83. To stent or not to stent: interventional bronchoscopy

P606

Interventional management versus standard treatment for inoperable malignant central airway obstruction

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Although endoscopic management of malignant central airway obstruction (mCAO) is well established, not enough survival and quality of life (QoL) data exist comparing it with sole chemo-radiotherapy.
We prospectively studied patients referred to our unit for mCAO using the EORTC QoL questionnaire, at one day before, 1 week after and every following month.
40 patients (31 males) aged 66.2±12.3 (mean ± st.dev) with either non-small cell lung cancer (n:35) or metastatic malignancies, were included.
31 patients (intervention group) underwent extensive interventional bronchoscopic management as indicated, whereas 9 declined endoscopic treatment (control group). Patients of the two groups did not statistically differ in age, comorbidities, type of malignancy and level of obstruction. Overall follow up time was 6±6.2 (range 1-26) months. 13 patients are still alive followed for 6.6±7.6 months (range 1-26). QoL and dyspnea significantly improved in all patients of the intervention group up to 1 month after the procedure ($p<0.05$). Improvement was greater in those initially presenting with atelectasis and tracheal obstruction. Dyspnea remained significantly improved in treated patients up to the 6th month. For those surviving over the 9th month (n:11) and those surviving over the 12th month (n:6), QoL and dyspnea, did not significantly deteriorate. In all time points, control patients had worse QoL and dyspnea ($p<0.05$). Mean survival time for intervention and control group were 20.47±23.57 and 6.33±7.03 months respectively.
Interventional bronchoscopy, may achieve prolonged survival, significant and sustained QoL and dyspnea improvement, in patients with airway obstructing malignancies.

P607

Bronchoscopic assessment of airway invasion by esophageal cancer: A retrospective study

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Background: Fiberoptic bronchoscopy (FOB) is frequently used to evaluate possible invasion of the tracheobronchial tree by esophageal cancer.
Objective: To evaluate the diagnostic utility of FOB for the assessment of airway involvement by esophageal carcinoma and its resectability.
Material and Methods: Retrospective study of bronchoscopies in patients with potentially operable esophageal carcinoma, correlating its findings with other staging modalities, in the last 6 years.
Results: We included 40 patients, 87.5% male, mean age 63±13.2 years. Respiratory symptoms appeared in 15% of cases, all of them with endoscopic abnormalities.
In 16 (40%) patients, FOB revealed: extrinsic compression in 12 (30%) and infiltration of the bronchial mucosa in 4 (10%) cases. These features were more frequent at the left main bronchus (n=5) and middle third of the trachea (n=4).
Comparing CT with FOB, we found that observed or suspected invasion of the trachea on CT (21 patients), was only confirmed by FOB in 4 cases (19%). In 3 patients with endoscopic abnormalities, CT revealed no invasion of the bronchial tree.
In cases of suspected airway involvement (n=8) by endoscopic ultrasound (EUS), 3 had wall protusion without evidence of mucosa's infiltration.
The overall accuracy of FOB with multiple brush cytology and bronchial biopsy in confirming or excluding airway invasion was 95%. Normal endoscopic appearance had a negative predictive value of 100%.
In 3 patients FOB was the decisive staging procedure, excluding surgical treatment.
Conclusion: Bronchoscopy with biopsy and brush cytology is a very accurate procedure in assessing potential airway invasion by esophageal cancer. CT and EUS findings alone are not reliable.

P608

Postintubation tracheal stenosis – A 15 year experience

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Background: Postintubation injury, with or without tracheostomy, is the most common cause of benign tracheal stenosis (TS).
Aim: To analyse characteristics, management and follow-up of postintubation TS.
Methods: Retrospective analysis of patients with postintubation TS evaluated at department of Broncology in Hospital de São João between 1st January 1996 and 31st December 2010.
Results: 84 patients were analyzed, with a mean age of 43.5 years. Median duration of intubation was 23 days and 38% of patients had a tracheostomy. Among tracheostomized patients, median time of orotracheal intubation before tracheostomy was 29 days. Symptoms occurred in a median of 30 days after extubation. Occurrence of stridor was associated to an earlier diagnosis. TS occurred at a high location (subglottis or upper tracheal third) in 82.9% of patients and was mostly complex (55.1%), followed by exophitic and web-like (14.5%). In children, web-like stenosis was predominant. Occurrence of ventilator-associated pneumonia was associated to complex TS and higher levels of severity. Endoscopic treatment was the first therapeutic measure in most patients (84.8%). Dilation was the main therapeutic option, either isolated (39%), either as a bridge to more definitive therapies (54.2%), and even after failure of other therapies (16.9%). Patients treated only with dilation performed a mean of 2 dilations/patient and median free time between dilations was 47 days. Surgical treatment was performed in 42.1%, with 38.7% of relapse. 13.2% of patients had stent placement and 11.8% had laser therapy. Most patients are now assymptomatic and mean residual stenosis is 28%.
Conclusion: TS is a challenging condition and several therapeutic modalities are usually needed.

