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CASE REPORT

BEEF BONE PERFORATION OF THE SMALL BOWEL: A CASE REPORT

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ABSTRACT

Background: Small bowel obstruction caused by ingested foreign bodies is rare in adults with no prior abdominal surgery. **Case Presentation**: We report a case of a 50-year-old man who presented with a 3-day history of abdominal pain, distension, and bilious vomiting. Computed tomography revealed dilated jejunal loops with a linear metallic density embedded in the jejunal wall with associated fat stranding. Exploratory laparotomy revealed a 3 cm × 2 cm beef bone that had penetrated the jejunal wall, causing a pinpoint perforation with 300 mL of purulent peritoneal fluid. The perforation margins were excised and primarily closed. The patient recovered uneventfully and was discharged on postoperative day 4. **Conclusion**: This case highlights the importance of considering foreign body ingestion in patients presenting with acute small bowel obstruction, even without a clear history of ingestion. Prompt imaging with CT and early surgical intervention are essential for favorable outcomes.

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INTRODUCTION

Bowel obstruction is defined as the hindrance to the progression of intestinal contents due to a mechanical obstacle. Small bowel obstruction in a virgin abdomen is rare; however, the main causes of such obstructions are hernias, malignancies, and inflammatory bowel disease. Ingested foreign bodies are particularly rare in adults and can obstruct the small bowel lumen. Observed obstructions often include food items, plastics, metals, plants, soil, hair, and insects (1). The majority of ingested foreign bodies are naturally expelled through the stool without leading to complications. However, approximately 1.0% result in perforation of the intestinal tract, predominantly occurring at the ileum level (2).These foreign bodies can trigger conditions such as perforation, obstruction, and fistula formation, which may have fatal consequences. Herein, we report a unique case of a small bowel obstruction caused by a beef bone.

CASE PRESENTATION

A 50-year-old man with no medical comorbidities presented with complaints of abdominal pain along with distension for 3 days and multiple episodes of bilious vomiting for 3 days. There was no history of fever, rectal bleeding, or unusual food habits. He had a smoking history of 15 years. His vital parameters revealed a raised pulse rate of 110 beats/minute. The rest of the physical examination, including DRE, was unremarkable apart from the tense, distended abdomen along with a tympanic note. Laboratory investigations revealed an elevated neutrophil percentage of 94, Serum BUN of 54mg/dl, and Serum creatinine of 1.60mg/dl. His serum bilirubin levels were at 3.03mg/dl. An abdominal X-ray revealed the presence of hydro-aeric levels at the small bowel segments without pneumoperitoneum. (Figure 1). CECT abdomen revealed dilated jejunal loops with a maximum caliber of 4 cm, along with a smooth transition point noted at the proximal ileum. There was also evidence of a linear metallic density area noted in the distal jejunum, with one edge seen embedded into the wall of the jejunum with associated fat stranding, likely foreign body ingestion (Figure 2). Due to the high-grade obstruction and the CT findings of a metallic body, surgical intervention was recommended. The patient was very hesitant initially, but finally agreed to undergo exploratory laparotomy with possible small bowel resection /stoma formation. Informed written consent was taken, and a laparotomy was performed.

Exploration revealed

- Approximately 300 ml of purulent fluid present in the peritoneal cavity.

- A sharp foreign body (bone) measuring 3 cm/2cm at the 25 centimeters distal to the duodenojejunal flexure, which penetrated through the wall of the jejunum, leading to a pinpoint perforation. (Figure 3).

Figure 1. An abdominal X-ray revealed the presence of hydro-aeric levels at the small bowel

