

Enterolith–presenting as acute intestinal obstruction

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I. Introduction

Gallstone ileus is well described but enteroliths which rarely form within gastrointestinal tract, except in certain pathological conditions like Crohn's disease or blind loop syndrome may some times cause intestinal obstruction. There are few reported cases of primary enteroliths causing small bowel obstruction. We report a rare case of a primary calcified enterolith causing ileal obstruction.

II. Case Report

A 60 years old female patient was admitted in emergency with three days history of intermittent severe colicky central abdominal pain with bouts of vomiting. Patient had not passed flatus and stool for the last three days. There was also history of similar episodes of intermittent colicky abdominal pain in the past 3 years though pain used to be less severe in intensity and was of shorter duration. There was no history of previous surgery and an medical therapy in the past. On examination there was slight central abdominal distension and bowel sounds were raised. Radiograph of abdomen showed distended small bowel loops with a faint radio opaque shadow in hypogastric region. Emergency ultrasound revealed liver , spleen and gall bladder to be normal with minimal free fluid in the pelvis.

Laparotomy revealed normal stomach , duodenum and gall bladder with minimal turbid free fluid in the abdominal cavity. There was a dilated ileal loop proximal to a thickened and narrowed segment of it which was located approximately 2 feet proximal to ileocecal junction . An oblong hard structure was felt at the level of this stricturous narrowing from where it was milked in to the proximally dilated part of ileum(Figure 1).



Figure- 1 Showing dilated small gut loops proximal to a narrowed segment harbouring an enterolith

An enterotomy was performed and an enterolith of size of approximately 3x3 cm was extracted out (**Figure-2**).



Figure -2 Enterolith being extracted out from within the lumen of small intestine.



Figure- 3 The extracted enterolith



Figure -4 Cut section of the enterolith showing hard outer and soft brown inner core.

The proximal dilated segment showed muscular hypertrophy and an ulcerated area. There were no specific features present and in particular no evidence of Crohn's disease, tuberculosis or an ischemic etiology was found. Enterotomy was closed in two layers and patient had uneventful post operative recovery. The stone had outer hard walls composed almost entirely of calcium oxalate. The soft brown core contained some definite histologically identifiable plant material (**Figure- 2**). Electron probe analysis of wall confirmed the high calcium content. The patient could not recall having ingested any fruit seed or fruit pith/skin.

III. Discussion

Small bowel obstruction resulting from stone impaction is very rare with most cases caused by a gallstone ileus or by an enterolith formed in a small bowel diverticulum.

Primary enteroliths are formed in the small bowel and secondary enteroliths (gall stones) are formed in the gall bladder.^[1] Primary enteroliths are further divided into true and false enteroliths^[2]. True enteroliths result from precipitation and deposition of substances from alimentary chyme.^[2] False enteroliths (fecoliths, almond piths, fruit skins, oat stones, phytobezoars or tricobezoars) are formed by clumping together and inspissations of intestinal contents.^[2-4] Proximal small bowel enteroliths are usually composed of bile acids while those in the distal small bowel are usually composed of calcium salts. Enterolith formation is thought to be secondary to hypomotility or stasis, although many conditions have been implicated.^[2,5,6] In general enteroliths rarely form in GIT, except in certain pathological conditions like Crohn's disease or blind loop syndrome.^[5] Although Meckel's diverticulum is an area of stasis, it is very unusual site of enterolith formation.^[7] Small bowel calculi tend to develop in the alkaline medium of the distal small intestine.^[5] Age related hypochlorhydria and treatment with proton pump inhibitors may aggravate the condition. Calcium from intestinal contents can precipitate initiating the process of stone formation. Stones can be associated with abdominal pain and anemia or if released into the intestinal lumen from gall bladder ,may cause intestinal obstruction.^[8]

Calcium enteroliths are rare and usually develop in the distal small intestine. They are associated with stasis, often related to an intestinal stricture caused by tuberculosis or Crohn,s disease.^[9] High content of choleic acid is found in the more common types of stones which tend to develop in acquired or congenital diverticula.^[3] Many enteroliths are thought to form around a nucleus, which is usually of plant material, especially fruit skins and stone. Experimental studies have shown that ingested material that swells may cause an obstruction and that oblong objects are slower in their progress through the bowel than round objects.^[10] Fruit piths and skins may produce an ileus at the site of slight stenosis.^[11]

IV. Conclusion

Small bowel obstruction resulting from stone impaction is very rare, with most cases caused by a gall stone ileus or by an enterolith formed in a small bowel diverticulum. Our patient's long history of intermittent colic suggests that the enterolith had been present at that site for some time as a source of mucosal irritation with subsequent fibrosis. We believe that most likely course of events was impaction of ingested plant material at a slight ileal stricture without obstruction, formation of a crust of calcium oxalate around this nucleus, excitation of chronic inflammation and fibrosis leading to further narrowing of segment of bowel, and finally complete obstruction. Definite treatment of enterolith-induced small bowel obstruction is surgical with most patients requiring enterotomy or occasionally resection. Prognosis is good if timely therapy is rendered.

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