CASE REPORT

Fish bone perforation of the terminal ileum presenting as acute appendicitis

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SUMMARY

We report a case of a bowel perforation due to a fish bone that presented as an acute abdomen. This patient's gastrointestinal perforation was treated with laparoscopic and open technique. Diagnosis can be difficult as foreign body bowel perforation can mimic other causes of acute abdomen. Diagnosis is still most commonly made intraoperatively. Laparoscopy proved useful in this case as it allowed the most appropriate surgical approach to be made.

BACKGROUND

Foreign body ingestion usually occurs without complication. However ingestion of a foreign body can cause perforation of the bowel in a small proportion of patients. Foreign body perforation of the bowel may present with symptoms of an acute abdomen. Abdominal pain may begin centrally and then localise as peritoneal inflammation develops. We present our experience of the diagnosis and operative management of a fish bone perforation of the terminal ileum that presented as acute appendicitis.

CASE PRESENTATION

A 46-year-old man presented with a 3-day history of abdominal pain that began centrally and migrated to the right iliac fossa (RIF). The pain was exacerbated by movement and subjectively graded as 9/10 in severity. No nausea, vomiting or diarrhoea was present. The patient smoked approximately 10 cigarettes/day but was otherwise fit and well with no prior medical or psychiatric problems. Examination revealed guarding and rebound tenderness in the RIF. No organomegaly or masses were palpated. Auscultation of the abdomen was normal.

INVESTIGATIONS

The patient was afebrile and had a white cell count of $10.8 \times 10^9/L$. C reactive protein was not performed following local policy. Urinalysis was normal. Abdominal imaging was not performed as a clinical diagnosis of appendicitis was made and the decision was to proceed directly to laparoscopy.

TREATMENT

The patient was worked up for a laparoscopic appendicectomy in accordance with local preference. This included routine blood tests and anaesthetic review preoperatively. Surgery was performed within 24 h of admission.

The patient received prophylactic antibiotics on induction. Pneumoperitoneum was achieved using an open Hasson technique. Secondary 5 mm ports were placed in the left iliac fossa (LIF) and suprapubic regions. The appendix was identified and found to be normal (figure 1). A sharp foreign body was found to be perforating the terminal ileum approximately 10 cm from the ileocaecal junction (figure 2). No collection or free fluid was identified.

The foreign body was removed laparoscopically. It was held along its longitudinal axis and removed from the LIF port with Johann forceps. It was then identified as a sharp fish bone. It was unclear whether the defect in the bowel would be amenable to laparoscopic repair and it was therefore deemed safest to convert to open surgery to oversew the small bowel. A Lanz incision was made and the laparoscopic ports removed. The perforated area was oversewn with three interrupted 3.0 polydioxanone sutures. The wound and port sites were closed in a standard fashion with no drain being inserted.

OUTCOME AND FOLLOW-UP

The patient made a good recovery and was discharged 2 days postoperatively. A further history was sought and the patient admitted to ingesting home cooked fish 3 days prior to admission.

DISCUSSION

Foreign body ingestion is relatively common and usually a benign event. Most foreign bodies pass through the gastrointestinal tract within a week and only around 1% cause a perforation.¹ The site of the perforation influences the symptoms experienced. The symptom constellation can mimic other

Figure 1 Normal appendix.

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Figure 2 Fish bone perforation of the terminal ileum.

causes of the acute abdomen including appendicitis, diverticulitis or a perforated viscus. Foreign bodies are most likely to lodge where the bowel is particularly angulated or narrowed.² The most common places for perforation to occur are the ileum and jejunum.²

Patients with foreign body bowel perforation will present with symptoms typical for acute abdomen such as pain, nausea, vomiting and diarrhoea.³ Patients rarely report foreign body ingestion and there can be a significant time interval between ingestion and perforation. However, cases with perforation due to non-dietary foreign body ingestion, more commonly seen in patients with psychiatric disorders, are likely to present sooner. The type of foreign body causing perforation includes fish bones (63%), other bones or bone fragments (23%) and tooth picks (9%).³ Risk factors include psychiatric conditions, incarceration, inflammatory bowel conditions and those with dentures.⁴ Plain radiographs have been shown to have a sensitivity of only 32% in cases of fish bone ingestion.⁵ Although the use of CT scanning has not been studied in detail a small series found CT to be useful, the only limiting factor being reporter interpretation.³ In this patient a CT scan would have likely revealed a normal appendix and may have demonstrated the fish bone. Although the patient would have still required surgery to correct the problem, a preoperative diagnosis would enable the appropriate surgical approach to be planned earlier. A normal C reactive protein may have also been useful in ruling out appendicitis. Pneumoperitoneum is an unreliable sign as it occurs less frequently than might be expected. Foreign bodies can migrate through the bowel wall over time thus allowing fibrin deposition and omentum or bowel loops to seal off the perforation minimising free air. Operative management can include laparotomy with abscess drainage, foreign body removal and repair of the defect or resection of the affected bowel segment, with or without stoma formation. Laparoscopic identification and repair has been reported on several occasions with a description of a pure laparoscopic repair technique.⁶ In most cases of surgical treatment the patient underwent an uneventful postoperative

recovery. Laparoscopy proved beneficial in the patient as it allowed a detailed inspection of the peritoneal cavity while keeping the operating surgeon free from injury.

The diagnosis of foreign body perforation should always be considered in individuals at high risk of foreign body ingestion. In this case, however, it was only revealed postoperatively with direct questioning that the patient had recently ingested bony fish.

Diagnosis of a foreign body perforation in a low-risk patient thus becomes extremely challenging. Despite the availability of diagnostic imaging unexpected diagnoses can still be missed, as in this case, and the diagnosis is still most commonly made intraoperatively.

A systematic approach to patient history and examination will lead to more accurate diagnoses and organisation of the appropriate investigations. It is always ideal to have a complete operative plan in place pre-operatively rather than having to adapt during surgery.

Learning points

- ▶ The presentation of a foreign body perforation will depend on the site of the perforation within the gastrointestinal tract.
- ▶ A high index of suspicion is needed when assessing patients with an acute abdomen who carry a high risk for foreign body ingestion.
- ▶ In patients with a low index of suspicion a systematic approach to assessment and diagnosis is essential in planning the most appropriate surgical course.

Contributors DS participated in literature review and discussion. MJ was involved in case report and response to review. MK and WMT were involved in critical review.

Competing interests None.

Patient consent Obtained.

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REFERENCES

- 1 Maleki M, Evans WE. Foreign-body perforation of the intestinal tract. Report of 12 cases and review of the literature. *Arch Surg* 1970;101:475–7.
- 2 Goh BK, Tan YM, Lin SE, *et al.* CT in the preoperative diagnosis of fish bone perforation of the gastrointestinal tract. *Am J Roentgenol* 2006;187:710–14.
- 3 Goh BK, Chow PK, Quah HM, *et al.* Perforation of the gastrointestinal tract secondary to ingestion of foreign bodies. *World J Surg* 2006;30:372–7.
- 4 Bunker PG. The role of dentistry in problems of foreign bodies in the air and food passages. *J Am Dent Assoc* 1962;64:782–7.
- 5 Ngan JH, Fok PJ, Lai EC, *et al.* A prospective study on fish bone ingestion: experience of 358 patients. *Ann Surg* 1989;211:459–62.
- 6 Lunsford KE, Sudan R. Small bowel perforation by a clinically unsuspected fish bone: laparoscopic treatment and review of literature. *J Gastrointest Surg* 2012;16:218–22.

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