CASE REPORT

Proctalgia and colorectal stricture as the result of a 2-year transit of a retained rectal chicken bone: a case presentation and review of the literature

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SUMMARY

We report a case of a 70-year-old woman who presented with progressively increasing intensity of lower abdominal, pelvic and rectal pain of 3-day duration. She had similar symptoms intermittently over the preceding 2 years. CT of the abdomen and pelvis revealed the presence of a 3.8×0.4 cm linear foreign body in the colorectal region. History obtained from relatives recalled inadvertent ingestion of a chicken bone 2 years prior to presentation. Trials of foreign body retrieval, both manually and via rigid and flexible sigmoidoscopy, however, were unsuccessful due to the presence of obstruction by a circumferential rectal stricture. Consequently, an exploratory laparotomy was performed, with segmental resection of 17 cm of rectum and distal sigmoid. Dissection of the strictured segment revealed the presence of a chicken bone. The patient had an uneventful postoperative course, was discharged and is to continue following up on an outpatient basis.

pain. Her medical history was significant for hypertension, diabetes mellitus, gastroesophageal reflux disease, diverticulosis, with colonic tortuosity, and a hiatal hernia. Surgical history included a Roux-en-Y gastric bypass ~10 years prior. A stool guaiac test was negative and laboratory investigations were unremarkable. Family and drug histories were unremarkable. On examination, vital signs were within normal range. The patient exhibited lower abdominal wall tenderness with absent rebound tenderness and rigidity, and normal bowel sounds. Abdominal X-ray and ultrasound were unremarkable. CT of the abdomen and pelvis displayed extensive rectal inflammation with the presence of a 3.8×0.4 cm linear foreign body (figure 1). The patient denied accidentally swallowing any material or animal bone, however, her granddaughter recalled that the patient had inadvertently swallowed a chicken bone 2 years prior to

BACKGROUND

Although rare, rectal foreign bodies are well documented in the English literature. Most foreign bodies in the rectum are inserted via the anal canal, for sexual eroticism.¹ Occasionally, some objects become arrested in the rectal region following ingestion of foreign bodies, most frequently animal bones.¹ A <10% of ingested foreign bodies fail to clear the entire gastrointestinal tract, of which 1% result in perforation. Patients commonly present with acute symptoms of rectal pain, and seldom present with an indolent course of intermittent symptoms; and rarely does a chronic inflammatory state ensue with resultant stricture formation. We present a case of unusually prolonged retention of a rectal foreign body with resultant circumferential sigmoidorectal stricture formation, 2 years after inadvertent ingestion of a chicken bone, in a 70-year-old woman.

CASE PRESENTATION

A 70-year-old woman, with a body mass index of 45 kg/m², presented to the emergency department (ED), reporting of progressively persistent, moderate dull aching lower abdominal pain of 3-day duration. She reported that it was aggravated by bowel movements, and associated with constipation alternating with thin blood streaked stools. She denied having nausea, vomiting, diarrhoea or fever. Over the past 2 years, she had experienced similar intermittent symptoms of lower abdominal and pelvic

Figure 1 CT of the abdomen and pelvis with contrast (sagittal view), showing a 3×0.4 cm linear foreign body in the colorectal region (red arrow).

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presentation. Subsequently, the patient was admitted and underwent rectal examination under anaesthesia (EUA), with attempted manual extraction of the foreign body, however, it could not be palpated. A rigid sigmoidoscopy was performed, which revealed evidence of a rectal stricture ~15 cm from the anal verge. Just beyond, a foreign body was seen, however, attempts to retrieve it failed; a flexible colonoscopy was attempted 2 days later and, similarly, aborted due to the inability of passing the stricture. It was explained to the patient that an exploratory laparotomy would need to be carried out.

DIFFERENTIAL DIAGNOSIS

Chronic rectal, pelvic and abdominal pain in the elderly can be a daunting dilemma with multiple differentials. A retained rectal foreign body is a rare but possible aetiology of unremitting gastrointestinal symptoms. A chronic inflammatory response may eventually ensue with the development of a rectal stricture. These symptoms overlap with a list of several causes that can be broadly categorised into inflammatory, infectious, neoplastic, autoimmune, iatrogenic and traumatic.

TREATMENT

Subsequently, a large rectal stricture with surrounding inflammation was identified in the pelvis, and a segmental resection of 17 cm of rectum and distal sigmoid colon was performed including both, a 5 cm strictured area involving the colorectal junction, and the adjacent segment of colon affected by diverticular disease. The friable distal rectum was oversewn and an end colostomy was matured after closure of the abdomen. The strictured segment of the specimen was dissected on the back table, revealing the foreign body to be 'a chicken bone' (figure 2).

OUTCOME AND FOLLOW-UP

Histopathological examination of the specimen was negative for malignancy but revealed evidence of both, acute and chronic inflammation. The patient had an uneventful postoperative course, was discharged and is to continue following up on an outpatient basis.

