

Ingested Sharp-Pointed Foreign Body in Children: A Case Report

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Abstract

Accidental foreign body ingestion and impaction of food bolus present as an emergency. Pediatric population is the most vulnerable. However, most foreign bodies pass spontaneously in the stool. A child was brought to emergency department with history of wire nail ingestion 15 hours back. Then emergency radiological investigation was done & advised to admit to the hospital. Patient was on conservative treatment & passed spontaneously per anum with stool after 04 days of ingestion. Decision regarding immediate intervention or conservative approach will require consideration of the level of lodgement & type of foreign body. Prevention is possible if parents/ guardians exercise control on their wards & are aware of implications of such an event.

Keywords: Wire Nail, Foreign body, Children

Introduction:

Foreign body ingestion and impaction of food bolus occur commonly. The majority of foreign body ingestions occur in the pediatric population, with a peak incidence between the ages of 6 months and 6 years.¹ The incidence of FB ingestion has increased in the past 13 years by 80%.² FBs can be broadly categorized into the following major groups: blunt objects, sharp-pointed objects, magnets, food boluses, and disk batteries.³ The reported incidence of sharp FB varies between different centers. In European and Asian centers, the incidence rates were reported between 11% and 13% respectively.⁴ In a recent report, among 3168 children with FB ingestion, approximately 18.3% were sharply pointed FBs. The management of sharp-pointed FB has been a matter of controversy as it has been associated with high morbidity and mortality. Delaying management could result in morbid complications including intestinal perforations.^{3,5} Some guidelines suggest prompt removal of all sharp-pointed foreign bodies within reach of the endoscope and some others describe that if a foreign body has not progressed on imaging for 72 hours, surgical intervention may have to be planned.⁴ This case report describes the management of a child who accidentally swallowed an iron nail. Additionally, we reviewed the literature and guidelines available on the same topic.

Case Report:

A 12-year old male child was brought to hospital 15 hours after ingestion of wire nail toy. The child was asymptomatic. On examination, vitals were stable. Abdomen examination was within normal limit. Radiograph of chest and abdomen erect showed the wire nail shaped (approx. 1.5 inch) foreign body in cardiac end of stomach. (Figure 1)



Day 1

Figure 1: First X-ray of chest and abdomen, showing the sharp-pointed foreign body (FB) in the epigastric region

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**Day 2**

Figure 2: In the x-ray after 24 hours, the position of the foreign body (FB) has changed, most probably at the level of Ascending Colon.

**Day 3**

Figure 3: X-ray on day 3 of ingestion: the pointed foreign body (FB) is seen in the Left iliac fossa most probably at Descending/Sigmoid colon.

**Day 4**

Figure 4: X-ray on day 4 of ingestion: the pointed foreign body (FB) is seen in the pelvis suggesting at rectum.

**Day 5**

Figure 5: X-ray on day 5 of ingestion: No foreign body (FB) is seen in abdomen & pelvis.

The child was kept nil orally for 48 hours with intravenous fluid supplementation and intravenous antibiotic injection ceftriaxone 50 mg/kg was given for 3 days, along with injection pantoprazole 1 mg/kg. On day 3, orally liquids were started followed by soft diet on day 4 and full diet on day 5. On day 4, it was expelled out through stool. Child had no complications and was discharged a day later. After 7 days of discharge from hospital, child came for follow up & he was in all right.

Discussion:

Infants are known to put almost everything into their mouths. Patients with foreign bodies in the upper GI tract usually fall into 1 of 3 categories: Children, psychiatric patients and prisoners, and edentulous patients.⁶

The majority of foreign body ingestions occur in the pediatric population, accounting for 75–85% of patients with foreign bodies in the upper GI tract but edentulous adults are also at greater risk of ingesting foreign bodies, including an obstructing food bolus or their dental prosthesis.⁷ Mortality rates have been extremely low. A compilation of multiple studies including 2 large series report no deaths in 852 adults and 1 death in 2206 children.⁸

Plain radiographs are an inexpensive and easily available imaging modality for the diagnosis of radio-opaque FBs and give an idea about their location in the GI tract. Jackson's axiom says

“advancing points puncture, trailing do not”; this is true for many sharp foreign bodies in the GI tract³. According to previous reports, objects wider than 2 cm tend to get lodged in the stomach as they cannot get negotiated through the pylorus, and objects with a length of more than 5 cm tend to be held in the duodenum.^{5,9} The average transit time suggested for a foreign body in children is 3.6 days¹⁰ and the average time from ingestion to perforation due to a sharp foreign body is estimated at 10.4 days.^{10,11}

