani, M. Rusca

University of Parma, Parma, Italy

Objective: Calcifying fibrous pseudotumor is a rare benign tumour occasionally encountered in the thoracic cavity. We herein illustrate an unusual case of calcifying fibrous pseudotumor located in the apex of the left thoracic cavity, that was found intra-operatively circumferentially surrounding the left subclavian artery.

Methods: A 28-year-old healthy woman came to us with a history of asymptomatic calcified mass of the left thoracic apex, occasionally discovered on a chest X-ray 14 years previously. In the past the patient had always refused any diagnostic procedure. A recent chest X-ray showed a wide shadow of the left superior mediastinum and a thoracic CT-scan found a well-defined, partially calcified, solid mass of 12 cm in maximum diameter, entirely occupying the left thoracic apex and lining the left mediastinal structures. The mass had doubled in size since the initial diagnosis. Surgical removal was proposed.

Results: An emiclamshell approach with section of the first cartilage and of costo-clavicular ligament showed the presence of a single calcified mass in continuity with the arch of the first rib; the left subclavian artery was found to be circumferentially entrapped by the tumour. After clamping of the left subclavian artery, an en bloc resection of the tumor including the first rib and the intratumoral arterial segment was performed. Arterial

reconstruction was achieved with a saphenous vein graft. The postoperative course was marked by a transient neurological motor-sensitive deficit of the left arm. The histopathologic examination showed a fibrous tumor, measuring 11.5×7.5×5.5 cm, containing rare spindle cells, lymphocytes infiltrates and psammomatous calcification, consistent with a calcifying fibrous pseudotumor. Eighteen months later the patient is asymptomatic without tumour recurrence.

Conclusions: Calcifying fibrous pseudotumor is occasionally encountered in the thoracic cavity; we report a challenging case of a calcifying fibrous pseudo-tumor, circumferentially entrapping the subclavian artery and necessitating arterial resection reconstruction for its removal.

012-C

'TO STENT OR NOT TO STENT?', THAT IS THE QUESTION

A. Menon, A. Sachithanandan, R. Dhillon

Birmingham Children's Hospital, Birmingham, UK

Objective: Young children with airway obstruction leading to ventilator dependency present a significant clinical challenge with uncertain outcome. We discuss the advantages and disadvantages of paediatric tracheobronchial stenting.

Methods: A two month old ventilator dependant infant presented with left lung collapse due to intermittent extrinsic left main bronchus compression secondary to a large suspected left ventricular rhabdomyoma. The risk of tumour haemorrhage and access precluded safe biopsy. Bronchoscopy showed narrowing of the left main bronchus through which the scope could be passed. Surgery was not feasible due to the site and size of the mass.

Results: The natural history of cardiac rhabdomyoma is one of spontaneous regression especially at early age presentation. This infant was electively ventilated for a month to allow for tumour regression. Surveillance bronchoscopy will be performed with a view to stent insertion.

Conclusions: Tracheobronchial stenting is a potential treatment option in ventilator dependant children with extrinsic airway compression. Stent related complications include migration, in-stent granulation and difficulty of future manipulation and removal. An initial conservative approach may be useful especially in dealing with benign extrinsic airway compression.

013-C

DISCONNECTION OF FISTULA BETWEEN A TRACHEA AND AN ARTIFICIAL ESOPHAGUS WITH REPEATED ESOPHAGOPLASTY WITH COLON GRAFT USING

V.D. Parshin, D.V. Ruchkin, D.V. Bazarov, M.A. Vyjygina, K.A. Abdumuradov, S.V. Golovinsky

National Research Centre of Surgery, Russian Academy of Medical Sciences, Moscow, Russian Federation

Objective: An internal respiratory fistula is rare disease of an intrathoracic artificial esophagus. Such pathological fistula can be consequence of iatrogenic damages of a transplant or perforation of a tumor recurrence.

Methods: This case report represents 54-year-old male patient with complaints on cough during feeding, the general weakness, dizziness, cachexy, moderately expressed anemia and hypoproteinemia. In 2002 patient have undergone VATS esophagus resection with one-stage subtotal gastric esophago-plasty in occasion of epidermoid cancer. In the preoperative period he had 36 Gr radiotherapy. In long-term postoperative period he had several dilatation of cervical anastomosis. In May, 2007 cough appeared during feeding and a fistula between a trachea and an artificial esophagus was revealed. X-ray and endoscopic methods revealed pathological fistula was found with size 3 sm in middle third of gastric tube through which contrast came in trachea and bronchi. Biopsy did not reveal malignancy. During operation fistula size was found 5 cm, it occupied all membrane part of a trachea. Walls of a gastric tube in a zone of fistula were atrophied with signs of degradation. Therefore fistula was dissected, defect in a trachea was sew up having fragments of gastric tube which have remained on tracheal walls. Then was performed a subtotal resection of a gastric tube. Antiperistaltic transplant from the left colon was prepared with median colic artery pedicle. Side-to-side colonoduodenostomosis was created. End-to-end esophagocolono-anastomosis was created in the neck.

Results: A feeding through a mouth have begun for eight day. He has good quality of life 11 months post operation.

Conclusions: Thus, dissociation of fistula between trachea and artificial esophagus with one-stage colon reesophagoplasty has allowed the patient to eat through a mouth and to provide high quality of a life. Such operations should be performs in clinics having experience of reconstructive operations on a trachea and on a esophagus.

014-C

PRIMARY SYNOVIAL SARCOMA OF THE LUNG PRESENTATION OF 2 RARE CASES AND REVIEW OF THE LITERATURE

A. Olcmen, M.Z. Gunluoglu, H.V. Kara, B. Medetoglu, A. Demir, N. Buyukpinarbasili, S.I. Dincer

Yedikule Teaching Hospital for Chest Diseases and Thoracic Surgery, Department of Thoracic Surgery, Istanbul, Turkey

Objective: Synovial sarcomas consist 14% of the soft tissue sarcomas, they have an aggressive course. Primarily lung localized synovial sarcomas are quite rare and consist the <0.1% of all lung carcinomas. We operated two primarily synovial sarcoma of the lung in the past three years in our institution. Methods: Case 1: 50-year-old male patient applied with right back pain. In the radiological investigation a mass filling the right hemithorax was diagnosed. Even due to repeated invasive samplings no tissue diagnosis

was achieved. Explorative toracotomy showed an invasively characterized tumoural lesion with high tendency for hemorrhage. We performed right pneumonectomy and chest wall resection. After the discharge he went on a adjuvant chemoradiotherapy. In the post operative 2nd month the patient developed ampiyema on the right hemithorax. In the postoperative 12th month patient died. Case 2: Nineteen year male patient had a left sided lesion in a routine check up. Bronchoscopically there was no endobronchial lesion. By the transbronchial biopsies even with the high suspicion of malignancy a definitive diagnosis could not be achieved. The patient had left torachotomy with left lower lobectomy. His follow-up was uneventful. He had adjuvant chemotherapy. He is healthy without any problem in the post operative 12th month.

Results: Postoperative histopathologic examination there was EMA and pancytokeratin positivity which supported the diagnosis as biphasic synovial sarcoma. In the screening of the whole body no other possible focus of malignancy could be diagnosed so they were decided as primarily synovial sarcoma of the lung.

Conclusions: Primarily synovial sarcoma of the lung are seen very rarely. In the literature only a few cases were demonstrated. The aggressive course of these tumours bring the question of role of surgery in the treatment. The effect of surgical excision on the survival can be cleared by increased number of patients in prolonged follow-up period.

Session 3 - Pulmonary Neoplastic Monday, 9 June 2008 14:00-15:30

015-O

DUAL TIME POINT F-18 FDG PET IN DISTINGUISHING BETWEEN PRIMARY AND METASTATIC LUNG ADENOCARCINOMA

H.K. Kim, S. Kim, S.Y. Lee, K.H. In, Y.H. Choi, K.T. Kim
Korea University Medical Center, Seoul, South Korea

Objective: The role of a delayed FDG-PET scan in lung lesion has not been established. We prospectively investigated whether the dual-phase FDG-PET was useful for the differentiation between primary and metastatic adenocarcinoma of the lung, and determined the best cut-off value.

Methods: Eighty-seven consecutive patients (male 54, female 33, age 59.68 ± 8.2 years) with pulmonary adenocarcinoma underwent dual-phase FDG-PET. Maximum SUV at 1 h (SUV1) and 2 h (SUV 2) following the injection of FDG were measured, and the retention index (RI) was calculated by dividing the difference between SUV2 and SUV1 by SUV1 ($RI = (SUV2 - SUV1) / SUV \times 100\%$).

Results: Forty-nine patients were histologically confirmed as primary adenocarcinoma of the lung (PA) and 38 patients as metastatic adenocarcinoma (MA) from colorectal cancer ($n=19$), gastric cancer ($n=5$), breast cancer ($n=7$), pancreatic cancer ($n=3$), unknown origin ($n=4$). The SUV1, SUV2, and RI of MA were significantly higher than those of the PA (SUV1, 5.3 ± 3.61 vs. 8.7 ± 3.67 ; SUV2, 6.3 ± 3.91 vs. 12.1 ± 4.69 , $P < 0.05$; RI, 22.3 ± 16.89 vs. 42.4 ± 17.81 , $P < 0.05$). The AUC values for SUV1, SUV2 and RI were 0.77 (95% confidence interval [CI], 0.67-0.86), 0.83 (95% CI, 0.74-0.90), and 0.82 (95% CI, 0.72-0.90), respectively. The AUC value of SUV2 was significantly higher than those of SUV1 and RI (SUV1 vs. SUV2, $P=0.002$; SUV1 vs. RI, $P=0.406$; SUV2 vs. RI, $P=0.866$). The best cut off value of SUV1, SUV2 and RI were 6.0, 8.1 and 22.5.

Conclusions: Dual-phase F-18 FDG PET using a combination of early and delayed image was shown to be useful in differentiating metastatic adenocarcinoma from primary adenocarcinoma in lung cancer.

016-O

THE ACCURACY OF 18F-FLUORODEOXYGLUCOSE POSITRON EMISSION TOMOGRAPHY IN THE EVALUATION OF METASTATIC PULMONARY NODULES

D. Fortes, M. Allen, C. Deschamps, F. Nichols, S. Cassivi, D. Wigle, S. Robert Mayo Clinic, Rochester, US

Objective: Pulmonary metastasectomy is beneficial in select patients. The sensitivity of 18F-fluorodeoxyglucose positron emission tomography (FDG-PET) for pulmonary metastasis is unknown. The aims of the study were to determine the accuracy of FDG-PET in detecting pulmonary metastasis and identify factors affecting sensitivity.

Methods: All patients undergoing metastasectomy from September 2002 through December 2006 who had both chest computed tomography (CT) and FDG-PET scans or a fused CT/FDG-PET within six weeks prior to surgery were reviewed. Univariate and multivariate analysis were performed to determine predictors of positivity.

Results: There were 84 patients (41 men, 43 women) who had 105 resections. Median age was 61 years (range, 32-87). One hundred and fifty-six nodules were resected in total; 47 patients had one nodule removed and 37 had multiple nodules resected. Histology was adenocarcinoma in 94 nodules, sarcoma in 18, squamous cell carcinoma in 15, renal cell carcinoma in 7 and other in 22. At least one nodule was FDG-PET positive in 68 patients (80.9%). True positive FDG-PET was found in 104 nodules (66.6%) while 52 were false negative (33.3%). Multivariate analysis revealed tumor diameter and grade correlated with increasing accuracy of FDG-PET.

Conclusions: FDG-PET is only positive in one third of metastatic pulmonary nodules. Nodule size and grade affect the accuracy of FDG-PET for metastatic pulmonary nodules. FDG-PET is not a sensitive test in the evaluation of patients considered for pulmonary metastasectomy. A negative FDG-PET should not be used to rule out metastatic disease or consideration for a pulmonary metastasectomy.

017-O

THE SIGNIFICANCE OF SUVMAX IN PATIENTS WITH STAGE I PULMONARY ADENOCARCINOMA

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Objective: Positron emission tomography (PET) has proven to be an invaluable tool for the diagnosing and staging non-small cell lung cancer. We analyzed the relationship between the preoperative maximum standardized uptake values (SUV_{max}) of the mass and the recurrence rates in patients with stage I pulmonary adenocarcinoma.

Methods: One hundred and seven patients with stage I pulmonary adenocarcinoma who underwent curative resection between September 2003 and June 2007 were included in this study. All of the patients had PET scans before surgery; the SUV_{max} of the mass and the recurrences until January 2008 were analyzed retrospectively.

Results: The overall recurrence rate was 15% (16/107). Forty-nine patients were in stage Ia, and 58 were in stage Ib. The patients were divided in four groups according to the value of SUV_{max} (< 2.0 as Group 1, $2.0-4.0$ as Group 2, $4.0-6.0$ as Group 3, over than 6.0 as Group 4). Fifty patients were in Group 1, and none showed recurrence (0%). Among 27 patients in Group 2, four experienced recurrence (15%). Among 15 patients in Group 3, six had recurrence (27%). Among 15 patients in Group 4, eight had recurrence (53%) ($P < 0.01$). The mean SUV_{max} of the 74 patients with mass < 3 cm was 2.2 ± 2.37 . Among these patients, patients with < 2.0 of SUV_{max} showed lower recurrence rates (0% vs. 19%, $P=0.002$). Thirty-three patients had a mass size with 3 cm or larger, whose mean SUV_{max} was 5.3 ± 3.88 . Among these patients, $SUV_{max} < 4.0$ had significant correlation with lower recurrence rates (13% vs. 50%, $P=0.01$).

Conclusions: We noticed that the patients with higher preoperative SUV_{max} had higher recurrence rates. It may be thus induced that even among stage I adenocarcinoma patients, those who are expected to have a higher recurrence rate judging by the size and SUV_{max} of the mass, require a more attentive observation after curative resection.

018-O

MID-TERM RESULTS AND FACTORS FOR SURVIVAL IN TRIMODALITY THERAPY FOR LOCALLY ADVANCED STAGE III LUNG CANCER

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Objective: In UICC stage III lung cancer there is still controversial discussion which therapy might be the best. Surgery alone provides a 5-year-survival of about 20% and competes with multimodal treatments. We present our retrospective results with a single institution multimodal treatment protocol.

Methods: Between February 1999 and May 2006, 55 patients with histologically proven N2 or N3 stage III disease were treated with four cycles polychemotherapy (Paclitaxel/Carboplatin), followed by hyperfractionated radiation with 45 Gy targeting at primary tumor, mediastinum, and brain (if requested by patient) and two cycles of concurrent chemotherapy. Afterwards surgical resection within 40 days (mean) was done. We analysed survival (Kaplan-Meier) and risk-factors (UICC-downstaging, ypN0, N-downstaging, T-downstaging, regression-junker-score and histologic type) using log-rank-test.

Results: Twenty-six lobectomies, 26 pneumectomies and 3 bilobectomies were done for R0 resection in all patients. UICC-downstaging was reached in 40 patients, T-downstaging in 44, N-downstaging in 38 and ypN0 in 28 patients. Mean postoperative stay was 21 days (range 5-114). Perioperative 30/60/90/120-days mortality was 1.8%/5.5%/5.5%/5.5%. Histologic type were 27 squamous-cell-carcinomas, 22 adenocarcinomas, 2 giant-cell-carcinomas, and 4 solid-cell-carcinomas. Regression-junker-score were III/IIb/IIa/I in 19/17/18/1 patients. Overall mean survival (Kaplan-Meier) was 43 Months (95% CI 35-52) with an estimated 5-year-survival of 49%. While T-downstaging and regression-score of IIb or higher did not reach significant level for survival ($P=0.072/P=0.072$), N-downstaging ($P=0.04$), ypN0 ($P=0.014$) and UICC-downstaging ($P=0.001$) were significant factors. The latter two with an currently estimated 5-year-survival of 63% and 65% respectively. Histological type of cancer (squamous-cell-carcinoma/adenocarcinoma) had no statistical influence on survival ($P=0.484/P=0.162$).

Conclusions: Neoadjuvant treatment of stage III lung cancer results in a better survival than known results of surgery alone. If UICC-downstaging or ypN0 is reached, 5-year-survival can be almost tripled up to 65%. In experienced centers no exceeding mortality rate is observed and Patients with stage III disease should be offered an aggressive multimodal treatment.

019-O

BRONCHOPLASTIC PROCEDURES VS. PNEUMONECTOMY AFTER INDUCTION CHEMORADIOTHERAPY FOR STAGE IIIA/IIIB NSCLC: A COMPARATIVE ANALYSIS OF MORBIDITY, MORTALITY, SURVIVAL AND RECURRENCES

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Objective: Whereas a possible survival improvement related to induction treatment before surgery was suggested, several studies highlighted postoperative risks with increase of morbidity and mortality. Concurrent application of chemotherapy and radiation was considerably more toxic and recent studies have shown however, that the extent of surgery determines postoperative mortality and survival. This study is a retrospective comparative analysis of short and long-term survival between bronchoplastic procedures and pneumonectomy for locally advanced stage IIIA/IIIB disease.

Methods: From 1998 to 2007, 477 patients with NSCLC IIIA/IIIB-disease underwent a lung resection after a multimodality protocol including three courses chemotherapy with cisplatin/etoposide or cisplatin/paclitaxel, followed by one course cisplatin/etoposide and hyperfractionated, accelerated radiotherapy of the primary tumor and the mediastinal nodes with 45 Gy. Resections included 141 pneumonectomies and 55 sleeve-lobectomies. There are 136 males and 60 females, age 56.2±9.4 (40-72).

Results: The 90-days mortality rates amounted to 4.2% for pneumonectomies (6/141) and 3.6% for sleeve lobectomies (2/55) while postoperative morbidity ran up to 39.7% for pneumonectomies (56/141) and 25.5% for sleeve lobectomies (14/55). The five year survival rates were 28% after pneumonectomy and 32% after sleeve lobectomy, disease relapses occurred in 35 patients after sleeve lobectomy (62%) and 104 patients after pneumonectomy (74%).

Conclusions: Sleeve lobectomy is feasible in patients after induction chemoradiation in NSCLC IIIA/IIIB disease with significantly less morbidity compared to pneumonectomy. There are not differences in the mortality, long-term survival and sites of recurrences between the two surgical procedures.

020-O

ADJUVANT ACTIVE VACCINATION WITH IG101 AFTER RADICAL LUNG CANCER RESECTION IN STAGE IB-III A - A PROSPECTIVE RANDOMIZED, DOUBLE-BLIND, MULTICENTER STUDY

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Objective: Systemic relapse is the most common cause of death after radical resection of NSCLC. Adjuvant chemotherapy is of limited value and can cause substantial complications. IG101 is a murine monoclonal antibody binding to Ep-Cam-Antigen presented by most of lung cancer cells. Active vaccination should be able to lower the incidence of systemic relapse without relevant complications.

Methods: Between November 2001 and April 2005, 762 patients were randomly assigned for active adjuvant vaccination in 26 European centers. Two weeks after radical NSCLC resection in stage Ib-IIIa, IG101 or placebo was applied subcutaneously on day 1, 15, 29 and every three month. No other preoperative or postoperative systemic treatment was permitted. Primary endpoint is relapse free survival, secondary endpoint consist of tolerability, immunogenicity, overall survival and quality of life (EORTC). The study ends 24 months after enrollment of the last patient (04/07).

Results: Seventy-nine percent of the patients were men, median age was 61 years. Squamous cell carcinoma (57%) was predominant for adenocarcinoma (32%). Distribution of stages is as follows: Ib 21%, II 47%, IIIa 32%. The two year relapse free survival were 52.6% in the Placebo- und 54.7% in the IG101-group (P=0.79). The overall survival for two years were 67.3% (Placebo) and 59.7% (IG101, P=0.07), respectively.

Conclusions: Adjuvant active vaccination with IG101 in lung cancer patients is well tolerated and feasible. Data analysis reveals no oncological effect of this type of systemic adjuvant treatment.

Session 4 - Young Investigator Award (Mixed)

Monday, 9 June 2008

14:00-15:30

021-F

REDUCED RECURRENCE OF MALIGNANT PLEURAL MESOTHELIOMA AFTER IMMUNO-CHEMOTHERAPY

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Objective: To assess the effect of immuno-chemotherapy on the extent of local tumour recurrence in an established rat model of malignant pleural mesothelioma (MPM).

Methods: Six days after subpleural inoculation of a syngeneic MPM cell line (IL-45), a tumour nodule was resected together with extra-pleural pneumonectomy and animals randomized into four treatments groups: control (n=6), 500 µg CpG-ODN (Cytosine-phosphate-guanosine-oligodeoxynucleotide) (n=6), Cisplatin-Vivostat[®] (n=6), Cisplatin-Vivostat[®]+500 µg CpG-ODN (n=6). Primary endpoint was the volume of tumour recurrence six days after treatment. Secondary endpoints were the SRY-gene (sex-determining-region Y) expression for quantification of the ratio host/tumour cells in the local recurrence and cytokines expression profile in the tumour tissue by qPCR. Treatment-related toxicity was assessed by repeated blood samples.

Results: The volume of tumour recurrence was significantly reduced from 610 mm³ in the control group to 11.7 mm³ in the Cisplatin-Vivostat[®] group (P=0.005) and to 21.8 mm³ in the Cisplatin-Vivostat[®]+CpG group (P=0.003). The determination of SRY gene by qPCR-technique showed a higher ratio host/tumour cells in the Cisplatin-Vivostat[®]+CpG-ODN group (45/55%) compared to the Cisplatin-Vivostat[®] group (27/73%). Pro-inflammatory cytokines (IFN-γ, IL-6, IL-12) were increased after treatment with Cisplatin-Vivostat[®]+CpG group. No significant treatment-related toxicity was observed.

Conclusions: Adjuvant treatment with chemo- or chemo-immunotherapy leads to significant reduction of mesothelioma recurrence after surgery in this aggressive tumour rat model. The additional effect of immunotherapy has been observed in the recruitment of inflammatory cells at the site of tumour growth and concomitant cytokines secretion.

022-F

THERAPEUTIC SURGERY FOR NON-EPITHELIAL MALIGNANT PLEURAL MESOTHELIOMA (MPM)? IS IT REALLY WORTHWHILE?

D. Trousse, A. Nakas, G. Cardillo, A.M. Ucar, S. Muller, D.A. Waller
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Objective: There is no surgical management consensus for non-epithelial MPM. We have performed a range of procedures for this disease and aimed to formulate a coherent, evidence-based strategy.

Methods: From a prospective surgical database of 300 patients we identified 88 (79 M:9 F, median age 60 years) with biphasic cell type in 68 and sarcomatoid in 20. Radical excision was performed in 45 patients (33 EPP: 12 radical pleurectomy/decortication) and 43 underwent palliative debulking (23 by thoracotomy and 20 VATS). We calculated survival and factors predicting good outcome.

Results: Overall 30 and 90 day mortality was 2.2% and 15.9%, respectively. Survival was significantly shorter for sarcomatoid than biphasic cell type. Univariate analysis identified: sarcomatoid MPM; non-radical surgery; anaemia and single modality treatment to be associated with a poor outcome. On multivariate analysis only the use of postoperative systemic chemotherapy was an independent prognostic indicator (P=0.012, HR 4.6). The extent of surgery had no bearing on outcome.

Conclusions: In cases of non-epithelial MPM the inherently poor prognosis does not justify any more than surgery for symptom control.

Survival table

Survival	% at 1 year	% at 2 years	Median (months)	P-value
Biphasic	39.6	11.1	10	<0.001
Sarcomatoid	3.7	0	5	

O23-F

STAGING VALUE OF EXTENDED CERVICAL MEDIASTINOSCOPY FOR BRONCHOGENIC CARCINOMA OF THE LEFT LUNG

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Objective: To evaluate the technical feasibility and the sensitivity, specificity and accuracy of extended cervical mediastinoscopy (ECM) in the staging of bronchogenic carcinoma (BC) of the left lung.

Methods: From 1998 to 2003, 89 patients underwent routine ECM for staging of BC of the left lung. In 2004, positron emission tomography (PET) was included in our staging protocol and ECM was reserved for those with positive mediastinal or hilar PET images, large lymph nodes on CT-scan and in central tumors. From 2004 to 2007 we performed selective ECM in 67 patients. ECM was considered positive when metastatic nodes or tumor involvement directly in the subaortic or anterior mediastinal regions was confirmed pathologically. One hundred and forty-three patients with negative ECM underwent subsequent thoracotomy for tumor resection and systematic nodal dissection. Pathological findings were reviewed and staging values were calculated.

Results: One hundred and fifty-six patients underwent ECM. In 13, ECM was positive and thoracotomy was contraindicated. The rest of the patients were operated. We performed 88 lobectomies, 34 pneumonectomies, 6 wedge resections, 13 exploratory thoracotomies and 2 parasternal mediastinotomies. Lymphadenectomy specimens showed tumour involvement of subaortic lymph nodes in eight patients (false negative). Complication rate was 2%: two cases of mediastinitis, one ventricular fibrillation, and one superficial surgical wound infection. Staging values are showed in the Table.

Conclusions: ECM is a safe and feasible staging technique that allows to rule out subaortic and anterior mediastinal nodal disease with high negative predictive value and accuracy, especially if it's performed selectively.

Staging values

	Routine-ECM (%)	Selective-ECM (%)
Sensitivity	45	75
Specificity	100	100
Positive predictive value	100	100
Negative predictive value	94	95
Accuracy	94.5	95.5

O24-F

IMPACT OF CHEST TUBE MILKING ON POSTOPERATIVE MORBIDITY AFTER THORACOTOMY: RESULTS OF A PROSPECTIVE, RANDOMIZED TRIAL

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Objective: In many centers of thoracic surgery, milking of chest tubes is performed to prevent them from blocking. The usefulness is discussed controversially. Therefore, we investigated the impact of postoperative chest tube milking on postoperative outcome in a prospective, randomized trial.

Methods: Within a period of 11 months, 145 patients undergoing pulmonary resection via thoracotomy were included. Two chest tubes were placed in all patients. Milking was applied to both chest tubes every 2 h within the first 48 h postoperatively and suction of 20 cm H₂O remained continuous for 48 h. Duration of chest tube drainage, quantity and quality of effusion or air leakage, co-morbidity, length of hospital stay and 30-day postoperative morbidity and mortality were analyzed. Furthermore, outcome was measured by assessment of chest radiographs at the time of discharge.

Results: Randomization resulted in milking of chest tubes of 71 and in observation without any manipulation in 66 patients. Twenty-one patients had to be excluded from further analysis due to aberrance from the study protocol ($n=11$), disconnected chest tubes ($n=7$) and re-operation for bleeding ($n=3$). The 30-days mortality rate was 0.7% in both groups and 30-day morbidity was 24.8% in the milking group and 26.2% in the observation group. Milking of chest tubes was not associated with a lower postoperative mortality or morbidity ($P=0.99$ and $P=0.67$, respectively; χ^2 -test). We observed a significant increase of postoperative pleural fluid drainage in the milking group ($P=0.04$; t -test), but there was no correlation between milking of chest tubes and duration of chest tube drainage, quality of effusion, air leakage or length of hospital stay.

Conclusions: Here we showed for the first time that postoperative chest tube milking is associated with a significant increase of pleural fluid drainage. Postoperative morbidity and mortality was not improved and therefore chest tube milking can not be recommended as a routine postoperative procedure.

O25-F

STEM CELLS AND BRONCHIAL STUMP HEALING

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Objective: Bronchopleural fistula is one of the most feared complications in Thoracic Surgery. We analyze the role of stem cells in the healing process of bronchial stump and in prevention of bronchial dehiscence.

Methods: Prospective, controlled and randomized experimental study. A left pneumonectomy is performed in 36 Wistar rats. Half of them receive stem cells in a trombine solution applied topically on the bronchial stump. In each group, seven rats are sacrificed on day 7 and 11 on day 21. We analyze macroscopic variables (rupture tension, fistula, intrapleural collections, perihilar pleura, adhesences, bronchial stump appearance) and microscopic variables (restitutio ad integrum, inflammation, infection, fibrosis, ulcers, macrophages, neovascularization and presence of stem cells in the bronchial stump). Statistical analysis is performed using SPSS v14.0.

Results: There were no fistula incidence in any group, neither air leaks from bronchial stump at a maximum pressure of 70 mbar. Day 7: The degree of adhesences favoured the group with stem cells ($P=0.04$). Stem cells could be found in the specimens (median 5 cells/camp, range 1-6) with morphological characteristics similar to fibroblasts, adipocytes and chondrocytes. Proliferation antigens (Ki 67) were expressed in 2.5% of those stem cells. Day 21: Adhesences degree also favoured stem cells group ($P=0.03$). Restitutio ad integrum were found in seven rats from the stem cells group and one from the control group ($P=0.01$). Stem cells group showed significantly less inflammation at this point of the healing process in every layer of the bronchial stump. ($P<0.02$). Stem cells were found in a median of 5 cells/camp (range 0-6) and 1% expressed proliferation antigens (Ki 67).

Conclusions: Stem cells topically instilled on a bronchial stump are able to migrate, reach the bronchial wall and participate in the healing process inducing less adhesences, less inflammatory response and a more perfect regeneration of the tissue.

O26-F

INCIDENCE, MANAGEMENT AND CLINICAL OUTCOMES OF PATIENTS WITH AIRWAY COMPLICATIONS FOLLOWING LUNG TRANSPLANTATION

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Objective: Airway complications (AC) remain a significant contributing factor of morbidity after lung transplantation (LT). The aim of this study was to identify risk factors for AC, and to review the outcomes after endoscopic and surgical treatment.

Methods: From 1993 to 2006, 255 patients underwent LT. Seven retransplants and 34 patients not surviving beyond seven days were excluded. The remaining patients were: 124 double LT, 85 single LT, 3 lobar LT and 2 liver-LT, comprising 343 bronchial anastomoses at risk. Donor lungs were flushed with either Eurocollins® or Perfadex®. Bronchial anastomoses were telescoped when needed. Donor and recipient variables were recorded and analyzed by univariate and multivariate tests to identify risk factors for AC, and to assess differences between both complicated and non-complicated groups.

Results: Twenty-seven patients presented AC (12.6%): 22 stenoses, 5 dehiscences, and 4 malacias, at 2.6 ± 1.7 month post-LT. Indications were 7 COPD, 3 AT deficiency, 12 CF ($P=0.007$), 4 pulmonary fibrosis, 1 bronchiectasis. AC were observed in 4 single and 23 double LT ($P=0.005$). Incidence of AC did not differ between telescoped and non-telescoped anastomoses. By univariate analysis, AC were more frequent in grafts preserved with Eurocollins ($P=0.033$), were associated with CMV disease ($P=0.027$) and with airway colonizations post-LT ($P=0.021$). Other donor and recipient variables did not differ between groups. By multivariate analysis, intubation longer than 72 h, double LT, and airway colonizations post-LT remained independently associated with AC. Survival did not differ between groups. Most of patients were successfully treated with endoscopic procedures; three required reoperation (lobectomy, pneumonectomy, retransplantation). AC related mortality was 1%.

Conclusions: The incidence of AC after LT is 12.6% with a related mortality of 1%, irrespective of the technique of bronchial anastomosis performed. Double LT, airway colonizations and prolonged intubation post-LT are associated with AC. Either endoscopic procedures or surgical therapy resolve these complications in most cases.

027-F

CHANGES OF CIRCULATING ENDOTHELIAL PROGENITOR CELLS (EPCs) IN SCLC AND NSCLC PATIENTS

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Objective: Endothelial progenitor cells (EPC) have just been described to be involved as vascular stem cells in angiogenesis also of solid tumors. The role of EPCs for the vascularization of small cell and non-small cell lung cancer (SCLC and NSCLC) is widely unknown. We correlated the concentration of circulating EPCs with tumor stage and disease progression in patients before and after surgery/(radio-) chemotherapy.

Methods: Thirty-six lung cancer patients and 15 healthy controls were recruited for the study. Quantification of EPCs in the mononuclear cell fraction (PBMC) was performed via four-colour FACS analysis using the expression of CD133, CD34, and vascular endothelial growth factor receptor (VEGFR2) as markers.

Results: A significant increase of EPC concentrations was found in all patients compared to healthy controls ($P < 0.01$). At follow-up measurements, levels of EPCs were found significantly higher in patients with tumor progression in comparison to patients with their disease controlled ($P < 0.01$). The change in EPC concentration between both assessments was significantly correlated with the time to the endpoint (progression or death, $P < 0.01$). Patients after curative surgery showed a decrease of $>50\%$ compared to the initial EPC measurement ($P < 0.01$). In contrast two patients after curative surgery went into progression or developed a second carcinoma with no decrease of EPCs in both cases.

Conclusions: In lung cancer patients, concentrations of circulating EPCs were linked to the stage and status of disease. Further work is required establish EPCs as a monitoring tool for the success of classical and/or targeted therapy. In the future measurement of EPCs could be useful for patient selection for adjuvant treatment regimens after curative surgery.

028-F

PROGNOSTIC FACTORS AND ANALYSIS OF PROTEIN S100A4 IN RESECTED PULMONARY METASTASES FROM RENAL CELL CARCINOMA

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Objective: In this study, we analyse our experience with pulmonary resection for metastases from renal cell carcinoma. The goals were to search for factors influencing prognosis and to investigate the presence and the prognostic value of protein S100A4 in the peritumoral cell infiltrate of lung metastases and corresponding primary renal tumours.

Methods: We identified 65 patients who underwent surgical resection between 1992-2007. Protein S100A4 expression was immunohistochemically examined in the peritumoral infiltrate of 64 lesions (32 lung metastases and the 32 corresponding primary renal cell carcinomas) using a polyclonal antibody against the protein.

Results: Overall 3-, 5-, 10-year survival rates were 58%, 46% and 25%, respectively. Univariate analysis revealed that radicality of the resection ($P = 0.0039$) and stratification into groups according to the International Registry of Lung Metastases classification ($P = 0.0137$) were prognostic factors. Multivariate analysis confirmed that the International Registry of Lung Metastases classification was a significant factor to predict prognosis ($P = 0.01$). All lung metastases and the corresponding primary carcinomas expressed protein S100A4. Eleven metastases (34%) had a weak expression and 21 (66%) a strong expression. Among the primary lesions, 12 (37.5%) had a weak expression and 20 (62.5%) a strong expression. Five-year survival rate for patients with strong expression of protein S100A4 in primary renal cell carcinoma was 33%, significantly lower than that of patients with weak expression (78%, $P = 0.05$).

Conclusions: Pulmonary resection in metastatic renal cell carcinoma is an effective treatment and results in long-term survival. Complete resection and stratification into groups according to the International Registry of Lung Metastases classification were prognostic factors. Immunohistochemical analysis revealed that overexpression of protein S100A4 in the peritumoral infiltrate of primary renal tumours was correlated with a poor prognosis. If confirmed in larger studies this finding could be used to schedule adjuvant treatments in patients undergoing nephrectomy for renal cell carcinoma.

029-F

QUALITY OF LIFE IN THE ELDERLY AFTER MAJOR LUNG RESECTION FOR LUNG CANCER

M. Salati, A. Brunelli, M. Refai, F. Xiume, L. Socci, L. Di Nunzio, A. Sabbatini
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Objective: To assess the residual Quality of Life (QoL) in elderly patients submitted to major lung resection for lung cancer.

Methods: Two hundred and seventy-three patients underwent major lung resection for lung cancer from July 2004 through August 2007. Of these, a total of 218 patients, 85 of whom were elderly (>70 years), had complete preoperative and postoperative (3 months) Quality of Life measures. QoL was assessed by the Short Form 36v2, which evaluates eight physical and mental health concepts and summary physical (PCS) and mental component scales (MCS) normalized to the general population. QoL scales were compared between elderly and younger patients, and within the elderly group, between high-risk (age >75 years, DLCO $<70\%$, ppoFEV1 or ppoDLCO $<40\%$, COPD, patients with coronary artery disease and pneumonectomy) and low-risk counterparts by the Mann-Whitney test. A significant level of 0.05 was selected.

Results: Although the elderly had lower preoperative SF36 PCS and Physical fitness, and higher preoperative SF36 MCS and Mental Health scales, the postoperative SF36 PCS (50.3 vs. 50, $P = 0.7$) and MCS (50.6 vs. 49, $P = 0.2$) and all SF36 domains did not differ compared to younger patients (Table). In the elderly, although five of the eight domains (either physical and mental) remained consistently below normal values (<50) compared to the general population, no significant differences were evident between high-risk and low-risk counterparts in terms of SF36 PCS and MCS at three months.

Conclusions: The information that residual QoL in elderly patients will be similar to the one experienced by younger and fitter individuals may help them in their decision to proceed with surgery, and increase referrals of elderly high-risk lung cancer patients to surgery. Future studies are needed to stratify the risk of poor residual quality of life in order to implement perioperative physical and psychological supportive programs.

Comparison between elderly and younger patients

Variables	Elderly	Young	P-value
Age	75	59.3	<0.0001
ASA	2.4	2.1	<0.0001
ECOG	0.7	0.3	<0.0001
Comorbidity index	2	1.3	0.0002
Stair climb height (m)	18.5	21.6	<0.0001
Preop SF36 PCS	50.6	53.2	0.03
Preop SF36 MCS	49.7	44.9	0.08
Postop SF36 PCS	50.3	50	0.7
Postop SF36 MCS	50.6	49	0.2

Session 5 - Pulmonary Non-Neoplastic

Monday, 9 June 2008

16:00-17:30

030-O

SHORT-TERM PERIOPERATIVE TREATMENT WITH AMBROXOL REDUCES PULMONARY COMPLICATIONS AND HOSPITAL COSTS AFTER PULMONARY LOBECTOMY. A RANDOMIZED TRIAL

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Objective: To assess in a randomized clinical trial the influence of perioperative short-term Ambroxol administration on postoperative complications, hospital stay and costs after pulmonary lobectomy for lung cancer.

Methods: The trial was designed and analysed according to CONSORT recommendations. Sample size was set to reach a statistical power of 90% to detect an expected difference in postoperative stay of at least two days. Patients gave their informed consent to participate in the study. One hundred forty consecutive patients undergoing lobectomy for lung cancer from April 2006 through November 2007 were randomised in two groups by simple unrestricted randomisation. Group A (70 patients): Ambroxol was administered by intravenous infusion in the context of the usual fluid therapy on the day of operation and on the first three postoperative days (1000 mg/day). Group B (70 patients): fluid therapy only without Ambroxol. Both participants and data manager analysing the outcome were blinded to group allocation. There was no drop-outs from both groups and no complications related to treatment. Groups were compared by the Mann-Whitney test for numeric variables, and by the χ^2 or the Fisher's exact test for categorical variables. All tests were two tailed with a significance level of 0.05.

Results: The two groups were well matched. Compared to group B, group A (Ambroxol) had a statistical significant reduction of postoperative pulmonary complications (4 vs. 13, 6% vs. 19%, $P=0.02$) and unplanned ICU admission/readmission (1 vs. 6, 1.4% vs. 8.6%, $P=0.1$). Moreover, the postoperative stay and costs were reduced by 2.5 days (5.6 vs. 8.1, $P=0.02$) and 2765 € (2499 € vs. 5264 €, $P=0.04$), respectively (Table). Two deaths occurred in group B.

Conclusions: Short-term perioperative treatment with Ambroxol improved early outcome after lobectomy. We recommend its systematic use to implement fast-tracking policies and cut postoperative costs.

Comparison between Group A and B

Variables	Group A (Ambroxol)	Group B (no Ambroxol)	P-value
Pulmonary complications	4 (6%)	13 (19%)	0.02
Cardiac complications	9 (13%)	7 (10%)	0.8
Total complications	9 (13%)	17 (27%)	0.03
Unplanned ICU admissions	1 (1.4%)	6 (8.6%)	0.1
Postop hospital stay (days)	5.6	8.1	0.02
Postop costs (€)	2499	5264	0.04

031-O

A PROSPECTIVE STUDY OF ANALGESIC QUALITY AFTER A THORACOTOMY: PARAVERTEBRAL BLOCK WITH ROPIVACAINE BEFORE AND AFTER RIB SPREADING

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Objective: Paravertebral block is an effective alternative to epidural analgesia in the management of post-thoracotomy pain. We decided to compare prospectively two groups of patients, one with the paravertebral catheter (PVC) inserted before rib spreading and the other before closing the thoracotomy, to determine if infusion of ropivacaine before rib spreading could decrease postoperative pain.

Methods: Prospective randomized study of 38 consecutive patients submitted to thoracotomy in two independent groups (anterior thoracotomy [AT] and posterolateral thoracotomy [PT]). They were randomized to have a PVC inserted before rib spreading (pre-RS-) or before closing the thoracotomy (post-RS). In each group (AT or PT) patients received an intraoperative bolus of 20 ml of ropivacaine 0.2% and postoperatively 15 ml every 6 h combined with methamizol (every 6 h). Subcutaneous meperidine was employed as rescue drug. The level of pain was measured with the Visual Analogic Scale (VAS) at 1, 6, 24, 48 and 72 h after surgery. It was also recorded the need of meperidine as rescue drug and secondary effects.

Results: We did not register secondary effects related to the PVC. Four patients (11%) needed meperidine as rescue drug (3 with ropivacaine pre-RS and 1 post-RS). Mean VAS values were the following: All the cases ($n=38$): 4.7, AT ($n=20$): 4.0, PT ($n=18$): 5.5, Pre-RS ($n=19$): 4.9, Post-RS ($n=19$): 4.6, AT-Pre-RS ($n=10$): 4.2, AT-Post-RS ($n=10$): 3.8, PT-Pre-RS ($n=9$): 5.6, PT-Post-RS ($n=9$): 5.4.

Conclusions: Post-thoracotomy analgesia combining paravertebral catheter and a non-steroidal anti-inflammatory drug is safe and effective. Patients with AT experienced less pain than those with PT (4.0 vs. 5.5); $P<0.01$. Paravertebral block with ropivacaine before rib spreading got similar VAS values than the block after rib spreading (4.9 vs. 4.6); $P>0.05$. The moment of the insertion of the PVC does not seem to affect the postoperative pain levels.

032-O

REDUCING AIRLEAKS IN LUNG VOLUME REDUCTION SURGERY: IS THERE A DIFFERENCE BETWEEN TWO DIFFERENT BUTTRESSES?

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Objective: The practice of lung volume reduction surgery (LVRS) continues to evolve. Air leak and cost-effectiveness remain major issues. We aimed to assess the clinical and financial impact of the introduction of a change in stapling techniques.

Methods: Unilateral video assisted LVRS was performed on 126 consecutive patients over a 10-year period. From a prospective database we compared the outcome for two cohorts in which two different types of buttressing material had been used: the initial group P [37 males and 22 females, median age 61 (range 39-73) years] using glutaraldehyde fixed bovine pericardial Peristrips (Synovis Life Technologies Inc, USA) and the latter group S [15 males and 8 females, median age 59 (range 43-72) years] using Gore Seamgard (WL Gore and Associates Inc, USA). Patients in whom a combination of materials had been used were excluded. There were no preoperative differences between the two groups in demographics, lung function, degree of dyspnea or arterial blood gases. Intraoperative and postoperative variables and an estimate of cost of consumables (staples/buttresses) were compared.

Results: The change in buttressing had no effect on operative time or hospital stay. There was an associated change in stapling practice with the use of longer cartridges. However, the cost of consumables was reduced, there were no re-operations for air leak and there was a trend towards reduction in the overall duration of air leak.

Conclusions: The perioperative cost-effectiveness of LVRS can be improved by technical modifications including the change of stapling practice and buttressing material.

Median (range)	Group P (n=59)	Group S (n=23)	P-value
Operative time (min)	70 (35-200)	75 (20-240)	0.74
Duration of air leak (days)	12 (2-49)	7 (1-72)	0.08
Infection rate	29%	17%	0.43
Reoperation for air leak	3.4%	0	0.92
Hospital stay (days)	15 (4-88)	12 (5-80)	0.12
45 mm staples (cartridges)	11 (4-20)	10 (3-18)	0.98
60 mm staples (cartridges)	4 (1-9)	5 (3-17)	0.04
Total cost of consumables per case	£4,459	£3,000	0.005

033-O

USEFULNESS OF HRCT-SCORE AS A GUIDE IN SELECTION OF THE OPTIMAL SITE FOR LUNG BIOPSY IN DIFFUSE PARENCHYMAL LUNG DISEASES

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Objective: The aim of the study was to evaluate the usefulness of HRCT-score (a semi-quantitative technique for categorizing distribution and types of parenchymal opacities) as a guide in selection of the optimal site for VTS lung biopsy in diffuse parenchymal lung diseases (DPLD).

