

XXV National Congress of the “Società Polispecialistica Italiana dei Giovani Chirurghi”
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A STANDARDIZED TECHNIQUE FOR LUNG BIOPSY IN IDIOPATHIC INTERSTITIAL PNEUMONIAS

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Objective: The value of standardizing a technique for diagnostic purposes in cases of suspected idiopathic interstitial fibrosis (IPF) has been recently emphasized by the American Thoracic Society and European Respiratory Society. The optimal site, the size and the number of biopsies to ensure an adequate sampling remains controversial. The aim of the study was to standardize a minimally invasive diagnostic technique that allows biopsy of lung tissue in cases of suspected idiopathic interstitial pneumonia (IIP).

Methods: Patients were selected on the basis of the CT-scan features: the presence of bilateral reticular abnormalities predominantly distributed in the peripheral, subpleural basal areas, with or without honeycombing, traction bronchiectasis or focal ground-glass opacities represented the criteria for selection. The presence of patchy consolidation or nodules with bilateral irregular distribution, likely suggestive of cryptogenic organizing pneumonia/bronchiolitis obliterans-organizing pneumonia (COP/BOOP) or suggestive of other forms of interstitial disease, was a contraindication to the procedure. Three pulmonary segments of the left lung (lingula, lateral/posterior basal and apical segment of the lower lobe) were biopsied using a three-ports left videothoroscopic approach. The operation was conducted under general anaesthesia and double-lumen endotracheal intubation for single-lung ventilation. No frozen examination nor microbiological examination were routinely requested.

Results: Between 2005 and 2012 we used this technique in 59 patients with suspected IIP. All patients fulfilled the radiological characteristics above-mentioned. There were 35 men (59%) and 24 women, the mean age was 56.3 years (range 31-79 years). All operations were accomplished using VATS and no conversions to thoracotomy were undertaken. The mean operation time was 38 minutes (range 23-106 minutes). Postoperative mortality was 3,3%: two patients died in the early postoperative period for severe and acute respiratory failure, with a clinical and radiological picture of adult respiratory distress syndrome. Conditions of both were critical and oxygen-dependent before SLB. Otherwise, no significant morbidity was observed: 2 cases of prolonged air leak (3,3%) and two cases of wound infection (3.3%) were recorded. The chest drain was removed on the first postoperative day in 15 patients (25%), on the second in 39 (66%), on the third in 3 (5%) patients, on the seventh in 1 (1.7%) and on the ninth in 1 (1.7%). Fifty-five patients (93%) were discharged between the second and the fourth postoperative day. A firm clinic-pathological diagnosis was achieved in all patients. The majority of these patients received a diagnosis of usual interstitial pneumonia (n=29, 49%) or non-specific interstitial pneumonia (n=19, 32%). The remaining 11 patients (19%) received a diagnosis of BOOP (n=2), sarcoidosis (2), silicosis (2), acute interstitial pneumonia (2), Langerhan's cells histiocytosis (1), tuberculosis (1) and respiratory bronchiolitis-interstitial lung disease (1) The mean size of the biopsy specimens was 3.9x3.1x1.9 cm.

Conclusions: The proposed technique has been proved to have a high diagnostic yield and to be safe, simple and fast in the various form of idiopathic interstitial pneumonias. Conversely, the technique is not indicated in diffuse parenchymal lung diseases in which the distribution of the lesions at HRCT is non-uniform and inhomogeneous. In these cases the various distribution of pathological changes requires a case-by-case evaluation of the optimal site, size and number of biopsies.

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**PERIOPERATIVE OUTCOME OF SLEEVE LOBECTOMY VERSUS PNEUMONECTOMY IN
TREATMENT OF NON-SMALL CELL LUNG CANCER (NSCLC)**

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Objective: Sleeve lobectomy is a valid alternative to pneumonectomy in preserving lung function in suitable patients with NSCLC. Purpose of this retrospective study is to assess and compare the incidence of perioperative morbidity and mortality after sleeve lobectomy and pneumonectomy for NSCLC.

Methods: From January 2008 to December 2012, 134 patients underwent pneumonectomy and 64 sleeve lobectomy for NSCLC at our Institution. In pneumonectomy group 55 patients had a right-sided operation, while 79 were left-sided; median age was 67 years old (range 18-85 yrs), with 18 pts older than 75 yrs. In sleeve group 42 patients had a right-sided operation and 22 were left-sided; median age was 65.5 (range 17-79) with 2 pts older than 75 years. Specific surgical and perioperative complications and 30-, 60- and 90-day or in-hospital mortality were assessed and compared between the two groups.

Results: In pneumonectomy group the incidence of perioperative complications was 35.1% (47 of 134 pts), with no side-related statistical difference, while in sleeve group the rate was 37.5% (24 of 64 pts) ($p=0.75$), where left side was a negative prognostic factor ($p=0.014$). Operative mortality was 3% (4 of 134 pts) in pneumonectomy group and 1.5% (1 of 64 pts) in sleeve group, with no statistical difference ($p=1.0$). A complete analysis of pre-, intra- and postoperative factors related to early outcome has been made.

Conclusions: Sleeve lobectomy, whenever feasible, should always be performed in alternative to a more extensive operation, but pneumonectomy still represents an appropriate and comparable treatment of NSCLC in terms of perioperative outcome.

**BRONCHIAL SLEEVE RESECTIONS AFTER INDUCTION THERAPY FOR TREATMENT OF
NSCLC: EFFECT ON BRONCHIAL HEALING**

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Objective: Sleeve lobectomy represents a safe and effective treatment for central NSCLC. In advanced stage due to lymph-node involvement induction treatment (IT) may be indicated; however, the effect of IT on bronchial anastomotic healing remains uncertain.

Aim of this study was to evaluate the impact of IT on short- and long-term results, focusing on bronchial complications.

Methods: A retrospective study was carried out by reviewing records of 159 consecutive patients submitted to sleeve lobectomy for NSCLC at our Institution between 2000 and 2012. We compared the results on patients who underwent IT with those who received directly a surgical treatment.

Results: In the study period, 49 (30.8%) patients received IT (37 chemotherapy, 1 radiotherapy and 11 chemoradiotherapy) and 110 (69.2%) patients were directly submitted to surgery (S).

The two groups were comparable for sex, age, comorbidities, ASA score, pulmonary function, side, type of procedure and histology. Pathological stage was statistically higher for IT group ($p=0.001$).

No differences between IT and S groups were observed concerning post-operative mortality (2% vs 0%, $p=NS$), morbidity (45% vs 38%, $p=NS$), early (6% vs 9%, $p=NS$) and long-term (16% vs 14%, $p=NS$) bronchial complication rates. The analysis of risk factors did not evidence any influence of type of IT, surgical procedure, anastomotic flap coverage, comorbidities and post-operative therapy.

Conclusions: in our experience, the use of IT did not increase mortality and morbidity rates, especially concerning early and late anastomotic complications. For these reasons sleeve lobectomy after IT seems a safe and reliable procedure for the treatment of locally advanced NSCLC.

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THE PROGNOSTIC SIGNIFICANCE OF PROLIFERATIVE INDICES IN SURGICALLY RESECTED IIIA-N2 NON-SMALL CELL LUNG CANCER AFTER INDUCTION CHEMOTHERAPY

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Objective: The aim of this study is to assess the prognostic significance of Mib1 expression, Mitosis (Mi) and Apoptosis (Ai) in residual tumour cells after induction chemotherapy in surgically resected IIIA-N2 patients.

Methods: Between January 2002 and November 2008, we reviewed 50 consecutive patients (39 males) with histologically proven stage IIIA-N2 NSCLC, who underwent radical resection following induction chemotherapy. Five-year survival in the series was evaluated in relation to lymph node downstaging, histology, extent of resection, number of chemotherapy cycles, pT status, sex and age. It was then also evaluated in relation to the proliferative indexes (Mi, Ap and Mib 1 expression), dividing the patients into two groups according to whether they were above or below the 50th percentile for each parameter. The associations between mortality and the abovementioned prognostic factors were explored using the Kaplan-Meier method, the log-rank test, and Cox regression analysis.

Results: The monovariate analysis confirmed the positive prognostic role of lymph node downstaging in terms of 5-yr survival: 31% vs. 12% (p=0.018). However Mi and Mib1 expression under the 50th percentile were also associated with better 5-yr survival: respectively 46% vs. 5% (p=0.007) and 40% vs. 6% (p=0.017). Neither apoptosis nor the other prognostic factors showed any statistical impact on long-term survival. The multivariate analysis showed Mi to be an independent prognostic factor (p=0.005).