As per the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) guidelines, endoscopic removal is recommended in all cases of esophageal FB. If the FB is in the stomach, endoscopic removal is recommended unless the object is shorter with a heavier blunt end. For sharp objects that are in the small intestine (beyond the ligament of Treitz) and the patient is asymptomatic, if the FB has shown no change in position in three days or if the patient becomes symptomatic, it necessitates enteroscopy or surgical intervention for the removal of the FB.³

However, there is a lack of data regarding the rate of complications secondary to sharp-pointed FB ingestion

and pediatric scientific literature is limited to a few case reports and case series, reporting variable complication rates.^{12, 13} In a recent retrospective study by Quitadamo et al.² out of 580 children with sharp FB ingestion, only 3.8% were symptomatic (vomiting including hematemesis, drooling, bloody stool, abdominal pain, dysphagia, etc.). Endoscopic removal was considered for endoscopically reachable FBs (esophageal, gastric, proximal duodenal retention) while children with intestinal-retained sharp pointed FBs were followed up until expulsion. All children with intestinal FB expelled the objects between eight and 94 hours without any complications. However, they did not record and analyse their data according to the size of the FBs.

Mantegazza et al. developed a nomogram based on the multivariable logistic regression model to predict the probability of the need for surgical or endoscopic intervention in children with FB ingestion, based on the information collected at admission.¹⁴ The points include age, gender, FB type, pre-existing disease, signs and symptoms such as drooling of saliva, dysphagia, vomiting, retrosternal pain, abdominal pain, respiratory symptoms, hematemesis, food refusal, and unexplained crying.¹⁴ Notably, not all symptoms carry the same weight in the scoring system. Symptoms related to an esophageal location contribute the highest number of points. Specifically, drooling, dysphagia, and retrosternal pain are associated with a 50%, 30%, and 30% increased risk of intervention, respectively, compared to patients who do not exhibit these symptoms. Other symptoms, such as vomiting, food refusal, unexplained crying, hematemesis, and abdominal pain, except for respiratory symptoms, contribute to a 10%-20% increased risk of intervention.¹⁴ The type of FB is also given importance. While the blunt and sharp-pointed FB scored fewer points (<30), the magnet and button battery scored higher points (40-70).

In our case, the child should have undergone endoscopic removal of the FB at the time of presentation. However, as we received the child more than 15 hours after the ingestion with FB in the small intestine and the child was clinically asymptomatic, we opted for watchful expectant management in consultation with the parents. We could observe the change in the position of the FB in each x-ray and hence remained hopeful of spontaneous evacuation. No change in position on serial x-ray is ominous for impending complication.^{12, 13} Even if we consider using the nomogram developed by Mantegazza et al.¹⁴, as the child was asymptomatic and the sharp-pointed FB scores fewer points, it would not have recommended a surgical intervention. Hence, we believe in an asymptomatic child,

regardless of the size of the sharp pointed FB, if it is in the intestine and the position is changing on serial x-rays, we should wait for a spontaneous evacuation.

Urgent intervention is indicated if any of the following warning signs are present:¹⁵

- When the ingested object is sharp, long (>5 cm), and is in the esophagus or stomach
- When the ingested object is a high-powered magnet or magnets
- When a disk battery is in the esophagus (and in some cases in the stomach)
- When the patient shows signs of airway compromise
- When there is evidence of near-complete esophageal obstruction (eg, patient cannot swallow secretions)
- When there are signs or symptoms suggesting inflammation or intestinal obstruction (fever, abdominal pain, or vomiting).⁷

Observation is recommended for patients with small, blunt objects below the diaphragm or with asymptomatic objects beyond the reach of an endoscope.¹⁶

Surgical removal should be considered for blunt objects beyond the stomach that remain in the same location for longer than one week.¹⁶

Conclusion:

In an asymptomatic child with sharp-pointed foreign body ingestion, the size of the object may not be a determining factor in management. If it is located in the intestine, a trial of conservative management in the form of close clinical and serial radiological monitoring should be opted for. As long as the child is asymptomatic and the FB is changing position on serial x-rays, watchful expectancy is advocated even if it takes longer than usual time for spontaneous expulsion. There should be a very low threshold for surgical intervention if the child becomes symptomatic and if the FB does not change position.

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