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## 267. Chest wall trauma and airway management

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**P2397****Surgery for late blunt traumatic diaphragmatic lesion**

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**Objective:** To evaluate the efficacy of surgery in the blunt traumatic diaphragmatic lesions.

**Material and methods:** From 1990 to 2010 a total of 24 patients (pts) (3 female and 21 male, mean age 47.1y) were operated on. Time from trauma to surgery varied between 4 months to 8 years. The left hemidiaphragm was injured in 17 cases, while the right one in 7. The thoracic trauma was associated with other injuries in 10 pts. In 3pts incarceration of herniated visceral segment was observed. In 2 pts herniated stomach has been drained for "pneumothorax" and emergency surgery was carried out.

**Results:** Laparotomy was applied in 3 pts with stomach volvulus. In 21 cases thoracotomy was the surgical approach. Stomach, colon, small bowel, omentum and spleen were most frequently found to herniated through the left diaphragmatic defects, whereas colon and liver were mostly seen in the right enterothorax. In 1 patient transthoracic splenectomy was carried out because of a severe induration. Dense adhesions were found in all cases. Mayo technique was performed in 19 pts for diaphragmatic repair. Marlex mesh was used in 4 pts and in 1 case an original technique for repair of enormous diaphragmatic defect with pericardial flap was carried out. Uneventful postoperative period was observed in all but one

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(pulmonary embolism, successfully treated). The mean in-hospital stay was 12.1 days. No relapse of the diaphragmatic lesion 1 to 16 years after the operation.

**Conclusions:** Patients with diaphragmatic rupture presenting in the late phase have adhesion between the herniated abdominal and intrathoracic organs, and thus the rupture is best approached and repaired via a thoracotomy, followed by very good early and long-term postoperative results.

#### P2398

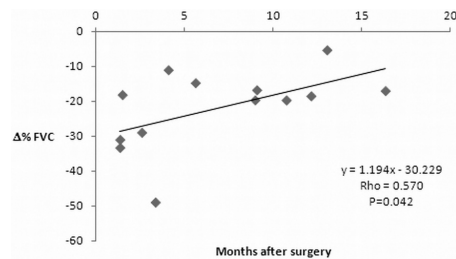
##### Pulmonary function after phrenic nerve transfer for brachial plexus avulsion injury

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**Objective:** Spirometry was assessed in patients before and after full-length phrenic nerve transfer surgery.

**Methods:** 16 patients (13 men; 17 to 58 years old) with brachial plexus injury underwent full-length phrenic nerve transfer. By video-assisted thoracic surgery the phrenic nerve was severed at a location just before its entry into the diaphragm, harvested from the thoracic cavity, and transferred to the musculocutaneous nerve. The median time between injury and surgery was 5.5 months (range 2.8 to 10.2). Patients underwent follow-up evaluation 1.4 to 16.4 months with manual muscle testing and spirometry; 3 patients were eventually lost to follow up.

**Results:** Baseline spirometric parameters were normal. Although no patient experienced pulmonary problems or respiratory complaints following the surgery, we observed a significant reduction of forced vital capacity (FVC), forced expiratory volume in 1 second (FEV<sub>1</sub>), and FEV<sub>1</sub>/FVC, respectively, to 69% of predicted values ( $\pm 13$ ;  $p < 0.001$ ), 68% of predicted values ( $\pm 17$ ;  $p < 0.001$ ) and 81% ( $\pm 11$ ;  $p = 0.03$ ). The percent variation of FVC was -22% ( $\pm 11$ ; range -49% to -6%). We observed a negative dependence between FVC and length of time after surgery (Figure). The majority of patients exhibit motor improvement on the arm.



**Conclusion:** Although preliminary, our results point to a significant impact of the surgery to spirometric parameters. This impact improves with the time after surgery.

#### P2399

##### The review of therapy of 453 thoracic trauma patients during 17-year period in a military hospital

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The initial management in the golden hour after injury relates directly to chances of survival in thoracic trauma.

