Endotracheal Surgery for Leiomyoma of the Trachea

Masahiko Sugiyama, MD,1 Ichiro Yoshino, MD,2 Fumihiro Shoji, MD,1 Motohiro Hamatake, MD,1 Tomofumi Yohen, MD,1 Atushi Osoegawa, MD,1 and Yoshihiko Maehara, MD1

A 61-year-old male was found to have a tracheal tumor, which was noted at the time of screening by a chest X-ray study. The tumor arose from the membranous portion 4 cm above the carina and was proven by biopsy to be a leiomyoma. Because the disease is a benign tumor, all methods for resection, including bronchoscopic techniques, were thus considered. We performed an endotracheal operation via a window made by an incision of the cartilaginous portion, and removed the tumor through an anterior approach. This type of endotracheal operation is one of the surgical procedures for the removal of benign tracheal tumors. (Ann Thorac Cardiovasc Surg 2009; 15: 206–208)

Key words: tracheal tumor, surgery, mediastinoscope
Endotracheal Surgery for Leiomyoma of the Trachea

Fig. 1. Radiological and endoscopic findings and intraoperating view.
A: Axial view of CT image showing the tracheal tumor (arrow) arising from the membranous wall of the trachea.
B: A bronchoscopic examination showed a smooth sessile tumor arising from the membranous wall of the trachea.
C: Mediastinoscope of the tracheal anastomosis findings. Left side, transfixed cartilage closure from outside the trachea; right side, final view of the tracheal anastomosis.

The trachea was exposed after dissecting the para-tracheal tissue. The esophagus was not compressed by either the tumor or the trachea.

At the beginning of the operation, a balloon cuff was placed at the proximal side of the tumor. Before opening the tracheal lumen, we pushed the tube forward to the side of the tumor, and a balloon cuff was then placed at the distal side of the tracheal tumor without injury to the tumor.

The cartilagenous portion of the trachea was incised transversely just above the tumor, approximately half of the cartilagenous portion in length, after ascertaining the tumor location by intraoperative bronchoscopy. The endotracheal tube was advanced to the carina before the resection was started. A mediastinoscope in the operative field provided a fine endotracheal view, which made the surgical procedures easy to perform. The tumor was extirpated via the cartilagenous window. The defect of the membranous portion was directly sutured with 6-0PDS. The incised tracheal cartilage was sutured by 4-interrupted sutures of 4-0PDS. After achieving adequate hemostasis and an airtight tracheal repair, we covered the anastomosis with a pedicled thymic graft. The thoracic wound was closed in layers with the opened sternum wired. The patient was extubated soon after the operation. Macroscopically, the tumor was well encapsulated and measured 15 × 8 mm. Histopathology proved it to be a leiomyoma, which consisted of spindle-shaped cells proliferating in an interlacing pattern (Fig. 2).

The postoperative course was uneventful. To protect the trachea, neck extension was restricted until postoperative day 7. A bronchoscopic inspection on that day revealed satisfactory conditions of both wounds of the cartilagenous and membranous portions of the trachea. The patient was discharged and allowed to go home on postoperative day 12. He is doing well and has no complications at 11 months after surgery.

Discussion

Among the tracheal neoplasms, a tracheal leiomyoma is a rare disease. Clinically, the patients often complain of dyspnea, wheezing, strider (symptoms of upper-airway obstruction), cough, and hemoptysis resulting from mucosal irritation and ulceration. Frequently, patients are initially diagnosed to have either asthma or chronic bronchitis. The bronchial leiomyoma usually arises from smooth muscle cells of the membranous portion of the trachea. In general, drug treatments have not been effective. A resection of the tumor, including an endoscopic
resection, is the only aim of this treatment, since a bronchial leiomyoma results in a critical condition. To date, several different approaches, such as tracheal sleeve resection, carinal resection, endoscopic resection, electrocoagulation, cryotherapy, and Nd-YAG laser ablation,\(^7,8\) have been reported.

In this case, the tumor was relatively small and asymptomatic, though it had a broad base at the membranous portion. Therefore endoscopic approaches were avoided. We developed the present approach to minimize operative risk and to achieve satisfactory curability, since a standard tracheal sleeve resection has a risk of anastomotic failure, such as dehiscence or stenosis. An endoscopic resection and ablation of the tumor may also be indicated; however, these approaches are accompanied by such complications as perforation, positive surgical margin, lost removed tumor, and occasionally an intratracheal explosion. In conclusion, we advocate that the endotracheal approach is a safe and effective procedure for a resection of benign tracheal tumors.

References


---

**Fig. 2.** Macroscopic and microscopic findings of the tumor.

Macrosopically, the tumor was well encapsulated, measuring 15 × 8 mm (upper). Histopathology of the mass proved it to be a leiomyoma consisting of spindle-shaped cells proliferating in an interfacing pattern (lower).