Methods: Study group included 28 patients with nonhomogenous distribution in HRCT-score in whom diagnosis of DPLD was suspected, based on clinical, radiological, physiological and non-invasive techniques. The two different lung segments with the most and with the least extensive involvement estimated by HRCT-score were biopsied by VTS.

Results: Histopathologic diagnosis of idiopathic interstitial pneumonia (IIP) was made in 15 patients and granulomatous diseases (GD) were found in 13 patients. In GD group there was predominance of nodular opacities (OR=5.58) and in IIP group predominance of linear opacities ($P=0.05279$) and higher HRCT-score in lower lobes ($P<0.01$). In the whole group the probability of obtaining the histopathological diagnosis was higher when the biopsy was taken from the high HRCT-score site than for low HRCT-score site (OR=3.947). However, the OR was very high in IIP group only (OR=12.5), but not significant in the GD group (OR=1.0). Moreover in GD group the histopathological result did not correlate with the site of the biopsy (lower vs. upper lobe).

Conclusions: HRCT-score is useful in choosing the site of VTS lung biopsy in IIP but not in GD patients.

034-O

EXERCISE CAPACITY ASSESSMENT IN PATIENTS UNDERGOING LUNG RESECTION

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Objective: The value of preoperative functional evaluation, including exercise capacity assessment by a cardio-pulmonary exercise test for prediction of postoperative lung resection outcome, is examined.

Methods: In a prospective study over 24 months, all patients candidates for major lung resection underwent preoperative functional evaluation by means of pulmonary function test, diffusing lung capacity for carbon monoxide and cardio-pulmonary exercise test. Patients who had pneumonectomy were excluded, and the study population consisted of 73 patients who underwent lobectomy ($n=64$), bilobectomy ($n=5$) or segmentectomy ($n=4$). The postoperative morbidity and mortality record was collected. A pulmonary complication was defined as the occurrence of atelectasis requiring bronchoscopy, pneumonia or respiratory failure.

Results: A postoperative complicated outcome, including two deaths, was observed in 31 patients (42%) and mean preoperative DLCO of these patients was lower than that of patients with no postoperative complications ($P=0.012$). A pulmonary complication was scored in nineteen patients (26%) and mean preoperative FEV1, VO_{2max} and DLCO of these patients were found lower than that of patients with no pulmonary complication ($P=0.013$, $P=0.043$ and $P=0.069$, respectively). In identifying pulmonary complication, the receiving operative curve showed a wider area when VO_{2max} was expressed in ml/kg/min (0.076), compared to VO_{2max} expressed as percentage of the predicted value (0.062). In the case of preoperative VO_{2max} 20 ml/kg/min the negative predicting value was 91%. Logistic regression analysis showed FEV1 expressed as percentage of the predicted value to be an independent predictor of postoperative pulmonary complication. No identifiers were found in those sixteen patients (22%) who presented with postoperative atrial fibrillation.

Conclusions: Exercise capacity assessment prior to lung resection helps in identifying patients at risk of postoperative pulmonary complications; however, it does not seem to be an independent predictive factor of postoperative outcome.

035-O

IMPUTATION TECHNIQUES AND MODELING OF OUTCOMES FOR MAJOR LUNG RESECTION

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Objective: Modeling of operative risks associated with major lung resection is potentially inaccurate and inefficient because of incomplete observations for potential covariates. Missing values do not usually occur randomly, potentially introducing an important source of bias in modeling. The current study analyzes incomplete variables as potential predictors of outcomes after major lung resection using imputation techniques.

Methods: We analyzed major lung resection patients treated from 1980-2006 for predictors of pulmonary, cardiovascular, and overall complications, as well as mortality. Predictive variables were initially determined using classification and regression tree (CART) methods. Imputation models were developed and variables with missing values were multiply imputed. We fit a logistic regression model for each outcome using CART variables and any covariates that were of interest clinically. Subsequent non-parsimonious regression models incorporated all main effects and significant two-way interactions among the covariates.

Results: Of 1046 resected patients, serum albumin and diffusing capacity (DLCO%) had the largest number of missing values (32% and 13% missing, respectively). Models included 11 covariates for pulmonary complications ($p<0.05$ for DLCO%, albumin, performance status, and FEV1%), 20 covariates for cardiovascular complications ($P<0.05$ for DLCO%, year of operation, albumin, and FEV1%), 19 covariates for overall complications ($P<0.05$ for DLCO% and year of operation), and 15 covariates for death ($P<0.05$ for albumin, performance status, and extent of resection). Interactions between covariates contributed to the models for pulmonary and cardiovascular complications in five instances.

Conclusions: We identified serum albumin as a previously under-reported and strong predictor of pulmonary, cardiovascular, and fatal outcomes after major lung surgery. Use of imputation techniques for modeling surgical risks has potential value in identifying important predictive variables that may ordinarily be eliminated from analysis or not identified as predictors because of incomplete observations in clinical databases.

Session 6 - Innovative Techniques - Experimental**Monday, 9 June 2008****16:00-17:30**

036-F

THE LAPAROSCOPIC MOTOR POINT DIAPHRAGM PACING STIMULATION (DPS) SYSTEM: PROVIDING AND MAINTAINING NATURAL DIAPHRAGM VENTILATION

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Objective: Mechanical ventilation, although life-saving, involves significant pulmonary risks. This report outlines experience with the diaphragm pacing stimulation (DPS) system with ramifications for any patient on positive pressure ventilation.

Methods: Patients were entered into prospective FDA trials for spinal cord injured (SCI) patients on ventilators and amyotrophic lateral sclerosis (ALS or motor neuron disease) patients. They underwent outpatient laparoscopic diaphragm motor point mapping to identify the optimum site where stimulation will cause maximum diaphragm contraction. Two percutaneous intra-muscular electrodes were implanted in each hemi-diaphragm.

Results: Eighty-two patients were successfully implanted (39 SCI, 43 ALS) with total cumulative use of 120 years. DPS provided tidal volumes to free 97% of tetraplegics from ventilators. ALS results showed a decrease in the decline of forced vital capacity (2.4-0.9% per month) to provide a 24 month improvement in ventilator free survival. DPS use during simultaneous mechanical ventilation allowed a 21% decrease in peak airway pressure, 19% increase in respiratory compliance and a subsequent 24% increase in tidal volume. Additional findings of DPS use include: conversion of fast twitch glycolytic (IIB) to functional slow twitch oxidative muscle (I) fibers; increased diaphragm muscle thickness and a 60% reduction in secretions in SCI patients. In ALS patients the use of DPS at night overcomes centrally mediated sleep hypoventilation. In one patient with acute transverse myelitis even though the phrenic nerve was non-functional because of inflammation, DPS was able to provide ventilation. This would be similar to patients with phrenic nerve injury during chest procedures.

Conclusions: The DPS system is safe and effective. It should replace the ventilator for SCI patients and prolong natural ventilation of ALS patients. Prophylactic temporary placement during high risk thoracic procedures would decrease the complications from temporary phrenic nerve dysfunction post-operatively and decrease time on mechanical ventilation decreasing the risk of pneumonia.

037-F

C-JUN N TERMINAL KINASE INHIBITION DOES NOT DECREASE LUNG INJURY AFTER ISCHEMIA-REPERFUSION INJURY IN RODENTS

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Objective: Ischemia/reperfusion injury has been identified as the main cause of primary graft dysfunction in the first 72 h after lung transplantation. It has been demonstrated that c-jun N terminal kinase (JNK) activation plays a critical role in the pathogenesis of ischemia/reperfusion induced injury. We hypothesize that JNK inhibition may reduce ischemia/reperfusion injury after lung transplantation.

Methods: Twelve Fischer rats underwent clamping of the left pulmonary artery (PA) via left thoracotomy for 90 min followed by restoration of the pulmonary circulation for 160 min, with ($n=6$) and without ($n=6$) i.v. administration of a JNK inhibitor (XG-102, Xygen, Lausanne). At this time point, both lungs were harvested and underwent broncho-alveolar lavage (BAL) followed by histological assessment and intravascular neutrophil count in the lung assessed on H and E and MPO- stained slides on ten successive high power fields (HPF). Controls underwent either thoracotomy with dissection of the hilum but without PA clamping ($n=6$) or anaesthesia without thoracotomy ($n=6$) followed by harvesting of the lungs after 250 min.

Results: BAL revealed a higher amount of protein content ($P<0.05$), cellularity ($P<0.01$) and relative neutrophil content ($P<0.05$) after thoracotomy with and without PA clamping compared to controls without thoracotomy. The mean neutrophil count/HPF was higher after thoracotomy with and without PA clamping compared to controls without thoracotomy ($P<0.05$).

	No thoracotomy	Thoracotomy no PA clamping	Thoracotomy PA clamping	Thoracotomy PA clamping+ JNK inhibitor
BAL protein (mg/ml)	0.63±0.40	0.94±0.2	1.67±0.4*	1.68±0.5*
BAL cells×104/ml	54±22	190±104*	324±91*	251±112*
BAL neutrophils (%)	4±2	23±19*	24±12*	31±21*
Histology: mean neutrophils count/HPF	9.8±2.8	30.6±3.6*	34±5.4*	31.3±3.3*

The BAL profile and the mean neutrophilic count after ischemia-reperfusion were not significantly different in animals with and without JNK inhibitor pre-treatment.

Conclusions: Thoracotomy and hilar dissection resulted in lung injury per se which is further increased by ischemia-reperfusion. In this model, JNK inhibition was unable to prevent this essentially mechanical damage.

038-F

THE ROLE OF CD133 IN THE IDENTIFICATION AND CHARACTERIZATION OF TUMOUR INITIATING CELLS IN LUNG CANCER

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Objective: Stem cells are believed to be crucial players in tumor development. There is much interest in identifying those compartments that harbor stem cells involved in lung cancer, given the high incidence and recurrence rate of this disease. Brain, prostate and colon cancer initiating cells can be identified through the expression of CD133 marker which is expressed by normal primitive cells of hematopoietic, neural, endothelial and epithelial lineages. This study aimed at investigating the existence of a population of tumor initiating cells in non-small cell lung cancer (NSCLC).

Methods: Specimens of NSCLC obtained from 85 patients undergoing resection were analyzed. Two methods to isolate the tumor initiating cells were used: 1. Cytometric analysis to identify phenotypic cancer cell subsets. Double positive cells CD34 and CD326 (epithelial cell adhesion molecule) or double positive cells CD133 and CD326 were detected as distinctive of stem-progenitor cells; 2. By culture condition similar to the one used for human neural stem cells, we were able to form spheres with stem cell-like characteristics from stabilized cell lines of NSCLC: Calu 1 and LC31. Both cell lines were injected into NOD/SCID mice which were sacrificed at 60-90 days. On the tumors obtained from mice, the expression of the following antigens was analyzed by flow cytometry: CD133, CD34, CD44, CD24 CD29 CD31 and CD326.

Results: Only injected sites from spheres grew tumors phenotypically identical to the original ones. CD133 was expressed on 88%; CD34 on 83%, CD44 70%, CD29 57%. The cultured cells, grown as spheres (pneumospheres), efficiently form tumours in NOD/SCID mice in comparison to the adherent counterpart. Conclusions: Only spheres enriched with CD133 seemed to contain the cancer initiating cells of the same histotype as the original tumor.

039-F

COMPARATIVE EFFECT OF HYPERTHERMIA VS. HYPERTHERMIA-CISPLATINUM IN THE DEATH INDUCTION OF THE PLEURAL MESOTHELIAL CELL

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Objective: Determination of the response of the pleural mesothelial cell-apoptosis and necrosis- to the application of hyperthermia versus hyperthermia plus cisplatin in a murine model.

Methods: Design: 90 white mice, male sex, Swiss OF1 race, 40-50 g weight, aged six weeks. Anesthesia (sodium-pentobarbital 0.5 mg/100 g, pancuronium bromide 0.1 mg/100 g). Exposition of right pleural cavity. Pleural perfusion with physiologic solution buffered with phosphate (PBS 0.15M). Isolation of mesothelial cells and preservation at 4 °C. Cellular re-suspension in DMEM (Dulbecco's Modified Eagles Medium), supplemented with antibiotics (penicillin 100 U/ml, streptomycin 100 g/ml, gentamycin 50 g/ml and glutamine 2 mM). Average n° of cells by experiment: 20×106. Determinations: 1. Cell apoptosis using fosfatidil-anexin serine V-FICT. 2. Cell necrosis with vital stain using propidium iodide. Analysis of samples: FACScan and Cellquest program (Becton Dickinson). Experimental groups (n=6, 15 mice/per group): Mesothelial cells culture during 120 min under the following temperature (T) conditions with and without cisplatin (CP) (33.7 µg/ml): 37 °C, 40 °C and 42 °C. Statistical treatment: U Mann-Whitney and Kruskal-Wallis. Significant P<0.005.

Results: Percentage expression of cell apoptosis and necrosis: Table Results Although no significant statistical differences were reached an increase in the percentage of cellular apoptosis and necrosis was observed in the different temperature conditions, when adding cisplatin.

Conclusions: The temperature increase induces the production of apoptosis from 40 °C on pleural mesothelial cells. The synergic action of hyperthermia and cisplatin increases the percentage production of cellular apoptosis and necrosis.

040-F

PATIENT-DERIVED XENOGRAPTS OF NON-SMALL CELL LUNG CANCER: A PRECLINICAL MODEL TO EVALUATE ADJUVANT CHEMOTHERAPY?

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Objective: Recent trials have evaluated adjuvant chemotherapy in patients with Non Small Cell Lung Cancer (NSCLC). For stage IB to IIIA a significant improvement of treatment results for platin-based chemotherapy was shown, but only one of 20 treated patients has a benefit in disease-free and overall 5Y-survival. In the future the implementation of prognostic parameters, novel agents and individual selection may contribute to better treatment results in adjuvant therapy. Preclinical models are one way to study treatment innovations.

Methods: We have developed a novel lung cancer xenograft model. Fresh tumor material of patients with NSCLC was subcutaneously transplanted to immunodeficient mice shortly after surgical resection. Up to now 102 samples have been transplanted from which 25 passagable models could be generated. Fifty-four percent of the established xenograft lines were derived from squamous cell carcinomas and 22% from adenocarcinomas. It was demonstrated that the early murine passages (maximum 10) correlated with the original tumor regarding histology, the expression of the surface proteins E-cadherin, EpCAM, the cell proliferation marker Ki-67 and in gene profiling (Affymetrix).

Results: All xenograft models showed a wide variability in response to common chemotherapy, in good correlation with results of recent clinical studies. The analysis of the EGFR gene revealed five tumors with mutations, K-ras mutations were found in five xenografts mutations, in the p53 gene in 12 tumors. While none of the constitutive expression levels was related to therapeutic response, the EGFR protein was down-regulated after treatment with tyrosine kinase inhibitors in some of the sensitive xenografts but not in the resistant ones, identifying the ability for dynamic regulation as potential prediction marker.

Conclusions: In summary, we have available a panel of well characterized NSCLC xenografts correlating with the clinical situation and being able to identify biomarkers and their regulation after therapeutic interventions both at genetic and at protein level.

Temperature	Apoptosis			P	Necrosis			P
	T	T+CP	% Increase		T	T+CP	% Increase	
37 °C	2.90	7.86	271	0.347	16.81	23.49	139	0.251
40 °C	5.46	14.10	258	0.117	17.90	30.77	172	0.117
42 °C	6.27	15.05	240	0.347	15.59	25.82	166	0.117

041-F

MINIMALLY INVASIVE RADICAL LYMPHADENECTOMY FOR EARLY STAGE LUNG CARCINOMAB. Witte¹, S. Groß¹, M. Wolf¹, W. Neumeister², M. Huertgen¹¹Department of Thoracic Surgery, Katholisches Klinikum Koblenz, Koblenz, Germany; ²Department of Pneumology, Katholisches Klinikum Koblenz, Koblenz, Germany

Objective: To assess the feasibility and radicality of a combined thoracoscopic and mediastinoscopic approach to mediastinal lymphadenectomy compared to thoracoscopy only for minimally invasive management of early stage lung carcinoma.

Methods: Prospective observational study of patients undergoing anatomical thoracoscopic lung resection for lung carcinoma in our department in 2007. Mediastinal lymphadenectomy was performed either thoracoscopically (VATS group) or by a combination of video assisted mediastinoscopic lymphadenectomy (VAMLA) and thoracoscopy (VAMLA+VATS group). Inclusion criteria for the study were: stage Ia on CT-scan, no central tumour at bronchoscopy, and no contraindications against lobectomy or segmentectomy. Additional criteria for VAMLA were: preoperatively confirmed histology, and no contraindications against multimodality treatment.

Results: Eighteen VAMLA+VATS and 14 VATS patients were studied. For histology, pTNM stage, type of resection, semiquantitative assessment of the fissure and vascular dissection plane, conversions, blood loss, operation time, adverse events and drainage time, no differences between the two groups were observed. In the VATS group, there was a slight preponderance of women, and right-sided tumours. In the VAMLA+VATS group, both the number of dissected mediastinal lymph node stations (6.4 vs. 3.6 stations) and the weight of the mediastinal specimen (10.7 vs. 5.6 g) were significantly higher than in the VATS group ($P < 0.005$).

Conclusions: A combined approach by VATS and VAMLA improves radicality of minimally invasive mediastinal lymphadenectomy without increase in operation time, morbidity, and drainage time.

042-F

STEREOTACTIC RADIOSURGERY FOR PULMONARY MALIGNANCIES: A SINGLE INSTITUTION EXPERIENCES.N. Krishnan, K. Bastin, C. Thomsen, K. Willis
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Objective: To review clinical response, morbidity, and survival in over 100 patients with lung neoplasms treated with stereotactic radiosurgery at our institution. Surgery is the preferred treatment for patients with resectable non-small cell lung cancer or for limited pulmonary metastases. Stereotactic radiosurgery is well established for the treatment of intracranial neoplasms and is an option for patients with lung cancer who are medically inoperable or refuse surgery. Stereotactic radiosurgery can also be used in recurrent or advanced cases in combination with chemotherapy and external beam radiation.

Methods: Inoperable patients with stage I-IV non-small cell lung cancer or metastases to the lung were treated with stereotactic radiosurgery. Fiducials were placed within or near tumors. Patients with Stage I lung cancer or lung

metastases were treated with 60 Gy in three fractions. Patients with advanced disease usually had previous radiation and received either a single fraction of 20 Gy or four fractions of 12 Gy. PET/CT imaging has been used to follow patients.

Results: Since 2006, 120 (age 41-95) patients with pulmonary pathology have been treated with stereotactic radiosurgery. Sixty had medically inoperable stage I lung cancer, 14 had lung metastases, and 46 had advanced stage or recurrent disease. Clinical pneumonitis from treatment has not been observed but pneumothoraces from fiducial placement have required chest tubes. For patients with at least one year of follow-up, overall mean and median survival are 12 and 13 months. For patients with Stage I lung cancer mean and median survival are 12 and 13 months, patients with advanced disease 10 and 8 months, and patients with metastases 13 and 14 months, respectively.

Conclusions: Stereotactic radiosurgery has shown encouraging early results in the treatment of pulmonary metastases and primary lung cancer. Most complications are related to fiducial placement. Mean and median survival continue to increase as the follow-up period lengthens.

043-F

ROBOTIC-ASSISTED THYMECTOMY? REPORT OF 134 PATIENTSJ.C. Rückert¹, M. Swierzy¹, M. Ismail¹, P. Rogalla², A. Meisel³, R.I. Rückert⁴
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Objective: Complete thymectomy (Thx) is necessary for all cases of thymoma and for most patients with myasthenia gravis (MG). Fourteen different surgical approaches for Thx have been developed due to the anatomical distribution of thymic tissue. Since January 2003, we switched from thoracoscopic Thx (tThx) to the technique of robotic-assisted tThx (rThx). The evaluation of the results is complicated due to the heterogeneity of the disease.

Methods: A prospective study analyzed 134 consecutive rThx (January 2003-January 2008) by a 3-trocar left-sided technique using the da Vinci robotic system (Intuitive Surgical, Sunnyvale, CA, USA). All patients with MG (122 of 134) were stratified into subgroups. All patients with MG were analyzed for quantification of improvement of MG and postoperative morbidity according to the Myasthenia Gravis Foundation of America (MGFA) classification. Furthermore, the worldwide development of rThx was analyzed.

Results: In this largest single-center-experience to date rThx required 184±52 min (90-360) with zero mortality and postoperative morbidity rate of 1.2%. The conversion rate was 2.2% (3 of 134). The cumulative complete stable remission rate of MG is >40% with a median follow-up of 16 months (0-59). There was no recurrence after rThx for thymoma (15/134). The analysis of the MGFA postintervention state for 109 patients with MG led to the following results (minimal manifestation/complete stable remission/all patients): females 34/14/57, male 22/11/44, age 60 10/5/20, ocular MG 5/0/6, mild MG 24/8/36, severe MG 33/17/57, MG with thymoma 7/3/16, seronegative MG 5/0/9, follicular thymic hyperplasia 29/12/42. Until April 2007, 39 institutions performed 608 rThx.

Conclusions: The results of rThx for all subgroups were similar or better with minimal morbidity as compared to other Thx techniques. Due to the inherent technical advantages the approach of rThx most effectively combines the requirements of minimal invasion and radical dissection for Thx.

044-F

NAVIGATION-ASSISTED MEDIASTINOSCOPY WITH 3D-VIRTUAL MOVIE BASED ON PET-CTH. Itano¹, K. Takauchi², Y. Hirokawa²¹Kure Kyosai Hospital, Kure, Hiroshima, Japan; ²Hiroshima Heiwa Clinic, Hiroshima, Hiroshima, Japan

Objective: The objective of this pilot study was to design a new image-processing system for producing 3D-virtual mediastinoscopy by using PET-CT images and to examine its clinical utility.

Methods: Thirty-seven patients with confirmed or suspected lung cancer underwent preoperative PET-CT and cervical/anterior mediastinoscopy within the past three years. Of these 37 patients, we tested our new

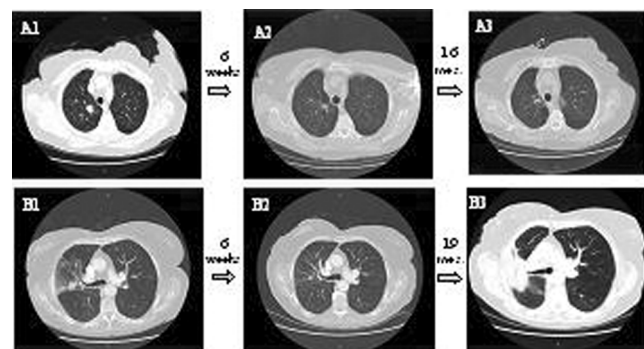


Fig. 1. (A1-A3) Serial CT scan of a patient with a complete radiographic and PET response. (B1-B3) Serial CT scan of a patient with an initial complete radiographic response and subsequent development of likely post-radiation changes.

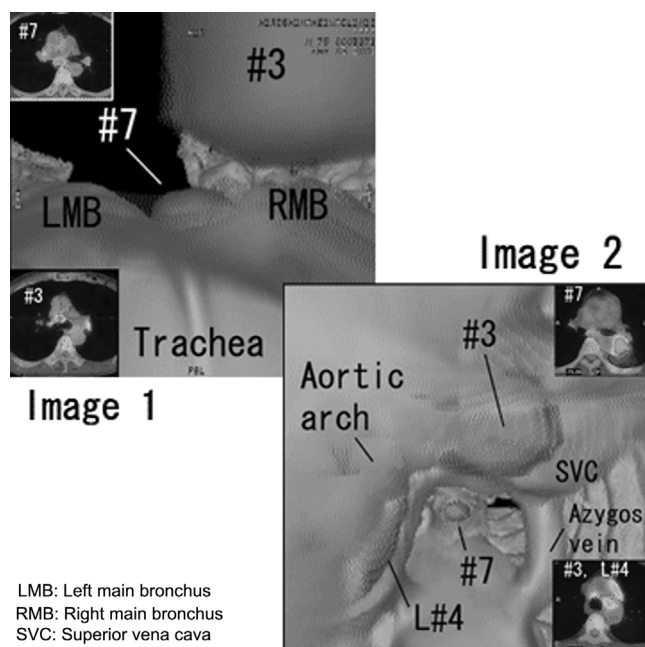


image-processing system in 15 who exhibited significant 18F-FDG uptake into the mediastinal nodes (FDG-avid nodes). The 18F-FDG uptake data obtained by using Discovery ST (a 16-detector row helical CT-scanner; GE Healthcare) were incorporated into the CT images, using the CT/PET Fusion program in the GE Advantage Workstation. 3D-virtual mediastinoscopy movies were created using the Navi tool program in First Volume Rendering in two complementary demonstration modes - the tracheo-bronchial (Image 1) and vessel modes (Image 2) - identical to the actual mediastinoscopy procedure, and used as intraoperative navigation for lymph-node biopsy. The tracheo-bronchial mode was designed to present only the FDG-avid nodes at the air interface and the vessel mode, only those at the fluid interface.

Results: Lung cancer accounted for 11 cases and benign diseases, for four cases. Under virtual navigation, targeted and accurate biopsy of the FDG-avid nodes was possible in all cases, without complications. Further, two anterior mediastinoscopies were undertaken - one for FDG-avid #3a and another for #5/6. Of the 11 lung cancer cases, metastases were pathologically confirmed in 4 (36.4%). Benign diseases included sarcoidosis, tuberculosis, nonspecific inflammation, and vagal schwannoma. This new technique enabled better understanding of the spatial relationship between the targeted FDG-avid nodes/tumors and the tracheo-bronchial/vessel structures and provided useful information for preprocedural planning and intraoperative navigation.

Conclusions: Creating two complementary modes for performing 3D-virtual mediastinoscopy based on PET-CT was feasible; further, we demonstrated the potential clinical utility of this technique for navigation-assisted mediastinoscopy and safer and more efficient biopsies.

Session 7 - Airway and Transplantation

Tuesday, 10 June 2008

14:00-15:30

045-O

WHEN THE LUNGS? A REVIEW OF CURRENT LUNG DONOR PROFILE AND ACCEPTANCE RATE

C. Meers¹, D. Van Raemdonck¹, G. Verleden², L. Dupont², W. Coosemans¹, H. Decaluwe¹, P. De Leyn¹, P. Nafteux¹, G. Decker¹, T. Lerut¹

¹Department of Thoracic Surgery, University Hospital Leuven, Belgium;

²Department of Pneumology, University Hospital Leuven, Belgium

Objective: Percentage of suitable lungs from (multi-) organ donors (MOD) is reported between 15-25% using standard donor criteria. We audited our current MOD profile and lung acceptance rate.

Methods: Donor charts from consecutive potential MOD were retrospectively reviewed between 1 January 2006-31 December 2007. Donor demographics, reasons for lung refusals, and number of lungs transplanted were recorded.

Results: Two hundred and seventy-nine potential MOD were offered to our transplant coordination office. One hundred and fourteen (41%) were declined as organ donor for: medical contraindications (66); no consent (28); not brain-dead (19); not documented (1). Out of 165 effective MOD, 108 (65.5%) were rejected as lung donors because of abnormalities on chest-X-ray (32), age >70 years (21), purulent aspirate (15), PO₂ <300 mmHg (17), heavy smokers (7), not brain-dead (4), infectious risk (3), lung emboli (2), hemodynamic instability (1), prolonged ventilation (1), and not documented (2). Three lungs were rejected after in situ inspection in the donor hospital. Finally, lungs were accepted from 57 (34.5%) effective MOD. Their mean age was 43±14 years (15-66 years) and M/F ratio was 1.04. Blood group was O in 26 (46%), A in 24 (42%), B in 6 (10%) and AB in 1 (2%). In 29 (51%) lung donors, trauma was the cause of brain death followed by an intracerebral bleeding in 22 (39%), hypoxia in 4 (7%), and a cerebrovascular accident in 2 (3%). Seven (12%) donors were ventilated for <24 h, while 50 (88%), 28 (49%), 21 (37%), 17 (30%), and 15 (26%) were ventilated for more than 1, 2, 3, 4, or 5 days, respectively. The following lungs were transplanted: 43 double, nine single in twin recipients, and five single in one recipient. The current survival in our recipients reaches 90%, 80% and 75% at 1, 3, and 5 years.

Conclusions: Lung donor acceptance rate (34.5%) surpassed reported figures by approximately 10-20% as a result of relaxed donor criteria. This policy did not negatively influence early/long-term survival in our lung recipients.

046-O

INSTITUTIONAL EXPERIENCE WITH PULMONARY RETRANSPLANTATION

D. Van Raemdonck¹, G. Verleden², L. Dupont², W. Coosemans¹, H. Decaluwe¹, G. Decker¹, P. De Leyn¹, P. Nafteux¹, G. Walther¹, T. Lerut¹

¹Department of Thoracic Surgery, University Hospital Leuven, Belgium;

²Department of Pneumology, University Hospital Leuven, Belgium

Objective: Pulmonary retransplantation (re-LTx) is the only therapeutic option left for some patients with Bronchiolitis Obliterans Syndrome (BOS). The value of re-LTx has been questioned in view of the overall scarcity of donor organs and a rather poor outcome reported by some institutions, especially for primary graft dysfunction. An analysis of our institutional experience, where re-LTx is applied in selected cases, aims to investigate its value.

Methods: We retrospectively analyzed all patients undergoing re-LTx in 399 consecutive primary lung or heart-lung recipients between 1991 and 2007 from our transplant database.

Results: Fifteen (11 F - 4 M) patients (mean age 34 years, range 15-57) underwent re-LTx, respectively three single (SL) and 12 bilateral lung transplantations (SSL). The indication for re-LTx in all 15 cases was chronic allograft dysfunction. The first transplant procedure was heart-lung (HL) in 2, SL in 4, and SSL in nine patients. The primary transplant indication was cystic fibrosis in four, emphysema in two, non-emphysematous obstructive disease in three, Eisenmenger in two (HL), sarcoidosis in one and pulmonary fibrosis in three patients. Mean time to re-LTx was 936±788 days (range 130-2739). Mean operating time was 491 min (range 370-620 min). The mean hospital stay post re-LTx was 34±33 days (range 15-56). Thirty-day mortality was 6.6% (1 SL recipient) due to an aspergillus infection in the remaining

lung. Actuarial 1-year, 3-year, and 5-year survival after re-LTx were 92.8%, 69.6%, and 69.6%, respectively. Freedom from BOS after the second transplant was 100% at five years. The mean follow-up was 535±802 days (range 29-3015 days).

Conclusions: Pulmonary retransplantation was performed in a minority (3.8%) of our transplant population and only for chronic allograft dysfunction. It is technically feasible, morbidity and mortality are acceptable and it offers long-term survival for selected patients. Double lung replacement is preferred to avoid problems in the remaining first donor lung.

047-O

AIRWAY COMPLICATIONS AFTER LUNG TRANSPLANTATION: RISK FACTORS, PREVENTION AND OUTCOME

W. Weder, I. Inci, S. Korom, P. Kestenholz, D. Schneiter, S. Hillinger, D. Lardinois

University Hospital, Zurich, Switzerland

Objective: Airway complications like dehiscence or stenosis have been described in up to 15% after lung transplantation (LuTx) and are challenging to treat, with a related mortality of 2-5%. The aim of this study was to analyze the incidence of complications in a consecutive series of bronchial anastomosis after LuTx and to delineate potential risk factors.

Methods: Between 1992 and 2007, 441 bronchial anastomoses were performed in 235 patients. Indications for LuTx were cystic fibrosis in 35.7%, emphysema in 28.1%, interstitial fibrosis in 12.8% and pulmonary hypertension in 7.7%. There were 206 sequential bilateral and 29 single LuTx including lobar transplantation in 20 cases. Donor bronchus was shortened to the lobar carina including the medial wall of the intermediate bronchus. Peribronchial tissue was left untouched. Anastomosis was performed by continuous absorbable running suture (PDS 4/0) at the membranous and interrupted sutures at the cartilaginous portion. Surveillance bronchoscopy was performed at 1, 2, 3, and 6 months after LuTx. Attention was given to the presence of fungal membranes, narrowing or dehiscence of the anastomoses.

Results: One-year survival since 2000 is 90.5%. No dehiscence was observed. A tiny fistula was closed surgically on postoperative day 5. Fungal membranes were found in 41.7% of the anastomoses at one month and in 12.7% at 6 months. Functionally irrelevant narrowing of the bronchial lumen was found in 4.3% at 1 month and in 2.1% at 6 months without requiring any intervention. Lobar LuTx was the only significant factor associated with narrowing. Age, cytomegalovirus status, induction therapy, immunosuppression, ischemic time, ventilation time, and rejection episodes within the first post-operative month had no influence on bronchial healing.

Conclusions: Clinically relevant bronchial anastomotic complications after LuTx can be avoided by use of a simple standardized surgical technique. Aggressive antibiotic and particular antimycotic therapy, might play an important additive role.

048-O

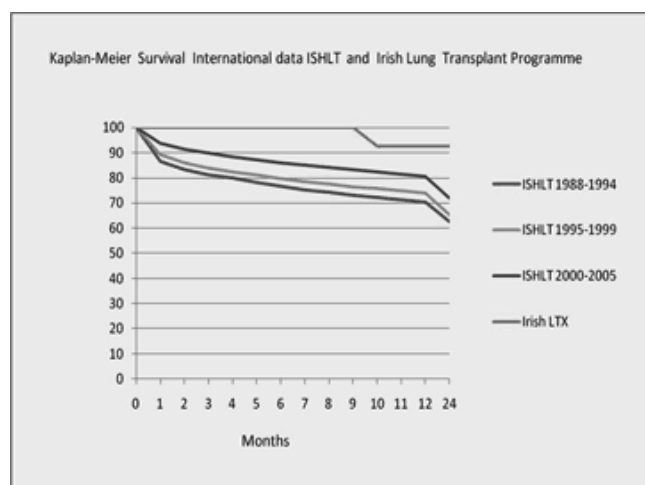
A REVIEW OF THE LUNG TRANSPLANT PROGRAMME IN IRELAND 2005-2007

W.R. Bartosik, J.J. Egan, A. Soo, L. Nolke, J.F.M. Carthy, A.E. Wood

Irish National Heart and Lung Transplant Programme Mater Misericordiae University Hospital, Dublin, Ireland

Objective: Lung transplantation have gained wide acceptance in end stage lung disease. In 2005 the International Society of Heart and Lung Transplantation reported 2169 lung transplantation worldwide. Many well-established lung transplant programme has been active since the late 80 s. Therefore, initiating a lung transplant programme presents unique challenges nowadays. We reviewed our two years experience following initiation of a lung transplant programme in 2005.

Methods: Fifty-seven patients were referred for lung transplantation to the Irish Lung Transplant programme between May 2005 and November 2007. Sixteen patients (28%): 6 male and 10 female underwent lung transplantation. Fourteen patients (25%) died awaiting transplantation and 27 still remain on transplant list. The mean age of transplanted patients was 53.8. The indication for lung transplantation included COPD (n=8), idiopathic pulmonary fibrosis (n=4), bronchiolitis obliterans (n=2), cystic fibrosis (n=1) and lymphangioleiomyomatosis (n=1). Immunosuppression regimen included Basiliximab as induction therapy, and Steroids, Tacrolimus or Cyclosporine and Cellcept as maintenance immunosuppression. First biopsy was performed 1-month post transplantation.



Results: Ten single lung transplants were completed, six patients underwent double sequential lung transplantation. The hospital mortality was 0%. Cardiopulmonary bypass was used in two patients (12%). The mean total ischemic time was 213 min (90-300 min). The hospital morbidity included caecal volvulus ($n=1$), sternum dehiscence ($n=1$), phrenic nerve paresis ($n=1$), renal failure ($n=1$) and cerebral stroke ($n=1$). Primary graft dysfunction was observed in two patients (12%), who required prolonged ventilation. No bronchial anastomosis complications were observed. The mean discharge time was 17.5 days. Acute rejection greater than A2 were observed in five patients (A2 $n=3$, A3 $n=2$). Poorly differentiated adenocarcinoma of the native lung was detected in one patient one-year post SLTx, this was successfully treated with pneumonectomy. One patient died ten months post DLTX secondary to obliterative bronchitis. The cumulative 2-year survival was 92.8%, which compare favorably to international standard of 72%.

Conclusions: Initiation of a new lung transplant can be undertaken and provide results comparable to established lung transplant programs.

O49-O

MANAGEMENT OF RESPIRATORY INSUFFICIENCY FOLLOWING THORACIC SURGERY: OUTCOME IN PATIENTS WITH INVASIVE AND NON-INVASIVE VENTILATIONS

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¹Division of Thoracic Surgery, University Hospital of Lausanne CHUV, Lausanne, Switzerland; ²Division of Adult Intensive Care Medicine, Lausanne, Switzerland

Objective: Non-invasive positive pressure ventilation (NIPPV) has become the first line treatment of respiratory insufficiency. However, little is known on its use on patients with respiratory insufficiency following thoracic surgery and admitted to the intensive care unit (ICU). Here we determined how the initial ventilation support requirements affect survival and ICU stay of these patients.

Methods: The medical records of the 82 consecutive patients undergoing thoracic surgery and admitted to the ICU between January 2005 and June 2006 were reviewed. Patients were clustered into three groups according to their initial ventilation support requirements: no ventilation support, NIPPV or mechanical ventilation. Survival and ICU stay were compared for each group using Fisher's exact test.

Results: Of the 82 patients admitted to the ICU following thoracic surgery, 52 did not require ventilation support, 15 were initially managed by NIPPV and 15 were admitted intubated following surgery. Survival was comparable in non-ventilated (52 of 52 patients, 100%), NIPPV (12 of 15 patients, 80%) and intubated groups (14 of 15 patients, 93%, NS). Three patients of the NIPPV group required mechanical ventilation and had a significantly decreased survival compared to the other groups (1 of 3 patients, 33%, $P<0.05$). ICU stay was significantly greater in the NIPPV (median 4 days) and intubated (median 5 days) groups compared to the non ventilated group (median 1 day).

Conclusions: Patients admitted with respiratory insufficiency have longer ICU stays but their survival is not affected. Patients that require mechanical ventilation following NIPPV have a bad prognosis. NIPPV is the first line therapy for patients developing respiratory failure after thoracic surgery, however, intubation should not be delayed in case of treatment failure.

O50-O

60 TRACHEAL RESECTIONS; SINGLE CENTER EXPERIENCE

I. Cordos, C.N. Bolca, C. Paleru, R.D. Posea

National Institute of Pneumology Marius Nasta, Bucharest, Romania

Objective: The authors discuss different variants of resection in relation with localization and character of the underlying disease. The purpose of this study is to evaluate the outcome following the surgical management of our patients.

Methods: Between 2001 and 2008 we performed tracheal resections in 60 patients - 34 M/26 F, median age of 38 years. There were 40 cases (67%) of postintubation stenosis, 14 (23%) tumors and 6 (10%) benign tracheo-esophageal fistulas. Among the tumors, 5 (8.3%) were benign lesions and 9 (15%) were malignant (7 primary and 2 secondary due to direct invasion by a thyroid cancer). Simple cervical approach was used in 53 cases, cervical incision with sternal split in three and posterolateral thoracotomy in 4. We performed 21 tracheal resections and 39 laryngotracheal resections. The length of resection ranged between 1, 5 and 4 cm. The range of resected rings was 1-8.

Results: One (1.66%) patient died during the surgical intervention by a stroke. There were 2 (3.4%) postoperative deaths, both in patients with tracheo-esophageal fistula (first 2 operated). One of them died in postoperative day 4 by an inornate artery fistula with an important loss of blood and the other one by mediastinitis in postoperative day 21. As major complications we mention 1 (1.66%) patient with restenosis who underwent revision surgery with good outcome. As minor complications, there were 5 (8.3%) wound infections and 2 (3.4%) cervical hematomas. Among the patients with malignant tumors we had one local epidermoid carcinoma recurrence 18 month after surgery and the two patients with thyroid cancer died six and nine month later.

Conclusions: Postintubation injury was the main cause of stenosis in our series. Using the right indication and a perfect surgical technique, good early and late results can be achieved. We think that emergency tracheal resection (first 24 h) can be used with success.

Session 8 - Pulmonary Neoplastic

Tuesday, 10 June 2008

14:00-15:30

O51-F

DO BONE MARROW ISOLATED TUMOR CELLS INFLUENCE LONG-TERM SURVIVAL OF NSCLC?

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Objective: To evaluate the survival for NSCLC in a group of patients in which the presence of bone marrow isolated tumor cells (ITC) and their DNA ploidy, was assessed.

Methods: Before 2002 seventy patients (58 male [83%] median age 70 years r. 49-89) with clinical T1-4 N0 M0 status underwent surgery. None received neoadjuvant therapy. Bone marrow was extracted from a rib. ITC were identified using pan-cytokeratin antibody MNF116. DNAploidy was assessed for propidium iodide staining. Bone marrow flow cytometry was diagnostic for ITC when >10% of cells reacted to MNF116. Immunohistochemistry and H and E staining assessed the biopsies. Follow-up was ruled on by chest X-ray and abdominal US at 6 month, CT/PET scan at 12 months for at least five years after surgery. Causes of death were assessed.

Results: Flow cytometry was negative in 52 patients (74%), (P-stage: I 32; II 8; III 10; IV 2); positive for ITC in 18 patients (26%): 6 with DNA euploidy (P-stage: I 4; III 2); and 12 with DNA aneuploidy (P-stage: I 5; II 4; III 3). Intraoperative mortality was 0, median follow-up was 61 months, 21 patients died for causes unrelated to NSCLC. Significant survival differences were calculated according to stage, presence/absence of ITC and DNA aneuploidy. In P-stage Ia-b the disease free survival of patients with aneuploid ITC was significantly worse than the survival of patients without ITC or with euploid ITC (Mantel-Cox $P=0.0001$) (Fig. 1).

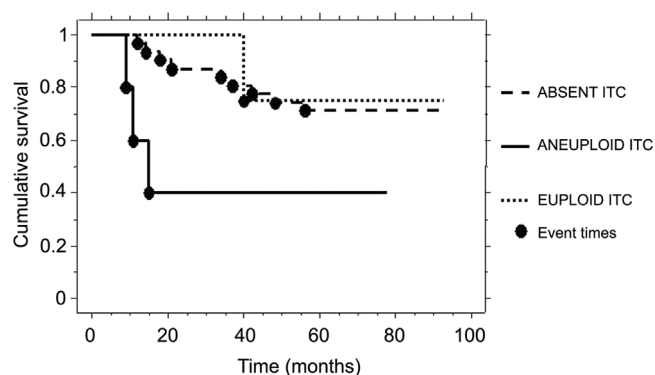


Fig. 1. Kaplan-Meier disease free survival plot for follow-up.

Conclusions: Aneuploid ITC influences negatively NSCLC survival particularly in stage I NSCLC.

052-F PROGNOSTIC SIGNIFICANCE OF INTRAOPERATIVE PLEURAL LAVAGE CYTOLOGY FOR LUNG CANCER PATIENTS WITHOUT MALIGNANT PLEURITIS: LONG-TERM FOLLOW-UP RESULTS

M. Higashiyama, K. Oda, J. Okami, J. Maeda, K. Kodama, A. Takenaka, T. Nakayama, G.-i. Yoneda
Osaka Medical Center for Cancer and Cardiovascular Diseases, Osaka, Japan

Objective: Among recently published reports regarding the prognostic implication of intraoperative pleural lavage cytology (PLC) for lung cancer, postoperative follow-up periods tend to be insufficient. We therefore reviewed the surgical results of lung cancer patients without malignant pleuritis with relatively long-term follow-up.

Methods: PLC was performed immediately after thoracotomy in consecutive lung cancer patients without malignant pleuritis undergoing tumor resection between 1988 and 1997. Postoperative follow-up was generally performed for at least five years.

Results: Eighty-nine (13.1%) of 679 patients had positive PLC findings. Positive PLC findings were observed more frequently in patients with advanced stage diseases. The median follow-up period was 9.3 years. The overall survival rates for five and ten years in PLC-positive patients were 43% and 25%, respectively, while those in PLC-negative patients were 66% and 58%, respectively ($P < 0.0001$). Among 393 patients with stage I disease, 34 (8.7%) showed PLC-positive findings, and their 5-,10-year overall survival rates were 57% and 31%, respectively, which was significantly worse compared with those of PLC-negative findings (80% and 68%, $P < 0.0001$). Multivariate analysis showed that PLC was an independent prognostic factor for both overall and cancer-specific survivals among all the patients, especially among those with stage I disease. Regarding tumor recurrence patterns among the PLC-positive patients, distant metastases (32/89, 36.0%) were more commonly observed than local recurrence (24/89, 27.0%). It is important to note that twenty-one (30.8%) of the PLC-positive patients showed postoperative pleural recurrences. Interestingly, late pleural recurrence after more than 5 years occurred in 5.6% (5 patients) of the PLC-positive patients.