In this study we reviewed the consequences of various types of thoracic injuries and treatment modalities. We hospitalised a total of 453 patients with major thoracic trauma, consisting of 247 cases with blunt trauma and 206 cases with penetrating trauma (caused by 125 gunshot wounds and 81 stab wounds) between January 1993 and December 2009. Four hundred three males and 50 females (mean age: 34.18) were enrolled into our study. In the blunt trauma group, 16 hemopneumothoraces, 37 hemothoraces, 37 pneumothoraces, 35 lung injuries, 6 flail chest, 2 contusion of the heart and 154 ribs, 15 sternal and 8 clavicular fractures were observed. One patient was quadriparalysed and polytrauma was seen in 33 patients. Among patients with gunshot wounds, there were 50 hemopneumothoraces, 42 hemothoraces, 15 pneumothoraces, and 35 lung injuries. Among patients with stab wounds, there were 22 hemopneumothoraces, 24 hemothoraces and 23 pneumothoraces. In the patients with thoracic trauma, tube thoracostomy was performed in 195, thoracotomy in 23, VATS in 8, laparotomy in 28, video-assisted thoracic surgery in 1 and other operations in 20. Mean hospitalisation was 7.8 days. There were five mortality in patients with blunt trauma and two mortality in patients with penetrating trauma.

According to our suggestion; closed tube thoracostomy is very valuable in the management of patients with pneumothorax and/or hemothorax except for some thoracic trauma cases with uncontrolled intrathoracic bleeding or visceral organ injury.

#### P2400

##### Omentopexy in rabbit for the repair of diaphragmatic defect and adhesion assessment of viscera to propylene mesh

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**Background:** The use of synthetic mesh for the repair of major congenital diaphragmatic hernia may cause visceral adhesion to prosthesis and ongoing complications. In present study the use of propylene mesh for the repair of diaphragmatic hernia and its role in eliminating of visceral adhesion to repair site is evaluated.

**Materials & methods:** This experimental study was carried out on 20 adult New Zealand rabbits (age: 6 months) assigned randomly into two equal groups. In one group, after laparotomy a defect (size: 1×1 cm) was created on the diaphragm. The suture was then repaired by sterile propylene mesh and nylon suture (thickness: 3/0 - 4/0). In another group, omentum was fixed on the mesh using a nylon suture (thickness: 3/0). After 30 days the two groups were operated and the visceral adhesion to repair site was compared using Mazuji scale.

**Results:** Nine (90%) out of 10 rabbits with propylene mesh repair had visceral adhesion to the repair site. On classifying the grade of adhesion among the cases, one, three, four and two rabbits were assigned the "0", "I", "II", and "III" grades, respectively. On the other hand, 4 (40%) out of 10 rabbits, in which the diaphragm was repaired by propylene mesh and omentopexy method, visceral adhesion (grade "I") was seen to the site of repair. The rest of animals displayed no such adhesion ( $P=0.015$ ).

**Conclusions:** Omentoplasty after, repair of large diaphragmatic defect with propylene mesh reduces the visceral adhesion to propylene mesh, so in intraabdominal operations which propylene mesh is used, omentoplasty also is recommended

#### P2401

##### The role of PEF and Vas score by pain assessment after thoracoscopic interventions

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The pain after surgical interventions in the thoracopulmonary region is characterized by a longer period of occurrence lasting usually 72 to 96 hours, considerable intensity and potential influence on the incidence of complications. Various clinical parameters were used to determine the pain most precisely. Measurements of the which one parameters the pain is most useful?

**Aim:** We looked for the most effective and simple method of pain assessment in postoperative thorax surgery.

**Material and method:** 80 patients were operated for lung cancer. The clinical parameters of pain were assessed, namely: the visual analog pain scale (VAS), pulse oximetry (SpO<sub>2</sub>), systolic and diastolic arterial pressure (RRs, RRd), spirometry - vital capacity, forced vital capacity, forced expiratory volume in one second, peak expiratory flow (VC, FVC, FEV<sub>1</sub>, PEF), measurement of pain intensity during a spirometry test. These parameters were monitored during 96 hours after surgery.