Conclusions: Although lymph node downstaging has been considered the principal prognostic factor after induction chemotherapy and surgical resection, Mi and Mib1 expression in residual tumour can predict long-term survival more accurately.

MULTIDISCIPLINARY TREATMENT OF NON-SMALL CELL LUNG CANCER WITH POSITIVE LYMPH-NODES: PROGNOSTIC FACTORS AND OUTCOME

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Objective: 30 to 40% of patients with non-small cell lung cancer (NSCLC) is diagnosed at a locally advanced stage of disease. Induction therapy (IT) before surgery has gained popularity becoming the standard of treatment in potentially resectable stage IIIA/B node positive NSCLC. IT aims to: downstage the disease, clear micro-metastases and prolong survival. Potential disadvantages are: increased morbidity/mortality after surgery and possible progression of disease. Purpose of this study is to evaluate the outcome and prognostic factors in a series of patients with node-positive NSCLC receiving IT followed by surgery.

Methods: A total of 86 patients (75.6% males, median age 63 years) affected by NSCLC in clinical stage IIIA (n=80) or IIIB (n=6), with pathologically-proven nodal involvement, underwent IT followed by surgery between 2000 and 2009.

Results: 80 (93%) patients received a median of 3 cycles of chemotherapy, 6 (7%) underwent induction chemo-radiotherapy. Response to IT was complete in 3.5%, partial in 59.3% and stable disease in 37.2%. Post-operative morbidity and mortality were 25.6% and 2.3%, respectively. At pathological evaluation 38.4% had a downstaging of disease with a complete lymph-node clearance in 31.4%. Median overall survival was 23 months (5-yrs survival 33%). Univariate analysis found a predictive role on survival for: clinical stage (p=0,02), histology (p=0.01) and response to IT (p=0,02).

Conclusions: Multidisciplinary treatment, by means of use of IT for lymph-nodes positive NSCLC, seems justified by low morbidity/mortality and good survival rates. Patients with response to IT are those who better benefits in the long term.

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SURGICAL RESULTS AND SURVIVAL OF OLDER PATIENTS WITH UNSUSPECTED N2 (STAGE IIIA) NON-SMALL CELL LUNG CANCER: A WORLD OF CAUTION

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Objective: The optimal treatment of stage IIIA-N2 non-small cell lung cancer (NSCLC) is still not clarified by current guidelines. In particular the presence of occult N2 disease in older patients represents an important surgical and ethical problem.

Methods: Between January 2000 and December 2010 273 patients older than 75years underwent lung resection for NSCLC. We extrapolate 42(15,4%) patients with pIIIA (unexpected N2). Of these 42% had micro-metastasis N2 involvement (pIIIA1) and 58% single station N2 disease (pIIIA2). Five patients (13,5%) with pN2 disease were pN1 free.

Results: The most frequent operation was lobectomy (59,5%, n=25) followed by atypical resection (19%, n=8) and pneumonectomy (14,3%, n=6). The prevalent histologic type was adenocarcinoma. The overall-operative mortality was 9,5%, 28,6% in pneumonectomy. Risk factors for in-hospital mortality were pneumonectomy and poli-vasculopathy. The mean follow-up period was 28.32±19 months. 1, 3 and 5-year survivals were 73%, 23% and 16% respectively. Twenty-two patients had disease recurrence. The mean freedom from recurrence was 13,2±5,9 months. The major causes of death were cancer related. At statistical analysis only recurrence of disease was correlated with limited survival.

Conclusions: In potentially operable older patients we need to make every effort to exclude N2 involvement because very poor long-term survival. Invasive staging of mediastinum should be considered also in these patients. Pneumonectomy has prohibitive in-hospital mortality. Further randomized controlled studies are needed to understand the prognosis and the best therapeutic strategies of different patterns of N2 involvement even in older patients.

ADVANTAGES OF A HOME-BASED PULMONARY REHABILITATION PROGRAMME IN POSTSURGICAL LUNG CANCER PATIENT

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Objective: The role and the benefits of pulmonary rehabilitation programme (PRP) in patients with lung cancer is a controversial issue. The aim of this study is to identify the effectiveness and the differences between a hospital PRP and a domiciliary PRP after lung surgery (LS).

Methods: 87 patients undergoing LS were enrolled and randomised to a hospital or to a domiciliary postsurgical PRP group. Pulmonary function, exercise capacity, dyspnea and quality of life were analysed before LS and repeated after one week and at the end of a two week-PRP. Dyspnea was assessed using the MRC and the Borg dyspnea scale and health related quality of life using the SF-36 and the EORTC, QLQ-C30 and the lung cancer specific module (LC-13).

Results: After a two-week PRP we had a significant decrease in most of the functional variables. Among domiciliary and hospitalised patients we observed a significant decrease in vital capacity, in forced vital capacity, and in others parameters. No significant differences were observed in the two groups in 6-minute walk distance, in MMRC, in BORG scale and in quality of life.

Conclusions: A home-based PRP is feasible and produces equivalent benefits as those obtained in a traditional hospital setting. The results of this study emphasize that domiciliary PRP should be placed in the postsurgical treatment of lung cancer patients in order to improve postsurgical recovery and to reduce healthcare costs.

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SURGERY IN PULMONARY METASTASES: A SINGLE CENTRE 11 YEAR SURGICAL EXPERIENCE

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Objective: Resection of pulmonary metastases is commonly performed in patients whose primary disease is controlled. The largest number of solitary metastases survivors had lesions primarily in the lung or liver. Aggressive resection of isolated pulmonary metastases has become a widely accepted treatment for appropriately selected patients.

Methods: Computed tomography is the preferred imaging modality for pulmonary metastases, the sensitivity of this technique is 100% for lesions larger than 1 cm, but it decreases according to the size of the metastases (<5 mm). There is a real problem of missing small metastatic lesions in the video-assisted thoracic surgery approach; complete manual exploration by axillary-thoracotomy remains the procedure of choice for patients undergoing pulmonary metastasectomy. We reviewed our series on thoracotomic metastasectomy performed for various primary tumors and tried to establish better prognostic indicators for their surgical application; 163 patients underwent lung metastasectomies from January 2001 to January 2012.

Results: Lung metastases were from colorectal cancer in 75 patients, renal cells carcinoma in 20, breast in 9, gynaecologic tumor in 17, head and neck cancer in 12, bone and soft tissue sarcoma in 12, melanoma in 9, hepato-biliary tract in 4 patients. The mean disease-free interval was 36,9 months. Eighty-nine patients had single-lung metastasis, 49 oligometastases, 25 multiple metastases. The survival after complete metastasectomy at 1, 5 and 10 years, was respectively 83%, 52%, 16%.

Conclusions: Absence of mediastinal lymph node involvement, limited number of pulmonary metastatic lesions, long disease-free interval, small metastasis and no elevation of tumor markers might be prognostic factors in patients with pulmonary metastases. Survival benefits of pulmonary metastasectomy should be proved by randomized trials. However, aggressive pulmonary metastasectomy can render some patients free of disease for long periods.

OUTCOMES AFTER SEQUENTIAL SURGICAL RESECTION OF HEPATIC AND PULMONARY METASTASES FROM COLORECTAL CANCER

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Objective: The value of aggressive surgical management in patients with both hepatic and pulmonary metastases from colorectal carcinoma still remains a controversial area. We analyzed the outcome of combined treatment and prognostic factors affecting survival in our series.

Methods: We reviewed our series of 30 patients from January 1998 to October 2010. All patients underwent resection of both metastatic sites. The sample was composed by 17 women (56.7%) and 13 men (43.3%), with mean age of 59 years.

Results: Overall 5 and 10 year-survival rates were 70.4% and 28.2% respectively. Twenty-three patients had a single lung metastasis and 7 multiple ones: estimated 5-year survival was 79.37% and 47.62% respectively. Single liver metastasis was present in 12 patients and multiple metastases in 18: 5-year survival was 72.73% and 70.19% for each group. Nine patients underwent more than three resections, included that one performed for primary tumor: this sample had a poorer prognosis than patients with three base surgery operations (P=0.005). Pulmonary and liver metastases occurred synchronously respectively in 10% and 33.3%, no one survived at 5-years. The DFI between primary tumor resection and diagnosis of first metastasis was 16 months (5-year survival was 75% in patients with DFI greater than 2 years) and 24 months between hepatic and pulmonary metastases (5-year survival was 72% in patients with DFI greater than 2 years).

