

Successful Treatment of Tracheal Mucoepidermoid Carcinoma Using Rigid Bronchoscopy Combined with Conventional Surgical Resection

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Mucoepidermoid carcinoma of the trachea is a rare tumor. This investigation reports on a case of a 67-year-old male with mucoepidermoid carcinoma in the lower 1/3 of the trachea. The patient presented with intermittent coughing and hemoptysis lasting for 1 month. The preoperative investigation revealed an intraluminal polypoid mass in the posterolateral trachea with 75% stenosis of the tracheal lumen. A rigid bronchoscope was used to evaluate the airway before surgery, and the tumor was mechanically resected using the tip of the rigid bronchoscope just before intubation. Finally, the tumor was completely removed, and the airway was successfully reconstructed. At 6 months after surgery with no adjuvant chemoradiotherapy, the patient was free of disease. (*Chang Gung Med J* 2003;26:530-4)

Key words: mucoepidermoid carcinoma, surgical resection, rigid bronchoscope.

Mucoepidermoid tracheal tumors arise from the serous and mucous glands of the upper airway. These tumors are frequently misdiagnosed as asthma and treated with bronchodilators because of their rarity, comprising only 0.1% to 0.2% of primary lung cancers and 1% to 5% of tracheobronchial adenomas.⁽¹⁾ From the number of mitoses and the level of necrosis and nuclear pleomorphism, these tumors can be classified as low or high grade. Survival depends on histological grading of the tumor and the ability to achieve complete surgical resection.⁽²⁾

CASE REPORT

A 67-year-old man presented with the complaint of 4 episodes of hemoptysis within 1 month. The episodes were self-limited, with neither airway compromise nor fainting. Clinical examination revealed

dyspnea and labored breathing. Meanwhile, a chest radiograph revealed a polypoid mass in the lumen of the mid to lower trachea, without lobar atelectasis or collapse; while computed tomography revealed a homogeneous, well-defined, intraluminal mass arising from the lateral wall of the trachea without extraluminal extension or a mediastinal lymphadenectomy (Fig. 1). Finally, the bronchoscope identified a granulomatous mass located 2 cm above the carina which was causing 75% obstruction of the tracheal lumen (Fig. 2). A bronchoscopic biopsy was done, but revealed no definite diagnosis upon histopathologic examination.

After obtaining patient consent and after careful communication with an anesthesiologist, the patient was placed in the supine position with the head raised at a 30° angle. The airway was secured by maintaining spontaneous ventilation with an inhaled

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anesthetic (enflurane) and a short-acting intravenous agent (2.0 mg/kg propofol). A rigid bronchoscope (Novatech, Aubagne, France) was carefully introduced through the vocal cords and passed beyond the tumor to assess the distal airway. Meanwhile, the tumor was partially removed using the tip of the rigid bronchoscope to relieve airway obstruction and facilitate intubation.

The patient was then returned to a decubitus position. Using a right thoracotomy and double lumen tube ventilation, the middle and lower 1/3 of

the trachea were exposed after dividing the azygous vein and dissecting the paratracheal lymph node. The tumor was located via manipulation. Meanwhile, the trachea was transected proximally (2 rings above the tumor) and distally (5 rings above the carina). The tumor then was removed, checked for margin adequacy, and sent for pathology examination. The distal and proximal ends were then anastomosed using simple interrupted absorbable sutures (4-0 Vicryl, Ethicon, NJ, USA). The anastomosis was tested under saline for air tightness by applying high pressure through the endotracheal tube. Finally, the pericardial fat pad was mobilized and used to reinforce the anastomosis.

The tumor mass measured $1.5 \times 1.2 \times 1.2$ cm, and was located in the trachea. Microscopically, the sections displayed a tumor comprised of sheets of squamous cells mixed with glandular structures with mucin content and confined to the cartilage plates, compatible with mucoepidermoid carcinoma. The patient was discharged 7 days after surgery and enjoyed an uneventful postoperative course. During the first 2 weeks after surgery, the patient resumed normal activity and was free of respiratory symptoms. The patient maintained good health, and displayed no evidence of recurrence in a bronchoscopic examination 6 months after surgery (Fig. 3).

