Original Research Paper

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General Surgery

A RARE CASE OF ACUTE SMALL BOWEL OBSTRUCTION SECONDARY TO TRUE PRIMARY ENTEROLITH

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ABSTRACT **Background:** Enterolithiasis also known as gastro-intestinal concretions are uncommon and are formed in the setting of intestinal stasis. Enteroliths are incidentally detected on imaging. Most enteroliths are asymptomatic, but they may rarely lead to bowel obstruction, haemorrhage and perforation. **Clinical Presentation:** We report a case of a lady in her 70s presented to surgery emergency with abdominal pain, distension, and constipation for 4 days. She had no history of abdominal surgery or foreign body ingestion. Abdominal examination revealed soft, distended abdomen with exaggerated bowel sounds. Abdominal X-ray revealed multiple air-fluid levels and dilated small bowel loops with a radio-opaque shadow in the pelvis. A contrast-enhanced computed tomography of abdomen showed a lamellated high density oval structure in the distal ileum measuring 3.7x2.8 cm with upstream dilatation of jejunal and ileal loops. No signs of pneumobilia or gallstones. Emergency exploratory laparotomy was done. Dense adhesions involving terminal ileum and omentum forming a mass in right iliac fossa with dilated proximal bowel. 4x4 cm impacted enterolith 20 cm proximal to ileo-caecal junction with significant thickening of bowel wall and luminal narrowing. Segmental resection of ileum and double barrel ileostomy was done. post operative period was uneventful and patient was discharged on post operative day 5. Histopathology report of resected bowel was suggestive of chronic inflammation. **Conclusion:** Enteroliths may be single or multiple and range in size from few millimetres to few centimetres. Small enteroliths causing partial bowel obstruction can be managed non operatively. Enterolith causing acute obstruction requires surgical intervention. Optimal treatment include milking into colon, enterotomy with enterolith removal and treatment of underlying pathology. Resection of involved segment is considered if associated with impaction and stricture.

KEYWORDS :

INTRODUCTION

Enterolithiasis also known as gastro-intestinal concretions is relatively uncommon clinical condition. They are sub divided into primary and secondary enteroliths. Primary enteroliths are formed in the setting of intestinal stasis like diverticular disease, enteric anastomosis, blind pouches, and intestinal strictures seen in the inflammatory bowel disease (1). They are classified into true and false subtypes Secondary enteroliths include gallbladder and renal stones that may migrate into the gastrointestinal tract as a result of fistula formation (4). Enteroliths are incidentally detected on imaging. Most enteroliths are asymptomatic, but they may rarely lead to bowel obstruction, haemorrhage and perforation.

CASE REPORT

We report a case of lady in her 70s, with hypertension and hypothyroidism, presented to surgery emergency with complaints of pain abdomen, abdominal distension and constipation for 4 days. There was no history of abdominal surgery, or foreign body ingestion. She had h/o constipation for last 2 years and was on laxatives.

She was admitted in the Surgery department and was investigated and diagnosed to be a case of acute small bowel obstruction. On examination she was conscious and oriented, afebrile with regular pulse rate of 85 beats per minute, blood pressure of 90/56 mm of Hg, respiratory rate of 20 cycles per minute, maintaining SpO2 at 99% on room air. She had BMI of 16.21 kg/m2. She had pallor and dry tongue and with a reduced urine output. Other systemic examinations were unremarkable.

On abdominal examination, her abdomen was distended, soft and non-tender. On percussion there was no loss of liver dullness and tympanic note was present all over the abdomen. On auscultation bowel sounds were exaggerated. On digital rectal examination, there was no growth, mucosa was free and mobile, rectum was collapsed, anal tone was normal and there was no finger faecal stain or blood stain on the returning finger.

Routine investigations were within normal limits barring the decreased haemoglobin which was 8.2 g/dl and hypoalbunimeia. Abdominal X-rays in supine erect and lateral views were suggestive of multiple air fluid levels and a oval radio opaque shadow in the pelvis.

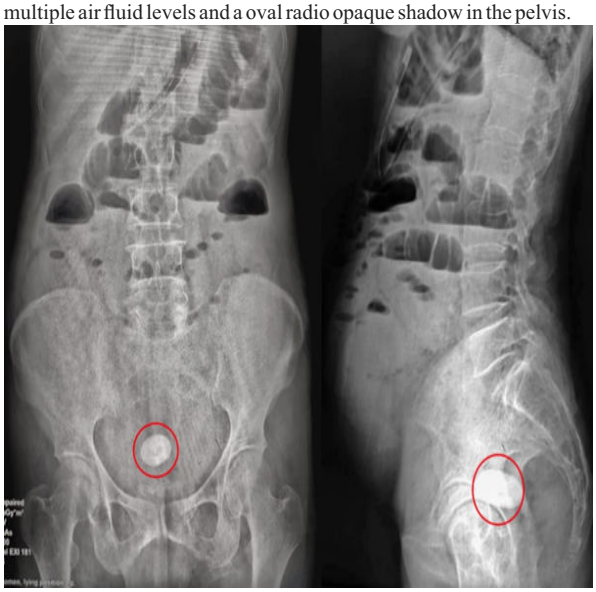

Figure 1. Plain skiagram of the abdomen and pelvis in erect position in anteroposterior (AP) and lateral views. Multiple air fluid levels are seen and an oval radio opaque shadow is seen in the pelvis (marked with a red circle)

Ultrasonography of the whole abdomen was suggestive of dilated small bowel loops > 3 cm with echogenic contents within it.

Patient was kept nil by mouth and a nasogastric tube was placed on drainage and a per urethral catheter was placed to monitor hourly urine output. Patient was resuscitated with IV fluids. A contrast enhanced computed tomography was done which showed a lamellated high-density oval structure is seen in the involved distal ileal loops measuring. 3.7 x 2.8 cm with upstream dilatation of Jejunal and ileal loops.

Figure 2. Contrast enhanced computed tomography of the abdomen showed a lamellated high-density oval structure (marked by a red arrow) in the involved distal ileal loops measuring. 3.7 x 2.8 cm with associated circumferential mural thickening with maintained mural stratification. There is upstream dilatation of Jejunal and ileal loops (maximum calibre of 4.1cm). Distal to this terminal ileal and large bowel loops are collapsed. There were, however, no pneumobilia or gallstones, and the gallbladder was unremarkable.

Patient was planned for an emergency exploratory laparotomy. Intraoperatively, dilated small bowel loops, with collapsed colon were noted. Terminal ileum was densely adherent to omentum and anterior abdominal wall forming a mass. 4x4 cm impacted enterolith 25 cms proximal to ileo-caecal junction. Thickened bowel wall (1cm) with significant luminal narrowing noted for a length of 10cms.

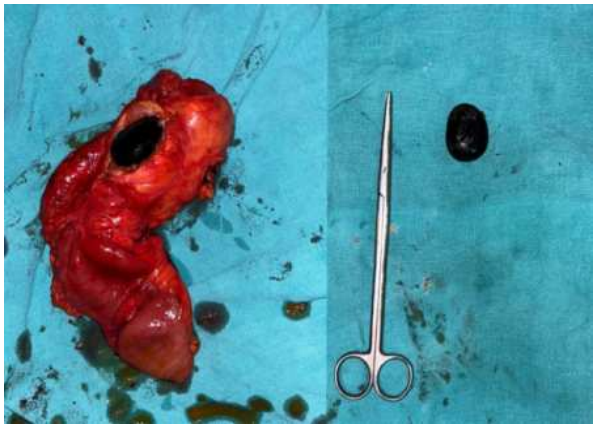

Figure 3. Intraoperative specimen of the resected ileal segment with the impacted enterolith.

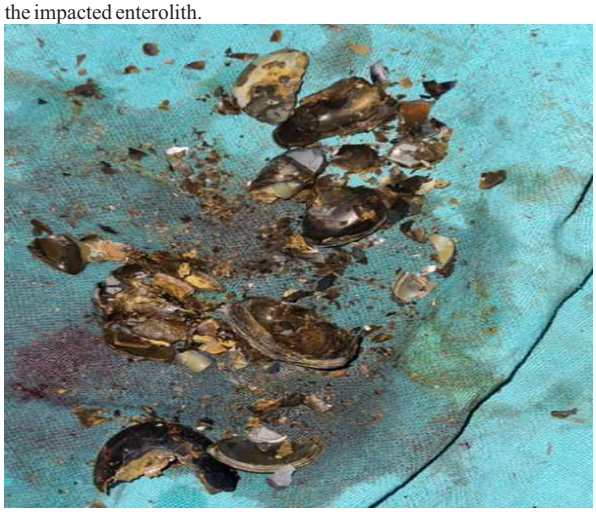

Figure 4. Enterolith showing concentric layers without any foreign body nidus- True primary enterolith

In view of poor nutritional status of the patient, oedematous dilated proximal bowel anastomosis was not done and a double barrel ileostomy was made.

