Duodeno-hepatic penetration by a swallowed traditional wooden toothbrush: a case report

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Abstract

Introduction

Although foreign body ingestion is relatively common, toothbrush swallowing is rare. Most ingested foreign bodies pass through the gastrointestinal tract spontaneously without causing untoward effects. However, sometimes these foreign bodies cause obstruction or perforation of the gastrointestinal tract necessitating surgical intervention. This report discusses a case of duodeno-hepatic penetration by a swallowed traditional wooden toothbrush.

Case report

We report a rare case of duodeno-hepatic penetration caused by an accidentally ingested traditional toothbrush (daatun). A 53-year-old male patient presented with a history of accidental ingestion of daatun 1 year back and intermittent epigastric pain for 8 months. Laparotomy revealed a linear foreign body penetrating into the segment VI of liver through the second part of the duodenum. The daatun was removed and duodenal perforation closed over Foley catheter. To the best of our knowledge, this is the first case to be reported.

Conclusion

In our case, radiology was suggestive of duodeno-hepatic penetration so that exploratory laparotomy was performed.

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Figure 1: Contrast-enhanced computed tomography of the abdomen showing hypodense lesion and air foci in segment VI of liver.

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area, measuring 3.9 × 3.5 cm in size with mild intra hepatic biliary radical dilatation in segment VI of liver with small air foci medially and mild peri-hepatic fluid collection. A small calcified lesion was also seen in segment VII of liver. There was evidence of 6 × 0.8 cm linear intraluminal foreign body with mean Hounsfield unit (HU) 40–42 in the second and third part of duodenum. It was causing perforation of the lateral wall of the second part of the duodenum with adjacent collection. It was seen reaching till the surface of the liver with surrounding collection and rim enhancement. CT scan finding was collaborated with retrospective exploration of accidental ingestion of daatun 1 year back. Surgery was performed. Laparotomy revealed omentum adherent to in the subhepatic area. Linear foreign body palpable in duodenum was adherent to the inferior surface of the liver. It was penetrating into segment VI of the liver through the second part of duodenum (Figure 2). Foreign body (daatun) was removed (Figure 3) and perforation rent in duodenum closed over 16 F Foley catheter. Feeding jejunostomy was done and abdomen closed after placing abdomen drain in subhepatic space. The postoperative patient developed controlled duodenal fistula and feeding started through feeding jejunostomy. Drain was removed on postoperative day 4 and he discharged on day 12 after successful recovery with advice of feeding through jejunostomy and regular follow-up in surgical outdoor. After 4 weeks he was re-admitted, Foley catheter removed and oral feeding started under observation. After successful oral feed, he was discharged and at 2 months of follow-up, he was doing well.

Discussion

The majority of ingested foreign bodies pass uneventfully through the gastrointestinal tract. A foreign body in the gut may remain silent or may be detected incidentally during investigations. In some patients, the ingested foreign body may cause impaction, perforation or obstruction. Gastrointestinal tract perforation may cause peritonitis, abscess formation, obstruction, fistulae and haemorrhage. Intestinal injury resulting from an ingested foreign body tends to occur in areas of acute angulations but it may occur in all segments of the gastrointestinal tract. The retroperitoneal, relatively immobile and rigid nature of the duodenum as well as its deep transverse rugae and sharp angulations make it a common site for the entrapment of long and sharp-ended objects. In a review of 31 cases of toothbrush ingestion, no episodes of spontaneous passage were reported. In this case, the accidentally swallowed daatun was entrapped in the duodenal sweep and then migrated through the wall of duodenum to penetrate into the liver. However, as the duodenal perforation sealed by foreign body itself, feature of peritonitis was not present. The diagnosis is usually straightforward if the patient reports with a history of incidental or accidental ingestion of foreign body. Otherwise an abdominal X-ray, or an ultrasound examination or a CT scan may be required if the diagnosis is in doubt or the history is not forthcoming. Objects longer than 6–10 cm, such as toothbrushes and spoons, will have difficulty passing the duodenal sweep and should be removed. Endoscopic removal is the preferred method, but because of the toothbrush’s geometric qualities, surgical retrieval is often required.

Figure 2: Intraoperatively showing daatun protruding from duodenum.

Figure 3: Daatun measuring 15 cm.
Case report

If endoscopic removal is not possible and particular complications are not present, a laparoscopic approach may be an alternative to laparotomy.\footnote{Wishner JD, Rogers AM. Laparoscopic removal of a swallowed toothbrush. Surg Endosc 1997 May;11(5):472–3.}

Conclusion

In our case, radiology was suggestive of duodeno-hepatic penetration so that exploratory laparotomy was performed. To the best of our knowledge, this is the first report of a swallowed daatun (traditional toothbrush) penetrating liver through duodenum.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

References