

Sleeve resection of mucoepidermoid carcinoma in left main bronchus through median sternotomy

*Sol ana bronşta yerleşmiş mukoepidermoid karsinomun
medyan sternotomi ile sleeve rezeksiyonu*

Maruf Şanlı,¹ Bülent Tunçözgür,¹ Ahmet Feridun Işık,¹ Fatih Meteroğlu,¹ Kemal Bakır,² Levent Elbeyli¹

Department of ¹Thoracic Surgery, ²Pathology, Medicine Faculty of Gaziantep University, Gaziantep

Mucoepidermoid carcinoma is a malignant tumor, which is rarely located in the tracheobronchial tree. Although mucoepidermoid carcinomas are usually low-grade malignant tumors, they should be surgically excised. A mass lesion narrowing the left main bronchus was detected during fiberoptic bronchoscopy in a 20-year-old male who presented with fever, cough and shortness of breath. Sleeve resection of the left main bronchus was performed through a median sternotomy, preserving the pulmonary parenchyma. Histopathological examination revealed a low-grade mucoepidermoid carcinoma. The patient did not receive radiotherapy or chemotherapy, and had no problem even one year postoperatively.

Key words: Bronchial neoplasms/diagnosis; bronchogenic/surgery; carcinoma; lung neoplasms; median sternotomy; mucoepidermoid carcinoma; pneumonectomy.

Mucoepidermoid carcinomas of the tracheobronchial tree are rare malignant neoplasms that originate from the submucosal glands.^[1] They are usually low-grade malignant tumors for which complete resection by surgery is the treatment of choice.^[2] This case of a tumor located in the left main bronchus near the carina that was treated by sleeve resection through a median sternotomy, has been presented due to the rare presentation of such tumors and the surgical intervention chosen for treatment.

CASE REPORT

A 20-year-old male patient with a three month history of fever, shortness of breath and weight loss was admitted to our clinic. Physical examination revealed a fever of 39 °C, heart rate of 120 per minute and blood pressure of 130/70 mmHg. Auscultation of the left hemithorax revealed diminished respiratory sounds. An approximately 2 cm diameter mass in located the left hilar

Mukoepidermoid karsinom nadir olarak trakeobronşiyal ağaçta yerleşen malign bir tümördür. Mukoepidermoid karsinomlar düşük evreli tümörler olmalarına rağmen, cerrahi olarak çıkarılmaları gerekir. Yirmi yaşında erkek hastada ateş, öksürük ve nefes darlığı yakınmalarına yol açan ve fiberoptik bronkoskopide sol ana bronşu daraltan kitle lezyonu saptandı. Akciğer özek dokusunu korumak için medyan sternotomi ile sol ana bronşa sleeve rezeksiyon uygulandı. Histopatolojik inceleme sonucu düşük evreli mukoepidermoid karsinom olarak bildirildi. Hasta radyoterapi ya da kemoterapi almadı ve ameliyat sonrası birinci yılında sorunsuzdur.

Anahtar sözcükler: Bronşiyal neoplazi/tanı; bronkojenik/cerrahi; karsinom; akciğer neoplazisi; medyan sternotomi; mukoepidermoid karsinom; pnömonektomi.

region was detected on chest X-ray. Calcified and non-calcified lymph nodes of non-pathological sizes were noted at the paratracheal and subcarinal region on chest CT-scan. In addition, a homogenous mass lesion of 1.5-2 cm was detected at the proximal area of the left main bronchus (Fig. 1a, b), just 1 cm distal to the carina. The mass filled the lumen almost completely and a frosted glass-like shadow was apparent at the base of the left lung. Bronchoscopy revealed a gray-white colored, vegetative mass with lobulated contours originating from the lateral wall of the left main bronchus that seemed to narrow the endobronchial area, impeding passage of the bronchoscope (Fig. 1c). Histopathological examination of the bronchoscopic biopsy specimen obtained from the bronchial mass was reported as “a malignant epithelial tumor presumably a mucoepidermoid carcinoma”.

