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Review Article

Crohn's Disease Presenting as Acute Abdomen- Literature Review

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ABSTRACT

Background: Crohn's disease is a chronic, relapsing inflammatory bowel disease characterised by segmental, transmural inflammation and a predilection for the terminal ileum and colon. Although most patients present with abdominal pain, diarrhoea and weight loss in early adulthood, a minority first present with acute surgical emergencies, including obstruction, abscess formation or perforation. Spontaneous free perforation of the small intestine is an uncommon but dramatic complication, reported in approximately 1–3% of patients and most frequently localised to the distal ileum.

Case presentation: We report a 23-year-old man with a prior colonoscopy-based diagnosis of Crohn's disease who had discontinued follow-up and maintenance therapy. He presented with acute onset lower abdominal pain and vomiting, and examination revealed generalised peritonitis. Contrast-enhanced computed tomography of the abdomen demonstrated long-segment inflamed mid-ileal loops with a small transmural defect, free intraperitoneal air, ascites and mesenteric lymphadenopathy, consistent with ileal perforation on a background of inflammatory bowel disease. Emergency diagnostic laparoscopy, converted to midline laparotomy, revealed purulent peritoneal fluid and a perforation 150 cm proximal to the ileocaecal junction with florid Crohn's changes. Segmental ileal resection with primary stapled ileo-ileal anastomosis was performed. Histopathology confirmed Crohn's disease with fissuring ulceration, transmural inflammation, focal perforation and granulomatous reaction. The postoperative course was uncomplicated.

Conclusion: Free perforation of the small intestine is a rare but life-threatening complication of Crohn's disease that should be considered in any patient with known or suspected Crohn's presenting with an acute abdomen and peritonitis. In developing countries, most non-traumatic ileal perforations are still due to enteric fever, intestinal tuberculosis or non-specific ulcers, so careful integration of clinical context, operative findings and histopathology is essential to distinguish these from Crohn's-related perforation and guide definitive therapy. This case highlights that, even in such settings, Crohn's disease-related perforation must not be overlooked and underscores the importance of long-term follow-up and adherence to maintenance therapy to prevent severe penetrating complications in young patients.

Keywords: *Crohn's disease, Ileal perforation,Small bowel perforation, Free peritoneal perforation,Acute abdomen*

