

## RETENTION OF AN INGESTED SMALL BLUNT FOREIGN BODY

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**Foreign body ingestion is a common problem in clinical practice. Majority of foreign bodies, once passed beyond the stomach, will be evacuated through the gastrointestinal tract within days without any difficulty. Retained foreign body is rare and the objects in question are mostly long, large, or have a sharp end. We report a case of retention of a small, blunt, spherical glass-like object in the ileum of an 87-year-old lady having benefited from a Hartmann's procedure which was incidentally discovered on a computed tomography scan 2 months before its spontaneous evacuation through the stoma.**

**Key-word:** Foreign bodies, in air and food passages.

Foreign body ingestion is not an uncommon clinical problem. It is estimated that 1500 people in the United States die annually due to ingestion of foreign bodies in the upper gastrointestinal tract (GI) (1). In about 80% of the cases the foreign bodies passed spontaneously without complication (2). The rest are usually managed endoscopically with less than 1% of the cases requiring surgery (1). In adults, the most common objects are food debris, bones, pills, coins, dentures, safety-pin, and razor blade (1). Once the object has negotiated beyond the stomach, it usually passes through the GI tract without difficulty. Longer retention is very rare and only a few cases have been reported (3-7); however, the objects described in those cases are considerably larger possibly preventing their passage through the bowel loops or gastric outlet. Here we report a unique case of retention of a small blunt foreign body in the ileum of an 87-year-old lady and eventually the object was passed out through the stoma 2 months after its first radiological appearance on a computed tomography (CT) scan.

### Case presentation

An 87-year-old Caucasian woman complained to the local general practitioner about finding blood in the colostomy faecal matter and was referred to our hospital for investigation. Her background history includes Hartmann's procedure for diverticulitis of sigmoid colon 8 years ago. Other comorbidities include left anterior descending

coronary artery occlusion with good collateralization, heart failure, chronic renal failure, hypertension, dyslipidaemia, osteoarthritis and hypothyroidism. Her stoma was not reversed due to cardiovascular comorbidities. Examination revealed a small parastomal hernia with no obvious source of bleeding. A colonoscopy and a rigid sigmoidoscopy of the rectal stump were performed but did not reveal any abnormality other than scattered diverticulae. Seven months later, she re-presented with the same complaint. A repeat colonoscopy revealed a lesion just beyond the stoma site and biopsy from this lesion confirmed the presence of invasive adenocarcinoma. A post oral contrast CT scan of the thorax, abdomen and pelvis done 18 days prior to the hospital admission showed that the tumor is adjacent to the stoma site outside the peritoneum and there was no evidence of enlarged lymph nodes or metastasis. Unexpectedly, the CT scan demonstrated a spherical 1.4 cm x 1.4 cm x 1.4 cm hyperattenuating object, possibly a metallic foreign body (Fig. 1). This object, however, did not cause any symptom or obstruction. The object was not visible on a previous plain film or CT scan dating back 8 years ago. A subtotal colectomy was performed and an ileostomy fashioned at the right iliac fossa. She began to vomit 3 days into her post-operative period. Her vomiting persisted despite nasogastric decompression and there was no output from the stoma 7 days into her recovery while she was on parenteral nutrition. A CT

abdomen and pelvis was performed to query for possible ileus and again showed that there was a spherical metallic foreign body in the ileum not causing any obstruction. The scan also showed a small fluid collection adjacent to the afferent limb of the ileostomy with diffuse dilated small bowel suggestive of ileus. Her symptoms were resolved on the ninth post-operative day. The foreign body was spontaneously passed into the stoma bag on the fortieth post-operative day (Fig. 2). It was a glass marble measuring 1.3 cm in diameter. The patient could not recall how long ago she ingested the foreign body and denied any insertion of the foreign body through the stoma. Since the history of ingestion was not available, we can only assume that the foreign body was ingested sometime between its first detection on CT scan and the negative abdominal x-ray 8 years prior; and therefore has been present in her abdomen for at least 2 months.

### Discussion

The majority of foreign bodies pass through the GI without clinical consequences. The properties of the foreign body in relation to the anatomical narrowing determine the likelihood of impaction or other complications. Most blunt objects are passed within 4 to 6 days (8). Impaction usually occurs at a number of anatomical narrowing in the oesophagus, stomach, and intestines. In the oesophagus, transit can be retarded or blocked at the upper oesophageal sphincter, the aortic arch, and the lower oesophageal sphincter. Most foreign bodies pass spontaneously once they reach the stomach. However, objects longer than 5 cm and wider than 2 cm rarely pass through the pylorus (1). Objects longer than 6 cm also have difficulty navigating through the C-curve of duodenum (9).

