



ENDOSCOPIC EXTRACTION OF IMPACTED FOREIGN BODY FROM THE DUODENUM

Gastroenterology

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ABSTRACT

Foreign body ingestion (FBI) may elevate risk of cholangitis, liver abscess, peritonitis, pancreatitis and cholecystitis or even lead to perforations and obstructions. Despite, being a common clinical entity, there is paucity of literature on FBI cases from the UAE. We present here an interesting case of a 26-year-old female presenting with complaints of upper abdominal pain and nausea post-accidental, after swallowing a 13 cm piece of a broken toothbrush. Endoscopic examination revealed object being stuck in the duodenum with both ends inserted between the duodenal bulb and D2 part of duodenal mucosa in a vertical position which seemed fixed. The object was successfully extracted by holding it from its proximal end and aligned to facilitate its extraction by passage through the pylorus, gastroesophageal junction, and the pharynx. The case highlights importance of quick approach in treatment of FBI and adds to real-world evidence base for treatment of this complex case.

KEYWORDS

Foreign body ingestion, duodenum, endoscopy, endoscopic removal

INTRODUCTION

Foreign body ingestion (FBI) is a commonly encountered phenomenon among young individuals, alcoholics, and in patients with psychiatric illness.^{1,2} The patients usually present to the emergency room (ER), of which up to 80% of ingestions pass spontaneously, about 20% are approached and managed with endoscopy, and less than 1% of patients require surgical intervention.³⁻⁴

Some of the most frequently ingested foreign objects are needles, coins, glass pieces, bone fragments, and pieces of plastic.⁵ Majority of the patients present to ER with abdominal pain. Diagnosis in these cases is usually achieved by history taking and an x-ray is performed to evaluate the shape, size, and number/s of the ingested object.⁵ If remained unaddressed, the FBI may elevate the risk of cholangitis, liver abscess, peritonitis, pancreatitis, and cholecystitis or even lead to perforations and obstructions in rare scenarios.⁶ Thus, the FBI poses a clinical challenge, especially in Asia owing to the increasing frequency of this condition in the region.⁷⁻¹⁰ Unfortunately, despite FBI being a pertinent health hazard in UAE, the literature regarding endoscopic removal of foreign bodies is limited.¹¹⁻¹² Moreover, without proper understanding of the anatomy, endoscopic accessories, and potential hazards, an endoscopist may end up doing more harm than good during retrieval of longitudinal impacted foreign bodies. Here, we present a rare case of a young woman with long duodenal FBI, which was removed successfully with endoscopy.

Case Description

A 26-year-old female rushed to the emergency room (ER) at Al Zahra Hospital, Dubai with complaints of epigastric pain. The patient had no significant medical, medication, or surgical history. She had accidentally swallowed a 13 cm piece of a broken toothbrush while inducing vomiting after drinking excess alcohol. She expected that the object would easily be expelled on its own and did not visit a doctor immediately but visited after 24 hours of ingestion. On developing symptoms of upper abdominal pain and nausea the next day, she visited the ER seeking immediate medical care. General examination revealed no abnormality in consciousness, orientation, and vital signs. On physical examination, epigastric tenderness was found without guarding. Abdominal x-ray and biochemical investigations (complete blood count, C-reactive protein, liver function test, serum lipase and amylase) showed no abnormal findings. As depicted in Image 1 and 2, endoscopy revealed that the object was stuck in the duodenum with both ends inserted between the duodenal bulb and D2 part of duodenal mucosa in a vertical position which looked fixed.

The snare was effectively passed beneath the distal end (Image 3), which was then held and moved gently until the liberation of the proximal end (see Image 4) that was inserted deeply in the bulb mucosa. As seen in Image 5, the object was successfully extracted by holding it from its proximal end and aligned to facilitate its passage through the pylorus, GE junction and the pharynx. Although, there were no signs of perforation at the FB impaction site, but the mucosa was found damaged as per the endoscopy image taken. In image 6, we can see the image of the FB which was ingested by the patient. Finally,

along with supportive care, analgesics, anti-emetics and prophylactic antibiotic cover, patient was discharged 6 hours later without any development of adverse events.

DISCUSSION

FBI is intentional in nearly 92% of adult cases.¹³ The size and nature of the object, length of ingestion time, location and the extent of symptoms determine the choice of intervention. Endoscopy is more commonly performed in cases of intentional ingestion. The American Society for Gastrointestinal Endoscopy (ASGE) recommends the urgent endoscopic removal of sharp objects with a size of 6 cm or more to avoid the risk of obstruction, fistulae, perforation, and abscesses.¹⁴ A previously reported case of 19 cm long toothbrush ingestion with perforation which was successfully managed with endoscopic removal and the perforation was closed with hemoclips and antibiotic cover.¹⁵ However, endoscopy is not devoid of complications and may be associated with mucosal trauma, bleeding, and perforation, ranging from less than 1% to >41% in frequency.¹⁶ The complication severity depends upon the type of foreign body ingested, its location and involvement in the body.

