

Prolonged Esophageal Button Battery Exposure: Considerations for Outpatient Pediatric Dysphagia Work-up

Hilary M. Caruso Sales D.O.¹, Ryan Stephenson D.O.¹, Casey Fisher D.O.¹ & Alyssa Terk M.D.^{2,3}

¹Department of Otolaryngology, Philadelphia College of Osteopathic Medicine, Philadelphia, PA

²Department of Otolaryngology, St. Christopher's Hospital for Children, Philadelphia, PA

³Assistant Professor of Otolaryngology and Pediatrics, Drexel University College of Medicine, Philadelphia, PA
Program Director: John McGrath D.O.

INTRODUCTION

In the field of pediatrics, ingestion of button batteries is considered a surgical emergency and may have devastating consequences. These include esophageal rupture, mediastinitis and death—all of which have been reported in children as early as two hours of ingestion³. In the case of our patient, ingestion occurred several weeks prior to presentation, and the patient was first seen in our office for complaints of new onset progressive dysphagia without any witnessed foreign body ingestion. In both general pediatrics and pediatric otolaryngology literature, there is a large void in management guidelines for the work-up of dysphagia, both in the inpatient and outpatient settings. Given that this patient had ingested a potentially lethal foreign body weeks prior to his presentation in our office, we will present a guideline for working up concerning symptoms in the pediatric population.

CASE SUMMARY

Our patient was a 15 month old male who presented to our outpatient otolaryngology clinic with a chief complaint of dysphagia. History revealed that the patient was experiencing a progressive aversion to PO intake which began approximately 2 months prior to his presentation. He was choking and coughing with eating, vomiting multiple times daily, and had a wet and raspy sounding voice when eating. Prior to the onset of symptoms, the patient was tolerating all textures of food but was now refusing solids and tolerating only select liquids. When eating, the patient would place his fist in his mouth as if to push his food into his esophagus. The patient's pediatrician believed the patient to be experiencing behavioral issues and thus delayed work-up. There was no report of witnessed foreign body ingestion or any acute events prior to the onset of symptoms. The patient did have older siblings.

An esophagram was ordered immediately after the patient was seen. Scout images revealed a foreign body in the upper aerodigestive tract consistent in appearance with a button battery. The patient was sent directly to our office from radiology and was urgently taken to the operating room for extraction.

Rigid esophagoscopy revealed the button battery to be in the proximal esophagus, below the level of the cricopharynx. There was surrounding granulation with adherence of the battery circumferentially to the esophageal mucosa. Removal was achieved with forceps and required significant force.

Post-operatively the patient was kept NPO for 48 hours. An esophagram was performed on POD #2 which revealed only mild narrowing of the esophagus. The patient was started on a clear liquid diet and, after toleration, was advanced to soft. Discharge home was on POD#3. Outpatient follow up 2 months later revealed continued difficulty with some solid foods, no liquid dysphagia and appropriate weight gain.



Figure 1. Button battery after extraction from the proximal esophagus just distal to the cricopharynx muscle.

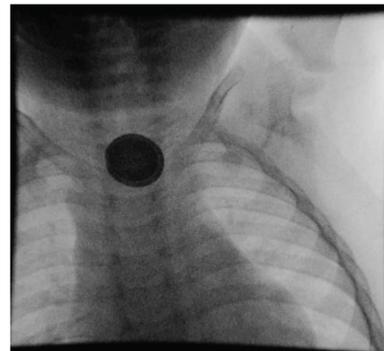


Figure 2. Scout images obtained prior to planned esophagram reveal round foreign body in the upper aerodigestive tract exhibiting the "halo" sign.

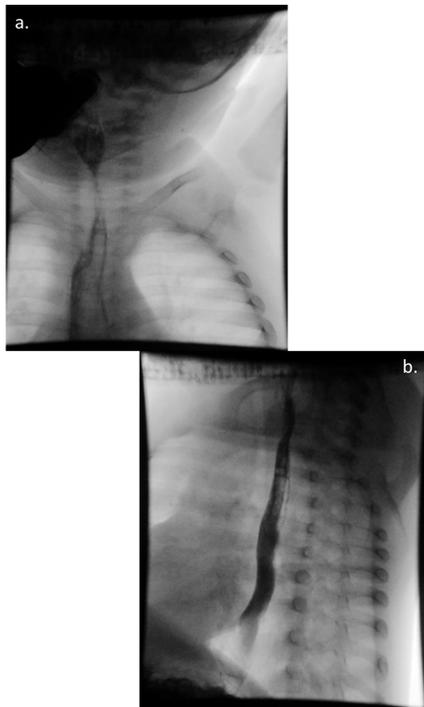


Figure 3a & b. POD #2 barium esophagram reveals mild narrowing at the level of the thoracic inlet, normal peristalsis and no signs of extravasation or obstruction.

DISCUSSION

Pediatric foreign body ingestion is a common and potentially lethal problem¹. Button battery ingestion has become more common due to its increased presence in household items. In 1998 the Poison Control Center reported just over 2,000 cases of ingestion. In 2007, more than 10,000 cases were reported. Frequently patients present with witnessed ingestion or choking episodes⁴. Like our patient, many children may have a delayed presentation or non-specific symptoms leading to delayed diagnosis or misdiagnosis². Our patient's presentation of prolonged and progressive dysphagia caused a broadening of our differential diagnosis; however, there was a high index of suspicion since he was developmentally normal with no past medical history.