Conclusions: Resection of pulmonary and hepatic metastases is safe and effective procedure with reasonable long-term survival. However, in our experience patients with synchronous metastases or undergoing more than three surgical operations, prognosis proved worse.

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**CLINICAL OUTCOME OF ORIGINAL VIDEO-ASSISTED INFRA-MAMMARY COSMETIC
INCISION AND MEDIAN STERNOTOMY IN 197 THYMECTOMIES FOR MYASTHENIA GRAVIS**

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Objective: To analyze the rate Clinical Stable Remission (CSR) in non-thymomatous myasthenia gravis (MG) patients surgically treated among our division of Thoracic Surgery.

Methods: Between January 1993 and December 2012, 211 thymectomies for non-thymomatous MG were performed via video-assisted infra-mammary cosmetic incision and median sternotomy. CSR was analyzed in 197 patients 24 months after surgery.

Results: Female to male ratio: 159 (80.7%):38 (19.3%). Mean age: 30.1+/-11,2 years. Preoperative MGFA score: stage I: 4 patients (2%); IIa: 59 (30%); IIb: 31 (15%); IIIa: 42 (21,6%); IIIb: 44 (22.6%); IVa: 2 (1%); IVb : 3 (1,8%); V: 12 (6%). Median operative time: 110 min (70-130 min). Median postoperative hospital stay: 4,3 days (3-9 days). Postoperative mortality was nil and morbidity occurred in eleven patients (5,5%). Final pathology: 140 hyperplastic thymus (71.1%); 49 involuted thymus (25.6%) and 8 normal thymus (4%). Mean follow-up was 82.9+/-34.6 months. Kaplan-Meier CSR was 39% and 43% at 5 and 10 years, respectively. The preoperative therapy and the MGFA stage were significantly associated with Kaplan-Meier CSR rates at multivariate analysis (HR 0,25, 95%CI 0,1-0,8, p=0,002 and HR 0,68, 95%CI 0,5-0,9, p= 0,0011 respectively). Remarkably, 180 (91%) patients judged their cosmetic results to be excellent or very good.

Conclusions: Thymectomy via video-assisted infra-mammary cosmetic incision and median sternotomy in MG patients turned out to be a valid surgical approach in terms of safety, CSR and aesthetic results. The preoperative therapy and the MGFA stage were significantly associated with Kaplan-Meier CSR rate.

**ROBOT-ASSISTED THORACOSCOPIC THYMECTOMY IN EARLY STAGE THYMOMA:
ONCOLOGICAL SAFETY AND FEASIBILITY**

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Objective: Minimally invasive thymectomy for stage I and II thymoma has been suggested in recent years and considered technically feasible. However, due to the lack of data on long-term results, controversies still exist about the optimal surgical approach. We sought to evaluate the results after robot-assisted thoracoscopic thymectomy in early-stage thymoma.

Methods: Data were collected from our centre. Between 2002 and 2011, 14 patients (4 men and 10 women; median age 54 years) with early stage thymoma were operated by left-sided robotic thoracoscopic approach. Eight patients (57%) had associated myasthenia gravis.

Results: Average operative time was 139 minutes (range, 70-185 minutes). One patient required an additional cervicotomy to perform a complete resection. No vascular or nervous injuries were recorded, no perioperative mortality occurred. Two patients (14.2%) had postoperative complications. Median hospital stay was 3 days (range 2-9 days). Median diameter of tumour was 2.5 cm (range 1-6 cm). Masaoka stage was I in 5 patients, (36%) II in 9 patients (74%). At median follow-up of 45 months, 13 patients were alive and disease-free and 1 patient died from nonthymoma-related cause (leukaemia) 26 months after thymoma surgery.

Conclusions: Robotic thymectomy for early stage thymoma is technically sound and safe procedure with a low complication rate and a short hospital stay. Oncologic outcome appears good, but a longer follow-up is required for this to be established as a standard approach.

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RECENT ACQUISITIONS FOR THE SURGERY OF ADVANCED THYMOMAS

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Objective: Actually, surgical treatment is considered the gold standard for the thymus cancer. Particularly, total resection is the optimal procedure. Incomplete resection and the debulking surgery don't benefit by bioptic-procedure.

Methods: In the Operative Unit of General Surgery, Matera Hospital "Madonna delle Grazie", from June 2011 to March 2013 six thymectomies are performed, four patients with myasthenia. Particularly, one case associated to extrapleural pneumonectomy; another case with resection "en bloc" of anonymous vein, jugular and left subclavian vein.

Results: Actually, all patients are alive. There aren't peri- and post-operative complications. Four patients are doing chemotherapy.

Conclusions: Ideal treatment of advanced thymomas is the union of different therapies (surgery, chemotherapy, radiotherapy). Different Authors performed the advanced surgery, "off-limits", with great resections. Gold standard of surgery is the radical excision of thymic tumor.

**PLEURAL RECURRENCE OF THYMOMA: SURGICAL RESECTION FOLLOWED BY
HYPERThERMIC INTRA-THORACIC PERFUSION CHEMOTHERAPY**

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Objective: Despite its indolent natural history, recurrences of thymoma are described as long as 10 years after surgical resection in 10-40% of cases with the pleura representing the most frequent site. Herein we report our experience with cyto-reduction of pleural recurrences of thymoma followed by hyperthermic chemotherapy pleural perfusion (HITHOC).

Methods: Patients with pleural recurrence of thymoma have been treated surgically with removal of pleural implants. At the end of the surgical procedure, as usual, 2 pleural drainages have been positioned in the pleural space and thoracotomy closed. Drainages have been connected with a dedicated perfusion machine, pleural space filled with saline solution, progressively heated up to 42.5 °C. At this time chemotherapeutic agents (Doxorubicin 25 mg/m² and Cisplatin 80 mg/m²) were injected in the circuit and perfusion lasted 60 minutes.

Results: In the period 2005-2012, 13 consecutive patients have been treated (7 males, 6 females, mean age 46 years). Initial Masaoka's stage was IIa in 2 cases, IIb in 5 cases, III in 5 cases and in 1 case stage IVa. Interval between thymoma resection and appearance of pleural implants was 54 months on average (range of 29 - 104). Eight patients were with myasthenia gravis, 1 with medullar aplasia. Complete pleural implants removal was achieved in all cases except one. HITHOC was successfully performed in all cases without adverse events. No signs or symptoms of toxicity was recorded in the peri-operative period. At a median follow-up period of 50 months (range of 6 - 99), 1 patient died for toxicity following systemic chemotherapy, 4 patients developed pleural relapses (2 ipsilateral, 2 contralateral) and 1 patients developed metastases to mediastinal celiac nodes. Mean survival was 56 months, median survival by Kaplan-Meyer method was not reached while four-years actuarial survival was 91%.

Conclusions: HITHOC seems to be feasible and safe. In terms of efficacy, the results of this study seems promising despite multi-centres studies and a longer follow-up period are required to ascertain its effectiveness.

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LUNG-CANCER SCREENING: A SINGLE CENTER EXPERIENCE

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Objective: The main purpose of our project was to evaluate the prevalence of lung cancer in asymptomatic individuals at high risk, quantify the rate of surgical resectable tumors, and evaluate the role of LDCT as a tool of screening in lung neoplasm.

Methods: Between June 2011 and March 2013 985 volunteers at high risk to develop lung cancer were enrolled in our study. They underwent LDCT and specialist examination of thoracic surgery. The following diagnostic and therapeutic steps were planned in relation to the results emerging from the CT. To evaluate speed and type of growth, solid nodules ≤ 4 mm were reassessed with annual LDCT, those $>4-6$ mm or $>6-8$ mm were reassessed with LDCT in 6 or 3 months while suspicious for malignancy nodules were more deeply investigated with PET-CT or biopsy.

Results: Non-calcified nodules were detected in 361 subjects (36.7 % of population); among these 39.6% had a diameter ≤ 4 mm, 45.9% had a diameter > 5 mm, 2.9% appeared as "ground glass" areas, and 37 (10.2% of detected nodules) looked as malignant (irregular margins, retraction of the surrounding parenchyma, diameter > 10 mm). Among the 37 patients who underwent PET-CT or biopsy 16 cases resulted positive for lung cancer (1.6% of population). These patients underwent surgical treatment with histological detection of tumors in stage IA (pT1a or pT1b, pN0).

