The man who swallowed a spoon
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Section: Abdominal imaging
Imaging Technique: CT
Case Type: Clinical Cases
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Patient: 34 years, male

Clinical History:

Constant right flank pain, nausea and vomiting. Known past medical history of paranoid schizophrenia, learning difficulties, and a history of swallowing foreign bodies.

Imaging Findings:

The patient presented with constant right flank pain, nausea and vomiting. He had a known past medical history of paranoid schizophrenia, learning difficulties, and a history of swallowing foreign bodies e.g. a biro and a spoon five years ago. Some objects were still in-situ. On examination, he was otherwise well. The working diagnosis of severe constipation was made.

His chest x-ray was clear, and his abdominal x-ray showed him to be constipated with faeces in the large bowel, but of note was a spoon in the right upper quadrant of the abdomen, and the tip of a biro pen seen in the left upper quadrant. His abdominal ultrasound showed up an echogenic linear structure passing through the lower poles of the right kidney (presumably, one spoon). The biro was not seen due to overlying gas.

On further investigation, endoscopy revealed the biro to be lying transversely in the stomach with the uncovered tip impacted in the fundus, and unable to be turned or removed. CT abdomen showed that the handle of the metal spoon had ruptured through the medial wall of the second part of the duodenum and had extended through the right kidney to lie just lateral to the quadratus lumborum muscle.

Despite the IVU showing air and probably granulation tissue present within the right renal pelvis and right upper ureter, and that the metal spoon has transected the right kidney; his overall symptoms improved. After taking expert urology opinion, it was decided not to proceed with any surgery at present.

Discussion:

This case is interesting because the CT abdomen revealed that:
- the spoon had transected the right kidney after coming through the bowel wall, which is very rare [2].
- the metal spoon has been corroded by intestinal acids.

Stomach perforations are an unusual complication of foreign bodies and they can be commonly removed with the help of interventional radiology [1] or endoscopy. Stomach perforations are an unusual complication of foreign bodies, although it can occur in presence of bezoars [2]. Although foreign body ingestions are a frequent occurrence, and a common A&E presentation, metal spoon swallowing is an uncommon occurrence [3]. In addition, unlike most cases of foreign body ingestion, there have been no cases reported of spontaneous passage [3]. Consequently, prompt removal is recommended before complications develop, e.g. with a gastrotomy to remove the object [3].

In our case however, no ‘peritonitis’ [2] was noted in the history, regardless of the CT abdomen having clearly shown the spoon to have transected the kidney. We can only conclude therefore, that at some point in his past, the spoon must have perforated and possibly re-sealed the wall of the intestine with equanimity, and left the patient
relatively symptom free. A very unusual occurrence!
The second point of note is that the metal spoon, like many other forms of cutlery and cooking pans is made of stainless steel and according to many manufacturers- is not supposed to corrode [4]. However, it can, and when it does, the results can be disastrous [4]. Unlike rusting, stainless steel corrosion is usually localized and apparently random. Tiny holes called pits can cause leaks or act as points from which cracks initiate, similar to the type of defect caused by scoring glass before breaking it. We believe that the corrosion evident around the metal spoon as shown by the CT abdomen was a result of the following: stainless steel is created by alloying iron with chromium. As the steel ingots cools after it has been made, tiny sulphur-rich impurity particles, about 10 millionths of a meter in diameter, solidify at a lower temperature than the steel, remaining molten for a time after the metal has solidified. A region around these impurity particles has significantly less chromium than the rest of the steel. During cooling of the steel the impurity, particles suck chromium out of the steel around them, creating tiny nutshells of steel that are not stainless. Corrosion of this layer, just one 10 millionth of a meter thick, is the virus that triggers the main attack. We conclude by stating how unusual it is for a foreign body to perforate the intestinal wall, without causing any complications such as peritonitis. We would also like to state how unusual it is for the foreign body, in this case a metal spoon, to then corrode whilst remaining in situ and still leave the patient without any severe symptoms for such a period.

Differential Diagnosis List: A migrated foreign body

Final Diagnosis: A migrated foreign body

References:

Absi EG, Buckley JG.
The location and tracking of swallowed dental appliances: the role of radiology.
Dentomaxillofac Radiol. 1995 May; 24(2): 139-42. (PMID: 9515387)

Rygl M, Pycha K.
Perforation of the stomach by a foreign body in a girl with anorexia nervosa— case report.
Lin CK, Lee KS, Kuo MC, Lin TJ, Tsai MS.
Removal of a mis-swallowed long spoon via gastrotomy—a case report.
Ryan MP, Williams DE, Chater RJ, Huttom BM, Mcphail DS.
Why stainless steel corrodes.
Figure 1

Description: IVU showing the metal spoon that has transected the right kidney and probably air or granulation tissue within the right renal pelvis and right upper ureter. Origin:
Description: The handle of the metal spoon had ruptured through the medial wall of the second part of the duodenum and had extended through the right kidney. Origin: