Barotrauma induced tracheal diverticulum rupture: imaging findings

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DESCRIPTION

An elderly patient was admitted for a coronary artery bypass graft. The postoperative course was complicated by decompensated atrial fibrillation requiring repeat endotracheal intubation.

On examination subcutaneous emphysema was noted, which progressed to involve the upper arms, cervical region and face.

Chest X-ray and CT scan demonstrated subcutaneous emphysema and pneumomediastinum (figures 1 and 2). Fibre optic bronchoscopy revealed a normal tracheobronchial tree, without obvious orifices in the tracheal wall. A CT scan of the thorax revealed a tracheal diverticulum on the right posterolateral aspect of the trachea (figures 3–5). A defect in the superoanterior wall of the diverticulum was identified as the site of rupture. Rupture was likely secondary to postintubation barotrauma. Given the absence

Figure 1 Chest X-ray: pneumomediastinum, diffuse subcutaneous emphysema, visible pectoralis major striations.

Figure 2 Axial CT scan of lung windows: pronounced subcutaneous emphysema of the upper chest wall.

Figure 3 Coronal CT scan of lung windows: tracheal diverticulum arising from the right lateral aspect of the distal trachea.

Figure 4 Axial CT scan of lung windows: there is a defect in the anterior wall of the diverticulum at the site of rupture.

Figure 5 Three-dimensional reconstruction of trachea: diverticulum arising from distal third of trachea on the right.

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of airway compromise or respiratory failure, the decision was made to treat conservatively.

Tracheal diverticula are invaginations of the tracheal wall found in 1% of the population.¹ Tracheal diverticula may be congenital or acquired. Acquired diverticula are lined by mucosa alone, congenital diverticula are lined by mucosa, smooth muscle and cartilage. They are predominantly found on the

right posterolateral aspect of the trachea due to a deficiency of cartilage and absence of the oesophagus supporting the paratracheal tissue at this level.² They are most commonly asymptomatic, though they can act as reservoirs for infection or have mass effect. They are an uncommon cause of tracheobronchial rupture.^{2,3} The patient's symptoms improved with conservative management. She was discharged 2 weeks postoperatively with minimal residual subcutaneous emphysema.

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Contributors CNO is the primary author. JWR procured and selected images. GC contributed to literature review. CAR is the senior author and advisor.

Competing interests None declared.

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Learning points

- ▶ Tracheal diverticula are uncommon but important differentials of tracheobronchial rupture.
- ▶ Thin slice (1 mm) CT scan with three-dimensional reconstruction is helpful in the diagnosis of tracheal diverticula and in identifying the site of rupture.
- ▶ Cases of pronounced surgical emphysema can be treated conservatively if there is no coexisting airway compromise or pneumothorax. Surgery is reserved for younger patients with symptomatic, congenital diverticula.

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