CASE REPORT OPEN ACCESS

Duodenal Foreign Body: Deceptive Imaging and Resourceful Management by Laparoscopic Gastro-Duodenoscopy

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ABSTRACT

Background: Foreign body (FB) lodgement in duodenum is quite uncommon in children that often becomes a diagnostic and management challenge.

Case Report: A 4-year-old girl presented with ingestion of key. On x-ray abdomen, the key appeared to be lodged at the ileocecal junction. Diagnostic laparoscopy showed the FB present in duodenum. Laparoscopic trans-gastrotomy gastroduodenoscopy was performed and FB removed successfully.

Conclusion: This is a novel method which has rarely been performed previously and has good post-operative outcomes in terms of avoiding morbidity of duodenotomy.

Key words: Duodenal foreign body; Laparoscopic gastroduodenoscopy; Foreign body ingestion

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INTRODUCTION

Foreign body (FB) ingestion is common in children.[1] Most of the ingested FBs pass through the gastrointestinal tract spontaneously, while few require removal. The most common location of an impacted FB is cricopharyngeal junction in the esophagus.[1] Once the FB passes into the stomach the chances of its lodgment and impaction are very rare. Duodenum is a rare site of FB lodgment. The plain X-ray of abdomen can be deceptive in locating FB in gastrointestinal tract. We herein describe a case of key ingestion which was managed by laparoscopic gastroduodenoscopy.

CASE REPORT

A 4-year-old girl presented with ingestion of a key, a month back. The patient was otherwise asymptomatic. X-ray abdomen confirmed the presence of key at the level of L5 just right to the vertebral column (Fig.1a). It appeared that the key was present near ileocecal region. She was kept on conservative management for 2 months and repeat x-ray showed static location of the key. The patient also developed abdominal pain thus a laparoscopy was performed. Initially we palpated the ileocecal junction with laparoscopic bowel grasper which did not reveal any grating sensation. Intraoperative radiograph, taken by keeping an instrument at cecum, did not reveal FB in relation to ileocecal junction. Rather it showed it at T12-L1 junction which was suggestive of impaction of key in D2 or D3 segment of the duodenum. In the absence of facility for intraoperative endoscopy, gastrotomy was done (Fig.1b) and the edges were hitched to abdominal wall by silk sutures. Through the gastrotomy incision, laparoscopic grasper

and camera were inserted into the duodenum for gastro-duodenoscopy and D2-D3 segment was explored (Fig.1c). Impacted seeds (Fig. 1d) were discovered incidentally along with the key. The seeds and key were extracted (Fig.2a,2b) from gastrotomy by bowel grasper and placed into a glove finger used as an endo-bag and gastrotomy was closed (Fig 2c). The endo-bag was retrieved through umbilical incision (Fig.2d). A nasogastric tube was placed and patient was kept nil by mouth for 3 days. Clear liquids were allowed on day 3 and solids were given on day 5 after surgery and discharged with stable vitals and good general condition. The patient is asymptomatic on 1 month follow-up.

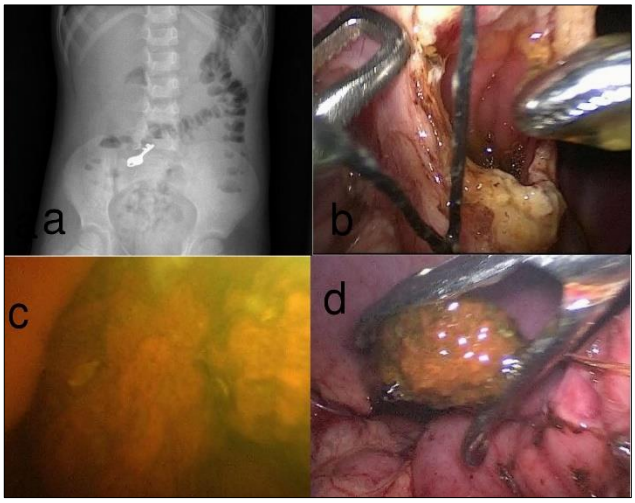

Figure 1: a) X-ray abdomen suggestive of key at level of L5 giving impression of impaction in ileocecal region. b) Gastrostomy at antrum with silk hitch from edges. c) Gastro-duodenoscopy suggestive of impacted seeds. d) Impacted seed being retrieved.