Conclusions: Based on long-term postoperative follow-up, PLC immediately after thoracotomy for lung cancer is an independent prognostic indicator. PLC-positive finding may be at high risk of both distant metastases and pleural recurrences. For PLC-positive patients, serial follow-up of more than five years is necessary for detecting a late recurrence in the pleura.

053-F EXPRESSION LEVELS OF ANTIOXIDANT AND RECEPTOR GENES IN PATIENTS WITH EARLY STAGE NON-SMALL CELL LUNG CANCER

G. De Palma³, P. Mozzoni², E. Internullo¹, O. Acampa², M. Corradi⁴, A. Mutti⁴, P. Carbognani¹, M. Rusca¹

¹Thoracic Surgery Unit University of Parma, Parma, Italy; ²ISPESL Research Center at the University of Parma, Parma, Italy; ³Department of Experimental and Applied Medicine Laboratory of Industrial Toxicology University of Brescia, Brescia, Italy; ⁴Department of Clinical Medicine Nephrology and Health Sciences, Laboratory of Industrial Toxicology, University of Parma, Parma, Italy

Objective: The aim of the study was to estimate the expression of genes belonging to different cellular pathways in cancerous and unaffected tis-

issues of patients undergoing major lung resection for early stage NSCLC. We studied the gene expression of heme-oxygenase 1 (HO-1), superoxide dismutase-1 (SOD-1), superoxide dismutase-2 (SOD-2), arylhydrocarbon receptor (AhR), epidermal growth factor receptor (EGFR) and v-erb-b2 erythroblastic leukaemia viral oncogene homology 2 (HER-2).

Methods: Total RNA was extracted from 28 couples of lung biopsies (both cancerous and unaffected tissue) excised from early NSCLC patients. cDNA was amplified by real time-PCR using specific primers. The relative quantification of gene expression was calculated after normalization by housekeeping genes (β 2-microglobulin, SDHA, HPRT, RPL13, PGK1).

Results: AHR, SOD-1, SOD-2 and HO-1 gene expression was significantly higher in the unaffected than in cancerous tissues. The HER-2 gene was more expressed in the adenocarcinoma than in the squamocellular carcinoma samples (median values 0.38 vs. 0.10, $P < 0.0001$), even after normalization for unaffected tissue (median values 1.06 vs. 0.46, $P < 0.05$). After normalization for unaffected tissue, the EGFR gene expression was higher in squamocellular than in adenocarcinoma samples (median values 1.59 vs. 0.71, $P < 0.05$).

Conclusions: The present study shows impaired antioxidant defence mechanisms, due to lower gene expression of HO-1, SOD-1 and SOD-2 in the tumour as compared to unaffected tissues. The depression of AhR gene expression in cancerous tissues highlights the cell cycle alteration. Observed differences in EGFR and HER2 expression levels between squamocellular and adenocarcinoma histotypes could be useful for diagnostic purposes and could have some therapeutic implication.

054-F 68GA-DOTA-NOC PET FOR THE EVALUATION OF PULMONARY NEUROENDOCRINE TUMORS: PRELIMINARY EXPERIENCE

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¹Department of Nuclear Medicine, San Orsola Malpighi Hospital, University of Bologna, Bologna, Italy; ²Division of Esophageal and Pulmonary Surgery, Villa Maria Cecilia and San Pier Damiano Hospitals, University of Bologna, Bologna, Italy

Objective: 18F-FDG PET is of limited value for the assessment of lung neuroendocrine tumours (NET). Sixty-eight Ga-DOTA-NOC, has been reported to be useful for the assessment of gastro-entero-pancreatic NET expressing somatostatin receptors (SSR). To our knowledge, 68Ga-DOTA-NOC has never been studied in patients with lung NET. Aim of the study was to evaluate the role of 68Ga-DOTA-NOC PET for the evaluation of lung NET.

Methods: Eleven patients (mean age: 62 years [44-80], M:F=6:5) with pathology proven lung NET were scheduled for 68Ga-DOTA-NOC PET. Indications to perform PET included staging (2), evaluation of equivocal conventional imaging findings (2) and follow-up after surgical excision of the primary tumour (7). PET results were compared with CT and with follow-up data.

Results: PET showed at least one positive lesion in 7/11 cases and was negative in 4. Considering all lesions, the mean SUV max was 29.1 [range: 4.4-60.5]. 68Ga-DOTA-NOC PET was concordant with CT in 3/11. Of the remaining eight cases, PET identified a higher number of pathologic areas in 3/8 and excluded the malignant nature of suspicious CT findings in 4/11. In one case a suspicious liver lesion documented by CT and undetected on the PET scan was subsequently excised and immunohistochemistry showed the lack of SSR on tumour cells. Overall, PET provided additional information in 8/11 cases, changing the clinical management in 4/8 and contributing to better evaluate the extent of the disease in 4.

Conclusions: Preliminary data show that 68Ga-DOTA-NOC is useful for evaluation of lung NET contributing to more accurate evaluation of disease.

055-F COMPLETION PNEUMONECTOMY FOR NON-SMALL CELL LUNG CANCER: DOES PREOPERATIVE TREATMENT AFFECT POSTOPERATIVE OUTCOME?

D. Galetta, P. Solli, F. Leo, G. Veronesi, A. Borri, R. Gasparri, F. Petrella, P. Scanagatta, L. Spaggiari

Division of Thoracic Surgery, European Institute of Oncology, Milan, Italy

Objective: Completion pneumonectomy (CP) is associated with high morbidity and mortality. We review our experience with this operation to evaluate if preoperative treatment (PT) may affect postoperative outcome and long-term results.

Methods: Between January 1998 and December 2007, 21 consecutive patients with non-small cell lung cancer underwent CP. There were 17 males, mean age was 63 years (range, 48-73 years). Right CP was carried out in 16 patients, and left in 5. Nine patients (42.8%) received PT (chemotherapy in 5, and radiotherapy in 4). Eleven patients (52.3%) had an extended resection, and 2 (9.5%) had a tracheal sleeve CP.

Results: Thirty-day mortality was 4.7% (1/21). Morbidity was 23.8% (5/21); there were 1 cardiac dislocation, 1 diaphragmatic hernia, 1 myocardial infarction, 1 TIA, and 1 immediate bronchopleural fistula which was reoperated on. Mean ICU stay was 1 day (range, 0-6 days). Mean hospital stay was 8 days (range, 5-16 days). PT did not influence postoperative morbidity and mortality. Eight patients (38%) had pathological stage I, 3 (14.3%) had stage II, and 10 (47.7%) had stage III. Overall 5-year survival was 28.7%. PT did not influence survival (25.7% for PT group vs. 29.6% for non PT group). Stage I had a significant better prognosis (66.7% for stage I vs. 0% for stage II vs. 21.8% for stage III, $P=0.04$). T and N factors did not influence survival. Eight patients (38%) are currently alive without disease. At univariate analysis only the type of PT have a statistical significance ($P=0.01$), which was confirmed at multivariate analysis ($P=0.009$).

Conclusions: In our experience, CP had a low mortality, acceptable morbidity, and good long-term survival which justified this surgical procedure. PT did not influence postoperative and long-term outcome.

056-F

POSTOPERATIVE AND LONG-TERM RESULTS OF PULMONARY RESECTION FOR LUNG CANCER AFTER SOLID ORGAN TRANSPLANTATION

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¹Department of Thoracic Surgery, Hospital Louis Pradel, Lyon, France;

²Department of General and Thoracic Surgery, Centre Hospitalier Lyon Sud, Lyon, France;

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⁴Department of Adult Cardiac Transplantation, Hopital Louis Pradel, Lyon, France

Objective: To evaluate postoperative morbidity and mortality and long-term results in patients operated for primary lung cancer after solid organ transplantation.

Methods: We performed a retrospective review of primary lung cancer resection in recipients of solid organ transplants from January 1980 to December 2006. Thirty-six patients were identified (34 men and 2 women). There were 19 heart, 9 kidney, 7 liver and 1 lung transplant recipients. Median time from transplantation to diagnosis of lung cancer was 82 months (6-242). All patients but one had a smoking history. Lung cancers were discovered by routine chest roentgenograms and computed tomography scans in 26 patients (72%) or because clinical symptoms in 10 (28%).

Results: Thirty-seven surgical procedures were performed: Lobectomy (30), sleeve lobectomy (1), bilobectomy (1), pneumectomy (4) and wedge resection ($n=1$). Histologic types were squamous (18), adenocarcinoma (17), and large cell carcinoma (1). Tumors were classified as stage IA (15), IB (14), IIA (2), IIB (1), IIIA (3) and IIIB (1). The postoperative mortality rate was 8% (3 respiratory failure) and postoperative complications rate was 44% (16) including eight pneumonia. Resection was incomplete in two cases. Fourteen patients subsequently died during follow-up. Among the 19 survivors three have recurrence. Absolute one and two year survival is 75% and 44%.

Conclusions: Despite a higher risk of postoperative infection and pneumonia pulmonary resection in transplanted patients is an acceptable procedure. Optimal outcomes seem to be related to early detection.

057-F

SURGICAL MULTIMODALITY TREATMENT FOR STAGE IIIA-N2 NSCLC

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¹Department of Thoracic Surgery, University Hospital Leuven, Belgium;

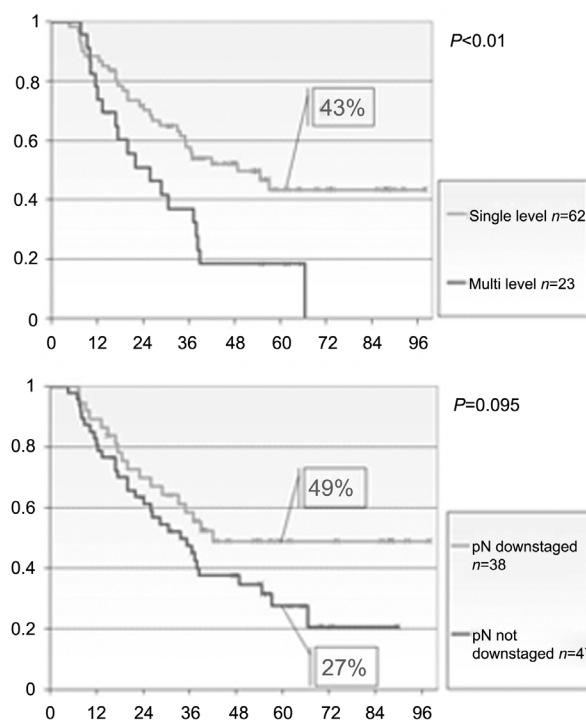
²Department of Pneumology, University Hospital Leuven, Belgium;

³Department of Radiotherapy, University Hospital Leuven, Belgium

Objective: Evaluation of single centre results and identification of prognostic factors of induction chemotherapy and surgery for mediastinoscopy proven stage IIIA (N2) NSCLC.

Methods: In a total of 996 resections of NSCLC between 2000-2006, 93 patients with response or stable disease after induction chemotherapy for histologically proven N2-disease underwent surgical exploration with the aim of complete resection. Median age was 64 (range 35-81) years, 68 were male. Clinical T-stage was cT1 in 9% ($n=8$), cT2 61% ($n=56$), cT3 23% ($n=21$) and cT4 7% ($n=7$). Adeno and squamous cell carcinomas were equally present. Median follow-up 51 (10-94) months. One patient was lost to follow-up.

Results: Complete resection (i.e. tumour with free margins and negative highest mediastinal lymph nodes, R0) was achieved in 68% ($n=63$),



resection was incomplete in 24% ($n=22$), while surgery was explorative in 8% ($n=7$). Pneumonectomy was performed in 24%, (bi) lobectomy in 62%, sleeve lobectomy in 13% of patients. In-hospital mortality was 2.3%. Need for ICU stay was 18% (30% after pneumonectomy). Median hospital stay was 10 days (6-157). Downstaging of mediastinal lymph nodes (pN0-1) was found in 43% ($n=40$). Overall ($n=92$) survival at five years was 33%, after complete resection 43%. We found a significant difference in survival if downstaging of T-status was present (64% vs. 23% at 5 years; $P<0.005$). Also, detection of multilevel positive nodes at initial mediastinoscopy was related to lower 5 years survival (19% vs. 43%; $P<0.01$) (Fig. 1). We found a trend of better survival in patients with mediastinal nodal downstaging with 49% 5 years survival vs. 27% in patients with persistent N2 disease ($P=0.095$, Fig. 2).

Conclusions: Surgery after induction chemotherapy for stage IIIA(N2) NSCLC can be performed with an acceptable mortality and morbidity. Single level N2 disease and downstaging of the T-status are prognostic for survival at five years. A subgroup of patients with persistent N2 disease after induction therapy has a rewarding survival.

058-F

TECHNIQUE AND ROLE OF RADICAL VATS SEGMENTECTOMY FOR SMALL SIZE LUNG CANCER

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Objective: We evaluated mid-term results and our technique of radical VATS segmentectomy for small size lung cancer.

Methods: Between January 2000 and December 2007, 84 (10.4%) patients underwent radical VATS segmentectomy among 805 resected lung cancer patients. The indication of radical VATS segmentectomy is clinical stage IA lung cancer <2 cm in tumor diameter, and pure GGO nodules were excluded. Points of our VATS techniques are as follows. 1. 7 cm incision+1 port or 3 port complete VATS was applied. 2. To divide lung parenchyma, jet ventilation through divided distal segmental bronchus is applied to clarify the border of the segment. 3. Small size silastic drains are placed. 4. LCS is used for lymph nodal dissection. 5. Pulmonary vessels were evaluated preoperatively by 3D-CT angiography.

Results: Median follow-up was 26 months. There was no hospital death and no severe morbidity. Disease free and overall 5-year survivals were 98.4% and 100%, respectively. Three cases had distant metastasis but there was no local recurrence.

Conclusions: Radical VATS segmentectomy is a safe and feasible procedure and can be a standard treatment of small size lung cancer.

059-F

IS PREOPERATIVE AND POSTOPERATIVE RESPIRATORY THERAPY WITH INTERMEDIATE POSITIVE PRESSURE BREATHING NECESSARY IN PATIENTS WITH MAJOR PULMONARY RESECTIONS?

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Objective: Forty-four patients undergoing major lung resections were included in a study which analysed the necessity of intermediate positive pressure breathing (IPPB) in prevention of postoperative pulmonary complications. IPPB is thought to avoid atelectasis and improve pulmonary function after lung surgery. Patients were compared in terms of pre- and postoperative lung function, pulmonary complication rate and six-minute walk test.

Methods: Prospective analysis of 44 patient records operated between 14 June 2007 and 31 January 2008. There were 21 women and 23 men with a median age of 58 years (range: 40-77 years). Randomisation into two groups with ($n=14$) and without ($n=30$) IPPB. All patients underwent preoperative pulmonary preparation and evaluation in terms of lung function and six-minute walk test. Data recorded was; smoking status, BMI, extent of operation, pre- and postoperative lung function, six-minute walk test and postoperative pulmonary complications.

Results: Preoperative FEV1 was comparable in both groups (without IPPB 77%, with IPPB 78%). Postoperative FEV1 was also comparable (without IPPB 48%, with IPPB 48%). The difference in meters between the preoperative and postoperative six-minute walk test was in the group without IPPB -242 month to +85 month, this again was comparable with the IPPB group where the difference was -101 month to +93 month. Pulmonary complications were observed in 8/30 (26%) patients without IPPB and 4/14 (28%) with IPPB. Hospital stay was similar in both groups (median: 9 days).

Conclusions: Postoperative respiratory therapy is given to obtain better functional recovery after lung surgery. In the data collected up to now we were unable to find evidence that additional improvement of postoperative pulmonary function is achieved when adding IPPB to standard physical therapy. The rate of pulmonary complications, such as pneumonia, was similar in both groups.

Session 9 - Oesophagus and Mediastinum**Tuesday, 10 June 2008****16:00-17:30**

060-O

LAPAROSCOPIC ISCHAEMIC CONDITIONING OF THE STOMACH REDUCES GASTRIC CONDUIT MORBIDITY FOLLOWING TOTAL MINIMALLY INVASIVE OESOPHAGECTOMY

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Objective: Minimally invasive oesophagectomy (MIO) is associated with a significant incidence of gastric conduit related complications. Previous studies have suggested that ischaemic conditioning of the stomach prior to oesophagectomy improves perfusion of the gastric conduit. We have therefore adopted laparoscopic ligation of the left gastric artery preoperatively and report our outcomes.

Methods: Seventy-seven patients underwent a Total MIO. Twenty-two consecutive patients, excluding those with middle third squamous tumours or early stage adenocarcinoma, underwent ligation two weeks prior to MIO at staging laparoscopy (Ligation group). Fifty-five patients did not undergo ischaemic conditioning in this way (Control group). We have defined conduit related complications as: leak managed conservatively (L); tip necrosis requiring resection and re-anastomosis (TN) and conduit necrosis needing resection and oesophagostomy (CN). Values are reported as medians.

Results: Ligation was performed at 16 days preoperatively (Operating time=70 min). There were no complications and length of hospital stay was one day. Although gastric mobilization at MIO was technically more difficult after ligation, there was no significant difference in operating time (Ligation, 407 min; Control, 425 min) or blood loss (Ligation and Control, 500 ml). There was less gastric conduit morbidity and no tip necrosis in the Ligation group (2/22, 10%; 1L, 1CN) compared with the control group (11/55, 20%; 4L, 5TN, 2CN), but these differences did not reach statistical significance ($P=0.211$ and $P=0.176$ Fisher's Exact test).

Conclusions: In this non-randomised clinical setting, our results suggest that ischaemic conditioning of the stomach prior to MIO is safe. There is a trend to reduced morbidity related to gastric conduit ischaemia. Laparoscopic ischaemic conditioning of the stomach prior to total MIO may reduce gastric conduit morbidity.

061-O

EPIPHRENIC DIVERTICULUM: A CLINICAL AND PATHOLOGIC STUDY

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Objective: Epiphrenic diverticulum is uncommon and poorly understood. This study categorizes motility disorders, structural abnormalities, and pathology findings in patients undergoing surgery for epiphrenic diverticulum.

Methods: From 1987 to 2008, 57 patients had surgery for epiphrenic diverticulum: 39 (68%) had complete preoperative studies (manometry, barium esophagram, and esophagogastroduodenoscopy) and pathologic review of diverticulum and myenteric plexus; 31 (79%) had diverticulectomy, myotomy \pm fundoplication; and 8 (21%) had esophagectomy.

Results: Motility: Motility was normal in 10 patients (26%). Twenty-nine (74%) had motility disorders: achalasia in 14 (48%), non-specific motility disorder (NSMD) in 6 (21%), and nutcracker esophagus (NUT), hypertensive lower esophageal sphincter (HLES), and diffuse esophageal spasm (DES) in 3 (10%) each. Structural abnormalities: Hiatal hernia was present in 22 (56%), 5 (50%) with normal manometry, 6 (43%) with achalasia, 5 (83%) with NSMD, 3 (100%) with NUT, 2 (67%) with HLES, and 1 (33%) with DES. Pathology findings: All diverticula had squamous hyperplasia, esophagitis, and submucosal fibrosis. Myenteric plexus was normal in 9 (23%) and abnormal in 30 (77%). Reduced or absent ganglion cells (GCRA) and myenteric inflammation or fibrosis (MIF) are reported in the table.

Conclusions: Epiphrenic diverticulum is a heterogeneous entity. The majority of patients have some abnormality, be it in motility, structure, and/or myenteric plexus. However, some patients have no detectable esophageal abnormality except epiphrenic diverticulum.

Myenteric plexus abnormalities

Motility	GCRA No. (%)	MIF No. (%)	Both No. (%)
Normal	5 (50)	4 (40)	2 (20)
Achalasia	8 (57)	9 (64)	6 (43)
NSMD	2 (33)	3 (50)	1 (17)
NUT	2 (67)	3 (100)	2 (67)
HLES	0 (0)	2 (67)	0 (0)
DES	3 (100)	1 (33)	1 (33)

062-O

TREATMENT OF LOCALLY ADVANCED (CT3-4N1M0) CANCER OF THE ESOPHAGUS AND GASTROESOPHAGEAL JUNCTION IN YOUNGER (<55 YEARS) PATIENTS

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Objective: There are no data available on the outcome after treatment of locally advanced cancer of the esophagus and gastroesophageal junction (GEJ) in younger patients.

Methods: Data of the cohort of patients aged under 55 years presenting with a cT3-4N1M0 carcinoma of the esophagus and GEJ were retrieved from a prospective database. Two similar groups were compared: 96 patients treated with primary surgery (Group I) and 59 treated with induction chemoradiotherapy plus surgery (Group II).

Results: Out of the 59 patients who started induction therapy 56 underwent surgery resulting in 50 (84.7%) resections. On an intention-to-treat basis 5 year survival was 37% in group I, 32.3% in group II ($P=0.407$) including postoperative hospital mortality of 2.1% and 8.5%, respectively. Pathological staging in group I showed complete response in 15 patients (25.4%) with a 5 year survival of 51.3% and being 24.5% in the non-complete responders ($P=NS$). Pathological staging in the primary surgery group showed pN0 in 21 patients (22%) with a 5 year survival of 69%, being 50% in peritumoral pN+<6 and 13.1% in non-peritumoral/pN+>7. In group I, pN0 did significantly ($P=0.0421$) better than pCR in group II.

Conclusions: In patients with locally advanced cancer aged <55 years one in three patients are long-term survivors, being one in two after primary

surgery in case of limited peritumoral node involvement. Adding induction chemoradiotherapy did not improve survival in this series. Clinically false positive nodes upgrade survival, necessitating further refinement of clinical staging.

063-O**EBUS-TBNA IN NSCLC STAGING**

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Objective: The aim of the study was to assess the diagnostic yield of endobronchial ultrasound guided transbronchial needle aspiration (EBUS-TBNA) in staging of N2-3 non-small cell lung cancer (NSCLC).

Methods: Consecutive NSCLC patients with enlarged or normal mediastinal nodes on CT-scans underwent EBUS-TBNA. All patients with negative EBUS-TBNA underwent subsequently the transcervical extended bilateral mediastinal lymphadenectomy (TEMLA) as a confirmatory test.

Results: One hundred and fifty-nine patients underwent EBUS-TBNA between 1 February 2007 and 31 December 2007. There were 214 mediastinal (stations: 2R - 7, 4R - 53, 2L - 1, 4L - 38, 7 - 115), 35 hilar (stations: 10R - 21, 10L - 14) and 3 interlobar nodes (stations: 11R - 2, 11L - 1) biopsied. EBUS-TBNA revealed metastatic lymph node involvement in 97/159 patients (61.0%) and in 134/252 biopsies (53.2%). In 62 negative EBUS-TBNA patients, who underwent subsequent TEMLA metastatic nodes were diagnosed in 13 patients - in 9 (5.7%) in stations accessible for EBUS-TBNA (stations: 4R - 2, 4L - 1, 7 - 7) and in 4 (2.5%) in stations not accessible for EBUS-TBNA (stations: 5 - 3, 6 - 1, 8 - 1). All positive N2 nodes diagnosed by the TEMLA contained only a small metastatic deposits. A diagnostic sensitivity, specificity, accuracy, PPV and NPV of EBUS-TBNA were 88.2%, 100%, 91.8%, 100% and 79%, respectively. No complications of EBUS-TBNA were observed.

Conclusions: 1. EBUS-TBNA is an effective and safe technique for mediastinal staging in patients with NSCLC. 2. In patients with negative results of EBUS-TBNA, surgical exploration of the mediastinum should be performed.

064-O**THE ROLE OF F-FDG PET-TC IN THE PREOPERATIVE ASSESSMENT OF ANTERIOR MEDIASTINAL MASSES**

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Objective: The purpose of the study was to explore the usefulness of F-FDG PET-TC in the preoperative assessment of isolated anterior mediastinic lesions, especially in the planning of operative strategy (biopsy or upfront resection).

Methods: During the last 36 months, 18 consecutive patients (9 male, mean age 52±16 years) underwent PET-TC in the preoperative work up of isolated anterior mediastinic disease. Maximal transverse diameter at CT and the postoperative Histology and Masaoka staging for thymomas were collected and related to the maximum standardized values (SUV). Thymomas were divided in low risk (LRT=A, AB and B1) and high risk (HRT=B2, B3 and C).

Results: There were 12 thymomas (6 LRT and 6 HRT), three lymphomas and two others primitive thymic tumours (1 paraganglioma, 1 disgerminoma). In LRT the mean SUV was 3.3±0.4 resulting significantly lower than HRT, 13.1±8.4 ($P=0.01$). The SUV in LRT was also significantly lower respect lymphoma, 13.2±4.8 ($P=0.001$), and the others primitive anterior tumours, 8±0.8 ($P=0.001$). Between thymomas we found a significant correlation between Masaoka stage and SUV, $r=0.67$, $P=0.006$. No correlation was found between transverse diameters and SUV, $r=0.15$, $P=0.4$.

Conclusions: In our experience a low SUV (<5) is associated with LRT and minimal invasive thymoma (Masaoka stage I) and therefore susceptible of upfront surgery. For lesions with and infiltrative aspect on CT scan associated with a higher SUV (>5), an open biopsy could help to exclude mediastinal lymphomas or, in case of HRT, to address a neoadjuvant treatment.

065-O**THYMECTOMY IN MYASTHENIA GRAVIS VIA VIDEO-ASSISTED INFRA-MAMMARY COSMETIC INCISION: LONG-TERM RESULTS IN 180 PATIENTS**

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Objective: We present outcomes after 180 radical thymectomies in non-thymomatous myasthenia gravis (NTMG) patients, performed through an original inframammary cosmetic incision and median sternotomy as described elsewhere.

Methods: A retrospective chart review/interview was made of 180 patients operated upon from 1993 to 2005. According to MGFA complete stable remission (CSR) and pharmacologic remission (PR) was calculated at the end of a minimal period of 12 months.

Results: There were 156 (86%) female and 24 (14%) male patients with a mean age of 29+10.8 years (range, 9-60 years). The preoperative MGFA score was: I: four patients; IIa: 56; IIb:32; IIIa: 42; IIIb: 42. IVa: 2; V: 2. Mean operative time was 110 min (70-130 min) and mean postoperative hospital stay was 4 days (3-10 days). Postoperative mortality was nil and morbidity occurred in seven patients (3.8%). Histologic diagnosis was: hyperplastic thymus in 146 patients (81.1%); involuted thymus in 28 (15.6%) and normal thymus in 6 (3.3%). Ectopic thymic tissue was found in 68% of patients. Mean length of follow-up was 55.9+33.79 months (12-128 months). CSR was obtained in 27.7%; PR in 13.3%; improvement in 54.4% and no change in 0.4%. One hundred and seventy-one patients judged their cosmetic results to be excellent.

Conclusions: Thymectomy in MG via video-assisted infra-mammary cosmetic incision has shown to be a useful surgical approach as demonstrated by the good functional and aesthetic results, associated with a very low morbidity and no mortality.

Session 10 - Chest Wall and Diaphragm and Pleura

Tuesday, 10 June 2008

16:00-17:30

066-F**AUTOLOGOUS BLOOD PLEURODESIS FOR PERSISTENT AIR LEAK**

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Objective: Air leakage is a well known problem that often leads to patient's discomfort and prolonged hospitalization. Many methods have been proposed for prevention or treatment of prolonged air leak, but none of them turned to be the perfect solution. The purpose of this study is to evaluate blood pleurodesis in patients with persistent air leak.

Methods: From March 2005 through June 2007 20 patients, 14 male and 6 female, ranging in age from 41 to 81 years were submitted to blood pleurodesis in our department due to persistent air leak (>7 days). In the majority of patients the underlying disease was emphysema (n=14). Lobectomy was performed in 10 cases, LVRS in four and three patients suffered from secondary pneumothorax. Autologous blood pleurodesis was performed in each patient's bed. With apical chest tube placement and the lung expanded 60 ml of blood was taken from the femoral vein and was instilled into the thoracic cavity. Because of the high air leakage the drainage was not clamped but was draped over the patient to prevent blood running out of the pleural space, but allowing air to be evacuated. The patients were asked to rotate in bed every 15 min for 6 h. The tube was removed 12 h after cessation of the air leak.

Results: In 14 patients (70%) the closure of the fistula was achieved in <12 h, in 3 within 24 h, in 2 within 48 h, while one patient with LVRS and NSCLC needed reoperation. Only in two cases a second instillation of blood took place. Over a 2-24-month follow-up period neither a complication nor a recurrence was observed.

Conclusions: The injection of autologous blood into the pleural space through the existing chest tube is an easy-to-perform, painless and inexpensive method with a high rate of success.

067-F**LONG-TERM OUTCOME FOR TREATMENT OF PRIMARY SPONTANEOUS PNEUMOTHORAX: IMPACT OF APICAL RESECTION**

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Objective: Surgical treatment for primary spontaneous pneumothorax (PSP) includes mechanical pleurodesis and resection of the pulmonary lesion. Here, long-term efficacy of VATS apical pleural abrasion (PA) vs. pleurectomy (PE) was investigated before resection of apical lesions were standard.

Methods: From 01.01.1993 to 31.12.1997, 68 patients (58 male, median age 31 years) underwent VATS treatment for PSP. All received apical pleurodesis, alternated/randomized between PE (34) and PA (34). Identified pulmonary lesions were resected. Demographics, type of intervention and postoperative course were analyzed. At a mean of 44 months (m) post-intervention (range 4.5-73.5 m), and at a mean of 112.5 m (range 73-142 m), rate of recurrences, duration/persistence of pain, extent of paraesthesia and the cosmetic result were evaluated.

Results: One hundred per cent of patients were interviewed at 44 months. The recurrence rate was 5.9% in both groups. At 112.5 m, 93% were interviewed. The recurrence rate was 9.7% (3/31) for PE, and 6.3% (2/32) for PA. In 69% of the patients, pulmonary lesions were resected, resulting in improved outcome: 2.1% recurrences vs. 15% of the non-resected cohort. PA was associated with less paraesthesia (18.7% vs. 25.8%), and a significant reduction of intermittent pain (13% vs. 0%; $P < 0.05$) at 112.5 m.

Conclusions: In this prospective evaluation over a period of ten years of VATS treatment for PSP, resection in addition to mechanical pleurodesis for treatment of PSP strikingly decreased the risk of future recurrences. Apical pleural abrasion was associated with a lower incidence of paraesthesia and persistent pain.

068-F

RESULTS OF MODIFIED BARONIESKY SURGICAL REPAIR IN ANTERIOR CHEST WALL DEFORMITIES

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Objective: To evaluate the immediate and mean term results of the surgical treatment of pectus deformities using modified Baronesky repair technique.

Methods: From May 2001 to December 2007, we operated 122 patients for an anterior chest wall deformities; 102 patients (84%) presented a pectus excavatum (PE), 16 (13%) a Pectus Carinatum (PC) and 4 (3%) a Pectus Arcuatum (PA). Surgical technique includes subperichondral excision of all deformed costal cartilages, followed by a transverse sternal osteotomy, anteriorly in case of PE and posteriorly in case of PC and PA. As the perichondral sheaths are totally preserved, they are stitched in continuous layers, giving a shortening effect. In case of PE the sternum is then secured anteriorly by a retrosternal metallic strut during about six months. The 7th cartilages, partially resected, are then stitched to the xyphoid. We evaluated length of incision, per-operative blood loss, length of time of surgical procedure, length of hospital stay and patients satisfaction rate.

Results: One hundred and twenty-two patients (103 men, 19 women) with a mean age of 24 years (± 9 years) were included. Mean operative time was 200 min (± 54 min), mean preoperative blood loss was 140 ml (± 80 ml), mean length of incision was 12.9 cm (± 2 cm), mean hospital stay was 3.9 days (± 1.2 days). Minor morbidity was observed in 12 (10%) patients. Follow-up was complete for 120 patients (98.4%); mid-term results (follow-up superior to 2 years) were evaluated in 88 patients (72%). Post operative 3 D CT-scan demonstrated, at six months, calcification of the resected cartilages beds, securing mid-term results of the deformity correction. Cosmetic result is excellent in 73 patients (83%), satisfactory in 15 (17%).
Conclusions: The procedures described here are safe, yielded excellent mid-term results with low morbidity and no mortality, and produced high patient satisfaction.

069-F

IS THE NUSS PROCEDURE FOR CORRECTION OF FUNNEL CHEST SUPERIOR TO THE OPEN PROCEDURE? A COMPARISON OF DIFFERENT OPERATING PROCEDURES

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Objective: The correction of funnel chest in adolescents and adults by the minimal invasive Nuss procedure has become widely accepted. The initial

result improves by thoracic remodeling under the effect of the Pectus Bar even further. In contrary to the classical open technique remains the integrity of the ventral chest wall intact. The open procedure leaves a lifelong scarring tissue. Disturbance of growth can occur. We report our results and experiences with Nuss procedure in comparison to open procedures (Brunner, Ravitch).

Methods: Between 2001 and 2008, we performed primary correction of funnel chest using the Nuss procedure in 38 patients aged between 6 and 31 years. The Haller Index was between 3, 6 and 7, 2 (4, 8). This patients are compared to 31 primary open corrections in patients aged between 14 and 46 years regarding length of treatment, blood loss, complications, cosmetic and functional results.

Results: In 80% of cases the funnel chest was corrected by the Nuss procedure using two Pectus Bars. The perioperative blood loss was 10 ml in comparison to 180 ml in the open procedures. Operating time were 55-135 min in comparison to 105-180 min. There were no complications like dislocations of the Pectus Bars, injuries to the pericard, heart or lungs or postoperative bleeding. The inpatient treatment was significantly lower with 7.2 vs. 12.1 days in the Nuss group. Two patients suffered a recurrence following open procedure.

Conclusions: The correction of funnel chest using the Nuss procedure is a completely different method in comparison to standard techniques and foregoes osteo- and chondrotomies as well as resection of costal cartilage. The correction is achieved by the initiation of the forming power of the metal rods (Pectus Bar, Biomed/Lorenz). The result is unmistakably better in the Nuss procedure and we believe this to be a clear advantage.

070-F

CAN ABSORBABLE STABILIZERS BE USED ROUTINELY IN THE NUSS PROCEDURE?

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Objective: In the surgical correction of Pectus Excavatum using the Nuss method, the bar is rotated 180° and fixed in that position by one or two stabilizers. Previously these stabilizers were all made by metal, but some (7%) needed them removed because of chronic pain caused by the stabilizer. Today there is a possibility to use one made by an absorbable material Lactosorb® which is totally absorbed after one year.

Methods: In the time period November 2001 to February 2008, a total of 483 patients underwent correction for Pectus Excavatum. We have used a shorter bar than prescribed originally. In all cases a stabilizer was placed in the end of the bar very close to the entry in the thoracic cavity, mainly on the left side. Very few got two stabilizers. Since February 2007 we have had the possibility to use stabilizers made by an absorbable material Lactosorb®. All operations were performed by the same surgeon and all patients were seen six weeks after surgery. Patient records were reviewed for retrospective analysis.

Results: In 419 patients the bar was stabilized by a metal stabilizer while 77 patients had a Lactosorb stabilizer. We didn't find any early broken stabilizers made by metal, but one late after 2½ year probably caused by metal fatigue. In the Lactosorb group we have seen three broken stabilizers, which all broke under the first few weeks, probably because of too heavy load of the flaps of the stabilizer.

Conclusions: Lactosorb stabilizers can be used to stabilize the bar in all patients where the force on the flaps of the stabilizer is not too heavy.

071-F

EXTRAPLEURAL PNEUMONECTOMY AFTER CISPLATIN/GEMCITABINE OR CISPLATIN/PEMETREXED INDUCTION FOR MALIGNANT PLEURAL MESOTHELIOMA

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Objective: To evaluate overall survival and time to recurrence with induction chemotherapy of two different regimes followed by extrapleural pneumonectomy (EPP) for patients with malignant pleural mesothelioma (MPM).

Methods: Eligible patients had MPM with clinical stage T1-3 N0-2 M0 disease considered to be completely resectable. Neoadjuvant chemotherapy consisted of a combination of cisplatin and gemcitabine (cis/gem) or cisplatin and pemetrexed (cis/pem). Surgery included extrapleural pneumonectomy, resection of pericardium and diaphragm. Postoperative radiotherapy was optional. Results: From May 1999 to January 2008, a total of 173 patients were treated for the diagnosis of MPM; 34 patients with primary palliative intent and 139 with the intention to treat with induction chemotherapy followed by EPP; 51% received the combination cis/gem and 49% cis/pem. Toxicity (haematological, renal and hospitalisations due to side effects) were significantly less frequent after chemotherapy with cis/pem ($P=0.05$). Ninety-three patients underwent EPP corresponding to a resectability rate of 66%. Ninety day mortality was 6.5%. The median survival of operated patients was significantly longer with 23 months (95% CI: 19.9; 26.0) for a median follow-up time of 21 months in comparison to 9.5 months (95% CI: 8.1; 10.7) of patients without EPP ($P=0.0004$). There was no difference in survival between both chemotherapy regimes applied. A significant prognostic factor for longer survival was the T-factor ($P=0.05$).

Conclusions: Induction chemotherapy with cis/gem or cis/pem followed by EPP for MPM results in a median survival time of 23 months. Although not compared by randomization there was no difference in survival between the two chemotherapy regimes applied.

072-F

TRIMODALITY THERAPY FOR MALIGNANT PLEURAL MESOTHELIOMA: EXTRAPLEURAL PLEURECTOMY/DECORTICATION, SYSTEMIC CHEMOTHERAPY WITH CISPLATIN/PERMETREXED AND RADIOTHERAPY

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Objective: Trimodality therapy seems to be the best treatment for malignant pleural mesothelioma. Extrapleural pleurectomy/decortication competes against extrapleural pneumonectomy as surgical therapy modality. The aim of our study was to analyze the feasibility and results of extrapleural P/D as surgical therapy modality in a trimodality therapy concept.

Methods: From November 2002 to October 2007, 35 consecutive patients with histological diagnosis of MPM were enrolled in a prospective database. They underwent trimodality therapy, including surgery with extrapleural P/D followed by four cycles of systemic chemotherapy with Cisplatin (75 mg/m²)/Pemetrexed (500 mg/m²) and radiation therapy of the chest wall and mediastinum 4-6 weeks after operation.

Results: Median age was 65 years (range 47-81 years). Pathologic stage was I in 10 patients (28.6%), II in 6 (17.1%), III in 17 (48.6%), and IV (T4) in 2 (5.7%). Tumor histology was epithelial in 25 patients (71%). Five patients (14.3%) had ipsilateral nodal metastases. Surgical morbidity and mortality were 20.0% and 2.9%, respectively. One patient died due to chemotherapy toxicity (2.9%). Thirty-three patients completed the trimodality therapy. Median follow-up was 18.3 months. Overall median survival was 33.2 months. One-, 2-, and 3-year-survival were 75%, 61% and 43%, respectively. In this small series long-term survival was not affected by nodal metastases (N0 vs. N1/2, $P=0.594$), tumor stage (I/II vs. III/IV, $P=0.285$) or tumor histology (epithelial vs. non-epithelial, $P=0.315$). Local recurrences occurred in 8 of 33 patients (24.2%). Further more seven patients (21.2%) evolved distant metastases. One out of 33 patients (3.0%) developed local and distant recurrence.

Conclusions: The trimodality therapy with extrapleural P/D demonstrates good results in terms of morbidity, mortality and survival for MPM. This treatment approach is feasible in all stages of MPM. Based on these results the role of extrapleural pneumonectomy in the treatment of MPM should be reappraised.

073-F

EXTRAPLEURAL PNEUMONECTOMY (EPP) IN MALIGNANT PLEURAL MESOTHELIOMA (MPM): TREATMENT RESULTS IN A SINGLE-INSTITUTION SERIES OF 48 CASES

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Objective: Malignant pleural mesothelioma has a survival of 4-12 months from the time of diagnosis in the absence of treatment. No clear advantage of pleurectomy-decortication, extrapleural pneumonectomy, simple drainage and talc pleurodesis or any other form of therapy has been demonstrated so far. Therefore, the role of surgery is still undefined.

Methods: A retrospective analysis of all cases with a histological diagnosis of MPM who underwent EPP between January 2000 and December 2007 at the Istituto Clinico Humanitas, Milan, Italy was carried out. Perioperative morbidity and mortality, and disease-free and overall survival were analyzed.

Results: Forty-eight patients were included in the study: Nine patients were treated with neoadjuvant carboplatinum and pemetrexed chemotherapy (CT), and five patients received adjuvant radiotherapy (RT) in addition to it. Postoperative morbidity rate was 29% (3 bleeding requiring surgical haemostasis, 2 chylothorax, 1 cardiac herniation, 5 atrial fibrillation, 1 laryngeal nerve injury and 2 late bronchopleural fistula). Morbidity in the neoadjuvant chemotherapy group was not increased compared with previously untreated patients. There was one perioperative death (2.1%) due to intrathoracic colon herniation and necrosis. Two patients were lost to follow-up. After a median follow-up of 21 months, 21 patients are still alive and 15 are disease-free. Median survival was 28 months and median time to progression 17 months.

Conclusions: In our experience EPP is a low-mortality procedure and carries an acceptable morbidity. Induction chemotherapy with carboplatinum and pemetrexed is active and can be administered with no apparent increase in postoperative morbidity.

074-F

MALIGNANT PLEURAL MESOTHELIOMA : A REVIEW OF 83 CONSECUTIVE EXTRAPLEURAL PNEUMONECTOMIES

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Objective: To report on a single institution experience with radical surgery for malignant pleural mesothelioma with emphasis on long-term outcome.

Methods: We reviewed from our prospective database over a 17-year period, 83 consecutive patients undergoing radical surgery for malignant pleural mesothelioma (MPM) in a multimodality program. Long-term overall survival was analysed using the Kaplan-Meier method.

Results: Eighty-three patients (65 male, median age: 60 years) underwent an extrapleural pneumonectomy with a curative intent. Epithelioid MPM was the most frequent (82%). A right-sided disease was present in half cases ($n=42$). IMIG stage of the disease was 2 in 36%, 3 in 45% and 4 in 9%. Preoperative chemotherapy consisting of a doublet cisplatin-pemetrexed (mean of 3 cycles) was offered to ten patients (12%). Postoperative therapies either chemotherapy or radiotherapy were given in 25 patients (30%). The 30-day and 90-day mortality rates were 4.8% and 10.8%, respectively. Postoperative complications occurred in 39.8% and were major in 23 patients (27.7%). Reoperation was necessary in 12 cases (14.5%) for one of the following reason: broncho-pleural fistula ($n=4$), bleeding ($n=3$), diaphragmatic patch rupture ($n=3$), oesophago-pleural fistula ($n=1$) and empyema ($n=1$). Mean hospital stay was 43 days. Median survival was 14.5 months. Overall 1-year, 2-year, 5-year survival rates were respectively 62.4%, 32.2% and 14.3%.

Conclusions: These results fit with the published data of the most experienced centre regarding mortality and morbidity after extrapleural pneumonectomy for MPM. In line with previous biggest series reported, the observed 5-year survival rate of almost 15% remains poor.

Session 11 - Best posters
Wednesday, 11 June 2008
08:00-09:00

**For Abstracts see Posters 105-P–109-P, 130-P–137-P,
 165-P–167-P**

Session 12 - Video (Mixed)
Wednesday, 11 June 2008
08:00-09:00

075-V

**PERSONAL EXPERIENCE IN THORACOSCOPIC SPLANCHNICECTOMY FOR
 PALLIATING THE PAIN IN PATIENTS WITH CHRONIC PANCREATITIS**

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Objective: The management of abdominal pain caused by chronic pancreatitis is still challenging. Many authors have described surgical splanchnicectomy as a good alternative in selected cases when pharmacological support has failed. The main aim of surgical approach is improvement of quality of life by transection of nerve fibers responsible for visceral pain. An accurate selection of patients is mandatory especially in case of alcoholic pancreatitis. Patients are enrolled after evaluation of the pain rate (using the numeric rating scale), coexisting morbidity and compliance to medical care.

