

A SHEARED METALLIC TRACHEOSTOMY TUBE IN THE RIGHT MAIN BRONCHUS: AN UNFORESEEN CASE REPORT

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ABSTRACT

INTRODUCTION

Tracheostomy is a lifesaving procedure commonly done on an elective or emergency basis to help people who need ongoing support for breathing. It's generally safe, but complications can happen early or later, such as bleeding, pneumomediastinum, tube blockage displacement, and infections.

MATERIAL & METHOD

Here we present 49-year-old male who presented to the ENT OPD with complaints of difficulty in breathing for the past 14 days, which increased progressively and worsened over the past two days. He was diagnosed with tubercular meningitis with bilateral abductor palsy in 2016 and was tracheostomized because of prolonged mechanical ventilation. He underwent a right laser cordotomy in June 2022 and has been on irregular follow-up since then.

CONCLUSIONS

A fractured tracheostomy tube is a rare yet critical medical emergency. Patients, caregivers, and healthcare providers must be able to identify fractures promptly and take immediate action. Flexible or rigid

bronchoscopy through a tracheostomy is an effective method for removing a dislodged tube.

KEY WORDS

Sheared Metallic Tracheostomy Tube, F.B. Bronchus, Tracheostomy Tube

INTRODUCTION

Foreign objects getting stuck in the aerodigestive tract have been known for a long time. However, it's rare for a tracheostomy tube to break and move into the air passages, but it can be dangerous. Tracheostomy is a lifesaving procedure commonly done on an elective or emergency basis to help people who need ongoing support for breathing. It's generally safe, but complications can happen early or later, such as bleeding, pneumomediastinum, tube blockage displacement, and infections. Later issues may include granulations, erosion of blood vessels, tracheostoma, and the development of a tracheoesophageal fistula. Metal tubes were used for patients requiring chronic airway support as it is relatively easier to give tracheostomy care at home, but they could break or dislodge because of rust. PVC tubes are less likely to break but can wear out with extended use, causing them to break^{2,3}. We share our experience with a case where a broken

tracheostomy tube went undetected.

CASE REPORT

A 49-year-old male presented to the ENT OPD with complaints of difficulty in breathing for the past 14 days, which increased progressively and worsened over the past two days. He was diagnosed with tubercular meningitis with bilateral abductor palsy in 2016 and was tracheostomized because of prolonged mechanical ventilation. He underwent a right laser cordotomy in June 2022 and has been on irregular follow-up since then.

On examination, the patient was febrile (temperature 100.6 F), with tachypnoea (26/min) and tachycardia (104/min) with stridor. On examination of the neck, he was on a size 26 Fullers metallic tracheostomy tube with an outer tube tied around the neck; on removing the inner tube, we found that one of the flanges was broken and went missing, and the tracheostoma was constricted. The patient and his caretaker could not recollect when the flange was broken. On chest x-ray posteroanterior view, we found a radio-opaque foreign body in the right main bronchus (Figure 1). The patient was immediately shifted to the emergency operation theatre, and under general anesthesia, the patient was ventilated intermittently through a stoma to prevent hypoxia. A size 5.5 rigid bronchoscope was introduced with slight difficulty through the tracheostoma. Tracheal mucosa was edematous with secretions, which were suctioned out. One of the flanges of Fuller's tracheostomy was found impacted in the right main bronchus with surrounding secretions.

Using optical forceps, the foreign body was successfully removed (Figure 2). After removing the foreign body, suctioning was done to clear the secretions. There was minimal mucosal injury at the site of foreign body impaction. A size 7 cuffed Portex tracheostomy tube was placed. The patient was shifted to a post-operative room, and the post-operative period was uneventful. The patient has received three days of intravenous antibiotics. A follow-up x-ray was done for the patient, which was found to be normal. He was discharged in hemodynamically stable condition and advised for strict follow-up with the ENT department. The patient and his caretaker were taught the proper care of the tracheostomy tube.

