

Fractured Tracheostomy Tube Migrating into the Tracheobronchial Tree: A Rare Complication

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ABSTRACT

Tracheostomy is a life saving procedure and many patients are discharged with permanent tracheostomy tubes. We report the rare occurrence of a fractured tracheostomy tube migrating into the tracheobronchial tree and highlight the clinical manifestations of this uncommon complication that carries the potential risk of fatal respiratory obstruction.

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Key words: Fractured tracheostomy tube, Bronchus.

INTRODUCTION

Foreign bodies in aero-digestive tract are known since ancient times.¹⁻⁴ Tracheostomy is a life saving procedure and many patients are discharged with permanent tracheostomy tubes. However, fracture of tracheostomy tube with migration into the tracheobronchial tree is relatively uncommon and carries the potential risk of fatal respiratory obstruction.⁴ Bassoe and Boe² first documented the occurrence of fractured tracheostomy tube migrating into the tracheobronchial tree. In 1978, Maru *et al*³ reported a similar case for the first time from India. We report the rare occurrence of a fractured tracheostomy tube migrating into the tracheobronchial tree that remained undetected for a long time.

CASE REPORT

A 35-year-old female patient reported to the Department of Otorhinolaryngology with complaints of difficulty in breathing since 10 days which had increased progressively. Since the preceding two days, respiratory distress had become severe. The patient had undergone a tracheostomy in 1988 for bilateral abductor vocal cord palsy. Since that time, the patient had not consulted an otolaryngologist.

On examination, the patient was febrile (temperature 99.6 °F) with tachypnoea (respiratory rate 28/min) and minimal stridor. The inner tracheostomy tube was not seen and the outer tube was tied to the neck. On careful examination, one of the flanges of the Fuller's tube was broken and missing. While the

patient was unable to recollect as to when the flange had broken but narrated that she had been using the tube with only one flange for the last five years.

Chest radiograph (postero-anterior view) (Figure 1) revealed a metallic foreign body in the left bronchus. The tracheal stoma was stenosed. A 6.5mm rigid bronchoscope was passed with some difficulty through the tracheal stoma. The mucosa of trachea was congested and oedematous. Purulent secretions were present which were sucked out. A foreign body was seen in the left main bronchus. It was completely covered with dried crusts and secretions and was impacted. It was impossible to make out the nature of the foreign body. It was gently dislodged by rotating and removing the crusts and was eventually removed successfully.



Figure 1. Chest radiograph (postero-anterior view) showing foreign body in the left bronchus and broken tracheostomy tube.

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The broken tracheostomy tube is shown in figure 2. The stoma was widened and a polyvinylchloride (PVC) tracheostomy tube was placed. The post-operative period was uneventful. The patient was discharged with strict instructions for regular follow-up and was educated regarding the care of the tracheostomy tube.



Figure 2. Photograph of broken tracheostomy tube.

DISCUSSION

Sporadic cases of broken tracheostomy tubes have been reported in the literature. Most of these cases are of metallic tracheostomy tube, but instances where PVC tracheostomy tubes had broken have also been occasionally reported.⁵⁻⁹ Occurrence of broken tracheostomy tubes remaining undetected for a long time has rarely been documented. Sreenath and Mahendrakar⁹ reported removing the broken flange of a tracheostomy tube four years after inhalation. Majid⁵ found that the length of time the tube has been worn by the patients before fracturing varied from a few days to eight years. Most of these patients had been using the same tube for long duration. A case of broken PVC tracheostomy tube that was detected eight hours after surgery has also been described.⁷ The clinical presentation of these patients ranged from acute respiratory distress immediately after tube fracture and inhalation in nine of ten cases and no symptoms for several years in only one case.⁵ The absence of the symptoms for several years may be explained by the fact that the flanges being flat, do not immediately cause obstruction.⁴

The Fuller's tracheostomy tube usually gets fractured at the junction of flanges and the collar of the tube. The possible reasons include prolonged use and seasonal cracking; repeated boiling and mechanical stress; erosion caused by tracheobronchial secretions; and manufacturing defects. In patients with a long standing tracheostomy, the

alkaline secretions of tracheo-bronchial tree and moisture stagnate over the tube, react with the copper in the german silver tube resulting in greenish deposits and erosion (seasonal cracking). In the present case, the tracheostomy tube had been in place for 22 years without any follow-up. The inner tube had been lost years ago and the outer flange got broken five years ago.

The right main bronchus is the most frequent site of lodgment of the foreign bodies.⁵ The fracture of the tube is common at the junction of the collar with the neck plates because stagnation of secretions is more in this area and these two parts are welded together.^{5,10} The tube was removed by bronchoscopy via the stoma of tracheostomy. The same route was used by most of the workers who had encountered this entity. The metallic flange can easily be removed with conventional forceps. A technique using Foley's catheter to remove a broken PVC tube in left bronchus in a patient with carcinoma larynx with large fungating secondaries and contracted tracheal stoma has also been described.⁶

Proper care and periodic replacement of the worn out tracheostomy tube is essential to avoid complications. The tubes must be regularly checked for signs of wear and tear. Periodic replacement should also be done. Patient education regarding tracheostomy tube care goes a long way in avoiding such complications.

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