

## Case Study on Enterolithiasis presenting with Intestinal Obstruction

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**Abstract:** Enterolithiasis or formation of gastrointestinal concretions is an uncommon medical condition that develops in the setting of intestinal stasis in the presence of the intestinal diverticula, surgical enteroanastomoses, Cholecysto-enteric fistulas, intestinal kinking from intra-abdominal adhesions, Crohn's disease and intestinal tuberculosis. We present a case of sub-acute small intestinal obstruction owing to a large impacted stone in the terminal ileum in a 65 years old man. The diagnosis was made by computed tomography. Laparotomy revealed grossly dilated small bowel with a 6cm intraluminal stone impacted in the terminal ileum. Resection and Anastomosis of the involved segment was done.

**Keywords:** Enterolithiasis; Cholecysto-enteric fistulas; impacted ileum stone; enterolithotomy,

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### I. Introduction

Enterolithiasis is classified into primary and secondary types. Enteroliths were first described by Pfahler and Stamm in 1915, but enterolith causing ileus similar to gallstone ileus was first reported by Philips in 1921.[1] Primary enteroliths arise in areas of intestinal stasis in the setting of diverticular disease, surgical enteroanastomosis, blind pouches, and intestinal stenosis or strictures seen in the infectious or inflammatory bowel diseases.

Secondary enteroliths include gallbladder and renal stones that may migrate into the gastrointestinal tract as a result of fistula formation. Prevalence of enterolithiasis ranges from 0.3% to 10% in selected populations. Proximal primary enteroliths are composed of choleic acid salts and distal enteroliths are usually calcified.

Clinical presentation includes abdominal pains, distension, nausea, and vomiting of occasionally sudden but often fluctuating sub-acute nature which occurs as a result of the enterolith tumbling through the bowel lumen. Radiological imaging can help establish a diagnosis in a patient at risk. The complications include bowel obstruction, direct pressure injury to the intestinal mucosa, intestinal gangrene, intussusceptions, gastrointestinal haemorrhage, and perforation. Mortality of primary enterolithiasis may reach 3% and secondary enterolithiasis 8%. Risk factors include poorly conditioned patients with significant obstruction and delay in diagnosis. Treatment relies on timely recognition of the disease and endoscopic or surgical intervention

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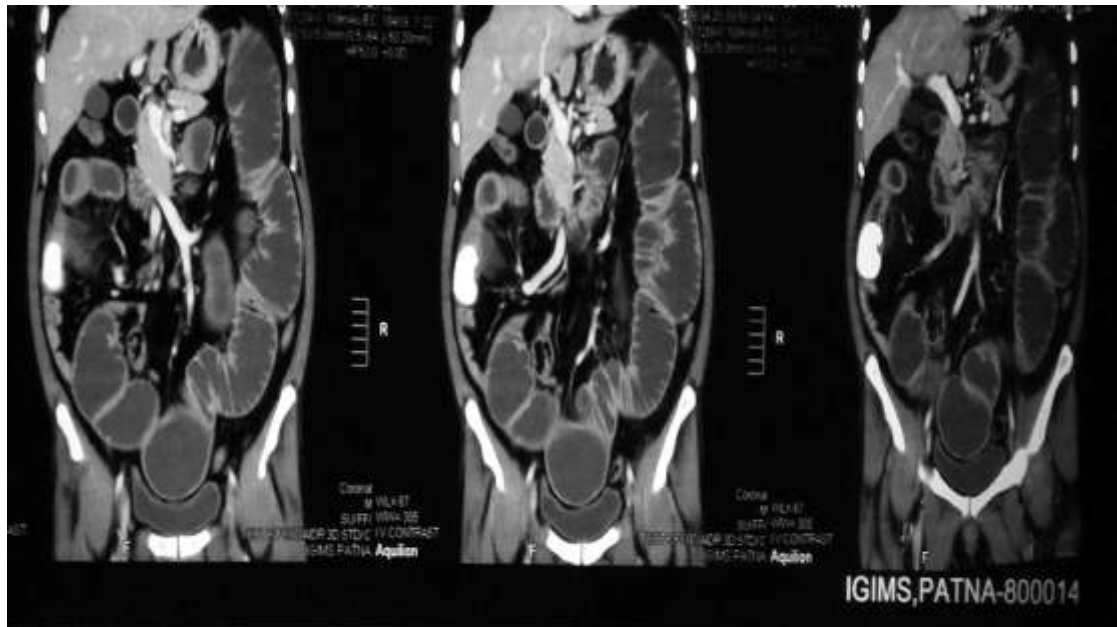
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## II. Case Presentation

A 65-year-old male presented with sub-acute obstruction for 25 days with history of recurrent colicky pain in abdomen. After thorough history taking and examination patient was subjected to radiological imaging.



**Fig 1**



**Fig 2**

Plain X-ray and CECT of the abdomen showed a round opacity in the Right Iliac Fossa as can be seen in the photographs below. CT was suggestive of mechanical cause of small bowel obstruction in the distal ileum. Hence decision for operative exploration was done after optimization of the patient.

