

Foreign Body Ingestion in Children: The Menace Continues

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Foreign body ingestion poses a significant health hazard in children, potentially leading to morbidity and mortality if impacted in the gastrointestinal tract. As opposed to adults, the majority of foreign body ingestions in children are accidental, often not witnessed, and mostly asymptomatic. Fifty years back in August, 1972, a research article was published in the journal on 'Acute dysphagia due to foreign bodies in esophagus' [1]. Through this communication, we present the changes and challenges in the management of foreign body ingestion in children which evolved over the last five decades.

THE PAST

The scenario described by Tandon, et al [1], half a century ago, highlights the magnitude of esophageal foreign body in children based on a hospital-based data from Agra, Uttar Pradesh. They reported a large series of 198 children who presented with impacted esophageal foreign body. The study population comprised of children aged 12 years or younger with a male to female ratio of 6:5. Though the maximum reported incidence of foreign body ingestion occurred in the age group between 6 months to 3 years, in that series, it was found evenly distributed across all age groups. As expected, the majority (63%) of the foreign bodies were stuck at the cricopharynx followed by middle third of esophagus (28%) and lower end of esophagus (9%). Plain X-ray of chest was performed in all to identify the nature, site and size of foreign body. Fortunately foreign bodies were radio-opaque in 90% of cases. Pre-existing gastrointestinal tract abnormalities such as strictures, diverticulum etc. increases the risk of impaction of a swallowed foreign body. Tandon, et al. [1] observed pre-existing esophageal abnormalities in 10% cases; 6% had benign esophageal stricture and 4% had congenital web. All endoscopies were performed under general anaesthesia with rigid endoscope, as per the

standard practice those days, which often resulted in slippage of foreign body into stomach, as was seen in 3% cases in the series. Endoscopic removal of foreign bodies is not without risk of complications, especially when rigid endoscopes are used. Only one child (0.5%) developed mediastinal emphysema following foreign body removal in that series.

THE PRESENT

Foreign body ingestion continues to be one of the major causes of pediatric emergency department visits, even though the nature of ingested foreign bodies has undergone a considerable change over the years. Children usually swallow the foreign body from household products such as coins, toys, fishbone, jewelry, magnets, and button batteries. As the economy grew and metallic coins gave way to printed notes, the spectrum of ingested foreign bodies changed. Nowadays, we see fewer reports of metallic coin ingestion but more often button battery ingestion

and food bolus impaction due to underlying eosinophilic esophagitis [2]. With the wide abundance of detachable batteries in consumer electric toys, the incidence of button battery ingestion has gone up exponentially [2,3]. The National Poison Data System (USA) outlined 83,459 battery ingestions from 1985 to 2017, 77% in children younger than 6 years [4]. In a recent Indian study, it was observed that 50% of ingested batteries in children were removed from a product (mainly from hearing aids, remote controls), 30% from toys, and the remaining 20% from unused cells, watches etc. [5]. Related morbidity and mortality have sharply risen in the last decade due to the use of more powerful (3.0 V vs 1.5 V) and bigger (>20 mm) lithium battery as compared to traditional alkaline button battery. Button battery causes necrosis of esophageal walls due to electric current, leakage of chemicals as well as pressure necrosis [6,7].



In 80-90% of cases, the foreign body passes without complications and is evacuated with feces within a few days. Around 10-20% of cases may require endoscopic removal because of impaction or its potential harm – less than 1% may require surgery [3]. The morbidity related to foreign body ingestion depends on three factors; nature of foreign body (button batteries, sharp-pointed objects), site of impaction (esophagus), and duration since ingestion.

Highlighting the clinical relevance of the situation, European Society for Pediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN) has recently published guidelines on how to manage button battery ingestion cases and its complications [8]. This guideline recommends early referral to the emergency department and getting bi-plane X-ray of neck, chest, and abdomen done in all patients with suspected foreign body ingestion, even if they are asymptomatic. A “halo or double-rim” sign on the antero-posterior view and “step-off” on the lateral view differentiates a button battery from a coin. Although, most foreign bodies in the gastrointestinal tract pass spontaneously without complications, endoscopic or surgical removal may be required in a few children. Management of ingested foreign bodies remains a challenging endoscopic dilemma faced by pediatric gastroenterologists. As per ESPGHAN recommendations, blunt foreign bodies and coins or impacted food bolus from the esophagus should be removed urgently (within 24 hours), even in asymptomatic children [2]. If the child is symptomatic, it should be removed on an emergency basis (within 24 hours), especially for sharp, pointed objects and button batteries [3,8]. Button batteries in the stomach are removed as soon as possible in symptomatic children, in cases of ingestion of more than one battery and if coin-ingestion with a magnet [8]. In cases of asymptomatic children, endoscopic removal of button battery from stomach/intestine is considered if it remains in the same position after 7-14 days, with a follow-up X-ray to confirm position [8].

Advances in endoscopic equipment, accessories and technique have made quantum leaps in the last 50 years. Use of rigid endoscope, Foley catheter and bouginage made way for flexible endoscopy, which is the current therapeutic modality of choice for most patients. The key principles for endoscopic management of esophageal foreign bodies are to protect the airway, to maintain control of the object during extraction, and avoid causing additional damage. Endotracheal intubation is sometimes necessary, especially in younger children and those at

higher risk for aspiration. The use of devices such as an esophageal overtube and a latex protector hood may facilitate the safer extraction of sharp/pointed objects.

CONCLUSIONS

It is important for all clinicians to be able to recognize symptoms of foreign body ingestion, radiographically identify them (especially button batteries and sharp objects), and ensure prompt endoscopic removal to minimize the risk of negative outcomes. Parents must be made aware of the hazards and take necessary actions to prevent ingestion. Community efforts should be made to diminish the burden through stricter legislation, product innovation, and redesign. As button batteries are the most commonly ingested foreign body with a potential risk of adverse outcomes, addressing this issue by raising awareness will certainly reduce the magnitude of the problem.

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