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Fig. 1. — Transverse (A) and coronal (B) views of CT scan with oral contrast showing a hyperattenuating spherical object (arrow) in the ileum with an approximate size of 1.4 cm x 1.4 cm. No bowel obstruction can be seen.

Rarely the foreign body may be entrapped at the ligament of Treitz, Meckel's diverticulum, or the appendix (10). Downstream from the small bowel, the ileocecal valve and the rectosigmoid junction are the other common areas of impaction due to their acute angulation. In this article we present a rare case of ingested foreign body retention in the ileum and subsequent spontaneous passage of the foreign body through the stoma at least 2 months after ingestion. Our case is unusual because the object is small, measuring only 1.3 cm in diameter, smooth, and spherical, which would predict its passage through the GI without any difficulty. The persistence of any small blunt object longer than 4 weeks is very atypical; and it is likely that the foreign body could have remained *in situ* had it not been for the surgical manipulation. The possible explanation for the

retention of the foreign body is the presence of adhesion after the previous Hartmann's procedure 8 years ago resulting in focal narrowing and angulation of bowel loops that was not severe enough to retard the transit of the foreign body. Another contributing factor to the retention can be the development of postoperative ileus and its effect differs in different segments of the GI tract. The effect on the small intestine is usually transient, recovering within 24 hours of surgery; and patients undergoing colectomy taking the longest time to recover (11). Postoperative ileus, however, usually do not persist for longer than 5 days.

Long term retention of foreign body in the bowel is a rare occurrence. So far only a few cases have been reported in the literature. Lavon et al. (5) reported a case of a

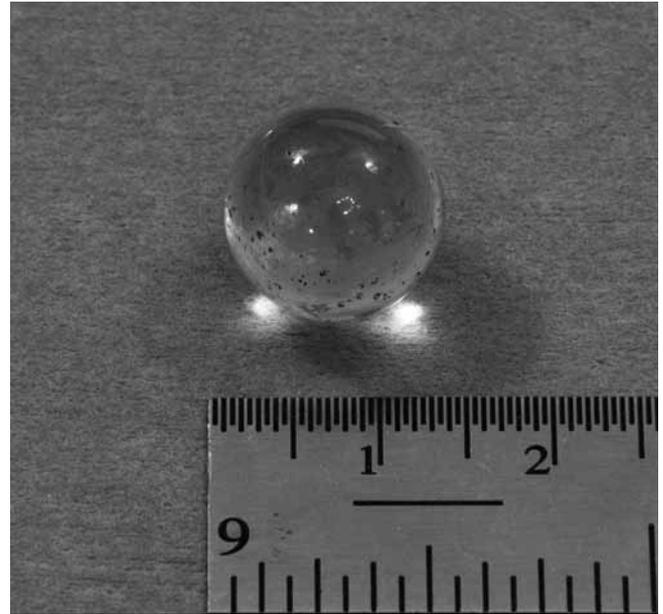


Fig. 2. — Image of the foreign body passed out through the ileostomy into the stoma bag 2 months after the initial CT scan showing its presence. The foreign body is a glass marble measuring 1.3 cm in diameter. The object has been cleaned before photographed.

prisoner who intentionally ingested a pack of two AA alkaline batteries which were retained in the stomach for 6 years and were removed laparoscopically. Deeba et al. (4) reported a case of a man who ingested two tea spoons under the influence of alcohol; one of which was adherent to the wall of the ascending colon for 10 years and was retrieved surgically. Endoscopic removal of a toothpick impacted in the wall of rectosigmoid junction causing 18 months history of chronic abdominal pain has been reported (7). A case of ingested sewing needle embedded in the anterior lesser curve of the gastric antrum for 32 years has also been described (6). In all cases, the foreign bodies in question were considerably larger. Some of which were long or even sharp which could easily get stuck at the acute angulation of the GI tract and imbedded into the bowel wall due to mucosal injury and chronic inflammatory process.