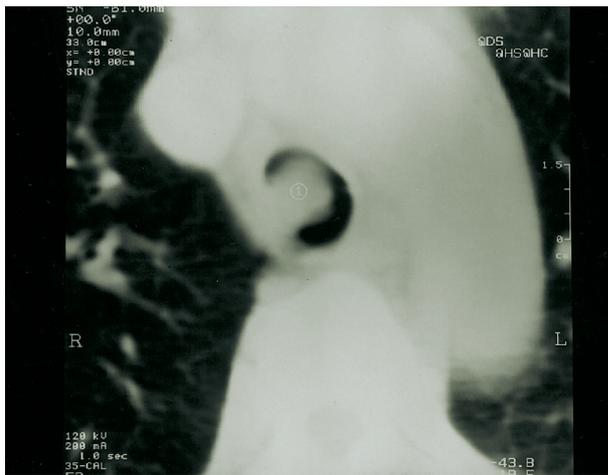


Fig. 1 Chest CT revealing a tracheal tumor above the carina.

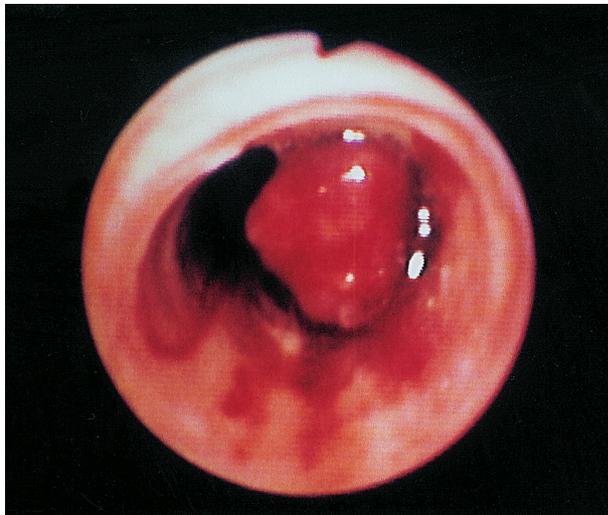


Fig. 2 Bronchoscopy revealing a tracheal tumor with tracheal lumen obstruction.

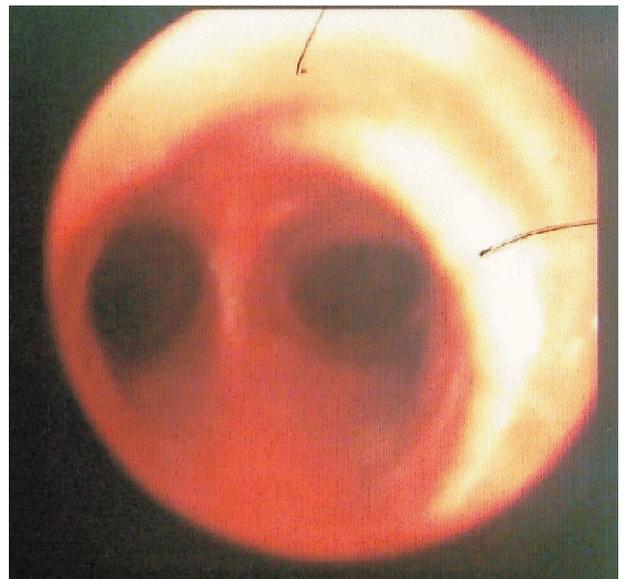


Fig. 3 Bronchoscopy 8 months following tumor resection revealing no tumor recurrence.

DISCUSSION

The vast majority of primary tracheal tumors in adults are malignant. The 2 most common tumors are squamous cell carcinoma and adenoid cystic carcinoma.^(3,4) Mucoepidermoid carcinoma is extremely rare in the tracheal bronchial tree, constituting 0.1%-0.2% of all lung tumors, or 1%-5% of all tracheobronchial adenomas.^(1,2,5) Mucoepidermoid carcinoma may present with cough, dyspnea, wheezing, hemoptysis, and pneumonia. Well-defined intraluminal lesions of the tracheal wall are frequently encountered on radiologic images.⁽⁶⁾ Treatment modalities include surgery, chemotherapy, and radiation. Successful tumor removal with a negative resection margin and tumor grading is a good prognostic factor.⁽²⁾