Unfortunately, despite FBI being a huge disease burden in UAE, the documented reports are few [11, 12]. Removal of foreign bodies apart from needing expertise of an endoscopist, warrants proper knowledge about gastrointestinal anatomy, endoscopic instrumentation, and possible complications. Endoscopic removal of foreign objects should be performed only by an experienced endoscopist. Longitudinal foreign bodies should be held from the tip and be aligned with the long axis of the endoscope to avoid injury. Endoscopic accessories like and overtube, a distal attachment for endoscope may be helpful when foreign bodies are sharp. Imaging in the form of X-ray or CT scan is must prior to embarking on the attempt to endoscopically retrieve the foreign body to understand the site of lodgement and probable complications like fistulisation/perforation. Other types of accessories used includes nares, Dormia baskets or strong-toothed graspers, a longer (> 45 cm) overtube that extends beyond the gastroesophageal junction is particularly helpful in extracting sharp object to provide protection to the GE junction and the esophagus from traumatic injury. Careful attempt should be made to dislodge the foreign body if its end seems embedded in duodenal wall, after having a surgical team on standby.

Duodenum is an infrequently involved site in FBI. In a large case series by Li et al including >1,000 case reports, merely 0.04% were of foreign bodies lodged in the duodenum.¹⁷ In complex cases, radio-imaging investigations, such as X-Ray or CT scan can allow for the exact location of FB.¹⁸ However, if the object is not radiopaque, as in our case, it might not be seen on X-ray. The indication and timing to proceed with endoscopy will depend on the history and clinical presentation. In the current case, the rare and unique position of the FB inserted between the bulb and second portion of the duodenum in addition to the duodenal thin wall made FB extraction more difficult due to the increased risk of perforation. Nevertheless, the length of 13 cm and slender shape of the ingested object resulted in the longer

duration of the endoscopy procedure. This is in line with the previous findings which suggest that objects longer than 5 cm are generally stuck in duodenal sweep and take longer to get dislodged.¹⁹ This is the first case of longest foreign body to be retrieved from duodenum which has been reported from UAE.

CONCLUSION

In the present study, we successfully identified and managed a young female with removal of FBI through a well-organized endoscopic procedure. Considering the complex lodgement of the FB, prompt employment of endoscopy made the preferred choice of investigation and intervention in this case. This is the first case of longitudinal foreign body lodged in duodenum to be reported from UAE and discuss the basics of endoscopic retrieval for longitudinal/sharp foreign body by gastroenterologists. The case highlights the importance of quick approach in the treatment of FBI and adds to the real-world evidence base for the treatment of this complex GI condition.

The patient felt a sigh of relief and expressed her gratitude for the surgery team. Later, consent was taken from the patient to publish this case report in a prestigious journal, so that readers can gain formation from the case. Author would like to acknowledge the patient for this gesture. Author of the case report does not have any conflict of interest to declare.

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Figure 1: The proximal end of the Foreign body impacted in the bulb mucosa

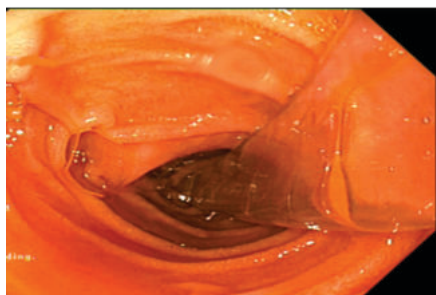


Figure 2: The distal end of the Foreign body impacted in the second duodenum mucosa

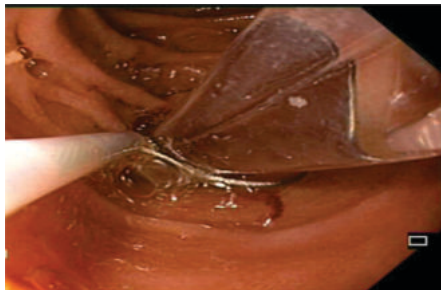


Figure 3: Passing the snare beneath the distal end of the Foreign body

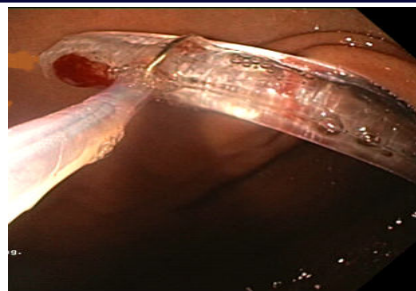


Figure 4: Grasping the Foreign body by the snare from its proximal end

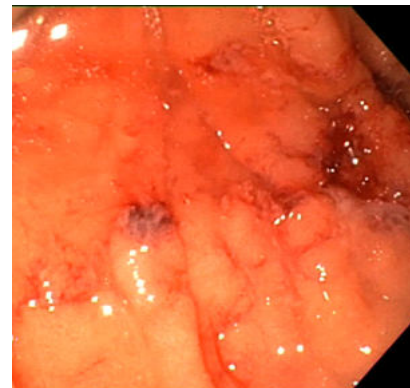


Figure 5: The mucosal damage at the site of the Foreign body impaction without perforation



Figure 6: Foreign body outside the patient body

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