With this high index of suspicion, we were able to quickly diagnose our patient's subacute presentation and perform the necessary acute intervention with a positive outcome. Our ability to diagnosis this patient efficiently and effectively was based on our ability to recognize the concerning signs and symptoms in his history. After thorough literature review, we have developed a framework based upon findings from Sink et al for the outpatient evaluation and work-up of pediatric patients who present with dysphagia or concern for foreign body ingestion (see Figure 4). By doing so, we hope to guide both pediatricians and pediatric otolaryngologists in taking the proper diagnostic steps to determine the underlying cause of a patient's symptoms upon initial presentation.

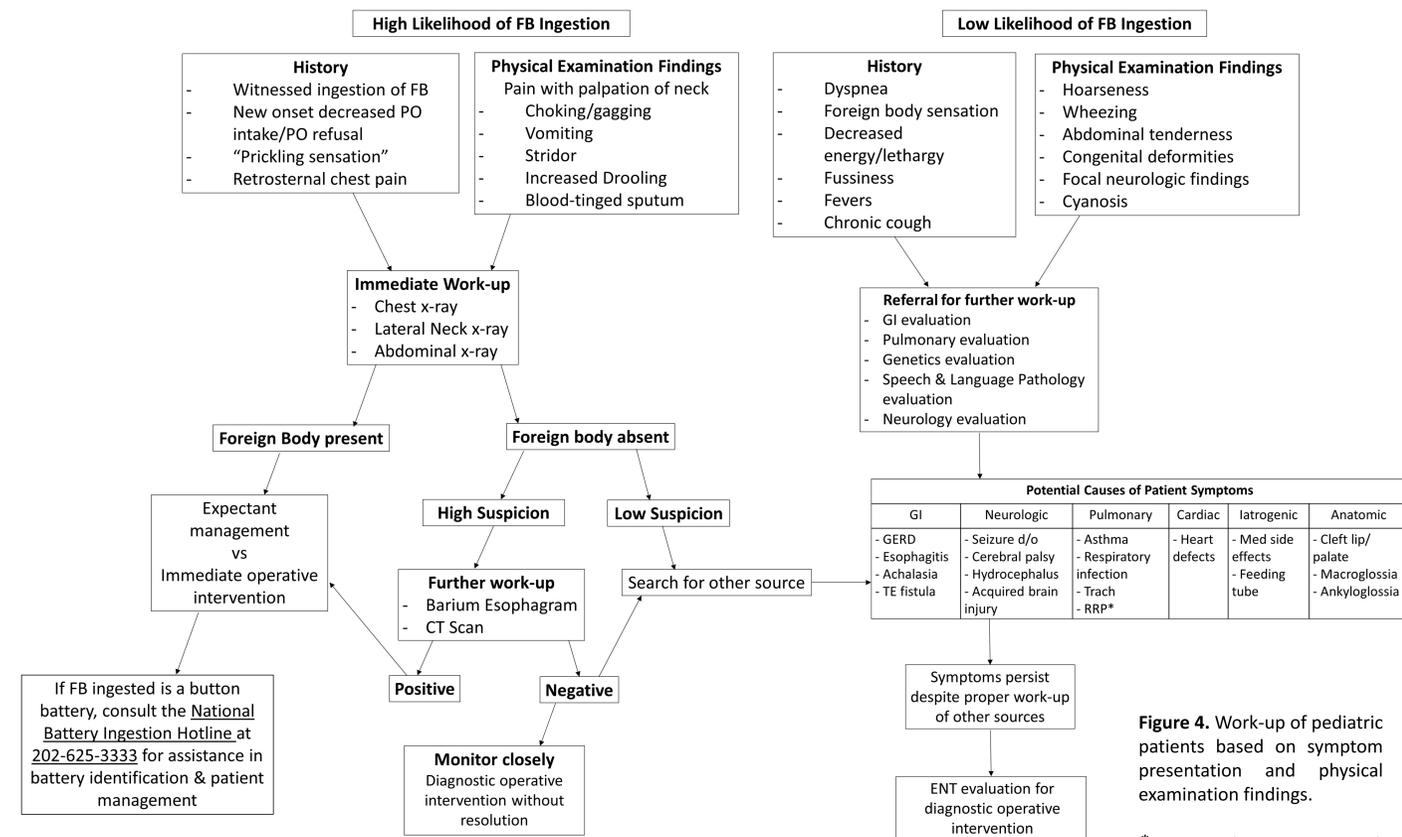


Figure 4. Work-up of pediatric patients based on symptom presentation and physical examination findings.

* Note that patients with hoarseness should be referred to ENT to rule out RRP.

REFERENCES

- Johnson, J. T., & Rosen, C. A. (2014). *Bailey's Head and Neck Surgery - Otolaryngology* (Fifth ed.). Philadelphia, PA: Lippincott Williams & Wilkins
- Dodrill P, Gosa MM. Pediatric Dysphagia: Physiology, Assessment, and Management. *Ann Nutr Metab* 2015, 66(suppl 5): 24-31.
- Jayachandra S, Eslick GD. A systematic review of paediatric foreign body ingestion: presentation, complications, and management. *Int J Pediatr Otorhinolaryngol* 2013, 77(3): 311-317.
- Sink, J. et al. Diagnosis of Pediatric Foreign Body Ingestion: Clinical Presentation, Physical Examination, and Radiologic Findings. *Ann Otol Rhinol Laryngol* 2016, 125(4): 342-350.