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Rare occurrences in the pediatric population, acquired bronchoesophageal fistulas necessitate significant anesthetic planning and present many challenges for the anesthesiologist. We present a case of bronchial intubation in a patient with acquired, recurrent bronchoesophageal fistula.

The case: An 11 year old male with a complicated past medical history is s/p slide tracheoplasty to repair a large left main-stem bronchoesophageal fistula caused by an esophageal foreign body. Left lower lobe (LLL) bronchiectasis causing persistent infections has led to multiple dilations and stent placement. Uneventful pectus bar placement was performed to relieve pressure on the left mainstem bronchus.

Bronchoscopy POD 2 identified a bronchoesophageal fistula. A 5.0 cuffed endotracheal tube (ETT) was passed over a fiberoptic bronchoscope into the right mainstream bronchus. Subsequently, a 3.5 cuffed ETT was passed through the tracheal stoma into the LLL distal to the bronchoesophageal fistula and the LLL was suctioned and lavaged.

Later POD 2 the patient had worsening oxygenation. A Sengstaken tube was placed stopping air leakage. The patient was taken to the OR for a silastic stent placement from the trachea into both the left and right mainstream bronchus – no detectable leak remained.

Discussion: Acquired broncho-/tracheoesophageal fistulas are rare occurrences; however, they are difficult to manage and may have devastating consequences for patients. The preferred approach to repair of these defects is primary closure. Large defects necessitate flap creation or tracheal resection (1). Initially, our patient had a slide tracheoplasty with good results. Recurrence after this type of repair is very rare and was likely complicated by placement of intrabronchial stents.

General anesthesia risk is increased in patients with broncho-/tracheoesophageal fistulas. Chronic aspiration may result in chronic pulmonary infections that must be treated (2). Positive pressure ventilation prior to intubation may cause/worsen aspiration. Fiberoptic intubation should confirm placement of the ETT cuff below the level of the fistula.

Lung injury from chronic aspiration and selective lung isolation during surgery may make adequate ventilation difficult. It is important to consider alternative ventilation strategies including multiple ETTs or passive oxygenation through a tube with a leak (3). Atelectasis may contribute to poor ventilation and oxygenation. Barotrauma in ventilated areas is a concern.

This patient had a rare, recurrent bronchoesophageal fistula visible only after expansion of the chest by Nuss bar. The case was difficult due to recurrent infections resulting from a fistula that was not detectable, reduction in ventilated lung volume due to need for complex isolation, and the need to limit airway pressures to lessen risk for aspiration and barotrauma.

References:

(1) Shen R, et. al. Ann Thorac Surg 2010; 90:914-9

(2) Kaur D, et. al. J Anaesth Clin Pharmacol 2012; 28:114-6

(3) Ford JM, Shields JA. AANA J 2010; 80:49-53

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