P609

Endoscopic management of idiopathic tracheal stenosis

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Background: Idiopathic tracheal stenosis (ITS) is a rare condition. A therapeutic option is endoscopic management, but long term results are not established. The aim of this retrospective multicenter study was to analyze long-term outcome after endoscopic management of ITS.
Methods: Patients endoscopically treated for ITS were included in 9 institutions involved in interventional bronchoscopy. A standard form was used to report patients and stenosis characteristics and long term outcome after endoscopic management.
Results: Twenty-three patients, 96% women, age: 45±16 years, were endoscopically treated for ITS. Time between first symptoms and diagnosis was 19±18 months. Bronchoscopy showed a web-like (61%) or complex (39%) stenosis, located in the upper part of trachea mainly in the cricoid area. Endoscopic treatment included mechanical dilation only (52%) or associated with laser or electrocoagulation (30%) and stent placement (18%). All procedures were efficient with no morbidity or mortality reported. The follow-up after endoscopic management was 41±34 months. ITS recurrence occurred in 30% at 6 months, 59% at 2 years and 87% at 5 years with a delay of 14±16 months. The treatment of recurrence (n=13) included endoscopic management in 12 cases.
Conclusion: Endoscopic management of ITS provides a safe and efficient therapeutic option but late recurrences are frequent and requires long term follow-up.

P610

Airway measurements in tracheobronchial stenosis using endobronchial ultrasonography during stenting

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Purpose: To assess airway measurements, endobronchial ultrasonography (EBUS) and multi-detector low computed tomography (MDCT) images are compared in patients with tracheal stenosis.
Methods: Airway stenting was performed on 31 patients, 25 malignant and 6 benign. EBUS and MDCT images were compared before intervention to assess the narrowing airway at 212 sites. Of these, 130 sites were considered normal and 82 abnormal. For malignant stenosis, airway measurements were taken at 160 sites including 112 normal and 48 abnormal. For benign stenosis, airway measurements were taken at 52 sites including 18 normal and 34 abnormal. This technique enables the EBUS probe to measure the distal end to proximal end of the stenosis whereby the inflated balloon size changes according to the degree of stenosis.
Results: The diameter and length of stenotic sites measured by EBUS and MDCT were near equal in all patients. Significant correlation was seen at all 212 sites

(r=0.805, p<0.0001), and for 130 normal (r=0.758, p<0.0001) and 82 abnormal sites (r=0.654, p<0.0001). For malignant cases, there was significant correlation in the total 160 sites (r=0.810, p<0.0001), 112 normal (r=0.782, p<0.0001) and 48 abnormal (r=0.564, p<0.0001). Benign cases showed significant correlations in the total 52 sites (r=0.780, p<0.0001), 18 normal (r=0.778, p<0.0001) and 34 abnormal sites (r=0.731, p<0.0001).
Conclusions: This EBUS technique was successful in establishing accurate airway measurements for suitable airway stent sizes in interventional procedures, especially in cases with tracheobrochial malacia.