Conclusions: Our study confirmed the emerging data on the use of LDCT as a screening tool for lung neoplasm in individuals at risk, able to increase survival rates and reduce lung cancer rate mortality.

PERIPHERALLY INSERTED CENTRAL CATHETERS IN PATIENTS UNDERGOING LUNG RESECTIONS

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Objective: Peripherally inserted central catheters (PICCs) may be a valid alternative option to standard central and peripheral venous catheters for patients undergoing lung resections and possible candidate to adjuvant chemotherapy.

Methods: We retrospectively reviewed data of 54 PICCs inserted in adult patients who underwent lung resection. Each patient was followed from the implant to the removal of the device (median 20 days, range: 10-370 days). Rate of complications at insertion and during maintenance were recorded. In 23 cases PICCs were also used for adjuvant chemotherapy.

Results: Insertions were successful in 98%. At insertion, there were no major complications and 15% minor complications (local hematoma, repeated punctures of the vein, difficulty in progression of the catheter and malposition). During maintenance there were no episodes of catheter-related bloodstream infection; two (3,7%) episodes of symptomatic thrombosis during the chemotherapy period associated to deep vein thrombosis of the legs occurred, treated with medical therapy. Accidental removal of the catheter was observed in one patient. Removal of the catheter was never required because of complications.

Conclusions: PICCs is a useful and safe device for patients undergoing lung resections. Their insertion is successful in 98% of cases and is not associated with significant risks, even in patients with coagulation disorders. Their maintenance is associated with an extremely low rate of infectious and non-infectious complications.

* Presenting Author

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**NON-INTUBATED THORACOSCOPIC PULMONARY NODULE RESECTION UNDER
SPONTANEOUS-BREATHING ANAESTHESIA WITH LARYNGEAL MASK**

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Objective: During the past twenty years, video assisted thoracoscopic surgery has been increased as an important minimally-invasive tool. In order to further reduce its invasiveness, after a preliminary experience, we decided to utilise a non-intubated spontaneous breathing general anaesthesia, for VATS resection of lung nodule, using a laryngeal mask.

Methods: We retrospectively selected 20 consecutive patients who underwent thoracoscopic wedge of lung nodule with this technique. Clinical data, ASA status, ACE-27 score and RCRI were recorded for each patients. General inhalatory anaesthesia (sevoflurane) was performed in all cases through a laryngeal mask, without muscle relaxants, thus allowing spontaneous breathing. All procedures were performed in the lateral decubitus position. The maximum and minimum values of end-tidal carbon dioxide tension (EtCO₂) and oxygen saturation (SaO₂) were recorded during the procedure. The level of technical feasibility was stratified by the operating surgeon according to 4 levels: excellent, good, satisfactory and unsatisfactory.

Results: They were 13 males and 7 females (mean age 57 years). The mean induction anaesthesia time was 6 minutes, while mean operative time was 38 minutes. The values of SaO₂, and minimum and maximum EtCO₂ were 99.1%, 33.6 mmHg, and 39.1 mmHg, respectively. No mask displacement occurred. The level of technical feasibility was defined excellent in 19 cases, good in 1. No mortality occurred. Morbidity consisted in pleural effusion (1 case), medically resolved. The mean post-operative stay was 3.5 days. Histopatologic results were: 1 squamous cell lung cancer (lung primary), 1 adenocarcinoma (lung primary), 5 metastasis from colon cancer, 4 from breast cancer, 3 from renal cancer, 3 saroidosis, 2 amartocondroma, 1 tuberculosis.

Conclusions: Our experience suggests that thoracoscopic wedge resection of lung nodule is safe and feasible under spontaneous breathing anaesthesia with laryngeal mask. This technique permits a confident manipulation of lung parenchyma and a safe stapler positioning, without cough, pain or panic attack described for awake epidural anaesthesia, avoiding the risks related with tracheal intubation and mechanical ventilation.

UNIPORTAL THORACIC SURGERY: EARLY EXPERIENCE

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Objective: Uniportal video-assisted thoracic surgery (VATS) has recently been proposed as an alternative to conventional three-ports VATS. The advantages of this technique should be a better pain control and a reduction of hospitalization.

Methods: The indications for uniportal VATS are the same of conventional three-ports VATS. Our approach uses a single incision of 2 to 5 cm, depending by surgical procedure, performed at the fifth intercostal space. A thirty degree videothoroscope and roticulating instruments are used.

Results: In the last two years we performed with this technique 52 cases of pleural biopsies and talc pleurodesis, 7 mediastinal mass biopsies, 5 resections of mediastinal masses, 6 apicectomies and pleurectomies for pneumothorax, 8 wedge resections for metastatic disease and 9 lobectomies for lung cancer. From December 2012 to March 2013 we performed 3 left upper lobectomies (LUL), 4 right upper lobectomies (RUL), 2 left lower lobectomies (LLL); in other 2 cases thoracotomy conversion was required to control bleeding from Boyden artery damage. Intercostal nerve block with lidocaine and ropivacaine allows pain control in the postoperative course. In lobectomy patients mean chest drainage duration was 2.3 ± 1.7 days and mean length of stay was 3.4 ± 1.8 days. In these patients a maximum grade 3 of VAS scale was reported.

Conclusions: Our initial experience shows that uniportal VATS is feasible, safe and effective. Major lung resections are feasible with advantages regarding pain control, pulmonary function and reduction of hospitalization. However in case of major intraoperative complications thoracotomy conversion is mandatory.

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DOUBLE-STAGE THORACOSCOPIC THREE-LEVEL SYMPATHETIC BLOCK BY CLIPPING FOR PALMAR AND AXILLARY HYPERHIDROSIS: ANALYSIS OF OUR EXPERIENCE AND OUTCOMES

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Objective: Thoracoscopic sympathectomy is the reference treatment for severe hyperhidrosis, but postoperative compensatory sweating (CS) may be a serious problem in some patients. We report the advantages of double-stage three-level clipping method in terms of continuing efficacy, patient satisfaction and potential reversibility in case of CS.

Methods: Between December 2008 and March 2012, 34 patients underwent thoracoscopic sympathetic block by clipping of T2-T3-T4 levels for primary palmar and axillary hyperhidrosis. The procedure was performed using a 5mm, 0-degree thoracoscope, with patients in lateral decubitus position under single-lumen intubated anesthesia. Moreover, we prefer double-stage surgery (usually within a month), due to potentially lethal complications reported in literature with the single stage technique. Patients were followed-up at least 1-year postprocedure by telephonic questionnaire.

Results: Our series consisted of 20 females and 14 males with a mean age of 31 years (range: 14-57). Sixteen patients suffered with hyperhidrosis in palms, 2 in axillae, 22 in axillae+palms and 3 had facial symptoms; 13 patients declared a familiarity. There were no intra/post-operative complications. Chest drain was removed 1.5 days after the operation and hospital stay was 48 hours. The results were positive in 100% for hands and 92% for axillae; 3 patients reported improvement in facial sweating and blushing, 2 in plantar sweating. CS occurred in 81% of patients (severe: 0%). Despite this, 99% of patients were satisfied and 100% of them declared a substantial improvement in quality of life.

Conclusions: We believed that double-stage three-level clipping is a safe and effective method of treating hyperhidrosis, that gives the advantage of recognizing the clipped levels for a potential reversibility in those patients who developed severe CS.

EFFECTIVENESS OF TRANSTHORACIC ULTRASOUND IN THE THORACOSCOPIC TREATMENT OF STAGE II - III PLEURAL EMPYEMA

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Objective: Optimal treatment of pleural empyema is still debated. Thoracoscopic approach is maybe the best choice in case of stage II and III empyema, especially because patients often have a poor performance status. But the presence of multiple loculations makes difficult the minimally invasive technique to be performed. We wanted to evaluate the effectiveness of transthoracic ultrasound (TUS) in the planning of the best thoracoscopic approach to pleural empyema.

Methods: From January 2007 to September 2012 26 patients with pleural empyema underwent preoperative transthoracic ultrasound. In 21 of them TUS showed a stage II empyema. Patients were examined in surgical position. The presence and topography of loculations as well as the position and the course of the hemidiaphragm were described. Considering them, a small working window and a thoracoscopic access were drawn on the skin of the patient. TUS accuracy was determined on empyema staging, topography of loculations and hemidiaphragm, and thoracoscopic accesses pianification.

