

Foreign body ingestion in children: At a glance

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Abstract

This article discusses the symptoms, diagnosis, and treatment options available for children who have accidentally swallowed foreign objects. It may be helpful for primary care physicians to recognize the wide spectrum of presentations of ingested foreign bodies in children. As a result, primary care physicians should emphasize the importance of considering ingested foreign bodies in the differential diagnosis of many respiratory and vague gastrointestinal complaints. In addition to this, it suggests a method for dealing with asymptomatic children who have swallowed a foreign body and identifies certain categories of foreign bodies that call for additional consideration.

Keywords: Children, coin ingestion, endoscopy, foreign body ingestion.

Introduction

Foreign body ingestion is one of the common problems among children. Children between the ages of six months and three are most likely to have problems after placing objects in their mouths, this is the exploratory stage of development. These events may cause serious complications (1,2).

Of many objects, such as coins, fishbones, pins, button batteries, magnets, household items, and many other objects, they are the most commonly ingested objects in most countries (3). Ingested foreign bodies can lodge in any part of the gastrointestinal (GI) tract, including the proximal esophagus, distal esophagus, and stomach. The variety of foreign bodies and hospitalization positions may cause different degrees of complications (3,4).

Patients who swallowed foreign bodies were admitted to the hospital with various symptoms. For example, vomiting, the feeling of something being stuck, odynophagia, and dysphagia. Besides the symptoms, the main guiding parameter for us is the history of swallowing by the patients or their parents. This makes it easier for healthcare professionals to reach the diagnosis (4).

Most ingested foreign bodies pass through the gastrointestinal tract without any complications. In rare cases, an ingested foreign body may cause ulceration, perforation, bleeding, or local stricture formation. The most dangerous foreign objects are button batteries, which can quickly cause mucosal injury. Magnets are also known to cause mucosal damage in the small intestine. On the other hand, FB may cause perforation at another level of the esophagus or gastrointestinal tract (5).

Etiology

Typically, pediatric foreign body ingestions occur accidentally, but intentional ingestion can also occur. Most cases occur in children due to the ingestion of small objects. Fishbones, pins, button batteries, magnets, and small household items, especially coins, are among the frequently ingested objects (3,4).

If coin/disc batteries are inserted into the esophagus, nose, ear, or other openings, even for a short time, serious injury may result. The highest risk is associated with larger lithium-based batteries, but all models carry some risk. Children with suspected button/disc battery ingestion should be treated promptly; a battery stuck in the esophagus should be removed without delay (5,6). A button/disc battery can be distinguished from a coin by its characteristic bilayer appearance when seen on a radiograph, or a circle-in-a-circle appearance when viewed from front to back. In a study reported 13 cases of serious complications, including 30.8% perforation, 23.1% stricture formation, aortoesophageal fistula formation, and 23.1% death from blood loss. More than 90% of serious complications occurred in children aged 5 years and younger, with batteries of 20 mm or larger in diameter (7,8).

Small, powerful magnets found in some toys can cause serious injury to the intestines, as the strong attraction between two or more magnets can cause the intestines to erode through intervening tissues. Sometimes it can cause stomach perforation and sometimes appendix or small intestine perforation. A single swallowed magnet can also cause injury, especially in combination with another metallic object such as a button/disc battery (9).

Pre-existing GI tract abnormalities such as previous surgery, strictures, fistulas, diverticula, or functional abnormalities increase the risk of an ingested foreign body implanting at the site of the abnormality (4,9).

Epidemiology

The majority of swallowing takes place between the ages of six months and three years. Children and mentally ill patients often swallow foreign bodies. Coins are most commonly ingested in the United States, while in other countries fishbone tends to be the most common form of ingestion (3,4-10). There are rare reports of death from ingestion, but the mortality rate from foreign body ingestion is generally very low (10).

Pathophysiology

The most common complication of foreign body ingestion in children is obstruction of the body in the esophagus, although the foreign body can remain anywhere in the gastrointestinal (GI) tract. Once inserted, the object may partially or completely block the GI tract. Also, some foreign bodies may erode from the GI tract, causing complications due to perforation or displacement of the object. Some patients may have a higher risk of retention, obstruction, or perforation. These include younger patients with smaller anatomy, previous upper GI tract surgery, a significant history of gastroesophageal reflux or eosinophilic esophagitis, neuromuscular disease conditions, or the presence of congenital malformations (8, 9).

The most common site of obstruction is the thoracic inlet, which is the area between the collarbones on an X-ray. The cricopharyngeal sling, located at C6, is also located at this level and is known as a place where foreign bodies are frequently attached. About 10 to 15% of foreign bodies are trapped in the middle esophagus, where the carina and aortic arch cover the entire esophagus. The rest remains trapped at the lower esophageal junction (5,7).

Foreign bodies are likely to be found in children with preexisting esophageal abnormalities. Once a foreign body reaches the stomach, it is less likely to be associated with complications. However, some foreign bodies may become stuck in the ileocecal valve (5,7,11).