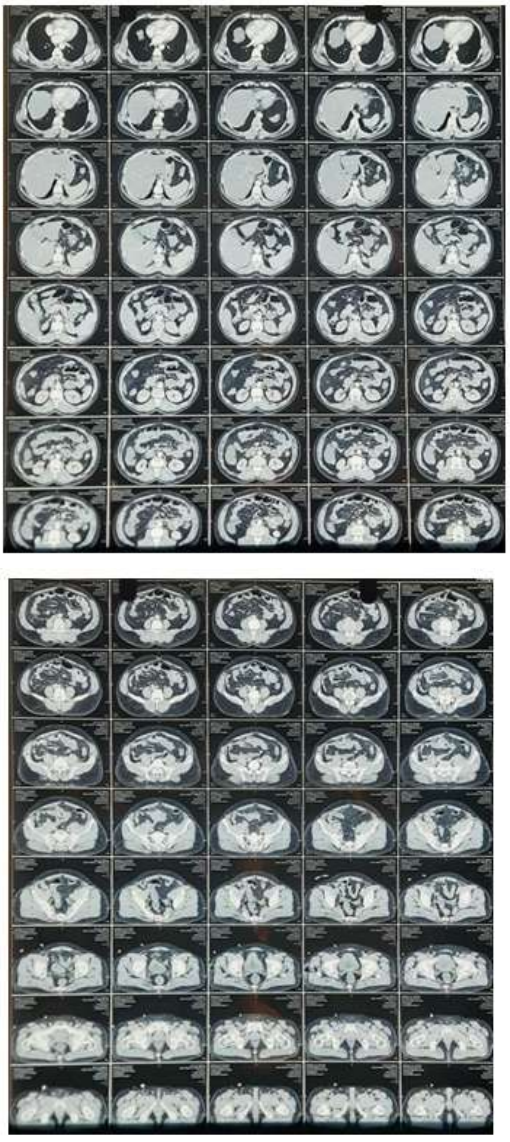

Figure 2. Axial contrast-enhanced CT-scan of the abdomen showing a high-density foreign body

Figure 3. Pinpoint perforation caused by pointed end of beef bone

Figure 4. Intraoperative image of the beef bone in the wall of the small bowel

Figure 5. Beef bone after removal

The margins of the perforation were excised, and primary closure was performed. The patient acknowledged that he had consumed beef 3 days ago. The postoperative course was uneventful. The patient recovered well and was discharged on the 4th postoperative day.

DISCUSSION

Small bowel obstruction has been recognized since ancient times, with early physicians like Praxagoras performing enterocutaneous fistulas as treatment in the third or fourth century BC. Modern medical advances—including improved understanding of obstruction pathophysiology, refined surgical techniques, antibiotic therapy, intestinal decompression methods, and isotonic fluid resuscitation—have significantly decreased mortality rates in mechanical bowel obstruction cases. Despite these improvements, bowel obstruction continues to challenge surgeons in terms of diagnostic accuracy, treatment timing, and therapeutic approach (3). The intestinal wall demonstrates protective mechanisms when exposed to sharp foreign objects. Upon contact with pointed items, the bowel lumen expands at the contact site, allowing the object to pass more freely. The natural flow of intestinal contents combined with bowel wall relaxation tends to orient objects with blunt ends forward and sharp ends trailing.(4)

Diagnosing acute abdomen caused by foreign body (FB) ingestion presents challenges preoperatively, particularly when patients have no recollection of swallowing foreign objects. Abdominal computed tomography has emerged as the preferred imaging technique for identifying foreign bodies within the small bowel. This modality also proves valuable for detecting complications and excluding alternative causes of acute obstruction. When patients exhibit peritonitis or obstruction symptoms, and CT imaging reveals dilated bowel loops containing radio-opaque objects alongside free fluid or extraluminal gas, foreign body ingestion should be considered a primary diagnostic possibility (5). Surgical intervention typically represents the standard approach for managing small bowel obstruction caused by foreign bodies. Straightforward cases are addressed through enterotomy with foreign body extraction. Complex presentations may necessitate bowel resection with primary anastomosis or creation of an ileostomy or colostomy (6). Laparoscopic techniques have shown limited effectiveness for foreign body retrieval, with O'Connor et al. reporting a 29% conversion rate to open surgery. Their findings indicated that unexpected pathology and extensive adhesions were primary factors requiring conversion. Additional research is necessary to establish the role of laparoscopy in managing foreign body-related small bowel obstruction (7). Complications from ingested foreign bodies carry a morbidity rate of 24.2% and mortality rate of 6.5%.(4) Treatment strategies for ingested foreign bodies vary based on patient symptoms, object characteristics, and location within the gastrointestinal tract (8). Surgical repair becomes essential when foreign bodies cause perforation or complications including abscess formation, fistula development, or ileus. Perforations of the small intestine require either direct surgical repair or segmental resection.

The surgical approach depends on multiple factors: perforation size, degree of contamination, bowel condition, and surgeon assessment. Prompt intervention is critical for minimizing morbidity and mortality.(9)

CONCLUSION

Perforation of intestine by a bone is a challenging diagnosis that should be recalled in cases of acute abdomen. Appropriate history taking, clinical examination and imaging techniques will lead to the correct diagnosis. Delay in diagnosis and treatment can be associated with significant morbidity and mortality.

Consent: Written informed consent for publication of their clinical details and/or clinical images was obtained from the patient.

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