Methods: We selected three patients candidate for surgery. They were affected by chronic pancreatitis determining episodes of severe abdominal pain pharmacologically treated at the emergency room. Before surgery an abdominal CT-scan excluded pancreatic cancer. We always treated the left thoracic side independently by pain localization. Splanchnicectomy was always performed endoscopically with three thoracic accesses and two accesses in the last patient.

Results: One patient was treated 12 months ago. The others six months ago. We never converted to thoracotomy. Mortality or morbidity rate was 0%. Postoperative hospital stay was three days. Pain relief was always obtained and still persisted at the last follow-up. Further intervention for pain relief was never required.

Conclusions: Thoracoscopic splanchnicectomy is a safe, easy and little invasive procedure. Based on our experience and literature review we think that this technique is an effective method in controlling abdominal pain and should be always considered in case of patients with chronic pancreatitis.

076-V

**CERVICO-MANUBRIAL-THORACOTOMIC APPROACH FOR REMOVAL OF A
 LEFT 'ANTERIOR PANCOAST' TUMOR**

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Objective: The anterior Pancoast tumors represent a technical challenge for the thoracic surgeon due to the complexity of the anatomy of the superior sulcus. The surgeon has to perform an en-bloc resection of the tumor infiltrating both the upper lobe of the lung and the antero-lateral part of the chest wall. Different approaches have been proposed by several authors for the treatment of such tumors. The cervico-manubrial-thoracotomy without section of the clavicle, described by Grünenwald, allows a safe access to the superior sulcus tumors.

Methods: The authors describe in the video presentation the clinical case of a 66-year-old male patient with a NSCLC of the anterior segment of the left upper lobe infiltrating the antero-lateral part of the 2nd intercostal space. Normal mediastinal lymph nodes. PET scan negative for distant localizations. The video shows the main surgical times of the procedure.

Results: The postoperative course was normal. The histology was a squamous cell carcinoma, pathological stage T3N0M0 (pStage IIB), the 2nd rib was infiltrated by the tumor while the 1st and 3rd rib were free from tumor. The mediastinal lymph nodes (stations 4, 5, 6, 7, 10) were all negative. The patient underwent adjuvant radiotherapy and the control six months after the surgical procedure is normal.

Conclusions: Superior sulcus tumors represent a technical challenge for the thoracic surgeon. The typical Pancoast tumors are posterior, while the so called 'Anterior Pancoast tumors' have a different clinical setting due to a possible compression/infiltration of the subclavian vessels, phrenic nerve, first rib and anterior scalene muscle. The video describes the surgical technique for removal of a superior sulcus tumor of the left upper lobe with antero-lateral invasion of the chest wall. The approach is a cervico-manubrial-thoracotomy with en-bloc resection of the left upper lobe and the first three ribs.

077-V

**THORACOSCOPIC REPAIR OF DIAPHRAGM INJURY USING 4 PORTS
 WITHOUT WORKING THORACOTOMY**

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Objective: Recently, VATS has gained general consent for the diagnostic method of suspicious diaphragmatic injury, but it is not used for the first line treatment method. Most surgeons prefer thoracotomy in order to repair diaphragm after the confirmation of injury. Generally, thoracotomy is more reliable operation than VATS in diaphragmatic injury because most patients combined with multiple traumas and vital signs are unstable. However, thoracoscopic repair of diaphragm will be acceptable in limited cases which diaphragmatic injury does not combined with major multiple injuries and vital signs are stable.

Methods: A 36-year-old man who was suspicious with right diaphragmatic injury, was decided emergency VATS for diagnosis. Two diaphragm injuries were shown, and the tearing sizes were about 12 cm, 3 cm length respectively. We decided thoracoscopic repair of diaphragm because patient did not combined major injury and vital signs were stable. Three 5 mm ports and one 12 mm port were used without working thoracotomy. Diaphragm was repaired using multiple horizontal interrupted mattress suture and reinforcement suture.

Results: The postoperative course was uneventful. Chest tube was removed at postoperative five days, and patient was transferred to the department orthopedic surgery at postoperative six days. Six months follow-up chest PA showed no abnormal finding except mild diaphragmatic elevation.

Conclusions: Thoracoscopic repair was acceptable procedure in the treatment of diaphragmatic injury and was possible using 4 ports without working thoracotomy. It will be a good indication in case that patient does not combined with multiple major traumas and vital signs are stable.

078-V

**TECHNIQUE AND RESULTS OF THORACOSCOPIC FIRST RIB EXTIRPATION
 (TFRE) IN THORACIC OUTLET SYNDROME (TOS)**

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Objective: First rib resection is the most common and best documented surgical treatment of TOS. To overcome the drawbacks of open surgery a thoracoscopic technique for surgical treatment of TOS was developed. The used thoracoscopic techniques are variable and operative results sparse. Our aim was, by employing new instruments, to have a thoracoscopic technique completely removing the first rib.

Methods: Our experiences of thoracoscopic first rib resection is reported and video of technical details showed (SE). Twenty patients including 13 women and seven men with a mean age of 32 (20-51) years underwent surgery. TFRE is performed in semi-lateral position with single-lung ventilation using three ports for Harmonic scalpel, special endoscopic elevators and rongeurs. The total extirpation of the first rib including attached fibrous bands, adhesions and scalenus muscles was achieved.

Results: There were no postoperative mortality or complications. The mean postoperative hospitalisation was 3.3 days being significantly shorter to previous open procedures. The postoperative opiate consumption was decreased, as well. In early postoperative follow-up, all patients had improved symptoms. The early- and medium-term result seem to be at least as good as after open approaches. A cosmetically acceptable scar was appreciated by female patients.

Conclusions: We conclude that port-access first-rib resection is a feasible, safe, effective and reproducible procedure. Videoscopic visualisation of

thoracic outlet from the pleural cavity is superior compared to other techniques. It promotes complete decompression of thoracic outlet, and, therefore, may provide a preferred alternative to standard first rib resections. A concomitant cervical rib is best resected through small cervical incision.

079-V

A CASE OF SPONTANEOUS HEMOTHORAX AS UNUSUAL PRESENTATION OF THORACIC ENDOMETRIOSIS SYNDROME: RADICAL SURGICAL TREATMENT BY VIDEO-ASSISTED THORACOSCOPY (VAT)

S. Margaritora, E. Meacci, V. Porziella, M.L. Vita, A. Tessitore, M.T. Congedo, P. Granone

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Objective: An isolated catamenial hemotorax alone is an unusual manifestation of Thoracic Endometriosis Syndrome (TES) generally occurring few years after clinical symptoms of pelvic endometriosis. We reported the surgical treatment of a young woman without history of pelvic endometriosis affected by spontaneous hemothorax of unknown origin.

Methods: A 24-year-old woman, in her second day of menstruation, was referred to our service with progressive dyspnea, cough and right-sided chest pain without history of trauma. She stopped two months before a ten years duration estrogen-progestin treatment. She denied gynecologic pathology. Chest X-ray showed a significant right-sided pleural effusion. A thoracentesis revealed bloody fluid. A whole-body CT-scan was negative for lesions outside the thorax. Because of the increasing of pleural effusion and the lack of diagnosis, we decided to perform a VAT.

Results: Videothoracoscopy showed a chocolate-brown fluid and strong pleural adhesions. A dense, cream-colored nodular peel was observed on the parietal pleural surfaces and a single perforation associated with purple nodules was found in the diaphragm; a small bulla was identified in the middle lobe. We performed a complete decortication, a bullectomy and a diaphragmatic resection and reconstruction. A chest tube was left in site for five days. Pathological examination showed extensive organizing pleuritis and small foci of glandular tissue resembling endometrial glands and stroma, consistent with endometriosis, both in pleural and diaphragmatic tissue.

Conclusions: VAT has been proved to be not only a diagnostic but also a therapeutic tool in the treatment of this unusual presentation of TES.

080-V

TECHNIQUE OF RIGHT VIDEOTHORACOSCOPIC THYMECTOMY: BEST MINIMALLY APPROACH FOR THYMECTOMY

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Objective: Videothoracoscopic thymectomy is feasible procedure. The hottest points of the dissection are the left innominate vein and the thymic vein, and we think that is easier to dissect them from the right side. We show our technique and experience of right videothoracoscopic thymectomy.

Methods: Since March 1993 to nowadays, we have performed 62 thymectomies through four 12 mm working ports. Surgical approach in the first three patients was via the left hemithorax, and in all the others we used the right-side approach. Hemostasis of the thymic veins was performed with clips, harmonic scalpel and one case with a vascular endostappler. Gender: 27 males, 32 female; Age 47.3 years, range 14-74. Myasthenia gravis: 38, Thymoma: 21 (non-invasive).

Results: In Myasthenia patients no morbidity or mortality were reported. Thymoma's patients there was one death in the postoperative period and other decease one year later because cerebral metastasis We needed to performed three minithoracotomies (4-5 cm) one because technical difficulties and two to extract big surgical specimen. Conversions: 3, 2 due to thymic vein bleeding and one to technical difficulties that unabled innominate vein dissection. Mean duration: 110 min (60-193). Postoperative stay: 3.7 days. Three patients were reoperated because suspected thymic residual tissue (pathology: fat tissue).

Conclusions: We think that right videothoracoscopic thymectomy is the best approach to perform a thymectomy because allows perfect control of the left innominate vein and thymic veins following Cava vein and Pirogoff's confluent. Exceptions are invasive or big thymomas and left sided thymus.

**Session 13 - Mixed Malignant
Wednesday, 11 June 2008
11:00-13:00**

081-F

VALIDITY OF IASLC PROPOSALS FOR THE REVISION OF THE N DESCRIPTORS IN LUNG CANCER

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Objective: This study was conducted to assess the validity of the proposals for the revision of the N descriptors by the IASLC (International Association for the Study of Lung Cancer).

Methods: One thousand and thirty-two non-small cell lung cancer patients who had pulmonary resection and proven to be stage I-III were reviewed retrospectively. Lymph node stations were grouped together into six zones: peripheral or hilar for N1, and upper or lower mediastinal, aortopulmonary, and subcarinal for N2 nodes. Survival was analyzed according to the proposed subdividing N descriptors: single-zone N1 (N1a), multi-zone N1 (N1b), single-zone N2 (N2a), and multi-zone N2 (N2b).

Results: The 5-year survival rate was 63.8% for N0, 42.3% for N1a, 36.5% for N1b, 35.8% for N2a, 17.4% for N2b, and 8.3% for N3. There were three distinct prognostic groups for N1 and N2 nodes: N1a, N1b or N2a, and N2b disease. In multivariate analysis, age, type of operation, T stage, and nodes status were independent prognostic factors. Hazard ratios vs. N0 for N1a, N1b or N2b, N2b, and N3 were 1.580, 2.115, 3.413, and 5.922, respectively.

Conclusions: Amalgamating lymph node station into zone and subdividing N descriptors followed a significant stepwise deterioration. Although more studies are needed, the proposals for the revision of the N descriptors by IASLC provide more accurate prognostic stratification.

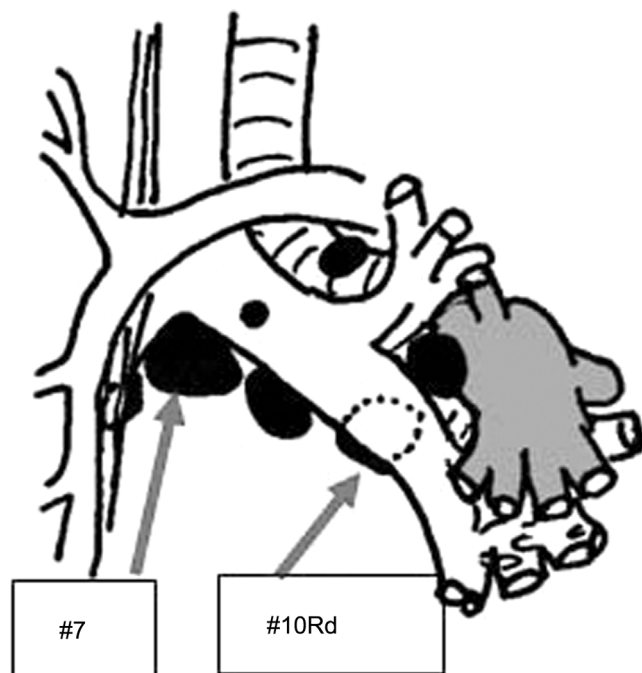
082-F

BORDERLINE BETWEEN HILAR AND MEDIASTINAL LYMPH NODES IN SUBCARINAL ZONE: AN ANALYSIS OF DEEPLY-LOCATED HILAR NODES IN RIGHT LUNG CANCER

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Objective: The IASLC Lung Cancer Staging Project has proposed the N descriptors as six 'zones' including peripheral or hilar for N1, and upper or lower mediastinal, aortopulmonary, and subcarinal for N2. However, some controversial issues still exist about the borderline of each zone. As for the



hilar area, we subdivided the location of lymph nodes and accumulated the surgical cases prospectively according to the subclassified hilar map. Among them, we designated the lymph nodes located ventrally by the intermediate bronchus and dorsally by the left atrium as #10Rd (deeply-located right hilar node), which is connected to subcarinal area and is difficult to recognize behind intermediate bronchus in operative field (Fig. 1). We evaluated the clinical and prognostic implications of #10Rd.

Methods: A total of 305 patients underwent pulmonary resection with lymph node dissection or sampling for right lung cancer from January 2003 to March 2007. Among them, we analyzed 53 patients with dissection of #10Rd.

Results: The proportion of patients with dissected 10Rd was 53.5% (53/99) in right lower lobe cancer. The proportion of preoperative recognition in computed tomography was 54.7% (29/53). Three patients had the metastasis in #10Rd. All of their primary tumours located in the lower lobe. For one patient, #10Rd was sole metastatic node. The median relapse-free survival time was five months in patients with metastasis to #10Rd and 32 months in patients with N1 except for #10Rd metastasis, respectively, and their difference was statistically significant ($P=0.02$, log-rank test).

Conclusions: With a conscious observation, #10Rd node can be recognized and dissected in a certain frequency. #10Rd is classified as peripheral zone in the lymph node maps proposed by the IASLC. However, the prognosis of the patients with metastasis to #10Rd may be considerably poor. It may be appropriate to classify #10Rd as N2, 'subcarinal zone'

083-F

SURVIVAL AFTER TRIMODALITY TREATMENT FOR SULCUS SUPERIOR TUMOURS AND CENTRAL T4 NON-SMALL CELL LUNG CANCER

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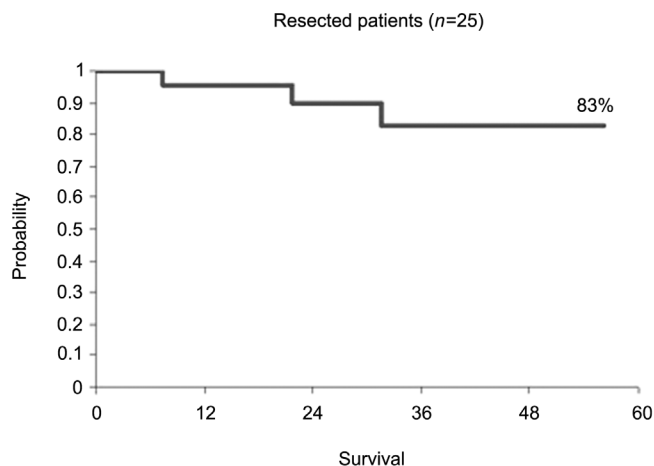
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³Department of Radiotherapy, University Hospital Leuven, Belgium

Objective: For sulcus superior tumours and central cT4 tumours, low resectability and poor long-term survival rates are obtained with single modality treatment.

Methods: In this prospective single centre study, all consecutive patients with potentially resectable pancoast tumours (cT3-T4) and central cT4 tumours were treated with induction chemoradiotherapy (2 courses of Cisplatin-Etoposide) and concomitant radiotherapy (45 Gy/1.8 Gy) after multidisciplinary discussion. Surgery with attempt of complete resection was performed in patients showing response or stable disease.

Results: Between 2002 and October 2007, 30 consecutive patients were enrolled in this study. Half of them were sulcus superior tumours (cT3:3; cT4:12). The mean age was 60 year. Two patients did not complete the induction chemoradiotherapy protocol due to tumour abscess. Twenty-eight patients were reassessed after induction, 26 had response or stable disease by conventional imaging. Twenty-five patients were surgically explored since one patient became medically inoperable during induction treatment. Twenty-three had a macroscopically complete resection, resection was microscopically incomplete (R1) in two patients. In 10 patients (40%) a pneumonectomy was performed, in 16 patients (64%) a chest wall resection was necessary. The overall complete resectability was 77% (23/30). Eighty-eight per cent of the resected patients had a complete pathological response



or minimal residual microscopic disease. The mean postoperative hospital stay was 9.2 days with no hospital mortality and no broncho-pleural fistula. With a median follow-up of 32 months, 4-year survival rates are 76% in the intent-to-treat population ($n=30$), and 83% in R0/R1 resected patients ($n=25$, fig), with no statistically significant difference between sulcus superior tumours and central cT4 tumours.

Conclusions: In patients with sulcus superior tumours and in selected patients with central cT4 tumours, trimodality treatment is feasible with acceptable morbidity and mortality. The complete resectability is high and long-term survival is promising.

084-F

N2-LYMPH NODE METASTASES OF NSCLC IN THE AORTO-PULMONARY WINDOW: REALLY A BETTER PROGNOSIS?

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Objective: Aim of the study was to investigate the prognostic significance of the level of lymph node metastasis in non-small cell lung cancer, by comparing isolated N2-disease in the aorto-pulmonary (AP) window with other sites of nodal metastasis.

Methods: According to the site and the modality of diagnosis of nodal disease, patients were grouped as follows: group I, N2-disease in the AP-window (level 5 and 6); group II, N2-disease at other level (level 1, 2, 3, 4, 7, 8, 9); group III, N2-disease at mediastinoscopy with response to induction treatment (level 2, 4, 7); group IV, N2-disease at mediastinoscopy without response to induction treatment (level 2, 4, 7); group V, N1-disease in the hilar or interlobar region (level 10, 11).

Results: From January 1999 to December 2005, 158 patients with node-positive non-small cell lung cancer were treated at our institution. Median age was 64 years (range: 33-84). Forty-eight (30%) had N2-positive mediastinoscopy and underwent induction chemo-radiotherapy and surgery (group III, 21 patients; group IV, 27 patients). Forty-four (28%) were found to have N2-disease (group I, 14 patients; group II, 30 patients) or N1-disease (group V, 66 patients) after thoracotomy. One hundred and twenty-two (77%) patients underwent (bi) lobectomy, 18 (11%) sleeve lobectomy, 15 (10%) pneumonectomy, and 3 (2%) lesser resection. Operative mortality and major morbidity rates were 2% and 15%, respectively. Adjuvant therapy (chemotherapy, radiotherapy, or both) was delivered to 52% of patients. According to the N-grouping, 5-year survival rates were 19% for group I, 12% for group II, 66% for group III, 15% for group IV, and 29% for group V ($P=0.05$).

Conclusions: The prognosis of patients with isolated N2-disease in the AP window is comparable to that of nodal disease at other level. Only lymph node metastasis clearance after induction treatment carries a significantly better outcome.

085-F

INDUCTION THERAPY IN ELDERLY NON-SMALL CELL LUNG CANCER (NSCLC) PATIENTS: A DANGEROUS CHOICE?

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Objective: Lung cancer account for the principal cause of cancer-related death in elderly. A complete resection represent the best chance for cure also in the elder population. In this setting the impact of multimodality treatment needs to be further investigated. We describe the results in elders treated by multimodality protocol at our Institution.

Methods: We retrospectively reviewed data on patients older than 70 years surgically treated for NSCLC from January 1996 to August 2006. Thirty patients underwent an induction treatment including cisplatin or gemcitabine plus 45 Gy of concurrent radiotherapy (group A). Two hundred and ninety-nine patients underwent surgery without induction treatment (group B).

Results: Mean age was 72.3 in group A and 74.3 in group B ($P=n.s.$). In group A there were 74% clinical stage III cases vs. 12% in Group B ($P<0.05$). We performed 25 lobectomies and 6 pneumonectomies in group A; in Group B there were 271 lobectomies, 15 pneumonectomies and 13 wedge resections. Morbidity was 10% in Group A and 6.6% in Group B ($P=n.s.$). Recurrence rates were 17.8% in group A vs. 28.8 in group B ($P=n.s.$). One-year, two-years and five-years survival were respectively, 92.3%; 80% and 80% in Group A vs. 90.9%; 83% and 65.7% in Group B ($P=n.s.$). We further compared survival

curve for Group A to a randomly selected population of patients under 70 years, treated with the same protocol and we find out a better survival for elder patients ($P < 0.03$).

Conclusions: We concluded that age does not represent an independent risk factor, precluding a multimodality treatment.

086-F SURGICAL RESECTION OF ADRENAL METASTASIS FROM RESECTED LUNG CANCER - ABOUT 69 CASES

P.-Y. Brichon

Thorax Group, Paris, France

Objective: To analyse results of surgical resection for adrenal metastasis from resected lung cancer.

Methods: From Jan 1982 to May 2007, we collect within the Thorax Group's surgeons: 69 cases of adrenal resection for metastasis from lung cancer, upon 67 patients (59 males, 35-79 year; mid: 57 year). Lung resection were: upper (38) and lower (13) lobectomy, pneumonectomy (11), lower-middle lobectomy (2), wedge (3). Histologic types were adenocarcinoma (47), squamous (9), large cell (8), poorly differentiated neuroendocrine (2) and pleomorphic (1). Twelve patients sustained chemotherapy before lung resection and three radio-chemotherapy. After lung resection fifteen patients sustained radiotherapy, 9 chemotherapy and 7 radio-chemotherapy. Post op staging showed 36 pN0, 12 pN1, 17 pN2 and 2 pN3. Adrenal metastasis were either synchronous (30) or metachronous (37) - disease free interval from 6 to 119 months; respectively synchronous and metachronous and both metachronous in two cases of bilateral metastasis. Adrenal resection was preceded by chemotherapy (21 cases) or radio-chemotherapy (1 case), and these treatments were often intricately with those associated to lung resection. Adrenalectomy was performed via laparotomy (35), lombotomy (9), pure posterior route (7), thoracophrenolaparotomy (1), coelioscopy (1) and in 16 cases through the diaphragm by the way of the thoracotomy used for lung resection. There were 2 postoperative deaths (synchronous et metachronous). Two adrenal metastasis were not able to resection (survival 11 et 21 months) and seven adrenal resections were extended to kidney (3), diaphragm (2), pancreas (1) and aortic-caval nodes (1).

Results: Five-year survival after adrenal metastasis resection is more than 20% (log-rank), dependent from nodal lung status; is twice in case of synchronous vs. metachronous metastasis ($P = 0.06$) and better in case of associated treatment (mostly chemotherapy - $P < 0.05$).

Conclusions: Resection of adrenal metastasis from resected lung cancer is licit and lead to the best results in case of N0 lung status, synchronous metastasis and/or associated treatment (specially chemotherapy).

087-F SURGICAL TREATMENT OF NEUROGENIC TUMORS OF THE MEDIASTINUM. A SINGLE INSTITUTION REPORT ON 93 CASES

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Objective: Neurogenic tumors of the mediastinum are uncommon neoplasms arising from neurogenic elements within the thorax. We sought to evaluate the outcome following surgical treatment of such tumors.

Methods: From February 1992 to March 2007, 93 neurogenic tumors of the mediastinum underwent surgical treatment in our Institution. A videothoracoscopic approach was used in 57 cases (61.3%): of these 44 underwent VATS only (group V) and 13 required a conversion (group C). In the remaining 36 cases, 32 patients underwent thoracotomy (group T) and four a combined neurosurgical approach (group N).

Results: No postoperative mortality was reported. Postoperative morbidity rate was 23.6% (22/93); 14 of group T, 4 of group N, 3 of group C and 1 of group V; $P: 0.00$). Histology showed benign neurogenic tumors in all patients. Statistical analysis showed mean differences between the three groups (group V, T and C, respectively) in operative time (102 ± 9.7 vs. 149 ± 11.3 vs. 143 ± 17.8 min; $P: 0.01$), postoperative stay (4.1 ± 0.5 vs. 6.6 ± 0.5 vs. 5.1 ± 0.9 days; $P: 0.0004$) and postoperative pain in day 1, day 7 and one month after surgery (respectively $P: 0.00$, $P: 0.00$ and $P: 0.001$). At a mean follow-up of 73 months no patients showed recurrence of the tumor.

Conclusions: VATS represents the gold standard for the treatment of benign neurogenic tumors of the mediastinum with better statistical significant results in terms of morbidity, operative time, postoperative stay and postoperative pain compared to open approach. Dumbbell tumors require a combined neurosurgical approach.

088-F ISOLATED LUNG PERFUSION VS. INTRAVENOUS DRUG ADMINISTRATION: COMPARISON OF FREE AND LIPOSOMAL DOXORUBICIN DISTRIBUTION IN A SARCOMA MODEL

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Objective: Isolated lung perfusion (ILP) with free and liposomal-encapsulated doxorubicin (LiporubicinTM) was compared to intravenous (IV) drug administration with respect to drug uptake and distribution in rat lungs bearing a sarcoma tumor.

Methods: A single sarcomatous tumor was generated in the left lung of 40 Fischer rats, followed 10 days later by left-sided ILP ($n=20$) or IV drug administration ($n=20$); for each doxorubicin formulation at a drug dose of 100 μg ($n=5$) and 400 μg ($n=5$). In each perfused lung, the drug concentration was assessed in the tumor and in three areas of normal lung parenchyma by HPLC.

Results: ILP and IV resulted both in a consistently lower drug uptake in tumors than in lung parenchyma for both doxorubicin formulations and both drug doses applied. For free doxorubicin, ILP resulted in a higher drug uptake in the lung and the tumor compared to IV for each drug dose; the tumor to normal tissue drug ratio was similar for ILP and IV at 100 μg (0.27 ± 0.1 vs. 0.39 ± 0.1) ($P=0.11$) and higher for ILP at 400 μg (0.67 ± 0.2 vs. 0.27 ± 0.1) ($P=0.02$). For LiporubicinTM, ILP and IV resulted in a similar drug uptake in the lung and the tumor for each drug dose but the tumor to normal tissue drug ratio was higher after ILP for both drug doses, without reaching statistical significance (0.52 ± 0.5 vs. 0.28 ± 0.1 for 100 mg, $P=0.28$; 0.54 ± 0.2 vs. 0.41 ± 0.1 for 400 mg, $P=0.27$).

Conclusions: The tumor to normal tissue drug ratio was higher after ILP than after IV drug administration for both doxorubicin formulations. The best tumor drug uptake (36.91 ± 0.4 mg/g) and tumor to normal tissue drug ratio (0.67 ± 0.2) were obtained with ILP and 400 mg of free doxorubicin.

089-F EFFECTS OF HYPERTHERMIA ON PLEURAL MESOTHELIAL CELLS: EXPRESSION OF INFLAMMATORY PROTEINS AND CELLULAR DEATH

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Objective: Determination - in a murine experimental model - of the pro-inflammatory response to hyperthermia on pleural mesothelial cells and its relation with the production of cellular apoptosis and necrosis.

Methods: Design: Forty-five white mice, male sex, Swiss OF1 race, 40-50 g weight, aged six weeks. Anesthesia (sodium-pentobarbital 0.5 mg/100 g, pancuronium bromide 0.1 mg/100 g). Exposition of right pleural cavity. Pleural perfusion with physiologic solution buffered with phosphate (PBS 0.15M). Isolation of mesothelial cells and preservation at 4 °C. Cellular re-suspension in DMEM (Dulbecco's Modified Eagles Medium), supplemented with antibiotics (penicillin 100 U/ml, streptomycin 100 $\mu\text{g}/\text{ml}$, gentamycin 50 $\mu\text{g}/\text{ml}$ and glutamine 2 mM). Average number of cells per experiment: 20×10^6 . Determinations: 1. Pro-inflammatory cytokines using RayBio[®] Mouse Inflammation Antibody Array II, Ray Biotech Inc: pro-inflammatory (KC, RANTES, G-CSF, MIP-2) and protective (IL-6, IL-10, sTNF α) cytokines; quantification: Amerzham Enhanced Chemiluminescence (ECL). 2. Cell apoptosis using fosfatidil-anexin serine V-FICT. 3. Cell necrosis with vital stain using propidium iodide. Quantification: FACScan and Cellquest program. Experimental groups (n 3, 15 mice/per group): Mesothelial cells culture during 120 min under the following temperature conditions: 37 °C, 40 °C and 42 °C. Statistical treatment: U Mann-Whitney and Kruskal-Wallis. Significant $P < 0.05$. Results: Percentage expression of inflammatory cytokines, apoptosis and necrosis: Table: Results

Conclusions: Hyperthermia induces significant changes as concerns the expression of some cytokines related to the mechanisms regulating the activity of the mesothelial cell. Together with this fact, an increase in the percentage of cellular apoptosis is observed when temperature reaches 40 °C.

Temperature	KC	RANTES	G-CSF	MIP-2	IL-6	IL-10	sTNF α	Apoptosis	Necrosis
37 °C	100	100	100	100	100	40	70	2.90	16.81
40 °C	100	100	30	90	80	-	40	5.46	17.90
42 °C	40	90	30	70	30	-	10	6.27	15.59
P (37/42 °C)	0.005	0.005	0.006	0.006	0.006	0.001	0.001	0.041	0.762

090-F

FDG-PET SUVMAX AND SURVIVAL CORRELATIONS WITH TUMOR MARKERS IN ESOPHAGEAL CANCER

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Objective: Esophageal cancer tumor biology is best assessed clinically by FDG-PET. Both FDG-PET SUVmax and selected tumor markers have been shown to correlate with stage, nodal disease, and survival in esophageal cancer. Interestingly, there is limited data examining the relationship between FDG-PET SUVmax and expression of these tumor markers in esophageal cancer. The purpose of this study was to determine the correlation of tumor markers with FDG-PET SUVmax and survival in esophageal cancer.

Methods: FDG-PET SUVmax was calculated in 67 patients with esophageal cancer of which 59 (88%) had adenocarcinoma. Neoadjuvant chemotherapy and/or radiotherapy was administered to 42% of patients. Esophageal tumor tissue and surrounding normal tissue was obtained and tissue microarrays were created. Immunohistochemical analysis was performed for five known esophageal cancer tumor markers (GLUT1, p53, cyclin D1, EGFR, and VEGF). Assessment of each tumor marker was made by an independent, blinded pathologist using common grading criteria. A *P*-value <0.05 was considered statistically significant.

Results: There were 55 men (82%) and 12 women (18%) with a median age of 63 years (range 40-83). Pathologic staging included stage I (*n*=29, 43%), stage II (*n*=19, 28%), stage III disease (*n*=17, 25%), and stage IV disease (*n*=2, 3%). PET SUVmax correlated with T stage (*P*=0.001) and greatest tumor dimension (*P*<0.0001). Increasing SUVmax values correlated with increased expression of GLUT1 transporter (*P*=0.0015). Table 1 illustrates an increase in the percentage of tumor cells expressing GLUT1 as maximal SUV values increase. VEGF expression was detected in tumor tissue of 12 patients (18%). On multivariate analysis, the presence of VEGF expression correlated with a significantly poorer outcome than patients without VEGF expression (*P*=0.03, HR=4.507).

Conclusions: FDG-PET SUVmax correlates with an increased expression of GLUT1 transporter in esophageal cancer. VEGF expression in esophageal tumor was an independent risk factor for significantly poorer survival in patients with esophageal cancer.

Table 1. SUVMax and GLUT1 expression (Mean±S.D.)

PET SUVmax	GLUT1 Expression (%)
0-2.5 (<i>n</i> =17)	2.65±1.36
2.6-5.0 (<i>n</i> =27)	12.96±5.28
5.1-10 (<i>n</i> =16)	35.94±10.38
>10 (<i>n</i> =7)	45.00±15.57

091-F

SEMIMECHANICAL ANASTOMOSIS VS. HANDSEWN ANASTOMOSIS AFTER ESOPHAGECTOMY WITH GASTRIC TUBULISATION AND CERVICAL ANASTOMOSIS

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Objective: Semimechanical side to side stapled anastomosis is thought to reduce frequency of leaks and strictures provided the use of whole stomach. Few data are available when using gastric tubulisation.

Methods: From a prospective database two matched groups were retrieved of cancer patients receiving a cervical esophagogastronomy on a gastric tubulisation: 165 semimechanical anastomosis (SMA), 96 handsewn anastomosis (HSA). **Results:** Overall incidence of anastomotic leaks was 4.9%. There was no fistula related mortality for an overall postoperative mortality of 2.7%. Leakage rate in SMA was 2.4% vs. 9.4% in HSA (*P*=0.011). All fistulae were treated conservatively. Need for dilatation occurred in 32.5% of SMA and 50% of HSA (*P*=0.003), 12% and 29%, respectively needing ≥3 dilatations (*P*=0.001).

The EORTC Quality of Life dysphagia score indicated a clear but non-significant trend favouring SMA for solids, becoming significant for semi-solids (*P*=0.003).

Conclusions: Anastomotic leakage rate can be kept below 5%. Semimechanical anastomosis reduces significantly the leakage rate and the need for dilatation, in particular repeat dilatation resulting thereby in a better dysphagia score in particular for semi-solid food. Semimechanical anastomosis can be safely used after gastric tubulisation allowing thus resection of the lesser curvature, an important oncologic principle for distal half tumours.

092-F

QUALITY OF LIFE AFTER THORACIC SURGERY IN THE ELDERLY: A CENTER-BASED PROSPECTIVE CONTROLLED TRIAL

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Objective: People in industrialized countries become older, which is reflected by the thoracic surgical patients. Age as a risk factor for surgical procedures becomes relative by improved general condition and excellent health status of elderly. Elderly patients seem not to suffer more from the surgical impact than younger ones. A prospective controlled trial concerning the Quality of life (QoL) will deliver a database concerning this aspect of seniors in thoracic surgery.

Methods: Patients were included from their chronologically income, senior patients were defined from 75 years and older. QoL was measured by the EORTC QLQ-C30 with appendix LC-13. First evaluation was done preoperatively, follow-up was completed three months postoperatively. Including criterias were patient's age, thoracotomy with pulmonary or mediastinal resection and patient's formal agreement. Questionnaire's evaluation followed the guidelines of the EORTC.

Results: One hundred and one patients were included in the 3-months follow-up, 55 patients in the senior, 46 patients in the control group. The seniors had an average age of 82 years. Thoracotomy was performed because of 43 NSCLC's, 4 metastasis, 1 sarkoma and 1 malignant mesenchymal tumor. Resection was done by standard lobectomy in 27 cases, 1 bilobectomy, 1 sleeve lobectomy, 4 extended lobectomies, 12 anatomic segmentectomies and 8 wedge resections. The control group was 50.4 years of age; diagnosis differed as follows: 22 NSCLC's, 13 metastasis, 10 benign tumors and 1 giant bulla. Standard lobectomy was done in 15 cases, 7 extended lobectomies, 4 segmentectomies, 18 wedge resections and 2 mediastinal tumor extirpations. QoL was rated with 58.96 in the senior preoperative score, postoperatively by 59.40. The control group scored QoL by 62.04 pre- and 57.58 postoperatively (by 100 max). No significant difference was measured, either within the group results or between them.

Conclusions: Thoracic surgical procedures can be offered to patients older than 75 years followed by the same impact on QoL compared to younger patients.

Session 14 - Mixed Benign Wednesday, 11 June 2008 11:00-13:00

093-F

THORACIC INJURIES IN SEVERELY INJURED PATIENTS: A PROSPECTIVE STUDY BY THE UK NATIONAL CONFIDENTIAL ENQUIRY INTO PATIENT OUTCOME AND DEATH

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Objective: Trauma is the leading cause of death in the first four decades of life in western countries. A national prospective study was conducted in the UK to examine the process and quality of care of severely injured patients. We present a previously unpublished analysis of the severity of injury, place of treatment, quality of care and survival amongst patients with thoracic injuries.

Methods: All UK hospitals with an emergency department were asked to provide prespecified clinical and process data on all patients presenting with significant injuries between 1st February and 30th April 2006. All data were stripped of patient, clinician and institutional identifiers before review by expert advisors.

Results: Data adequate for analysis were obtained on 1735 of 2203 injured patients reported. An Injury Severity Score (ISS) ≥16, the threshold for severe injury, was derived from case records of 795 patients, who comprise the study denominator. Of these, 387 (49%) had a thoracic injury, usually as part of polytrauma. The mortality rate was 8% (of 13) 9% (of 23) 10% (of 175) 14% (of 136) 22% (of 37) and 100% (of 3) for the six ascending grades of severity for the thoracic component of the ISS score. One hundred and seventy-six of the 795 patients (22%) had a thoracic injury sufficient for them to be classified as severely injured regardless of any other injuries. The quality of care as assessed by expert advisors showed an apparent association with overall trauma volume of the 142 treating hospitals (Table). For

patients with thoracic injuries where the specialty of the team in charge could be identified ($n=284/387$) trauma and orthopaedics (T and O) cared for 36%, critical medicine 22%, general surgery 19%, neurosurgery 8% and only 5% were in the care of thoracic surgeons. One or more chest drains were inserted in 203/795 (26%) of patients, few of them by thoracic surgeons.

Conclusions: Given that polytrauma patients rarely come under the care of thoracic surgeons and yet frequently have severe thoracic injuries there is a clear need for T and O surgeons and generalists to have a good grounding in thoracic procedures.

Care of thoracic injuries

Tercile of hospital volume	Lowest	Middle	Highest
Number of ISS>16 patients during 3/12	1-5	6-12	13-51
Severe thoracic injuries	$n=54$	$n=62$	$n=60$
Good practice	43%	43%	65%
Room for improvement	48%	52%	33%
Less than satisfactory	4%	5%	2%
Insufficient data	5%	0%	0%

094-F

ANALYSIS OF 4205 PATIENTS WITH THORACIC TRAUMA: 10 YEARS EXPERIENCE

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Objective: Thoracic injuries, due to traffic accidents, work-related injuries, and criminal affairs, are known as one of the causes of most of the morbidities and mortality in developing countries. In this study, we are presenting our experience with thoracic trauma within last ten years.

Methods: Between January 1997 and January 2008, 4205 cases presented with thoracic trauma to our emergency department. All patients were studied retrospectively and variables, including age, sex, reason for thoracic injury, clinical and radiological findings, associated organ injuries, interventions, morbidity, and mortality of the cases, were all recorded and analysed.

Results: Of 4205 patients with thoracic trauma, 85% of them were male, 15% were female. Mean age was 36.2 years, ranging between one and 89 years. In 66% of the cases, blunt injury was the reason for thoracic trauma of which traffic accidents (72%) were found as the most common cause, while 34% was penetrating injury that was mostly caused by stab wounds (70%). Associated organ injuries, including extremity fractures, abdominal organ damage, cranial and spinal cord injuries, were complicated in 35% of cases. The overall morbidity rate was 5.2%. Hemopneumothorax (65%) was detected as the most common morbidity in all cases. For the treatment, 40% of the patients needed tube thoracostomy. Thoracotomy was performed in only 252 (6%) cases. Moreover, 5% of the cases was intubated and followed-up in intensive care unit. The mortality rate was 3.3%. The two most common reasons for mortality were respiratory failure and adult respiratory distress syndrome, respectively. Average hospitalization time was 9.2 days.

Conclusions: Thoracic trauma, mostly associated with other organ injuries, should be diagnosed promptly and managed carefully with a multidisciplinary team approach. Urgent hospital admission, early diagnosis and appropriate management will decrease morbidity and mortality, as well as social improvement.

095-F

INTRAPLEURAL VACUUM ASPIRATION CLOSURE FOLLOWING THORACOSTOMY IS A HIGHLY EFFECTIVE THERAPY IN STAGE III PLEURAL EMPYEMA

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Objective: Therapy of stage III pleural empyema often requires life-long chest tube application or thoracostomy care. Good results in therapy of chest wall wounds led to evaluate the usefulness of VAC therapy in the treatment of post-empyema thoracostomy.

Methods: In 2007, 72 patients with pleural empyema stage II or III were operated on in VATS. Six patients with stage III pleural empyema and severe infective disease showed residual empyema in the diaphragmatic (4 patients) or the apical thoracic space. In these patients, thoracostomy

was performed and VAC therapy was initiated. VAC dressings were changed twice weekly and foam layer was adapted to decreasing wound size continuously.

Results: All patients recovered rapidly from infective empyema disease. Laboratory findings normalized and fever disappeared. Mobilization to normal daily life was possible within a few days. Patients showed broad acceptance because of completely vanishing malodor. Four patients (67%) with diaphragmatically located residual empyema showed a continuous and sufficient closure of the thoracostomy under VAC dressing in 90 days. These patients have been demitted after a mean hospitalization time of 87 (± 4.8) days and are free of disease in follow-up. There is an excellent level of quality of life without any major restriction of physical activity. Costs for VAC therapy show a clear advantage vs. conventional empyema therapy lasting longer than six months. Two patients (33.3%) with apical empyema had prolonged VAC therapy because of persisting bronchopleural fistulas which needed long-time application of increased suction, very clean wounds were produced by the VAC manoeuvre which allow continuous care with dry wound dressing without compromising malodor.

Conclusions: VAC therapy is highly effective therapy for stage III empyema patients treated with thoracostomy. Diaphragmatic locations seem to correspond better than apical lesions. VAC therapy is well tolerated, produces good quality of life. It shows acceptable cost-effectiveness and allows early rehabilitation.

096-F

FAILED DECORTICATION AETIOLOGY TREATMENT OPTION AND OUTCOME

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Objective: To find out different factors which lead to failed Decortication and to evaluate their management and outcome.

Methods: Study design: Retrospective observational descriptive study. Place and duration: Department of Cardiothoracic Surgery, Postgraduate Medical Institute, Lady Reading Hospital Peshawar from January 2003 to June 2006. Subjects and method: Clinical record of 260 patients who underwent Decortication for chronic Empyema during the last 3.5 years was retrospectively analyzed and their results evaluated. Detailed scrutiny of the computerized clinical record was carried out to analyze the aetiology of failure of the operation. The variables studied were persistent broncho-pleural fistula, poor postoperative efforts by the patients, wound infection, old chest drain site infection, technical failure and nutritional state of the patient.

Results: Of the 260 decortications performed over the period of 3.5 years, 230 patients had a successful outcome in terms of lung expansion and improved pulmonary functions. In thirty patients (19 males, 11 females with age range of 12-70 years) Decortication failed to achieve the desired results. These patients had to undergo space obliterate procedures for persistent infected space. Twenty three patients had history of tuberculosis and seven patients had non-tuberculous Empyema. All patients had chronic Empyema with duration of more than 12 weeks before the first operation. All patients were nutritionally compromised. Thoracoplasty (complete or partial) was performed in 25 patients to obliterate the persistent infected space. Five patients with recurrent broncho-pleural fistula had an additional procedure of intercostal muscle re-inforcement over the fistulae, in addition to thoracoplasty. All patients had successful obliteration of the persistent space with no mortality and minor wound infection in only three patients.

Conclusions: Thoracoplasty is a useful procedure following failed Decortication as a space obliteration procedure in patients with nutritional impairment and poor respiratory efforts.

097-F

SURGICAL TREATMENT OF PURULENT DISEASES OF LUNGS AND PLEURA

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Objective: The retrospective study was aimed to improve results of treatment of patients with lungs abscesses and pleural empyema.

Methods: Since 1985 in Department of thoracic surgery 3678 persons, suffered from purulent diseases of lungs and pleura, were treated, including 7% HIV-positive. In 1626 patients with lung abscesses (87.4% males, 12.6% females), 28.3% cavities localized in upper lobe right, 3.3% - in middle lobe, 21.7% - in lower lobe right, 15% - in upper lobe left, 19.2% - in lower lobe left.

Pleural empyema in 2042 patients (86.7% males, 13.3% females) was localized more often right (54.2%), than left (40.6%) or bilateral (5.2%). Before the last hospitalization 60% persons have been treated for 1 month, 28.1% up to 3 months, 11.9% up to 6 months. Inadequate treatment led to advanced cases: chronicization has become of 17.3% invalids, sepsis of 4.6% patients.