P611
Bronchoscopic application of mitomycin-C as adjuvant treatment of postintubation tracheal stenosis
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Introduction: Postintubation tracheal stenosis (PITS) continues to be a challenge in the diagnosis, management, and prevention.Mitomycin-C (MMC) is an antineoplastic antibiotic that inhibits fibroblast proliferation, modulating wound healing and scarring.Its topical application, as adjuvant treatment in endoscopic management of stenosis, has showed good results.
Aim: Evaluate the results of MMC application by Rigid Bronchoscopy (RB) in PITS.
Methods: Selected patients with PITS, in whom MMC was applied.It was used in a concentration of 0,4 mg/ml, applied with a cotton stiletto around granulation tissue, for 2-3 minutes, after RB dilatation or laser. Re-evaluation and MMC application was done according to evolution. Patients were evaluated for kind, location and stenosis size (%), treatment procedures and results with adjuvant MMC application.
Results: 7 patients, 71,4% women, mean age 55,4y. Mean initial stenosis diameter 50% of airway lumen, mostly located 1-3cm below vocal cords, with 1-2 tracheal rings involvement. Stenosis RB dilatation, laser and MMC were made in all patients. Mean MMC sessions 2.7, with good and lasting decrease in granulation tissue in 43%, moderate in 29% and relapsing in 29%. At this moment, after MMC use, the mean time since granulation and symptoms improvement is 17,3 m, and mean final airway diameter 70% of the lumen.
Conclusions: Our experience revealed that topical application of MMC can be beneficial in the modulation of wound healing and in the decreasing scar formation in the treatment of airway stenosis. Further research and randomized prospective clinical trials are needed to determine the most effective concentration, time and frequency of exposure to MMC.

P612
The management of post-intubation/tracheostomy stenosis with silicone stent
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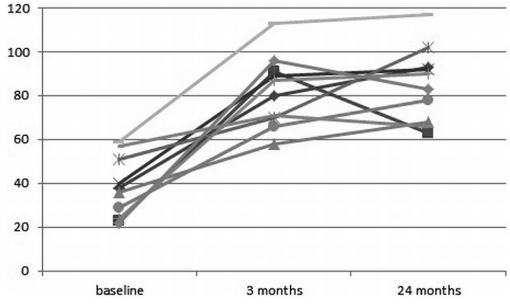
Benign tracheal stenosis in adult patients may occur as a complication of intubation, tracheostomy or surgical procedure. Silicone airway stenting has opened up a new way to treat patients with post-intubation stenosis.We investigated the clinical efficacy through a review of patients with post-intubation stenosis who underwent consecutive Natural silicone stent.
Between January 2005 and December 2009, 19 patients underwent ballooning, ablation using electro-surgical unit, or bougienation by rigid bronchoscopy, followed by placement of the Natural stent. All patients reported subjective symptomatic relief immediately after stent placement. Spirometry data was collected at baseline, 3 month, and 24 month. The baseline and follow-up spirometry data was available in 11 patient. The baseline median FEV_1% predicted was 40% (range, 22% to 62%). Follow-up spirometry data showed 37% improvement (range, 19% to 74%) at 3 month later, and 41% improvement (range, 21% to 77%) at 24 month later:



The Natural stent were removed successfully in 10 patients (52.6%) after median of 16months. Other 5 patients (26.3%) were required re-stenting, and 4 patients died due to acute pulmonary edema with ESRD, myocardial infarction, intracranial hemorrhage.The Natural silicone stent proved to be effective and feasible therapeutic modality in improving quality of life with relief of dyspnea.

P613
Long term outcomes of patients with benign tracheal stenosis after multidisciplinary management
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Treatment for benign tracheal stenosis remains controversial. Endoscopic management is often considered conflicting to surgery. We aimed to evaluate the long term results of multidisciplinary management in our patients cohort during the last 5 years.
24 patients (17 males), aged 48,5±20,2 (mean ± st.dev) with symptomatic tracheal stenosis were referred to our center. Patients were stratified in 5 groups as A: short/web stenoses (n=5), B: long/complex stenoses (n=11), C: Post-surgery relapse (n=4), D: Complications/Relapse after stent placement (n=2) and E: External compression (n=2).
Therapeutic decisions were made on the principle that operable complex stenoses should be operated whereas short stenoses should first undergo interventional endoscopy reserving surgery for recurrence. If surgery was declined, patients were interventionally treated.
7 patients (groups A:1, B:5, C:1), underwent surgical tracheal resection and anastomosis. 3 patients (group A) underwent simple bronchoscopic resection and dilatation and never relapsed since. 15 patients (Groups A:1, B:7, C:3, D:2, E:2) received stent placement. 1 of them (group B) finally underwent surgery due to relapse. All patients were successfully treated and reported well after 34,9±23,8 months of follow up. No deaths occurred. Major complications included 1 case of bilateral pneumothorax during bronchoscopic intervention and a severe relapse of stenosis over a tracheal stent, both successfully undertaken by surgeons.
Interventional bronchoscopy and tracheal surgery are both valuable options. Multidisciplinary counseling on each case using a simple therapeutic algorithm, may lead to successful long term results in practically all patients.