Though most foreign bodies pass without incident, complications can arise following ingestion of foreign body. Common complications include perforation, haemorrhage, bowel obstruction, and fistula formation to adjacent viscera. Intestinal perforation is quite rare, and accounts for less than 1% (2). However, the signs and symptoms of intestinal perforation can mimic

other acute abdominal conditions such as acute appendicitis, acute diverticulitis, intra-abdominal abscess or inflammatory mass; and diagnosis is seldom made until laparotomy (10). Perforation is usually caused by thin, pointed objects, although very rare, perforation related to blunt objects have been described (12, 13). Despite the seemingly benign physical properties, it has been suggested that blunt foreign bodies can erode through the intestinal wall through slow pressure necrosis in conjunction with local inflammatory reaction from continual apposition. Foreign body related perforations have occurred throughout the GI tract, but the highest incidence was found to be in the terminal ileum followed by rectosigmoid region owing to the narrower caliber of the intestinal lumen and the acute transition between a mobile portion of mesocolon to a more fixed portion of the retroperitoneum (10, 14). The rate of surgical intervention is significantly higher for longer period of impaction and for objects resided beyond the pylorus (15, 16). Therefore, there is a very small risk of intestinal perforation or other complications for long term retention of foreign body in the ileum.

Since the clinical presentation of the complications of foreign body ingestion can be non-specific and a definite history of foreign body is often not available, radiological imaging has become an important modality for the diagnosis. However, localization of the foreign body can be a major challenge. Fish bones, wooden tooth pick, plastic and most thin aluminium objects are radiolucent on routine plain film (17). Barium swallow can be helpful to outline the radiolucent object in selected cases where a suggestive history of foreign body ingestion is available but the object is not visible on radiographs. However it should be used with discretion since it compromises subsequent endoscopic management. Most glass objects of substantial size e.g. 1-2 mm or larger should be visible on radiographs (17). The sensitivity for glass objects is about 86% from a series of seven glass object ingestions (18). Plain film may not be helpful in visualizing pneumoperitoneum in case of perforation since the bowel wall is covered with fibrin due to chronic inflammation progressive impaction and prevent the exit of gas into the peritoneal cavity. CT is superior to plain radiography because of its

capacity to differentiate between tissue densities of 0.5% and is helpful in evaluating foreign bodies which are occult or difficult to localize. In addition, it provides accurate location of the foreign body in cases where surgical retrieval is needed and can be helpful for diagnosing many foreign body related complications. In this case the intra-abdominal foreign body was diagnosed incidentally based on a CT scan. It should be noted that objects may be obscured by the use of contrast media in CT for other purposes and therefore any unsuspected foreign body may be missed.

The management of foreign body ingestion is determined by the physical characteristics of the foreign body including the size, shape and type of ingested material, the location of the foreign body in the GI tract, whether the patient is symptomatic and any clinical finding suggestive of complications. A history of ingestion, if available, is important to determine the quantity and the type of ingested material, since urgent intervention may be required for certain foreign bodies like disc battery and drug packet. Physical examination should pay attention to evidence of luminal obstruction or perforation. Conservative management by observation is advocated as the protocol of choice in asymptomatic patients (19, 20). Blunt objects impacted in the oesophagus should be removed as soon as possible to avoid perforation and fistula formation due to pressure necrosis. Once the object is in the stomach, the patient can be managed expectantly because over 90% of cases the object will pass out spontaneously (19, 20). As far as small, blunt object is concerned, the current American Society for Gastrointestinal Endoscopy guideline suggests weekly radiographs to follow the progression of small blunt objects not observed to pass spontaneously and consider surgical removal if objects remain in the same location for more than 1 week (8). We, however, agree with Weiland and Schur (20) that conservative outpatient management by watching and waiting is appropriate in asymptomatic patients even though there is a slight risk of perforation if the object is retained for long term. In their experience, most objects will eventually pass and patients who develop a perforation or acute abdomen can be treated surgically without complications if there is no delay in intervention (20).

Patients should be instructed to continue a regular diet and observe the stool for the ingested object. They should also be educated regarding the early symptoms of complications and that those symptoms can mimic an acute abdomen. Endoscopic removal is indicated in symptomatic patients who fail to pass foreign bodies out of the stomach within 3 to 4 weeks of observation (8). Flexible endoscopy is the preferred modality of foreign body extraction due to its high efficacy, low morbidity and reduced costs compared to surgical intervention. Surgical intervention is considered if endoscopic removal fails or is not possible when the foreign body has passed beyond the duodenum, or if the patient develops symptoms indicative of complications, or when there is a danger to the patient.

