



Successful Laparoscopic Retrieval of Ingested Sewing Needle in the Pancreas: A Case Report and Review of Literature

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Abstract

Introduction: Foreign Body (FB) ingestion is a common emergency presentation, and mostly courses through the Gastrointestinal (GI) tract uneventfully. It is rare to perforate the gut and very rare to lodge into the parenchyma of a solid organ, like liver or pancreas. Encountering a sharp object penetrating through the pancreas is very rare and terrific, with the paucity of existing evidence in the management of a similar situation, warrants a higher level of attention.

Case Report: Here we are presenting a very seldom case of ingested sewing needle, in a middle-age woman, piercing through the pancreas reaching up to the aorta, which was successfully retrieved laparoscopically. The patient presented to the emergency department with two weeks history of severe epigastric pain, without vomiting, hematemesis or melena. The patient reported that she had ingested accidentally a sewing needle 6 weeks ago, without any immediate complications. Urgent upper gastrointestinal endoscopy was done, but it failed to identify the sharp object. Appreciating the high risk of complications and the critical position of the needle, the patient underwent successful laparoscopic removal of the needle. A review of literature was made on the penetrating sharp objects to pancreas; including the very few reported cases which managed to retrieve them laparoscopically.

Conclusion: The sharp object in the pancreas carries a high risk of fatal complication and should be taken seriously. When considering a surgical option for extraction, minimally invasive surgery, in the presence of experienced hands is a valid choice.

Keywords: Foreign body; Sewing needle; Pancreas; Laparoscopic

Introduction

Ingestion of FB is a frequent presentation in the GI. If not passed with the stool peacefully, endoscopy achieves to remove it without consequences [1]. The time and the type of the FB are the two fundamental risk factors for any complications to happen. Most of the ingested FB in adults includes (food boluses, fish bones, chicken bones, denture, wires, and pins) [2]. However, sewing needle is not commonly reported in the literature; and very few cases had bowel perforations, but all required surgical intervention for removal. Encountering a sharp object penetrating through the pancreas is very rare and terrific, with the paucity of existing evidence in the management of a similar situation, warrants a higher level of attention. Herein we report a successful management of a sewing needle in the pancreas, which supports the effectiveness the laparoscopic surgery in the removal of extra-luminal sharp FB, particularly in the pancreas.

Case Presentation

A 46-year old diabetic female presented to the emergency department with two weeks history of severe epigastric pain, without vomiting, hematemesis or melena. She had ingested accidentally a sewing needle 6 weeks ago, without any immediate complications. She has Diabetes Mellitus type II, but not known to have any psychological illnesses; her past surgical history was positive for open appendectomy, which she had it 3 years ago. On general examination, she was vitally stable. The abdomen was not distended or tender. Her routine laboratory investigations complete blood count, comprehensive metabolic panel, and lipase and amylase were normal. Abdomen plain X-ray shows a linear radiopaque shadow at the epigastrium, but no free air under the diaphragm (Figure

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Figure 1: Plain abdominal X-ray shows a linear radiopaque shadow (Sewing needle) at the epigastrium. White arrow point towards the needle.

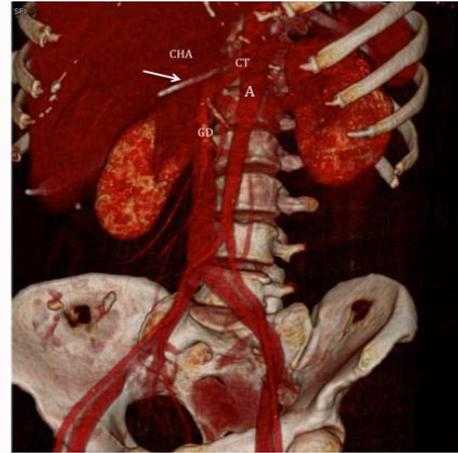


Figure 3: A 3D reconstruction of the CECT scan, showing the critical position of the needle between the major vessels. The white arrow points toward the needle. A: Aorta; CT: Celiac trunk; CHA: Common hepatic artery; GD: Gastroduodenalartery