P614
Evolution and therapeutical features in post-intubation tracheal stenosis in COPD patients
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Post-intubation tracheal stenosis represents a severe complication in patients with hypercapnic respiratory failure due to COPD. We present a series of iatrogenic tracheal stenoses in COPD patients addressed to the Bronchology Department during 5 years. There were 13 patients (10 males, 46% over 60 years-old), COPD stage III-IV GOLD, who suffered a severe exacerbation that required oro-tracheal intubation; 8 needed tracheotomy.Tracheal stenoses developed after a mean period of 24 days (7-42) and were clinically significant. Bronchoscopy revealed tracheal stenosis with diameter less than 5 mm. 8 were located in proximal trachea and 5 in medial trachea, with length more than 2 cm in 7 cases and less than 2 cm in other 6. Initially, all were treated with interventional bronchoscopy (dilatation, granuloma resection) but the results were instable in time, requiring other methods: prosthetics (8 cases) or surgery (5 cases). In the patients treated by prosthesis, the stent was removed in 3 cases after 1,5-2 years, the rest remained chronic carriers of prostheses. The patients treated by surgery had significant complications: 1 death by mediastinis, 3 stenosis relapse on the anastomosis line (finally resolved with interventional bronchoscopy). Only one case was successfully solved after surgery. In conclusion, interventional bronchoscopy had a higher success rate (37%) than surgical therapy (20%), also solving the cases complicated post-surgery with reoccurrence of stenosis. While for different etiologies of tracheal stenosis, surgical resection is the first choice of treatment, in patients suffering from COPD, interventional bronchoscopy remains the only way to solve it.

P615
RespiStent – A new concept for a viable stent for the treatment of endobronchial stenosis
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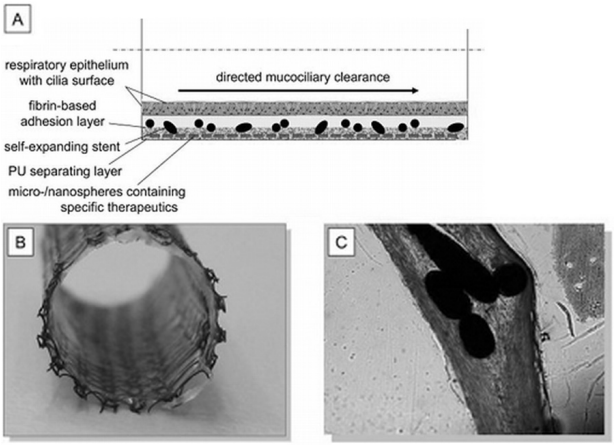
Endobronchial stent therapy is an accepted method for the treatment of endobronchial stenosis. It is limited by a loss of physiologic surface and, thus, mucus retention. We developed a novel concept for a vitalized endobronchial stent (fig. 1 A). The concept is based on the combination of stent technologies with the principles of tissue engineering. The RespiStent provides (1) a functional respiratory epithelium on the luminal side, which allows the maintenance of the mucociliary function in the stented area and hereby will help to reduce complications of mucus retention, (2) embedded micro- or nanosphere formulations, enabling the sus-

tained release of tissue-specific therapeutics in combination with (3) a mechanical separating layer on the external side, avoiding restenosis by a tissue ingrowth.



In addition (4) an adequate anchorage resulting from the specific stent design and the biological coating of the stent struts guarantees an adequate fixation and embedding of the construct into the surrounding tissue, thereby avoiding stent displacement during breathing and coughing. As seen in fig. 1 B and C, the stent structure embeds readily in a fibrin-gel based tissue-engineered construct.
The novel RespiStent with active mucociliary clearance will improve quality of life and increase the life expectancy of patients undergoing endobronchial stent therapy.