Symptomatology

In cases where foreign body ingestion is suspected, the airway (including the oropharynx) and respiration should be evaluated immediately. A blocked or injured foreign body in the esophagus can cause chest pain or foreign body sensation. Symptoms may be more pronounced when swallowed. Younger children may drool, vomit, or refuse food. Hematemesis and cough may be present. Foreign body remaining in the stomach or intestine can cause abdominal pain, vomiting, or bloody stool. If it is present for a long time, fever or weight loss may develop. A foreign body completely obstructing the esophagus causes more dramatic symptoms (11-15).

Importantly, however, pediatric swallows may have no signs or symptoms (or they may be vague and difficult to spot). Since most foreign body ingestions by children are unwitnessed, the possibility of nonspecific symptoms caused by foreign body ingestion should always be considered. For example, in one series, only half of the patients had any symptoms despite the witnessed foreign body ingestion (11-14). Ingested foreign bodies containing nickel may cause systemic signs and symptoms such as rash or itching in patients with nickel sensitivity.

Physical examination and evaluation

If a complete history and physical examination (including pharyngeal examination) suggest possible foreign body ingestion, a decision should be made as to whether additional imaging is necessary. If so, plain radiographs are usually sufficient initially. Recently, healthy children with low-risk foreign body ingestion can simply be observed. Metallic ingested foreign objects, such as coins and batteries, will easily show up on a plain radiograph. Metal detectors are occasionally used, especially when ingesting known coins (5,8). It is not unusual to find an unexpected foreign body on a radiograph taken to evaluate nonspecific symptoms such as cough, fever, or weight loss. Most glass fragments can be seen on a radiograph. Radiolucent objects, such as a large piece of meat or a plastic toy, may not appear on radiographs, although their edges or irregularities may still be noticeable on the radiograph. Affected patients may require more advanced imaging

techniques such as contrast-enhanced radiography or MRI scanning, but these patients may also be considered for treatment (eg, endoscopy) without further imaging (5,10,13).

Management

Most children who swallow a foreign body do not require invasive treatment. Asymptomatic, previously healthy children who have ingested low-risk foreign bodies will usually be successful (12). Patients should be informed of the signs and symptoms of possible subsequent complications (10-15).

Foreign bodies that settle in the esophagus are most often removed endoscopically (15). Some, especially those that remain at the gastroesophageal junction of the lower esophagus, spontaneously pass into the stomach after a few hours; this is safe for small, immobile objects such as coins and similar in children who have otherwise normal GI tracts and have a low risk of further complications as the object passes through the rest of the GI tract. Some centers remove small esophageal foreign bodies, especially coins, with a bougie or balloon catheter; these require serious experience. Endoscopy is also typically used to remove large, sharp, pointed, or other high-risk objects from the stomach, or in patients where the continued passage of the object through the GI tract is at risk. Objects in the lower GI tract should be managed with a specialist who may recommend surgical removal (13-15).

Medical treatment of foreign body ingestion is not recommended. Emetics, muscle relaxants, and meat tenderizers are typically ineffective and potentially dangerous in the treatment of children with esophageal foreign bodies (16). Laxatives are sometimes used to encourage the passage of objects through the gut, but this practice has not proven effective (5,12).

Prognosis

The outcome and prognosis of pediatric foreign body ingestion is generally good, with most patients tolerating the passage of swallowed objects without intervention. Even in scenarios where intervention is required, mortality and morbidity are low. High-risk ingestion (button batteries, magnets) may be

associated with complications and, in rare cases, death (11,15).

Systemic reactions associated with zinc allergy have been reported. Esophageal foreign bodies are known to cause mediastinitis, perforation, and pneumomediastinum. Button batteries cause the highest morbidity and therefore must be removed as soon as they are diagnosed. Finally, foreign body removal procedures can also cause complications from anesthesia or the procedure (5).

Complications

As mentioned above, esophageal obstruction is children's most common complication of foreign body ingestion (6,7). However, some foreign bodies may erode from the GI tract, causing complications due to perforation or displacement of the object. In rare cases, the following complications may occur:

- . Perforation of the esophagus or stomach
- . Pneumothorax
- . Mucosal erosion
- . Aortoenteric fistula
- . Pressure necrosis
- . Failure to thrive secondary to decreased oral intake

The management of children ingesting foreign bodies requires an interprofessional approach. Doctors, nurses, poison control specialists, radiology technologists, child life specialists, ambulance personnel, and others must work together to provide ongoing, child-friendly care, both acute and follow-up. The nurse should educate parents and caregivers about the dangers of leaving small items around children. Also, parents should be told never to keep button batteries near children, as they are known to cause rapid damage to the GI tract (12,14).

Unusual or recurrent foreign body ingestion should ensure that psychosocial concerns are taken into account and evaluated by a mental health professional. Foreign body ingestion can be a risk-taking or attention-seeking behavior. Abuse or neglect may be present. Mental illness can cause some children to swallow foreign bodies. This may be unintentional, such as a patient with bulimia who is unable to hold and swallows a toothbrush used to induce vomiting. Drug packages may be swallowed to avoid being noticed by the police (6,8).

Conclusions

Preventing foreign body ingestion in children is a high priority. Caregivers should be trained to prevent young children from coming into contact with small objects that may be harmful if swallowed, especially button/disc batteries, small magnets, and other high-risk objects.

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