Endoscopic Removal of an Ingested Mercury Glass Thermometer: A Case Report

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Abstract

Foreign body ingestion is a potentially lethal condition and the wide variety of ingested foreign bodies poses a challenge in the management of these patients. Endoscopic removal is the first-line treatment for ingested foreign bodies that need to be removed either due to their harmful potential or because they will most likely fail to pass per anus. We report the retrieval of an ingested thermometer from the stomach of a young schizophrenic male by endoscopic means.

Keywords: Foreign body, thermometer, endoscopy, esophagus

Introduction

Foreign body ingestion is a potentially lethal condition. Children constitute 80% of the total ingestions with most foreign bodies (FBs) are true FBs (nonfood objects) such as coins, marbles, buttons, safety pins, toys, magnets, and batteries. For the remaining 20% of ingestions that occur in adults, most are related to eating, leading to either bone or meat bolus impaction.[1] On the other hand, intentional or accidental true FB ingestion in adults occurs more commonly in individuals with psychiatric disorders, developmental delay, alcohol intoxication or drug abusers, and those seeking secondary gain. The symptoms, signs, and complications produced depend on nature, size, location, and duration of the FB ingestion in the gastrointestinal (GI) tract.[2] Endoscopic removal has become the standard procedure for the removal of FB lodgment in the upper GI tract. Flexible endoscopy is the best diagnostic and therapeutic approach in the management of FBs and with success rates >95% and complication rates of 0%–5%.[3] The complications are mostly minor and include bleeding or mucosal erosion, tears, perforation, and abscess.[4] We report the successful retrieval of an ingested mercury glass thermometer from the stomach of a young schizophrenic male patient by endoscopic means.

Case Report

A 23 years schizophrenic male patient was brought to our gastroenterology emergency department from psychiatry with a history of ingestion of a glass mercury thermometer. The standing x-ray of the abdomen confirmed the presence of a foreign body (thermometer) in the stomach (Figure 1). He was observed for 3 days with serial abdominal X–rays which showed no progression of the intragastric thermometer through the gastrointestinal tract. The decision was taken to re-

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Figure 1: Standing X-ray of the abdomen showing the thermometer below the gastroesophageal junction

move the foreign body by means of endoscopy.

After obtaining consent from attendants, the patient was taken for endoscopic removal of the foreign body. Under conscious sedation with midazolam, esophagogastroduodenoscopy (EGD) was performed. A mercury glass thermometer was seen enclaved between the gastric folds along the greater curvature of the stomach with proximal mercury end at the fundus and distal end in the body of the stomach (Figure 2a). After few attempts, the proximal end of the thermometer was grasped with the polypectomy snare and necessary angulations were achieved to bring the thermometer in the same axis as that of the endoscope (Figure 2a).

The thermometer was withdrawn carefully from the gastroesophageal junction and after that, it came out easily from the upper esophageal sphincter and mouth. The use of an overtube could have attained greater security in grasping the thermometer and also reduced the risk of breakage but due to the non-availability, we had to carry out the procedure in its absence. The procedure was uneventful and the patient

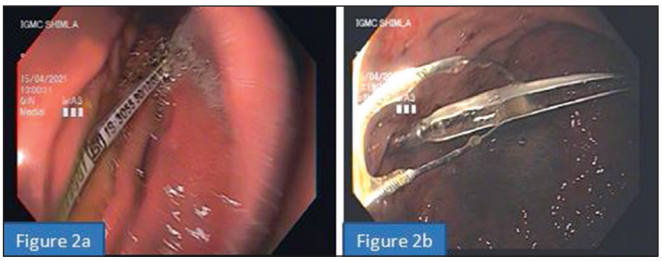

Figure 2a: endoscopic image showing a mercury glass thermometer enclaved between the gastric folds along the greater curvature of stomach; 2b: image showing thermometer being grasped with polypectomy snare at the proximal end

was attached to psychiatry after the procedure.

Discussion

The most commonly encountered foreign bodies (FBs) in the upper gastrointestinal tract are coins, button batteries, meat impaction, denture, sharp and pointed objects and toothbrushes. There are only a few cases of endoscopic retrieval of ingested thermometer reported in the literature.[5,6,7] The majority (80%–90%) of the ingested FBs passes through the gastrointestinal (GI) tract without any clinical sequelae however 10 to 20 % will require endoscopic intervention and 1% may require operative therapy.[8] So unless the F.B. is sharp with the danger of perforation, watchful waiting should be the first approach to an ingested FB that has reached the stomach. However object wider than 2.5 cm and object longer than >5 cm such as pen, pencil, toothbrush and eating utensils may not negotiate through the pylorus or around the duodenal sweep and should be removed from the stomach at presentation or if they have not progressed in 3 to 5 days.[8]

There were two major concerns during the procedure: fracture of the thermometer, and loosing the handhold of the foreign body. Fracture of the thermometer during retrieval could result in leakage of mercury and the formation of two or more sharp glass fragments in the stomach, a condition that makes endoscopic removal more dangerous and might warrant surgical intervention. The use of an overtube can protect the digestive mucosa from injury and limit the risk of aspiration.[8] Objects can be extracted through the overtube or retracted into the overtube with both overtube and endoscope removed simultaneously. Mercury presented in thermometers is metallic and causes no harm to an intact gastrointestinal tract as it passes through too rapidly to undergo transformation.[9]

In order to avoid fragmentation of thermometer, the metallic biopsy forceps and foreign body forceps, which are traditionally used for retrieval of F.B. were not used in the present case. Endoscopic removal of an oblong object using a snare however can be difficult because the axis of the foreign body becomes perpendicular to the long axis of the endoscope as the snare is withdrawn.[10] This problem was circumvented in our case by allowing the snare to hang out 2-3 cm from the distal tip of the endoscope while the snare is tightly looped onto the "neck" of the thermometer (Figure 2b). This maneuver brought the long axis of the thermometer parallel to the long axis of the esophagus, thereby permitting easy passage through the esopho-gas-

tric junction. The second concern was of loosing grip of the thermometer, especially at the upper esophageal sphincter due to the smooth, glass surface of the thermometer and the resistance of the sphincter. But in our case, the grasping force of the snare was enough to overcome the resistance we encountered on our way out.

Conclusion

An ingested thermometer can easily be retrieved by means of endoscopy from the stomach if skilled personnel are involved.

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