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Case Report

Appendiceal entrapment of an ingested metallic nail in a 10-year-old boy: a case report

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ABSTRACT

Foreign body (FB) ingestion is a frequent pediatric concern. While most objects pass spontaneously, a small percentage becomes impacted at anatomical narrowings. The appendix is an exceptionally rare site for FB entrapment, representing approximately 0.05% of cases. A 10-year-old boy presented with a metallic nail ingestion one month prior. He was largely asymptomatic except for mild periumbilical pain. Serial radiographs over 11 days showed the nail stationary in the right lower quadrant, initially suggesting ileocecal valve impaction. After 12 days of failed conservative management, exploratory laparotomy and intraoperative C-arm imaging localized the nail within a non-inflamed appendix. An appendectomy was performed, leading to an uneventful recovery. Appendiceal foreign bodies are diagnostically challenging as they may remain dormant or mimic acute appendicitis. Sharp objects, such as nails, pose a high risk of perforation (up to 75% in some series). Standard imaging often fails to differentiate between an object in the terminal ileum versus the appendiceal lumen. Given the risks of delayed inflammation or perforation, prophylactic appendectomy is the recommended management for stationary appendiceal FBs. A radiopaque foreign body that remains stationary in the right lower quadrant on serial imaging should raise clinical suspicion of appendiceal entrapment. Early surgical intervention is vital to prevent complications, even in asymptomatic patients.

Keywords: Paediatric sharp foreign body, Foreign body ingestion, Appendectomy, Appendiceal foreign body

INTRODUCTION

Foreign body (FB) ingestion is a common occurrence in the pediatric population. While the majority of objects pass spontaneously through the gastrointestinal tract without complication, some may become impacted or cause perforation.[1] Impaction typically occurs at sites of anatomical narrowing (e.g., the ileocecal valve), acute angulations (e.g., the duodenojejunal junction), or at sites of pre-existing strictures and adhesions.

Management usually involves serial radiography and a watchful waiting approach. Surgical intervention is rarely required.[2-4]

However, we present the case of a 10-year-old boy who presented with a persistent FB located in the right lower quadrant (RLQ) for one month. Aside from mild, intermittent periumbilical pain, the patient remained asymptomatic.

Following 12 days of unsuccessful conservative management and suspected impaction at the ileocecal valve, surgical exploration was performed. Intraoperatively, the FB was surprisingly discovered within the lumen of the appendix, which showed no gross signs of inflammation.

Appendiceal foreign bodies are exceptionally rare and diagnostically challenging, particularly when asymptomatic. Since standard imaging often cannot definitively confirm the intraluminal position of a FB within the appendix, a high index of clinical suspicion is essential for timely diagnosis and management.

CASE REPORT

Presentation and history

A 10-year-old boy presented to the emergency department on 08 September 2025, with a history of nail ingestion one month prior. His only clinical complaint was mild, intermittent periumbilical pain. He reported regular bowel habits and denied anorexia or fever. On physical examination, the abdomen was soft and non-tender, with no signs of peritonitis. An abdominal radiograph (X-ray) revealed a metallic nail in the right lower quadrant (RLQ), suggestive of impaction in the distal small bowel or at the ileocecal junction.

Management and progression

Conservative management with close clinical monitoring was initiated. Over the following 11 days, the patient remained stable with regular bowel movements, though he developed intermittent RLQ pain and nausea.

Serial abdominal X-rays performed at 2–3 day intervals confirmed that the FB remained stationary (Figure 1). Due to the lack of progression after 12 days of observation, the decision was made to proceed with exploratory laparotomy.

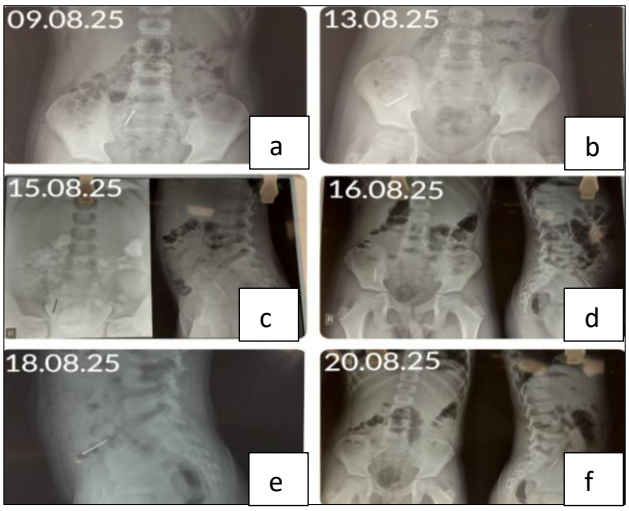

Figure 1 (a-f): Serial abdominal X-rays.