Results: All patients underwent thoracoscopic treatment with a working window of about 10 cm and a second access of 10mm. In 4 cases (15,4%) open-conversion was necessary because of pathology extension. Topography was correct in 24 cases (92,3%) and good thoracoscopic approach was achieved in 22 (86%). The presence of small and multiple loculations and a strong iperechoic effusion were the main causes of failure.

Conclusions: TUS is a very useful tool in the thoracoscopic treatment of pleural empyema. Its usefulness could further extend the use of thoracoscopy for the treatment of the pathology.

* Presenting Author

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POST-TRAUMATIC CHEST WALL STABILIZATION WITH A NEW TITANIUM PLATES SYSTEM

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Objective: Chest wall integrity and stability ensure the protection of endothoracic organs and an adequate respiratory function. The Authors report their experience with a new titanium plates system recently introduced to repair traumatic injuries of the chest wall by fixation and stabilization of ribs and sternum fractures.

Methods: From January 2010 to January 2013, 8 male patients, mean age 56,4 years (range: 16-75 years), were treated at our Institutions with a new titanium plates system (Synthes®) for post-traumatic ribs and sternum stabilization. Indications were as follows: flail chest (4), multiple ribs fractures (3), posterior sternoclavicular joint dislocation (1). All patients underwent pre-operative chest wall tri-dimensional CT study to precisely evaluate the site and the entity of the traumatic injury.

Results: From 1 to 9 (mean 4) titanium plates were implanted in each patient. Mean operating time was 167 minutes (range: 120-240 minutes), without intra-operative complications. One patient with significant co-morbidities required post-operative tracheostomy. Mean post-operative ICU stay was 7 days (range: 0-29 days), hospital stay 26,5 days (range: 7-61 days). No post-operative mortality occurred. Six patients (75%) had no post-operative complications; minor complications occurred in one; pneumonia with respiratory failure requiring mechanical ventilation was the major complication in one. At a median follow-up of 32 months, no post-traumatic deformity and pain were present.

Conclusions: The new titanium plates system allowed to obtain an optimal post-traumatic stabilization of the chest wall, with restoration of a normal respiratory function and a significant reduction of post-traumatic pain, deformity and need for mechanical ventilation.

SURGICAL TREATMENT OF CHEST WALL TUMORS: OUR EXPERIENCE

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Objective: Chest wall tumors represent 1-2 % of primary tumors and 5% of chest neoplasm. The aim of the study is describing our experience in the treatment of these diseases.

Methods: A retrospective analysis of 180 consecutive patients who underwent surgery for chest wall tumors requiring chest wall resection and reconstruction between April 1999 and January 2009 was conducted. The follow up was considered of four years.

Results: There were 109 males and 71 females and the median age was 52 years. In 121 cases there were primary tumors, 93 benign and 28 malignant. In 59 cases there were secondary tumors. The reconstruction of chest wall with biological and/or synthetic materials was necessary in 33 cases. Morbidity was 17% and mortality was nothing. Recurrence occurred in 28% of cases.

Conclusions: A radical surgery reduces the recurrence rate and improves survival. The choice of material for the reconstruction depends of entity of chest wall disease and experience of the surgeon. Multidisciplinary approach in the therapeutic strategy of these tumors remains crucial.

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AN INNOVATIVE TECHNIQUE FOR ANTERIOR CHEST WALL RECONSTRUCTION USING THE STERNAL ALLOGRAFT TRANSPLANTATION

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Objective: Resection of the sternum generally leaves a large chest wall defect. The correct stabilization of the anterior chest wall is important to avoid secondary complications. Different materials have been used to reconstruct the sternum, but none of them are considered the gold standard procedure. We propose a new technique using sternal-allograft to reconstruct the anterior chest wall after sternal resection.

Methods: The sternal allograft was harvested from a multi-tissue donor. After packaging, the allograft was stored at -80°C until it's use. A full-thickness partial or complete resection of the sternum en-bloc with costal cartilage was performed as needed. The sternal allograft was then tailored to perfectly fit with the chest-wall defect. The allograft was fixed using titanium bars and screws.

Results: Between June 2010 and December 2012, seven patients underwent sternectomy followed by anterior chest-wall reconstruction using sternal transplantation. Six patients were treated for neoplastic disease, one patient for complex sternal dehiscence after cardiac surgery. In the post-operative period no major complications were reported and the patients were discharged after 9±2,4 days. The mean follow-up time was 13.7±5.3 months. No mechanical failure or reconstruction related complications have been reported during the follow-up and all patients are alive, in good clinical conditions, pain free and with normal pulmonary function tests.

Conclusions: The most used materials for sternal replacement were methylmethacrylate, polytetrafluoroethylene, marlex-mesh, metallic-plates and bone-autograft. Synthetic materials have many disadvantages. Bone-autografts have optimal biomechanical characteristics and are fully compatible.

MODIFIED RAVITCH PROCEDURE FOR PECTUS DEFORMITIES: AN ANALYSIS OF OUR EXPERIENCE

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Objective: Pectus chest deformities are among the most common major congenital anomalies, occurring in approximately 1 in every 400 births. Pectus excavatum (PE) and Pectus Carinatum (PC) are commonly recognized during the first year of life. We report our clinical experience with a modified Ravitch procedure for pectus deformities repair in 52 consecutive patients.

Methods: Between January 2008 and June 2010, 52 patients underwent ravitch modified procedure for pectus deformities. The procedure was performed using the "open" technique with patients in supine position. Moreover, we prefer open surgery, due to better cosmetic results and potentially lower risks due to lower reported complications in literature with minimally invasive technique. Patients were followed-up at least 1-year post procedure by telephonic questionnaire.

Results: Our series consisted of 3 females and 49 males with a mean age of 25 years (range: 4-40). 40 patients suffered with pectus excavatum, 12 with pectus carinatum. 3 patients were affected by other deformities, and 5 with cardiac malformations. 19 patients had postoperative PNX, but of these only 10 needed a pleural drainage; 11 patients developed pleural effusion, but of these only 1 needed a pleural drainage. Only one patient had a post-operative bleeding. Despite this, 89% of patients were satisfied and 95% of them declared a substantial improvement in quality of life.

Conclusions: The open Ravitch procedure is effective for all variations of PE and PC in patients of all ages, provides a stable chest wall, causes only mild postoperative complications and produces good physiologic and cosmetic results.

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SURGICAL TREATMENT OF ELASTOFIBROMA DORSI: EXPERIENCE OF A SINGLE CENTER

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Objective: Elastofibroma Dorsi (ELD) is a rare soft tissue benign tumor of the chest wall. The aim of this study is to report our single-institutional experience in the surgical management of ELD and, on the basis of our data, we discuss the main features of this entity.

Methods: We report observational information on 71 ELD cases. We discuss the clinical onset features, radiological and surgical characteristics and pathological and immunohistochemical evidences.

Results: In the period between January 1994 and September 2009, 71 consecutive patients (23 male and 48 female; mean age: 60.2 years) with ELD diagnosis were surgically treated at our Center. ELD was right sided in 34 patients (47.9%), left in 25 (35.2%), and bilateral in 12 (16.9%). In nine patients, ELD were diagnosed synchronously and three metachronously. Thirty-eight patients (53.5%) had no significant symptoms; 33 (46.5%) reported a clunking sensation or a localized scapular swelling during the shoulder movements. Sixty-six (93%) patients underwent surgical excision with radical intent while in five patients, a biopsy-only procedure was undertaken. Complications occurred in 15.5% (postoperative bleeding, hematoma, seroma or fever). Mean hospital stay was 3.0 days (SD \pm 1.2 days) with a morbidity of 10.6% (one case of major postoperative bleeding requested a surgical revision of the hemostasis). At the univariate analysis, the probability of occurrence of morbidity increases with tumor size. All operated patients are alive and well at follow-up with no sign of recurrence and complete resolution of the symptomatology.

Conclusions: ELD is relatively rare and benign disease, usually well-controlled by radical surgery. Bilateral disease is not uncommon (17% in our series) and a local relapse could be occur after incomplete resection. The etiology is still controversial and enigmatic; thus we strongly advocate further investigations on the pathophysiological determinants.

ENDOSCOPIC TREATMENT OF TRACHEO-BRONCHIAL STENOSES

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Objective: Tracheo-bronchial stenoses, partial or sub-total, are an extremely severe and dangerous disease, for the possibility of an asphyctic syndrome which can lead to death. They can be classified in: sovra and subglottic, tracheal, bronchial and mixed stenoses. There are many causes: neoplastic, post-infectious, post-inflammatory or infiltrative, from extrinsic compression, iatrogenic, post-traumatic. We report our experience in the treatment of this disease.