In conclusion, long term retention of a small smooth and blunt foreign body that has passed beyond the stomach is very rare. If the patient is asymptomatic, expectant management with patient education regarding the symptoms of complications is the treatment of choice.

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#### References

1. Webb W.A.: Management of foreign bodies of the upper gastrointestinal tract: update. *Gastrointest Endosc*, 1995, 41: 39-51.
2. Velitchkov N.G., Grigorov G.I., Losanoff J.E., Kjossev K.T.: Ingested foreign bodies of the gastrointestinal tract: retrospective analysis of 542 cases. *World J Surg*, 1996, 20: 1001-1005.
3. Cox D., Donohue P., Costa V.: A swallowed toothbrush causing perforation 2 years after ingestion. *Br J Hosp Med (Lond)*, 2007, 68: 559.
4. Deeba S., Purkayastha S., Jeyarajah S., Darzi A.: Surgical removal of a tea spoon from the ascending colon, ten years after ingestion: a case report. *Cases J*, 2009, 2: 7532.
5. Lavon O., Lurie Y., Abbou B., Bishara B., Israelit S.H., Bentur Y.: Surgical removal of cylindrical batteries 6 years after ingestion. *Isr Med Assoc J*, 2008, 10: 799-801.
6. Misra S.P., Dwivedi M., Gupta M.: A needle embedded in stomach for 32 years. *Gastrointest Endosc*, 2004, 60: 436.

7. Zezos P, Oikonomou A., Souftas V., Gkotsis D., Pitiakoudis M., Kouklakis G.: Endoscopic removal of a toothpick perforating the sigmoid colon and causing chronic abdominal pain: a case report. *Cases J*, 2009, 2: 8469.
  8. Eisen G.M., Baron T.H., Dominitz J.A., et al.: Guideline for the management of ingested foreign bodies. *Gastro-intest Endosc*, 2002, 55: 802-806.
  9. Williams C., McHenry C.R.: Unrecognized foreign body ingestion: an unusual cause for abdominal pain in a healthy adult. *Am Surg*, 2004, 70: 982-984.
  10. Goh B.K., Chow P.K., Quah H.M., et al.: Perforation of the gastrointestinal tract secondary to ingestion of foreign bodies. *World J Surg*, 2006, 30: 372-377.
  11. Holte K., Kehlet H.: Postoperative ileus: a preventable event. *Br J Surg*, 2000, 87: 1480-1493.
  12. Memon M.A., Macafee D., Rattan H.: Accidental ingestion of cotton bud stick during alcohol intoxication: an unusual cause of caecal perforation. *Ir Med J*, 2002, 95: 19-20.
  13. Cross K.M., Holland A.J.: Gravel gut: small bowel perforation due to a blunt ingested foreign body. *Pediatr Emerg Care*, 2007, 23: 106-108.
  14. Pinero Madrona A., Fernandez Hernandez J.A., Carrasco Prats M., Riquelme Riquelme J., Parrila Paricio P.: Intestinal perforation by foreign bodies. *Eur J Surg*, 2000, 166: 307-309.
  15. Palta R., Sahota A., Bemarki A., Salama P., Simpson N., Laine L.: Foreign-body ingestion: characteristics and outcomes in a lower socioeconomic population with predominantly intentional ingestion. *Gastro-intest Endosc*, 2009, 69(3 Pt 1): 426-433.
  16. Chaves D.M., Ishioka S., Felix V.N., Sakai P., Gama-Rodrigues J.J.: Removal of a foreign body from the upper gastrointestinal tract with a flexible endoscope: a prospective study. *Endoscopy*, 2004, 36: 887-892.
  17. Hunter T.B., Taljanovic M.S.: Foreign bodies. *Radiographics*, 2003, 23: 731-757.
  18. Cheng W., Tam P.K.: Foreign-body ingestion in children: experience with 1,265 cases. *J Pediatr Surg*, 1999, 34: 1472-1476.
  19. Pavlidis T.E., Marakis G.N., Triantafyllou A., Psarras K., Kontoulis T.M., Sakantamis A.K.: Management of ingested foreign bodies. How justifiable is a waiting policy? *Surg Laparosc Endosc Percutan Tech*, 2008, 18: 286-287.
  20. Weiland S.T., Schurr M.J.: Conservative management of ingested foreign bodies. *J Gastro-intest Surg*, 2002, 6: 496-500.
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