Results: Flexible bronchoscopy was effective for abscess draining in 89.7%. Failures of bronchoscopic draining were caused by small size (2-4 cm) or subpleural localization of cavities. One of the most dangerous complication of lung destruction was pulmonary bleeding and haemoptysis in 46% patients. The endovascular bronchial arteries embolization was conducted in 21 patients, including repeatedly in six patients. The effect was reached in 15 patients, but relapses were rather often. Surgical operations were performed in 2243 patients. Sometimes the surgery was multistage. There were 9 pneumonectomies performed, 164 lobectomies, 347 partial lung resections, 257 decortications of lungs, 1802 chest drainages, 37 mediastinotomies. Mortality was 4.3% in patients with lung abscesses, 11.1% in persons with gangrenous abscesses, 2.2% of people with empyema.

Conclusions: Surgical operations at purulent lung- and pleura diseases are actual nowadays. The advanced surgical technologies ought to be introduced gradually, accordingly equipment quality and surgeons experience. The rational management of patients includes opportune hospitalization in special thoracic departments.

098-F

EARLY AND AGGRESSIVE PULMONARY RESECTION FOR MYCOBACTERIUM AVIUM COMPLEX LUNG DISEASE

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Objective: To examine the postoperative outcomes of patients with Mycobacterium avium complex (MAC) lung lesions persisting despite treatment with multiple antibiotics.

Methods: Patients with localized pulmonary lesions persisting after state-of-the-art antimicrobial chemotherapy administered for 6-37 months (mean=17), and expected to recover a stable postoperative pulmonary function underwent surgical resection procedures by lobectomy ($n=22$), segmentectomy ($n=7$) or partial lung resection ($n=9$). Five patients underwent bilateral resections. Seven patients underwent VATS resections.

Results: Mycobacterium avium complex causing bronchiectasis or cavital lesions was detected preoperatively in all 32 patients. There was no major operative morbidity or mortality. Postoperative chemotherapy was continued for 6-35 months. Thirty-one patients were alive survived at follow-ups ranging from 2 to 320 months (median=63 months). One patient died of progression of contra-lateral lung disease 60 months after surgery. Sputum findings consistent with MAC disappeared after surgery in 29 patients. In one patient, positive sputum from the contra-lateral lung converted to negative four months after resection of a cavitory lesion during continuation of chemotherapy. Both vital capacity and forced expiratory volume in one second after surgery have maintained 89% and 84% of the values of before surgery. Conclusions: The long-term outcomes of patients operated for MAC resistant to prolonged antimicrobial chemotherapy were excellent. We recommend performing surgery before the disease has become advanced and non-resectable. In extensive disease, the excision of large cavity bacterial foci like may facilitate the medical management of contra-lateral lesions.

099-F

CHANGES IN VENTILATORY CAPACITY, EXERCISE CAPACITY, AND PULMONARY BLOOD FLOW AFTER LOBECTOMY IN PATIENTS WITH LUNG CANCER

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Objective: As there is a loss in both ventilatory capacity and pulmonary blood flow (PBF) after lung resection, change in exercise capacity after lobectomy seems to have a relationship with change in ventilatory capacity and PBF in the operated lung. The aim of this study was to compare the changes in ventilatory capacity, exercise capacity, and PBF in the operated lung after lobectomy according to the lobe resected, and to clarify which lobectomy is associated with the greatest loss in exercise capacity.

Methods: Twenty-one patients underwent right upper lobectomy (RUL), 26 left upper lobectomy (LUL), 24 right lower lobectomy (RLL), and 25 left lower lobectomy (LLL). Pulmonary function tests, exercise capacity tests,

and perfusion lung scans were performed preoperatively and six months to one year after lobectomy.

Results: Table 1 shows percentage change in pulmonary function, exercise capacity, and PBF in the operated lung after lobectomy (*: $P<0.05$ vs. RLL; #: $P<0.05$ vs. LLL; **: $P<0.05$ vs. LUL). RUL was associated with significantly less loss in forced vital capacity (FVC) than RLL or LLL ($P<0.05$). LUL was associated with the greatest loss in maximum oxygen consumption (VO_{2max}) ($P<0.05$). LUL was associated with significantly greater loss in PBF in the operated lung than RUL ($P<0.05$). We compared the differences between the percentage changes in VO_{2max} , FVC, and PBF to resected lung lobe. LUL had a significantly higher negative value in percentage change in VO_{2max} - percentage change in FVC and percentage change in PBF - percentage change in FVC than the RLL or LLL groups ($P<0.05$).

Conclusions: LUL was not associated with the greatest loss in ventilatory capacity or PBF, although it was associated with the greatest loss in VO_{2max} . Each lobectomy has its own peculiarity in magnitude of loss in VO_{2max} , PBF in the operated lung or FVC.

Table 1

	RUL	LUL	RLL	LLL
% change in FVC	-8.9±9.9*#	-11.5±12.9	-17.1±9.1	-17.3±12.1
% change in VO_{2max}	-10.3±8.6**	-18.1±12.3	-9.4±12.7**	-11.4±11.1**
% change in PBF	-20.8±8.0**	-25.6±7.4	-22.5±10.1	-23.1±9.0

100-F

FACTORS INVOLVED IN GASTRO-OESOPHAGEAL REFLUX CONTROL AFTER ANTIREFLUX SURGERY

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Objective: To evaluate the relationship between pressure, overall length and intra-abdominal length of the 'new-high pressure zone' and postoperative gastro-oesophageal reflux control in patients undergone to an anti-reflux procedure. To determine which is the best anti-reflux technique in restoring the competency of gastro-oesophageal junction.

Methods: A retrospective cohort of 100 patients submitted to an anti-reflux procedure (25 Dor technique after Heller's myotomy for achalasia; 25 Nissen procedure; 25 Hill procedure; 25 trans-thoracic Belsey-Mark IV operation) was selected. We reviewed results of oesophageal manometry and 24-h pH monitoring performed in all patients six months after surgery. Patients were divided in two groups: A-group (78 patients), with normal pH monitoring, and B-group with persistent pathologic gastro-esophageal reflux (22 patients). Manometric data (pressure, overall length and intra-abdominal length of the 'new-high pressure zone') of two groups were compared with t -test analysis for unpaired data (mean±S.D.).

Results: A statistic difference was noted for pressure value (A: 16.76±0.8 mmHg; B: 9.11±3.82 mmHg; $P=0.004$) and intra-abdominal length (A: 25.71±4.7 mm; B: 16.80±11.2 mm; $P=0.03$) of the 'new-high pressure zone' in two groups. The difference of overall length had not a statistic value (A: 45.0±16.5 mm; B: 36.67±12.75 mm; $P=0.176$, not significant).

Conclusions: The results of our study support the view that major factors involved in postoperative gastro-oesophageal reflux control are pressure and intra-abdominal length of the 'new-high pressure zone', regardless of surgical technique employed.

101-F

THE ROLE OF INTERCOSTAL NERVE PRESERVATION ON POSTOPERATIVE PAIN CONTROL AFTER THORACOTOMY; A DOUBLE CENTER

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Objective: Pain control after thoracotomy is one of the most important issues which affect the outcome in thoracic surgery. The aim of this study was to determine the role of intercostals nerve preservation on the early and late postoperative pain control.

Methods: We analyzed the data of all patients who received thoracotomy at both institutions between 2005 and 2007, retrospectively. There were 375 patients underwent thoracotomy. Patients were divided into two groups:

group I: patients with intercostals nerve sacrifice, and group II: patients with intercostals nerve preservation. Data were collected from medical records as well as through direct patient contact.

Results: Group I (intercostals nerve sacrifice) consisted of 218 patients (158 male). Group II consisted of 167 patients (98 male). The operative procedures were: 1) Pneumonectomy for non-small cell lung cancer (NSCLC) ($n=40$), and for malignant pleural mesothelioma (MPM) ($n=10$), 2) Lobectomy for NSCLC ($n=210$), 3) Segmentectomy and wedge resection ($n=13$), 4) Open decortication for pleural empyema ($n=84$), 5) Laminectomy and internal fixation of thoracic vertebral fracture ($n=8$), 6) Removal of hemothorax ($n=9$), 7) Removal thymus cyst in one patient. PDA was performed in 186 patients in group I and in 143 patients in group II. The mean hospital stay was longer in group I (12 days) than in group II (8 days) ($P=0.023$). The rate of pain free patients at discharge was significantly higher in group II ($P=0.038$). Early mobilization of the patients was significantly higher in group II ($P=0.041$). Two weeks control after hospital discharge showed parasternal hypoesthesia more in group I ($P=0.014$). Significant patient's contentment in group II was noticed ($P=0.041$).

Conclusions: Surgical techniques with preservation of the intercostals nerve is feasible, and an effective method to help control pain after thoracotomy in early postoperative phase.

102-F

10-YEAR FOLLOW-UP OF ENDOSCOPIC THORACIC SYMPATHECTOMY

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Objective: Immediate and short-term results of endoscopic thoracic sympathectomy (ETS) for primary hyperhidrosis are good. Adverse effects have been identified clearly and are supposed to decrease with time. We report the long-term results of ETS with regard to efficacy, side effects and patient satisfaction.

Methods: Between 1992 and 1997, bilateral ETS was performed in 31 patients suffering from primary hyperhidrosis of the upper limbs. Fifteen patients (48.4%) were retrieved for follow-up. Mean follow-up time was 12 ± 2 years. ETS success rate, rate of compensatory sweating and degree of patient satisfaction were assessed.

Results: Eight patients (53%) complained about a decent to moderate recurrence of hand sweating. Compensatory and gustatory sweating were observed in 9 (60%) and 5 (33%) patients, respectively. Reported side effects related to surgery were paresthesias of the upper limb and the thoracic wall in 8 patients (53%) and recurrent pain in the axillary region in 1. At an average 12 years after surgery 47% of patients were comfortable with the treatment results, 40% were disappointed. Six patients (40%) affirmed they would ask for the operation if it were to be redone.

Conclusions: Our findings indicate that results of ETS deteriorate and compensatory sweating does not improve with time. It is mandatory to inform patients of the potential long-term adverse effects before surgery.

103-F

SIDE EFFECTS, COMPLICATIONS AND OUTCOME OF THORACOSCOPIC SYMPATHICOLYSIS FOR PALMAR AND AXILLARY HYPERHIDROSIS IN 406 PATIENTS

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Objective: To analyze the complications, side effects, satisfaction and quality of life of patients with thoracoscopic sympathectomy for hyperhidrosis (HH).

Methods: Four hundred and six patients diagnosed of upper extremity HH, treated with thoracoscopic sympathectomy and one year follow-up. The studied variables were: age, sex, type of HH, family history, presence of

plantar HH, surgical technique, effectiveness, complications, side effects, recurrence, satisfaction grade and quality of Life.

Results: Four hundred and six patients (241 women) with an average age of 25.1 ± 9.1 years (range 13-66 years). Thirty per cent of the patients had a family history. 76.7% had associated plantar HH. The sympathectomy was on T2-T3 (isolated palmar, $n=139$), T3-T4 (isolated axillary, $n=7$) and T2-T4 (palmar-axillary HH, $n=260$). There were not deaths, major intra-operative problems or conversion to thoracotomy. Complications arose in 23 cases (5.6%): 16 pneumothorax, 2 Horner syndrome, 2 hemothorax, 1 quilothorax, 1 transitory cubital neuropraxia and 1 subcutaneous emphysema. The success rate after discharge, 6 and 12 months was, respectively, 100%, 98.1% and 96.5% for palmo-axillary hyperhidrosis; 100%, 99.3% and 97.8% for isolated palmar hyperhidrosis and 100%, 85.7% and 71.4% for isolated axillary hyperhidrosis. No persistence of hyperhidrosis was observed. Global recurrence was 3.7%. Compensatory sweating was 55%, excessive dryness 9% and improvement of plantar HH 33.6%. Satisfaction rates at discharge, 6 and 12 months was 100%, 99% and 90%, respectively. Quality of life was 'Excellent' at the discharge, at 6 and 12 months at in 100%, 100% and 97%. 6% of the patients regretted the surgery.

Conclusions: Pneumothorax is the most frequent complication. Compensatory sweating is the most undesirable side effect and not related to the extension. Plantar HH improves initially, although tends to reappear. Postoperative satisfaction is high but decreases over time owing to the appearance of compensatory sweating and recurrence. Most patients reported improvement in quality of life, but 6% of them regret the surgery.

104-F

PARENCHYMA SAVING SURGICAL TREATMENT OF GIANT PULMONARY HYDATID CYSTS

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Objective: The purpose of this study was the review of 97 patients with giant pulmonary hydatid cysts assessing the clinical features and results of different operative technique during 27-year period.

Methods: Between January 1981 and December 2007, 590 patients were operated on for pulmonary hydatidosis and 97 (17%) of these patients had giant pulmonary hydatid cyst. Medical records of these 97 patients were reviewed retrospectively. The diameter of hydatid cysts were measured by using radiologic methods and intraoperatively.

Results: Seventy-eight of patients were male (80%) and 19 were female (20%). The median age was 23.4 years (range 15-63 years). The most common symptoms were chest pain (54%), cough (43%) and dyspnea (41%). Fourteen patients were asymptomatic (14%). The diameters of cyst were ranged between 10 and 25 cm (mean 13.8 cm). The cysts were located in the right hemithorax in 52 (54%) patients, in the left hemithorax in 44 (45%) patients and bilaterally in one patient (1%). Five patients had more than one cyst. The operation procedures were including cystotomy and capitonnage in 53 patients, enucleation and capitonnage in 27 patients and just cystotomy or enucleation in nine patients. Anatomic resection was performed in nine patients. Prolonged air leakage more than seven days occurred in five patients, one of them was operated and Heimlich valve were applied two of them. Postoperative mortality was not occurred. The mean follow-up was 2.4 years (6 months to 27 years). Recurrence was not detected in follow-up period.

Conclusions: The higher lung tissue elasticity and the delayed symptoms due to localizations of cyst are the reasons of occurrence of giant hydatid cysts in the lung. Increased diameter of hydatid cysts is directly related with increased morbidity. Parenchyma-saving operation should be performed instead of anatomic resection because of the low complication rate which can be treated with conservatively.

Sunday Posters

Sunday, 8 June 2008

08:30-17:30

105-P

LONG-TERM SURVIVAL AFTER VATS AND OPEN PULMONARY METASTATECTOMY

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Objective: Proponents of open metastatectomy argue that palpation of lung parenchyma improves completeness of excision and therefore outcome. We reviewed our experience of VATS and open metastatectomy over the last 19 years to determine whether VATS was indeed associated with inferior outcomes.

Methods: First time pulmonary metastatectomies performed at our institution from 1989-2008, excluding pneumonectomies, were included. Survival data came from the national deaths registry. Non-normally distributed data is presented as medians and assessed with the Mann-Whitney test. Kaplan-Meier survival curves were evaluated by the log rank test. If $P < 0.1$ the variable was entered into a stepwise cox multivariable model.

Results: Demographics and in-hospital outcomes. See Table 1. Bracketed figures are 95% Confidence Intervals of the median or percentages as appropriate. Survival analysis: In univariate analysis, open approach, lymphovascular invasion, pleural involvement, primary tumour type (sarcoma vs. carcinoma vs. other) and lobar vs. sublobar resection predicted mortality with $P < 0.1$. These were entered into the cox multivariable model. In the final model, extent of resection (relative risk lobar vs. sublobar 1.89 (1.10, 3.25), $P = 0.021$) and presence of lymphovascular invasion (relative risk 2.42 (1.32, 4.46), $P = 0.004$) independently predicted mortality.

Conclusions: Both open and VAT metastatectomy were safe, with no 30-day mortality in our 19-year series. Lymphovascular invasion and larger resections were associated with poorer long-term results. VATS approach did not independently influence long-term mortality risk, but did correlate with reduced hospital stay, even after stratification by extent of lung resection. We conclude that with appropriate case selection, VATS approach does not adversely affect long-term survival in primary metastatectomy.

	Open	VATS	P-value
Number	75	63	
Median age	56.2 (53.2, 61.4)	61.7 (55.2, 65.2)	0.298
Proportion male	47/28 (63%)	34/29 (54%)	0.390
Sublobar vs. lobectomy resection	22/53 (29%)	25/38 (40%)	0.272
Median disease free interval (months)	36.0 (24.0, 44.7)	24.0 (19.0, 42.0)	0.298
Median metastases excised	1.0 (1.0, 1.0)	1.0 (1.0, 1.0)	0.142
Median hospital stay - sublobar resection	7.0 (5.0, 9.3)	4.5 (3.0, 5.0)	0.006
Median hospital stay - lobectomy	9.0 (8.0, 10.0)	6.0 (5.0, 7.0)	<0.001
30-day mortality	0/75 (0%)	0/63 (0%)	1.000

106-P

THORACIC METASTASECTOMY FOR THYROID MALIGNANCIES

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Objective: To better define early and long-term outcomes of patients undergoing thoracic metastatectomy for thyroid cancer.

Methods: We identified, reviewed, and analyzed the medical records of all patients who underwent thoracic metastatectomy for thyroid cancer in our institution from 1971-2006.

Results: There were 48 patients (26 men, 22 women). A complete resection (R0) of all known disease was performed in 33 (69%), while 15 patients (31%) underwent incomplete resection (R1 or R2). By histology, the majority were papillary-31 (65%), follicular-8 (17%), medullary-5 (10%), and Hurthle cell-4 (8%). The majority (87%) were confined to a single side of the chest or

mediastinum, while the remaining 13% presented with bilateral metastases. Thoracotomy was performed in 28 (58%), sternotomy in 12 (25%), and thoracoscopy was used in 8 (17%). There was no operative mortality (in-hospital and 30-day mortality) was 0% and postoperative complications occurred in eight patients (17%). Median follow-up for survivors in the cohort is four years (range, 1 month-17 years). The overall 5-year survival after thoracic metastatectomy was 62%. Based on histology, 5-year survival for papillary cancer was 64% compared to 40% for follicular and Hurthle cell neoplasms ($P = 0.07$). Among the five medullary thyroid cancer patients, 5-year survival was 100%. Five-year survival was improved for patients <45-year-old at the time of diagnosis of their initial thyroid malignancy (84% vs. 50%; $P = 0.04$). Disease-free interval of >3 years between initial thyroid malignancy diagnosis and pulmonary thoracic metastatectomy demonstrated improved 5-year survival (67% vs. 55%; $P = 0.04$).

Conclusions: Pulmonary resection for thyroid metastasis is safe with low morbidity and mortality. Retrospective analysis demonstrates improved long-term survival in patients with a longer disease-free interval (>3 years) and younger age at diagnosis of initial thyroid malignancy. Excellent long-term survival was also achievable in selected patients with thoracic metastases from medullary thyroid cancer.

107-P

REACTIVITY OF INTEGRIN-LINKED KINASE AND THE RECURRENCE OF NSCLC AFTER BRONCHOPLASTIC RESECTION

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Objective: Integrin-linked kinase (ILK) is a recently described protein whose overexpression promotes metastatic spread in a variety of pre-clinical and clinical models of human cancer, including NSCLC. In addition, ILK can selectively be inhibited by pharmacological means. Here we investigate the prognostic role of ILK in a consecutive series of patients after bronchoplastic resections for NSCLC.

Methods: Primary tumor samples of 61 patients with NSCLC (stages IA-IIIa) treated by bronchoplastic resection were retrieved from the archive and stained against ILK-1. The degree of ILK expression was recorded and correlated with the clinical follow-up.

Results: Twenty-four out of 61 tumor samples (39.3%) were ILK positive. ILK status was not correlated with clinical stage. After a mean follow-up of 28.3±2.9 months, 23 patients (37.7%) experienced a recurrence (17 distant recurrences; 6 local recurrences). In 81.1% of ILK-negative patients, no distant recurrence was observed; in contrast, 41.7% of ILK-positive patients developed a distant recurrence ($P = 0.023$). The incidence of local recurrence was not correlated with ILK status. The mean actuarial survival of ILK-negative patients was 65±6 months, as compared to 47±8 months in ILK-positive patients ($P = 0.045$).

Conclusions: The expression of ILK in NSCLC is directly correlated with a higher risk of distant recurrence as compared to cases without ILK expression. On the other hand, ILK status does not impact on local recurrence. Hence, ILK-positive NSCLC may be treated by means of bronchoplastic procedures, but could particularly benefit from concomitant chemotherapy.

108-P

LARGE SCALE TISSUE MICROARRAY STUDY OF COPY NUMBER CHANGES OF C-MYC AND EGFR ONCOGENES IN OPERATED ON NSCLC PATIENTS - CLINICAL IMPLICATION

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Objective: The aim of the study is to evaluate in operated on NSCLC patients the clinical significance of the gene copy number changes of two oncogenes (EGFR and c-Myc), that play a pivotal role in carcinogenesis.

Methods: The high-throughput tissue microarray technology was used for analysis of tissue samples from 306 operated on NSCLC patients and from 56 healthy controls. The tumor samples were arranged in triplicates in two paraffin blocks of tissue microarrays. Fluorescent in situ hybridization with locus specific FISH probes for two oncogenes (C-MYC SO, EGFR SO/CEP 7 SG) was applied. The correlation between the clinico-pathological data (TNM-stage, grade, metastatic potential and survival) and the gene copy number of the two oncogenes was analysed.

Results: Overall, the frequency of EGFR copy number increases in all lung cancers analyzed was 21.3%, and this one of c-myc was 36.6%. The highest

incidence was established in squamous-cell carcinoma for EGFR alterations and in adenocarcinomas for c-myc copy number changes. We found a statistical correlation between the EGFR genetic gain and the histological grade of the tumors, as well as the changes of the gene copy numbers of c-myc and the mediastinal lymph node metastasis, using χ^2 analysis ($P < 0.00001$ and $P < 0.0005$ respectively). The correlation analysis of Kendall's tau-b between the clinical stage and genetic number changes of the two genes showed significant correlation between the gene copy number changes of c-myc and the clinical stage (0.679). C-myc was also found as a prognostic factor for survival. The normal number of gene copies corresponded to a better median survival of 62 months compared with 12 and 13 months median survival for c-myc gain and amplification, respectively. Conclusions: The gene copy number changes of EGFR and c-MYC could be used in a panel of markers for lung cancer staging and prognosis.

109-P**PREOPERATIVE INTRATHORACIC LYMPH NODE STAGING IN PATIENTS WITH NON-SMALL CELL LUNG CANCER: ACCURACY OF INTEGRATED PET/CT**

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Objective: To evaluate the accuracy of integrated positron emission tomography with fluorine 18 fluorodeoxyglucose (FDG) and computed tomography (PET/CT) in preoperative intrathoracic lymph node staging in patients with non-small cell lung cancer (NSCLC), and to ascertain the role of invasive staging in verifying PET/CT results.

Methods: Retrospective, single institution study of consecutive patients with suspected or pathologically proven, potentially resectable NSCLC undergoing integrated PET/CT-scanning in the same PET center. Lymph node staging was pathologically confirmed on tissue specimens obtained at mediastinoscopy or thoracotomy. Statistical evaluation of PET/CT results was performed on a per-person and per-nodal-station bases.

Results: A total of 1001 nodal stations (723 mediastinal, 148 hilar, and 130 intrapulmonary) were evaluated in 159 patients. Nodes were positive for malignancy in 48 (30.2%) of 159 patients (N1=17; N2=30; N3=1) and 71 (7.1%) of 1001 nodal stations (N1=24; N2=46; N3=1). At univariate analysis, lymph node involvement was significantly associated ($P < 0.05$) with tumor diameter (< 3 cm vs. ≥ 3 cm), and maximum standardised uptake value (≤ 9 vs. > 9). PET/CT staged the disease correctly in 128 out of 159 patients (80.5%), overstaging occurred in nine patients (5.7%), and understaging in 22 patients (13.8%). The overall sensitivity, specificity, positive and negative predictive values, and accuracy of PET/CT for detecting metastatic lymph nodes were 54.2%, 91.9%, 74.3%, 82.3%, 80.5% on a per-person-basis, and 57.7%, 98.5%, 74.5%, 96.8%, 95.6% on per-nodal-station basis. With regard to N2/N3 disease, PET/CT accuracy was 85.5% and 95.3% on a per-patient basis and on per-nodal-station basis, respectively. Referring to nodal size, PET/CT sensitivity to detect malignant involvement was 32.4% (12/37) in nodes < 10 mm, and 85.3% (29/34) in nodes ≥ 10 mm ($P = 0.00001$).

Conclusions: Our data show that integrated PET/CT provides high specificity but low sensitivity and accuracy in intrathoracic nodal staging of NSCLC patients and underscores the continued need for surgical staging.

110-P**REGULATORY T LYMPHOCYTES (TREG CELLS) IN NON-SMALL CELL LUNG CANCER: PROGNOSTIC ROLE AND THEIR INDUCTION BY TUMOR MASS**

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Objective: The TNM staging provides a clear but incomplete prediction for the expected survival of patients with non-small cell lung cancer. However, an antitumor immunity counteracts the tumor cells and tumor cells induce immunosuppression using multiple pathways have been well established. However, the role of subsets of lymphocytes in anti-tumor immunity and its regulation by tumor mass were not completely documented. Our aim was to document the subsets and of mononuclear cells in anti-lung cancer immunity and its clinical relevance in lung cancer patients.

Methods: Our subjects were 20 patients with resectable non-small cell lung cancer. All patients underwent preoperative evaluation and anatomical

resection. We evaluated 47 different phenotypically different lymphocyte subsets in blood samples taken from the pulmonary artery, pulmonary vein of tumor bearing pulmonary lobe and peripheral blood during pulmonary resectional surgery. Clinical and pathological parameters were recorded. Survival was estimated using Kaplan-Meier method.

Results: Tumor mass increased the rate of suppressor T-lymphocyte (Treg), suppressor B lymphocyte (Breg), apoptosis-inducing T lymphocytes and Natural Killer (NK) cells ($P = 0.01$, $P = 0.04$, $P = 0.03$, $P = 0.001$ and $P = 0.01$, respectively). However, activated T cells and Mac-1+ cells were decreased by tumor mass ($P = 0.04$ and $P = 0.04$). Memory T cells and Mac1+ cells were expanded in peripheral blood ($P = 0.001$ and $P = 0.001$) without significant change induced by tumor mass. Increased Treg cell subset was also found to be associated with poorer survival and tumor size ($P = 0.04$ and $P = 0.02$). Increased ratio of memory T cells returns near initial level 1 month following surgery.

Conclusions: Subsets of Treg, Breg cells, FasL+ T lymphocytes, B lymphocytes were modified by lung cancer microenvironment itself. Treg cells plays an important role in anti-tumor immunity and could be an additional prognosticator as a parameter of immune response demonstrated by tumor host.

111-P**DIFFERENT ASPECTS OF NEW T DEFINITION IN LUNG CANCER STAGING**

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Objective: One of the most important problem of the current 1997 version of TNM staging system is no significant difference of survival between neighboring stages IB and IIA. The aim of a study is to determine a more refined T definition on the basis of clinical outcomes to differentiate prognosis of IB and IIA.

Methods: Regarding the first aspect of T descriptor T1 tumors were divided into T1a tumors (< 2.0 cm) and T1b tumors (2.1-3.0 cm). The new IA was defined as T1aN0, new IB as T1bN0 and new IIA as T2N0+T1N1. In the second aspect we additionally divided T2 tumors into T2a tumors (3.1-5.0 cm) and T2b tumors (> 5.1 cm) and define new IIA (T2aN0+T1N1), new IIB (T2aN1+T2bN0+T3N0) and new IIIA (T2bN1+T3N1+all N2). We analyzed the survival of 1108 patients who underwent the anatomical resections due to NSCLC from January 1997 to September 2002 in Wroclaw Thoracic Surgery Centre. The prognostic difference between the neighboring pathological stages was compared for 1997 TNM staging system and two new proposals of TNM.

Results: Regarding the division of the T1 tumors the 5-year survivals of the new IA, new IB, new IIA, IIB, IIIA, IIB and IV were 65.9%, 54.7%, 49.1%, 32.6%, 25.1%, 24.5% and 14.9%, respectively. Regarding the division of the T1 and T2 tumors the 5-year survivals of the new IA, new IB, new IIA, new IIB, new IIIA, IIB and IV were 65.9%, 54.7%, 52.1%, 36.1%, 25.4%, 24.5% and 14.9%, respectively. In both aspects of the division of T descriptor, as well as in current TNM staging system, we found no statistically significant differences of survival between IB and IIA.

Conclusions: The division of T1 or both T1 and T2 descriptors did not allow to significantly differentiate IB and IIA stages.

112-P**EXAMINATION OF THE SUPRACLAVICULAR NODES IN NON-SMALL CELL LUNG CANCER (NSCLC); COMPARISON OF DIFFERENT DIAGNOSTIC TECHNIQUES**

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Objective: To assess different methods of examination of supraclavicular lymph nodes in non-small cell lung cancer (NSCLC) patients.

Methods: In the prospective non-randomized study 50 consecutive patients with NSCLC underwent preoperatively palpation, ultrasonography of supraclavicular region, computer tomography (CT) and positron emission tomography (PET/CT) to evaluate supraclavicular lymph nodes. The patients were preselected by previous endobronchial ultrasound (EBUS) or endoesophageal ultrasound (EUS), the patients with metastatic nodes found on were not included. All patients underwent subsequently transcervical extended mediastinal lymphadenectomy (TEMLA) with simultaneous radical bilateral removal of the supraclavicular nodes.

Results: There were 12 women and 38 men in age 40-75 (mean 62.2). Right sided tumor-19 patients, left sided tumors-31 patients. Histology: Squamous-Cell Carcinoma-36, Adenocarcinoma-10, NSCLC-3, Large-Cell Carcinoma-1.

In all patients the results of palpation, ultrasonography, tomography, PET and final pathologic report were negative, metastatic nodes were found in 4/50 patients (8%) on TEMLA. The number of removed supraclavicular nodes was 0-9 (mean 3.3) on the left side and 0-14 (mean 3.7) on the right side ($P>0.05$). The operative time of TEMLA with bilateral supraclavicular nodal dissection was 120-210 min (mean 172.3) for the left sided tumors and 120-200 min (mean 59.7 min) for the right sided tumors.

Conclusions: 1. Palpation and/or ultrasonography are sufficient to evaluate supraclavicular nodes in operable NSCLC, such techniques as CT, PET/CT or surgical dissection are not necessary. 2. Low incidence of the mediastinal metastatic nodes was the result of preselection of patients with EBUS or EUS.

113-P

LONG-TERM SURVIVAL OF 114 PATIENTS WITH METASTATIC COLORECTAL CARCINOMA AFTER EXTENDED 1318 NM LASER LUNG METASTASECTOMY UP TO 62 METASTASES

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Objective: Is to present our results with multiple lobe sparing metastasectomies and to underline the role of a new 1318 nm laser resection technique for metastatic colorectal cancer.

Methods: Between July 1996 and July 2005; 114 patients (53 females, 61 males, median age 64 years; ranged 43-80 years) underwent lung laser metastasectomy (LLM) following complete resection of colorectal carcinoma. All LLM were exclusively performed by a 1318 nm laser system, recently by new high power diode laser (100 W, patented, FDA approval pending) significantly reducing duration of surgery. From the total of 1064 nodules removed (9 per patient), histology confirmed 812 metastases (7/patient; range 1-62 Met). The lobectomy rate was 11%. Complete resection was achieved in 93 patients (82%), incomplete resection in 21 (18%) including 15% lymph-node involvement.

Results: There was no intra-, perioperative and in-hospital stay mortality. Follow-up was complete for all patients, ranged 3-100 month (median 30 month). Overall 5 year-survival (Y-S) for patients with complete resections (mean 6 Met/patient) was 30%, what is statistically significant compared to those ones after incomplete resections ($P=0.015$) where the 5 Y-S was 6%. 5 Y-S after bilateral procedures ($n=37$, 11 Met/patient) was 19% vs. 39% after unilateral procedures ($n=56$, 2 Met/patient) $P=0.02$. Poor outcome was observed for patients with lymph-node involvement (5 Y-S of 0) even after complete resection $P=0.059$. The best 5 Y-S of 59% was recorded for patients with solitary metastasis ($n=30$) without lymphatic disease. Potential curative resection was demonstrated for 26 patients with long-term disease free follow-up with 5 Y-S of 79%.

Conclusions: As previous reported this 1318 nm laser system is a lung parenchyma- and lobe-sparing technique. Our results show that this precision resection allows the removal of high number of pulmonary metastases with low complication rate and good quality of life and therefore should it be offered also for patients with metastasis of colorectal carcinoma.

114-P

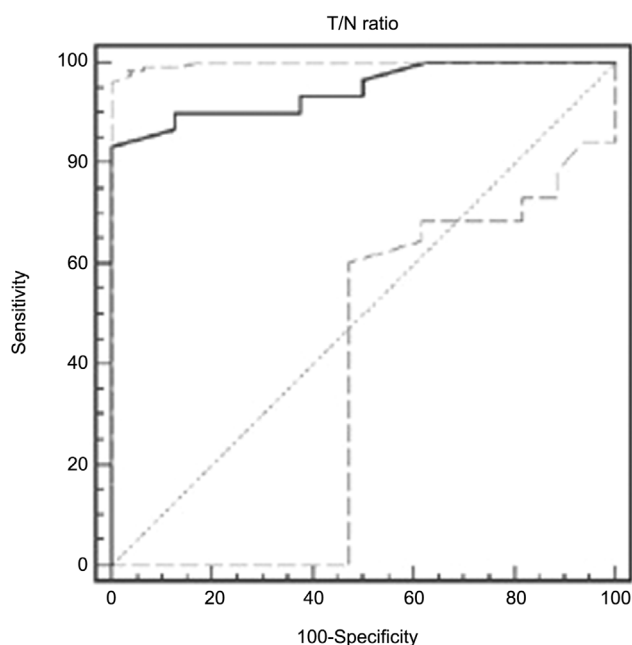
THE ROLE OF 99M TECHNETIUM- HEXAKIS-2-METHOXYISOBUTYLISONITRILE (MIBI) IN THE DETECTION OF NEOPLASTIC LUNG LESIONS

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Objective: Our objective was to determine the role of 99m Technetium hexakis-2-methoxyisobutylisonitrile (99 m Tc-MIBI) in the detection of neoplastic lung lesions.

Methods: We studied 38 consecutive patients with clinical and radiological suspicion of lung cancer. Each patient was submitted to chest single photon emission tomography (SPET) after 99 m Tc-MIBI injection (555 MBq i.v.). Qualitative analysis was performed to evaluate SPET images in order to localize abnormal activity in the radiologically demonstrated lesion. Semiquantitative analysis was made by calculating tumor/controlateral normal lung ratio (T/N). Finally, the scintigraphic findings were correlated to the histopathological diagnosis obtained by thoracotomy, percutaneous thoracic needle biopsy or bronchoscopic biopsy.



Results: In 30 patients were diagnosed 22 squamous cell carcinomas, 2 adenocarcinomas, 3 large cell carcinomas, 1 small cell carcinomas, 2 metastatic lesions. In eight patients benign lesions were found: 3 hamartomas, 2 non-specific inflammatory infiltration, 2 tuberculomas, 1 suppurating inflammatory infiltrate. Qualitative analyse SPET demonstrated that abnormal activity accumulation was significantly correlated to the malign lesions (percent of cases correctly classified: 86.4%, sensitivity: 90%, specificity: 75%, $P=0.0003$) and to the size of tumors ($P=0.007$). Semiquantitative analysis added major information in differentiating between malignant and benign processes. For a T/N ratio higher than 1.32 value (ROC curve; Fig. 1), sensitivity, specificity, positive predictive value and negative predictive value were 83.3%, 100%, 100% and 61.5%, respectively. However, central tumour necrosis was demonstrated as a hypoactive area (2/3 patients with T/N <1.32 value). The correlation between SPET and surgically resected lymph nodes was 100%.

Conclusions: This study seems to indicate that 99 m Tc-MIBI represents an useful tumour imaging agent. However, larger series should be investigated to clarify its exact role and clinical usefulness in diagnosis of lung cancer.

115-P

SLEEVE LOBECTOMY OR PNEUMONECTOMY AFTER INDUCTION CHEMO-RADIOTHERAPY FOR NON-SMALL CELL LUNG CANCER: LONG-TERM RESULTS OF A DOUBLE-CENTRE EXPERIENCE

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Objective: Sleeve lobectomy (SL) is generally considered the best therapeutic option in locally advanced non-small cell lung cancer (NSCLC) patients even when pneumonectomy (PN) is tolerated. Very few reports specifically compared the results after SL or PN in induction therapy (IT) protocols. We present the results of a double-centre experience, analyzing the impact on both SL and PN in terms of morbidity, mortality and survival.

Methods: From 1995-2005, we performed 32 SL and 43 PN after IT (consisting of concurrent radio-chemotherapy plus three comparable chemotherapy regimens) for NSCLC. Surgical results were statistically compared between the two surgical procedures.

Results: We enrolled 75 patients (41 males and 34 females). Clinical stage was IIB in 7 cases, IIIA in 34, and IIIB in 34. After IT, the downstaging rate to pStage 0-I was 47% in SL and 40% in PN. Morbidity and operative mortality were 28% for SL vs. 33% for PN, and 9% in SL vs. 5% in PN, respectively.

One-year, 3-year and 5-year survival rates were: 78% in SL vs. 92% in PN, 53% vs. 56%, and 47% vs. 38%, respectively ($P=NS$). Recurrence rate was 51.7% in SL and 34.1% in PN. There were 9 local recurrences in SL (31%) vs. 6 in PN (14.6%) ($P=NS$).

Conclusions: Sleeve resection and pneumonectomy are both valid options in multimodality therapy for NSCLC. There were not strong differences in terms of morbidity, recurrence rates and survival. It appears questionable whether a PN may represent a better option when SL is technically feasible.

116-P

DOES A NEGATIVE PET/CT PRECLUDE N2 DISEASE IN NSCLC? A SINGLE CENTRE EXPERIENCE

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Objective: To evaluate diagnostic yield of PET/CT in nodal staging of NSCLC patients undergoing thoracotomy with or without prior invasive mediastinal staging procedure.

Methods: Medical records of 183 patients undergoing either invasive staging or thoracotomy for NSCLC over two years were extracted from a prospective database and evaluated. Of them, 127 patients with complete preoperative workup, no neo-adjuvant therapy and complete resection were included in the study. Mediastinal lymph node involvement was initially assessed with PET/CT for all patients and at least one invasive mediastinal staging procedure was performed if a positive scan was obtained. Of those who did not turn out to have proven N2 disease on mediastinal lymph node biopsy and all patients with a negative mediastinum on PET/CT proceeded to thoracotomy. All patients underwent careful intra-operative staging prior to any lung resection with systematic mediastinal lymph node dissection. Maximum standardized uptake value (SUVmax.) of FDG was accepted as pathologic if it was higher than that of mediastinal vascular bed.

Results: The mean age was 58.2±8.7 and 98 (77%) patients were male. Histopathology revealed squamous cell carcinoma, adenocarcinoma, and other cell types in 73 (57%), 48 (38%) 6 (5%) patients, respectively. Thirty-six (28%) patients had increased uptake of FDG on at least one mediastinal lymph node, however invasive staging proved N2 disease in only 15 (42%). Remaining 21 patients and PET/CT negative 91 patients underwent thoracotomy ($n=112$; 88%). Two patients from PET/CT negative group and another two patients from negative invasive mediastinal staging group had in fact multiple N2 disease confirmed during intra-operative staging, thus prohibited lung resection. Overall sensitivity, specificity and accuracy of PET/CT were 89.4%, 82.4% and 83.5% with positive and negative predictive values of 47.2% and 97.8%, respectively.

Conclusions: Negative PET/CT-scan of the mediastinum precluded N2 disease in 97.8% of our series and therefore may obviate preoperative invasive mediastinal staging procedures in NSCLC.

117-P

EVALUATION OF PLEURAL LAVAGE CYTOLOGY AT THORACOTOMY AS A PROGNOSTIC FACTOR

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Objective: Patients positive for pleural lavage cytology (PLC) have been reported to have a poor prognosis. We evaluated the importance of positive PLC as a prognostic factor, and discussed treatment principles based on the mode of recurrence in PLC-positive patients.

Methods: Of 813 patients with lung cancer treated by radical resection between October 1992 and December 2005, 710 underwent PLC at the time of thoracotomy after excluding patients with extensive adhesion or small bronchoalveolar carcinoma. Immediately after thoracotomy, physiological saline (100 ml) was sprayed over the pleura near the tumor, and the presence or absence of malignant cells in the lavage fluid was determined. The association between the results of PLC and clinicopathological factors, outcomes, and the mode of recurrence were evaluated.

Results: Of the 710 patients, 30 (4.2%) were PLC-positive. PLC was frequently positive in patients with adenocarcinoma, pathologically positive lymph

node metastasis, a pathologically high T stage, an advanced pathological stage, pleural involvement of the tumor, a high serum CEA level, lymphatic permeation, or vessel invasion. The 5-year survival rate was significantly lower ($P<0.001$) in the PLC-positive patients (17%) than in the PLC-negative patients (70%). Even in pathological stage I, the 5-year survival rate was low in PLC-positive patients (30%). Multivariate analysis showed PLC as an independent prognostic factor ($P<0.0001$). In the PLC-positive patients, the initial recurrence was observed in local areas in five patients and in distant areas in 17.

Conclusions: Recurrence by distant metastasis was observed in many PLC-positive patients. Therefore, positive PLC should be used not only as a factor associated with local progression but also as a factor associated with a poor prognosis. In PLC-positive patients, postoperative systemic adjuvant chemotherapy should be considered.

118-P

THORACOSCOPIC INTRAPLEURAL PERFUSION HYPERTHERMIC CHEMOTHERAPY FOR PLEURAL DISSEMINATION WITH NON-SMALL CELL LUNG CANCER

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Objective: Intrapleural perfusion hyperthermic chemotherapy (IPHC) has been used recently as an effective treatment for intrathoracic malignancies such as invasive thymoma, malignant mesothelioma, or advanced lung cancer. We carried out a retrospective analysis to evaluate the feasibility, safety, morbidity and mortality of IPHC in non-small cell lung cancer patients with pleural seeding.

Methods: From June 2003 to July 2007, nine patients underwent surgical resection of primary lesions and then received IPHC under VATS within 10 days. IPHC consisted of perfusing the pleural space for 90 min with a 43–45 °C saline solution containing CDDP (150–200 mg/m²) using extracorporeal circuits.

Results: All patients successfully completed the treatment. Although no life-threatening postoperative complications occurred, nephrotoxicity was present in three patients, who were recovered after adequate hydration treatment without complication. There was no pulmonary edema nor irregular hemodynamics in any of the patients. The follow-up period ranged between 3.6 and 31 months (median 14 months). Two patients died as a result of systemic disease progression such as liver, bone metastasis without progression of pleural disease at postoperative 6th and 21st month. One had recurrence at contralateral lung and liver but was alive until postoperative 8th month. Another one had recurrence at cervical nodes but was alive at postoperative 12th month. No other patients had recurrence in a ipsilateral pleural cavity.

Conclusions: IPHC is not a complicated procedure without serious complication and could be safely applied to incidentally found pleural seeding or pleural recurrence. And despite of intermediate results, it seems to provide effective local control in patients with advanced NSCLC.

119-P

POSTOPERATIVE PULMONARY REHABILITATION: ITS ROLE AFTER LUNG RESECTION IN COPD PATIENTS

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Objective: Pulmonary rehabilitation is capable to improve exercise capacity and quality of life in patients with severe lung disease. There are a few reports on rehabilitation results after resective surgery for lung cancer. In this retrospective study we considered postoperative benefits of post-operative Pulmonary rehabilitation in patients affected by COPD who underwent surgery for NSCLC.

Methods: From January 2003 to November 2005, 100 patients with a diagnosis of lung malignancy and affected by COPD, fulfilled the inclusion criteria for a postoperative pulmonary rehabilitation programme. Seventy-three concluded the entire 4-weeks period. There were 58 male (79%) and 15 female (20.5%). Median age was 66.9 (±7.9 S.D.). Body mass index was 25.4 (±3.3 S.D.). Type of resection included 5 bilobectomies (6.8%), 23 left lobectomies (31.5%), 23 right lobectomies (31.5%), 9 pneumonectomies (12.4%), 7 atypical resections (9.6%) and 6 other types of resections (8.2%). Formal pulmonary function assessment was done before and after rehabilitation.

Results: Pre-treatment physiological parameters were: mean FEV1 55.5% (± 1.16) and 1.48 l/min (± 0.04) mean SatO₂ 94.9% (± 0.30); median MRC 3 (range 1-4); median Borg value 3 (range 0-7); 6 min walking test mean 302.7 (± 9.17). After rehabilitation: FEV1 60.4% (S.D. ± 1.48), ($P < 0.01$) and 1.65 l/min (S.D. ± 0.06), ($P < 0.01$); satO₂ 96.0% (± 0.25), ($P < 0.01$); median MRC value 1 (range 0-2), ($P < 0.01$); median Borg value 1 (range 0-7). ($P < 0.01$), 6 min walking test mean 401.7 (± 9.7). ($P < 0.01$).

