CASE REPORT

Buried coin in the gastric mucosa

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SUMMARY

A 29-year-old man presented to the Accident and Emergency department with abdominal cramping following ingestion of a 50p coin 2½ weeks prior to presentation. He had not observed it pass in his stools. An abdominal radiograph confirmed the presence of the 50p coin in his stomach. Subsequently, he had an oesophagogastroduodenoscopy (OGD) performed with a failure to visualise the coin. 1½ weeks later, he returned to the department as he was still unable to observe its passing in his stools. A repeated abdominal radiograph and a CT of the abdomen and pelvis revealed that the coin was still in his stomach. A second OGD was performed once again with a failure to visualise the coin. It appeared that the coin had migrated into his gastric mucosa.

BACKGROUND

Foreign body ingestion is a condition commonly seen in Accident and Emergency departments, and a majority of such cases are seen among children. It is often an accidental event in this group of patients. Conversely, most intentional foreign body ingestion is seen primarily in adults. This may present as a pattern of repetitive ingestion, especially in patients with an underlying mental illness such as pica and schizophrenia. Foreign body ingestion is also observed among drug traffickers who bodypack illicit substances across international borders, such as cocaine, heroin and cannabis.

Coins are relatively small and have smooth edges. These normally pass through the pylorus and pass with the stool. As such, the ingestion of coins is usually managed conservatively. There have been exceptions and rare cases of bowel perforation,¹ pancreatic and biliary obstruction,² and zinc toxicity³ have been reported before in the literature.

To the best of our knowledge, we report the first ever case of a coin migrating into the gastric mucosa.

CASE PRESENTATION

A normally fit and well 29-year-old man first presented to the Accident and Emergency department complaining of abdominal cramping, which he reported as most notable when hungry. 2½ weeks prior to presentation, he had accidentally ingested one 20p and one 50p coin after his friends put them in his beer as part of a prank. While he had managed to regurgitate the 20p coin through emesis immediately after the ingestion, he was unable to do the same for the 50p coin (figure 1). He was concerned about not having observed the 50p coin being passed in his stools. An abdominal radiograph confirmed the presence of the 50p coin in his stomach (figure 2). An oesophagogastroduodenoscopy (OGD) was subsequently performed for a careful search for the coin but proved unsuccessful. He was discharged and advised to continue a regular diet and observe his stools for the coin. He was instructed to return to the hospital if the coin did not pass within 1 week from discharge.

He returned to us 1½ weeks later with a resolution of his symptoms but without having observed the coin in his stools. Surprisingly, a repeat abdominal radiograph once again revealed the presence of the 50p coin in his stomach (figure 3). CT scans of the abdomen and pelvis confirmed this finding (figures 4 and 5). A second OGD was performed in view of the imaging findings for another careful search of the coin, once again with a failure to visualise it. It appeared that the coin had migrated into his gastric mucosa. As his symptoms had resolved and were asymptomatic by that time, he was managed conservatively.

OUTCOME AND FOLLOW-UP

Our patient was seen for a follow-up appointment 6 weeks after his second OGD. He was given the option to watch and wait or to undergo surgical removal of the coin either through endoscopic mucosal resection or laparoscopic removal. As he was completely asymptomatic, he opted to watch and wait.

DISCUSSION

In cases of foreign body ingestion, the decision to intervene depends on several key factors that affect the perceived risks of complications. These include the patient's age and symptoms; the shape, size and location of the ingested foreign body; the elapsed time since ingestion of the foreign body; and the

Figure 1 The dimension of a UK 50p coin.

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Figure 2 First X-ray abdomen showing the 50p coin in the stomach.

technical abilities of the endoscopist.⁴ The ingestion of a battery dictates prompt endoscopic or surgical intervention as a failure to do so might be disastrous. An algorithm for the management of foreign body ingestion presented by Vijaysadan *et al* suggests a watch and wait approach for blunt and short objects that have passed to the stomach.⁵ It also suggests endoscopy and surgical removal if patients are symptomatic, if there is a failure to progress or if there is a failure to retrieve. However, this algorithm only takes into account objects that are lodged in the lumen of the gastrointestinal tract.