DISCUSSION

Rectal foreign bodies have been classified into categories as voluntary versus involuntary and sexual versus non-sexual.² The involuntary non-sexual subtype is found most commonly among children, in mentally impaired and alcohol intoxicated

individuals, and in those wearing dentures. Many authors have emphasised that accidentally ingested foreign bodies are most common among the latter. This is attributed to the loss of tactile sensitivity in the palatal surface, hence making foreign bodies difficult to identify in food.^{1 3} A ~10–20% of foreign bodies fail to clear the gastrointestinal tract.¹ Distal to the stomach, foreign bodies have been described to potentially lodge in the pylorus, ileocaecal valve and the rectum, with <1% resulting in perforation, most frequently at the ileocaecal valve.¹ Our patient had previously undergone a Roux-en-Y gastric bypass procedure, which had facilitated the passage of the swallowed bone into the jejunum, bypassing major obstruction sites such as the pylorus and duodenum, in a person with a normal anatomy. Among the elderly population, retained foreign objects, whether due to ingestion or transanal insertion, are most commonly aluminium foil wrapping from pill containers, retained thermometers, enema tips, tooth picks or animal bones.^{2 4} Other objects including wires, pins and wood splinters, among many others, have been described. Most patients, especially those who have inserted anorectal foreign bodies for non-therapeutic purposes, are reluctant to seek medical advice until multiple trials of self-retrieval have failed, nonetheless, ~90% will seek medical consultation within a week.⁵

Symptoms span from vague lower abdominal pain, constipation, rectal pain and pelvic pain, to bleeding per rectum with signs of perforation in complicated cases.^{2 6} Patient presentation in the involuntary group, particularly those with accidental unconscious ingestion, may be more puzzling, as these patients may not recall any historical trigger to their symptoms.⁶ This poses a greater diagnostic challenge and clinical examination may overlook an underlying calamity. Hence radiological evaluation is extremely important in this group of patients. X-ray of the abdomen can delineate location and characteristic of the foreign body, and exclude complications.² CT scan and ultrasound may further improve the diagnostic ability to visualise smaller objects, however, these imaging procedures are seldom needed. Prompt removal of foreign bodies is advisable prior to the development of complications. Removal may be attempted in the ED for objects palpated on per rectum examination and for those that are <10 cm proximal to the anal verge.⁷ Many authors have recommended an algorithm for management, with a routine approach of initially attempting bedside extraction with local anaesthesia and sedation in patients with no signs of peritonitis. Should this measure fail, a rigid sigmoidoscopy must

Figure 2 (A) Opened specimen of the sigmoidorectal region showing impacted chicken bone (black arrow); (B) 3.8×0.4 cm chicken bone.

be performed prior to resorting to operative management.⁶⁻⁸ Flexible sigmoidoscopy is recommended for high-riding objects in the proximal rectum or recto sigmoid, as it serves the purpose of both exploration and therapeutic intervention. Inadvertent injuries of the bowel mucosa should be thoroughly excluded if extraction has been successful.² Our patient underwent an attempt of EUA, as well as using rigid and flexible sigmoidoscopy, without success. The duration of the retained chicken bone had triggered a chronic inflammatory state resulting in a rectal stricture precluding any chance of transanal or colonoscopic retrieval. A large review of 87 patients on the management of colorectal foreign bodies, by Lake *et al*, found no statistically significant association between the size of the object and requirement of operative intervention. However, objects proximal to the rectum and those retained for >2 days were a significant predictor of patients requiring colostomies.⁸ Complications of rectal foreign bodies include anal incontinence (the most common), perforation, fistulas, per rectal abscess formation and, rarely, stricture formation.

Rectal strictures are defined as chronic narrowing or obstruction of intestinal flow. They are caused by a diverse number of aetiologies, which may be broadly categorised as benign or malignant.⁹ Benign causes are more common and can be attributed to inflammatory or infectious aetiologies secondary to inflammatory bowel disease, or syphilis and lymphogranuloma venereum, respectively. Iatrogenic causes may occur after radiotherapy or colorectal anastomosis, or as a result of non-steroidal anti-inflammatory suppositories.¹⁰ All the aforementioned causes share a relatively common pathophysiology of inflammation and scarring with resultant stricture formation.¹⁰ The presentation varies depending on the degree of narrowing, with diarrhoea, constipation, urgency and tenesmus being the front runners, and mechanical bolus large bowel obstruction occurring at a more delayed stage as a result of severe narrowing.¹⁰ Therapeutic options include rectal stricture mechanical dilation, electrocautery, digital dilation, transanal mechanical stapling devices, endoscopic stenting and surgical approaches.^{9 10} The former two have been reported as the most common methods, with balloon dilation being the most widely used mechanical technique.¹⁰ However, it is limited to short strictured segments and requires several dilations to be performed.^{9 10} Although this