Factor Analysis was applied in order to present the pain status of patients by using one digit (the rotation method, VARIMAX). The common factors (F) were created for various management methods.

**Results:** The factor F was created by using the data from the VAS and spirometry. The correlation between F and PEF achieve a value -0,76 and between F and VAS reach 0,97. The greater pain worsens outcome PEF and increases the VAS result.

**Conclusions:** In thoracoscopic practice, the interview with subjective assessment of pain (VAS) and the one parameter (PEEF) of spirometry is great importance to measure the intensity of postoperative pain.

#### P2402

##### Study of traumatic extrathoracic lesions associated with lung contusions

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**Objectives:** This study brings an original contribution in setting some extrathoracic lesion associations according to lung contusions' extent, aspects that have not been fully discussed in the medical literature.

**Methods:** We analyze 253 lung contusion cases, from the point of view of 89 variable categories, within the context of 1353 thoracic traumas. The data were analyzed by the statistical processing system SPSS 15.0 for Windows.

**Results:** This study proves that the cranial traumas are associated with extensive lung contusions (Chi-Square Tests 0,464), while the upper limb traumas are associated with limited lung contusions (Chi-Square Tests 0,711). Abdominal traumas are also associated with limited lung contusions (Chi-Square Tests 0,862). This aspects suggest a certain pattern in lung contusion induction, and they represent important etiopathogenical elements.

The clinical use of the results has an improved prognostic capacity according to

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the described associations. The existence of an extrathoracic lesion warns on a possible lung contusion of a certain extension and it justifies subsequent various radiological investigations in order to make it evident in complicated cases.

**Conclusions:** According to this study data, cranial traumas are frequently associated with extensive lung contusions in polytrauma cases. If the lung contusion is not shown by the first thoracic radiography, subsequent Rx studies or CT scans are needed, especially in the complicated cases.

**P2403****Effectiveness of treatment of transdermal narcotics in rib fractures**

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Rib fracture is the most common pathology in thoracic traumas. Severe pain is the most common symptom. The use and dosage of narcotic analgesics in the early period is controversial. Our aim is to investigate the efficacy of transdermal release (TR) narcotics in these patients

There were consecutive 25 patients who had diagnosis of rib fractures. Patients in group 1 (n=10) had intercostal nerve block (by bupivacain 0.5%), intramuscular narcotic (meperidine) according to the weight of the patient and paracetamol per orally. Patients in group 2 (n=15) intercostal nerve block (by bupivacain 0.5%), transdermal release (TR) narcotics (fentanyl) and paracetamol orally. We used Visual Analog Scale (VAS) for scoring the pain. The efficacy of treatment is evaluated by calculation and scoring of VAS both at exertion and relaxation. The sedation that might be by the narcotic agents was followed by Ramsey Sedation Scale (RSS) and arterial blood gases. The study was ended in the fifth day.

There were no difference for age, gender, type of trauma, additional pathology number of fractured ribs and their localization between the two groups. Both groups had improvement for VAS before and after treatment. The VAS improvement in group 2 was better in both in relaxation and activity for the 5 days

It is difficult to establish the effective blood levels of parenteral narcotics so that there is continuous need for repetitive administration of the drugs. In TD applied narcotics the blood levels of the drugs are stable. The use of narcotics transdermally instead of parenteral administration was more effective and comfortable by the way of administration according to our study results.

**P2404****Chest wall stabilization with titanium clips and rib bridge: Four case reports**

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**Introduction:** Chest wall stabilization has a paramount importance. Herein, we aimed to present our experience with the using titanium clips and rib bridges in the chest wall stabilization.

