

# Wedge Resection of the Trachea: An Alternative Technique to Tracheal Sleeve Lobectomy

Akif Turna, MD; Alper Toker, MD; Mehmet Ali Bedirhan, MD; Atilla Gürses, MD

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

## Abstract

We successfully treated a 56 year-old man with adenocarcinoma involving the right upper lobe bronchus and lateral tracheal wall. He underwent right upper lobectomy and longitudinal wedge resection from the lateral wall of distal trachea. There were no complications during the procedure nor recurrence of disease 18 months after the surgery. This technique

can be recognized as a safe and alternative technique to tracheal sleeve lobectomy for the tumors involving the right upper lobe bronchus and the lateral wall of trachea.

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**Key words:** tracheal wedge resection, lung cancer, technique

## Introduction

Resection of lung parenchyma within disease-free margins is considered as the standard therapeutic approach for a potentially resectable non small cell lung cancer (NSCLC). Sleeve resections have been recognized as parenchyma saving operations when technically possible, especially in patients with marginal respiratory reserve.

## Case Report

A 56 year-old man was referred to our department with a diagnosis of adenocarcinoma involving the right upper lobe, azygos vein and trachea, which was revealed in thoracic computed tomography (CT) (Fig. 1). The patient complained of neck pain in the past 3 months. Laboratory data showed no abnormality and pulmonary function tests indicated a physiologically acceptable patient for pneumonectomy. Bronchoscopy revealed a tumoral mass obstructing the apical and the posterior segments of the right upper lobe. Histological examination of the biopsy of the mass disclosed adenocarcinoma. Paratracheal lymphadenopathies smaller than 1 cm were also present. According to our institutional strategy, we performed a mediastinoscopy and the histopathology showed no positivity.

A right posterolateral thoracotomy was performed. The tumor had invaded the azygos vein, but since the inferior vena cava was

**Correspondence:** Dr. Akif Turna  
Cami Sok. Müminderesi Yolu, Emintaş  
Çamlık Sit. No:32/22, Sahrayıcedid,  
81080, İstanbul, Türkiye  
Tel: +90 (0) 216 411 36 75  
Fax: +90 (0) 216 411 66 51  
e-mail: aturna@turk.net

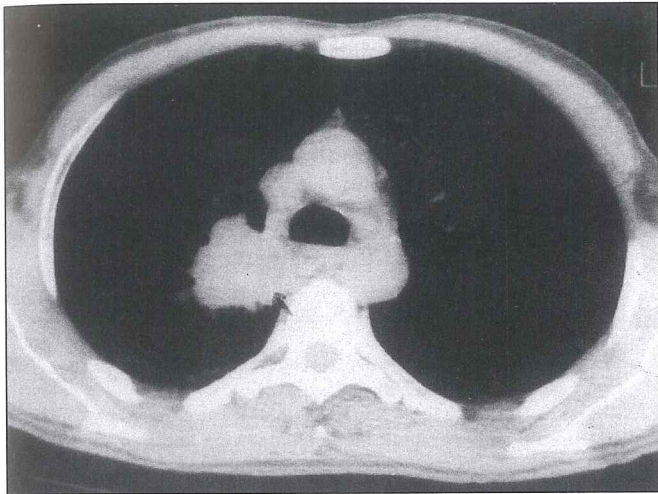


Figure 1. Computed tomography showing mass involving right upper lobe and lateral tracheal wall.

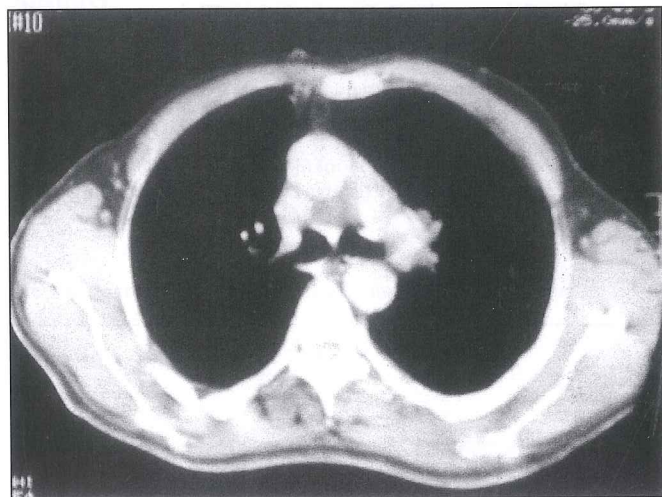


Figure 3. Computed tomography obtained three months after discharge showing remodeled airway from carina to bronchus intermedius. A minimal narrowing caused no morbidity and disappeared after 6 months.

present and intact, it was divided and ligated. During the operation, it was noted that it had also invaded the lateral wall of the distal trachea, a finding which was confirmed by 'frozen section' histopathological examination. For this reason, a right upper lobectomy with a longitudinal wedge resection from the lateral wall of the trachea (1 cm proximal to the carina) bronchus intermedius was performed. The frozen section of the distal margin of the resected tracheobronchial segment was negative for malignancy. The tracheobronchial defect was reapproximated transversely, in a single layer, with interrupted non-absorbable No.3.0 Prolene suture (Fig 2). The bronchial suture line was covered with a pleural flap. Two chest tubes were inserted following systematic mediastinal lymph node dissection. Histological examination revealed an adenocarcinoma staged as T4N0M0. There was no air leak postoperatively and the patient was discharged on the 7<sup>th</sup> postoperative day. He received radiotherapy postoperatively. He was doing well at the postoperative 18<sup>th</sup> month. A thoracic CT taken on the third postop-