P616
Incidence of bacterial colonization in patients with tracheobronchial stents
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Objective: To describe the prevalence and incidence of potentially pathogenic microorganisms (PPM) colonizating the airways of patients with tracheobronchial stents
Methods: We collected bronchial washings from patients treated endoscopically for neoplastic or benign tracheobronchial stenosis
Results: We retrospectively studied39patients during a median of 128 days (12-448), 12 (31%) COPD with FEV1% of 58%, benign disease 5 (13%) and malignant in 34 (87%). Silicone stent were implanted in 74%, metallic autoexpandible in 20% and a combination of both in 6%. See table for microbiological results. Wilcoxon test shows that there are significant statistical differences in the prevalence of PPM colonization (25.6% vs 71.8%, $p<0.05$) and the type of germ ($p<0.05$) in the first control (34 days of median)Subsequent analysis between consecutive controls doesn't find any statistical difference. The incidence density is 42 cases per 100 person-month (25 new cases during follow-up 59.4 months).

Prevalence of PPM colonization/Type of germ

	0	Quarter (%)				
		1st	2nd	3rd	4th	5th
N	39	39	25	11	7	8
BAS + for PPM	10 (25,6)	28 (71,8)	20 (80)	9 (81,8)	6 (85,7)	7 (87,5)
PA	4 (10,3)	9 (23,1)	8 (33,3)	3 (27,3)	1 (14,3)	3 (37,5)
SA	3 (7,7)	9 (23,1)	6 (25)	2 (18,2)	2 (28,6)	1 (12,5)
MARSA	–	1 (2,6)	1 (4,2)	–	–	–
HI	2 (5,1)	3 (7,7)	–	–	1 (14,3)	1 (12,5)
SP	–	–	–	–	–	–
Others	1 (2,6)	6 (15,4)	3 (12,5)	4 (36,4)	2 (28,6)	1 (12,5)

PA, *P. aeruginosa*; SA, *S. aureus*; HI, *H. influenzae*; SP, *S. pneumoniae*; PPM, potentially pathogenic microorganisms.

Conclusions: Tracheobronchial stents are associated with a high, increasing and irreversible colonization of PPM, with a prevalence of 87.5% after 12 months. Incidence density is high. The main colonizing PPM are *P. aeruginosa* and *S. aureus*.

P617
Double esophagus and airways stents: Retrospective analysis in 33 patients
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Introduction: Double stenting of esophagus and airways can be used for the palliative treatment of advanced tracheo-esophageal tumors.

Aim: Evaluate complications and quality of life of patients treated with esophageal stent (OS) and tracheobronchial stent (TS).
Methods: Retrospective analysis of patients treated with OS and TS at the Rouen University Hospital between 1997 and 2010.
Results: Among 326 patients treated with OS, 33 received TS. Primary tumor was esophageal for 26 patients, pulmonary for 6 and both esophageal and pulmonary for one. 17 TS were placed for oeso-bronchial fistula, 5 for bronchial obstruction and 4 for both.
Median Olgivie's dysphagia score was 4/4 before OS and 1 after. TS reduced dyspnea and eating cough in all cases except 3 (2 persistant fistula – 1 persistant dyspnea). Median survival after second stent insertion was 84 days. Hospitalization free median survival after second stent insertion was 42,5 days corresponding to 51% of survival. Lung cancer patients had shorter median survival than esophageal cancer patients 75 *vs.* 57 days.
Early severe complications were 2 massive hemoptysis, 2 septic chock and 1 vocal chord paralysis. Complications occurring after 10 days of stenting were 3 hematemesis, 2 massive hemoptysis, 3 oeso-respiratory fistula, 1 septic chock and 1 tracheal compression.
Mild early complications occurred for 11 patients including thoracic pain in 3 patients and 2 minor hemoptysis. Mild late complications occurred for 32 patients including 14 TS infections, 7 pneumonias and 6 alimentary obstructions of OS.
Conclusion: OS and TS for advanced tracheo-esophageal tumors are associated with frequent infectious complications but improves patients' quality of life.