Both radiology and endoscopy were used for preoperative evaluation. Chest film and computed tomography provide information on the tumor's intraluminal and extraluminal status, as well as the relationship of the tumor to adjacent organs. Both flexible and rigid bronchoscopes were used to plan the operative approach. Tumor location and extent can be safely and accurately examined with a rigid bronchoscope before surgical resection and reconstruction.^(7,8)

Various anesthetic techniques have previously been reported. For example, Geffin described Cross field intubation and distal airway ventilation for middle and distal airway resection.⁽⁹⁾ Jet ventilation achieves the advantages of minimal movement of the operative field and avoids interrupting ventilation during the operation.⁽¹⁰⁾ Extracorporeal circulation without circulatory arrest can be considered in cases where airway problems are complicated by cardiac procedures, tracheoplastic procedures involving small children, and complex tracheobronchial injuries.⁽¹¹⁾

Anterior collar incision is used for tumors located over the upper and middle trachea. The incision can be extended vertically downwards 1 or 2 cm below the sternal angle in the situation of cases of inadequate simple transcervical exposure. Meanwhile, a right thoracotomy and median sternotomy are reserved for lower tracheal tumors. Pearson performed airway anastomosis by placing interrupted fine stainless steel wire in the posterior membrane, and interrupted 4-O Vicryl over the

anterolateral tracheal wall.⁽¹²⁾ Moreover, Grillo and associates used interrupted 4-O Vicryl in both the membranous and cartilage portions.⁽¹³⁾ A report indicated 20%-40% morbidity as anastomotic leakage and 5%-15% mortality due to excessive anastomotic tension.⁽¹⁴⁾

In conditions of central airway stenosis with unsuitable resection and reconstruction (poor medical condition, metastatic disease, or anatomic limitations), bronchotherapeutics performed by rigid bronchoscope are relatively non-invasive and provide good palliation. Treatment modalities include dilation, laser ablation, brachytherapy, stenting, photodynamic therapy, and endoscopic resection. Significant improvements in respiratory symptoms and in quality of life were reported for combinations using laser ablation, brachytherapy, dilation, endobronchial stent, and photo dynamic therapy (PDT). In situations of curative resection, endoscopic resection can be used to remove the endobronchial lesion, drain purulent material or the parenchyma abscess cavity beyond the obstruction, and provide a relatively clear environment for definite resection and reconstruction.^(8,15)

The prognosis of mucoepidermoid carcinoma depends on histological grading and the ability to achieve complete surgical resection. Tumors can be removed using trachea sleeve resection or bronchoplastic resection (a lung-sparing procedure). Complete resection alleviates the need for further therapy in cases of low and intermediate mucoepidermoid carcinoma. Adjuvant therapy may be beneficial in cases of incomplete resection. In contrast, high-grade tumors frequently involve local structures, are less amendable to complete resection, and frequently require chemotherapy and radiotherapy.^(2,14)

In conclusion, this investigation describes the successful use of a rigid bronchoscope combined with conventional surgical resection to treat a case of low-grade mucoepidermoid carcinoma of the lower trachea. The rigid bronchoscope was used to assess the airway status preoperatively, and the tracheal tumor was removed to facilitate airway control and provide a relatively clear and save environment for airway resection and reconstruction. Tracheal surgeons should include both endoscopic and conventional resection and reconstruction techniques in their armamentarium.

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氣管類黏膜鱗狀上皮癌經硬式氣管鏡合併傳統外科切除 之成功經驗

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氣管的類黏膜上皮癌是罕見腫瘤。我們記錄一位67歲男性於氣管下段發生類黏膜上皮癌的病例。其臨床表現為連續一個月的間歇咳嗽和咳血。術前的支氣管鏡檢查發現在氣管腔的後外側有一個腫瘤，並造成了75%的管腔狹窄。在術中先使用硬式支氣管鏡來在評估氣道，並在氣管插管前將腫瘤部分移出送檢。之後將部分氣管和腫瘤完全移除，並重建氣管。於術後第六個月門診追蹤時，病人在沒有輔佐性化療及放射療法下無腫瘤復發。(長庚醫誌 2003; 26:530-4)

關鍵字：氣管類黏膜上皮癌，手術切除，硬式支氣管鏡。

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