Complications of ingested foreign objects include impaction, perforation, obstruction, and in the case of coin ingestion, zinc toxicity.³ Obstruction is common in areas of acute angulation or physiological narrowing, which include the level of the cricopharyngeus muscle and the ileocaecal valve. The most frequent sites of impaction are the terminal ileum and ileocaecal valve (50%–75%), followed by the proximal ileum and jejunum (20%–40%), stomach and duodenum (10%).⁶ Conzo *et al* have described an impaction occurring at the level rectosigmoid junction, showing that obstruction at unexpected sites where the lumen is larger such as the colon is, while rare, possible.⁶ Patients with a background of intestinal atresia and other anomalies are also at a higher risk of obstruction. Ismail and Mudge have previously reported a case of pancreatic and biliary obstruction following the ingestion of a coin in a patient with duodenal stenosis.²

Figure 3 Second X-ray abdomen showing the 50p coin in the stomach.

Figure 4 Axial CT image showing the 50p coin in the stomach.

Needless to say, objects with sharp edges or pointed tips have the highest risk of perforations or complications. The complications are reported to be as high as 35%. Most perforations occur in the oesophagus as it is a passive and unadaptable organ in which peristalsis may not be sufficient to pass objects that are large. Once through the oesophagus, the majority of ingested foreign bodies pass readily in the stomach and travel the remainder of the gastrointestinal tract spontaneously. However, 10%–20% of all cases may require endoscopic intervention and in 1% of cases, surgical intervention.⁷

Almost all instances of coin ingestion only require conservative outpatient management once it has entered the stomach.⁷ However, Sekiya *et al* report a case of gastric perforation after a patient ingested 1894 coins.⁸ The authors believed that the sheer weight of the coins (approximately 8 kg) resulted in them eroding through the stomach. Additionally, Halverson *et al* report a perforation of a Meckel's diverticulum following the ingestion of a coin.¹

Figure 5 Sagittal CT image showing the 50p coin in the stomach.

It is recommended that objects that fail to leave the stomach within 3 to 4 weeks should be removed endoscopically. In the case of our patient, endoscopic removal was attempted twice with failure to visualise the coin. A coin migrating to lodge itself in the gastric mucosa has not yet been documented before in the literature. A known phenomenon with object migration into or through the gastric mucosa is buried bumper syndrome (BBS), which was coined by Klein *et al.*⁹ This rare syndrome occurs when the tip of a percutaneous endoscopic gastrostomy (PEG) tube erodes into the gastric mucosa. It occurs in 1%–9% of patients with PEG tubes.¹⁰ Complications due to BBS mostly revolve around difficulty with PEG feeding and abdominal pain or infection around the stoma site. More serious complications are related to gastric wall perforation leading to abdominal sepsis and gastrointestinal bleeding.¹¹

We were faced with the dilemma of whether to leave the coin as it is or to remove the coin either via endoscopic mucosal resection or laparoscopic removal. Zinc toxicity has been reported before in cases of coin ingestion, although it occurred after massive ingestion of coins.¹² Given that the patient was asymptomatic with no background of other comorbidities and

that the risk of perforation is low due to the coin being blunt and the gastric mucosa being a thick muscular layer, it was deemed that the risks of complications were far lower than the risks associated with an endoscopic mucosal resection or a laparoscopic exploration. This was discussed with the patient and it was agreed for conservative treatment with regular follow-up.

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Learning points

- The decision to intervene an ingested foreign body depends on the patient's age and symptoms; the shape, size and location of the foreign body; the elapsed time since ingestion of the foreign body; and the technical abilities of the endoscopists.
- Most ingested foreign bodies can be treated conservatively.
- Approximately only 1% of ingested foreign bodies require surgical intervention.
- If CT imaging confirms the presence of a foreign body in the stomach but not visualised with an endoscope, do consider the phenomenon of a buried foreign body.
- If a patient is symptomatic, that is, in pain and colic, then an elective endoscopic mucosal resection should be considered.

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