

Bowel Obstruction from an Incidentally Ingested Foreign Body

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ABSTRACT

Small bowel obstructions are common surgical presentations that are most often caused by adhesions following abdominopelvic surgeries. However, in patients with no history of abdominal surgical interventions, assessment of the cause of a small bowel obstruction is more complex, and such patients frequently require operative intervention. We present a case of a 65-year-old man who presented with a small bowel obstruction caused by an inadvertent ingestion of a bread tag that was not identified on preoperative imaging. The sharp end of the bread tag had eroded through the small bowel leading to a walled-off perforation of the small bowel. Surgical resection was required.

KEYWORDS: small bowel obstruction; perforation; ingested foreign body

INTRODUCTION

Small bowel obstructions (SBOs) are a common surgical presentation, the majority of which are caused by adhesions from prior abdominal operations. SBOs usually present with intermittent, colicky abdominal pain, with a combination of nausea or vomiting, abdominal distention and potentially constipation.¹ SBO patients without a history of abdominal or pelvic operations very often have surgical causes to the bowel obstruction that require operative intervention to resolve. The predominant causes of non-adhesive SBOs are either due to hernia or malignancy. On rare occasions, an obstructing foreign object may be the cause of the bowel obstruction. We present a case of a 65-year-old man with a long-standing small bowel obstruction caused by an unlikely etiology. This case highlights the importance for the primary care provider and surgeon to consider atypical causes of SBO presentation, particularly in patients without a history of abdominopelvic surgeries.

CASE REPORT

A 65-year-old man had a 3-month history of intermittent crampy abdominal pain associated with mild bloating. He also noted that his bowel movements had become

increasingly watery and loose. His only medical history was gastro-esophageal reflux disease and he had no history of any abdominopelvic operation. The patient had previously presented twice to the emergency department. During the first presentation, both physical examination and radiographic studies, including CT scan imaging, were unrevealing and the patient was not admitted. At the second presentation, one month prior to this presentation, the patient again reported ongoing abdominal pain, but this time it was associated with nausea and worsening abdominal distention. Physical examination noted a moderately distended but non-tender abdomen and no evidence of hernia. Imaging revealed a possible small bowel obstruction. Repeat CT scan did not demonstrate a transition point. He was admitted to the surgical service and a small bowel follow-through study was undertaken which was reported as normal and demonstrated passage of contrast into the colon. The patient's symptoms resolved and he was able to tolerate a diet. Upon return of bowel function, he was discharged home with close follow-up.

One month later, the patient again presented to the emergency department with a third episode of exacerbation of his abdominal pain. On this occasion, the patient had associated nausea, one episode of vomiting, significantly increased abdominal distention, and noted no flatus or bowel movements for the 2 days prior to presentation. Physical examination demonstrated localized tenderness. There was no guarding, rebound or rigidity, and again no appreciable hernias. Laboratory investigations noted no leukocytosis and a normal lactic acid level. This time, a CT scan of the abdomen and pelvis noted distended small bowel with a transition point located within the mid-pelvic region, but no obvious obstruction source. There was a small amount of free fluid in the pelvis. He was admitted and serial abdominal exams over the next 12 hours noted progressive tenderness.

At this point, the patient was counselled regarding the potential etiologies, including the possibility of a small bowel malignancy. The patient was taken to the operating room and underwent an initial diagnostic laparoscopy. Intraoperatively, an inflamed mass was encountered in the mid-jejunum, with a sharp foreign body protruding from the bowel with associated surrounding inflammation (**Figure 1A**). The bowel proximal to this was noted to be distended

Figure 1A. Sharp edge protruding through the bowel wall.



Figure 1B. The sharp “bread tag” rotated out of the perforated bowel wall.