Conclusions: Lung surgery patients affected by COPD, show a respiratory function and exercise capacity improvement after postoperative pulmonary rehabilitation.

120-P

IS THERE A ROLE FOR LUNG METASTASECTOMY IN THE ELDERLY?

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Objective: Due to the increase of the median age of the population in the western world, the number of elderly patients developing solid tumours metastatic to the lung is increasing. The role of lung metastasectomy in this cohort of patients has never been investigated. The aim of this study was to analyze postoperative morbidity and the long-term results of pulmonary metastasectomy over the age of 70.

Methods: Our clinical database was reviewed to identify patients aged 70 or more, who underwent lung metastasectomy at our institution between 1998 and 2007. Overall mortality and morbidity were analysed. Follow-up data was obtained by contacting referring physicians or patients in September 2007. End-points of the follow-up analysis were the definition of a) overall 5-year survival b) pattern of recurrence after complete metastasectomy c) predictors of early failure.

Results: The study population was composed of 82 consecutive patients aged 70 or more (44 males, median age 73 years, range 70-85). One-sided metastasectomy was planned in 66 patients and bilateral metastasectomy in 16 patients. A total number of 98 thoracotomies were performed, requiring anatomical resection in 30 cases and wedge resections and/or enucleoresections in the remaining 68 cases. No postoperative death was recorded, the most frequent complications being atrial fibrillation (18.3%) and prolonged air leak (15.3%). Overall 5-year survival for the whole group was 41% and 54% of the recorded deaths were due to relapse. The number of resected lesions was confirmed as the only reliable predictor of long-term survival (< 4 nodules OR 0.8, CI 0.2-0.9). No other predictor of survival or of early recurrence was identified.

Conclusions: Results from this study have shown that age per se is not a contraindication in candidates to pulmonary metastasectomy, which represents a safe and potentially curative procedure in elderly patients. Overall 5-year survival was equivalent to survival reported in younger patients by the International Registry of Lung Metastases.

121-P

THROMBOCYTOSIS, AS A NEGATIVE PROGNOSTIC VALUE IN LUNG CANCER, SIGNIFICANTLY CORRELATES WITH SMOKING HABITS

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Objective: Solid tumours have a worse prognosis when associated with thrombocytosis. Our study assessed the prognostic value of platelet counts, and its correlation to smoking habits in lung cancer patients.

Methods: Three hundred and ninety-eight patients operated on for lung cancer were divided into two groups, whether they had normal platelet counts (Group I) ($n=312$) or thrombocytosis (Group II) ($n=86$) in the perioperative period. The normal thrombocyte count was $\leq 350,000$ G/ml. Three hundred and forty-eight of the 398 patients had data for smoking habit (99 non-smokers; 249 smokers). To detect the suspected N1 and/or N2 lymph node micrometastasis, immunohistochemistry with antibody against cytokeratin (CK-KL1) were performed in 41 of the 188 stage I cases. Twenty of the 41 patients had thrombocytosis.

Results: The incidence of smokers was 87% in thrombocytosis cases, and 67% among patients with normal platelet counts ($P=0.001$). The overall 5-year survival was significantly better in Group I (50.8%) than in Group II (35%) ($P=0.0001$). In 188 cases with stage I cancers, the 5-year survival was 70% in cases with normal platelet counts, and 47% in patients with thrombocytosis ($P=0.004$), but in the immuno staining subgroup of the stage I cancers, there was no detectable lymph node micrometastasis in cases with either normal platelet counts or thrombocytosis.

Conclusions: There was a significant correlation between smoking habits and thrombocytosis. In lung cancers, thrombocytosis is associated with a significantly worse survival rate, but the suspected tumour dissemination did not spread through the lymph node system.

122-P

REPEATED METASTASES SURGERY WITH THOROUGHGOING TECHNICAL RADICALITY CAN ENHANCE SURVIVAL OF PATIENTS WITH PULMONARY METASTASIZING OSTEOSARCOMA

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Objective: Survival rates up to 45% in patients with lung metastases in osteosarcoma are due to interdisciplinary concepts with adjuvant chemotherapy and aggressive surgical approaches for complete surgical remission (CSR). It was evaluated how far CSR can be enforced with repeated metastasectomies and thoroughgoing surgical radicality.

Methods: Ninety-five patients operated on for pulmonary metastases in 176 operations were investigated. Surgical procedures and outcome were documented prospectively. CSR was documented by surgeons and pathologists and was calculated as prognostic factor for survival. Second metastasectomy was performed in 46 patients, third in 17 patients, fourth in 4 patients, fifth in 2 patients. Patients were followed up for overall and event free survival. Surgical techniques including chest wall resections, broncho/angioplastic procedures and laser surgery were available in all operations.

Results: Mean follow-up was 51.7 (SE 4.42) months, 56 patients. were operated on for primary metastases, 39 for pulmonary relapse. Surgical extensions in redo operations showed increasing tendency, such as chest wall resections from 31% (1st redo) to 100% (4th redo), pericardial resections from 6.5% (1st redo) to 50% (4th redo) or mediastinal resections from 1% (1st redo) to 50% (4th redo). Bronchoplastic manoeuvres increased from 7% (2nd redo) to 50% (4th redo). CSR was possible with event free survival after 1st redo in 33.3%, after 2nd redo in 41.6% and in 50% after 3rd and 4th redo. Five patients are alive with disease after redo. Overall survival rate was 48%. CSR was the main prognostic factor ($P < 0.001$) for overall and event-free survival. In 5 operations (2.8%) we found technical inoperability, in 3 operations (1.7%) CSR obviously failed.

Conclusions: CSR in pulmonary metastasectomy is mandatory for long time survival in patients with pulmonary metastases in osteosarcoma. As main prognostic factor for survival, it justifies immensely extended operative procedures. Event-free survival can be achieved even after multiple redo operations.

123-P

LONG-TERM RESULTS AFTER SURGICAL RESECTION OF BONE SARCOMA PULMONARY METASTASES

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Objective: Pulmonary metastases from bone sarcomas occur in 30-40% of cases. The combination of both chemotherapy and surgical resection are the current standard treatment options for these patients. We wanted to study the influence of different prognostic factors on long-term survival.

Methods: We reviewed the prognostic factors and survival rate in 60 consecutive patients with pulmonary metastases from bone sarcomas. All of them were previously treated with chemotherapy and submitted to metastasectomy, at a single institution, from 1996 to 2006. Clinical and demographic variables, related to the primary tumor as well as to the pulmonary metastases and treatment procedures were registered. Univariate (Log-rank) and multivariate (Cox-regression) analysis were performed to identify significant prognostic factors related to overall survival. Five year survival rates were estimated by using Kaplan-Meier method.

Results: Median follow-up was 45 months. 26.7% of the patients were alive without disease (follow-up range: 17-122 months; median survival: 87 months) 6.7% were alive with disease, 38.3% were dead of disease, 1.6% were dead from other causes and 26.7% were lost to follow-up. The overall five year survival rate was 43.9%. Disease free interval, number of lung nodules or complete resection at surgery were not significant prognostic factors at univariate analysis. Cox-regression analysis showed that the number of thoracotomies ($P=0.004$) was the only independent significant prognostic factor. Sex, age, site and histology of primary tumor, disease free interval ($P=0.083$), surgical approach and type of lung resection did not significant impact on survival.

Conclusions: Redo lung surgery in well-selected patients can prolong survival in bone sarcoma pulmonary metastases.

124-P

INFLUENCE OF THE AGE ON ACCURACY OF FDG-PET IN MEDIASTINAL STAGING OF NON-SMALL CELL LUNG CANCER

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Objective: There is necessary to perform subgroup analysis to determine the exact role and factors influenced accuracy of PET in mediastinal staging of non-small cell lung cancer (NSCLC). We aimed to reveal the influence of the age on general accuracy of PET in mediastinal staging.

Methods: FDG-PET was performed to 205 patients with operable NSCLC between 2004 and 2007. Maximum uptake values (SUVmax) of mediastinal lymph nodes were detected and accepted metastatic according to PET if SUVmax was >2.5. After mediastinoscopy, mediastinal lymph node dissection via thoracotomy was done if no metastasis was found. Lymph nodes examined histopathologically. Sensitivity and specificity of PET in mediastinal staging was calculated and compared for patients aged under and over 70-year-old. **Results:** PET has 79% of sensitivity, 75% of specificity, 55% of positive predictive value, 90% of negative predictive value and 76% of general accuracy rate in mediastinal staging of NSCLC patients aged under 70-year-old. These rates were 54%, 62%, 44%, 72% and 60%, respectively, for patients aged over 70-year-old.

Conclusions: Accuracy of PET in mediastinal staging of NSCLC decreases significantly in patients over 70-year-old.

125-P

THE ROLE OF FDG-PET IN PREOPERATIVE EVALUATION ON INDETERMINATE PULMONARY LESIONS

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Objective: In this study, we would like to assess the efficacy of the maximum standard uptake value measured (MaxSUV) in diagnosis of indeterminate pulmonary lesion submitted to pulmonary surgical biopsy.

Methods: This is a prospective study on a group of patients who had an indeterminate pulmonary lesion and underwent integrated positron emission tomography using Fluorodeoxyglucose-PET [FDG-PET] scan with the maximum standardized uptake values (MaxSUV) reported, followed by a complete surgical resection. In our group of study 88% of patients was operated with a MaxSUV >2.5. The other subjects had no evidence of hyperaccumulation of radionuclides and were resected for their CT imaging pattern associated with an oncologic history or anamnestic risk factors.

Results: We have found in our database 70 eligible patients. Forty of them had a primary lung cancer with mean MaxSUV value of 7.7 directly related to size and grading of lesion. Lung metastases were the diagnosis in 16 patients with mean MaxSUV about 3.4 with a direct correlation with size. Fourteen had a benign lesion and in the last ten patients mean MaxSUV was 4.6 without correlation to largest lesion. We obtained 51 true positive and four true negative cases working with a rate of 79% diagnostic accuracy, 91% sensitivity. False negatives at FDG-PET were NSCLC in three patients, carcinoid in 1, and breath metastases in 1. False positives included infection and benign lesion in ten patients.

Conclusions: Although FDG-PET is a valuable approach to study indeterminate pulmonary lesions, is necessary to be aware about what could cause false positives and negatives. A suspicious nodule, which has a MaxSUV from 0 to 2.5, is cancer in 7% chances.

126-P

THE ROLE OF MUSCLE FLAP IN PREVENTING BRONCHUS STUMP INSUFFICIENCY AFTER PNEUMONECTOMY FOR MALIGNANT PLEURAL MESOTHELIOMA IN HIGH RISK PATIENTS

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Objective: Bronchus stump insufficiency (BSI) is one of the major complications after pneumonectomy, we analyzed all patients who underwent extra pleural pneumonectomy (EPP) for malignant pleural mesothelioma (MPM) in order to detect the role of muscle flap (MF) on preventing early and late stump insufficiency.

Methods: From January 2000 till December 2005, there were 42 patients admitted with MPM for further intervention at our institution. Thirty patients were suitable for surgery thus received a combined treatment modality approach with neo adjuvant chemotherapy using Cisplatin® and Gemcitabin (Gemzar®), EPP followed by 54 Gray (Gy) adjuvant radiotherapy. Data were collected from the surgical and oncological records. Age, sex, concomitant diseases, risk factors, staging, operative procedures, tumor histology, time of hospital stay, early and late complications, and overall survival were analyzed.

Results: There were 37 male patients (88%), the median age was 65 years (range 40-83 years). Seven (17%) patients had concomitant diseases. Nicotine abuse was found in 22 (52%) patients, 40 (95%) patients had asbestos exposition. The histological findings in all patients were: 1) epithelial (n=32), 2) papillary (n=2), 3) biphasic (n=2), and 4) sarcomatoid type (n=4). The operative procedures were EPP with muscle flap through an anterolateral thoracotomy. One patient (3%) died on the 2nd postoperative day due to lung embolism. Mild complications were noticed in the early postoperative phase in 8 (25%) patients. There was no early or late stump insufficiency during the 15 month follow-up. One patient had local recurrence within three months postoperative (3%), and after 12 months in 8 (25%) patients. The overall survival after 15 months is 60%.

Conclusions: Surgical techniques using muscle flap seems to play a major role in the prevention of bronchus stump insufficiency especially after neo adjuvant chemotherapy.

127-P

SUB-LOBAR LUNG RESECTIONS OF PERIPHERAL STAGE I NSCLC DOES NOT AFFECT LOCAL RECURRENCE RATE

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Objective: To investigate the potential role of wedge or segmentectomy for the management of peripheral stage I NSCLC we analyzed retrospectively a series of patients consecutively treated with lobectomy or sub-lobar resection at the same Institution.

Methods: From January 1994 to December 2000, 152 patients, 130 males and 22 females with a mean age of 65.7, with stage I peripheral NSCLC were operated on at our department. One-hundred and sixteen patients underwent standard lobectomy (group I) while the remaining 36 patients received a sub-lobar resection with mediastinal lymphadenectomy (group II).

Results: Fifty-one patients (33.5%) were staged as T1 and 101 (66.5%) as T2. Median follow-up was 59 months. Five years overall survival was similar in the two groups 64.4% for the lobectomy group vs. 66.7% for the sub-lobar resection group (P=0.3). Also five-year overall disease free survival was similar between the two groups, 69.4% for lobectomy vs. 78.1% for sub-lobar resection (P=0.3). No difference was observed in term of distant recurrence rate between the two groups (P=0.14) although local recurrence rate was higher in the sub-lobar resection group (25% vs. 6.9%) with difference statistically significant (P=0.006). For patients with stage T1, five year survival rate for lobectomy and sub-lobar resection groups respectively of 78% and 79% (P=0.2); also the local recurrence rate was similar 1.7% vs. 5.5% without statistically significant differences (P=0.8). For T2 patients, five years overall survival for lobectomy group and sub-lobar resection group was respectively 59.7% and 65.4% without statistically significant difference (P=0.18). Recurrence rate was significantly higher in the sub-lobar resection group 19.2% vs. 5.1% (P=0.001).

Conclusions: In patients with peripheral stage IA NSCLC, type of resection seems to not affect local recurrence rate and it might justify sub-lobar resections in high risk patients.

128-P

COMPARISON OF POSITRON EMISSION TOMOGRAPHY IMAGING AND MEDIASTINOSCOPY IN STAGING OF NON-SMALL CELL LUNG CANCER: ANALYSIS OF 815 LYMPH NODES

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Objective: In this study we compared the results of F-18 fluorodeoxyglucose marked integrated positron emission tomography-computerised tomography (PET-CT) with those of mediastinoscopy in mediastinal staging of potential resectable non-small cell lung cancer (NSCLC) patients.

Methods: PET-CT and mediastinoscopy is performed on 214 NSCLC patients between September 2005 to December 2007. Fourteen patients receiving neoadjuvant chemotherapy and time interval longer than six weeks between PET-CT and mediastinoscopy were excluded from the study. Patients with negative mediastinoscopy results underwent surgical resection. The pathological results were correlated with PET-CT findings.

Results: The PET-CT from 2 to 42 days before mediastinoscopy (mean: 15 days) were performed on 200 patients (190 men and 10 women; mean age: 58.4 years) with NSCLC. In PET analysis 58 true-positive, 42 false-positive, 97 true-negative and three false-negative patients were found. The sensitivity, specificity, positive and negative predictive values and accuracy for PET-CT were 95.1%, 69.8%, 58%, 97% and 77.5%, respectively. PET-CT examinations analyzed on 815 nodal stations resulted in 93 true-positive, 87 false-positive, 617 true-negative and 18 false-negative findings. The sensitivity of PET was 83.8%, specificity was 87.6%, positive predictive value was 51.7%, negative predictive value was 97.2% and accuracy was 87.1%. The sensitivity, specificity, negative predictive values and accuracy for mediastinoscopy were 80.3%, 100%, 92.1% and 94%, respectively.

Conclusions: PET-CT helps the surgeon to sample more lymph nodes, precisely during mediastinoscopy, avoiding unnecessary thoracotomies. Mediastinoscopy appears necessary for exact lymph node staging in patients whose PET scan results were positive. Mediastinoscopy can be omitted in patients with negative PET scan.

129-P

PROGNOSTIC MARKER FOR MALIGNANT PLEURAL MESOTHELIOMA

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Objective: To assess the impact of marker expression such as the tumour suppressor PTEN, the oncogene EGFR, p27 (cell cycle inhibitor) and the excision repair cross-complementation group 1 (ERCC1) protein - also relevant for survival and response to platinum chemotherapy in NSCLC-patients - on overall prognosis and survival of mesothelioma patients in a tissue microarray-based (TMA-) based study.

Methods: Quadruple punches of 341 MPM patients were studied for the expression of PTEN, EGFR, p27 and ERCC1 by immunohistochemistry using different antibodies. Staining intensity was semi quantitatively scored (0-3) and for ERCC1 percentage of positive stained cells (0-100%) was additionally measured. A final H-score was calculated by summing up intensities or by multiplication of intensity with percentage (ERCC1). This H-score was correlated to overall survival.

Results: More than 50% of the biopsies showed a biphasic growth pattern of mesothelioma, 34% were an epitheloid subtype and 13% a sarcomatoid subtype. PTEN expression was lost in 62% of the cases; ERCC1 was expressed in 80%, EGFR in 90% and p27 in 53% of these cases. Stepwise cox-regression analysis revealed that EGFR expression only correlates with epitheloid subtype. Survival time was correlated to marker expression in 126 cases with complete follow-up data. Univariate analysis revealed age ($P=0.02$), histological subtype ($P=0.01$), treatment (none with trimodality therapy) ($P=0.0015$) and PTEN H-Score ($P=0.00001$), H-Score ERCC1 ($P=0.0004$) and p27 as prognostic markers. Stepwise cox-regression analysis revealed PTEN and ERCC1 H-score as the only independent marker for overall survival ($P=0.001$ and $P=0.02$, respectively).

Conclusions: EGFR expression correlates with epitheloid growth pattern in mesothelioma patients. Overall survival is independently predicted by protein expression of ERCC1 and PTEN, which will be further analysed in a prospectively documented database of MPM patients undergoing cisplatin chemotherapy.

130-P

PNEUMONECTOMY FOR BRONCHOGENIC CARCINOMA: ANALYSIS OF FACTORS PREDICTING SHORT AND LONG-TERM OUTCOME

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Objective: Goal of our study was to analyse prognostic factors for postoperative and long-term outcome after pneumonectomy in our surgical institute.

Methods: From 1 January 2000, to 1 January 2005, 424 patients were diagnosed with clinical stage I-III lung cancer. Two hundred and fifty-two

consecutive patients (59%) were operated on, in 86 (34%) a pneumonectomy was performed. Patient/treatment characteristics and complications were collected retrospectively by reviewing the hospital electronic medical file and clinical charts. Complications were categorised as: Surgical/Infection/Organ dysfunction/Hospital - Provider Errors and Drug related. Multivariate analysis for postoperative morbidity and mortality, and long-term survival was performed.

Results: Five year survival rate for all surgical patients was 44%. In the multivariate analysis patients aged 70+ had a 1.5 times higher risk of dying compared to younger patients ($P=0.06$), those with comorbidity 1.8 times ($P=0.009$), and stage 3A 2.3 times compared to stage 1 ($P=0.002$). Postoperative mortality in patients undergoing pneumonectomy was 10% ($n=9$). Patients aged 70+ had a 20 (OR 0.05; 0.006-0.457) times higher risk of dying postoperatively compared to younger patients (P)

Patients undergoing right-sided pneumonectomy had a 2 (OR 0.418; 0.163-1.069) times higher risk of postoperative morbidity compared to left sided ($P<0.03$).

Conclusions: Patients aged 70+ and right sided pneumonectomy had a significant higher risk for postoperative morbidity and mortality after pneumonectomy. The high morbidity (42%) and mortality (10%), emphasises the knowledge of possible risk factors influencing outcome to weigh surgical risk.

131-P

CLINICAL SIGNIFICANCE OF TUMOUR CELLS IN THE PULMONARY VEINS FROM RESECTED SPECIMENS OF PATIENTS WITH NON-SMALL CELL LUNG CANCER

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Objective: To understand the clinical significance of the presence of tumor cells in the draining veins from resected specimens of patients with non-small-cell lung cancer (NSCLC).

Methods: Prospectively collected, retrospectively analyzed data from 33 patients with completely resected primary non-small cell lung cancer (pT1-4 pN0-2). The blood samples obtained in theatre from pulmonary veins after lobectomy or pneumonectomy were examined for occult tumour cells by immunocytochemical staining of cytopins using the pancytokeratin antibody A45-B/B3 that binds to the cytokeratins 8, 18 and 19.

Results: Cancer cells in pulmonary venous blood were observed in seven out of 33 patients (21%). In this limited series, we could not find a statistically significant correlation with standard clinical-pathological parameters. However, we found that the incidence of tumour cells in pulmonary venous blood was different in patients with smaller (pT1-pT2; 17.2%) in comparison to larger size T (pT3-pT4; 50%). None of the patients with N2-lymph node involvement was positive for the presence of cancer cells in the venous blood. In addition, we observed that the incidence was 41.6% in patients affected by squamous cells carcinoma, 33% in patients with large cell carcinoma, and only 8.3% in patients with adenocarcinoma. No evidence of venous dissemination was found in patients affected by other histological types. Occult cells in the venous blood were found more often in patients undergoing intraoperative frozen section compared to those with preoperative histological diagnosis (30% vs. 15%).

Conclusions: Occult cancer cells in the pulmonary venous blood are detectable in about 21% of the patients with resectable non-small cell lung cancer. Larger series are needed to verify a) the extent by which surgical manoeuvres can contribute to cancer cell dissemination in the pulmonary veins; b) whether the detection of such cells might be useful for the identification of patients who may benefit from adjuvant therapy.

132-P

LOCALLY ADVANCED NON-SMALL-CELL LUNG CANCER (NSCLC) - DO INTRAPULMONARY SATELLITE NODULES FIT IN THIS CATEGORY?

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Objective: Locally advanced bronchial tumors beyond stage IIB have long been considered a contraindication for surgery. However, with advances in neoadjuvant and adjuvant therapy even selected patients with tumors

in stage IIIA and IIIB are potential candidates for surgery. The classification of intrapulmonary satellite nodules remains however point of discussion.

Methods: We retrospectively reviewed all 71 patients who underwent curative resection of locally advanced NSCLC in stage T3 or T4 according to postoperative histology from January 2002 to December 2006. Patients with T4 and/or M1 staging due to intrapulmonary satellite nodules were analysed with regard to postoperative outcome and compared to all other patients.

Results: During the observation period 71 patients (14 female, 57 male; mean age 63+10 years) with pT3/pT4 NSCLC underwent resection with curative intent. Postoperative stage was IIB in 20, IIIA in 15, IIIB in 32 and IV in four patients. Overall 30 day survival was 93.0%, 1 year survival 64.8% and 3 year survival 36.7%. There was a clear trend towards improved survival in patients with T4/M1 stage due to intrapulmonary metastases (30 days 100%, 1 year 81.0%, 3 years 57.2%, $P=0.06$) and significantly less cancer related mortality ($P=0.05$). Disease free interval was significantly longer in those patients (783+449 vs. 451+409 days, $P=0.02$) and the survival was significantly better if radical resection was achieved ($P<0.003$). Patients in stage IIIA and IIIB receiving neoadjuvant or adjuvant chemo-/radiotherapy had a comparable outcome to patients in stage IIB.

Conclusions: The current classification of intrapulmonary satellite nodules seems inappropriate. In a multimodality treatment setting including radical resection favourable outcome for patients with locally advanced NSCLC even in stage IIIA and IIIB can be achieved.

133-P

LONG-TERM SURVIVAL FOLLOWING COMBINED MODALITY MANAGEMENT OF PATIENTS WITH NON-SMALL CELL LUNG CANCER (NSCLC) AND SYNCHRONOUS SOLITARY BRAIN METASTASIS

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Objective: Although resection of primary lung cancer and metachronous brain metastases is superior to other treatment modalities, resection of the primary non-small cell lung cancer and synchronous brain metastases is still discussed controversially.

Methods: Over a 17-year period, 17 patients underwent surgical treatment for synchronous brain metastases from NSCLC and subsequent complete resection (R0) of the primary tumor at our institution. Follow-up including patterns of relapse was documented in a prospective manner. Kaplan-Meier curves of cancer-related survival were analyzed using log-rank statistics.

Results: All patients presented with neurologic symptoms at time of first diagnosis. Craniotomy was performed first in all patients. Median time

between craniotomy and thoracotomy was 36 days (range 2-793 days). Pneumonectomy was performed in 1 patient (6%), bilobectomy in 2 (12%), lobectomy in 13 (76%) and segmentectomy in 1 (6%). Postoperative complications developed in 5 (29%) patients. Cell type was adenocarcinoma in 7 (41%) patients, squamous cell carcinoma in 2 (12%), large cell carcinoma in 6 (35%), and undifferentiated in 2 (12%). After pulmonary resection, 12 (71%) patients had no evidence of lymph node metastases (pN0), 1 (6%) had hilar metastases (pN1), and 4 (23%) had mediastinal lymph node metastases (pN2). Six (35%) patients received postoperative adjuvant therapy. The most common cause for relapse were new distant metastases. Median survival was 15.1 months. The 5 years survival rate was 35%. Presence of thoracic lymph node metastases (pN1 or pN2) tended to be associated with poor survival. **Conclusions:** Surgical resection may be beneficial in a selected group of patients with synchronous solitary brain metastases and lung cancer without lymph node metastases.

134-P

LONG-TERM RESULTS OF LUNG CANCER AFTER HEART TRANSPLANTATION: SINGLE CENTER 20-YEAR EXPERIENCE

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Objective: We analyzed the incidence of lung cancer occurring after heart transplantation and long-term survival after diagnosis and surgical treatment.

Methods: From November 1985 to December 2006, 786 heart transplants were performed in our Center; we underwent a retrospective review of patients developing primary lung cancer in our experience.

Results: Among 660 heart transplant recipients valuable in the study, 22 (3.3%) developed a lung cancer (20 male, 91%), their mean age at time of heart transplant was 54.5+5.2 years (range, 42-65). The mean time from transplantation to lung cancer diagnosis was 73.7±30 months. Eleven patients (50%) were in stage IIIB or higher at the time of presentation. The five year survival rate of the entire study population was 21.4%, with a median survival of 10.1 months. Ten patients underwent surgical resection (9 lobectomies and one wedge resection) and demonstrated improved long-term survival with 5-year survival of 56% and median 70.4 months, compared to patients not submitted to any surgical procedure, all of whom died during follow-up, with 1-year survival of 33%.

Conclusions: Long-term results after surgery for lung cancer in heart transplant recipients are very satisfactory in early stage disease. Routine chest computed tomography screen should be considered in high-risk patients to identify earlier disease.

Monday Posters

Monday, 9 June 2008

08:30-17:30

135-P

MODIFIED NUSS REPAIR OF PECTUS EXCAVATUM IN ADULTS - SINGLE INSTITUTION EXPERIENCE

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Objective: Ravitch-type operation is a major chest surgery characterized by subperichondrial resection of abnormal costal cartilages and transverse incision of sternum for correction of pectus excavatum with uncertain cosmetic result. The excellent alternative to this kind of surgery is Nuss procedure developed in 1980. In this technique surgeon through two small skin incisions places one or two curved steel bars behind the sternum and forces it back into the desired shape. It became the preferred method for pectus excavatum surgery for patients aged 5-15 years. In our institution we adopted this technique with modification (the third, subxiphoid incision) for surgery in older patients.

Methods: Twenty-seven patients (4 women) aged 17-26 years were operated on in years 2004-2007. The main indication for surgery was patient's unsatisfactory cosmetic appearance. Our modification involves two bilateral, midaxillary incisions and the third vertical subxiphoid incision which permits metal bar to be placed safely retrosternally under surgeon's finger control. This results in remodeling of the sternum and costal cartilages. The follow-up period was between 5 and 37 months.

Results: Twenty-six patients had 1 bar placed, one had 2 bars placed. Procedure duration was 65 min (50-120 min). Seventeen patients had chest drainage for one day because of pneumothorax. One of the patients had metal bar displacement without any clinical symptoms (patient with 2 bars). In one case metal bar was removed in 4th post op week due to symptoms of metal intolerance. Postoperative hospitalisation was 3, 8 days (4-6 days). All patients were satisfied with routine pain control (Morphine and NSAID). Postoperative cosmetic results were good, accepted by all patients.

Conclusions: The Nuss procedure in our modification is safe, minimally invasive and relatively technically easy with good cosmetic result also for elderly patients.

136-P

QUALITY OF LIFE AFTER OESOPHAGECTOMY FOR CARCINOMA. DOES IT IMPACT THE ELDERLY MORE?

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Objective: We have previously demonstrated the survival benefit of oesophagectomy for carcinoma in the elderly. However, the impact of surgery on the patients' quality of life (QoL) has not been fully explored. We aimed to assess the changes in quality of life on elderly patients after surgery.

Methods: The EORTC generic QoL questionnaire C-30 and the disease specific module OES-24 were completed at pre-admission clinic then posted at 6 and 12 months post oesophagectomy. Complete data was obtained on 85 participants [63 male and 22 female, median age 68 (range 41-89) years]. Scores were grouped into scales using EORTC algorithms and analysed using the Wilcoxon signed rank test. The responses of the 20 patients older than 75 years (Group A) were compared with the ones from the younger group (Group B, n=65).

Results: Generic Questionnaire C-30 scales showed generalised deterioration after surgery in both groups (Physical, Role, Cognitive and Social Functioning domains as well as Fatigue Score in Group A; Physical and Role Functioning domains and Fatigue, Dyspnoea and Loss of Appetite Scores in Group B). However, the patients' rating of their Global Health Status only worsened in Group A ($P=0.004$) and not in Group B ($P=0.8$). By contrast, the domains in the Disease-Specific OES-24 Questionnaire showed no deterioration in either group (in fact there was improvement on the dysphagia score in Group B). Despite this, the elderly group reported significant impact in their QoL due to the Disease ($P=0.07$) and the Treatment ($P=0.02$). These changes were not evident in Group B ($P=0.2$ in both scores).

Conclusions: In summary, despite the elderly reporting a greater impact of the disease and the treatment in their overall Health Status compared to the younger population, there were no changes in the QoL assessment scores between the groups.

137-P

TRANSBRONCHIAL NEEDLE ASPIRATION UNDER DIRECT ENDOBRONCHIAL ULTRASOUND GUIDANCE OF PET POSITIVE ISOLATED MEDIASTINAL ADENOPATHY IN PATIENTS WITH PREVIOUS MALIGNANCY

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Objective: Isolated mediastinal adenopathy is a challenging clinical problem in patients with history of malignancy; positron emission tomography (PET) scanning has been proven to be a significant advance in the ability to accurately assess the mediastinal lymph nodes, but false-positive studies lead the clinicians to insist on histological confirmation. The purpose of this prospective and controlled study was to assess the yield of endobronchial ultrasound guided transbronchial needle aspiration to reveal mediastinal lymph node metastases in patients with previous malignancy and possible mediastinal involvement to computed tomography and positron emission tomography.

Methods: Twenty-three consecutive patients with history of malignancy and suspected mediastinal recurrence to CT and PET were referred to our Institution. EBUS examinations were performed using a flexible bronchoscope with a linear scanning transducer of 7.5 MHz (BF-UC160F-OL8, Olympus; Tokyo, Japan). Pathologic lymph nodes were sampled with a dedicated 22-gauge TBNA needle. The glass slides were evaluated by a on-site cytologist for adequacy. At the end of the TBNA, the patients proceeded to either mediastinoscopy or thoracoscopy under general anesthesia. Cytological results were compared to final surgical-pathological diagnosis. The sensitivity, specificity, positive predictive value, negative predictive value, and diagnostic accuracy rate for EBUS-TBNA prediction of lymph node metastasis were calculated using the standard definition. **Results:** The EBUS-TBNA gives a sensitivity, specificity, positive predictive value, negative predictive value, and accuracy of 88.9%, 100%, 100%, 83.3%, and 92.8%, respectively. The disease prevalence was 64.2%. All the endoscopic procedures were well tolerated and no immediate complications were recorded.

Conclusions: Transbronchial needle aspiration under real-time endobronchial ultrasound guidance is a valuable technique for cytological diagnosis of PET positive mediastinal lymphadenopathy in patients with history of malignancy. Tissue sampling by invasive surgical procedures (mediastinoscopy or thoracoscopy) remains mandatory in case of non-adequate or negative transbronchial needle aspiration cytology.

138-P

TIMING OF ESOPHAGECTOMY AFTER COMPLETION OF NEOADJUVANT THERAPY AFFECTS ANASTOMOTIC LEAK RATES

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Objective: Neoadjuvant therapy is routinely used in the treatment of esophageal cancer. The surgical timing following completion of induction therapy remains arbitrary and controversial. The aim of this study was to investigate whether time to surgery has an effect on anastomotic leak rates following surgery.

Methods: Retrospective review of a prospective database of all patients undergoing esophagectomy from January 2000 to January 2007.

Results: A total of 160 patients underwent esophagectomy at our institution (transhiatal=130, transthoracic=30) during this period. The indication for surgery was malignancy (n=124), high grade dysplasia (n=11), and other (n=25). Sixty-nine (43%) patients received neoadjuvant induction treatment, with median time to surgery after completion of induction treatment of 30 days. Operative mortality was 1.8% (3/160) and anastomotic leak rate was 15% (24/160). In those that received neoadjuvant treatment, leak rate was 17% (12/69). In this cohort the median time to surgery was significantly longer (66 days) in those that had an anastomotic leak compared to 28 days in those that did not have a leak ($P=0.006$; Wilcoxon rank-sum test). When esophagectomy was performed within 30 days of completion of neoadjuvant

therapy anastomotic leak rate was significantly lower (3/35=9%) compared to those who had esophagectomy beyond 30 days of completion of neoadjuvant therapy (9/34=26%, $P<0.05$). Leak rate among those that had no neoadjuvant induction treatment was 13% (12/91).

Conclusions: Neoadjuvant therapy does not increase anastomotic leak rates when surgery is done early (within 4 weeks) after completion of treatment. Patients that had anastomotic leak had significantly greater time delay between completion of induction treatment and surgery.

139-P

IS ARDS/ALI COMMON AFTER OESOPHAGECTOMY IN A SPECIALIST THORACIC UNIT? AN AUDIT OF RESPIRATORY COMPLICATIONS

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Objective: It has been stated that Adult respiratory distress syndrome/Acute Lung Injury (ARDS/ALI) occurs in up to 20% of oesophagectomies. We aimed to audit our recent experience in a Thoracic Surgical Unit which has developed a clear clinical pathway and management guidelines.

Methods: An 18 month review (2006-October 2007) identified 94 consecutive patients [68 male and 26 female, median age of 70 (range 50-89) years] undergoing elective oesophagectomy for carcinoma ($n=90$) or high grade dysplasia ($n=4$) in our unit. Thirty percent of the patients were older than 75 years. We reviewed the case notes and all radiological investigations performed during their hospital stay. Outcomes of the study were the incidence of ARDS/ALI and other respiratory complications evident in postoperative investigations and mortality.

Results: There were 4 (4.3%) postoperative deaths. ARDS/ALI was only present in one of the patients who died after surgery and another patient who survived. Most patients (82%) developed some abnormal feature in postoperative CXR, mostly minor effusions (68%) or atelectasis (82%) of little clinical consequences. Only 6% required insertion of an intercostal drain due to complications.

Conclusions: Our contemporary series reveals that, even in an ageing surgical population, our current protocol of care correlates with low hospital mortality and minimal incidence (2%) of ARDS/ALI. Most abnormal features in postoperative radiographs are minor atelectasis and effusions.

140-P

CRITICAL APPRAISAL OF LYMPH NODE MAPPING FOR STAGING ESOPHAGEAL ADENOCARCINOMA

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Objective: This study critically evaluated the prognostic value and potential clinical application of lymph node mapping (LNM) in the staging of primary esophageal adenocarcinoma (EADC).

Methods: Between February 1991 and February 2006, a consecutive series of 142 patients underwent subtotal esophagectomy (transthoracic, $n=77$; transhiatal, $n=65$) and gastric transposition for primary EADC (Siewert Type I), defined according to strict clinicopathologic criteria. No patient received induction therapy. Intraoperative LNM, based on a numeric system and precise anatomic boundaries for each lymph node station as recently proposed by the AJCC, was applied prospectively to characterize patterns of nodal metastasis, for staging, and to predict survival. Following LNM and biopsy, all patients had a standard 2-field lymphadenectomy. Histopathologic examination of lymph nodes in the resected specimen was correlated with LNM-directed biopsies.

Results: Overall 5-year survival (OS) was 26.4%. With respect to lymph node metastasis, OS was reduced with increasing pN stage ($P<0.0001$), the number of positive nodes (0, 1-3, >3 ; $P<0.0001$), and the proportion (>0.2) of positive nodes of the total number of nodes resected ($P<0.0001$). A median of six thoracic and abdominal lymph node stations (range, 3-10) were evaluated by LNM to determine patterns of metastasis. Significantly reduced postoperative survival was associated with the number of involved lymph node stations (0, 1, >1 ; $P<0.0001$).

Conclusions: Following surgical resection of EADC, the presence, number and fraction of lymph node metastases has prognostic significance. LNM, a technique which has gained wide acceptance among thoracic surgeons for staging lung cancer, would also appear to be a useful adjunct to conventional staging of EADC, particularly in the context of a standard 2-field lymphadenectomy as commonly performed in clinical practice.

141-P

SENSIBILITY AND SPECIFICITY OF FDG-PET/CT FOR PREOPERATIVE STAGING OF ESOPHAGEAL CANCER

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Objective: Limited information is available on the sensibility and specificity of 18Ffluorodeoxyglucose positron emission computed tomography (FDG-PET/CT) for esophageal cancer clinical staging. Aim of the current study was to evaluate the diagnostic performance of FDG-PET/CT.

Methods: Thirty one patients (28 men, median age 63 years r. 41-81) who underwent FDG-PET/CT and thoraco-abdominal CT-scan, were retrospectively evaluated. Lymph node (N) and presence/absence of distant (M1b) and nodal (N) metastases as determined by FDG-PET/CT and CT were assessed in relation to clinical patterns (for M) and pathology (for N). Esophagectomy and extended lymphadenectomy without prior neoadjuvant treatment was performed in 22 patients. Sensitivity, specificity, diagnostic accuracy and k statistics of the two imaging techniques were calculated.

Results: Four tumors (13%) were located at the cervical esophagus (2 squamous cell carcinomas, 1 anaplastic cell carcinoma and 1 adenocarcinoma) 15 (48%) at the gastroesophageal junction (11 adenocarcinomas, of whom 6 with Barrett's metaplasia and 4 squamous cell carcinomas) and 12 (39%) at the thoracic esophagus (11 squamous cell carcinoma, 1 adenocarcinoma). At pathology, 18 patients (81%) had metastatic N, no distant metastatic disease was reported. Data on performance of the two imaging techniques are summarized in Table 1.

Conclusions: FDG-PET/CT with respect to CT improves specificity in N and sensibility and specificity in M disease. FDG-PET/CT provides additional value for clinical staging of esophageal cancer versus CT and, in relation to the data of the literature, versus FDG-PET.

	N disease FDG-PET/CT	N disease CT	M disease FDG-PET/CT	M disease CT
Sensibility (%)	67	83	80	40
Specificity (%)	100	75	92	84
PPV (%)	100	94	66	33
NPV (%)	40	50	96	88
Diagnostic accuracy (%)	82	82	16	16
	k=0.265; P=0.135		k=0.380; P=0.034	

142-P

SURGICAL MANAGEMENT OF INTRA-THORACIC GOITERS

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Objective: Intra-thoracic or mediastinal goiters represent 7-20% of mediastinal masses and 1-15% of all thyroidectomies. They comprise cervico-thoracic goiters (goitres plongeants), recurrent and residual goiters (portion of thyroid tissue left behind in previous surgery) and aberrant intra-thoracic or ectopic goiters. The aim of this study is to report our experience, evaluate the different methods of diagnosis and to establish the best management of these situations.

Methods: We retrospectively reviewed the medical records of 65 patients with intra-thoracic goiters who underwent surgery at our institution, between 1987-2008. Age, sex, symptoms, preoperative diagnostic findings, type of operation, pathologic diagnosis, morbidity and mortality were analysed.

Results: There were 47 women and 18 men with age ranged from 38-82 years. Fifty-four patients had cervico-thoracic (plunging goiters), 6 had residual goiters (previous surgery 9-30 years before) and 5 had ectopic goiters. The great majority of plunging goiters were right sided (48%), as well as residual goiter (5/6). Ectopic goiters were central (4) or right sided (1). In cervico-thoracic goiters, thyroidectomy was performed through a cervicotomy in 46 patients, through a cervico-sternotomy in two and a cervicotomy+anterior thoracotomy in other 2. In four patients only the intra-thoracic thyroid tissue was removed (absence of palpable cervical thyroid) via a postero-lateral thoracotomy. Residual goiters were removed by postero-lateral thoracotomy (3), sternotomy (2) or cervico-sternotomy (1). Ectopic goiters were operated via sternotomy (4) or a postero-lateral thoracotomy (1). One patient could not be

immediately extubated due to respiratory complications, four had transient hypocalcemia and 6 transient/permanent vocal cord palsy. There was no mortality. The majority of lesions proved to be colloid diffuse, nodular or adenomatous goiters; there were 6 follicular adenomas and 2 papillar carcinomas. Conclusions: All intra-thoracic goiters should be operated in the absence of surgical contra-indications (there is no effective medical treatment and there is a high-risk of complications in long-standing goiters). We found CT-scan the best diagnostic method of evaluation for mediastinal goiters. Nearly all cervico-thoracic goiters can be removed via a cervical incision and with low morbidity. Residual intra-thoracic and ectopic goiters, mimicking other mediastinal tumours, should be operated via a sternotomy or a thoracotomy.

143-P

THE USE OF TRANSCERVICAL APPROACH WITH ELEVATION OF THE STERNAL MANUBRIUM FOR SURGERY OF MEDIASTINAL TUMOURS

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Objective: Operative technique and results of resection of upper mediastinal benign and malignant tumours through the transcervical approach with elevation of the sternum.

Methods: Twenty-eight patients with upper mediastinal tumours were operated on from 1 January 2004 to 15 January 2008. The operation was performed through the collar incision, with elevation of the sternal manubrium with use of the mechanical sternal retractor without opening of the mediastinal pleura and without any mediastinal and pleural drainage.

Results: There were 18 benign tumours and 10 malignant tumours. Benign tumours included: ectopic thyroid - 4; thymic cyst - 3, other mediastinal cysts - 5; parathyroid adenoma - 1; neurinoma - 5. Malignant tumours included: metastatic nodes - 8; thymic carcinoma - 1; interdigitating dendritic cell sarcoma - 1. Localization of tumours in the mediastinum: anterior - 10; middle - 12 (including aorta-pulmonary window - 2); posterior - 6. R0 resection was achieved in all benign tumours and in 7/10 malignant tumours. The diameter of the completely resected tumours was 2, 5, 9 cm (mean 5.3 cm). Operative time was 30-125 min. (mean 78 min). There was one conversion for thoracotomy (due to adhesions) and one reoperation (transcervical revision with left videothoracoscopy) for bleeding and no other complications (morbidity 3.7%). Postoperative hospital stay was 3-7 days (mean 4.3 days). Conclusions: 1. Transcervical approach enables complete resection of the benign tumours and early stage malignant tumours. 2. Localization of tumour in the posterior mediastinum or the aorta-pulmonary window and the considerable size of the tumour were not contraindications for this approach.

144-P

A MOUSE MODEL OF ORTHOTOPIC, UNILATERAL LUNG TRANSPLANTATION

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Objective: Progress in studying acute and chronic pulmonary allograft rejection has been hampered by the lack of feasible animal transplantation (Tx) models. The heterotopic tracheal implantation does not substitute for orthotopic engraftment, since it lacks adequate vascularization and aeration. To utilize the breadth of available genetic modifications, we implemented and validated a procedure of orthotopically transplanted, perfused and ventilated single pulmonary Tx in mice.