Methods: At the Unit of Surgery of the University "G. D'Annunzio" of Chieti-Pescara, from 1999 to 2012, 96 patients have been treated with rigid bronchoscopy: 40 neoplastic stenoses, 37 cicatricial stenoses, 9 tracheomalacias, 7 post-surgical stenoses, 1 endobronchial lipoma, 1 foreign body, 1 extraluminal stenosis.

Results: Stents were positioned in 63 patients, laser disobstruction was performed in 48, mechanical disobstruction in 10, pneumatic dilatation in 7, stent removal in 5, foreign body removal in 1. In some cases these procedures were performed simultaneously. Major complications were 2 myocardial infarctions; minor complications were 3 stent dislocations and 1 stent infection.

Conclusions: Endoscopic treatment may constitute the first therapeutic procedure in patient with asphyctic syndrome due to tracheo-bronchial obstruction. Moreover, it can be inserted in a therapeutic strategy in which surgical resection, when feasible, still remains the "gold standard", especially in cases of cicatricial stenosis.

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BENIGN TRACHEOESOPHAGEAL FISTULAS: EARLY AND LATE OUTCOME AFTER SURGICAL TREATMENT

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Objective: Tracheoesophageal fistulas (TEF) are rare life-threatening conditions. We report the Padua's experience on surgical treatment of benign TEF.

Methods: 15 patients (age 56 ± 16 years) with benign acquired TEF were reviewed from 2000 to 2011. TEF was due to prolonged intubation/tracheotomy (n 12; 80%), idiopathic (n 1; 7%) or secondary to other surgery (n 2, 13%). The tracheal defect was 2.5 ± 1.3 cm long and was associated with a tracheal stenosis in 6 (40%) patients.

Results: All patients underwent surgical treatment: direct division and closure of tracheal and oesophageal defect (n 8, 53%) or tracheal resection and anastomosis with primary oesophageal closure (n 7, 47%) through cervical approach (n 11, 73%), cervicotomy and median sternotomy (n1; 7%), toracotomy (n 1, 5%) or cervicotomy associated with sternal split (n 2, 13%); in 6 (40%) cases a muscular flap was used. No perioperative death occurred and in 6 (40%) cases a protective tracheotomy was performed at the end of the surgery. Perioperative surgical complications (tracheal stenosis, oedema and others) occurred in 4 (27%) patients, none required a second surgical look. Median follow up was 41 months, long time outcome was excellent or good in 13 patients (87%). 2 (13%) patients are still dependent from PEG or tracheotomy one due to residual neurological disease and one being needed mechanical ventilation for end-stage respiratory failure waiting lung transplantation.

Conclusions: Surgical treatment of TEF is associated with good results in terms of control of acute symptoms and long term outcome particularly concerning oral intake and spontaneous breathing.

PNEUMOTHORAX COMPLICATES H1N1-A VIRAL INFECTION IN TWO CHILDREN

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Objective: Most illnesses caused by H1N1 virus are acute and self-limited. Severe clinical syndromes (diffuse pneumonitis, ARDS, shock, renal failure) are rare. We describe two cases of respiratory failure with pneumonia and pneumothorax sustained by H1N1 infection in pediatric age, successfully treated with pleural drainage and antiviral therapy.

Methods: A 6-year-old male patient was admitted to ICU for hyperpyrexia and respiratory failure; chest X-rays and CT-scan revealed severe subcutaneous and mediastinal emphysema, middle and left lower lobe consolidation and bilateral pneumothorax. Bilateral pleural drainages were positioned. A 8-year-old female patient was admitted to ICU for prolonged hyperpyrexia, dyspnoea and radiological evidence of multiple pulmonary consolidations. Chest X-rays after a sudden dyspnoea worsening revealed subcutaneous and mediastinal emphysema with increasing of consolidations. A chest tube was positioned to drain a left anterior pneumothorax.

Results: RNA PCR-detection on nasopharyngeal swab revealed H1N1 positiveness in both patients. Antiviral therapy was started. The patient were both extubated in the first day after drainage and progressively recovered; with total re-expansion of both lungs with subcutaneous and mediastinal emphysema reduction in the first patient and emphysema disappearing in the second patient. Discharge occurred respectively after 8 and 11 days with restituito ad integrum.

Conclusions: In contrast to seasonal influenza, most of the serious illnesses caused by H1N1 virus occurre among children and nonelderly adults, with approximately 90% of deaths in those under 65 years. Complications in pediatric patients can influence patient's survival and must be treated with intensive protocols of medical therapy.

* Presenting Author

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A CASE OF PERSISTENT PNEUMOTHORAX IN RHEUMATOID DISEASE

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

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

Results: Cultures on parenchymal exudates and pleural fluid were negative. Histology showed pleuro-parenchymal flogosis with fibrinoid stratification on pleural surface. After excluding empyema, methotrexate, methylprednisolone and ibuprofen therapy was restored. A re-thoracotomy for parenchymal sutures was performed due to prolonged air leaks and discharge occurred with a Heimlich valve. Chest X-rays after out-patient tube removing showed pneumothorax and air leaked from thoracotomy. Hydroxychloroquine-sulfate was added to therapy. A two months-outpatient clinical visit showed complete thoracotomy healing, and total re-expansion of the left lung with disappearing of parenchymal nodules at CT scan.

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

SURGICAL TREATMENT OF IATROGENIC PNEUMOTHORAX AFTER RADIOFREQUENCY ABLATION THERAPY OF METASTATIC LUNG NODULES

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Objective: We describe the case of a man treated with radiofrequency ablation (RFA) for recurrence of lung cancer, who developed a severe pneumothorax for necrosis of treated parenchyma and needed surgical repair by staplers, manual sutures and muscle flap apposition.

Methods: A 72-year-old man already submitted to right upper lobectomy for squamous-cell carcinoma and cystectomy for bladder carcinoma, received RFA for a single, lung cancer metastatic nodule of the left upper lobe. Chest x-rays performed four days later for dyspnoea and fever showed pleural effusion. Subsequently he developed respiratory failure and emphysema with radiologic evidence of left hydro-pneumothorax. A chest tube was positioned. Assisted ventilation was settled; aspiration was applied to the drainage. After extubation air leaks continued and CT-scan revealed a parenchymal consolidation with a central cavity in the left upper lobe. The patient presented cachexia, tachyarrhythmia, hepatic failure, hydroelectrolytic decompensation and was submitted to thoracotomy showing necrosis in the radiofrequency-treated area. Wedge resection was performed with staplers and manual sutures reinforcement and intercostal muscle flap apposition with fibrin glue.

Results: Histology revealed necrosis with absence of malignant cells. CT-scan revealed the total re-expansion of the left lung. Complications were atrial flutter and bronchoaspirations for atelectasis. The patient, discharged after 10 days, although in poor general conditions, left oxygen supply. He deceased six months later for bladder cancer progression.

Conclusions: Radiofrequency ablation remains a valid therapeutic option for patients with lung metastasis who are not eligible for surgery. However, this procedure is not free from life-threatening complications.

* Presenting Author

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AN INTERESTING CASE OF HEMOTHORAX

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Objective: We report the case of a 50 yrs old female patient admitted in the E&A Unit for dyspnoea and sudden right chest pain for a massive, apparently spontaneous, hemothorax.

Methods: The patient referred a second-degree AV 2:1 block treated with a VVI-R pacemaker two years before and a Hodgkin's lymphoma when she was 24, treated with radiotherapy. A chest X-Ray showed a massive, right-sided pleural effusion; a chest drainage was placed and showed an hemothorax. In the suspect of a neoplastic disease a chest CT-scan was performed. The scan showed a pulmonary diffuse peripheral thromboembolism, treated with heparin. The day after a massive hemothorax occurred again and a second drainage was placed. The patient was admitted in ICU for treating the hemorrhagic shock.

Results: To assess the cause of hemothorax the patient underwent an exploratory VATS. During the procedure we discovered the tip of the pacemaker wire in the right mediastinic pleura, coming from the perforation of the right auricle and the pericardium. The VATS was then converted in a sub-mammarian thoracotomy, the electrode was cut and the atrial wall repaired with a purse string. After ten days of ICU the patient was sent in ward and discharged in 18th day because of a bacterial pneumonia.

Conclusions: In case of spontaneous hemothorax in patients with a pace-maker it is mandatory checking the wire position. For this reason we suggest a trans-aesophageal cardiac US rather than a CT scan that, in our case, was not diagnostic twice.

