Title: Staple Sabotage: A Delayed Airway Betrayal
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Background

Acquired tracheoesophageal fistula (TEF) is a rare (0.3-1.5%) but often fatal complication following esophagectomy.While malignancy drives over 50% of adult cases, late-onset benign TEFs are frequently caused by iatrogenic factors, including mechanical erosion from surgical hardware like migrated clips or staples. In colonic interposition, the conduit's proximity to the posterior trachea increases the risk of pressure necrosis, particularly when exacerbated by chronic inflammation from recurrent aspiration. In patients with homozygous Factor V Leiden, the necessity for lifelong anticoagulation makes hemoptysis a critical "sentinel" sign of a potential structural breach or vascular erosion.

Hospital Presentation and course

A 72-year-old man with prior esophagectomy and colonic interposition, recurrent aspiration pneumonitis, factor V Leiden on anticoagulation, and atrial fibrillation presented with 2 days of worsening hemoptysis. Anticoagulation was held. CT chest showed tree-in-bud opacities consistent with aspiration pneumonitis, and ampicillin-subactam was initiated.

With worsening hemoptysis, emergent bronchoscopy revealed a 2.5-cm TEF in the mid-trachea with eroded surgical clips from the neoesophagus. Laser ablation was performed, followed by placement of a covered tracheobronchial stent (20 × 40 mm) with balloon dilation. Antibiotics were escalated to piperacillin-tazobactam and micafungin for suspected mediastinitis. Hemoptysis resolved, anticoagulation was resumed, and the patient was discharged in stable condition.

Discussion

This case illustrates a rare, delayed complication of esophageal reconstruction in which surgical clips erode into the trachea, resulting in a TEF and hemoptysis. While TEF is more commonly associated with malignancy recurrence or anastomotic leaks, hardware-induced fistulization is uncommon and may occur years after surgery. The initial presentation was attributed to an inflammatory process (aspiration pneumonitis) based on imaging; however, TEF remained on the differential diagnosis given the patient's surgical history and hemoptysis. Bronchoscopy was essential for definitive diagnosis and management, allowing for direct visualization, laser debridement, and placement of a covered metallic stent to achieve a mechanical seal.
While surgery with tissue interposition is definitive, it carries mortality rates exceeding 35% in post-esophagectomy patients due to mediastinal fibrosis and poor graft vascularity. Covered-stents provide an effective alternative for non-surgical candidates by occluding the fistula and maintaining airway patency.

Aggressive coverage with piperacillin-tazobactam and micafungin was vital for managing secondary mediastinitis, particularly given the 19-25% mortality rate linked to fungal translocation in esophageal defects. Finally, securing the airway enabled the safe resumption of anticoagulation within 7-14 days, effectively balancing the 3- to 8-fold increased thromboembolic risk of Factor V Leiden against the risk of recurrent massive hemorrhage.

Conclusion

Delayed TEF due to surgical staple erosion is a rare but serious cause of hemoptysis in patients with prior esophageal reconstruction. Clinicians should maintain a high index of suspicion for structural complications in such patients, particularly when symptoms persist or worsen despite standard therapy. Early bronchoscopy and timely intervention can be life-saving and definitive.

References:

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