

Case Report

Missed intraoperative localisation of an accidentally ingested razor blade in a child with subsequent spontaneous passage: a case report

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ABSTRACT

Accidental ingestion of sharp foreign bodies in children is a pediatric surgical emergency that carries a significant risk of gastrointestinal perforation, hemorrhage, and obstruction. Although the majority of ingested foreign bodies pass spontaneously, sharp metallic objects such as razor blade fragments represent a particularly high-risk category. Failure to localize such objects intraoperatively is a rare and challenging scenario with few published reports. A 13-year-old boy presented to the emergency department following accidental ingestion of half of a new double-edged shaving razor blade. He was entirely asymptomatic on presentation, with no abdominal pain, hematemesis, melena, or signs of peritoneal irritation. Vital parameters were within normal limits. Serial plain radiographs of the abdomen confirmed progressive distal migration of the metallic fragment. Given concerns about perforation risk from the sharp-edged object, exploratory laparotomy was undertaken after 24 hours of observation. A pre-operative radiograph suggested the blade had reached the distal ileum. Intraoperative examination of the entire small bowel conducted under bright illumination and with the aid of a sterilized magnet failed to locate the fragment. The abdomen was closed after thorough exploration. The postoperative course was uneventful; the patient passed flatus on postoperative day one, and the intact razor blade fragment was identified in the patient's stool on postoperative day two following mild laxative administration. This case illustrates that intraoperative failure to localize an ingested sharp metallic foreign body does not preclude spontaneous passage. It underscores the diagnostic limitations of intraoperative localization techniques and suggests that conservative post-exploration management with laxatives and stool surveillance may be appropriate when no adverse intraoperative findings are encountered. Pre-operative and real-time intraoperative fluoroscopy may enhance localization in future cases.

Keywords: Foreign body ingestion, Razor blade, Pediatric laparotomy, Intraoperative localization, Spontaneous passage, Gastrointestinal foreign body

INTRODUCTION

Foreign body ingestion (FBI) is a common pediatric emergency, with an estimated incidence of over 100,000 cases annually in the United States alone.¹ The majority of ingested foreign bodies—approximately 80-90%—pass spontaneously through the gastrointestinal (GI) tract without complications.² However, sharp metallic objects, particularly those with cutting edges such as razor blades or needles, represent a subset with a substantially

elevated risk of mucosal laceration, perforation, fistula formation, and hemorrhage, estimated at 15-35% for sharp objects compared to less than 1% for blunt foreign bodies.^{3,4} The management of ingested sharp foreign bodies remains the subject of debate. Current guidelines from the American Society for Gastrointestinal Endoscopy (ASGE) and the European Society of Gastrointestinal Endoscopy (ESGE) recommend endoscopic retrieval when sharp objects are within endoscopic reach (esophagus, stomach, or proximal

duodenum) and close radiographic surveillance with a low threshold for surgical intervention when objects have passed beyond the ligament of Treitz.^{5,6} Surgical exploration is generally reserved for evidence of perforation, obstruction, significant hemorrhage, or failure of radiographic progression. Intraoperative localization of small metallic foreign bodies within the small bowel can be unexpectedly difficult, given the length of the intestine and the tendency of objects to be mobile. Published literature on cases where intraoperative localization fails, yet spontaneous passage subsequently occurs, is exceptionally sparse. We present the case of a 13-year-old boy who underwent exploratory laparotomy for an ingested razor blade fragment. Despite thorough intraoperative exploration-including examination under bright illumination and the use of a magnet-the blade could not be identified. The patient subsequently passed the intact blade fragment per rectum on postoperative day two. This case is reported in accordance with the Surgical CAse REport (SCARE) 2023 guidelines for surgical case reports.⁷

CASE REPORT

Patient information and history

A 13-year-old male patient presented to the Surgical Emergency Department of Gauhati Medical College and Hospital (GMCH), Guwahati, Assam, India, with a history of accidental ingestion of approximately half of a brand-new double-edged shaving razor blade approximately two hours prior to presentation. The ingestion was unwitnessed but immediately reported by the child. There was no history of intentional self-harm. The patient had no prior history of gastrointestinal disease, previous surgeries, or psychiatric illness. His immunization history was up to date.