BILATERAL BRONCHOSCOPIC LUNG VOLUME REDUCTION AS A BRIDGE TO LUNG TRANSPLANTATION

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Objective: We report the case of a patient who underwent sequential bilateral bronchoscopic lung volume reduction (BLVR) for emphysema as a bridge to lung transplantation.

Methods: A 48-year-old man was referred to our Institution, because of emphysema with chronic respiratory failure requiring long-term home oxygen therapy and non-invasive ventilation (NIV) at night. Lung scintigraphy showed hypoperfusion in the upper lobes, more prevalent on the left side. Spirometric parameters were as follows: FEV1 0.50 lt, 14%; DLCO 3.8 ml/mmHg/min, 13%; RV 4.29 lt, 206%. Hemogasanalysis showed: pCO2 73 mmHg, pO2 72 mmHg, SatO2 94%, pH 7.31. He underwent left BLVR, positioning 3 endobronchial valves (Zephyr 4.0 and 5.5 mm) in the apico-posterior (B1-B2), anterior (B3) and lingular (B4-B5) segmental bronchi and was discharged with an improvement of his clinical condition. Seventeen months later, he was re-admitted with tracheostomy and a worsening of his respiratory situation. After a prolonged intensive period of rehabilitation, he underwent right BLVR, positioning 3 endobronchial valves (Zephyr 4.0 mm) in the apical (B1), posterior (B2) and anterior (B3) segmental bronchi, at 20 months from the first procedure.

Results: After bilateral BLVR, hemogasanalysis at about two years from the first observation shows: pCO2 75 mmHg, pO2 66 mmHg, SatO2 92%, pH 7.38. The patient has been referred to a national lung transplantation centre for evaluation to be put on the waiting list for bilateral lung transplantation.

Conclusions: Considering the scarcity of lung donors, in selected cases, bilateral BLVR should be considered as a potential bridge to lung transplantation.

* Presenting Author

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A RARE CASE OF NECROTIC THYMOMA

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Objective: We report the case of a patient who underwent resection of a huge anterior mediastinal mass, revealing to be a necrotic thymoma. The patients had been previously submitted to surgical biopsies of the mass yielding non diagnostic results due to extensive necrosis.

Methods: A 58-year-old woman was referred to our Institution, because of chest computerized tomography (CT) evidence of a huge antero-superior mediastinal mass with adjacent right lung consolidation. Multiple biopsies of the mass through right mini-thoracotomy resulted “not suitable for pathologic evaluation because of massive necrosis”. A sternotomy was then performed to resect the mediastinal mass originating from the thymus en-bloc with the apparently infiltrated lung.

Results: Histopathology of the “capsulate mass adherent to lung parenchyma” reported “possible cyst/thymoma in massive necrosis, not further definable”. Revision by a specialized pathologist (Rosai) confirmed total mass necrosis and no lung infiltration, thus orientating diagnosis towards a necrotic thymoma and excluding a lymphoblastic lymphoma, with similar histopathological features but more frequent in children or characterized by neoplastic infiltration of surrounding lung. After oncology consult, no adjuvant therapy was administered. Follow-up was performed at 6-months intervals with total body CT scan and fluorodeoxyglucose positron emission tomography (¹⁸F-FDG-PET)/CT, which show neither local recurrence, nor distant metastases two years after surgery.

Conclusions: In case of anterior mediastinal mass with suspected involvement of contiguous lung and difficult histopathological diagnosis due to massive necrosis, the hypothesis of a necrotic thymoma should be considered. After radical removal prognosis is generally favourable and no adjuvant treatment is required.

PREOPERATIVE EMBOLIZATION OF GIANT THYMOMA WITH EXTRA-MEDIASTINIC GROWTH

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Objective: We describe the case of a huge mass occupying the whole lower right hemithorax and fed by a highly vascularized mediastinic peduncle. Preoperative embolization followed by surgical removal was performed. Histology revealed a Thymoma, type AB.

Methods: A 36 year-old male referring persistent chest pain revealed at chest X-rays an almost complete opacity of the right hemithorax. CT scan showed a voluminous mass of 15x15x16cm totally developed in the lower right hemithorax with a wide mediastinic peduncle. It was highly vascularized and caused compression of superior vena cava and right atrium, without infiltrative notes. Tumor markers and bronchoscopy were negative. Angiography revealed vascularization by an arterial net from a hypertrophic, right internal mammary artery. Superselective embolization of most hypertrophic vessels by coils and permanent embolic agents preceded the mass excision, which was performed via a right antero-lateral thoracotomy at the 5th intercostal space.

Results: Histology showed a Type AB Thymoma. No complications occurred; discharge occurred on the 7th post-operative day. At the 10-month follow up, the patient is disease free.

Conclusions: Mediastinic masses represent approximately the 1% rate of all tumors. Thymic tumors are the most common (20-30%), followed by neurogenic tumors (15-20%), germinal cells tumors (10-15%) and lymphomas (10-12%). A favourable prognosis is achieved for Type AB Thymoma, merely if radical excision is performed. Preoperative embolization allowed the complete excision of this voluminous tumor, with unusual growth and localization, without bleeding complications.

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SOMETIMES A NOT SURGICAL CASE AT FIRST SIGHT, CAN BECOME POSSIBLE

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Objective: We present a very rare case of thymoma with intravascular infiltration through the thymic veins of the superior vena cava (SVC) extending to the cardiac cavity and, after an accurate imaging and multidisciplinary discussion, radically resected.

Methods: A 44 year old female presented at our attention with face and upper extremity edema. A chest TC demonstrated completely thrombosis of left brachiocefalic vein (LBV), SVC through the right atrium, and a separate anterior mediastinal mass. After an accurate imaging, PET-TC and a multidisciplinary discussion, the patient was submitted to a median sternotomy; the thymoma infiltrated the pericardium and marginally LBV at the junction of the thymic veins. A radical thymectomy, the sacrifice of LBV and the complete removal of the non infiltrated endovascular neoplastic thrombus was made with the aid of cardiopulmonary bypass and a large longitudinally incision of the SVC trough the atrium (without invasion of the vessel wall).

Results: Pathological examination revealed a type B3 thymoma, the recovery was uneventful and the patient was discharged in 7th post-operative day. Postoperatively the patient received chemotherapy and radiotherapy and she was well till now.

Conclusions: This is a very rare case of malignant thymoma presenting with SVC syndrome without direct infiltration of the main vessel but grew through the thymic veins along the SVC and right atrium in venous stream and submitted to a successful radical surgery.

ESOPHAGEAL BYPASS IN PALLIATIVE TREATMENT OF A MALIGNANT BRONCHO-ESOPHAGEAL FISTULA

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Objective: Esophageal bypass is an uncommon palliative treatment for advanced esophageal carcinoma. We describe its application for an esophago-respiratory fistula by lung cancer.

Methods: A 55-year old, smoker patient, suffering from scleroderma, coronary disease and achalasia presented with cough, bronchorrhea, emophtoe, weight loss, fever, asthenia, chest pain. Chest X-rays showed a consolidation in the right hemithorax. CT scan revealed an irregular pulmonary lesion (2.5 cm in maximum diameter) in the right lower lobe, with a fistula between the right main bronchus, just below the carina, and a significantly enlarged esophagus. Bronchoscopy confirmed the presence of a large esophago-respiratory fistula. Bronchial biopsies revealed a squamous-cell carcinoma. The esophagus and airways double stenting was not practicable as esophagus was significantly enlarged and the right main bronchus wall presented a huge lack; no stent anchorage was possible. After interrupting oral alimentation, the patient was submitted to thoracotomy for esophagus closure above and below the fistula. Cervical esophagostomy for drainage of saliva and a feeding jejunostomy were performed. Recovery from bilateral pulmonary infections and improvement of general conditions were achieved within ten days. Then the esophageal bypass was performed: stomach was mobilized, tubularized and brought through a retrosternal tunnel into the neck where it was anastomized with cervical esophagus.

Results: Ten days after the second operation oral feeding was possible. At the three-month follow up the patient is alive, under chemotherapy and refers sporadic emophtoe.

Conclusions: Esophageal bypass could be useful for palliative aggressive treatment of esophago-respiratory fistulas not susceptible to other therapeutic options.

