

Background

- Tracheobronchial foreign body (TFB) is one of the most common pediatric airway emergencies
- Delayed diagnosis can lead to long term complications such as recurrent pneumonia, bronchiectasis requiring lobectomy, or even death^{1,2}.
- We present a case of TFB from a broken tip of a closed circuit suction system (CCSS) that was retained in our patient for 6 days until discovered by the anesthesiology team intraoperatively.

Case Description

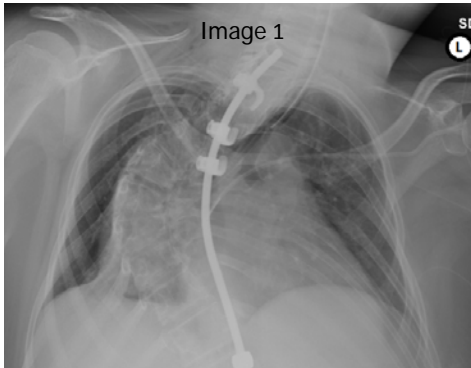
An 18-year-old boy with Prader-Willi Syndrome, DM 2, and severe kyphoscoliosis (>100° thoracic curve and >80° kyphotic) was scheduled for posterior spinal fusion (PSF) T3-L3.

First Intraoperative Course: Osteotomies T5 to T12 with temporary rod instrumentation T3 to L3

On the day of surgery, patient underwent uneventful induction and was intubated with GlideScope® and bougie after 2 failed direct laryngoscopy attempts. Approximately 3 hours into the case, loss of MEPs and SSEPs in bilateral lower extremities prompted a wake-up test confirming movement, but necessitated quick closure. Patient was admitted to PICU intubated, with vasopressors to maintain adequate spinal perfusion.

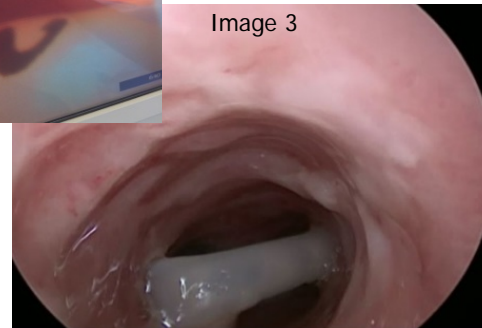
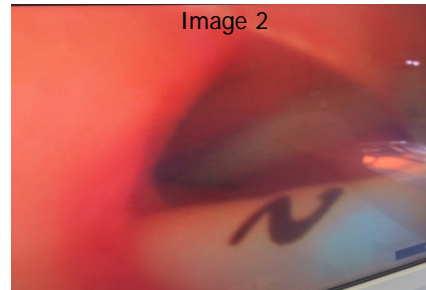
Intermediate Hospital Course

The next day prior to extubation, CXR revealed a catheter "projecting over RUQ which may represent the patient's epidural catheter" (Image 1). Patient did not have an epidural catheter. On the floor, he had persistent episodes of agitation, cough, tachypnea and shallow breathing, yet oxygen saturation remained 98-100% on room air.



Second Intraoperative Course: Posterior spinal instrumentation T3 to L3

On hospital day 7, patient returned to the OR for the 2nd stage PSF. He was intubated with bougie and GlideScope®. Shortly after going prone, he developed a significant decrease in pulmonary compliance that was transiently relieved with aggressive ETT suctioning and albuterol. Flexible fiberoptic bronchoscopy revealed a TFB at the level of the carina (Image 2). The decision was made to return supine and consult otolaryngology for immediate TFB removal. Rigid bronchoscopy demonstrated improved definition of the TFB (Image 3). A 12-cm catheter tip of a CCSS (Image 4) was retrieved after 30 minutes of difficult rigid bronchoscopy. He underwent the rest of surgery without complication, with disposition to PICU intubated.



Post-operative Course

Extra measures were taken to ensure no TFB after extubation on post-op day 2. He was eventually discharged home after a month in rehab for severe oropharyngeal dysphagia.

Discussion

- The piece of catheter found in this patient's airway was consistent with a 4.0mm 12F Kimberly-Clark® HALYARD® closed suction catheter (Image 5)³, the standard CCSS used in our PICU.
- This is the only case report of CCSS malfunction causing dislodgment within the airway as a TFB.
- CXR findings before and after the first ICU extubation were overlooked by the patient's care team. The patient did exhibit signs of airway irritation and respiratory distress that could be explained by a retained TFB, but his complex medical history made elimination of more common differential diagnoses such as atelectasis or splinting due to acute postoperative pain challenging.
- A thorough evaluation and management of his intraoperative airway obstruction by the anesthesia team led to the discovery and retrieval of the iatrogenic foreign body.
- This case highlights the importance of inter-disciplinary communication and astute management of postoperative complications when caring for a complex surgical patient.
- Fortunately, iatrogenic foreign body injury remains a rare occurrence, but vigilance for all causes of perioperative respiratory complications should be maintained.



References:

1. Kaur et al. Foreign body blocking closed circuit suction catheter. Int J Appl Basic Med Res, 2014, 4(1): 50-2.
2. Karakoc et al. Foreign body aspiration: what is the outcome? Ped Pulm, 2002, 34: 30-6.
3. <https://products.halyardhealth.com/respiratory-health/closed-suction-systems-adult/standard-use-catheters/halyard-closed-suction-catheter-double-swivel-elbow.html>