**Case 1:** A 50-year-old man was referred to our clinic with multiple rib fractures on the left side, bilateral lung contusion, left sided pneumothorax and left clavicle fracture. A chest tube has been inserted to the left side and he has been intubated because of respiratory insufficiency. He was extubated successfully. Although the lung contusion resolved, his blood saturation decreased frequently due to flail chest and secretion retention. We performed 5th, 6th and 7th ribs stabilization with titanium rib clip with 9 segments.

**Case 2:** A 73-year-old man admitted with chest pain and dyspnea. He had a motor vehicle accident two months ago and he had treatment for multiple rib fractures (4, 5, 6 and 7 ribs) and hemothorax on the right side. He underwent 4th and 5th ribs stabilization with titanium rib clip with 4 and 5 segments.

**Case 3:** A 21-year old male admitted with the unstable anterior chest wall. He was operated two times for deformity. His clinical presentation was compatible with floating sternum as a long-term complication. He underwent sternum stabilization with two implant bridges. He was discharged on the 5th postoperative day.

**Case 4:** A 58-year old male admitted with right upper lobe tumor which was invasive to the anterior chest wall. He underwent right upper lobectomy with chest wall resection including 2, 3 and 4 ribs. We placed an implant bridge on the 3th rib.

**Conclusion:** Rigid materials such as titanium clips and titanium rib bridge are good alternative choice for the stabilization of chest wall.

**P2405**

WITHDRAWN

**P2406****Primary abscess of the chest wall – Case report**

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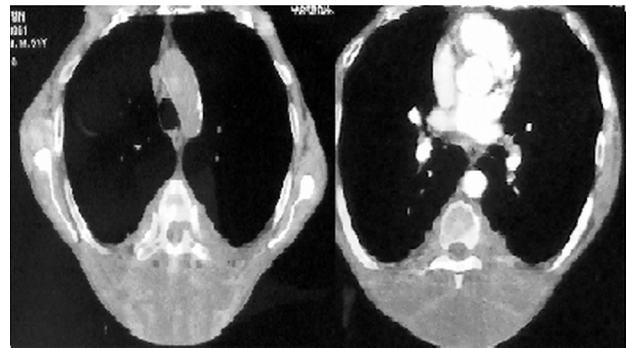
**Introduction:** The infections of the chest wall are uncommon. Usually, there are secondary to previous procedures, such as median sternotomy and thoracotomy. Primary chest wall infections are very rare. The incidence is difficult to establish because of the sporadic nature of the problem and lack of reporting. The treatment is based on the antibiotics and same infections maladies require radical resection.

**Clinical features:** The work presents a case of a very large primary abscess of the chest wall, in the region interscapulaire.



No sign of the penetrating trauma was found.

**Lab and imagistic studies:** On blood examination, the total leucocyte count was 16800 cells UL<sup>-1</sup>. The imagistic evaluation indicated the lack of the osteomyelitis lesion and localization in the soft tissue of the chest wall. All tests (sputum, liquid abscess) no indicated presence of the mycobacterium tuberculosis.



**Surgery:** The surgical approach was very simply with incision and drainage.

**Postoperative outcomes:** The evolution was very good with discharge of the patient 7 days after.

**Discussion:** The principal differential diagnosis was the cold abscess, but all analyses were negative and the evolution was favorable without specific treatment.

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**P2407****Minimally invasive repair for pectus excavatum (Nuss procedure) – Aesthetic and/or functional?**

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**Background:** Pectus excavatum is the most frequent anterior thoracic wall congenital malformation. Among teenagers, when the esthetics and clinical symptoms become more important, pectus excavatum becomes a real psychological problem. During the time many treatment techniques have been proposed, conservative or surgical. The minimally invasive repair technique of pectus excavatum, Nuss technique, developed after 1986, is now the most used technique worldwide.

**Objectives:** Our study aimed to analyze the degree of patients' satisfaction regarding the esthetic results after the minimally invasive repair of pectus excavatum, as well as the improvement of respiratory functional parameters.