Figure 5. Double barrel ileostomy

Postoperative period was uneventful and patient was discharged on day 5. Final histopathology report of the resected bowel segment was suggestive of chronic inflammation

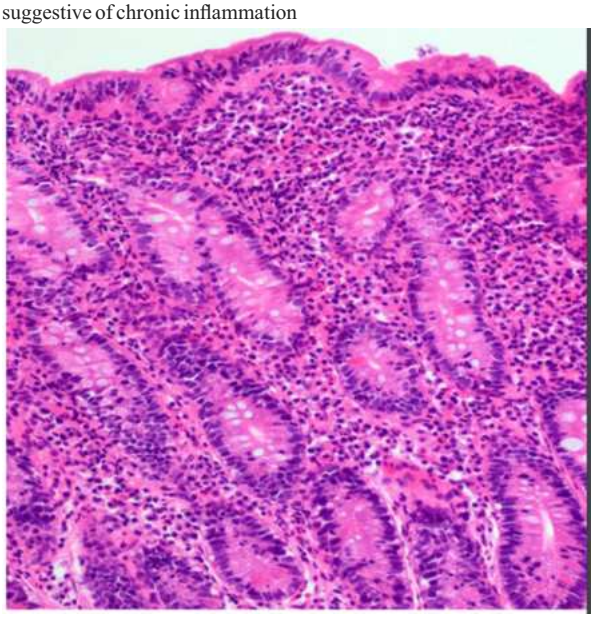

Figure 6. H and E section show focal ulcerated ileal mucosa with the lamina propria showing dense chronic inflammation with increase in fibroblasts

DISCUSSION

Enterolithiasis was first described by French physician Chomelin J in 1710 (2). Enterolithiasis also known as gastro-intestinal concretions are uncommon and are formed in the setting of intestinal stasis like strictures, diverticula, adhesions, blind loops and anastomotic sites. Enteroliths may be single or multiple and range in size from few millimetres to few centimetres. Enteroliths are incidentally detected on imaging.

Primary enteroliths are formed within the gastrointestinal tract and can be further subdivided into the “true” and “false” subtypes. True primary enteroliths are made of substances found in chyme. False primary enteroliths are formed from insoluble foreign substances in the bowel. Primary enterolithiasis mostly occurs in association with pathological conditions leading to hypo-motility and stasis (3). Small intestinal pH variation is region specific, starting at about pH of 6 in the duodenum and progressively increasing to about pH 7.4 in the terminal ileum (6). Cholic acid enteroliths are typically found in the proximal small intestine (lower pH). Calcium phosphate, calcium oxalate, and

calcium carbonate enteroliths are found in the terminal ileum (higher pH). Secondary enteroliths are formed outside the gastrointestinal tract and then migrate into the bowel causing obstruction (most common-Gall stone ileus) with the most common site of obstruction in the ileum (60%) (4). Classic description by Leo Rigler in 1941 of pneumobilia or contrast medium in the biliary tract, partial or complete small bowel obstruction, and a visualized ectopic gallstone that may change position within the bowel (Rigler's triad) is seen in less than 50% of patients with gallstone ileus (9, 10, 11, 12, 13). Two case reports were identified in the indexed literature of secondary enterolithiasis due to renal stones from an underlying fistulizing disease (7, 8).

Most enteroliths are asymptomatic, but they rarely lead to bowel obstruction, haemorrhage and perforation. Transit of an enterolith through the GI tract may result in acute, subacute, or chronic, intermittent, partial or complete intestinal obstruction (5). Small enteroliths causing partial bowel obstruction can be managed non operatively. Enterolith causing acute obstruction requires surgical intervention. Optimal treatment include crushing and milking into colon, enterotomy with enterolith removal and treatment of underlying pathology. Resection of involved segment is considered if associated with impaction and stricture.

CONCLUSION

Enterolithiasis is relatively rare clinical condition. Most enteroliths are asymptomatic, but they may rarely lead to bowel obstruction, haemorrhage and perforation. Imaging plays an important role in preoperative diagnosis. Distinction between primary and secondary enterolithiasis and identification of underlying enteropathy is crucial in establishing disease process and plan of management. Treatment should be aimed at endoscopic or surgical enterolith removal and correction of the underlying intra- and extra-intestinal pathology to prevent additional stone formation. Impacted enteroliths can cause surrounding inflammation and adhesions that might need resection of bowel segment.

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