Methods: C57BL/6 mice served as recipients, with Balb/c as donor for allografts. At time of harvest, donor lungs were perfused with 3 ml Perfadex® at 4 °C, and the heart-lung-block was excised. Under 30-40× magnification, cuffs (20-24 G venous catheter) were placed in the vessels and main bronchus and secured by ligation. Recipients were anaesthetized, intubated and ventilated, and following a left thoracotomy, the hilar donor cuffs were inserted into the corresponding donor structures and ligation-secured. Syngeneic and allogeneic (n=12/group) Tx were performed, with a follow-up period of maximal 90 days.

Results: The success rate of lung transplantation was 87.5% (21/24). Failure was due to vascular leakage during implantation. Mean cold ischemia time was 27.3±12.6 min, warm ischemia time was 30.8±9.5 min. The survival of successfully transplanted (syngeneic) graft beyond day 5 post-Tx was 81.8% (9/11), displaying a perfused and ventilated graft at 28, 50 and 90 days post-transplant.

Conclusions: The model of unilateral lung transplantation in mice can be performed in a standardized and controlled fashion, comparable to the approach in the rat. Employing transgenic and knockout mice strains, this procedure will help to advance the understanding of pathways in acute and chronic rejection in a physiologic model of pulmonary transplantation.

145-P

MEDIASTINAL DISONTOGENETIC CYSTS: ROLE OF VATS

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Objective: The mediastinal disontogenetic cysts are rare benign lesions (10% of mediastinal benign neoformations). Their treatment is still discussed, principally for asymptomatic cysts. The Authors illustrate their experience with thoracoscopic resection of mediastinal disontogenetic cysts.

Methods: From 1992 to 2007, 17 patients with mediastinal disontogenetic cysts have been observed: 13 (76.7%) were asymptomatic, 2 (5.8%) showed cough and emphysema, 1 (5.8%) dysphagia and 1 (5.8%) chest pain. The average cysts size was 6.4 cm, and the largest diameter was 12 cm. Five cysts were located in the middle mediastinum, 3 in the posterior mediastinum and 9 in the anterior mediastinal. None of the cysts were complicated.

Results: All patients have been operated by VATS, but one case was converted to thoracotomy because of pleural symphysis; 16 cysts were resected completely by thoracoscopy. Histological were found 8 (47%) pleuropericardial cysts, five bronchogenic cysts, 3 (17.4%) esophageal duplications and 1 (6.2%) lymphangioma cystic of thoracic duct. There were no operative deaths and 1 (6.2%) case of postoperative intrathoracic bleeding, successfully treated by re-VATS were observed. Other complications were not observed. Mean hospital stay was six days. Long-term follow-up (at least 60 months) showed no recurrence.

Conclusions: After accurate preoperative diagnosis (TC, MR chest and functional tests) the treatment of choice of mediastinal disontogenetic cysts, also asymptomatic, is the resection by VATS: this method is safe, has little postoperative discomfort, early functional recovery and a good aesthetic outcome.

146-P

PARADOXICAL EFFECT OF COSEAL® IN THE PREVENTION OF POST-SURGICAL LUNG ADHESIONS

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Objective: Postsurgical pleural adhesions are a relevant problem in cases where a re-thoracotomy is expected. Published data support the potential for prevention of postoperative adhesions of a polyethylene glycol (PEG)-polymer lung sealant (Coseal®). This experimental study was designed to evaluate the efficacy of Coseal® in preventing the development of pleural adhesions after thoracotomy and lung resection.

Methods: Sequential bilateral thoracotomy followed by a minimal lung resection and suturing was performed on a group of female Wistar rats (n=23). After randomisation, Coseal® was applied over the lung injury and below the thoracotomy incision in one of the hemithoraces while the other side served as a control. Subjects were euthanized after a 21-day survival period and the presence and severity of lung adhesions were assessed macroscopically and histologically in a blind manner.

Results: The sites where Coseal® was applied showed a marked and significant development of dense pleural adhesions compared to control (P<0.001). This was observed both in the lung suture area and below the thoracotomy. A complete pleurodesis took place in 53% of the Coseal® hemithoraces against 6% in the controls. Four cases of frank pleural empyema (23.5%) were recorded in sides where Coseal® was applied (see picture). Histological analysis found dense pleural adhesions without foreign body granulomas. No traces of the product were detected after 21 days.

Conclusions: Coseal® induced the formation of severe pleural adhesion after thoracotomy and lung resection in this randomised, controlled and masked experimental setting. Post-application swelling and disruption of normal pleural flow might explain these unexpected and potentially worrying results. Final data with different dosages and a modified protocol will be presented during the meeting.



Massive empyema in the left hemithorax.

147-P

PHYSIOLOGICAL EFFECTS OF A LUNG RECRUITING STRATEGY APPLIED DURING ONE LUNG VENTILATION

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Objective: One-lung ventilation (OLV) affects respiratory mechanics and ventilation/perfusion matching, reducing functional residual capacity of the ventilated lung. While the application of a lung recruiting manoeuvre (RM) on the ventilated lung has been shown to improve oxygenation, data regarding the impact of RM on respiratory mechanics are not available. The aim of the study was to demonstrate the physiological effects of RM on respiratory mechanics during OLV:

Methods: Thirteen patients undergoing lung resection in lateral decubitus were studied. During OLV, a lung recruiting strategy consisting in a recruitment manoeuvre (RM) lasting 1 min followed by the application of PEEP 5 cm H₂O was applied to the ventilated lung. Hemodynamics, gas exchange and respiratory mechanics parameters were recorded on two-lungs ventilation (TLVbaseline); OLV before and 20 min after the RM (OLVpre-RM, OLVpost-RM, respectively); TLVend. Hemodynamics parameters were also recorded during the RM.

Results: The PaO₂/FiO₂ ratio was 358±126 on TLVbaseline; it decreased to 235±113 on OLVpre-RM (*P*<0.01).

Conclusions: During OLV in lateral decubitus for thoracic surgery, the application to the dependent lung of a recruiting strategy significantly recruits the dependent lung, improving arterial oxygenation and respiratory mechanics until the end of surgery. However, the transient hemodynamic derangement occurring during the RM should be taken into account.

148-P

CANCER STEM CELL STRATEGY TO REFINE PROGNOSIS IN EARLY HUMAN NON-SMALL CELL LUNG CANCER

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Objective: Recent evidence indicates that tumors contain a small population of cancer stem cells (CSC), CD133+, responsible for tumor maintenance and spreading. Molecular and functional characterization of such tumorigenic population may provide valuable information to be exploited in the clinical setting.

Methods: We explanted CSC population from 21 early NSCLC and characterized them for surface marker (CD133, CD35, CD45). In the tumor cell cultures obtained from every patient, we monitored the acquisition of differentiation marker (CK7) and the loss of stem cell markers. To determine CSC self renewal ability, clonogenic in vitro assays and the capacity to generate long-term growing secondary spheres were used. We compared CD133 yield and clinical stage. Three thousand cells obtained from NSCLC cells (CK7+), from dissociated NSCLC spheres (CD133+, CD35-, CD45-) and from cocultured CK7+ and CD133+/CD35-/CD45-, were plated in 96-well flat-bottom plates. Chemotherapeutic agents were added. Cell viability was evaluated by Vialight assay and TUNEL assay.

Results: The protocol used led to a CSC isolation in the 100% of the samples tested. Analysis of CD133+/CD45-/CD31- cells led to the identification of specific distribution within the tumor mass and validated the CSC niche model. Significant correlation was found between the CD133+ percentage and the clinical stage. Our observation indicate that NSCLC CSC are resistant to chemotherapeutic drugs.

Conclusions: Standard treatment for stage I NSCLC is surgical resection, despite the observation that nearly 30-35% will relapse after surgery and have a poor prognosis, indicating that a subgroup of these patients might benefit from adjuvant chemotherapy. We have showed an alternative strategy that would evaluate the benefit of the identification of a individual therapeutic profile in vitro. Our study is a critical first step in the use of primary and CSC cultures tools as a strategy to refine the prognosis and improve the selection of patients appropriate for adjuvant chemotherapy.

149-P

IN-VIVO ASSESSMENT OF ANGIOGENESIS IN HUMAN MESOTHELIOMA XENOGRAFTS

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Objective: We describe a rodent model for studying microcirculation in human mesothelioma xenografts in-vivo.

Methods: Mesothelioma morphology and microcirculation were analysed by intravital microscopy (IVM) using a transparent chamber preparation in Swiss nude mice (female, age 10-15 weeks). The human mesothelioma cell line H-meso-1 was used. Two days after implantation of a titanium chamber into the dorsal skin fold of a nude mouse a 1 mm² fragment of the H-meso-1 tumour was transplanted in the skin fold preparation (*n*=6). Control animals had chamber preparation but no tumour implantation (*n*=5). Angiogenesis and growth of the xenograft were observed up to ten days by daily IVM (transillumination and fluorescence microscopy using fluorescein isothiocyanate-dextran).

Results: The take rate of the human mesothelioma xenograft H-meso-1 in the skin fold chamber of nude mice was 100%. Three days after tumour implantation capillary sprouting was observed in the tumour periphery in six of six animals. From day 3-10 a progressive formation of irregularly shaped capillaries occurred, presenting an inhomogeneous blood flow. Six to 10 days after tumour grafting these newly formed vessels developed anastomoses, and blood flow became more regular throughout the tumour. The tumour surface did not increase significantly during the observation period.

Conclusions: Xenotransplantation of H-Meso-1 tumours in the skin fold chamber preparation in nude mice enables the in-vivo assessment of human-derived tumour angiogenesis and microcirculation. This model may serve as a tool for assessing vascular mediated treatment strategies against malignant pleural mesothelioma.

150-P

SURGICAL STAPLERS VERSUS BIPOLAR FUSION TO COMPLETE THE FISSURE DURING LUNG MAJOR RESECTION

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Objective: Staplers are widely used to complete the fissure, but prolonged air leak is a common complication. The objective is to evaluate the value of the bipolar fusion in lung resection, comparing the quality of parenchymal section between two technics: staplers versus bipolar new technology.

Methods: Prospective randomized clinical trial. The completion of the fissure performed with the Ligasure system TM was compared with standard method using stapler. One hundred and forty-four patients were included in this multicenter study. Inclusion criteria were: major resection, informed and signed consent. Exclusion criteria were: history of homolateral surgery, pleural adhesion. The main outcome measures were air leak at day 1, prolonged air leak, complication, cost and length of stay.

Results: Demographics data were comparable in both group stapler (*n*=74) or Ligasure (*n*=70). On day 1, air leak was present in 61 patient (42%): 27/74 staplers group, 34/70 Ligasure group, *P*=0.14. Prolonged air leak (>7 days) was present in ten patients (6.9%): 1/74 staplers group, 9/70 Ligasure group, *P*=0.007. Postoperative morbidity was similar between the two groups, either postoperative hospital stay (median 9 days).

Conclusions: The Ligasure System appears as a safe and promising new technology for staplerless thoracic surgery. Further improvement of the forceps may generalized the use of this device.

151-P

INCISIONAL SYMPATHECTOMY (IS) FOR POST THORACOTOMY PAIN; THE CONCEPT; SURGICAL TECHNIQUE; INITIAL RESULTS

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Objective: Chronic debilitating neuropathic pain occurs after thoracotomy in 5-10% of cases and is difficult to treat. Experimental animal models have demonstrated that sympathectomy at the time of nerve trauma prevents neuropathic pain. Sympathectomy performed during thoracotomy was investigated.

Methods: Incisional Sympathectomy (IS) was defined as sympathectomy performed at surgery to cover precisely the surgical incision and trauma. The sympathectomy is complete, permanent and preemptive (concomitant with surgery). **Technique:** the sympathetic chain is sectioned by incising the pleura with electrical cautery over the rib head. The incision is prolonged 5 cm laterally to section accessory sympathetic nerves and anatomical rami. Thoracic drains are inserted in the intercostal space below the surgical incision and sympathectomy is performed on one rib above and two below the thoracotomy; additional levels are added as necessary to cover all tissue trauma (e.g. chest wall resection). IS was performed in 74 patients undergoing thoracotomy for a wide variety of pathologies and procedures, over a period of six years. Case details are described. Patients were followed for at least six months.

Results: IS is simple, safe and quick to perform. In two cases post-sympathetic neuralgia occurred after sympathetic ganglion resection. Post-sympathetic neuralgia never occurred when the sympathetic ganglion was not injured. Ganglionectomy should not be performed. No complication could be attributed to IS. At three weeks 81% of patients no longer required opiates. At six months, none of the patients suffered of severe or debilitating neuropathic pain, including six who had not received peridural analgesia and 54 patients who had clinical evidence of intercostal nerve injury (typically sub-mammary hypoesthesia).

Conclusions: A simple and safe technique of sympathectomy for thoracotomy pain is described and was performed in 74 patients. No deleterious effects of IS were observed and initial results were excellent. Further investigation of IS is warranted.

152-P

AUTOFLUORESCENCE BRONCHOSCOPY IN PATIENTS CANDIDATES TO AND IN FOLLOW-UP AFTER RESECTION FOR LUNG CANCER

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Objective: Autofluorescence bronchoscopy (AFB) has been proposed to improve the diagnostic capacities of traditional white light bronchoscopy (WLB) in the early detection of tracheo-bronchial neoplastic and pre-neoplastic lesions. This study aims to assess the role of AFB in patient's candidates to and in follow-up after resection for lung cancer.

Methods: From May 2002 to October 2007 we performed a WLB-AFB (D-light/AF system, Storz, Germany) in 561 patients (455 men, 106 women), mean age 64 years (range 17-8 years), who were divided in two main groups: group A (266 patients at risk of lung cancer, 142 of which in follow-up after resection for lung cancer) and group B (295 patients with lung cancer candidates to surgical resection).

Results: Six hundred and ninety-one WLB-AFB (366 in group A, 325 in group B) and 212 biopsies of suspected areas were performed. In group A, on 231 WLB-AFB in 142 follow-up patients, we detected in three of them five areas of dysplasia and two of carcinoma in situ. In group B, in the evaluation of the endobronchial extension of the disease in patients with endoscopically visible neoplastic lesion, we observed a discordance between areas of lesion evident with WLB and with AFB in 48 cases, which was confirmed as positive in 31 of them at pathological examination.

Conclusions: In our experience AFB has revealed to be a valid procedure both for the early diagnosis of neoplastic recurrence or second primary lung cancer in patients in follow-up after resection and for the precise preoperative evaluation of the endobronchial extension of the disease in patients candidates to surgical resection, so guiding the decision of the surgeon to a more correct therapeutic approach.

153-P

COMPUTED TOMOGRAPHY VOLUME RENDERING EVALUATION OF PARENCHYMAL HYPERINFLATION BEFORE AND AFTER BRONCHOSCOPIC LUNG VOLUME REDUCTION

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Objective: To evaluate the efficacy of Bronchoscopic Lung Volume Reduction (BLVR) in patients with advanced stage emphysema according to spiral CT findings.

Methods: Between 3 January 2006 and 31 October 2007, seven patients (6 male, 1 female; age range 51-77 years, mean 64) with advanced stage heterogeneous emphysema (FEV1 180%) underwent BLVR using the Emphasys one-way valves (Emphasys, Redwood City, CA, USA). All patients were studied preoperatively and postoperatively (48 h, 1 month and 3 months after treatment) by functional tests (spirometry, plethysmography, DLCO, 6-min walking test) and by spiral multislice CT-scan (collimation 16x0.75). Radiological assessment by CT-scan was performed with a 3D protocol, before and after treatment, analysing the volume of the target lobe and of the entire treated lung and quantifying the emphysematous parenchyma rate according to the density range. Lung parenchyma has been classified as emphysematous if the density was in the -1024/-900UH range and as normal if the density was in the -900/-200UH range. Preoperative radiological data were compared with postoperative data observed one month after treatment. Overall, 24 valves have been placed in the seven patients. Valves have been placed in the right upper lobe in two patients, in the left upper lobe in five and in both the left upper lobe and the right lower lobe in 1.

Results: Volume reduction of the target lobe and of the entire lung was observed in all patients. Lobar volume reduction ranged between 1.3% and 53.77% of the preoperative value. Volume reduction of the entire lung ranged between 0.33% and 27.25%. Reduction of emphysematous parenchyma rate was observed in all cases (range 3.1-16.8%) The higher volume reduction rate was observed in the three patients showing the better FEV1 improvement.

Conclusions: CT-scan volume rendering evaluation confirms the efficacy of BLVR in reducing parenchymal hyperinflation. Functional advantages are higher when the volume reduction is more evident.

154-P

COMPARATIVE STUDY OF NEW DRAINAGE DEVICE (DRAINAGE BAG) AND CHEST BOTTLE FOR PLEURAL CAVITY DRAINAGE

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Objective: Chest tube have been used as a close drainage system for evacuation of pleural cavity after thoracic surgery and traumatic patients. To day, the chest bottles are making from hard and fragile material that may broken easily, and so for proper function chest bottle need to sterile saline solution that should be adding. Further more, heaviness of bottle with pressure effect on the chest wall, can produce sever pleuretic chest pain which interfere to early ambulation and postoperative ventilation. We used a new drainage device which made from soft and paliable material (like to the urine bag) for pleural cavity drainage that has not other disadvantage of routine chest bottle.

Methods: This clinical- trial have been designed to compare efficacy of new drainage device (Drainage bag) and chest bottle for pleural cavity evacuation. Among of this study 50 selected patients with explanation for procedure and settled in two subject groups incidentally. For one group (25 patients) routine chest bottle have been utilized and for another them (25 patients) drainage bag were used as close drainage system of pleural cavity. Then two patients group compared for severity of chest pain (according to Visual Analog Score), satisfaction and duration of admission. All data were analyzed statistically.

Results: Distribution of mean pain score was 4.2 score for drainage bag in versus to 5.5 for routine chest bottle, as well as in the aspect of patient's satisfaction for ambulation and fungibility of device was 81% for drainage bag and 43% for routine chest bottle. Duration of admission was evaluated and data showed 5.3 days mean duration for drainage bag and 8.7 days for chest bottle group.

Conclusions: According to these datas it seems that use of new drainage bag for evacuation of pleural cavity, can be as effective as routine chest bottle with less pain and more satisfaction of patients and shorten of hospital admission.

155-P

POST-DISCHARGE WOUND SURVEILLANCE IN GENERAL THORACIC SURGERY

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Objective: To define an optimal strategy for post-discharge wound surveillance in general thoracic surgical practice.

Methods: Consecutive patients receiving major non-esophageal general thoracic surgery by a single thoracic surgeon during a 22-month period - and who had no significant complications before discharge - were studied. All 270 patients received wound surveillance on scheduled follow-up at the specialist cardiothoracic surgery hospital clinic. In addition to this, in the first half of the study period, 130 patients received regular alternate day wound inspections at community-level general out-patients (GOP) clinics after discharge (Regular group). In the second half, 140 patients were instructed to attend GOP clinics only if the wounds became symptomatic (PRN group).

Results: All pre-discharge demographic and clinical variables were similar in the two groups. Post-discharge wound complications (PDWC) in the first 30 days following surgery occurred in 43 patients (33.1%) in the Regular group, compared to 16 patients (11.4%) in the PRN group ($P < 0.001$). This difference was mainly accounted for by a greater incidence of minor superficial wound dehiscence in the Regular group ($P = 0.001$), with surgical site infection rates similarly low in both groups. Amongst patients who developed PDWC, the use of regular GOP inspections did not lower ASEPIS wound scores, reduce requirements for additional therapy, or shorten the time to complete healing (see Table). No PDWC identified by GOP clinics were missed by specialist cardiothoracic surgery clinic follow-up. Use of video-assisted thoracic surgery resulted in lower PDWC rates than open thoracotomy (19.5% vs. 34.1%; $P = 0.032$), but no other factor showed significant influence on PDWC rates (including patient immuno-compromise, wound classification, duration of surgery, duration of chest drainage, length of hospital stay, and others).

Conclusions: Following uncomplicated thoracic surgery, regular post-discharge wound inspections by community GOP clinics may predispose to wound dehiscence, and offer no significant benefits over specialist cardiothoracic surgery clinic follow-up alone.

Impact of post-discharge wound surveillance

	Regular group (%)	PRN group (%)	P-value
All patients			
Post-discharge wound complication (all)*	33.1	11.4	<0.001
CDC-definition surgical site infection	1.5	1.4	0.940
Minor superficial wound dehiscence	18.5	5.7	0.001
Patients developing PDWC*			
ASEPIS score >10	9.3	12.5	0.718
Extra therapy required (antibiotics, readmission, debridement etc)	11.6	18.8	0.477
Healing time >4 weeks	32.6	18.8	0.358

*Includes wound dehiscence, serous oozing and mild erythema in addition to surgical site infections as defined by the Centers for Disease Control and Prevention (CDC).

156-P

RADIOFREQUENCY ABLATION (RFA) IN THE TREATMENT OF PULMONARY METASTASES

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Objective: In the treatment of liver metastases RFA has proved its efficacy. In a small number of studies on the treatment of pulmonary tumors, RFA has been described to improve survival. Since one year we have applied RFA in patients with lung metastases. Here we describe the feasibility and first results.

Methods: From October 2006 till October 2007 13 RFA procedures were performed in nine patients. Six men and three women (mean age 66 years) were treated. Seven patients had colorectal metastases, the other two renal cell cancer. Seven of nine patients underwent earlier surgery for metastatic disease (hepatic and/or pulmonary resection). In all cases RFA was preferred by the patients themselves. Under general anesthesia and CT guidance, the lesions were located with a bipolar needle. After radiological confirmation of the correct position of the needle tip an amount of energy is delivered to the tumor adjusted to its diameter. CT imaging during and after the procedures showed a rim around the tumor confirming that the lesion is completely ablated.

Results: A total of 13 procedures were performed. In six of 13 procedures a chest tube was placed due to pneumothoraces. All tubes could be removed

in one day. Median hospital stay was two days. Patients hardly had complaints and were not impaired in their daily activities. Complications: 1 prolonged fever without abscess or empyema, 1 diaphragm paresis. At present no local recurrences were diagnosed, however in some patients new pulmonary metastases did occur.

Conclusions: Radiofrequency ablation of pulmonary metastases is safe, minimally invasive, tissue sparing, easy to repeat in recurrent disease and patient friendly with short hospital stay. It is striking that patients themselves choose to be treated this way. Long-term results and preferable controlled trials should define the exact place of RFA in the treatment of pulmonary metastatic disease.

157-P

SINGLE ACCESS TECHNIQUE: AN EFFICACIOUS PAINLESS WAY OF CHEMICAL PLEURODESIS BY VATS

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Objective: Chemical pleurodesis by VATS is widely utilized for treatment of malignant pleural effusion (MPE). We compared efficacy, in terms of pain control and effusion recurrence, of a 'single access' technique to a standard VATS.

Methods: Three hundred and seventeen patients with MPE underwent to chemical pleurodesis by VATS between 2002 and 2006. In 187 patients (group A) we used only one access to introduce the camera and another surgical instrument. Two or more accesses were necessary in 130 patients (group B). An elastomeric pump for a continuous infusion of 20 mg of morphine associated with 150 mg ketorolac in 100 ml of normal saline at 2 ml/h, was administered for the first 48 postoperative hours. In case of inadequate control of pain, another elastomeric pump with the same drugs was given. A chest radiography, one and three months after surgery, was used to identify the recurrence of pleural effusion.

Results: Mortality was nil and morbidity did not differ in two groups. In 81% of group A and in 64% of group B, a second infusion by elastomeric pump was not necessary. This difference is statistically significant ($P = 0.001$). MPE did not recur in 96.8% of group A and in 94.5% of group B.

Conclusions: 'Single access' technique allows a statistically significant reduction in analgesic administration compared to a standard VATS and did not influence the efficacy of the chemical pleurodesis.

158-P

VO₂MAX AND CARDIOVASCULAR RISK EVALUATION IN PATIENTS SUBMITTED TO THORACIC SURGERY

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Objective: The aim of the study was to assess the efficacy of maximal oxygen consumption (VO₂max) evaluation as predictor of cardio-pulmonary complications after thoracic surgery, compared to 6-min walking test (6MWT), METS (metabolic equivalent tasks) score and left-ventricular (LV) ejection fraction (EF) at rest.

Methods: Forty-six patients (42 males, 4 females), mean age 65 years, were submitted to functional evaluation by either direct and estimated VO₂max determination and assigned to one of three subgroups: low-risk (VO₂max >15 ml/kg/min), intermediate risk (VO₂max 10-15 ml/kg/min) and high risk (VO₂max <10 ml/kg/min) group. Patients were also stratified by 6MWT, METS score, LV-EF, on the basis of cut-off values drawn by literature. Mean post-operative stay (MPS) was considered for each group.

Results: Sixteen lobectomies, 20 wedge resections, 3 pneumonectomies, 2 partial pleurectomies, 2 lung volume reductions, 3 biopsies were performed through thoracotomy. METS: METS >4, 29 patients, MPS 7.4 days; METS 500 mt, 18 patients, MPS 7.1 days (r=0.44). Direct VO₂max: VO₂max 15 ml/kg/min, 23 patients, MPS 7.1 days (r=0.31). Estimated VO₂max: VO₂max 15 ml/kg/min, 4 patients, MPS 5.2 days (r=0.50). LV-EF at rest: Patients submitted to typical resections: LV-EF <40%, 4 patients, MPS 7 days; LV-EF >40%, 34 patients, MPS 12 days. Patients submitted to typical resections: LV-EF <40%, 1 patient, MPS 16 days; LV-EF <40%, 13 patients, MPS 15.9 days.

Conclusions: In our experience both 6MWT and VO_{2max} were significantly correlated to mean postoperative stay after thoracic surgery, whereas we did not find a significant relationship between LV-EF at rest and mean postoperative stay. METS remains a valid, but subjective and complementary test.

159-P

RESECTION OF CHEST WALL TUMORS AND RECONSTRUCTION WITH AN ORIGINAL MESH: SEVEN-YEAR EXPERIENCE

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Objective: Reconstruction of the full thickness defects of the chest wall remains a challenging problem of thoracic surgery. The authors underline the advantages of a new, original mesh in stabilization of the thoracic wall, presenting their clinical experience.

Methods: We retrospectively review 94 patients who underwent surgical management for tumors of the chest wall between January 2001 and January 2008 in our clinic. For 31 of them a full thickness resection was performed. Stabilization of the thoracic wall with reconstruction of the soft tissues was imposed in all cases with a larger than 5 cm parietal defect excepting posterior parietal defects covered by the scapula. For the thoracic stabilization we used THORATEX® mesh, an original mesh with two main components: a knitted textile carrier and the reinforcement grid manufactured from monofilament polyester yarns.

Results: Age of patients varied from 23 years to 74 years (mean age - 42 years). Nineteen (61.3%) were primitive tumors (9 of the bone), 6 (19.35%) parietal invasions of lung cancers and 6 (19.35%) bone metastases (from renal, breast, lung, throat cancers). The distribution of bone resection procedures was: one rib - 6 cases (19.35%), two ribs - 7 cases (22.58%), more than three ribs - 7 cases (22.58%), four ribs and portions of diaphragm - 2 cases (6.45%), parietectomies and pulmonary resections - 6 cases (19.35%), partial resections of the sternum - 3 cases (9.67%). The THORATEX® mesh was used for stabilization in 18 cases (58%), in five cases a grid of nylon sutures was manually performed while in two cases we used another surgical mesh. We encounter two (6.45%) postoperative complications. No operative deaths occurred. There were no late complications related to reinforced mesh.

Conclusions: This technique is safe and cheap, resulting in a stable and satisfactory reconstruction especially after large antero-lateral full-thickness chest-wall resections.

160-P

VIDEOTHORACOSCOPIC ULTRASOUND LUNG RESECTION - NEW SURGICAL TECHNIQUE FOR PERIPHERAL OBJECTS ABLATION

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Objective: The modern ultrasound surgical equipment is useful in wide operative areas. The advanced technology was invented to simplify videothoroscopic partial lung resection by means of ultrasound dissection and coaptation.

Methods: There were conducted 76 videothoroscopic (VTS) partial lung resections, including 65 for biopsy at lung disseminations, 6 resections at bullous emphysema, 5 at peripheral nodes. For these operations was invented harmonic dissector 'Ultracision' (Johnson and Johnson Co., USA). The largest resection reached 5 cm deep from visceral pleura. Additional aero- and haemostasis was necessary only for deepest wounds. There were applied fibrin glue, autotrombogel, adhesive collagen sponges, endosurgical ligatures.

Results: There were not intra- and postoperative bleedings. Only resections more than 4 cm deep led to air leakage and demanded additional closure. Complete aerostasis and lung extension were reached after 75 operations during first 24-72 h after operation. Inside this group more longer air leakage was established at concomitant COPD and diffuse emphysema (50.1±20.3 h). After one deep resection without cover procedure air leakage was intensive, lung collapse was severe. This patient was operated repeatedly. Re-VTS was performed and air leakage was discontinued. All removed pieces of lung tissue were of high quality for morphologic diagnostic, without squash or heavy thermocautation.

Conclusions: Videothoroscopic ultrasound lung resection is perspective surgical technique. It may be performed for lung biopsy and at peripheral objects, such as bullas, benign nodes, small metastases. It may be valid both for subpleural and more deep objects. Deep ultrasound lung resections demands additional wound closure.

161-P

THE ROLE OF THORACOSCOPY IN THE MANAGEMENT OF HYDATID CYST OF LUNG - PRESENT AN EXPERIENCE

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Objective: Debate exist for thoracoscopic intervention in the management of hydatid cyst. One of the most anxious point in the management of hydatid cyst is spillage of hydatid fluid through bronchial tree or pleural space. The hydatid cyst is an alive parasite with high internal pressure and alkaline PH so, any change in these characteristic (such as rupture of cyst) can growing to a dead cyst and potentially doing as a lung abscess. In this setting we can evacuated of hydatid cyst thoracoscopically without hesitancy of spillage and related complications.

Methods: Twelve selected patients with hydatid cyst who was admitted in our hospital (RAMC) during two last years (2005-2006). Among of these seven male and five female with age from 11 to 64 years. The main criteria for selection of patients were rupturing and peripherally located (outer one third of lung) cysts. All patients were explain for procedure from ethical point. All patients underwent general anesthesia with double lumen endotracheal tube and proper position of thoracoscopy. Through the thoracoscopic port, delineation of cyst and evacuation of contents was performed. With resection of superficial portion of cyst wall and proper control of air leakage (as muresuplization or capitonnage), pleural cavity was drained with a large bore chest tube.

Results: Nine patients (75%) thoracoscopic drainage was done successfully with mean hospital stay four days. In one case (8.3%) air leakage continued beyond the seven days and in two patients (16.6%) thoracoscopy turned to open procedure due to inaccessibility of cyst and uncountable air leakage. No recurrence was detected on the site of operation in the following patients.

Conclusions: Debate exist for applicability of thoracoscopy in the management of hydatid cyst of lung, however in selected patients who have peripherally located cyst that considered for surgical intervention may be manage successfully with acceptable result.

162-P

EFFECTIVENESS OF SYMPATHETIC BLOCK BY CLIPPING IN THE TREATMENT OF HYPERHIDROSIS AND UNCONTROLLABLE FACIAL BLUSHING

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Objective: Main cause of dissatisfaction after videothoroscopic sympathectomy in the treatment of hyperhidrosis (HH) and uncontrollable facial blushing (FB) is compensatory sweating (CS). Theoretically Sympathetic nerve (SN) clipping permits to revert the block effect by removing the clips in case of a massive intolerable CS. We present our experience with this technique comparing it with our own historical series of sympathectomy.

Methods: From January to November 2007, 45 patients diagnosed of HH and/or FB were operated by clipping of SN. Clipping levels varied in function of the sort of disease. Results were evaluated one week and three months after surgery. Mean follow-up period was 4.4 months.

Results: There were 45 patients (22 males/23 females), mean age: 27 (range 15-47). In 12 patients (26.6%) main symptom was FB and in 33 (73.4%) palmar and/or axillary HH. Forty-four of the patients were discharged before 24 h after the surgery, 33 (73.3%) of them in an ambulatory program. One patient (2.2%) that was readmitted 72 h after surgery because of a pneumothorax that needed drainage. Four patients (8.8%) had a minimal apical pneumothorax that resolved spontaneously. Forty-three of the 45 patients showed improvement of their symptoms (95.5%). CS was seen in 27/45 (60%), being labelled as mild-severe in five patients (11.1%). It was not necessary to remove the clips in any case. In our historical series of 300 patients submitted to sympathectomy we observed an improvement of the symptoms in 99% and CS in 78%, being severe in 18%.

Conclusions: Sympathetic nerve clipping by VATS is a safe and effective procedure for the management of FB and palmar/axillary HH. Levels of CS are similar or lesser than with the standard sympathectomy and, if necessary, this technique allows to revert the sympathetic block.

163-P
PHOTODYNAMIC DIAGNOSIS IN MANAGEMENT OF METASTATIC LUNG CANCER

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Objective: The inability to prevent and eradicate Metastatic disease remains the primary cause of cancer death. The lung is a frequent site of distant metastases. The surgical treatment of isolated pulmonary metastases has become a widely accepted procedure, with low morbidity and mortality. Metastases are found in the peripheral one third of the lung fields, most often at the lung bases. They present as well-circumscribed spherical nodules, unassociated with linear densities. Patients with known metastases on chest radiographs should undergo CT to identify other smaller metastases. The indications for partial or complete resection of pulmonary metastases are: to establish a diagnosis, remove residual nodules after chemotherapy, obtain tissue for tumor markers or immunohistochemical studies, and decrease tumor burden. Video-assisted thoracoscopic surgery (VATS) has become an important approach in the management of Metastatic lung disease. The aim of the current clinical study was to evaluate the auto fluorescence endoscopic localization of metastases in the lung.

Methods: From September 2003 till September 2005, PDD thoracoscopy was used for localization and excision of lung nodules. Twenty patients with suspected pulmonary metastasis Preoperative clinical history of primary malignancy was documented.

Results: Twenty patients. Mean age: 58±5 years. Females 60%: Males 40% Operative time 50±7 min. Duration of ICT drainage 3±1 days. Operation performed: total metastasectomy VATS (Complete excision) 35%; total metastasectomy (Lobectomy via thoracotomy) 5%; partial metastasectomy 30%; metastasectomy+associated pleurodesis 30%. Sensitivity (95%). Conversion

to thoracotomy (5%). Mortality (0%). Degree of metastatic spread: isolated solitary pulmonary metastases 25%; multiple pulmonary metastasis 55%; systemic metastasis 15%.

Conclusions: VATS can be considered a viable treatment option for patients who present with a solitary pulmonary metastasis with a diameter of 3 cm or less, when the lesion is located in the periphery of the lung. PDD Thoracoscopy is useful tool for endoscopic localization of Metastatic lung cancer with sensitivity (95%).

164-P
UNIORTAL VATS: SINGLE SURGEON'S EXPERIENCE WITH THE FIRST 23 CASES

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Objective: Single port (uniportal) VATS has been proposed as an alternative to conventional three-port VATS. It may potentially reduce postoperative neurological complications and hospital stay. The objective of this study is to report the initial experience of a single surgeon utilising this technique.

Methods: Between July 2007 and January 2008, 23 patients underwent uniportal VATS (Table).

Results: There was no hospital mortality. No significant postoperative morbidity occurred except for a patient who developed transient acute renal failure. A successful outcome was achieved in all patients except for one patient with recurrent malignant pleural effusion who had requested for a trial of VATS pleurodesis instead of the suggested permanent tunnelled drain (Table).

Conclusions: Uniportal VATS can be adopted as alternative to conventional three-port VATS. The technique is safe and efficient.

Indication for surgery	Procedure	Number of cases	Median length of chest tube in days	Median length of hospital stay in days	Median length of follow-up in months	Percentage of successful outcome
Recurrent pneumothoraces	Apical bullectomy and pleurodesis	6	2	3	5	100%
Interstitial lung disease	Lung biopsies of right upper, middle and lower lobes	2	2	3	3	100% diagnoses were obtained
Pleural thickening associated with effusion	Pleural biopsies and pleurodesis	10	4	5	4	100% diagnoses obtained and satisfactory pleurodesis
Malignant recurrent pleural effusion	Pleurodesis	3	5	6	4	67%
Benign recurrent pleural effusion	Pleurodesis	1	5	6	3	100%
Empyema	Drainage and breakdown of multiloculations	1	5	7	1	100%

Tuesday Posters
Tuesday, 10 June 2008
08:30-17:30

165-P

THE COMPARISON OF THORACOTOMY CLOSURE TECHNIQUES IN POSTTHORACOTOMY PAIN CONTROL: 'INTERCOSTAL SUTURES' VS. 'INTRACOSTAL SUTURES FOLLOWING INTERCOSTAL NERVE DISSECTION'

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Objective: One of the most important considerations in the care of thoracic surgical patients is a pain control that leads increased morbidity and relevant mortality.

Methods: Sixty patients undergoing full muscle sparing posterior minithoracotomy were prospectively randomized into two groups according to thoracotomy closure techniques. In the first group (Group A), two holes on the sixth rib were drilled using a hand perforator and sutures were passed through the holes on the sixth rib and circled from the upper edge of the fifth rib compressing the intercostal nerve underneath the fifth rib. In the second group (Group B), the intercostal muscle underneath the fifth rib was partially dissected along with the intercostal nerve corresponding to the holes on the sixth rib. Two 1/0 Vicryl sutures were passed through the holes on the sixth rib and above the intercostal nerve but underneath the fifth rib. The fifth intercostal nerve was not compressed by the sutures in Group B.

Results: There were 30 patients in each group. Visual analogue score; observer verbal ranking scale (OVRs) for pain and Ramsay sedation scores were used to follow-up postoperative analgesia and sedation. Von Frey hair test was used to evaluate hyperalgesia of the patients on the 2nd, 15th and 30th postoperative days. Patients in Group B had a lower visual analogue scores at rest at 8th, 24th, 48th h and at coughing at 8th, 24th, 48th h. Patients in Group B had a lower OVRs than Group A patients at 24th and 48th h. There was no statistically significant differences in the groups in terms of Ramsey sedation scores and Von Frey hair tests.

Conclusions: Thoracotomy closure avoiding the intercostal nerve compression decreases the postoperative pain significantly. The prevention of postthoracotomy pain is much more important than application of various analgesia methods.

166-P

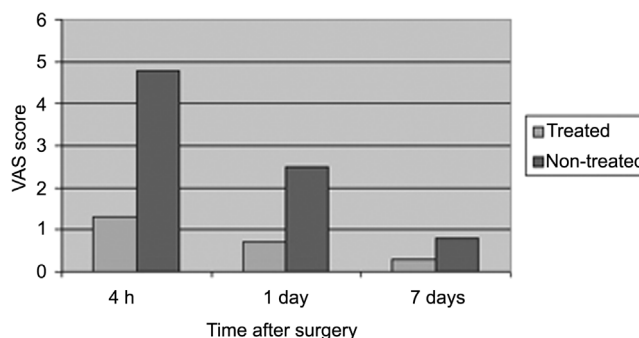
PREVENTIVE LOCAL ANESTHESIA IN VATS SYMPATHECTOMY

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Objective: Although video-assisted thoracic surgery (VATS) is an effective alternative to thoracotomy for several indications, allowing less pain-related morbidity, a significant portion of patients receiving VATS still experience some degree of pain. Among the different strategies for the reduction of postoperative pain, preventive local anesthesia has been successfully introduced in other surgical fields. The aim of our study was to evaluate the effectiveness of intercostal preventive anesthesia in patients undergoing thoracic sympathectomy through VATS.

Methods: We prospectively evaluated 18 consecutive patients undergoing bilateral VATS sympathectomy for hyperhidrosis. Each patient was randomized to receive, on one side, a total dose of 15 ml 0.5% bupivacaine injected to the port sites before incision and, on the other side, 15 ml of saline. All patients were interviewed at 4 h, 1 day and 7 days after surgery. Pain intensity was recorded for each chest side by the means of the Visual Analog Scale (VAS).

Results: No major postoperative complications were observed. Two patients had pleural effusion that resolved spontaneously. At 4 h after surgery, wound pain was significantly reduced on the pre-treated side ($P=0.003$) and this trend was confirmed at 1 day ($P=0.008$). Preventive anesthesia also reduced chest wall paresthesia at all postoperative controls (4 h: $P=0.04$; 1 day: $P=0.03$; 7 days: $P=0.02$). Only 2 of 18 patients (11.1%) needed occasional postoperative analgesia. No patients had postoperative pain or paresthesia causing functional impairment.



Conclusions: Our results suggest that intercostal preventive analgesia is effective in the control of postoperative pain after VATS procedures, like thoracic sympathectomy for hyperhidrosis. However, further studies with larger series are needed to confirm these features.

167-P

IS THERE ANY PREDICTOR OF POOR QUALITY OF LIFE AFTER PNEUMONECTOMY?

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Objective: After pneumonectomy, quality of life (QoL) may result as being impaired in a certain proportion of patients, due to the presence of invalidating symptoms causing severe limitations in daily activities. This is a prospective study on patients who have undergone pneumonectomy for oncological reasons, assessing QoL modifications six months after surgery. **Methods:** As of August 2006, candidates to pneumonectomy have had their QoL assessed by the EORTC questionnaire (QLQ-C30+LC13) preoperatively and at one, three and six months after surgery. Poor quality of life at six months was defined as QoL values lower than the first quartile. The impact of several clinical variables (age, sex, preoperative treatment, comorbidity, respiratory function, side and type of pneumonectomy, postoperative complications, adjuvant treatment) was tested in order to define predictors of postoperative poor QoL.

Results: Out of the 51 patients enrolled in the study, 45 patients had a complete QoL follow-up on January 2008, and they represent the population of the study. Six months after surgery, QoL was improved in 13 patients (28.9%), stable in 11 patients (24.4%) and impaired in 21 patients (46.7%). Eight patients complained of poor QoL (17.7%), mainly due to invalidating symptoms such as dyspnea (75%) and limited tolerance to moderate efforts (50%). Statistical analysis confirmed two factors as predictors of poor postoperative QoL: poor preoperative QoL (OR 2.2, CI 1.2-4.4) and the need for adjuvant treatment (OR 2.6, CI 1.4-3.2).

Conclusions: Pneumonectomy has a major adverse impact on patients' QoL in about 15% of cases. Preoperative QoL evaluation may represent a reliable tool to identify patients at risk, while adjuvant treatment after pneumonectomy should be tailored to postoperative patients condition, as it may have a detrimental effect on long-term QoL.

168-P

TACHOSIL VS. STANDARD SURGICAL TREATMENT FOR AIR LEAKAGE IN PULMONARY LOBECTOMY

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Objective: Alveolar air leakage remains a critical problem in lung surgery, with persistent air leakage possibly having adverse consequences for postoperative complications, morbidity, hospitalisation and health care costs. The sealing properties of the surgical patch, TachoSil might reduce alveolar

air leakage and diminish postoperative complications. The aim of this study was to evaluate the sealing efficacy and safety of TachoSil as air leakage treatment in standard pulmonary lobectomy.

Methods: This trial had an open, randomised, prospective, multicentre, parallel-group design. Following lobectomy, patients with grade one or two air leakage (evaluated by water submersion test) were evenly randomised by means of an interactive voice response system (IVRS) to TachoSil or additional standard surgical treatment. Duration of postoperative air leakage (primary endpoint), reduction of intra-operative air leakage intensity (secondary endpoint) and number of days until removal of (last) chest drain as well as adverse events were recorded.

Results: Out of a total of 301 lung cancer patients randomised, 299 (67% male, 33% female; mean age: 64 years (33-83 years) received trial treatment (TachoSil: 149; standard treatment: 150). Following surgery TachoSil patients had at all time points a lower incidence of alveolar air leakage, leading to a statistically significant reduction in post-operative air leakage duration compared to standard surgical treatment (ITT, $P=0.030$) and demonstrated a significant reduction in intra-operative air leakage intensity of one to two grade units in 71% of patients vs. 62% of standard treatment patients (ITT, $P=0.042$). The mean number of days until removal of drains was 4.9 and 5.5 days for TachoSil and standard surgery patients, respectively (NS). Occurrence of adverse events was similar for both groups.

Conclusions: Tachosil is significantly superior in reducing postoperative air leakage duration in patients undergoing elective pulmonary lobectomy and significantly more effective in reducing intraoperative air leakage intensity compared to standard surgical treatment. TachoSil is well tolerated and safe.