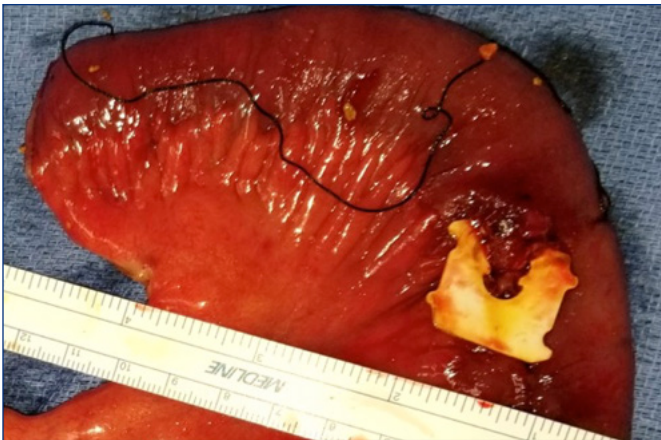
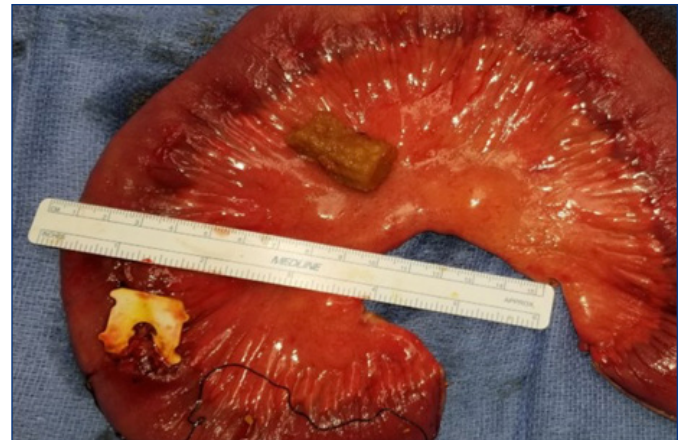


Figure 2A. Piece of undigested food proximal to the obstructing foreign object



Figure 2B. Bread tag and piece of baby corn leading to SBO and perforation.



and the bowel distal to this area was noted to be decompressed. The case was converted to an open laparotomy. During exploration, a second intraluminal foreign body with an associated perforation was noted just proximal to the first perforation (**Figure 2A**). There was no obvious abscess, and no other masses or lymphadenopathy. The rest of the exploration was unremarkable. Two small bowel resections with primary anastomosis were performed to include each of the areas of perforation. The specimens were opened on the back table. The first perforation involving the sharp foreign object was noted to be a plastic bread tag wherein the sharp edge had perforated the small bowel (**Figure 1B**). The more proximal foreign body was noted to be an undigested piece of baby corn which had perforated through the distended bowel (**Figure 2B**). The patient tolerated the procedure well. The remainder of his hospital course was uneventful; the patient recovered well and was discharged on post-operative day 5. The patient had no recall of swallowing the bread tag. However, when the findings were related to the patient, he did report that due to poor dentition, he often was unable

to chew and would merely swallow his food, which may explain why he did not sense the bread tag within his food. The patient has been seen twice in follow-up in the general surgery clinic and has reported complete resolution of his symptoms.

DISCUSSION

Small bowel obstructions (SBOs) are a common surgical presentation leading to more than 300,000 inpatient admissions per year in the United States. Postsurgical adhesions account for approximately 85% of cases of SBO and the significant majority are successfully managed with nonsurgical management.² Unusual and atypical causes must always be considered in a patient presenting with a clinical SBO who has neither a history of intra-abdominal or pelvic operations nor an obvious abdominal wall hernia. Worldwide, infectious disorders including parasites or tuberculosis constitute leading causes of both small and large bowel obstruction.^{1,3} More uncommon causes include strictures, neoplasms,

perforations, or inflammatory diseases. Other more rare etiologies that often require emergent operative intervention include small bowel obstruction due to volvulus or malrotation, gallstones, or bezoars and foreign bodies.¹ In children, ingested foreign bodies tend to be blunt or round such as a button or small battery, whereas in adults, there is a higher incidence of sharp foreign bodies such as toothpicks, bristles from wire brushes or, as in our case, ingestion of plastic bread tags.

Plastic bread tags were first introduced in the US in 1952. Sealing a bag of bread with the plastic tag is believed to preserve the bag's content keeping it fresh for longer. Intestinal complications due to plastic bag clips were first reported in 1975.⁴ Interestingly, the original case presentation was very similar to our current patient wherein the patient presented several times over many months with crampy abdominal pain, finally presenting with nausea and abdominal distention consistent with small bowel obstruction without any history of abdominal or pelvic operation. Further, at exploration the surgical team identified a partial perforation of the sharp edge with obstruction from undigested vegetable matter proximal and surrounding the bread tag. The next report of plastic bread tags within the intestine involved 3 incidentally identified tags within bowel resected for other reasons.⁵ Ingestion of plastic bread tags remains a relatively rare event, but often with severe surgical consequences.⁶ Anderson et al have reported that the acute presentation is usually for erosion or perforation with most requiring operative intervention and several deaths have been reported.⁷

Among patients who did ingest a plastic bread tag, individuals reported consuming their food too quickly. The vast majority of patients were noted to be elderly, intoxicated, and visually or cognitively impaired. It has been postulated that the history of either cognitive impairment or substance use disorder may contribute to the prolonged nature of the symptoms of a patient with small bowel obstruction in the absence of abdominal surgical interventions.

