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CLINICAL IMAGE

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# Large malignant tracheo-oesophageal fistula with lung abscesses

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**Key message**
Tracheo-oesophageal fistula (TOF) can arise as a rare complication of malignancy (especially oesophageal or lung cancers) and pose difficult diagnostic and management dilemmas. We explore a challenging case of large malignant TOF below.

**KEYWORDS**
abscess, malignancy, pneumonia, trachea-oesophageal fistula

A 72-year-old male was diagnosed with locally advanced well-differentiated pulmonary squamous cell carcinoma with an unusual retro-tracheal adjacent primary. He received concurrent chemoradiotherapy with good initial radiological response. Six months later, he was hospitalized with aspiration pneumonia and lung abscesses complicated by pulmonary embolism and rapid atrial fibrillation. Despite extended duration piperacillin/tazobactam, the fevers and hypoxaemia persisted. CT chest revealed interim development of a posterior tracheal defect with oesophageal stricture as well as progression of right lower lobe consolidation and lung abscesses (Figure 1). Bronchoscopy confirmed large tracheo-oesophageal fistula (TOF) measuring approximately 2 × 1 cm (Figure 2). Tissue biopsy was negative for malignancy. Washings cultured multi-resistant Pseudomonas aeruginosa, and antibiotics were escalated appropriately. Given the poor clinical and functional status, the patient was deemed unsuitable for tracheal stenting. Oesophageal stenting alone was performed (Figure 3). Post-procedural imaging showed contrast pooling in the upper oesophagus but excluded definitive leak. The patient gradually improved with targeted antimicrobials and supportive measures. He was discharged home after 6 weeks. The lung abscesses eventually resolved on repeat imaging. Unfortunately, the patient aspirated repeatedly over the ensuing months. Follow up bronchoscopy

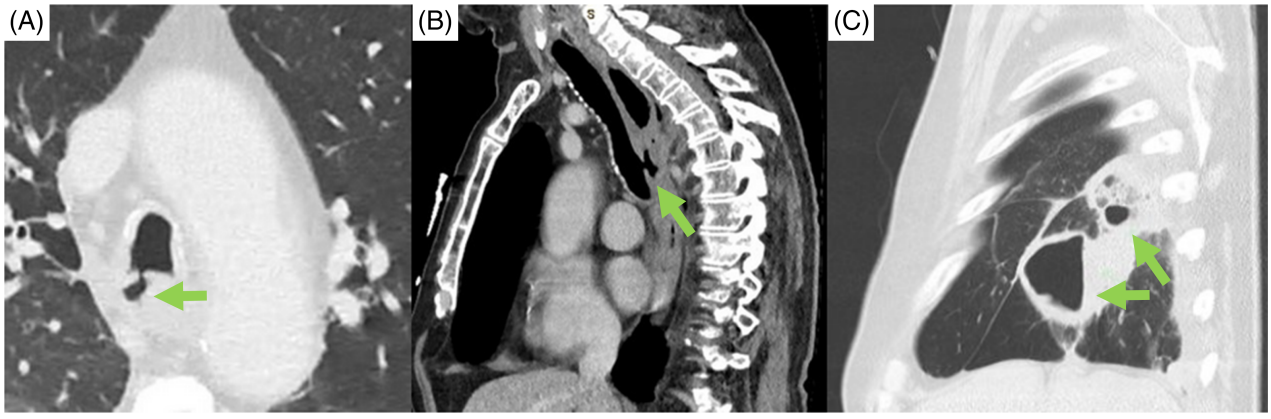


**FIGURE 1** Computed tomography of the chest. Findings of interest denoted by green arrows. (A) A focal defect in the posterior tracheal membrane with an apparent blind-ended pouch. (B) Same defect shown. Marked oesophageal thickening and obstruction. (B) Sagittal slices demonstrating multifocal lung cavities within the right lower lobe.