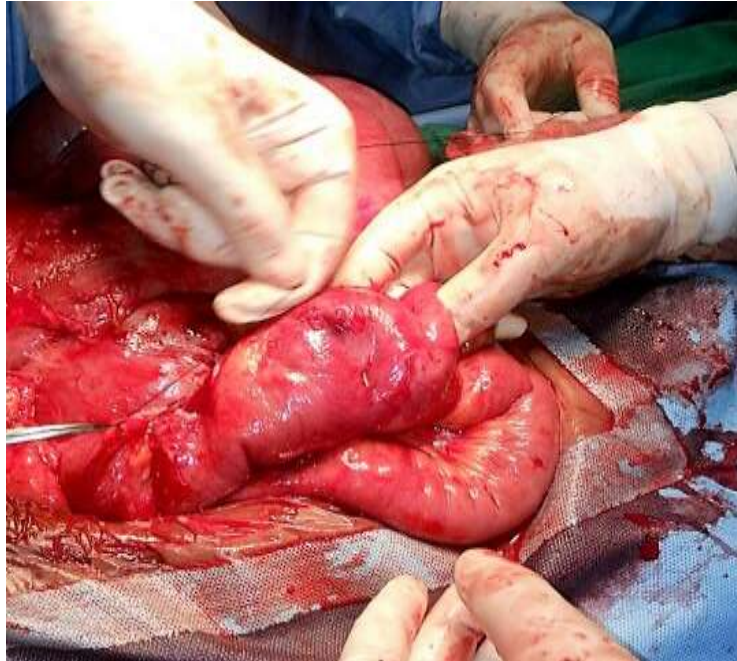


Fig 3

. On exploration, there was obstruction in the ileum at approximately 15 cm from the ileo-caecal junction due to one hard impacted enterolith (approx 5-6 cm in diameter). The stone was immobile and no amount of maneuvering would allow removal on enterotomy. Hence resection was planned. The rest of the proximal bowel was dilated and distended. Resection and Anastomosis of the involved segment of Ileum was done. Specimen can be seen below in Fig 4

Fig 4.



Bowel activity returned in 48 hours and postoperative recovery was uneventful, and the patient was discharged on the 8th postoperative day.

### III. Discussion

Primary enterolithiasis may be asymptomatic or may present with sub-acute or acute intestinal obstruction.[2] The reported prevalence of primary and secondary enterolithiasis in selected populations varies widely from 0.3% to 10% and is largely dependent upon clinical presentation, etiology, and underlying risk factors. Intraluminal stone formation of various sizes is more common than anticipated, typically remains underreported in absence of clinical symptoms or due to its minute size that permits intermittent passage, and may not be visualized on conventional radiologic imaging in majority of the cases. Primary enteroliths are classically formed in the areas of stasis within the bowel in the presence of the intestinal diverticula, surgical side-to-side enteroanastomoses, blind pouches (cul-de-sac), afferent loops in the Billroth II gastrojejunostomy and Roux-en-Y procedures, incarcerated hernias, small intestinal tumors, intestinal kinking from intra-abdominal adhesions, or proximal to the intestinal strictures encountered in cases of Crohn's disease and intestinal tuberculosis [3,4]. Gallstone ileus remains the most common form of secondary enterolithiasis. This condition

arises in estimated 0.3%-0.5% of general cholelithiasis[5,6]. It accounts for approximately 1%-4% of all cases of mechanical bowel obstruction, while significantly increasing to 25% in geriatric population[7].

It is interesting to note that although intestinal tuberculosis is fairly common in India and is associated with multiple strictures of small intestine, providing ideal conditions for enterolithiasis, surprisingly, its occurrence seems to be rare. Low dietary calcium intake along with high phytate content may be the reason for the low incidence in such patients.[8]

Clinical presentation of enterolithiasis varies according to the etiology, age, location, chemical composition, finally, dimensions of the stone. Primary enterolithiasis should be suspected in a younger patient with underlying inflammatory bowel disease (industrialized countries) or tuberculosis (third world countries) or an older patient with intestinal surgery or small bowel diverticular disease who presents with abdominal pains, distention, nausea, and vomiting of occasionally sudden but often fluctuating subacute nature which occurs as a result of the enterolith tumbling through the bowel lumen[9,10].

Optimal treatment of enterolithiasis should focus on enterolith removal and correction of underlying pathology to prevent future formation of additional enteroliths. In cases of acute intestinal obstruction, expectant management with serial abdominal examinations, electrolyte correction, appropriate hydration, and nasogastric tube suctioning may be selectively considered for stones less than 2 cm in size in absence of underlying luminal compromise[11].

Spontaneous passage of a larger stone is unlikely and a thorough search for an underlying pathology should be performed. In cases of intestinal stricturing, stenosis, or an anastomotic defect, an attempt at endoscopic segment dilatation and stone retrieval may be considered first. Surgical management remains the mainstay of therapy in the majority of the cases, with an attempt at digital fragmentation of the stone followed by manual "milking" of the smaller parts into the large intestine being successful in nearly 50% of the cases[12]. Alternatively, proximal enterotomy of the non-edematous segment with manual enterolith removal may be performed. In cases of impacted, immobile stones, inflammation, perforation, necrotic bowel, congenital diverticuli, and congenital duplication of the gut, resection of the involved gut segment and primary bowel anastomosis is the best option.[13][14]

#### IV. Conclusion

Enterolithiasis is an uncommon cause of intestinal obstruction and can occur in patients of all age groups. It should be considered with high index of suspicion when plain abdominal radiograph or CT Scan shows multiple radio opaque shadows in a patient with mechanical small bowel obstruction. It can be differentiated from gallstone ileus by documenting the absence of biliary pathology by ultrasound or CT scan. Enterolithiasis may occur in the absence of any bowel pathology. The treatment is essentially surgical for relieving obstruction as well as for confirmation of diagnosis.

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