Figure 2: Serial coronal CT-scan, showing the progressing of the needle from day 1 of the admission (A), day 3 (B), today 6 (C). White arrow points to the tip of the needle. P: Pancreas; A: Aorta

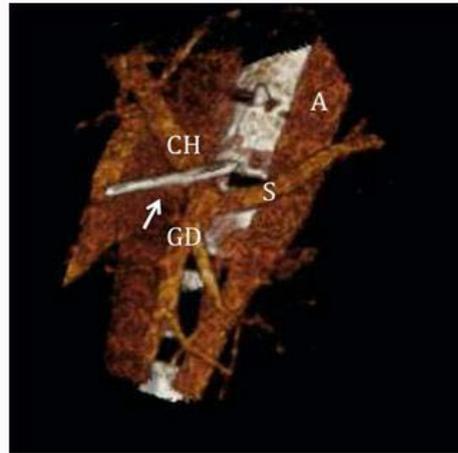


Figure 4: A 3D reconstruction of the CECT scan, showing the critical position of the needle between the major vessels. The white arrow points toward the needle. A: Aorta; S: Splenic artery; CH: Common hepatic artery; GD: Gastroduodenal artery

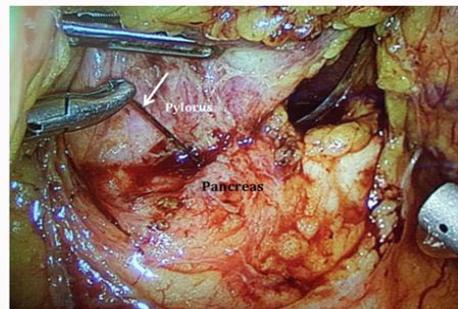


Figure 5: Intraoperative photo showing removal of the sewing needle from the pancreas using laparoscopic needle holder. White arrow points toward the needle.

1). Urgent Oesophago-Gastroduodenoscopy (OGD) done, revealed multiple erosion marks at the peripyloric area but failed to identify the FB. A Contrast-Enhanced Computerized Tomography (CECT) scan done, showed a metallic FB (needle) seen piercing the duodenum into the neck of the pancreas, without evidence of free air or adjacent fluid collection. The patient was admitted for close observation and repeated CECT scan. Two follow-up CECT scan with three days interval demonstrated medial migration of the needle, apparently totally outside the duodenum, with further traversing the pancreas and the medial tip is 4 mm from the abdominal aorta (Figures 2-4). Appreciating the high risk of complications and the critical position

of the needle, the patient underwent laparoscopic removal of the needle. The access into the pancreas was approached by opening the lesser sac through the gastrocolic ligament. To identify the location

Table 1: Review of existing literature of the intra-abdominal locations and common complications related to sewing needle ingestion.

Authors	Year	Site	Symptoms and Complication	Management
Manganiello PD [1]	1978	Pelvic cul-de-sac	Pain	Laparoscopic removal
Hashmonai M [2]	1978	Series of 10 cases perforation at the upper GI	Asymptomatic	Surgical removal
Toyonaga T [3]	2001	Pancreas	Diarrhea	Surgical removal
Nishimoto Y [4]	2003	Liver	Asymptomatic	Surgical removal
Chintamani, Singhal [5]	2003	Liver	Liver abscess	Surgical drainage and removal of Foreign body
Rahalkar MD [6]	2003	Liver	Upper abdominal pain	Observation
Sinha D [7]	2004	Pancreas	Asymptomatic	Observation
		Appendix	Appendicitis	Appendectomy
Cheng-Jen Ma [8]	2006	Larynx, bowel, intraperitoneum	Peritonitis	Indirect laryngoscope, laparotomy
Murat Baser [9]	2007	Retroperitoneal	Aortoduodenal fistula and gastrointestinal bleeding	Surgical repair
Brankov O [10]	2007	Pancreas and spleen	Abdominal pain	Splenectomy and distal pancreatectomy
Lanitis S [11]	2007	Liver	Asymptomatic	Endoscopic and laparoscopic removal
SerhatAvcu [12]	2009	Liver	Liver abscess	Antimicrobial and surgical removal
Ha NR [13]	2009	Appendix	Appendicitis	Appendectomy
Jutte E [14]	2010	Liver	Liver abscess	Surgical drainage and removal of the abscess
Bolanaki H [15]	2010	Liver	Irritability	Surgical removal
Jain A [16]	2013	Pancreas	Epigastric pain	Laparoscopic removal
Thakur Deen [17]	2013	Pancreas	In pancreas causing severe pain	Resection of the head of the pancreas and Roux-en-Y pancreaticoduodenectomy
Misra [18]	2013	Intraperitoneal and urinary bladder	Peritonitis	Laparotomy, drainage and repair
UgurDeveci [19]	2014	Sub capsular hematoma	Liver	Surgical evacuation and removal of foreign body
Cevizci MN [20]	2014	Sigmoid	Asymptomatic	Surgical removal