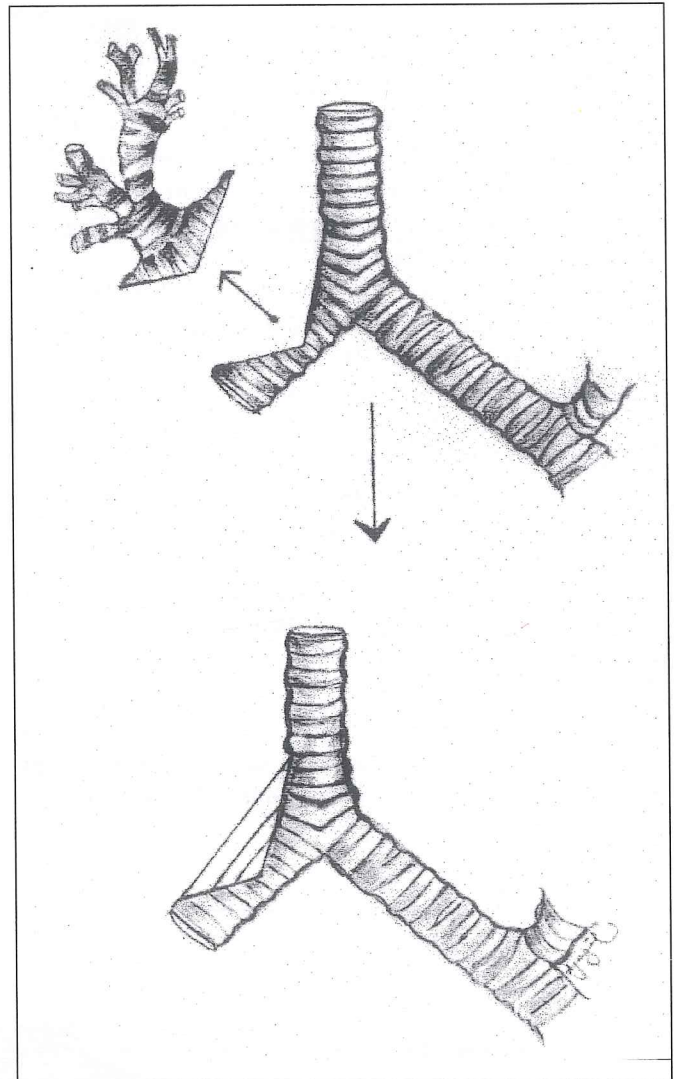


Figure 2. Wedge tracheobronchoplasty on the right side.

erative month showed patency of the remaining airway system (Fig 3). Fiberoptic bronchoscopies was performed 6 and 12 months after the operation revealed no pathology.

Since it was first reported by Price-Thomas, sleeve resection has been accepted as a parenchyma saving operation especially in patients with tumors involving a lobar bronchus with local infiltration of the cranial and the caudal parts of the adjoining bronchus (1,2). Three types of bronchoplastic procedures have been described: sleeve, flap and wedge.

Tracheal sleeve lobectomy is an aggressive procedure for resection of bronchial carcinoma involving the lower trachea. Although Jalal and Jeyasingham reported the mortality as nil, the procedure has been described as technically demanding (3). Wedge bronchoplasty is an easy, fast and safe technique of restoring the bronchial tree architecture in patients with bronchial carcinoma (4). Our experience is similar to that of Kotoulas and his associates and we advocate this tracheo-



bronchial wedge resection as an easy and safe procedure [4]. Although these authors mention a carinal tumor that was included in their series, no tracheal wedge resection was described and no patient was staged as III. As described here, tracheobronchial wedge resection can be an alternative to tracheal sleeve lobectomy or pneumonectomy. In our patient, it was possible to accomplish a complete resection with negative surgical margins and lymph node dissection and also we were able to preserve as much parenchyma as possible. The decision for radiotherapy was taken by the radiotherapist since the tumor was reported to be T4. However, the indication for radiotherapy remains to be justified.

The patency of the wedge resection site was verified by tomography. Fiberoptic bronchoscopy following operation was considered unnecessary since full aeration of the lung was seen after suturing during the operation. Tomography not only served to verify bronchial continuity but also helped us to check the external tracheal wall and exclude the presence of a segmental atelectasis.

Since wedge resection of the trachea is not a surgically demanding procedure and does not carry a high morbidity and mortality risk, it can be recommended not only for

patients with limited respiratory reserve but also in any patient when it is technically possible. Although techniques for tracheal wedge resection in a number of publications (5,6), we could not find a description for tracheobronchial wedge resection in patients who underwent lobectomy for pulmonary carcinoma and who had lateral tracheal wall involvement. Further studies are needed to confirm the applicability and safety of this technique.

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*Istanbul and spring. Photography by Orhan Arseven*