DISCUSSION

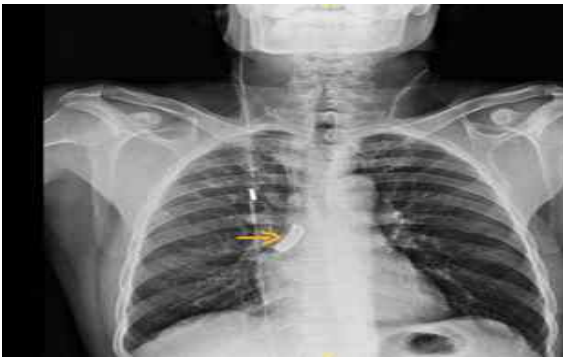
A rare complication in tracheostomy cases is a fractured tube, which can act like a foreign object in the air passages. The first recorded instance dates back to 1960 by Bassoe and Boe⁶, and since then, sporadic cases have been reported. The fractures were mostly in the middle of the outer tube. In developed countries, metallic tracheostomy tubes are no longer used, but in some regions like the Middle East and parts of Asia, they are still prevalent, made from alloys containing materials like 45% silver, 15% copper, 24% cadmium, and 16% zinc¹, out of which zinc component of the tube is a culprit for the corrosion. Silver tubes were initially considered corrosion-free but might fracture with prolonged use. Metallic tubes, which are made in India, will have a fragile layer of silver plating, which wears out in two to three weeks. Basic carbonates form by the action of alkaline secretions of the tracheobronchial tree, causing greenish deposition and erosion of the

metal, described as "season cracking."⁽⁵⁾ Due to the high cost, modern tubes are typically made from stainless steel, which resists staining and rusting but can still rust. Metallic tube fractures can result from wear and tear, patient neglect in changing tubes, frequent removal and reinsertion, repeated sterilization causing corrosion, and design flaws. It was found that mid-shaft fractures were more common, suggesting potential issues with stainless steel quality. Cases involving extensive debris and corrosion led us to discard these tubes. In one case, a fracture at the neck plate-tube junction hinted at a manufacturing defect. We prefer polyvinylchloride tubes instead of metallic ones, depending on patient affordability. Fractured tracheostomy tubes can lead to severe complications, including cardiac arrest and airway blockage. While cardiac resuscitation can revive vital signs, it's crucial to inspect and diagnose the issue to prevent further complications promptly. Chest radiography can aid in identifying the position of the dislodged tube. Retrieval may require endoscopy and bronchoscopy; in some cases, a revision tracheostomy may be necessary, especially if the original opening is small. Regular follow-up is emphasized, and a tracheostomy tube change should be done regularly for chronic patients to avoid these complications. Lastly, education of patients and caretakers regarding tracheostomy care is of utmost importance⁽⁴⁾.

CONCLUSION

A fractured tracheostomy tube is a rare yet critical medical emergency. Patients, caregivers, and healthcare providers must be able to identify fractures promptly and take immediate action. Flexible or rigid

bronchoscopy through a tracheostoma is an effective method for removing a dislodged tube. Various factors can contribute to tube fractures, including manufacturing defects, stagnant alkaline bronchial secretions, and the mechanical stress caused by frequent tube removal, cleaning, and boiling. Medical professionals should thoroughly inspect all tubes before use to prevent such incidents. Patient education is vital in tube maintenance and regular check-ups, a critical preventive measure. It is of utmost importance to avoid serious complications, and considering alternative types of tracheostomy tubes can be



a sensible strategy.
Figure 1: Plain X ray chest Postero anterior (PA) view showing radio opaque broken flange of Fullers tracheostomy tube in the right main bronchus



Figure 2: Retrieved flange of Fullers tracheostomy tube from right main bronchus.

DECLARATION

Ethics approval and consent to participate: Ethical approval is not required as it is a descriptive case report

Availability of data and material: The datasets during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Author's contribution: RR and VMS are the major contributors to writing the manuscript. JL and KR participated in editing and interpretation along with RR and VMS.

Competing interests: The authors declare that they have no competing interests

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