

A Case of Metallic Tracheostomy Tubes as Foreign Bodies Broken for a Long Time and Lodged in the Bilateral Main Bronchi

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— ABSTRACT —

The case that fragments of metallic tracheostomy tubes lodged in bilateral main bronchi as foreign bodies rarely occurs. A 52-year-old male presented with excessive cough and purulent sputum induced by fragments of metallic tracheostomy tube in both main bronchi and the left pleural effusion. With the assistance of anesthesiologist with abundant experience, ventilating bronchoscopy under local anesthesia was attempted, and both the fragments of tubes were removed by the order of the right and the left. The patient showed the rapid improvement of symptoms after ventilating bronchoscopy. This case is the first report in the world literatures that successful removal of fragments of metallic tracheostomy tube lodged in the both main bronchi as foreign bodies was done under local anesthesia maintaining self-respiration. (*J Clinical Otolaryngol* 2013;24:105-108)

KEY WORDS : Foreign body · Tracheostomy tube · Bronchus.

Introduction

Although a great variety of foreign bodies lodged in the tracheobronchial tree have been reported, the metallic tracheostomy tube as a foreign body is rarely found. Aspiration of various tracheostomy tubes into main bronchi has been described in patients given a tracheostomy, most of which were unilateral or PVC (polyvinyl chloride) tubes even if bilateral.¹⁻³⁾ In this case, two separate fragments of metallic tracheostomy tube were lodged in the bilateral main bronchi. And then, two fragments of metallic tracheostomy tube lodged in bilateral main bronchi were successfully removed under local anesthesia for the first time in the

worldwide. So we report the first case of successful removal of two fragments of metallic tracheostomy tubes lodged in the bilateral main bronchi, with the review of relevant the literature.

Case Report

A 52-year-old male presented with cough and excessive purulent sputum as the chief complaints. This patient had experienced glottic stenosis after giving a tracheostomy which was performed due to a stab wound of neck 30 years ago. At that time, metallic tracheostomy tube was placed for the patient. The metallic tracheostomy tube was broken by blunt trauma and lodged in the right main bronchus 20 years ago. However, a metallic tracheostomy tube was reinserted without removing the fragment of broken tube from the bronchus because he had no specific complaints. After the tube was reinserted, it was destructed by his own mistake, to make matters worse, it was subsequently lodged in the left main bronchus 3 years lat-

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Fig. 1. Chest plain film reveals the radio-opaque destroyed metal shaped shadow in both main bronchi and the left pleural effusion.

er. Even though he had not complained dyspnea or any other special symptoms for about 15 years, excessive cough and sputum were increased from 1 week prior to the visit. The radio-opaque shadows like destroyed metallic tubes in both main bronchi and the left pleural effusion were shown in chest radiologic findings (Fig. 1). In chest computed tomography, foreign bodies were observed in both main bronchi. In laryngoscopy, both vocal cords fixation with the glottic web were observed (Fig. 2). Secretion was greatly increased within the tube settled at both main bronchi, which made it difficult to insert an endoscope into the tube. By diagnostic thoracentesis, gross pus was detected through the chest tube, but dyspnea became more severe. We've decided to surgical intervention. With the assistance of anesthesiologist with abundant experience, ventilating bronchoscopy under local anesthesia (with xylocaine) was attempted.

And then, both fragments of metallic tracheostomy tubes (foreign body) were removed using grasping forcep by the order of the right and the left through

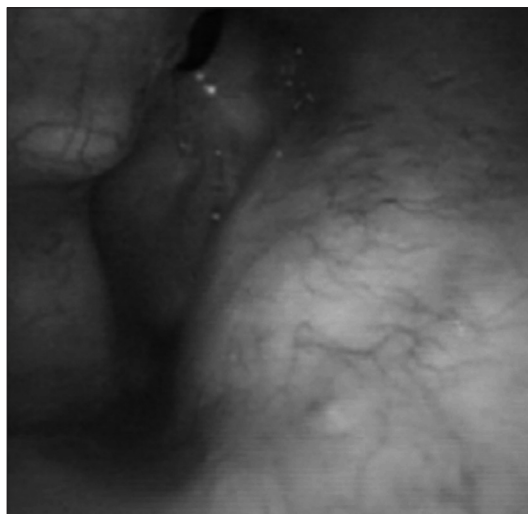


Fig. 2. Laryngoscopic finding shows both vocal cords fixation and glottic web.