Since clinical symptoms may not sufficiently be reliable alone to either fully rule out a cause of the possible SBO or assess the need for operative intervention, radiographic imaging plays an important role. CT scan of the abdomen with IV contrast is recommended for potential cases to better elucidate severity, location, grade, and etiology.^{8,9} However, imaging has limited efficacy, with a reported 50–75% accuracy in identifying a cause for the SBO in patients without prior abdominopelvic operation.^{1,10} To identify whether plastic bread tags were radiopaque, and thereby potentially detectable with imaging, Newall et al undertook CT scans of isolated plastic bread tags placed directly onto CT scan gantry.¹¹ Importantly none of the tags was identifiable by imaging. Laboratory studies play a very limited role in either diagnosing an etiology or directing management. Although patients with a perforated bowel may present with a leukocytosis, it is critical to understand that, as was noted in

our patient, a normal white cell count does not rule out a bowel perforation or an intra-abdominal infection. Further, although a lactic acidosis may be concerning for ischemic bowel, it is very important to remember that a normal lactic acid level does not rule out ischemic bowel. This is particularly true in patients with closed loop obstructions or with enteric venous outflow obstruction.

It has been postulated that the high perforation rate from plastic bread tags is due to the uniquely shaped sharp claws of the tag. Bowel mucosa becomes entrapped within the plastic tag leading to mucosal ischemia and necrosis. The free solid edge of the tag is sharp and can penetrate the opposing wall of the bowel with peristalsis.

Management of patients with SBO without a history of abdominopelvic surgeries is challenging given the lack of a widely accepted algorithm for these patients.^{9,10} Indications for surgery depend on the duration and severity of symptoms, including nausea, abdominal pain, and obstipation, as well as physical examination findings of peritonitis, including rebound, guarding or rigidity. Radiographically, free air is a clear sign of perforation of a hollow viscus, and free fluid is highly suggestive of an etiology requiring operative intervention. Signs of perforation and ischemia are clear indications for urgent surgical management. If the ingestion is rapidly identified, then there is a potential for endoscopic retrieval; however, to date, the overwhelming predominance of retrievals have been undertaken surgically. Determining the need for surgery and appropriate timing is also critical. SBO-related morbidity and mortality increase with delays in surgical management, particularly beyond 24 hours in patients with symptoms of complete obstruction without response to nonsurgical treatment.¹²

Both surgical abdominal emergencies as well as airway obstructions have resulted from ingested bread tags and have been noted to occur worldwide. In response to a child choking from a plastic bread tag, distributors in the UK in the 1990s discarded their plastic bread clips in favor of resealable twist ties.¹³ In Australia in a response to eliminating single use plastic, Australian bread makers removed plastic bread tags in favor of cardboard or paper-based bread tags.¹⁴ Recently, Canada followed in similar fashion with several large breadmaking companies using cardboard-based compostable bread clips. Efforts to transition to more environmentally friendly non-plastic material retain some of the problems of the nature of a bread tag should it be ingested. Degradable materials including wood, cotton, or potato starch still retain the physical properties of sharp edges and toothed jaws or clamps necessary to hold the bread bag in place, and thus retain the potential to 'grasp' the folds in the small bowel mucosa and cause bowel perforation. However, ongoing efforts are underway to replace the plastic tags with rapidly biodegradable materials such as paper-based materials that would rapidly soften with intestinal secretions.

CONCLUSION

This case highlights the complexity of managing SBO in the absence of diagnostic radiologic findings. In patients with atypical presentations, an increased awareness for a surgical cause to the SBO is important. Our patient presented with an atypical cause of SBO that was not identified on CT scan. A careful consideration of an etiology that would require operative intervention is critical in a patient without prior abdominopelvic operation who presents with recurrent SBO symptoms.

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Financial Disclosure

No author has any financial or proprietary conflict of interest. No financial support was received for this study.

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