Table 2: Review of existing literature of different pancreatic foreign bodies and their complications.

Author	Year	Type of Foreign Body	Symptoms and Complications
Robert S Baldwin [21]	1935	Toothpick	Death
Cheah WK [22]	1999	Fishbone	Abdominal pain
Junghans R [23]	1999	Fishbone	Pancreatic granuloma
Pezzilli R [24]	2000	Needle	Asymptomatic
Toyonaga T [3]	2001	Needle	Diarrhea
Rahalkar MD [6]	2003	Sewing needle (Series of 3 cases)	Asymptomatic
Kim KH [25]	2004	Toothpick	Pancreatitis
Goh BKP [26,27]	2004	Fishbone	Inflammatory mass mimic pancreatic carcinoma
Goh BKP [26]	2005	Fishbone	Pancreatic abscess
Cindy Wu [28]	2006	Piece of wire	Peri-pancreatic abscess
Symeonidis D [29]	2007	Fishbone	Pancreatitis
Wang WL [30]	2008	Fishbone	Inflammatory mass
Yasuda T [31]	2010	Fishbone	Abdominal pain
Rao VS [32]	2011	Chicken bone	Pancreatic inflammatory
Ann R Garment [33]	2012	Bone	Pancreatic abscess
Jain A [16]	2013	Needle	Abdominal pain
Thakur Deen [17]	2013	Sewing Needle	Abdominal pain
Helen E Williams [34]	2014	Duck bone	Epigastric pain and inflammatory mass
Hongbin Zhu [35]	2015	Toothpick	Inflammatory mass
Wei-GuoWang [36]	2015	Fishbone	Pancreatic granuloma

of the needle, meticulous dissection between the pylorus and the pancreas was done with the aid of laparoscopic ultrasonography and C-arm fluoroscopy. The needle was safely extracted with the use of the

needle holder (Figure 5), and the entry point at the pylorus was closed using interrupted 4/0 PDS stitches. The post-operative recovery was uneventful. She was discharged home on the 2nd postoperative day in

Table 3: Review of existing literature of laparoscopic intra-abdominal foreign body extraction.

Author	Year	Anatomical Site	Foreign Body
Cheah WK [22]	1999	Pancreas	Fishbone
Omejc M [37]	2002	Liver	Pin
Braumann C [38]	2004	Gastric Wall	Pin
Bulbuloglu E [39]	2005	Greater Omentum	Sewing needle
Wu C [28]	2006	Pancreas	Small wire
Lanitis S [11]	2007	Liver	Sewing needle
Jain A [16]	2013	Pancreas	Needle

a good health.