P618
Tracheo-esophageal phistula: The role of bronchology
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Tracheo-esophageal phistula (TEP) is a complex condition with different etiology and prognosis. Present study evaluates a series of patients (pts) with TEP according to etiology, complications, survival and endobronchial treatment. Among 50 pts there were 41 (82%) men and 9 (18%) women, mean age was 62.2 years. Tracheobronchoscopy was the diagnostic method of choice, other methods were anamnesis, chest X ray, 3Dimensional CT and esophagoscopy. Malignant disease was the cause of TEP in 33 (66%) pts, benign disease in 17 (34%) pts. There were 17 pts with esophageal carcinoma, 8 pts with bronchial/tracheal cancer, 8 pts with other tumours, 9 cases with tracheostomy or tracheal intubation, 8 traumatic cases and 7 consequences with endoscopic therapy (laser, esophageal stent, brachytherapy). Phistula was covered by tracheal or Y tracheobronchial stent in 19 (38%) pts, esophageal stent in 8 (16%) pts and doublestenting in 4 (8%) pts. Median of overall survival (MOS) was 14.3 m. It was 8.8 m in men and 29.3 m in women (p 0.0441). MOS in malignant diseases was 5.6 m, in benign disease 34.8 m (p 0.04). Pts with endotracheal/bronchial stents survived non significantly longer than those without stents: MOS 13.7 m vs 11.3 m (p 0.949). The difference was not significant in benign processes (39.6 m vs 22.1 m, p 0.523) and in malignant diseases as well (5.0 m vs 5.6 m, p 0.484). Endobronchial/endotracheal treatment brings substantial symptomatic relief, but sometimes can be a cause of TEP as well. Other survival determinants could not be analyzed in present study due to small number of patients.

P619
Long-term outcome of bronchial artery embolisation (BAE) for massive haemoptysis
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Background: BAE for massive haemoptysis is potentially life-saving with low short-to-medium term failure rates in previous studies. We aimed to characterise patients referred for BAE, to examine long-term treatment success and identify risk factors for requiring repeat BAE.
Methods: We retrospectively identified all patients undergoing BAE from 1994-2007. We collated data from hospital databases and primary care on demographics, respiratory diagnoses and procedure with follow-up of up to 16 years. Outcomes were all-cause mortality and recurrence of haemoptysis requiring repeat BAE.
Results: 158 patients were embolised on 208 occasions. 85 (54%) patients were male and median age was 54 (IQR: 41-67)y. The most common underlying diagnoses were aspergilloma (n=38; 24% of patients), bronchiectasis (n=24; 15%), unidentified cause (n=17; 11%) chronic tuberculosis (n=14; 9%), active tuberculosis (n=12; 8%) and cystic fibrosis (n=11; 7%). All-cause mortality at 1 month and 3 years was 5.3% and 29.7%, and need for repeat BAE was 4.7% and 30.7% respectively. Repeat BAE at 3 years was most common with aspergilloma (50%) and least common with active TB (0%). 3-year mortality was highest in cystic fibrosis (40%) and least with unknown cause (7.7%) Neither number nor location of vessels embolised predicted mortality or need for repeat BAE. No major procedural complications were noted.
Conclusions: BAE by experienced operators is a safe, minimally invasive procedure for massive haemoptysis with excellent short-term success. It does not prevent late recurrence of haemoptysis nor obviate the need for repeat BAE, the risk of which is related to the underlying disease rather than to technical aspects of the procedure.

P620

Bronchial artery embolisation in the management of haemoptysis in pulmonary tuberculosis

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Introduction: Bronchial artery embolisation (BAE) is the procedure of selective bronchial angiography with embolisation of abnormal vessels.
Aims and objectives: To assess the efficacy and safety of BAE in patients with haemoptysis in pulmonary tuberculosis (PTB).
Methods: This is a retrospective study of all patients of haemoptysis in PTB who underwent BAE between January 2004 and December 2010 in a tertiary care hospital in India. Bronchial arteriography and embolisation was performed using 5 French pigtail catheter and polyvinyl alcohol (PVA) particles ranging from 150 to 1000 micrometers.
Results: 34 patients (21 males and 13 females) of haemoptysis in PTB, underwent 37 BAE procedures during the period of study. 11 (32.3%) of these patients had multidrug resistant tuberculosis. Mean age of patients was 29.4 years (range: 13-69 years). Indication of BAE was: acute major haemoptysis in 11 (32.3%) and chronic recurrent bleeding in 23 (67.7%) patients. Haemoptysis was successfully controlled after the embolisation procedure in 32 (94.1%) patients. Procedure was repeated in three (8.8%) patients within a period of six months because of recurrent haemoptysis. Following arteries were embolised: right bronchial artery (11), left bronchial artery (7), common bronchial trunk (7), intercostal artery (14), right internal mammary artery (1), thyrocervical trunk (1), right intercostobronchial (2), and left intercostobronchial (1). No abnormal vessel was detected in one patient. The only complication encountered was local haematoma in one (2.94%) patient.
Conclusions: Bronchial artery embolisation is an effective and safe procedure for haemoptysis in pulmonary tuberculosis.