Clinical findings

On arrival, the patient was conscious, alert, and in no acute distress. He denied any dysphagia, odynophagia, drooling, abdominal pain, nausea, vomiting, hematemesis, melena, or hematochezia. There was no foreign body sensation in the throat or chest. Vital signs on presentation were within normal limits: heart rate 84 beats per minute, blood pressure 110/70 mmHg, respiratory rate 18 breaths per minute, oxygen saturation 99% on room air, and temperature 37.1°C. Abdominal examination revealed a soft, non-tender abdomen with no guarding, rigidity, or palpable organomegaly. Bowel sounds were normal. Oral and oropharyngeal examination revealed no mucosal injury. Chest auscultation was unremarkable.

Diagnostic assessment

Baseline investigations including complete blood count, serum electrolytes, renal function tests, liver function tests, coagulation profile, and blood glucose were within

normal range. Blood type and cross-match were sent as a precautionary measure. Plain radiographs of the chest and abdomen (anteroposterior and lateral views) were obtained at presentation and demonstrated a linear, hyperdense metallic opacity consistent with a razor blade fragment, which at this time appeared to be located within the gastric region. No pneumoperitoneum, free fluid, or bowel obstruction was identified (Figure 1).



Figure 1: Initial abdominal radiograph demonstrating the radiopaque razor blade fragment in the gastric region shortly after ingestion.

The patient was admitted to the surgical ward for observation. Serial abdominal radiographs were performed at 6-hourly intervals. Repeat imaging at 12 hours demonstrated progressive distal migration of the metallic fragment into the small bowel (Figure 2). At 24 hours post-admission, a pre-operative plain radiograph taken prior to proceeding to the operating theatre suggested that the blade had migrated to the level of the distal ileum (Figure 3).



Figure 2. Serial abdominal radiograph demonstrating progressive distal migration of the radiopaque razor blade fragment through the gastrointestinal tract.



Figure 3: Preoperative abdominal radiograph demonstrating the apparent distal ileal/right iliac fossa position of the razor blade fragment immediately before exploratory laparotomy.

Operative management

Given the sharp nature of the foreign body, persistent parental and clinical concern, and the lack of established safe passage through the ileocaecal valve, a multidisciplinary decision was made to proceed with exploratory laparotomy. Written informed consent was obtained from the patient's parents. Under general anesthesia, a standard midline laparotomy incision was performed. Intraoperative findings revealed no hemoperitoneum, no evidence of perforation, no peritoneal soiling, and no palpable mesenteric lymphadenopathy. The small bowel was examined systematically from the duodenojejunal (DJ) flexure to the ileocaecal junction. The entire length of the small bowel was held up against the bright operating room illumination to transilluminate the bowel wall and attempt to visualize the metallic fragment through the intestinal wall. Additionally, a sterilized magnet was applied to the external surface of the bowel at multiple segments in an effort to locate the metallic object. No palpable abnormality, no mucosal contour irregularity, and no visible metallic density were identified throughout the small bowel (Figure 4).



Figure 4. Intact razor blade fragment recovered from the stool following spontaneous passage after surgery.

The large bowel, stomach, and solid viscera were also examined and found to be normal. Given the absence of any intraoperative complication or identifiable pathology, the abdomen was irrigated and closed in standard layers. Total operative time was approximately 124 minutes. Estimated blood loss was minimal. The patient was transferred to the recovery room in a stable condition.

Postoperative course and outcome

The postoperative period was unremarkable. The patient was maintained nil by mouth for the first 12 hours, after which clear liquids were commenced. Vital signs remained stable. Abdominal examination on postoperative day one revealed a soft, non-tender abdomen with return of bowel sounds and successful passage of flatus. Mild laxatives (lactulose 10 mL twice daily) were administered to facilitate further gastrointestinal transit. On the evening of postoperative day two, the patient passed stool into a bedpan as part of standard stool surveillance protocol. The passed stool was carefully inspected, and the intact razor blade fragment was identified within the stool, unaccompanied by any blood. The patient remained haemodynamically stable and completely asymptomatic. No additional complications were recorded. The patient was subsequently discharged on postoperative day three in good general condition. At follow-up one week later, the patient was well with no complaints.

