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Case Report

Interesting images of ingested long metallic needles lodged in the second part of duodenum

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Abstract. Ingestion of foreign body is not uncommon. However, long metallic needles with sharp pointing ends in the second part of the duodenum are rare. Most ingested sharp metallic bodies pass through the digestive tract spontaneously and patients can be managed conservatively. Sometimes, however, complications like perforation occur and surgical treatment becomes necessary. We came across such an interesting case where a patient had ingested two sharp long metallic needles and was asymptomatic. There were no associated complications. The needles could not be retrieved by upper gastrointestinal endoscopy and had to be removed by laparotomy.

Key words: Metallic, foreign body, duodenum

1. Introduction

A gastrointestinal (GI) foreign body (FB) is a common occurrence in both children and adults (1). Persons ingesting a FB are commonly children, elderly with dental prosthesis, alcoholics, prison inmates and psychiatric patients (1). Coins, small toys, pins, dentures and nails are commonly ingested materials (1).

Most ingested FB that reach the pylorus, pass through the rest of GI tract within a mean period of four days (1). However, 10% to 20% will require nonoperative intervention, and 1% or less will require surgery (2).

When ingested sharp objects lie in the stomach, endoscopic removal is the gold standard. The dilemma occurs when sharp objects have passed the pylorus; as it is suggested that if a sharp FB has not advanced in the GI tract after three days, then surgical intervention should be considered, and if the patient becomes symptomatic, then surgical intervention is mandatory (1). We report a case of a psychiatric patient with previous history of laparotomy to retrieve ingested foreign bodies, who came to the emergency department after a month of swallowing sharp long metallic needles. On upper gastrointestinal endoscopy, the needles were seen to be impacted in the duodenum and could not be retrieved by endoscopic means. The needles were successfully removed by surgery. It is rare for such long metallic needles to lie in the duodenum for a month without causing any significant symptoms and complications.

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2. Case report

A 20-year-old psychiatric male patient presented to the emergency department with history of ingestion of a long metallic needle one month back and another similar needle three days ago. He had a history of laparotomy done for ingested metallic needles two years back. His vitals were stable. The abdomen was soft, non-tender and there were no signs of peritonitis or intestinal obstruction. An abdominal plain roentgenogram revealed two long, overlapping, slightly curved needles (≅15cm) in right paravertebral position, lying obliquely at the level of first to fourth lumbar vertebrae and crossing the midline at their distal end. The distal end of nasogastric tube was lying alongside the needles with no free air under diaphragm, any significant air fluid levels or dilated bowel loops (Fig 1). An upper gastrointestinal endoscopy was performed and the needles were seen to lie obliquely in the

second part of duodenum. The needles were impacted in the duodenum, and despite repeated attempts to remove them, the needles could not be retrieved.

Fig. 1. Plain X-Ray of the abdomen showing the metallic needles and the distal end of nasogastric tube lying in the second part of duodenum with the sharp ends of the needles lying proximally.

Any forceful attempt to remove the needles during endoscopy could have resulted in an iatrogenic perforation. After failure of endoscopic removal of the needles, a midline laparotomy was performed through previous laparotomy scar. At laparotomy, the needles were palpated to be lying in the 'C' loop of duodenum. After kocherizing the duodenum, duodenotomy was performed in the second part of duodenum at the point where needles were palpable. Both the needles were manipulated gently and retrieved (Fig. 2) through the duodenotomy. The duodenotomy was closed transversely in two layers to avoid luminal narrowing. The patient was allowed oral feeds on second post operative day and was discharged on fourth post-operative day. The patient is asymptomatic after three months of follow-up.

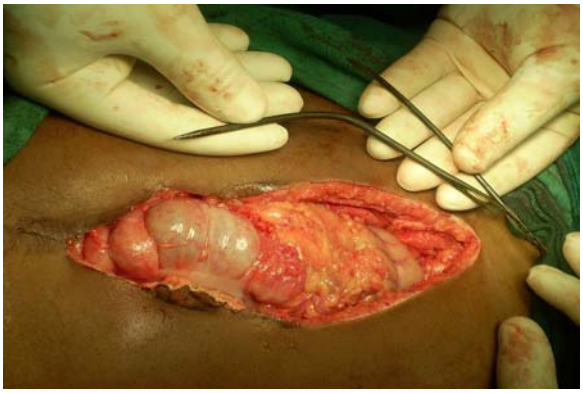

Fig. 2. Operative photograph of laparotomy showing the extracted metallic needles.

3. Discussion

The patients with ingested FB are commonly children, elderly, prison inmates and psychiatric patients (1). Coins, small toys, pins, and alkaline button batteries are some of the commonly ingested foreign bodies (1). Patient's age, clinical condition; size, shape and nature of ingested material; anatomic location and technical ability of the endoscopist influence the management. Barros et al reviewed 167 cases of foreign body ingestion (3). The size of the foreign body varied from < 2cm (3%) to >20 cm (6%). The largest foreign body reported was 28 cm in length (3).

Presentations vary depending on site of impaction, type of ingested food, and presence or absence of complications. If food is impacted in oesophagus, then symptoms range from foreign body sensation, chest pain, odynophagia, vomiting, and respiratory symptoms. Patients with impaction in small intestine present with symptoms of vomiting, abdominal distension, and constipation (1). Sharp foreign bodies can perforate and present with mediastinitis or perforative peritonitis depending on site of perforation (1).