**Method:** We will present some historical data related to surgical repair of pectus excavatum, advantages and disadvantages of open surgery; also we will present clinical and paraclinical evaluations, including anthropometric indexes, as well as indications and contraindications of Nuss technique and possible intraoperative and postoperative complications.

Our study was carried out on a group of patients with pectus excavatum, who have been submitted to Nuss technique, during a timeframe of 4 years (2007 – 2011), aged from 8 to 38 years. Prior to surgery the patients were submitted to a standard protocol of investigations.

**Results:** We present the benefits of Nuss technique and the improvements of the functional and aesthetical indexes.

**Conclusions:** Nuss technique is an efficient method, with very good aesthetical and functional results, allowing quick social and professional patients' reintegration, as well as an improved self-image and self confidence.

**P2408****Tracheal stenosis in children, old problem, new techniques**

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Tracheal stenosis is an unusual and sometimes lethal condition. Imaging: HR-CT Thorax and volume rendering technique. With the flat detector CT it is possible to visualize the relationship between trachea and the great vessels with high spatial resolution during cardiac catheterization. During surgery, children are on the heart-lung-machine (Stöckert S-5, priming volume 200ml, D 100 kids oxygenator). The tracheal surface is usually exposed via median sternotomy. In case of sliding plasties cardiopulmonary bypass (CPB) is used. Surgery is performed on the empty beating heart at 30-32°C. Two arterial cannulas are used (innominate artery and ascending aorta) in order to disconnect the innominate artery temporary from the ascending aorta. In the present of LSS a slide plasty with bronchoscopic control is performed. Tracheal stenosis from external compression is released without CPB by aortopexy or resection of compressing ligaments (If additional Tracheomalacia is present an external suspension is used. In the case of ventilatory problems veno-venous-ECMO using a bilumen catheter for CO<sub>2</sub>-elimination can be used. The postoperative care is characterized by a longer time of mechanical ventilation (up to weeks) and a difficult weaning from the respirator. A modified heart-lung-machine (Stöckert S-5, Highlight 800 Oxigenator MEDOS) may be used at the ICU, if necessary. We report 3 children suffering from different types of tracheal stenosis.

**Conclusion:** A highly specialized team and individual management are essential for good results. No surgical technique corrects all of the anatomic variants of this disease. Long-segment tracheal stenosis is best treated using slide tracheoplasty and concomitant repair of cardiovascular lesions.

**P2409****Surgical treatment of primary malignancies of trachea**

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The main treatment of patients with primary malignant tumors of the trachea is endoscopic recanalization of the trachea lumen with stenting and radiotherapy. Radical surgery of the trachea primary malignancies is single-step circular resection with end-to-end anastomosis.

The aim was to demonstrate that a single-step circular resection is possible when tumor extension is 45% of the trachea length, with involvement of the epiglottis subfold portion.

18 single-step circular resections were performed in patients with primary tumor of the trachea. Adenocystic cancer of the trachea was diagnosed in 13 subjects, and typical carcinoid – in 5. Among them over 45% of trachea was resected in 10 patients. Localisation and extension of the tumor was established by fibrobron-

choscopy, and MDCT. Tumor extension from 1.0 to 3.0cm was diagnosed in 8 patients, and from 3.0 to 6.0cm – in 10 patients. Single-step circular resections and tracheotracheal anastomosis were performed in 7 patients, laryngotracheal anastomosis – in 6, and a laryngotracheal resections were made in 5 patients. Immediate and prospective results of the treatment are considered to be sufficient in all patients. In Pearson-Grillo laryngotracheal resection the distance between the anastomosis and vocal cords varied from 1 cm to 3 cm.

Single-step circular resection is the only radical surgical treatment of primary trachea malignancies. Subfold portion involvement is not a contraindication to a single-step circular resection of the trachea and subfold portion of the epiglottis. Postoperatively, a single-step circular resection for adenocystic cancer must be followed by radiotherapy.