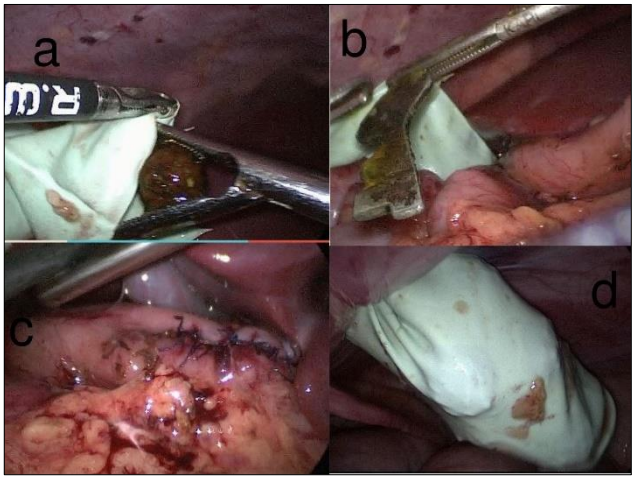

Figure 2: a) Seeds being placed in glove finger. b) Impacted key being retrieved. c) Closure of gastrostomy incision. d) Glove finger used as endo-bag being taken out from umbilical port.

DISCUSSION

FB ingestion is common between 6 months and 6 years of age.[2] Common presentation is with choking, abdominal pain, vomiting, refusal to eat or acute abdomen.[2] The most common site of impaction of a FB is at the cricopharyngeal junction (20-30%) followed by the ileocecal junction.[1] Other possible sites are at the level of aortic arch, at gastroesophageal junction, pylorus, duodenum, anus or at areas of anatomic abnormalities or site of previous GI surgery.[1] Therefore, any case presenting with FB lodgment at unusual site without a history of previous surgery, an anatomical anomaly should be suspected. Moreover, the presence of impacted seeds in the duodenum in the index case may point to suspicion of distal duodenal obstruction.

X-ray abdomen is the primary modality for the diagnosis of an impacted radiopaque FB in the gastrointestinal tract. Radiographs may not detect radiolucent FBs and also the location of the FB may be misinterpreted. In our case, the initial X-ray picture was suggestive of foreign body being impacted around the ileocecal junction (L5 level). CT scan on the other hand, is highly sensitive in reporting the site of lodgment of foreign body as well as the associated complications.[4,5]

FBs which have crossed the GE junction usually pass the GI tract uneventfully. Surgical intervention is required if it is non-progressive/impacted or if the FB is pointed, erosive or patient is symptomatic.[6] There have been quite a few case reports where laparoscopic gastrotomy been performed for FBs lodged in stomach which are not amenable to endoscopy. Duodenotomy, is recommended for impacted FBs in duodenum in which endoscopic removal has failed. However, there has been no case where laparoscopic duodenoscopy was performed for duodenal FB removal to best of our knowledge. We decided to perform gastrotomy as facility for intraoperative endoscopy was not available and we preferred gastrotomy to duodenotomy even for a duodenal (D1-D2) foreign body because gastrotomy has documented lesser risk of leak and better healing as compared to a duodenotomy. Also, this procedure was done laparoscopically thereby avoiding the extensive incision of laparotomy, providing the benefit of greater magnification and better post-operative recovery of the patient.[5] This procedure is advocated for resourceful management on failure of endoscopy to retrieve FB or when it is encountered as intraoperative surprise.

In conclusion, FB impacted in duodenum must be evaluated for any anatomical anomaly like stricture, divertic-

ula, web, annular pancreas as duodenum is a rare site of foreign body lodgment. X-ray has lesser sensitivity and specificity in diagnosing the level of impaction of foreign body and can be deceptive. Therefore, in doubtful cases CT scan should be done. We propose that laparoscopic gastrotomy followed by laparo-duodenoscopic foreign body removal is safe and a technically feasible procedure in cases of impacted duodenal FB.

Consent: Authors declared that they have taken informed written consent, for publication of this report along with clinical photographs/material, from the legal guardian of the patient with an understanding that every effort will be made to conceal the identity of the patient however it cannot be guaranteed.

Authors' Contribution: All the authors contributed fully in concept, literature review, and drafting of the manuscript and approved the final version of this manuscript.

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