169-P

A RANDOMIZED CONTROLLED TRIAL COMPARING PERICARDIAL BUTTRESS VERSUS STAPLING WITH BIOGLUE IN PREVENTING AIRLEAKS AFTER LUNG VOLUME REDUCTION SURGERY

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Objective: Lung volume reduction surgery (LVRS) is complicated by prolonged airleak. Various adjuncts are advocated to reduce air leak after LVRS. A feasibility study was conducted to compare effectiveness of BioGlue (CryoLife Europa) and buttressed pericardial strips (Synovis) in reducing air leak in LVRS.

Methods: A prospective, self controlled randomised, clinical trial was conducted in patients undergoing LVRS. For each patient bioglue was used as an adjunct to the staple line on one side and pericardial buttress (our standard practice) was used on the other side. The sides were randomised for adjuncts with each patient acting as his own control. Duration of air leak, intercostal drainage and time to chest drain removal were the study end points.

Results: Ten patients undergoing bilateral LVRS through a median sternotomy were recruited between December 2005 to October 2007. There were 6 men (60%) and mean age of patients was 59.8 years (range 48-64.5 years, S.D. 4.91). There was one mortality due to non-study related causes. One patient in the Peristrips group needed additional pneumostasis at the end of the procedure. The outcome data presented as mean±S.D. in Table 1. No major complications were encountered with either BioGlue or Peristrips.

Conclusions: This study demonstrates comparable efficacy of BioGlue and Peristrips in prevention and reduction of alveolar air leak after LVRS.

	Bioglue	Peristrips	P-values
Airleak (days)	3.0±4.6	6.50±6.88	0.267
Drainage volume (ml)	733±404.3	1001±861.2	0.650
ICD duration (days)	9.7±10.56	11.5±11.07	0.732

170-P

DETERMINATION OF INDICATION FOR SURGICAL OPERATION AND ITS SCALE ACCORDING TO CAT EXAMINATION IN CASE OF PULMONARY TUBERCULOSIS

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Objective: The goal of the study has involved determination of CAT criteria of reversibility of pathological alterations in the patients affected by

pulmonary tuberculosis in order to make planning regarding indication for operation and its scale.

Methods: Materials and methods: X-ray and CAT findings in 68 patients have been studied in dynamics. Fibrocavernous tuberculosis have been detected in 39 (55.9%) patients, cirrhotic TB-21 (30.9%) patients, and rough damage of bronchial branches (including 3 cases of post operational stump deficit)- in 9 patients (13.2%).

Results: In case of fibrocavernous tuberculosis the non-existence of cavern closure tendency has been seen, when cavity walls density exceeded 150 HU and thickness was <2.5 mm, particularly at their subpleural disposition. Predictive importance has acquired the degree of constriction of drained bronchus (on average twice). The study has shown the vital importance of vascularization of surrounded parenchyma for the reversibility of the damage. The scale of density figures appeared informative, that proved to be in direct correlation with vascular network. In case of cirrhotic tuberculosis, operation have been recommended for the patients, with deformed cavern in their cirrhotic lobe or segment, also densitometric signs of soft caseation in bronchial branches, parenchyma or lymphatic nodes. Virtual bronchoscopy program enables the examine of distal branches at stenosis or searching of the postoperative stump fistula as well as the cavity of chronic empyema, also the condition of bronchus wall in order to select tactical advantage

Conclusions: The patients affected by irreversible tubercular damage of lung tissue and pleura are subject to surgical operation, when significant improvement of patient's condition or recovery is expected. Predictive CAT criteria confirmed by the study essentially increase the possibility of successful operations.

171-P

EXPERIENCE WITH PULMONARY RESECTION FOR EXTENSIVELY DRUG-RESISTANT TUBERCULOSIS

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Objective: Extensively drug-resistant tuberculosis (XDR-TB), the most virulent type of drug-resistant tuberculosis, is becoming a global threat. Since XDR-TB is still a relatively new phenomenon, the optimal management of this disease remains undetermined. We report our recent experience in using pulmonary resection for treating patients with XDR-TB.

Methods: Records were reviewed of 54 consecutive patients undergoing a pulmonary resection for multidrug-resistant tuberculosis (MDR-TB) at our institution between 2000 and 2006. XDR-TB patients were identified using the definition of XDR-TB agreed by the WHO Global Task Force on XDR-TB in October 2006 (i.e. resistant to any fluoroquinolone, and at least one of three injectable second-line drugs (capreomycin, kanamycin, and amikacin), in addition to MDR-TB).

Results: There were five (9%) patients (three men and two women), with age ranging from 31 to 60 years. None of the patients were HIV-positive. Their isolates were resistant to isoniazid, rifampicin, levofloxacin, and kanamycin (XDR-TB definition), and also resistant to further four or six drugs. Adjuvant resectional surgery was considered, for the patients had localized disease but they did not have sputum conversion in response to the best available multidrug regimens. Procedures included pneumonectomy ($n=2$) and upper lobectomy ($n=3$). The bronchial stump was reinforced with a muscle flap in all resections: the latissimus dorsi in four and the intercostal muscle in one. There were no operative mortality and morbidity. All patients attained sputum-negative status after the operation, and were maintained on multidrug regimens for two years postoperatively. Success rate was 100% (5/5) for the XDR-TB patients, comparing with 98% (46/47) for the pure MDR-TB patients.

Conclusions: Pulmonary resection under cover of chemotherapy is safe and effective for patients with XDR-TB. Adjuvant resectional surgery should be included in the treatment options for XDR-TB patients when their disease is localized.

172-P

TIMELY DEBRIDEMENT OF PLEURAL EMPYEMA VIA VIDEOASSISTED THORACOSCOPY

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Objective: Influence of delayed surgery in adult thoracic empyema on treatment results and patients' physical capacity.

Methods: Retrospective single-centre study of 412 consecutive patients treated for pleural empyema between January 2000 and December 2005 including follow-up of the patients.

Results: Of the 412 patients 337 (81.8%) were successfully treated by VATS debridement at hospital admission or the following day (Group I). Additional 45 patients (10.9%) underwent open decortication (following VAT exploration) due to advanced course of disease (conversion rate 11.7%)(Group II). Thirty patients (7.2%) were excluded from surgery because of serious comorbidities and received a thoracic tube (Group III). Age distribution in the three groups was as follows: 55±16, 53±15 and 65±17 years ($P=0.018$). Empyema etiology was primary in 76%, 80% and 63% of cases. Previous antibiotic therapy and tube thoracostomy had been performed in 90%, 100% and 86% of patients. Length of hospital stay was similar in all three groups (21.4±14.4, 23.7±15.6, and 22.5±16.4 days). Conversion-thoracotomy and decortication significantly increased intensive care treatment duration ($P=0.049$) and requirement of blood transfusions ($P=0.001$). Follow-up was available in 52.2% of patients (mean follow-up time 4.4±1.8 years). Physical capability was significantly reduced in group II ($P=0.01$). All over long-term mortality was distressing high (32.1%).

Conclusions: Timely videoassisted thoracoscopy and pleural debridement is mandatory to obviate disease progression into stage III. Conversion thoracotomy and decortication significantly reduces patients' physical capability. The general impact of adult thoracic empyema on patients' healthiness appears to be underestimated and calls for further investigation.

173-P

PEDIATRIC PARAPNEUMONIC EMPYEMA: CORRELATION BETWEEN PREOPERATIVE CHEST ULTRASONOGRAPHY AND SURGICAL EVIDENCE

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Objective: The purpose of this retrospective study was to evaluate the role of chest ultrasonography in staging pediatric parapneumonic empyema (PPE) in terms of a correlation between ultrasound patterns and surgical evidence.

Methods: Between 1995 and 2008, 18 children with diagnosed PPE not responsive to antibiotic therapy were evaluated at our Institution. Ultrasound patterns were graded as follows: presence of free fluid within the pleural cavity (stage I), development of loculations (stage II) and pleural thickening (stage III). Treatment was conservative in stage I with the positioning of a chest tube and surgical for the other stages. Videothoroscopic exploration was carried out in all surgical patients.

Results: There were ten girls and eight boys, mean age 4.6 years (range 3-8). Mean duration of symptoms was six days (range 3-13). On the basis of the ultrasound four patients were classified as stage I, five as stage II and seven as stage III. Videothoroscopic exploration showed stage II PPE in eight patients and stage III in four patients, revealing ultrasonography stage overestimation in 37.5% of the cases. Surgical treatment consisted of videothoroscopic debridement and drainage of pus in stage II and pleural decortication via a muscle-sparing thoracotomy in stage III. Ultrasound specificity and sensibility were 62% and 100%, respectively while accuracy reached 75%. Ultrasound PPV was 57%.

Conclusions: Chest ultrasonography is an effective method to assess PPE severity and to plan an effective treatment. However, initial VATS exploration in all surgical cases ameliorates the specificity of disease staging and can avoid unnecessary open surgery.

174-P

EARLY SURGERY FOR PULMONARY TUBERCULOSIS

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Objective: The purpose of our study was to analyze current indications for surgery in tuberculosis and evaluate the outcome of early surgical intervention.

Methods: Total number of cases was 132; M:F 105:27. Age range was 20-79 years. Mean age was 48.4 years. The indications for surgical intervention included five cases of pulmonary Aspergilloma, nine cases of Pneumothorax; three cases of pulmonary nodes and masses without histological diagnosis, 15 cases bronchiectasis, 12 cases of massive Hemoptysis and 82 cases of pleural empyema while six patients with multi drug-resistant tuberculosis required surgical intervention. Out of 132 cases, 54 were sputum severe positive pre-op.

Results: The surgical procedures performed are lobectomy in 45 cases, pleural drainage in 20 cases, segmented pulmonary resection in 32 cases, surgical procedures on the chest wall in 17 cases, pneumonectomy in 10

cases, decortication in 8 cases. In 22 cases, two or more procedures were performed on the same patient. In 26 (19.6%) cases various complications were noted of which wound infection was the most frequent (11 cases). Post-op out of 67 sputum positive cases, 42 became sputum negative. There was a mortality rate of 3.3% (4 cases).

Conclusions: Surgical treatment is indicated for the complication of TB and management of MDR TB. Early surgery is beneficial in patients whose disease is still localized and who can tolerate resection surgery; of particular importance is a healthy opposite lung, on which the patient would be dependent during and immediately after surgery.

175-P

THE POSTPNEUMONECTOMY SYNDROME - CLINICAL PRESENTATION AND TREATMENT

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Objective: The postpneumonectomy syndrome (PPS) is a rare complication after pneumonectomy. It consists of an excessive mediastinal shift resulting in stretching and kinking of the tracheobronchial tree, the vena cava and the esophagus. The pathophysiology of symptoms is well understood on the right side but less clear on the left.

Methods: We retrospectively reviewed our patients treated with PPS since 1994 with respect to symptoms, therapy and outcome and evaluated the underlying pathophysiology. Our results were compared with the literature. Results: Six women with a median age of 56.5 years (range 49-65) developed PPS after pneumonectomy, (incidence 2%). Four presented with a PPS on the right side. The median time to onset of symptoms was 11 months (range 6-36) after surgery. Symptoms consisted of shortness of breath in all, dysphagia and heartburn in two patients with a right sided PPS. Bronchial airflow obstruction by kinking of the bronchus was seen on the right only. Correction required reexploration of the pneumonectomy space, reposition of the mediastinum followed by the insertion of silicone prosthesis in five and fixation of the mediastinum with xenopericardium in one. All improved functionally and four patients returned to their regular activity with a follow-up of four years. FEV1 improved statistically significant in all with right sided PPS but not on the left. We found 73 cases of PPS in the English literature, on the right in 50 patients

Conclusions: PPS after pneumonectomy is rare and more frequent after right pneumonectomy were it leads to a bronchial airflow obstruction due to a kinking of the left lower lobe bronchus in all and to a pseudoostruction of the esophagus occasionally. On the left side we postulate an impaired cardiac filling. Repositioning of the mediastinum by implantation of a prosthesis is most commonly used treatment.

176-P

MANAGEMENT OF PULMONARY ARTERY-VENOUS MALFORMATIONS

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Objective: Artery-venous malformation (AVM) of lungs a rare congenital pathology. Its frequency according to different authors varies from one on 2350 up to one on 39000 of the population. Aim of study was to investigate results of management of pulmonary AVM.

Methods: Fifty-five patient with AVM in the age of from 6 till 49 years were treated. Mean age of 25.1 years. There were 28 men and 17 women. Until 1983 the basic method of diagnostics was angiopulmonography (APG). Now it can be replaced with a computer tomography (CT) with contrast introduction with 3D reconstruction of the image. At some patients during operation applied a method of electromagnetic floumetry. Bypass of blood through AVM varied from 480 up to 650 ml/minutes. Surgical treatment of AVM was up to 1980 and included lobectomy (29), pneumonectomy (1), exploration (1). Since 1980 rentgenendovascular embolization (REE) became a novel treatment modality of patients with AVM. Spirals Gianturca, Flipper and Amplatz occluder were used during 17 REE in ten patients. Their amount varied from one up to seven spirals per patient.

Results: After surgical treatment there were four lethal outcomes (12%). Complications were in eight cases (27%). After REE there was not lethality. Complications are noted at three cases (10%). All patients after management

noted reduction and full disappearance of a dyspnoe, acrocyanosis, reduction in number of red blood cell. In short-term after management PO₂ and SatO₂ have increased.

Conclusions: In treatment of patients with AVM REE now is a method of a choice which is clinically effective and safe. In case of multiply widespread AVM, with defeat more than two lobes REE it is necessary to regard as a unique method of treatment. The basic method of diagnostics is APG which now can be replaced CT with contrasting and 3D reconstruction.

177-P

VIDEOTHORACOSCOPY IN PLEURAL EMPYEMA FOLLOWING THE LUNG INFECTION OF MRSA

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Objective: The aim of this retrospective study was to establish the indications for videothoracoscopy (VAT) in methicillin resistant staphylococcus aureus (MRSA) pleural empyema.

Methods: From January 2004 to December 2007, we observed 64 patients with empyema due to MRSA pneumonia. All patients underwent primary intention drainage tube and pleural washing with antiseptic and subsequently with specific antibiotic. This treatment was successful in ten patients. No positive response was obtained in the other 54, who underwent VAT.

Results: An exudative stage was diagnosed in seven patients, a fibrinopurulent stage in 15 and an organizing stage in 32. VAT allowed a complete lung parenchyma reexpansion in 22 multiloculated empyema patients by means of breaking the septa and drainage washing techniques. Thirty-two III stage patients needed thoracotomy after VAT insufflation of CO₂ to separate coerced parenchyma and parietal pleural thickening.

Conclusions: VAT discloses the responsible factors for unsuccessful tube thoracostomy therapy. It is the ideal treatment in stages I and II of empyema. In stage III it allows an easier dissection, reducing the operation time and postoperative air-leaks.

178-P

SURGICAL MANAGEMENT OF BRONCHIECTASIS; AN EXPERIENCE OF 100 CASES

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Objective: To observe the various clinical presentations of bronchiectasis and evaluate its surgical management and outcome.

Methods: Computerized clinical data of 100 patients surgically managed during two and a half years was retrospectively analyzed. Detailed scrutiny of the record was carried out to determine various procedures done and analyze the clinical outcome.

Results: A total of 100 patients underwent various surgical procedures. Male: Female ratio was 78: 22; age range was 15-48 years with a mean age of 23.7 years. The predominant clinical presentations were productive cough in 55 (55%); recurrent chest infections in 30 (30%) and hemoptysis in 15 (15%) patients. The mean operative time was 68 (40±) min. Seventy-two (72%) patients underwent Lobectomy, in 18 cases (18%) pneumonectomy, in six cases (06%) bilobectomy and lingulectomy in four cases (04%). Postoperative morbidity was 6 (6%). Three patients required ventilatory support postoperatively; prolonged air leak was noted in two cases and post-resection empyema in one patient. There was one mortality due to ventilatory failure. This was a 45-year-old male patient who developed respiratory distress postoperatively and could not come off ventilator. Seventy-two (72%) patients were asymptomatic in the follow-up, 24 (24%) experienced improvement in symptoms and in 4 (4%) patients symptoms were unchanged.

Conclusions: Surgical resection for bronchiectasis can be performed with acceptable morbidity and mortality at any age. The involved bronchiectasis sites should be resected completely for the optimal control of symptoms.

179-P

CONGENITAL LUNG MALFORMATIONS IN ADULTS: MANAGEMENT AND OUTCOME

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Objective: Congenital lung malformations (CLM) may be asymptomatic and therefore not discerned until adulthood. We retrospectively reviewed

our experience with CLM in adults in terms of diagnosis, management and outcome.

Methods: From January 1996 to January 2008, 35 patients with a mean age of 30.2 years (range 17-71), presented at our Institution for 37 CLM. Twenty-six patients were symptomatic: 12 had respiratory infections, four dyspnoea, three chest pain and dysphagia and two presented hemoptysis. All patients underwent computed tomography (CT) scan. Further evaluation including magnetic resonance (MR) and arteriography was carried out in eight (24%) and six cases (18%), respectively. There were 21 bronchogenic cysts (BC), six pulmonary vascular malformations (PVM), eight pulmonary sequestrations, and two congenital lobar emphysema. One patient with pulmonary sequestration had an associated PVM and another a BC.

Results: Thirty-three patients underwent 35 resections. Two patients with PVM underwent embolization alone. Surgical procedures included one pneumonectomy, nine lobectomies, four sequestrectomies, four wedge resections and 17 mediastinal mass excisions. Thoracoscopic resection was performed in 15 patients. Postoperative complications included prolonged air leak (two cases), pleural effusion (one case) and pneumothorax (one case). At the present time all patients are well with no recurrences.

Conclusions: CLM in adults can be diagnosed by means of CT-scan in almost 80% of the cases although additional angiography may be needed for PVM. Depending on the patient's general condition, CLM should always be resected to avoid the risk of pulmonary compression, infection or malignant degeneration, even in asymptomatic patients.

180-P

LUNG RESECTION IN TUBERCULOSIS: CHALLENGING ISSUES

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Objective: Surgery still plays a role in the treatment of patients with TB. Patients with lungs destroyed by MDR TB or cavitary disease, with or without positive sputum smears, mycotic infection and life-threatening hemoptysis will require resection. We present our experience with TB patients during 2005-2006 (at least one year follow-up).

Methods: We have performed surgery on 41 patients (28M/13F, median age 37.5-year-old) as follows: 7 cases of TB destroyed lung (5 right/2 left), 8 MDR cavitary disease, 6 sterile cavitary disease, 6 aspergillomas, 12 tuberculous lung nodules and 2 cases of post TB bronchiectasis. We performed the following lung resections: 8 pneumonectomies (7 destroyed lung and 1 right sided for aspergilloma) 20 lobectomies (all cavitary disease, 5 aspergillomas and 1 tuberculoma), 11 wedge resections (tuberculomas) and 2 segmentectomies (bronchiectasis). Intraoperative we have encountered dense adhesions in 17 cases which required extrapleural dissection with important loss of blood and in two cases of aspergillomas we let over brachiocephalic trunk a patch of fibrotic tissue. In two cases we were obliged during the operation to extend resection because of the lack of the elasticity of the remaining lung.

Results: No postoperative mortality. One patient with right pneumonectomy died 14 month later by an unique lung abscess. As complications we encountered: 1 postpneumonectomy fistula (right sided) with empyema at 29 days after surgical intervention, treated by transsternal approach; 3 cases of postoperative bleeding requiring reintervention, prolonged air leaks (more than 7 days) 2 cases, lack of lung expansion also 2 cases, atelectasis 3 cases. All cases of MDR TB were negative in sputum cultures 3 month following surgical procedure and 1 relapse at 12 month.

Conclusions: Surgical resections are challenging because of pleural adhesions, modified lung anatomy and patients poor biological status. Good surgical technique results in lower mortality and morbidity.

181-P

MINI-INVASIVE THORACIC SURGERY IN DIAGNOSIS AND TREATMENT OF PLEURAL DISORDERS

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Objective: The objective of our study is to underline the value of mini-invasive surgery (MIS) in diagnosis and treatment of pleural disorders.

Methods: We retrospectively reviewed all our patients (275) to whom we applied a miniinvasive procedure (either surgical thoracoscopy or video-assisted thoracic surgery - VATS) for the diagnosis and treatment of diseases of the pleural space from January 2001 to November 2007. MIS was used in cases with irrelevant paraclinical investigations, as well as for curative and palliative treatment.

Results: From 274 patients, 185 were male and 89 female. Age varied from 6 years to 80 years. Surgical approach was strictly thoracoscopic in 118 cases (43%), VATS from the beginning in 114 cases (41.6%) and thoracoscopy converted to VATS in 42 cases (15.4%). Causes of conversion: tight adhesions (36 cases), intraoperative accidents (5 cases), failed selective intubation (1 case). The most frequent was affected the right hemithorax (55.83%) especially in cases with non-specific pleural effusions. The pathological spectrum was represented by non-specific pleural effusions (31.75%), malignant effusions (24.45%), tuberculous effusions (17.15%), primary pneumothorax (10.58%), hemothorax (10.21%), pleural tumors (4.74%) and cysts (1.1%). Surgical procedures comprise pleural biopsies (39.41%), decortication (12.4%), wedge resections (8%), liquid evacuation (8%) and other combined procedures. We got the histopathological results in all cases. There were 14 postoperative complications (5.1%) and one death in the first 24 h due to cardiac decompensation.

Conclusions: The remarkable progress registered by the mini-invasive surgery has turned this technique into one which ensures the diagnosis as well as the precocious and effective treatment of pleural effusions and some other diseases of the pleural space. The advantages of the thoracoscopic surgery as well as its relatively simple technique allow the abandon of the traditional thoracotomies.

182-P

DIFFERENCE OF SURGICAL TACTICS AT SPONTANEOUS PNEUMOTHORAX VERSUS PROVED BULLOUS EMPHYSEMA

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Objective: The study was aimed to optimize treatment policy differentially for urgent episode of spontaneous pneumothorax (SP) and for bullous emphysema (BE).

Methods: There were managed 586 persons with 610 episodes of SP, including 327 patients with primary SP and 259 with secondary ones. Causes of secondary SP were non-specific in 116 persons and tuberculosis in 143 invalids. The most common cause of non-specific SP was bullous emphysema. Pleural punctures (PP) were used in 256 patients, sometimes repeatedly. There were 438 chest tubes placed. For immediate treatment 32 medical thorascopies were performed under local anesthesia. Medical thorascopies reached SP-causes diagnose and controlled draining. There were 117 surgical videothorascopies (VTS) and 32 open operations performed. Cautions of blebs, bullectomies, partial lung resections, segmentectomies, lobectomies were aimed to stop air leakage but rather to remove the basic lung pathology.

Results: Complete lung extension without air leakage was enough for treatment of urgent episode of SP. Success of first 24 h of treatment was different for each method. Success of PP for total SP was fair (only 26.1% of 180 patients), for partial SP much better (40% of 75 persons). 'Blind' pleural drainages with diameter 1-4 mm were effective in 45.2% of 42 cases, with diameter 6-10 mm - in 79% of 396 cases. Controlled pleural drainages after medical thorascopies (diameter 7-10 mm) were effective in 94% of 32 cases. Surgical VTS and open operations were effective for management of SP and it's causes, but more traumatic.

Conclusions: The most often real indication for surgical aggression is not SP itself, but BE or another chronic pathology of lungs. Radical VTS and open surgery without comprehensive examination may cause diagnostic and therapeutic errors so they are not always advisable in emergencies. Treatment is proposed to be divided into stages of emergency care and radical planned surgery.

183-P

CONTACT CRYOABLATION DECREASES EXPERIMENTALLY CREATED LUNG AIR LEAKAGE

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Objective: Previously, we, and others found that cryoablation on normal lung produced localized pulmonary hemorrhage and edema, causing obliteration of air space. Therefore, we hypothesized that lung air leakage may be diminished by this procedure. In the present study, we examined if cryoablation can attenuate experimentally created lung air leakage.

Methods: Male domestic pigs underwent a thoracotomy. The lung was resected approximately 5 mm in diameter, and 1 mm in depth to create air leakage lesions. An argon gas cryoprobe with a copper plate attached to its tip was

used to cryoablate the lesions superficially. After cryoablation, the positive airway pressure that produced visible bubbles from each lesion site was compared between cryoablated and untreated lesions. Also, cryoablation of the lung surface was carried out in male Donryu rats which were sequentially sacrificed in order to observe the histological changes over a time course.

Results: In the pigs, the air leakage pressure was significantly increased with cryoablation (40 cm H₂O) compared to no treatment (19±5 cm H₂O) (P= 0.021, Mann-Whitney U-test). Histologically, cryoablation produced acute pulmonary hemorrhage and edema. In the rats, the region with extensive hemorrhage progressed to fibrosis in 1 month, and the areas with edema recovered.

Conclusions: This study provides supportive evidence that cryoablation has the potential to stop air leakage from superficial pulmonary injury. This procedure may provide a useful adjunct to surgical resection for spontaneous pneumothorax, and the control of air leakage from dissected lung surfaces during lung resection.

184-P

EVALUATION OF THORAQUIK®: A NEW DEVICE FOR THE TREATMENT OF PNEUMOTHORAX AND PLEURAL EFFUSION

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Objective: Aspiration for pneumothorax and pleural effusions is performed using a variety of equipment designs and kits which need assembly and are not fit for purpose. ThoraQuik® has a unique design incorporating an aspiration port and one-way valve controlled by a three-way tap, which is designed to be fit for purpose. We evaluated the safety, efficacy, operator handling and acceptability of the ThoraQuik® device for the treatment of pneumothorax and pleural effusion as part of a planned phase I evaluation of a new medical device.

Methods: A prospective observational ethically approved trial was conducted in adult patients undergoing VATS procedure (n=10) to evaluate the utility of the device in controlled theatre settings. The device was introduced at the second port site after introduction of the camera. The chest wall thickness, device introduction, penetration and ease of use were evaluated. Values are presented as means (range). The operator feedback regarding the clarity of instructions, ease of handling and procedure satisfaction were evaluated.

Results: Ten patients undergoing VATS were recruited between May 2005 to March 2007. The mean age was 48.5 (range: 18-76) years and equal sex distribution. In all cases penetration of the chest wall was achieved satisfactorily. Mean chest wall thickness measurements for the males and females were 3.2 (1.8-5.1) cm and 3.4 (2.0-4.5) cm, respectively. No major complications were encountered. The evaluation of the device by the surgeons are in Table 1.

Conclusions: This study showed the ease and utility of ThoraQuik® and has validated key aspect for its continued development. A larger clinical study is in progress in acute patients with pneumothoraces and pleural effusions to further validate the device. Data from the larger study will be reported in due course.

Table 1. Operator feedback

	Excellent	Good	Adequate	Poor	Very poor
Quality of instructions					
For use		10 (100%)			
Robustness of packaging	5 (50%)	5 (50%)			
Ease of storage	5 (50%)	5 (50%)			
Package design	3 (30%)	6 (60%)	1 (10%)		
Ease of unpacking	3 (30%)	6 (60%)		1 (10%)	
Device					
Ease of insertion	7 (70%)	3 (30%)			
Ease of two handed use	4 (40%)	6 (60%)			

185-P

OUTPATIENT MANAGEMENT OF MALIGNANT PLEURAL EFFUSIONS WITH AN INTRAPLEURAL SUBCUTANEOUS DRAINAGE SYSTEM

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Objective: To describe our early results using an implantable subcutaneous drainage system which allows for outpatient evacuation of malignant pleural effusions (MPEs) in patients who are not candidates for pleurodesis due to lung entrapment.

Methods: We analysed data prospectively gathered from nine patients with MPEs. Pleurodesis could not be performed in these cases because of persistent pleural chambers due to irreversible lung entrapment. A central venous access system connected to an intrapleural 9.6F catheter was implanted under local anesthetics. This system allowed for the evacuation of large volumes of pleural effusion by means of a simple skin puncture when needed by the clinical situation. The evacuations were performed by palliative care-providers at the patients' home.

Results: All patients were discharged from hospital uneventfully after the procedure. The palliative care team evacuated variable amounts of fluid in each visit ranging from 500 to 3000 ml (average 1250 ml). The time interval between evacuations ranged from five days to three weeks and each patient required an average of 4.2 evacuations during follow-up. Maximum follow-up time has been 5.5 months. All patients reported remarkable improvement of dyspnea and/or chest pain with minimal or no discomfort during the procedure. No local or pleural infections were noted and one case of catheter obstruction was solved by instillation of fibrinolytics through the access port. All systems remained permeable until exitus and no emergency visits were needed.

Conclusions: This system provides a much needed option for patients with recurring MPEs. The subcutaneous placement of the system and easy management account for the low rate of complications in this early series. Coordination with home palliative care teams avoids unnecessary hospital visits and improves patients' comfort. Our results support this treatment as a safe, minimally invasive, low-cost and effective alternative with a positive impact on the quality of life of these patients.

186-P

THE EFFECT ON QUALITY OF LIFE AND PHYSICAL DEVELOPMENT AFTER BAR REMOVAL IN THE NUSS PROCEDURE FOR PECTUS EXCAVATUM

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Objective: The present study was designed to evaluate the quality of life and the physical developmental changes after bar removal in the patients who had undergone the Nuss procedure.

Methods: From August 2001 to July 2006, 61 patients of 132 (46.2%) who had gone the Nuss procedure have been removed the bar. Interviews and follow-up chest CT were performed in 29 patients (male 20, female 9) of 61 (47.5%). Ten questions were scored from 1 (negative) to 5 (positive). And, their height, body weight and CT index, and pulmonary function test were measured.

Results: Patient's age was 6.5 ± 2.97 years at the Nuss procedure, 8.7 ± 3.19 at bar removal, and 11.8 ± 2.94 at last follow-up. Satisfaction and well-being scores were increased after bar removal ($P < 0.05$). Social belonging and empowerment scores were increased after the Nuss procedure ($P < 0.05$). Height standard deviation score (SDS) according to biologic age and sex in Korean child (The Korea Pediatric Society, 1998) (-0.15 ± 1.63 vs. 0.63 ± 1.01 , $P < 0.05$) and weight SDS (-0.35 ± 1.42 vs. 0.02 ± 1.50 , $P < 0.05$) were increased after bar removal comparing to preoperation. CT index (4.18 ± 0.97 vs. 3.6 ± 0.54 , $P < 0.05$) and angle of sternal rotation (10.85 ± 8.83 vs. 9.43 ± 5.76 , $P < 0.05$) were decreased after bar removal. Postoperative pulmonary function test showed mild restrictive pattern (forced vital capacity (FVC): $76.9 \pm 11.56\%$, forced expiratory volume in 1 second (FEV1): $76.9 \pm 10.45\%$, FEV1/FVC: $92.3 \pm 5.20\%$). Patient's height and weight SDS changes were not correlated with CT index changes ($r_2 = 0.48$, $P = 0.34$; $r_2 = -0.17$, $P = 0.87$). Patient's overall satisfaction was not correlated with height SDS difference ($r_2 = 1.14$, $P = 0.30$), weight SDS difference ($r_2 = -0.78$, $P = 0.96$), and CT index differences ($r_2 = -5.60$, $P = 0.312$).

Conclusions: The Nuss procedure made positive contribution to parent's and patient's quality of life and physical functional capacity. However, patient's overall satisfaction was not correlated with physical developmental improvement.

187-P

CAUSES OF FALSE POSITIVE RESULT OF FDG-PET IN MEDIASTINAL STAGING OF LUNG CANCER

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Objective: Positron emission topography (FDG-PET), as a non-invasive imaging method, has become more popular in mediastinal staging of non-small cell lung cancer (NSLC), recently. But using it is limited due to high false

positivity rate. We aimed to reveal causes of false positive results of PET in mediastinal staging of NSCLC.

Methods: Two hundred and nineteen patients with operable NSCLC were included to the study. Preoperatively, PET was performed and mediastinoscopy was done to all the patients. Thoracotomy and mediastinal lymph node dissection was performed to patients with no mediastinal metastasis was found. Results of histopathologic examination and PET were compared.

Results: Mediastinal FDG uptake at pathological level was observed in 86 patients. No mediastinal metastasis was found in 40 of these patients after mediastinoscopy and thoracotomy. Histopathologic examination showed reactive hyperplasia in 30, necrotizing granulomatous inflammation in five and non-necrotizing granulomatous inflammation in five patients's mediastinal lymph nodes who PET resulted false positive. Sensitivity, specificity and positive predictive value of PET in mediastinal staging was calculated as 73%, 74% and 53%, respectively

Conclusions: Causes of false positive result of PET include granulomatous diseases which is common in some country and more frequently, reactive hyperplasia possibly due to infection or inflammation secondary to the tumor. All positive mediastinal PET results should be confirmed by invasive methods because of poor positive predictive value of PET in mediastinal staging.

188-P

THORACOTOMY AFTER PREVIOUS CURATIVE THORACIC RADIOTHERAPY

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Objective: Traditionally, radiotherapy (RT) in curative intent is considered a contraindication for lung resection. In recent years, increasing number of long-term survivals represent with an intrathoracic lesion which require thoracotomy after having a high dose thoracic radiation. This study reports our experience on thoracotomy and lung resections in the patients who previously had curative RT for various diseases.

Methods: We retrospectively reviewed our patient's notes from 2004 to 2007. Patients who had 60 Gy underwent thoracotomy not earlier than 12 months after completion of RT are the subjects of this study. In these cases, previous diseases, the types and doses of RT, the indications of thoracotomy, the types of resections and postoperative outcomes were analyzed.

Results: Eleven of these patients were male ranging in age from 47 to 69 years. Previous diseases were superior sulcus tumor in four (T3-4N0), NSCLC in six (T3-4N1-2), and breast and larynx carcinoma in one each. Interval between RT and thoracotomy was 12-120 months (mean 32). Median time for DFI was 19.4 months. We performed pneumonectomy in 2, lobectomy in six of which concomitant and chest wall resection in 4, nodule excision in four patients. There was no mortality in this series. Morbidity occurred in two patients (respiratory failure and empyema) Postoperative ICU stay was 1-18 days (mean 3.1 ± 0.8).

Conclusions: These results suggest that thoracotomy may be feasible following curative RT. Postoperative mortality and morbidity rates are acceptable in highly selected patients.

189-P

PNEUMONECTOMY IN NON-SMALL CELL LUNG CANCER - DOES IT WORTH?

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Objective: 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. The aim of this study was to evaluate short and long-term results of pneumonectomy in NSCLC patients.

Methods: Four hundred and forty-six (31%) pneumonectomies were performed in 1439 patients operated for NSCLC between 1993 and 2000 in one institution. Median age of 389 man and 57 women was 60 years (36-78 years). In all 194 right (43.5%) and 252 left (56.5%) pneumonectomies complete mediastinal lymph node dissection was performed.

Results: Median survival after pneumonectomy was 16 months while 5-year survival was recorded in 116/446 (26%) patients. Pathological stage of NSCLC was the strongest negative predictor of survival in the analyzed group ($P < 0.0001$). Median survival in months according to pathological stage was Ib - 41, IIb - 22, IIIa - 14, IIIb - 11. In 27 (6.1%) patients with large cell carcinoma median survival was 6 months, while in 67 (15%) patients with adenocarcinoma was 12 months. Three hundred twenty seven patients with squamous cell carcinoma has three times longer survival than patients with large cell pathology (21 months, $P = 0.03$). Patients with left pneumonectomy

lived longer than those with right sided resection (21 vs. 12 months, $P=0.002$). Thirty-days or in-hospital death was recorded in 36/446 patients (8.1%) - 75% after right and 25% after left sided pneumonectomy.

Conclusions: A man with right sided large cell carcinoma that has IIB or higher stadium of NSCLC, additionally having low haemoglobin and high white blood cell count is the worse candidate for pneumonectomy concerning complications and long-term survival. Pneumonectomy is a procedure of a high risk of death and complications in addition to poor long-term survival and thus should be limited to a selected patients population.

190-P

IS SURGICAL RESECTION OF RECURRENT AND SECOND PRIMARY LUNG CANCER SAFE AND EFFECTIVE?

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Objective: In this study we analyzed our experience about a second lung operation for a new lung cancer in patients who have had a previous lung resection due to a primary lung tumour.

Methods: From 1996 to 2005, a series of 883 patients with primary lung carcinoma underwent surgical resection with curative intent in our institution. We have identified 25 patients who had developed a second lung cancer. Using criteria set out by Martini and Melamed, we have divided the patients in two groups, analyzed them separately and then compared between them.

Results: Fifteen patients developed a second primary lung cancer (SPLC): median age was 70.7 years and the mean disease-free interval was 54 months. Median preoperative FEV1 was 1.91 L. The performed resections were: wedge resection in three patients, lobectomy in eight and complete pneumonectomy in 4. The 3- and 5-years survivals were 80% and 62%, respectively. Ten patients (8 men and 2 women) developed a second metastatic lesion: median age was 68.7 years, the disease-free interval was 11.9 months and in all patients the histological types were the same as those of the first tumour. Wedge resections were performed in six cases, lobectomy in three and sleeve lobectomy in 1. The three and five-years survivals were both 62%. Complications occurred in 16% of patients after the first resection, and in 32% after the second operation, but there were no operative deaths. No significant difference was found in overall survival between the two groups.

Conclusions: Aggressive assessment and surgical intervention offer a safe, effective and warranted approach to patients with a second lung cancer if the usual criteria of operability after full assessment are satisfied.

191-P

FOLLOW-UP STRATEGIES IN SOFT TISSUE SARCOMA FOR EARLY DIAGNOSIS OF PULMONARY METASTASES

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Objective: The follow-up strategies of potentially curative resected soft tissue sarcoma (STS) are very inconsistent. Several surveillance programs are available but no standardized guidelines exist. Our objective was to evaluate the time until occurrence of pulmonary metastases and the effectiveness of our follow-up practice to detect pulmonary metastases.

Methods: We retrospectively analyzed all cases with STS treated at our department of surgery between February 1997 and May 2007. Our concept implied observation of the patients after three months and every six months thereafter. The follow-up practice consisted of clinical examination, imaging of the primary site by MRI and pulmonary CT-scan to exclude eventual metastasis.

Results: From 51 surgically treated sarcoma patients, 43 had a STS (24 trunk, 19 extremity) and were included. All patients were evaluated. The mean follow-up time was 30 months (3-119). The primary site tumors were classified according to the FNCLCC grading system. There were 8 G I, 9 G II and 26 G III tumors. Pulmonary metastasis occurred in 15 from 43 patients (35%). In pulmonary metastasis, six originated from trunk and nine from extremity sarcoma. Four metastasis originated from initially grad I tumor, six from grade II tumors and five grade III tumors. The mean time until occurrence of pulmonary metastasis varied between 0-92 months; mean 13 months. In seven patients all pulmonary metastasis (47%) could be resected.

Conclusions: The correct follow-up strategy for early diagnosis of pulmonary metastases in soft tissue sarcoma remains difficult. Our patients show a broad time spectrum of appearance of pulmonary metastases. Frequent and long time follow-up for these patients is crucial, independent from the FNCLCC grading and the site of the primary.

192-P

EFFECTIVENESS OF MEDIASTINAL LYMPH-NODE DISSECTION

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Objective: To evaluate the effectiveness of mediastinal lymph-node dissection (MLND) versus lymph-node sampling (LNS) within patients with non-small cell lung cancer in relation to morbidity, mortality, disease free survival and overall survival.

Methods: A retrospective study was carried out of 220 patients with non-small cell lung cancer treated by surgery during the period January 2001 to December 2006 in the 'Kenemer Gasthuis' Hospital in Haarlem, the Netherlands. LNS consisted of harvesting of one or more lymph nodes from station 2-4 and 7-9 on the right side, and stations 4-9 on the left side. MLND consisted of removal of all lymphatic tissues within defined anatomic landmarks. The technique applied in a patient was related to the preference of the involved surgeon.

Results: There were 220 interventions (165 lobectomies, 35 pneumonectomies, 5 wedge resections, 6 bilobectomies, 3 segment resections, 6 sleeve resections). One hundred and forty-four patients underwent mediastinal lymph-node dissection versus 76 patients lymph-node sampling. The two groups of patients were comparable with respect to age, tumorstage and histology. A significant difference between both groups was found regarding gender. There was no significant difference in recurrence of disease or in overall survival between the two groups. There was no significant difference in postoperative 30-day mortality and complications. However, rethoracotomy was seen significant more ($P=0.022$) in the MLND group (14% vs. 4%). Main reasons for rethoracotomy were bleeding, airleak of the bronchus and empyema.

Conclusions: During this short follow-up period, our results suggest that mediastinal lymph-node dissection does not influence disease-free or overall survival in patients with non-small cell lung cancer. Besides MLND results in more numbers of rethoracotomy.

193-P

ULTRASOUND GUIDED BIOPSY FOR PULMONARY MASSES

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Objective: To demonstrate our experience and determine the feasibility, safety and effectiveness of ultrasound (US) guided biopsies of lung lesions.

Methods: Fifty-five patients (18 female, mean age 62.5 range 27-95) with pulmonary masses were considered suitable for US-guided biopsy. The lung lesions measured 0.6-8.5 cm and their distance from the lung surface was 0-1 cm. All procedures were performed with US guidance and included FNA and TRU-CUT biopsy. Twenty-nine cases were performed in the US suite. Two cases were performed under general anaesthesia in the operating room. In twenty-four cases of very small or deep lesions the biopsy was performed on the CT table and the US-guided positioning was verified by CT.

Results: US-guidance was feasible in all 55 patients. The biopsies were diagnostic in 54 cases (98.2%). Histology revealed primary lung cancer in 25 (45.5%), metastatic sarcoma in 3, bladder transitional cell carcinoma in two and renal cell carcinoma in 3. Ten biopsies revealed inflammatory process (18.2%) including Tuberculosis ($n=2$), actinomycosis ($n=1$), aspergillosis ($n=1$) and others ($n=6$). Other diagnoses included sarcoidosis ($n=2$), COP(cryptogenic organizing pneumonia, $n=3$), amyloid tumor ($n=1$) and Wegener granuloma ($n=1$). Four lesions were negative for tumor and remained unchanged on follow-up CT, and one case was non-diagnostic. The procedure was short (<5 min) in all cases. Two biopsies had to be repeated. There were 7 cases of pneumothorax (12.7%); only 1 required drainage. We did not encounter any other complications due to the procedure.

Conclusions: US-guided biopsy is easy to perform, is convenient for the patient and yields good results. The real-time monitoring enables optimal needle positioning. Even small lung nodules located at a distance of up to 1 cm from the pleura can be clearly detected and targeted. The procedure is safe and can be performed bed-side or in the operating room. It is recommended for pulmonary lesions demonstrable by US.

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RELAPSE PATTERN IN COMPLETELY RESECTED STAGE I-III NSCLC REVISITED: PROSPECTIVE STUDY ON 88 PATIENTS

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Objective: Beside the well known predominance of distant vs. locoregional relapse, several aspects of the relapse pattern still have not been fully elucidated

Methods: Prospective, controlled study that included 88 patients with complete lung resection for NSCLC in the period December 2002-March 2004. Stage IIIA existed in 35 (39.8%) patients, whilst stages IB, IIA and IIB existed in 10.2%, 4.5% and 45.5% patients respectively. Inclusion criteria: stage I-IIIa, complete resection, systematic lymphadenectomy with at least seven different lymph node groups examined, no neoadjuvant therapy, regular contact with patients at 3-months intervals, exact date of the relapse confirmation, exact data about the outcome of the treatment.

Results: The five year survival: 37.8%. During the follow-up period, cancer relapse occurred in 50 (56.8%) patients. Locoregional, distant and both types of relapse occurred in 26%, 70% and 4% patients, respectively. Postoperative

relapse occurred in 27/35 (77.1%) patients. in the stage IIIA, in 21/40 (52.55) patients in the stage IIB and in 22.22% patients in the stage IB. Among 30 patients with the relapse onset inside the first 12 month after the lung resection, in 20 (66.6%) patients either T3 tumours or N2 lesions existed. The percent of positivity of lymph nodes varied between 2.8% for pulmonary ligament nodes to 17.8% for the upper paratracheal nodes. In patients with N0, N1 and N2 lesions, cancer relapse occurred in 30%, 55.6% and 70.8% patients, respectively. Among 37 patients with metastases, one single and more than one metastatic sites existed in 70.27% and in 29.73% patients respectively. The most frequent metastatic site was brain (51.35% patients), followed by liver and contralateral lung. The disease free interval was shorter ($P>0.05$) and survival longer ($P<0.05$) in patients with lobectomy vs. pneumonectomy. **Conclusions:** The relapse pattern can not be explained only by the influence of N stage. Other factors are discussed in detail.

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