**P2410****Congenital tracheal diverticulum seen in adult age: Two cases**

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Tracheal diverticulum is a very rare entity. Congenital ones appear 4-5 cm below the vocal cords and in right lateral wall of trachea. Usually diagnosed incidentally. We present here two tracheal diverticulum diagnosed incidentally.

**Case 1:** A 65-year old male patient was admitted to our clinic with back ache and cough. The CT scan of the chest showed posterior mediastinal mass and tracheal diverticulum which was in the middle of trachea at posterolateral wall. Fiberoptic bronchoscopy demonstrated the communication between the trachea and the diverticulum. The patient was operated because of posterior mediastinal mass, not considered for tracheal diverticulum.

**Case 2:** A 51-year-old male patient was admitted to clinic of nephrology with chronic renal failure. The patient was referred to our clinic with dyspnea. The CT scan of the chest showed pleural effusion and a tubular air-filled structure, which was adjacent to the posterolateral wall of the trachea at the level of thoracic inlet. Fiberoptic bronchoscopy demonstrated a communication between trachea and diverticulum. The patient was treated conservatively management with antibiotics and bronchodilators.



Treatment options of tracheal diverticulum include surgical resection and conservative management. Treatment options change depending on the patient's symptoms, age and physical state. Surgery is recommended for symptomatic patients, conservative medical treatment for elderly and debilitated patients.

**P2411****Intraoperative management of tracheobronchial ruptures after double-lumen tube intubation**

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**Background:** Tracheobronchial rupture is an uncommon but a potentially serious complication of endotracheal intubation. In this study, diagnosis and treatment strategies of a specific group of ruptures caused by double-lumen tube intubation is presented.

**Methods:** The medical records of 18 patients diagnosed and treated for tracheobronchial rupture after double-lumen tube intubation between January 1999 and October 2010 is analyzed retrospectively.

**Results:** In all cases, the rupture occurred at the membranous part. The average length of the laceration was 2.44±1.78 cm. The most common localization of the rupture was at the lower third of the trachea (n=7, 39%) or at the left mainstem bronchus (n=7, 39%). One patient was diagnosed before the incision by fiberoptic bronchoscopy and 17 patients by direct vision of the rupture intraoperatively. All

patients are treated successfully with surgery. There was not any morbidity or mortality recorded related to the tracheobronchial rupture.

**Conclusions:** The thoracic surgeons must be alerted for any tracheobronchial rupture in patients that are intubated by double-lumen tube which is commonly used for thoracic operations. Immediate repair must be performed for any laceration which is diagnosed intraoperatively.

#### P2412

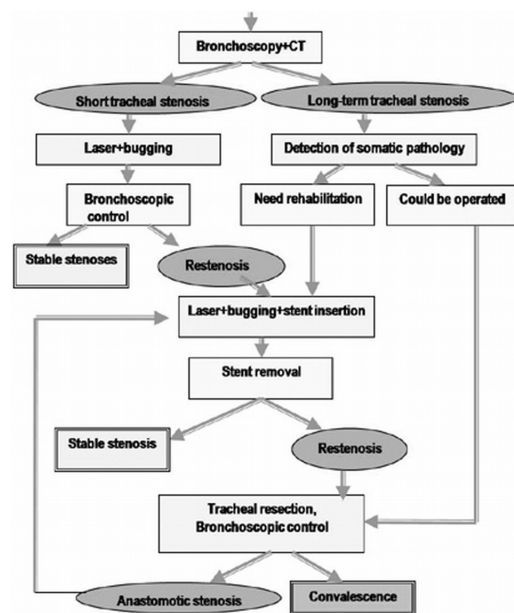
##### Perfection of diagnostic and tactic of stage-by-stage endosurgical treatment of cicatricial stenoses of a trachea