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Brochial artery embolization in 110 patients with massive hemoptysis in Punjab, India

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Aims and objective: BAE role has been established as an effective technique in the emergency treatment of life threatening hemoptysis. We report our experience with 110 cases that underwent BAE.
Material and methods: Records of 110 consecutive patients (89 males and 21 females) from march 2005 to march 2010 with massive hemoptysis and who underwent BAE were retrospectively studied and analyzed.
Results: The mean age of patients who underwent BAE was 46 years (range 19-80 years). 50% of patients presented with acute hemoptysis. The aetiology of hemoptysis included post tubercular bronchiectasis in 53 patients (48%), active pulmonary tuberculosis in 40 patients (36%), mycetoma in 11 patients (10%), pneumonia in 4 patients (6%), pulmonary embolism in 1 patient and unknown in 1 patient. Embolization was done with Polyvinyl alcohol Cook's particles (size 300-750 micron) in 90 patients, coils in 6 patients and gel foam in 14 patients. Overall, 112 sessions of embolization were performed and average number of arteries embolized per patient was 3.5 Massive hemoptysis was successfully controlled in 102 patients but 10 patients had recurrence and were treated by re-embolization. 1 patient expired despite re-embolization. 3 patients were sent for lobectomy. The complication of BAE seen included perforation of bronchial artery (in two patients), transient chest pain (in 10 patients) and secondary infection in one patient.
Conclusion: BAE is a safe and effective procedure for controlling massive hemoptysis and should be regarded as the first line treatment for patients presenting with massive hemoptysis. Multiple sites of non-bronchial collaterals causing hemoptysis are not unusual.

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Endobronchial photodynamic therapy with chlorine E6 in III-IV stage central lung cancer

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Aim: To evaluate short- and long- term results of photodynamic therapy (PDT) with chlorine e6 in palliative treatment of lung cancer.
Methods: 52 patients with IIIb (21) and IV (31) stage of lung cancer with major airway obstruction were prospectively included in endobronchial PDT protocol. Histological types were: NSCLC – 46 patients, SCLC – 6 patients. Water-soluble chlorine e6 complex was used as a photosensitizer in dose of 2 mg/kg. The interval between the injection and illumination was 2 hours. Red light at 662+1 nm wavelength was used to achieve a total illumination dose of 250 j/cm^2 of the tumor during flexible bronchoscopy under topical anaesthesia. All patients except four received chemotherapy concomitantly. PDT was done twice in 13, three and more times – in 39 patients. Results of treatment were evaluated by percentage of bronchial lumen desobliteration in every four weeks after the first procedure. Survival was calculated using Kaplan-Meier method.
Results: Bronchial desobliteration after the first PDT was recorded as complete endobronchial remission – in 17 cases (33%), partial (>50% of tumor volume) – in 21 cases (42%). No effect was seen in 25% of patients. After the next procedures number of patients with complete remission decreased to 24%, patients with partial remission - increased up to 53%. Median survival time was 11,6 months, it was higher in patients with complete remission than with partial remission (13,5 vs 10,3 months, p<0,05). One year survival was 48%, two years survival - 24%.
Conclusion: Repeated PDT with chlorine e6 is a safe and effective for lung cancer patients. Survival depends on degree of endobronchial remission.

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Active smoking, COPD and arterial hypertension are independent prognostic factors for complications following Nd:YAG laser resection of central lung cancer

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Introduction: Major aim of this study was to investigate complication rate and identify clinical risk factors for complications following Nd:YAG laser resection in patients with advanced lung cancer.
Patients and methods: We evaluated medical and bronchoscopy charts of 512 patient who underwent Nd:YAG laser resection as a part of multimodality treatment of lung cancer. Complications after laser resection were defined as: severe hypoxemia, global respiratory failure, arrhythmia requiring treatment, haemoptysis, pneumothorax, pneumomediastinum, pulmonary edema, trachea-esophageal fistulae and death. Risk factors were defined as: acute myocardial infarction within 6 months before treatment, hypertension, chronic arrhythmia, chronic obstructive pulmonary disease (COPD), stabilized cardiomyopathy, previous external beam radiotherapy, previous chemotherapy and previous interventional pulmonology treatment.
Results: Overall complication rate was 8.4%. Statistically significant risk factors were: age (p=0.001), current smoking status (p=0.012), arterial hypertension (p<0.000), chronic arrhythmia (p=0.034), COPD (p<0.000), and stabilized cardiomyopathy (p<0.000). Independent clinical risk factors were age over 60 years (p=0.026), arterial hypertension (p<0.000), COPD (p<0.000) and smoking over 60 pack years (p=0.012).
Conclusion: Closer monitoring of patients with identified risk factors is advisable prior and immediately after laser resection. In order to avoid or minimize complications special attention should be directed towards patients who are current smokers (over 60 pack years), over 60 years of age, with arterial hypertension or COPD.