Signs of obstructive pneumonia were controlled with medical treatment and the patient underwent an operation

Received: July 24, 2006 Accepted: December 7 2007

Correspondence: Ahmet Feridun Işık, M.D. Gaziantep Üniversitesi Tıp Fakültesi Göğüs Cerrahisi Anabilim Dalı, 27310 Gaziantep, Turkey.
Tel: +90 342 - 360 60 60 e-mail: abaybora@msn.com

on the 12th day of admission. The mediastinal region was accessed through a median sternotomy using a right double-lumen endotracheal tube under general anesthesia. The pericardium was dissected anteriorly and the posterior pericardial wall was opened after pulling the ascending

aorta laterally to the left side and the vena cava superior to the right side. The right pulmonary artery was retracted inferiorly, and the carina and the left main bronchus were suspended (Fig. 2, 3). The left main bronchus was incised at the carina and a proximal 2.5 cm segment that included the internal tumoral mass was resected. 3/0 polydioxanone (PDS, Ethicon, Inc. Somerville, NJ, ABD) running sutures were used for anastomosis between the left main bronchus and the carina. The frozen section examination of the subcarinal and paratracheal lymph nodes and the samples obtained from the resection edges were reported as benign. The anastomosis line was shown to be intact on a bronchoscopy performed during the operation. No complications occurred postoperatively. Histopathological examination revealed a low-grade mucoepidermoid carcinoma with no malignancy in the excised lymph nodes. No adjuvant therapy was administered and the patient had no postoperative problems at one year.

DISCUSSION

Tracheobronchial mucoepidermoid carcinomas are rare and account for only 0.1-0.5% of all lung tumors.^[1] They

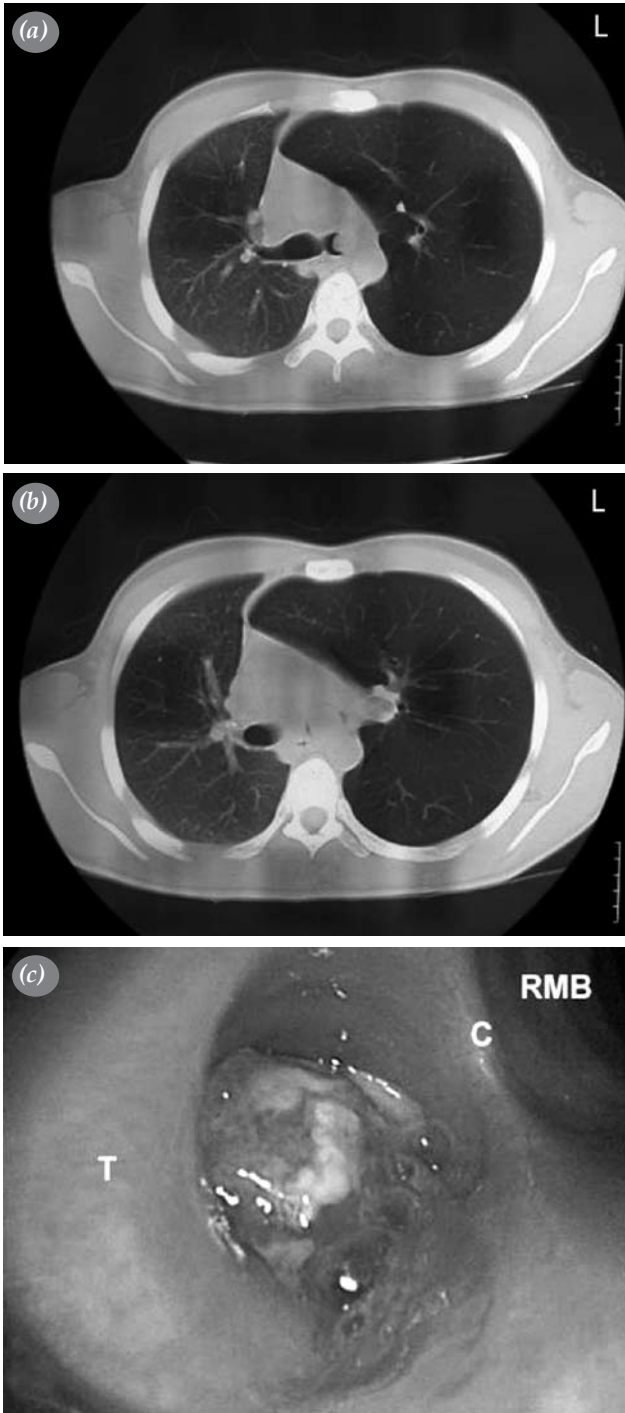


Fig. 1. (a, b) Computed tomografi scan revealed an endobronchial mass just below carina. (c) Endo-bronchial view of mucoepidermoid carcinoma; tumor has obstructed whole left bronchial system. T: Trachea; C: Carina; RMB: Right main bronchus.