Shukhrat Hudaybergenov<sup>1</sup>, Georgiy Pahomov<sup>2</sup>, Otabek Eshonkhodjaev<sup>1</sup>, Irisov Ortikali<sup>1</sup>, Rustem Hayaliev<sup>2</sup>. <sup>1</sup>Department of Lungs and Mediastinum Surgery, Republican Specialized Centre of Surgery Named after Academician V.Vakhidov, Tashkent, Chihilanzar Region, Uzbekistan; <sup>2</sup>Department of Faculty and Hospital Surgery, Tashkent Medical Academy, Tashkent, Uzbekistan

**Background:** Research devoted to studying of complex treatment of cicatricial stenoses of trachea (CST) with use of various methods of stage-by-stage surgery including endoscopic laser photodestruction, bugging, stent insertion and tracheal resection are presented.

**Methods:** The analysis of results of diagnostics and endoscopic and surgical treatment of 101 patients with CST was made. 1 group have made of 44 (43,6%) patients at whom extent of a stenosis has made to 2 sm and 2 group have made of 57 (56,4%) patients with a long of cicatricial zone of a trachea more than 2 sm.

**Results:** After endoscopy in a case of restenosis were carried out by a following stage: after resection at 36 patients. At 51 (50,5%) the patient endosurgical methods were independent and an effective treatment and have allowed them to avoid reconstructive surgery. At 29 (28,7%) patients endoscopic methods have served as a preparatory stage to a circular resection of a trachea. So in 1 group endoscopic method of treatment as stages of surgical corrections of CST was independent and effective at 28 (71,8%) from 39 patients, while in 2 group at 18 (36,0%) patients that is authentic twice less than in 1 group.



**Conclusion:** The diagnostic-and-treatment algorithm and tactics of combined stage-by-stage treatments with application of hi-tech methods of diagnostics and treatment depending on extent of CST is developed.

#### P2413

##### Evaluation of plethysmography findings as a diagnostic method for patients with post-intubation tracheal stenosis (PITS)

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**Introduction:** PITS is a serious disease can caused many diagnostic problems. It caused by cuff pressure during tracheal intubation. Generally, invasive diagnostic methods, based on fiber-optic or rigid bronchoscopy, are suggested for initial treatments.

**Aims and objectives:** This study aimed to evaluate the plethysmography findings,

as a diagnostic method for PITS; and assess the relationship between plethysmography and bronchoscopy findings in patients with PITS.

**Methods:** The sample included 30 patients, who were admitted to an ICU or in a surgical ward during the course of a year and had been diagnosed with PITS. All patients after taken a history underwent plethysmography and then rigid bronchoscopy; and the relation between plethysmography and bronchoscopy findings was able to be examined.

**Results:** Regarding the relationship of the variables under evaluation by bronchoscopy with plethysmography findings, stricture intensity had the highest correlation with SRaw (resistance of upper airways) with a p-value=0.001. The relationship of the length of stricture with FEV1, MEF 50 and MEF 75 was significant (P-value = 0.039, 0.042 and 0.036 respectively) in the univariate and with RV% and TLC% in the multivariate analysis.

**Conclusions:** Significant relationships were found between plethysmography and rigid bronchoscopy findings in patients with PITS; some statistical formulas were developed which allow medical practitioners additional opportunities to estimate the stricture intensity without bronchoscopy. Other significant relationships were also found - regarding the length of stricture - which affirmed the effectiveness of plethysmography for evaluation of patients with PITS.

#### P2414

##### Difficult intubation of the esophagus or trachea stent – When cervical muscle contractures combined with the narrowing. Descriptions of cases

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**Purpose:** The muscle contraction is the main cause of difficulty of tracheal intubation. Self-expanding tube stents are typically placed using a rigid bronchoscope. How to do it by simultaneous occurrence of strictures and the stiff neck.

**Material:** We described 2 cases of patients with received prolonged mechanical ventilation in an intensive care unit. In both patients developed: stiff neck and tracheoesophageal fistula (TEF).