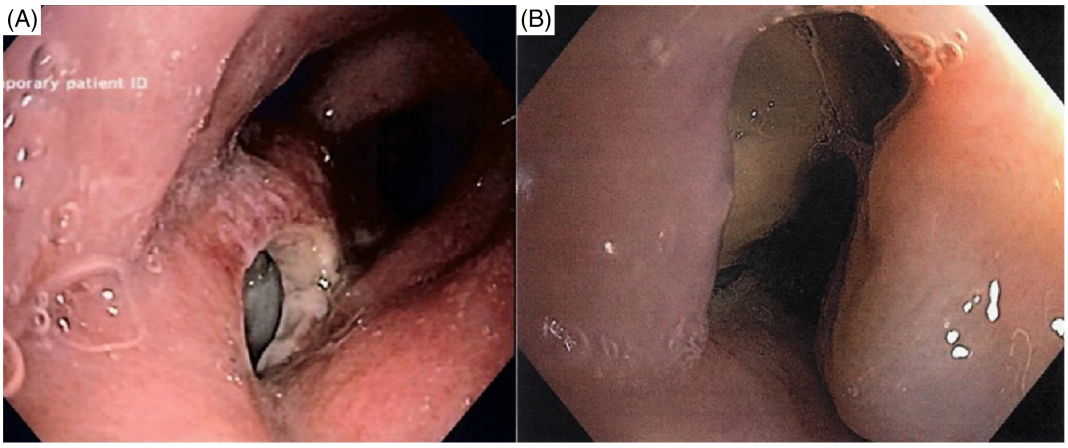


**FIGURE 2** (A) Bronchoscopy view of tracheo-oesophageal fistula situated in the distal trachea with surrounding mucosa erythema and irregularity. (B) Gastroscopy view of tracheo-oesophageal fistula at the mid-oesophagus level measuring 26 cm from the incisors, prior to deployment of oesophageal stent.

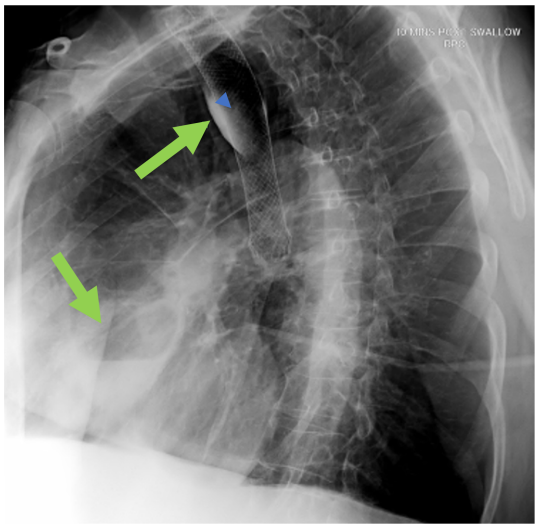

**FIGURE 3** Barium swallow study. Oesophageal stent in situ. A portion of contrast collects outside of the stent in the upper oesophagus anteriorly. No definitive tracheal leak visualized. Air-fluid level visible within a lung cavity.

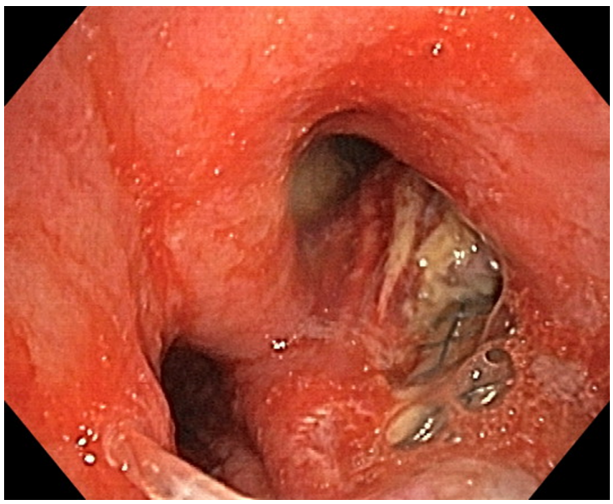

**FIGURE 4** Bronchoscopy view of new tracheo-oesophageal fistula situated in the distal trachea with oesophageal stent on view. Diffusely erythematous inflamed airway mucosa with clear foamy secretions.

demonstrated closure of the original TOF, however the oesophageal stent eroded through and formed a new TOF distally (Figure 4). The patient passed away 4 months following the first admission. Malignant TOF may form due to cancer progression and/or treatment, and usually signify worse outcomes, with reported median survival of <6 weeks following discovery.[1] Sequential or individual placements of tracheal and oesophageal stents may be pursued as palliative treatment but do carry significant risks including pain and new TOF formation.[2]

## AUTHOR CONTRIBUTIONS

Kang Xiang Tan drafted the manuscript. John Aukes contributed to the acquisition of data, supervision and editing. Both authors approved the final manuscript.

## CONFLICT OF INTEREST STATEMENT

None declared.

## DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

## 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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