Discussion

Foreign body ingestion is a common emergency scenario, especially in pediatrics population; although most of the presented adults were either senile, psychiatric patients, with alcohol intoxication; or prisoners seeking secondary gain [3,4]. The type of ingested objects in children are blunter and more rounded, like coins, batteries, and toys; whereas in the adult are sharp and pointed [5]. In most of the case, those FBs pass harmlessly through the GI tract, whereas only 10% to 20% of them will require endoscopy [6]. The surgical intervention to remove the ingested FB is indicated in 1%, although some authors reported it up to 30% [7]. Once a FB reaches the stomach, usually it will pass through the rest of the GI within 4 days to 6 days, though some can stay up to 4 weeks [8]. Kay et al. proposed the longer the contact of a FB to the GI, the higher the risk of complication. The risk of complication from sharp FBs is as high as 35%, particularly with Objects longer than 5 cm to 6 cm. Thus urgent endoscopy, within 24 h is recommended [1]. The clinical presentation of perforation is insidious and can mimic diverse pathologies, and it is related to the site of perforation [9]. Most of the perforations occur at the lower GI, terminal ileum and colorectal [3,10]. Whereas the pylorus and the duodenum are rarely involved [11]. Being surrounded by critical structures and major vessels, perforation at this site has crucial consequences. In review of literature, we retrieved 32 reported cases that showed similar transmural perforation, caused by sewing needle, through the upper gastrointestinal tract, stomach and duodenum (Table 1). Most of the tabulated data shows infrequent involvement of the pancreas among other intra-abdominal solid organs. We also reviewed all the published cases of the migratory FB in the pancreatic parenchyma (Table 2). In the twenty-two cases found in literature, the most common type of penetrating FB was the fish bone. The amplitude of the presentation varies from asymptomatic incidental finding to most catastrophic outcome, death; but the majority of patients were suffering from upper abdominal pain secondary to localized irritation and inflammatory mass formation. Regarding the diagnostic plan, thorough history and physical examination are essential. If foreign body ingestion was expected, the initial recommended workup is a plain X-ray of the neck, chest, and abdomen. However, CECT scan is superior in determining the anatomical location and the complication, with sensitivity and specificity more than 90% and 93.7% respectively, and hence it is strongly recommended when FB ingestion related complication is suspected [1]. Because the perforation is minute, and the inflammation is extensive, the site of perforation becomes covered by fibrin, omentum, or adjacent loops of bowel; hence it is difficult to detect free air under the diaphragm. The diagnostic signs to identify the perforation are thickened intestinal

segment, localized pneumoperitoneum, regional fatty infiltration, or associated intestinal obstruction. In our case, the initial plain X-ray could reveal the presence of a metallic FB in the upper abdomen, considering the failure of the endoscopy to extract the needle, and the long period of the time of ingestion, four weeks, and increases the risk of complication, CECT scan was done with follow up images. The CECT scan images appreciated movements of the tip of the needle in very critical retro-pancreatic space (Figure 2). The unpredictable fate of this sharp object and the risk of local erosions, inflammation, and pressure necrosis, and appreciating the imperilment of major vessel injury, a decision for surgical removal was taken. Although, the majority of ingested sharp FBs will pass harmlessly in the stool, but still there is a significant risk of complication (including ulceration, laceration, perforation or abscess formation) that reaches up to 35%, as well as death mostly due to fulminant sepsis. It is recommended by the European Society of Gastrointestinal Endoscopy to do an urgent endoscopy, within 24 h and if failed, then patient should be admitted for close clinical observation and daily radiographs to be followed. However, surgical intervention is recommended when a long sharp object lodge in the duodenum or failed to progress distally after 3 days [1]. Surgical therapy for removal of a FB remains a challenging option due to difficulty in localizing the objects, dense inflammatory adhesions, and the risk of injury to nearby important structures. Either conventional open surgery or minimally invasive technique will be an option whenever surgery is indicated. Although most of the existing cases in literature had open surgery, we could retrieve only 7 cases that had subsequent removal of the FBs laparoscopically, out of which only three were retrieved from the pancreas (Table 3). Laparoscopy is an efficient and safe as laparotomy, with the advantages of smaller, more cosmetic scars, less chance of infection, less postoperative analgesia requirement and faster convalescence period. Here in we reported the fourth successful laparoscopic removal of a sewing needle transecting the pancreas.

Conclusion

In summary, this is a report of successful laparoscopic retrieval of a sharp FB that migrated through the proximal small bowel into the pancreas that could have led to fatal complications. In view of the limited successful attempts reported before in similar cases, we feel that laparoscopy may be useful as a valid surgical modality.

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