The insertion of self-expanding stents has been found successful in both patients.

**Method:** After failed attempts to insert the rigid endoscope, there were temporarily used an oral endotracheal tubes. To put them we used a laryngoscope to visualize the throat, fiberscope's and guides with stringed tubes. By Hegar's method (pushing and replacing tubes in increasingly diameter) were obtained extending of tracheal stenosis or narrowing of pharyngeal sphincter. Then through the intubation tube the adjusted stents were inserted into the trachea or esophagus. Correction or control of positioning of stents ended treatments.

**Conclusions:** Stiff neck and narrowing of the trachea or esophagus, are a significant obstacle in the establishment of the stents. They should be taken into account in planning treatment.

Use of fiberscope, guides and intubation tubes of increasing diameters is relative simple and cheap way to solve the problem.

#### P2415

##### Transcervical versus transsternal approach of bronchial stump following pneumonectomy – Two methods in an open competition

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**Introduction and objectives:** Bronchial stump dehiscence after pneumonectomy was classically treated through transsternal transpericardial approach, method developed in the 60's. In 1996, Azorin, performed first bronchial transcervical approach.

**Methods:** Between March 2001 and February 2010 in our Clinic, we performed 15 cases of transsternal transpericardial approach (6 cases of left primitive bronchial fistula) and 2 cases of transcervical approach of the left bronchial stump fistula.

**Results:** In transsternal transpericardial approach: M:F = 12:3, 11 neoplastic (73,57%)/4 TB empyema, 4 cases early (<30 days) fistula and 10 cases of late fistula. 1 case of pulmonary artery lesion, no mortality, fistula recurrence in one case (one line stapled bronchus). The average hospitalization was 7 days and clinical follow-up was between 2 and 56 months. The transcervical approach: M: F = 1:1, both empyema. Mean operating time was reduced to 40 minutes, related to 150 minutes of the transsternal transpericardial approach, with full mobilization of the patients second day after surgery and a hospitalization of 3 days. Clinical follow-up was between 2 – 16 months.

**Conclusions:** Even that transsternal approach of the bronchial fistula remain a major option, the new transcervical approach offer in selected cases an non-traumatic, non-shocking alternative, with very good result. Good experience in mediastinoscopy is required.

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**P2416****Efficiency of nebulised therapy in preventive maintenance of bronchial stump insufficiency after pneumonectomy**

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**Introduction:** Introduction for preventive maintenance COPD nebulised therapy (NT) promotes the high local activity of inhaled remedies.

**Purpose:** To value efficiency of NT in preventive maintenance of bronchial stump insufficiency (BSI) after pneumonectomy (PE).

**Material and methods:** The interesting results were received at study of the influence accompanying pathology on frequency of development BSI after PE. The frequent diseases were COPD and heart-vascular pathology. So from 390 patients in 207 (53,1%) accompanying COPD was revealed, on background which after PE in 36 (17,4%) patients was noted development of BSI. In turn, amongst 183 (46,9%) patients without accompanying COPD this complication was noted only in 2,7% of the cases. That is to say, presence of COPD raised the risk of the development BSI more then in 6 once.

**Results:** Introduction NT has allowed in the main group to reduce the risk of the intensification COPD to 16,1% after PE on the left and 17,2% after PE on the right, and frequency of the development of BSI on background accompanying COPD decreased to 3,2% and 6,9% accordingly. In the main group accompanying COPD was revealed in 60 patients (61,2%), activation after operation was noted in 10 (16,7%) patients, but development of BSI only in 3 patients, that has formed 5,0%.

**Findings:** Introduction of NT for preventive maintenance COPD promotes not only reliable improvement of the factors of breathing frequency ( $P<0,002$ ) and functional respiratory tests ( $P<0,001$ ), but also reduction of the frequency of the intensification of obstructive syndrome from 52,4% to 16,7% that led to reduction of the risk of development BSI from 16,5% to 5,0%.