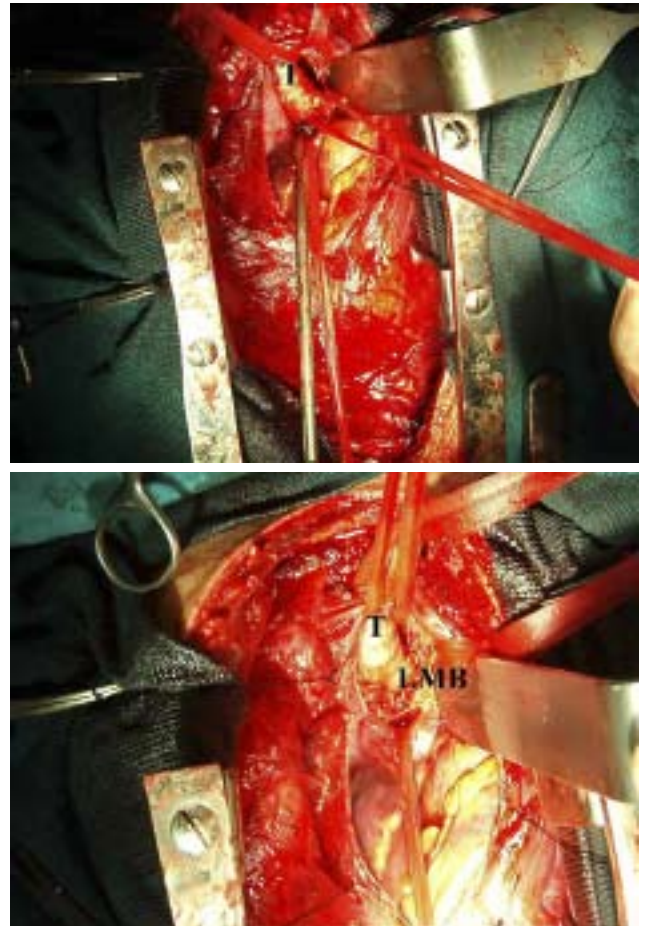


Fig. 2. Trachea and left main bronchus were explored through median sternotomy and pericardiotomy. T: Trachea; LMB: Left main bronchus.

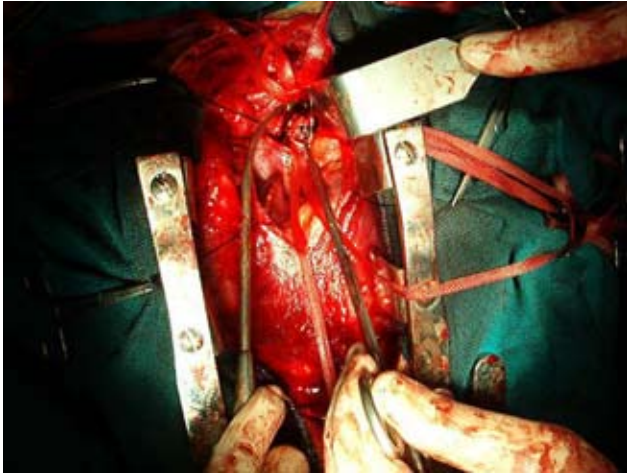


Fig. 3. When left main bronchus dissected and cut, an endobronchial mass (TM) could be easily seen.

are classified as high- or low-grade mucoepidermoid carcinomas according to histopathological findings.^[2]

Mucoepidermoid tumors are usually localized in the segmental lobar bronchi and cause symptoms suggesting upper respiratory tract obstruction and irritation, such as cough and dyspnea.^[1,3] Affected patients may be misdiagnosed as asthmatic.^[2,3] Diagnosis is based on bronchoscopic and biopsy findings.^[1] The examination of our patient who did not respond to medical therapy revealed the tumor located in the left main bronchus.