method is less invasive than surgery, it does not go without risks. A review of 11 studies with a total of 140 patients undergoing balloon dilation reported complications of abscess formation, perforation, bleeding and transient septicaemia as well as technical failure. However, the overall complication rate is seemingly lower when compared to that of other treatment modalities, hence, short uncomplicated strictures are amenable to balloon dilation as a preliminary treatment modality.¹⁰ This could not be undertaken in our case, due to the risk of perforation as a result of the foreign body impaction. Self-expandable colorectal stenting has been described as a primary therapeutic strategy and as providing an interim for the relief of symptoms bridging to surgical intervention. Patients who have failed these strategies due to technical difficulties or who initially have a stricture affecting a long segment of bowel, are treated operatively using transanal or open resection.

Similar cases reviewed in the literature, on retained rectal animal bones (outlined in table 1), demonstrate a more acute onset and shorter duration of symptoms in comparison to our case. Additionally, ours would be the first case complicated by colorectal stricture formation. Although in the presence of diverticular disease it would be challenging to solely attribute the stricture to the retained foreign body, we believe that the foreign body impaction within this region likely contributed to a chronic inflammatory response leading to the development of the stricture. It has been reported that chronic attacks of diverticulitis can result in stricture formation,¹¹ with no clear data on the expected timeline of stricture development. Our case had undergone a screening colonoscopy 3 years prior to presentation, which revealed evidence of diverticular disease with no signs of narrowing. Furthermore, the site of the stricture was coinciding with the site of impaction of the chicken bone, making it reasonable to assume that an association may exist between the former and the latter, and addressing the dilemma, 'which came first, the stricture or the chicken bone?'

In conclusion, ingested foreign bodies may lodge anywhere along the gastrointestinal tract, with predilection for specific terminals such as the rectum, and having transit times of up to 2 years. They are uncommon causes of chronic proctalgia and rectal strictures. High-riding rectal foreign bodies and those retained chronically are likely to require surgical management.

Table 1 Review of similar cases in the literature on retained rectal animal bones

Author/(year published)	Symptoms	Onset/duration of symptoms	Diagnostic modalities used	Complications	Treatment and findings
Elmoghrabi <i>et al</i> (2016)*	Lower abdominal pain, rectal pain, pelvic pain, constipation	Chronic/2 years	CT of the abdomen	Rectal stricture	Rectosigmoidectomy, chicken bone measuring 3.8×0.4×0.3 cm
Berk <i>et al</i> (1971)	Constant abdominal pain in left lower quadrant	Subacute/3 weeks duration	Plain abdominal X-ray, barium enema	Diverticular perforation +sigmoid abscess	Sigmoidectomy+drainage of abscess, chicken bone measuring 5×0.5×0.4 cm
Moreira <i>et al</i> (1975) ¹²	Pain and swelling around anal canal and scrotum, inability to sit or walk	Acute/2 days duration	Rectal and inguinal physical examination	Inguinal crepitus, extension of abscess to scrotum and abdominal wall	Resection and debridement of gangrenous skin+antibiotics+digital removal of chicken bone
Davies <i>et al</i> (1991)	Severe rectal pain, unable to sit	Sudden onset/9 hours duration	Rectal examination, plain abdominal X-ray, proctosigmoidoscopy	None	Digital removal of a 4 cm long chicken bone
Ward <i>et al</i> (1952) ¹³	Generalised colicky abdominal pain, nausea, vomiting, diarrhoea, tenesmus, then constipation	Acute/5 days	Postmortem examination	Perforation, peritonitis, death	Half a rabbit's scapula

*This report

Patient's perspective

Having been reassured by so many doctors that my symptoms are of a benign nature, from a medical perspective, the scrutiny that this was all caused by a chicken bone that I had swallowed 2 years earlier is unbelievable. I do not remember swallowing it, but my granddaughter was staying with me at the time—she told me that it had got stuck in my throat; and that I had tried swallowing water and peanut butter to get it down.

Learning points

- ▶ Most retained rectal foreign bodies are inserted transanally for sexual eroticism, however, occasionally they may occur as a result of ingestion and impaction in the anorectal region.
- ▶ Most ingested foreign bodies clear the gastrointestinal tract, with <10% defying the usual benign fate by arresting somewhere along its length, commonly lodging in the pylorus, ileocaecal valve and the rectum.
- ▶ Patients with retained rectal foreign bodies commonly present with acute lower gastrointestinal symptoms, however, they may present with an indolent course of chronic proctalgia and pelvic pain.
- ▶ Retained rectal foreign bodies may result in a chronic inflammatory state especially in a background of diverticular disease, with resultant stricture formation.
- ▶ High-riding rectal foreign bodies and those retained chronically are likely to require surgical intervention.

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