

Paradoxical cause of weaning failure: Post tracheostomy foreign body causing non-resolving pneumonia with worsening failure to wean

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Abstract

The Percutaneous technique for tracheostomy has become the standard procedure, due to its ease in placement, minimal complications, and has almost replaced the traditional open (surgical) tracheostomy in intensive care units. We describe a case of broken tracheal cartilage which slipped into the tracheobronchial tree following percutaneous tracheostomy (PCT), impinging and causing collapse of medial basal segment of right lower lobe.

KEYWORDS

foreign body, tracheal cartilage, tracheostomy complications

INTRODUCTION

Tracheal rings are commonly fractured during the PDT, although total dislocation of part of trachea cartilage is a rare phenomenon, which makes this case unique. Flexible bronchoscopic guidance can minimize such misadventures in airways. Our case highlights a rare complication of PDT leading to weaning failure, irony of situation being that it was done to treat the same.

CASE REPORT

An 88-year-old male, non-smoker, hypertensive and diabetic referred to our centre in a conscious state (GCS—E₄V₁M₆), tracheostomy tube in situ with the ventilatory support as failure to wean. He was being treated as a case of sepsis with MOF, right lower lobe pneumonia with pleural effusion and respiratory failure. He underwent with percutaneous tracheostomy (PCT) due to prolonged ventilation and repeated weaning failure.

Chest X ray was suggestive of right side pleural effusion (Figure 1A). CECT Thorax showed right side pleural effusion with segmental collapse-consolidation of right lower lobe and dependent atelectasis of left lower lobe (Figure 1B).

He further underwent fiberoptic bronchoscopy via the tracheostomy tube which showed shining white coloured flat foreign body (1 cm × 0.2 cm) in medial basal segment of right lower lobe bronchus (Figure 1C,D) and surrounding minimal granulation tissue. Foreign body was removed in one piece with the grasping forceps. Histopathological examination of the foreign body was done which showed hyaline cartilage (Figure 1E).

MRI Neck and chest was done which showed tracheal ring disruption from 1 to 4o' clock position at the level of tracheostomy tube (Figure 1F) which was recovered from right lower lobe bronchus.

Post procedure, with active physiotherapy his ventilatory requirements further decreased. His Chest X ray showed clearance of right side lower zone haziness and he was weaned off the ventilator. Subsequently, he was discharged at home with tracheostomy tube in situ and gradually tracheostomy tube was also removed.

DISCUSSION

Foreign body in the airways are common in extremes of age seen in children as well as in elderly. They have a wide spectrum of presentations, from asymptomatic to respiratory arrest and death. Our patient had weaning failure due

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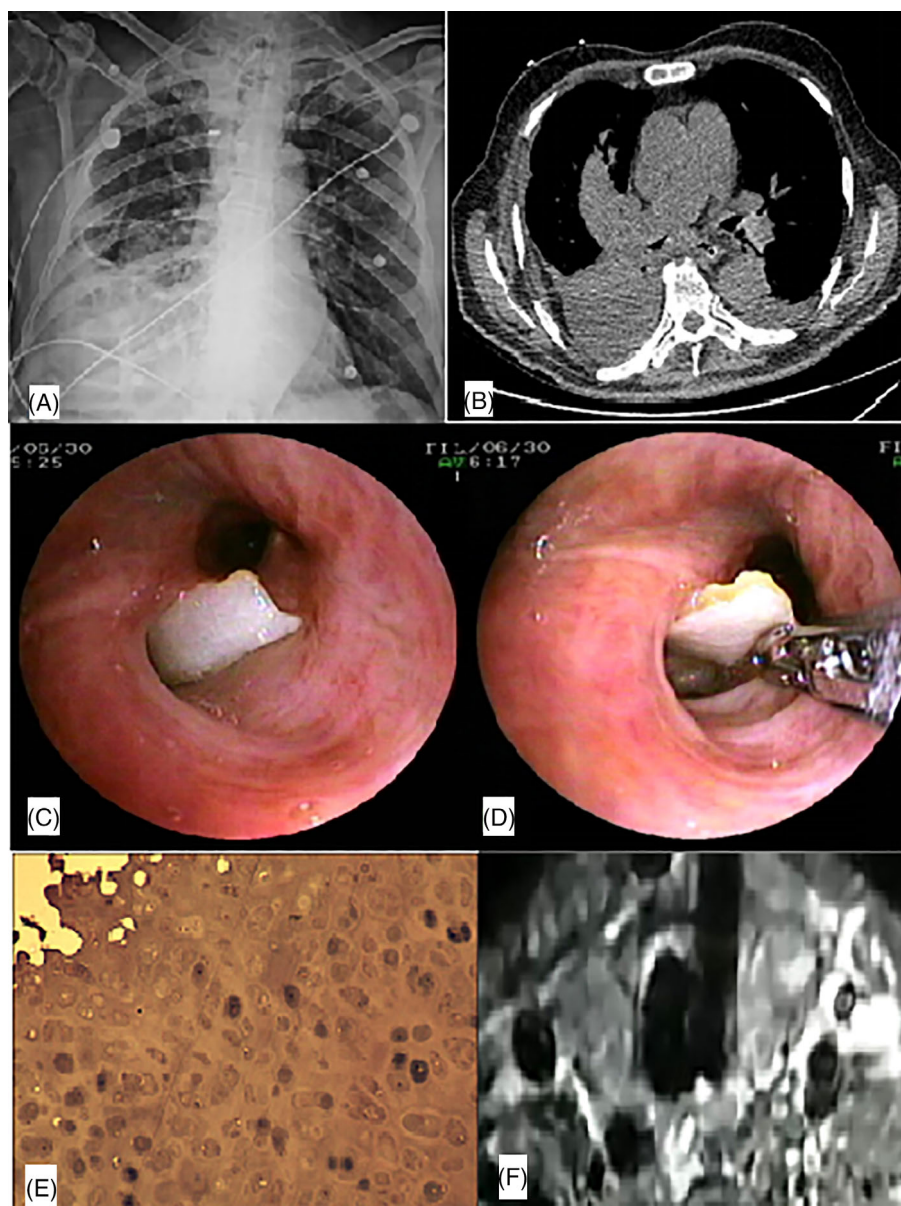