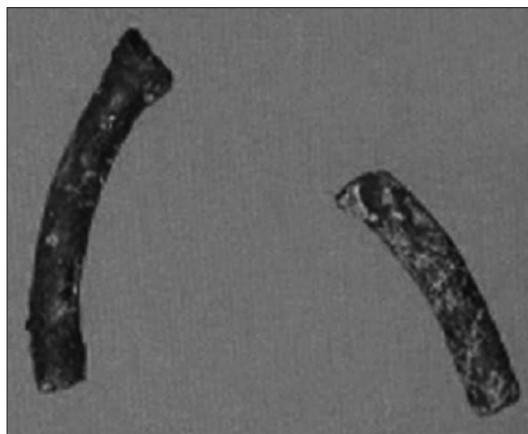


Fig. 3. It demonstrates removed fragments of metallic tracheostomy tubes.

ventilating bronchoscope maintaining self-respiration (Fig. 3).

After the removal of foreign bodies, the patient showed the rapid improvement of the symptoms and empyema. He was discharged 21 days after surgery. Until now, he is under the regular follow up observation without special complications during 16 months.

While glottic web remains with both vocal cords fixation, we have no idea whether or not nerve palsy is present because electromyogram was not checked. The patient refused follow-up examinations recom-

mended by physicians, so we checked only larynx CT scan that he wanted. Larynx CT scan revealed no specific abnormal findings other than glottis stenosis. Although we recommended further treatments, he refused any other treatment. The case has been studied with the approval of the Institutional Research Committee of the Pusan National University School of Medicine.

Discussion

Although bilaterally developing foreign bodies in the airway are uncommon, foreign bodies in the bilateral main bronchus represent 3.1% of the cases reported.⁴⁾ This case, distinct from other cases, shows that bilateral foreign bodies were developed with the time difference of several years. Because it was metal foreign bodies with soft surface, air ventilation was allowed through the tube lumen in some degrees. Consequently, the patient could endure the symptoms relatively for a long time. Several factors for the breakage of metal tubes have been considered. Bowdler et al. reported the breakage caused by frequent washing, repeated insertion, and other physical compressions.⁵⁾

Maru et al. reported that it was caused by the erosion of the zinc and copper alloy area of metallic tube by alkaline bronchial secretion.⁶⁾ This case shows that irregular washing and repeated exchanging of tube caused the erosion, the erosion seems to be one of the important factors which cause the breakage. Recent years have seen an increase in the use of synthetic tubes (e.g. PVC tube) that can be easily exchanged by guardians. The most important advantage of synthetic tubes is the characteristic of thermoplastic, which makes the tube shape adjustable to the contour of bronchus depending on temperature.⁷⁾ Gupta reported a case of fractured tracheostomy tube which involved an 8-years-old male having metallic tracheostomy tube for laryngeal diphtheria.⁸⁾ Two fractured flanges revealed in chest X-ray, one was in the right main bronchus and the other was in the posterior basal segment of the left lung. However, the tube in the left lung could not be

removed because of deep anatomical location, mild symptom, and refusal of thoracotomy. Although several cases of fractured metallic tracheostomy tubes have been reported after 2000, all of them were unilateral fractured tubes.^{1,2)} Apart from other cases previously reported, this report deserves the first successful removal case of fragments of metallic tracheostomy tube lodged in bilateral main bronchi for a long time. In addition, when the ventilating rigid bronchoscope is inserted through mouth, general anesthesia should be performed because of uncooperation of patients during procedure. Although, general anesthesia is administered for bronchoscopy, remaining of spontaneous respiration is better for preventing acute airway obstruction. If thick secretions through rigid bronchoscopy block the airway, jet ventilation might be needed. In this case, general anesthesia was difficult because of purulent sputum and dyspnea due to metallic tube in both main bronchus.

However, topical anesthesia could be administered easily because tracheostomy was made earlier. Therefore, we could complete the removal of foreign bodies while remifentanyl was infused and spontaneous respiration was kept. In conclusion, we recommend that the patients with metallic tracheostomy tube should cleanse and manage gently not to be broken and not to be eroded.

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