DISCUSSION

Accidental ingestion of sharp foreign bodies in the pediatric population is a well-recognized clinical emergency. Razor blades-particularly double-edged variants-present a particularly formidable challenge owing to their bilateral cutting edges, metallic composition, and propensity to cause transmural injury during transit. The management strategy must balance the high potential for perforation against the risks associated with unnecessary surgical intervention.^{3,8} Our case is notable for several distinct features. First, despite the clearly high-risk nature of the ingested object, the patient remained completely asymptomatic throughout his entire hospital course-a clinical presentation that, while recognized in published case series, continues to challenge clinical decision-making.⁹ This highlights the well-established but often counterintuitive observation that the severity of the foreign body does not reliably correlate with the presence or absence of symptoms. The decision to proceed with surgical exploration in this case, despite the asymptomatic status of the patient, was driven by several factors: the undeniably sharp and potentially dangerous nature of the object, parental anxiety, the apparent location of the blade in the distal ileum (a region known to be an anatomical narrowing and therefore a potential impaction point), and the absence of evidence that the object would safely traverse the ileocaecal valve. This decision is consistent with the approach described by several authors who advocate for a lower threshold for

intervention with sharp objects in the small bowel, particularly when in the distal ileum, given the associated risks.^{5,10}

The most instructive aspect of this case is the complete failure to localize the foreign body intraoperatively, despite thorough systematic exploration. The small bowel was examined from the duodenojejunal (DJ) flexure to the ileocaecal junction using both transillumination and external magnet application. The failure of transillumination to reveal the blade most likely reflects the attenuation of light through the bowel wall and intestinal contents, particularly in a retrograde gas-filled loop. The use of intraoperative magnets for metallic foreign body retrieval has been described in selected reports; however, its utility is inherently limited by the requirement for the magnet to be in close proximity to the object, the confounding effect of a gas- or fluid-filled intestinal lumen, and the mobility of objects within the bowel.¹¹

A key learning point from this case is the potential role of intraoperative fluoroscopy, which was not employed here. Real-time fluoroscopic guidance during exploration would theoretically allow dynamic localization of a radiopaque foreign body and could have directed the surgical team to the precise bowel segment. Several published case reports and series support the utility of intraoperative fluoroscopy in this setting.^{12,13} In future cases of this nature, we advocate strongly for the routine availability of intraoperative fluoroscopy prior to surgical exploration for radiopaque foreign bodies. The spontaneous passage of the blade on postoperative day two-through an abdomen that had just been explored 48 hours earlier-deserves specific comment. It is likely that at the time of surgery, the blade had already traversed into the large bowel (beyond the ileocaecal valve), and the pre-operative radiograph localization was inaccurate, possibly due to bowel gas superimposition or movement of the patient between imaging and surgery. Alternatively, the object may have migrated rapidly through the ileocaecal valve during the brief interval between the final pre-operative radiograph and the intraoperative exploration. This underscores the limitations of pre-operative static radiography as a real-time localization tool.

Management of the post-exploration period was guided by clinical status and stool surveillance. The decision to administer mild laxatives was empirical but consistent with standard postoperative care aimed at facilitating early return of GI function. The successful per-rectal passage of the intact blade without mucosal injury, hemorrhage, or perforation further supports the known but seemingly paradoxical capacity of the GI tract to negotiate sharp foreign bodies, likely aided by the lubricating action of intestinal mucus and the orientation of the blade as it travels.¹⁴ This case adds to the limited body of literature describing intraoperative localization failure followed by spontaneous passage and reinforces

several important management principles: even high-risk ingested foreign bodies may pass without intervention; when exploration fails to identify a foreign body, conservative post-operative management with stool surveillance is safe and appropriate in the absence of surgical complications; and intraoperative fluoroscopy should be available and employed as standard of care during exploration for radiopaque foreign bodies.

CONCLUSION

This case highlights the diagnostic and therapeutic challenges inherent in the surgical management of ingested sharp metallic foreign bodies in children. Failure to localize an ingested razor blade fragment intraoperatively despite systematic small bowel exploration does not preclude spontaneous passage. In the absence of intraoperative findings of perforation, hemorrhage, or obstruction, conservative postoperative management including mild laxatives and structured stool surveillance is safe and effective. Pre-operative and real-time intraoperative fluoroscopy should be considered standard practice during surgical exploration for radiopaque foreign bodies to improve localization accuracy and reduce unnecessary bowel manipulation. Clinicians should be aware that a negative intraoperative exploration does not signify retained complications, and close postoperative monitoring remains paramount.

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