FIGURE 1 (A) Chest X ray showing right side pleural effusion. (B) CT scan showing right side pleural effusion with segmental collapse of right lower lobe. (C and D) Videobronchoscopy images showing foreign body in medial segment of right lower lobe bronchus (tracheal cartilage). (E) Histopathological appearance of retrieved tracheal cartilage (foreign body). (F) MRI neck showing missing tracheal cartilage

to persistent non-resolving pneumonia of RLL secondary to the FB.

Diagnosis of foreign body requires high index of suspicion. Tracheal cartilages have high-tensile strength and not been reported to break during tracheostomy procedures. In our patient tracheostomy was done with Blue rhino by seldinger's technique in another hospital. It is postulated that either dilator or tracheostomy tube itself with introducer must have displaced the cartilage. Contrary to the belief that PDT (percutaneous dilatational tracheostomy) causes tracheal cartilage displacement to accommodate tube, a study by Hotchkiss KS et al.¹ has showed significant tracheal cartilage fractures in cadaveric patients who underwent PDT. Weak cartilage due to old age could have been a precipitating factor

for fracture and displacement of the cartilage in our patient. Patient also had significant vitamin D deficiency (Vitamin D assay—13.10 ng/ml: Normal >75 ng/ml).

Presently, PDT is preferable done under bronchoscope guidance in most of the ICU's, and direct vision of the procedure and post procedural evaluation of the airway might have either avoided this complication or diagnosed early leading to prevention of lobar collapse-consolidation and antecedent prolonged ventilation. A randomized controlled trial by Hassanina² showed that flexible bronchoscope is able to decrease the needle puncture and complications when compared to blind PDT, although increased procedural time and hypercapnia was found more with bronchoscope guidance.

With the increasing use of ultrasound in ICU care, a RCT trial Chacko et al.³ of 177 PDT cases evaluated real-time ultrasound guidance with and without bronchoscopy. They reported ultrasound as a non-invasive tool to guide PDT, but USG cannot replace the bronchoscopy, which provides better endobronchial visualization and can help in minimizing complications including bleeding.

We could only find two cases of tracheal cartilage dislocation in literature post tracheostomy.^{4,5} However, in both case reports post tracheostomy, check bronchoscopy diagnosed it immediately. Many centres are not performing the check bronchoscopy after PDT, and this case highlights the importance of check bronchoscopy soon after post tracheostomy.

AUTHOR CONTRIBUTIONS

All authors were equally involved in the construction of the manuscript and patient care.

CONFLICT OF INTEREST

None declared.

DATA AVAILABILITY STATEMENT

Research data are not shared.

ETHICS STATEMENT

The authors declare that appropriate written informed consent was obtained for the publication of this manuscript and accompanying images.

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REFERENCES

1. Hotchkiss KS, McCaffrey JC. Laryngotracheal injury after percutaneous dilatational tracheostomy in cadaver specimens. *Laryngoscope*. 2003;113:16–20.
2. Hassanina EG, Elgnadya AA, El-Hoshya MS, Besheyb BN, Abdelhadya AM. Fiberoptic bronchoscopic guidance in percutaneous dilatational tracheotomy. *Egypt J Chest Dis Tuberc*. 2013;62: 519–27.
3. Chacko J, Gagan B, Kumar U, Kumar U, Mundlapudi B. Real-time ultrasound guided percutaneous dilatational tracheostomy with and without bronchoscopic control: an observational study. *Minerva Anesthesiol*. 2015;81(2):166–74.
4. Thomas A, Subramani S, Mitra S. Tracheal ring fracture—dislodgement after blue rhino percutaneous tracheostomy. *Anaesthesia*. 2003;58:1241.
5. Sun KO. Fracture and dislodgement of tracheal cartilage during percutaneous tracheostomy. *Anaesthesia*. 1995;50:370.

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