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A multimodality treatment approach to post transplant airway stenosis

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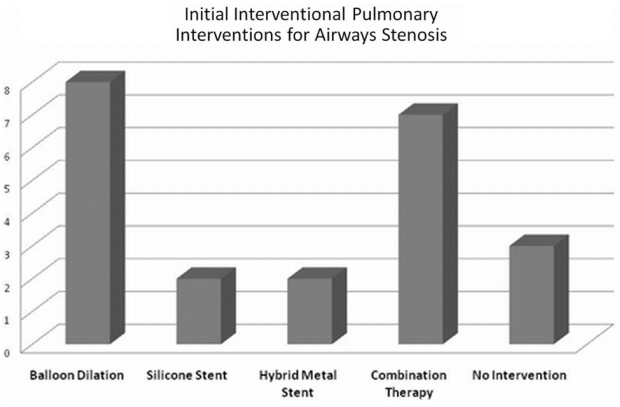
Purpose: Anastomotic airway complications are a significant cause for morbidity and mortality after lung transplantation (LT). The aim of this study was to investigate post LT anastomotic airway complications to evaluate both the need for and modalities used for treatment.



Methods and materials: All patients undergoing LT performed between August 2005 and May 2010 by a single surgeon at our institution were reviewed retrospectively. All airway complications were managed by the Interventional Pulmonary team. Airway stenoses were managed with rigid bronchoscopy, balloon dilation, observation and or stent placement.
Results: A total of 98 patients underwent LT (86 bilateral, 7 left, 5 right). 46 female and 53 male, with a mean age 49.7. 28 patients (28.6%) developed pneumonia within three months of transplantation, 8 of which were identified as a result of pseudomonas (28.6%). 28 (28.6%) patients also reported having evidence of acute cellular rejection within three months after transplantation. The median length of mechanical ventilation after transplant was 3 days (range 1 to 183). Of the 98 patients, 35 (35.7%) developed airway stenosis at a median of 16 weeks (range 1 to 164 weeks following surgery). Of these patients, 23 (65.7%) patients received at least one airway intervention.
Conclusions: Airway stenosis after LT can be successfully managed with a variety of airway interventions. Further studies are needed to determine the best modalities.

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SHFJV (super imposed high frequency jet ventilation), ETCO2 correlation to PaCO2 in diagnostic and therapeutic rigid bronchosscopy
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We report the findings on 42 patients who underwent diagnostic and therapeutic interventional rigid bronchoscopy under SHFJV.
Monitoring of the patients included ECG, blood pressure, SaO2, EtCO2, arterial blood gas analysis, FIO2 jet, FIO2 aw.
SHFJV is defined as weight-based innovative mechanical ventilation combined with superposition of two jet-streams in an open system.
The high-frequency jet-stream is responsible for the oxygenation; the normo-frequency jet-stream regulates the CO2.
Basic patient characteristics (mean±SD):
– Age 59.7±13.8
– FEV1 (liter) 2.79±0.58
– PaCO2 (mmHg) 35.52±6
Findings after 10 minutes SHFJV:
– PaCO2 (mmHg) 35.13±11.78*
– ETCO2 (mmHg) 27.48±4.81
– FIO2 (%) 64.76±12.95
*p=0,001
General characteristics of SHFJV:
– No CO2 increase
– No risk of barotrauma (open system conditions)
– No air trapping (open system conditions)
– Best ventilation in open system
– Integrated gas analysis
– Electronically controlled
– Laser application without fire risk (laser safe mode)
Summary: SHFJV in diagnostic and therapeutic rigid bronchoscopy is a safe and effective method of ventilation to achieve sufficient oxygenation without any increase of PaCO2.