Surgical intervention

A right transverse infraumbilical incision was performed.

Systematic assessment of the small bowel from the duodenojejunal junction to the ileocecal junction failed to localize the object. Intraoperative C-arm imaging confirmed the nail remained at the original site. Based on the persistent localization, the appendix was identified and delivered into the wound. The FB was palpated within the appendiceal lumen. An incision was made at the antimesenteric border near the appendiceal tip to confirm the presence of the nail (Figure 2). Following ligation of the appendicular artery, an appendectomy was performed.

Outcome

The postoperative recovery was uneventful. The patient was discharged on postoperative day five in stable condition.

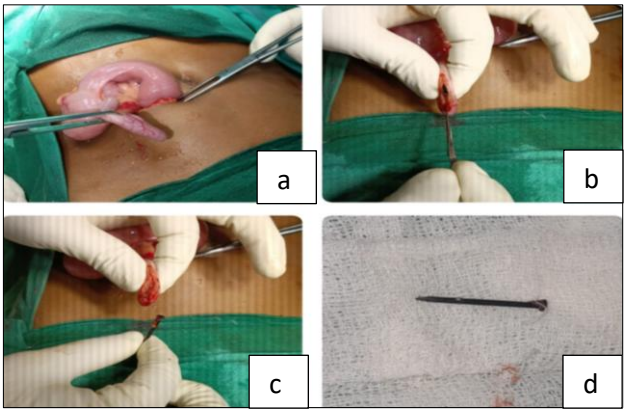

Figure 2 (a-d): Appendix with foreign body.

DISCUSSION

FB ingestion is a common clinical challenge in the pediatric population. Frequently ingested objects include coins, magnets, and button batteries. Prior literature indicates that approximately 80–90% of these objects pass spontaneously through the gastrointestinal tract within one week, while fewer than 1% result in complications such as obstruction or perforation requiring surgical intervention. Endoscopic removal is successful in approximately 10–20% of cases.[1-4]

Impaction of a foreign body is a rare occurrence, typically localized at sites of acute anatomical angulation—such as the duodenojejunal junction, the ileocecal valve, or the appendix—or at areas of narrowing caused by strictures, adhesions, previous surgery, or congenital anomalies4. Intestinal foreign bodies may remain dormant within the appendix for years without clinical consequence; however, they may also precipitate acute appendicitis, with or without perforation. The reported prevalence of appendiceal foreign bodies is approximately 0.05%.[2]

The literature describes a wide array of impacted objects, including bird-shot pellets, screws, drill bits, needles, bone fragments, seeds, toothpicks, surgical staples, and prosthetic materials. These are categorized into high-risk (75%) and low-risk (12%) groups. High-risk objects are characterized as sharp, long, or pointed, whereas low-risk objects are typically blunt or spherical.[2,5,6]

The entry of a foreign body into the appendiceal lumen is often facilitated by its dependent position and the relatively low motility of the cecum. Once entrapped, the

object is rarely expelled back into the cecum. The development of appendicitis in these cases is thought to result from mechanical obstruction and a subsequent inflammatory reaction. Consequently, prophylactic appendectomy is generally recommended for all FBs identified within the appendix, given the elevated risk of appendicitis, abscess formation, or perforation.[6]

The diagnostic difficulty of this condition is well-documented in recent literature: Tangul et al reported two pediatric cases. The first involved a 7-year-old boy with symptoms of acute appendicitis and a CT scan showing a 9-mm hyperdense focus, initially misdiagnosed as an appendicolith. Surgery revealed a wire-like structure penetrating the appendiceal wall. The second case involved a 3-year-old girl with a metallic pin that remained stationary for three months; despite a negative colonoscopy, diagnostic laparoscopy eventually confirmed the pin within an edematous appendix.[2] Alabkary et al documented a 3-year-old boy with a square metallic FB that remained in the lower abdomen for seven months. Intraoperative fluoroscopy was required to localize the object to the appendiceal tip, as there were no external signs of inflammation.[6] Liang et al described a 2-year-old boy with a screw that remained in the right lower quadrant for two months. Despite negative enteroscopy results, the screw was eventually localized via C-arm and removed through laparoscopic appendectomy.[3] A systematic review by Liang et al of appendiceal foreign bodies—including cases involving infants as young as 11 months—further reinforces that surgical intervention remains the definitive management strategy for objects lodged within the appendiceal lumen.[3]

CONCLUSION

While appendiceal foreign bodies are rare, they should be considered when a radiopaque object remains stationary in the RLQ on serial imaging. Because sharp objects carry a high risk of perforation or abscess formation, prophylactic appendectomy is generally recommended even in asymptomatic cases. A high index of clinical suspicion remains the most critical tool for timely diagnosis and management.

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