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A PULMONARY LOCATION OF BRONCHUS-ASSOCIATED LYMPHOID TISSUE NON-HODGKIN LIMPHOME: CASE REPORT

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Objective: The non-Hodgkin lymphoma of bronchial-associated lymphoid tissue is a low grade B-cell non solid neoplasm representing less than 1% of all lymphomas. The clinical course is often indolent with low histological malignancy. The involvement is usually unilateral.

Methods: a 83 years old woman has a X-ray chest for ribs trauma, in which a finding of a pulmonary nodule is detected in the right upper lobe. She has a history of rheumatoid arthritis, osteoporosis with repeated vertebral collapses, hypertension, cerebrovascular disease. The chest computed tomography shows a nodule of 23 x 22 mm in the anterior segment of the right upper lobe, with a pathological hyperfixation on Positron Emission Tomography scan (standard uptake value: 5.1). Other investigations such as spirometry, blood tests and anesthetic assessment are performed before surgery. The patient is submitted to typical bisegmentectomy (anterior and apical) of the right upper lobe with hilar lymphadenectomy by mini-thoracotomy access. During postoperative period, a severe anemia forced us to transfuse. A episode of fever occurs on the third day after surgery.

Results: Histology shows lung lymphoid interstitial infiltrate with formation of lymphoid follicles and moderate sclerosis.

Conclusions: The bronchus-associated lymphoid tissue lymphoma is rare and mostly present with association of pulmonary manifestation of autoimmune diseases like Rheumatoid Arthritis and Systemic Sclerosis. This type of lymphoma is related to a high expression of chemokines and cytokines, supporting the development of lymphoid tissue. Surgery is performed for diagnostic purposes and to lead the treatment through appropriate chemotherapy protocols.

MANAGEMENT OF LUNG CANCER IN SITUS VISCERUM INVERSUS PATIENT

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Objective: The aim of the study is the evaluation of the diagnosis and treatment of a bronchogenic carcinoma in Situs Viscerum Inversus (SVI) condition. We report a case of left bronchogenic carcinoma in patient with SVI that it is a rare pathology characterized by total inversion of thoracic and abdominal organs. Congenital transposition of internal organs not biased the histologic and radiologic diagnosis but the surgical approach needed the automatic inverted deeds respect to the normal side of structures.

Methods: A 65 years-old-man arrived at our observation after the second episode of hemoptysis. Patient showed type 1 SVI diagnosed during childhood and spondyloarthritis associated with Dupuytren's disease to the right hand. A careful study has been done to search for other defects. A must is the study with Thin-section computed tomography (TSCT) of brain, thorax and abdomen and the fiberbronchoscopy study. The anatomo-pathological evaluation of bronchial biopsies allowed the diagnosis of squamous cell carcinoma. Left upper lobectomy with lymph node dissection was done in general anaesthesia and muscle-sparing axillary minithoracotomy on the 4th intercostal space.

Results: The total operation time was 112 minutes and the drains are removed in the third and fifth day after day-surgery. Postoperative histologic evaluation confirmed preoperative diagnosis. The tumor measured 2.3 cm in the larger diameter and the lymph nodes were not affected by disease (T_{1b}N₀M₀: Stage IA). Patient left the hospital on 7th day with rapid and wide recovery function.

Conclusions: Our study offers a double challenge to the consideration of genetic and surgical nature of SVI. This raises attention to the correct diagnostic procedure and on the surgical approach that sees the operator to deal with anatomy totally reversed. The work shows that a proper and thorough study allows to perform routinely also quite rare anatomical conditions.

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A CASE OF MULTIPLE MYELOMA (MM) PRESENTED WITH CHEST WALL INVOLVEMENT AND PLEURAL EFFUSION IN A 42 YEARS OLD MAN: SURGICAL DIAGNOSIS AND IMAGING

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Objective: To report a rare presentation of MM with thoracic involvement.

Methods: A young man with chest pain and worsening dyspnea was admitted. **Radiological imaging:** massive right pleural effusion, multiple rib fractures, vertebral erosions, right thoracic wall mass. **Other examinations:** blood tests (anemia, leukopenia, monoclonal gammopathy), brain-MRI, abdomen-US, FDG-PET/CT. MRI and US: no abnormalities. PET/CT: abnormal 18-FDG uptake in right pleura, ribs, chest muscles, dorsal vertebrae, widespread medullary uptake at rachis vertebrae, sternum and pelvis. **Surgical treatment:** pleural effusion drainage and biopsy of the thoracic mass.

Results: **Histopathological diagnosis:** thoracic localization of MM. **Finally diagnosis** at oncology unit: IgA k MM (IIIA-Durie et Salmon), normal karyotype, negative for 13q14.3 deletion. Thanks to young age and good clinical conditions, the patient was proposed for autologous stem cells transplantation (ASCT). **Medical treatment:** induction chemotherapy, cytoreductive therapy and stem cells mobilization, conditioning to transplantation, tandem ASCT; maintenance therapy. Complete remission was obtained soon after induction therapy.

Conclusions: MM is uncommonly diagnosed in young patients; pleural effusion is a rare presentation of the disease, considered as a late manifestation or as an expression of aggressive behaviour. It's more often associated with IgA MM and it occurs in around 6% of all patients; myelomatous effusion in less than 1%. MM, rare disease for the thoracic surgeon, must be considered in differential diagnosis of chest wall masses, also in young patients. PET/CT scan is a useful tool at diagnosis and during follow up, leading to a more precise staging (Durie et Salmon plus).

PLEUROPNEUMONECTOMY FOR TUBERCULOSIS OF PLEURA AND LUNG

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Objective: A single case of pleuropneumectomy for tuberculosis is described. A 45 year old, male patient with atelectasis of left upper lobe of a lung totally destroyed for recurrent and persistent pneumonia, and inveterate pyopneumothorax, was referred to our Institution.

Methods: The patient was already hospitalized in the department of Infectious Diseases for inveterate empyema, recurrent Pseudomonas Aeruginosa pneumonia and sequelae of pulmonary tuberculosis treated by medical therapy, esitating in fibrothorax. The patient underwent left pleuropneumectomy as the ultimate curative treatment modality for destroyed lung despite multiple risks involved in the procedure. The Sarot pleuropneumectomy technique, described in 1949, was adopted. Latissimus dorsi was used to fill the cavity and protect the bronchial stump.

Results: Hystological examination described pulmonary tuberculosis in all different evolving stages of the disease: epithelioid giant cells-granulomas with Langhans cells and caseous necrosis, acute inflammation with endoalveolar oedema and endobronchial suppurative exudate. After the procedure anemia and limited skin ischemia were observed. The patient was discharged at the 44th postoperative day, healthy with no evidence of thoracic infections.

Conclusions: The extrapleural pleuropneumectomy is effective in removing the thick infected fibrotic pleura and for the intrapericardial approach to the vascular structures, minimizing contamination of the operation field. Although a long post-operative stay, the patient is no longer under medical therapy and he has not suffered early and long-term infections anymore.

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ANTIPLATELET THERAPY IN PATIENTS WITH CORONARY STENT UNDERGOING THORACIC SURGERY: A CASE REPORT

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Introduction: Perioperative management of antiplatelet therapy in patients with coronary stents is challenging and often represent a matter of debate between cardiologists and surgeons. In this scenario, Italian Societies of Cardiology GISE/ANMCO and Italian Society of Thoracic Surgery SICT/SIET published a consensus document evaluating perioperative hemorrhagic and ischemic risks. We present a significant case-report focusing on difficult management of a patient with coronary stent candidate to surgical resection for lung cancer.

Case-report: A 67-year old male patient was admitted to hospital for anterior myocardial infarctation. He underwent coronarography with evidence of thrombotic occlusion of middle tract of IVA and critical stenosis of D1. After angioplasty, kissing stents and overlapping stents were positioned. A double-antiplatelet therapy with aspirin and clopidogrel was started after procedure.

During hospitalization, a right-lower lobe lung neoplasm and papillary thyroid cancer were found. After cardiologic and surgical conjunct assessment, the patient underwent sincronous VATS right-lower lobectomy and total thyroidectomy without suspension of double antithrombotic therapy. However, massive right hemothorax was evidenced 48 hours after surgery. Aspirin and clopidogrel were suspended and thoracoscopic revision and declotting of the pleural cavity were done. Antiplatelet therapy was gradually reintroduced without thrombotic events.

Conclusions: This case-report finds out critical management of coronaropathic patients candidate to a major surgical procedure. Drug-eluting stents should be carefully used possibly after patient's general inquadration. On the other side, particular attention to accurate hemostasis during surgery after cardiac revascularization is fundamental.

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