Most of the ingested FB pass successfully through the GI tract and get discharged with the faeces without any complications (3). If the foreign body reaches stomach, then the probability of this object passing through the gastrointestinal tract without causing any complication ranges between 80% and 90% (2). However, in some cases, foreign body ingestion is followed by life-threatening complications, for which surgical intervention is essential, such as perforation and peritonitis, perforation with secondary abscess formation, GI bleeding, bowel obstruction or even perforation into the adjacent viscera (4). Once sharp and pointed foreign bodies enter the stomach, most of them will pass through the remaining GI tract without any problems; however, the risk of complications due to sharp pointed objects can be as high as 35% (2). Perforation may occur in one percent of the cases (3).

Diagnosis of radiopaque foreign bodies is not difficult, since plain chest and abdominal X-rays are sufficient. Detection of radiolucent foreign bodies can be difficult and oral contrast studies may be useful in these cases. In case a perforation is suspected, abdominal ultrasound and CT scan have proven to be very useful (5). Perforation of the retroperitoneal portion of the duodenum is difficult to diagnose quickly and accurately, if the perforation is not accompanied with symptoms of generalized peritonitis or by abscess formation.

The use of double-contrast X-rays is useful for the diagnosis of such perforations (6). Therefore, in patients who present with accidental foreign body ingestion, daily observation with abdominal X-ray is adequate, as long as these bodies are radiopaque and blunt (4). Sharp objects (e.g. needles, toothpicks) are more likely to infiltrate or perforate the bowel wall. Sometimes, localization of sharp FB like sewing needles becomes difficult because they usually disappear in the GI tract during manipulation and are impalpable clinically. Parlakgumus et al. (7) reported one such case where they used mini C-arm fluoroscopy for identification of the needles and this approach obviated exploration and shortened the operation time. All sharp foreign bodies must be removed before passing the stomach, as it is reported that 15–35% of them will perforate the bowel, usually around the ileocaecal valve (4). Intervention is required if the blunt foreign body remains in same place for more than a week, and sharp object remains in same place for more than three days (1). Surgery is indicated for bowel obstruction, perforation or fistula formation (2).

Treatment of foreign body ingestion has traditionally involved hospitalisation with close observation until the object is passed. Routine conservative management is advocated as the protocol of choice for foreign body ingestion (8). With the development of the endoscope and as techniques have become more refined, access to the upper gastrointestinal tract has been facilitated. Endoscopic retrieval by means of esophagogastroduodenoscopy (EGD) is often attempted early after admission because of its perceived success rate and safety (8). However, often the object has already transited the stomach or is otherwise not amenable to endoscopic removal (8). Patients are commonly referred for surgical extraction after failure of the endoscopic approach. Objects longer than 6 cm or wider than 2 cm are unlikely to traverse the pylorus, the duodenal C-loop and ileocecal valve and thus should be removed endoscopically (2). Objects longer than 6-10 cm pass with difficulty through the duodenal sweep. Hence the sharp pointed objects that have reached the stomach or duodenum should be removed.

In the study by Weiland et al. (8) of the 256 ingested foreign bodies, 79 were removed via EGD (31%), 71 were removed surgically (28%), and 106 passed spontaneously (41%). Among patients managed conservatively, 97% of the objects passed spontaneously. In another study by Webb (9), out of 242 foreign bodies of the upper gastrointestinal tract, two hundred thirty-nine foreign bodies (98.8%) were successfully managed endoscopically. The surgery rate was 0.4%. There was no morbidity or mortality. According to Webb (10), if a sharp foreign object has not advanced in the GI tract after 3 days, then surgical intervention should be considered, and if the patient becomes symptomatic, then surgical intervention is mandatory. Ingestion of sharp foreign bodies is accompanied with higher morbidity and mortality rates, compared to the rest of the foreign body groups.

The surgical intervention may be laparotomy or laparoscopy. Generally, laparotomy is performed for diagnosis and management in cases of impacted foreign bodies in the gut. However, with increasing expertise, laparoscopy can be equally effective with all other advantages of a minimal access approach. The use of laparoscopy has been described as the means of removing intraabdominal foreign bodies, both intraperitoneal and intraluminal, from the stomach or bowel (11). An early report detailed the laparoscopic removal of translocated intrauterine devices from the peritoneal cavity. Laparoscopic removal of a retained surgical sponge also has been reported. For large ingested objects that cannot be retrieved by flexible endoscopy, laparoscopic gastrotomy and foreign body removal have been described. Advantages of laparoscopic surgery are well known and have to be preferred when endoscopy is unsuccessful or dangerous. The laparoscopic approach is less invasive, has less postoperative pain, better cosmetic results and a faster return to normal activities (12). Hospital stay and costs are also reduced. Kurzbauma et al (13) reported a case where an ingested metal fork was removed from the stomach laparoscopically. Chin et al (11) reported three cases of laparoscopic foreign body retrieval.

After thoroughly reviewing the literature for similar case reports, we found that in most cases the ingested sharp metallic objects were small sewing needles and pins. The reported cases of long metallic needles were symptomatic and complicated. This case is interesting for two reasons. Firstly, it is rare for such long sharp metallic needles to reach duodenum without any difficulty. Secondly, it is rare to have long pointing metallic needles lying in the duodenum for a month without any symptoms or any complications. In our case, the patient presented to us after a month of ingesting needle with mild abdominal pain. Since we were able to localize the needles on endoscopy, we planned for early

surgery to prevent complications. Literature supports this fact that surgical intervention is required for sharp FB of more than three days duration (1). To conclude, though it is extremely rare for very long sharp objects to pass through the pylorus, prompt surgical intervention in that case can avoid the morbidity and mortality of subsequent perforation of the GI tract.

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