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Abstract

Large ingested foreign bodies (LIFB) too large to retrieve endoscopically pose a unique challenge. Because of their inability to pass through the pylorus, LIFB have classically left surgeons with no alternative but to retrieve them operatively. Frequent ingestions often lead to multiple laparotomies, posing greater risk and morbidity with every subsequent surgery. We present a case of a 28-year-old male who repeatedly ingested large metallic forks resulting in chronic non-healing abdominal wounds, hernias, and fistulae from serial laparotomies. After failing to retrieve the object endoscopically, the patient was taken to the operating room where an original percutaneous endoscopic approach was devised to extract the object in the most minimally invasive approach possible and to facilitate future extractions with minimal difficulty and morbidity.

Introduction

Over 80% of ingested foreign bodies will pass spontaneously and without complication.¹ Several factors increase the likelihood for intervention. Intentional ingestion increases the rate of endoscopic intervention to 63%-76% and surgical intervention to 12% to 16%.² Previous abdominal surgeries reduce the likelihood that the object will pass spontaneously.³ Finally, over 80% of objects longer than 6 cm remain in the stomach secondary to their inability to traverse the pylorus and the duodenum.⁴ Both the ASGE and ESGE guidelines therefore, recommend that long objects greater than 6 cm should be removed in an urgent manner (within 24 hours) because of the risk of perforation in up to 35% of cases.^{5, 6}

Case Presentation

The patient is a 28-year-old male who presented with abdominal pain after ingesting a large metallic fork. An abdominal radiograph (Figure 1) confirmed the ingested foreign object without evidence of pneumoperitoneum.

The patient had a longstanding history of LIFB with multiple laparotomies resulting in incisional hernias, enterocutaneous fistulae, chronic non-healing abdominal wounds, and extensive adhesive disease (Figure 2). Secondary to the object's size (Figure 3), the patient was taken urgently for endoscopy to minimize the risk of perforation.

Methods

Under endoscopy, the blunt tip of the fork was observed passing through the pylorus while the teeth were lodged in the body of the stomach (Figure 4). Extensive efforts to retrieve the fork failed and an operative intervention was warranted. Direct palpation over the left upper quadrant with trans-illumination identified an optimal position for a gastrotomy away from abdominal or cutaneous pathology. An introducer needle was used to gain percutaneous access into the stomach. A guidewire was threaded into the stomach and serial dilators most commonly used for percutaneous tracheostomies were used to sequentially dilate the gastrotomy to 48Fr or 1.6 cm with the Seldinger technique.