The most preferred treatment modality in low-grade mucoepidermoid tumors is complete excision of the lesion in addition to complete regional lymph node dissection with lobectomy. However, bronchoplastic interventions are adequate for tumors in accessible locations. In a study by Suen et al.^[4] of the eight out of 19 patients who underwent sleeve resection due to low-grade malignancies, sleeve resection was performed only on the main bronchus or the intermediate bronchus without excising the pulmonary parenchyma.

The choice of surgical intervention in sleeve resection of the left main bronchus is controversial due to the aortic arch obliterating the carinal area. Many authors recommend right thoracotomy for carinal reconstruction and interventions on the left main bronchus. Right thoracotomy is a widely accepted intervention for right sleeve pneumonectomy.^[5] However, median sternotomy has been recommended for bronchoplastic procedures of the carina or left main bronchus without parenchymal resection. Despite the fact that additional manipulations required for median sternotomy may cause hemodynamic instability and cardiac problems, Darteville and Macchiarini^[6] have reported that median sternotomy for left bronchial sleeve resection ensures an easier surgical intervention, caused less incisional discomfort and less

respiratory limitation than that was caused by thoracotomy. In a series of 231 patients who underwent sleeve carinal resection, Porhanov et al.^[7] advocated lateral thoracotomy, sternotomy, combined sternothoracotomy or thoracotomy and sternal access together to access the carina, while they preferred routine sternotomy for left resection. In our case, the tumor that was located within the left main bronchus 1 cm below the carina was excised successfully by sleeve resection of the left main bronchus through a median sternotomy, preserving the pulmonary parenchyma.

A histopathologically clean resection line and non-metastatic lymph nodes translate into cure for the disease.^[8] Survival seems to be correlated with the presence of metastasis in the regional lymph nodes.^[2] The patient did not receive radiotherapy or chemotherapy due to lack of tumoral invasion in the excised lymph nodes, in addition to the histopathological low grade of the tumor. The patient is under periodic follow-up and he has had no problems for one year.

Sleeve resection should be considered particularly for mucoepidermoid tumors located in the proximal tracheobronchial tree. Regional lymph nodes should be resected and a careful histopathological examination is critical. A median sternotomy may be beneficial in lesions located in the left main bronchus appropriate for bronchoplastic intervention.

REFERENCES

1. Yang CS, Kuo KT, Chou TY, Lin CM, Hsu WH, Huang MH, et al. Mucoepidermoid tumors of the lung: analysis of 11 cases. *J Chin Med Assoc* 2004;67:565-70.
2. Vadasz P, Egervary M. Mucoepidermoid bronchial tumors: a review of 34 operated cases. *Eur J Cardiothorac Surg* 2000; 17:566-9.
3. Noda S, Sundaresan S, Mendeloff EN. Tracheal mucoepidermoid carcinoma in a 7-year-old child. *Ann Thorac Surg* 1998; 66:928-9.
4. Suen HC, Meyers BF, Guthrie T, Pohl MS, Sundaresan S, Roper CL, et al. Favorable results after sleeve lobectomy or bronchoplasty for bronchial malignancies. *Ann Thorac Surg* 1999;67:1557-62.
5. Mitchell JD, Mathisen DJ, Wright CD, Wain JC, Donahue DM, Allan JS, et al. Resection for bronchogenic carcinoma involving the carina: long-term results and effect of nodal status on outcome. *J Thorac Cardiovasc Surg* 2001; 121:465-71.
6. Darteville P, Macchiarini P. Techniques of pneumonectomy. Sleeve pneumonectomy. *Chest Surg Clin N Am* 1999; 9:407-17.
7. Porhanov VA, Poliakov IS, Selvaschuk AP, Grechishkin AI, Sitnik SD, Nikolaev IF, et al. Indications and results of sleeve carinal resection. *Eur J Cardiothorac Surg* 2002; 22:685-94.
8. Tsuchiya H, Nagashima K, Ohashi S, Takase Y. Childhood bronchial mucoepidermoid tumors. *J Pediatr Surg* 1997; 32:106-9.