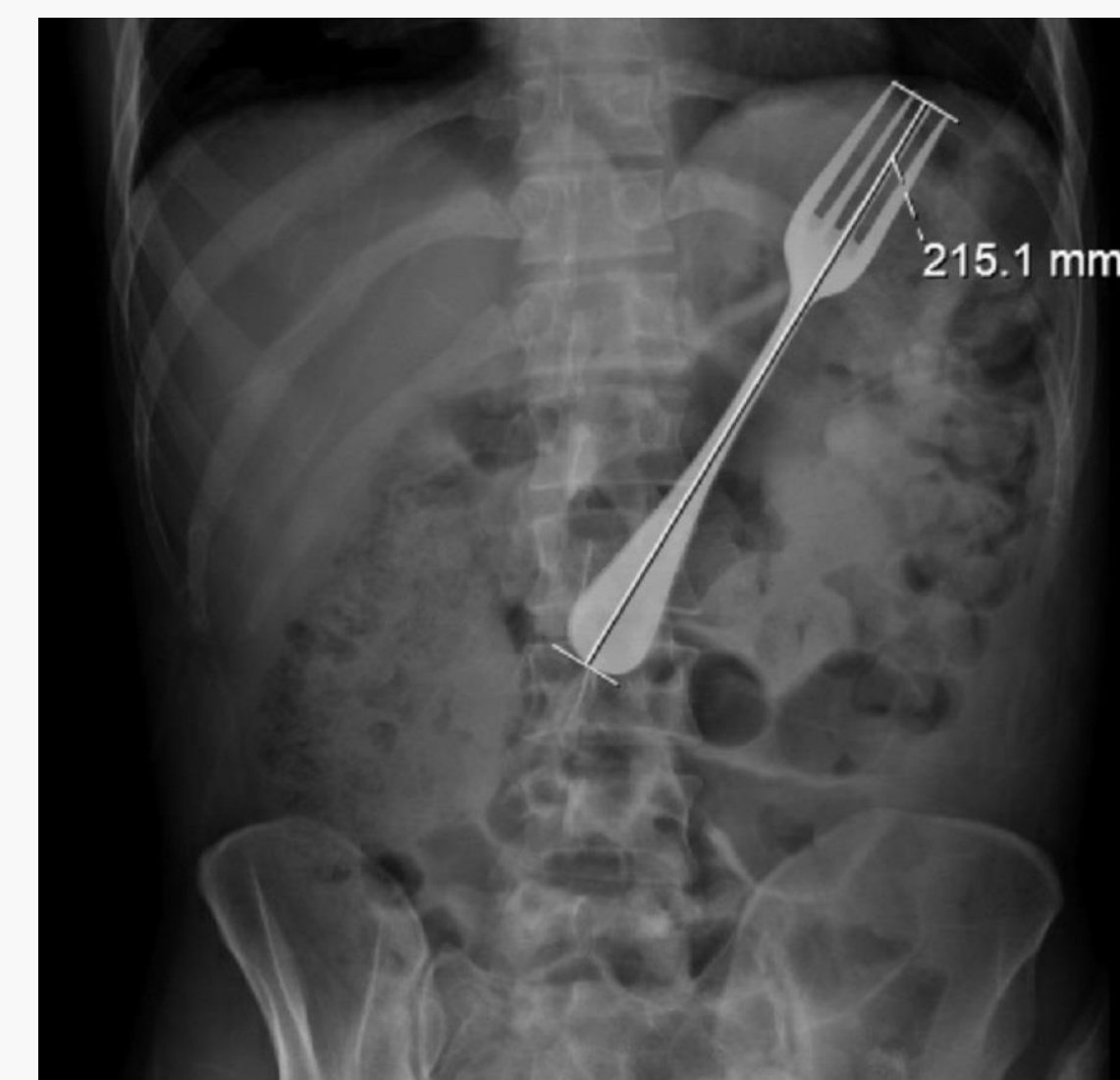


Figure 1.
Abdominal radiograph



Figure 2.
Postoperative abdominal pathology; gastrostomy button

A finger was easily introduced into the stomach and under endoscopic guidance, the blunt end of the fork was grasped with the finger and retrieved via the gastrotomy. Secondary to the patient's history and likely need for future retrievals, an 18 Fr low profile gastrostomy button was placed and secured with a purse string suture to the stomach. The retention balloon was inflated and the skin re-approximated, thereby creating an easily accessible, yet reversible gastrocutaneous tract for future LIFB extractions (Figure 5).

Results

The patient recovered well postoperatively, but returned within 24 hours of hospital departure having ingested another metallic fork. He was taken back to the operating room where the skin sutures were removed and the gastrocutaneous tract was accessed with a clamp by following the gastrostomy button's course into the stomach and confirmed under endoscopic vision. The previous gastrostomy button's balloon was deflated and the button removed. The fork was grasped with endoscopic assistance and extracted through the tract once again. Another 18Fr low profile gastrostomy button was secured in similar fashion to maintain gastro-cutaneous patency. The patient tolerated a diet and was discharged that day to a psychiatric facility.

Discussion

Adults who present with intentional foreign body ingestion commonly present with multiple episodes, ingest multiple foreign objects at a time, and require operative intervention 16% of the time.⁷ Repetitive laparotomies to retrieve these foreign objects result in considerable morbidity and mortality. Approximately 22% of midline laparotomies result in incisional hernias at 3 years,⁸ approximately 9% of abdominal surgeries will result in small bowel obstruction,⁹ and 15-25% of abdominal surgeries are complicated by surgical site infections resulting in nearly \$1 billion in associated healthcare costs per year.¹⁰



Figure 3. Large ingested foreign body



Figure 4.
Endoscopy of large ingested foreign body



Figure 5.
Gastrostomy button

Conclusions

Classically, LIFB too large to be endoscopically extracted usually have resulted in laparotomies for retrieval. These surgeries pose great risk, particularly after multiple laparotomies, resulting in significant morbidity to the patient and cost to society. The original percutaneous endoscopic technique described has the potential to significantly reduce the associated costs, morbidity, and mortality by providing a minimally invasive approach to retrieval. In cases where recurrent ingestions are likely, the placement of a temporary gastrostomy button provides an easily accessible and reversible gastrocutaneous tract for future extractions.

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