INTRODUCTION

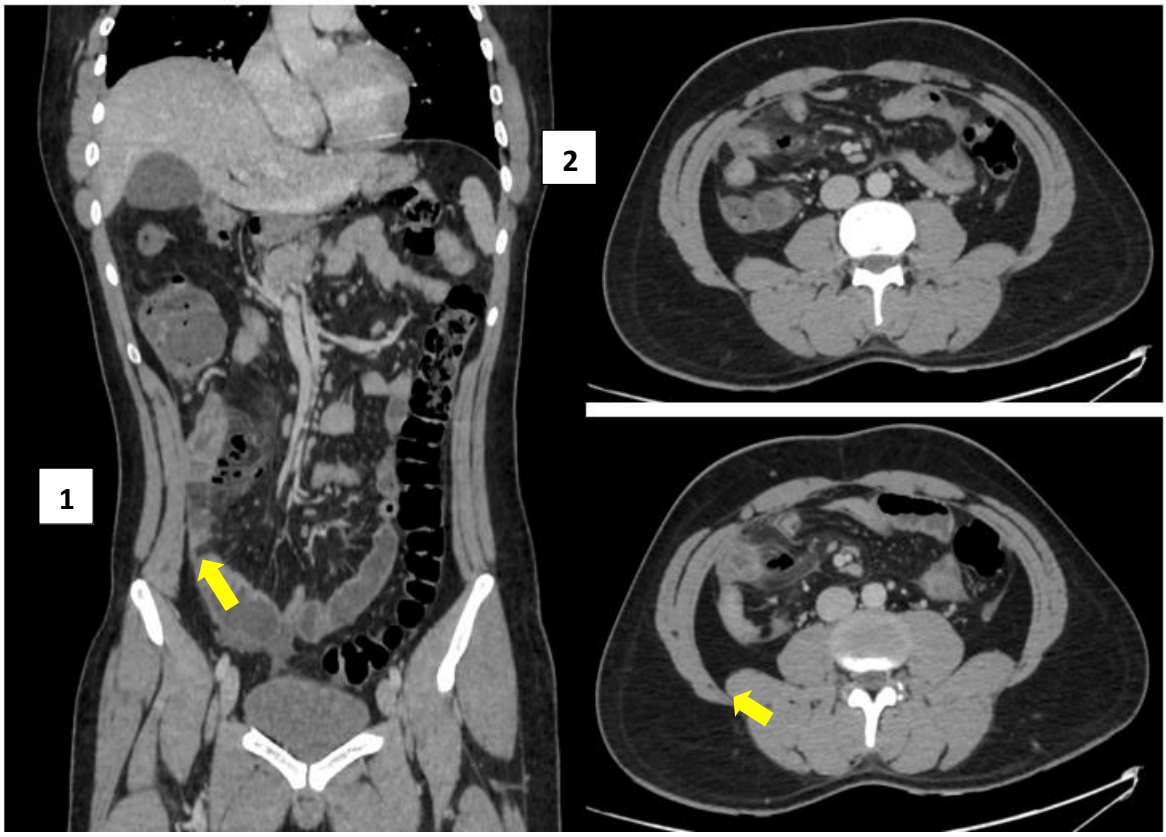
Crohn's disease is a chronic transmural inflammatory bowel disease that can involve any segment of the gastrointestinal tract but most commonly affects the terminal ileum and colon.(1,2) Small-bowel involvement is reported in approximately 70–80% of patients, most often as ileocolic or isolated small-bowel disease.(1,3) The transmural nature of inflammation predisposes to stricturing and penetrating phenotypes, which in turn lead to complications such as obstruction, fistulae, abscess formation, and intra-abdominal sepsis, and a proportion of patients present with surgical emergencies including obstruction, abscess, or perforation.(2,4,5) Spontaneous free perforation of the small intestine is an uncommon event, occurring in roughly 1–3% of patients with Crohn's disease overall and most frequently involving the distal ileum.(6–8) We describe a young adult with established Crohn's disease who was lost to follow-up and presented with acute generalized peritonitis due to ileal perforation, highlighting the need for continuing medical therapy and a high index of suspicion for perforation in Crohn's patients presenting with an acute abdomen.

CASE PRESENTATION

A 23-year-old man with a prior colonoscopy-based diagnosis of Crohn's disease in 2021, who had subsequently discontinued follow-up and was not on any maintenance therapy, presented to the emergency department with acute onset lower abdominal pain of one day duration. The pain was associated with three episodes of non-bilious vomiting, there was no documented history of other significant comorbidities.

On admission, General physical examination was unremarkable. Abdominal examination showed diffuse tenderness predominantly in the lower abdomen with guarding, absent bowel sounds, and obliteration of liver dullness, consistent with generalized peritonitis and possibility of perforation. Contrast-enhanced computed tomography (CECT) of the abdomen was obtained in view of suspected perforation peritonitis. CECT demonstrated long-segment diffuse edematous wall thickening of mid-ileal loops with mucosal enhancement, prominent adjacent mesenteric vascularity, and significant surrounding fat stranding, in keeping with active inflammatory ileitis. A small transmural defect was identified along the medial wall of the inflamed ileal segment, associated with multiple pockets of pneumoperitoneum within the adjacent mesentery and in the right anterior subdiaphragmatic region, mild ascites with peritoneal thickening and omental fat stranding, and multiple prominent sub-centimetric mesenteric lymph nodes.

These findings were suggestive of an ileal perforation on a background of inflammatory bowel disease.



CECT Abdomen Images(1-3)

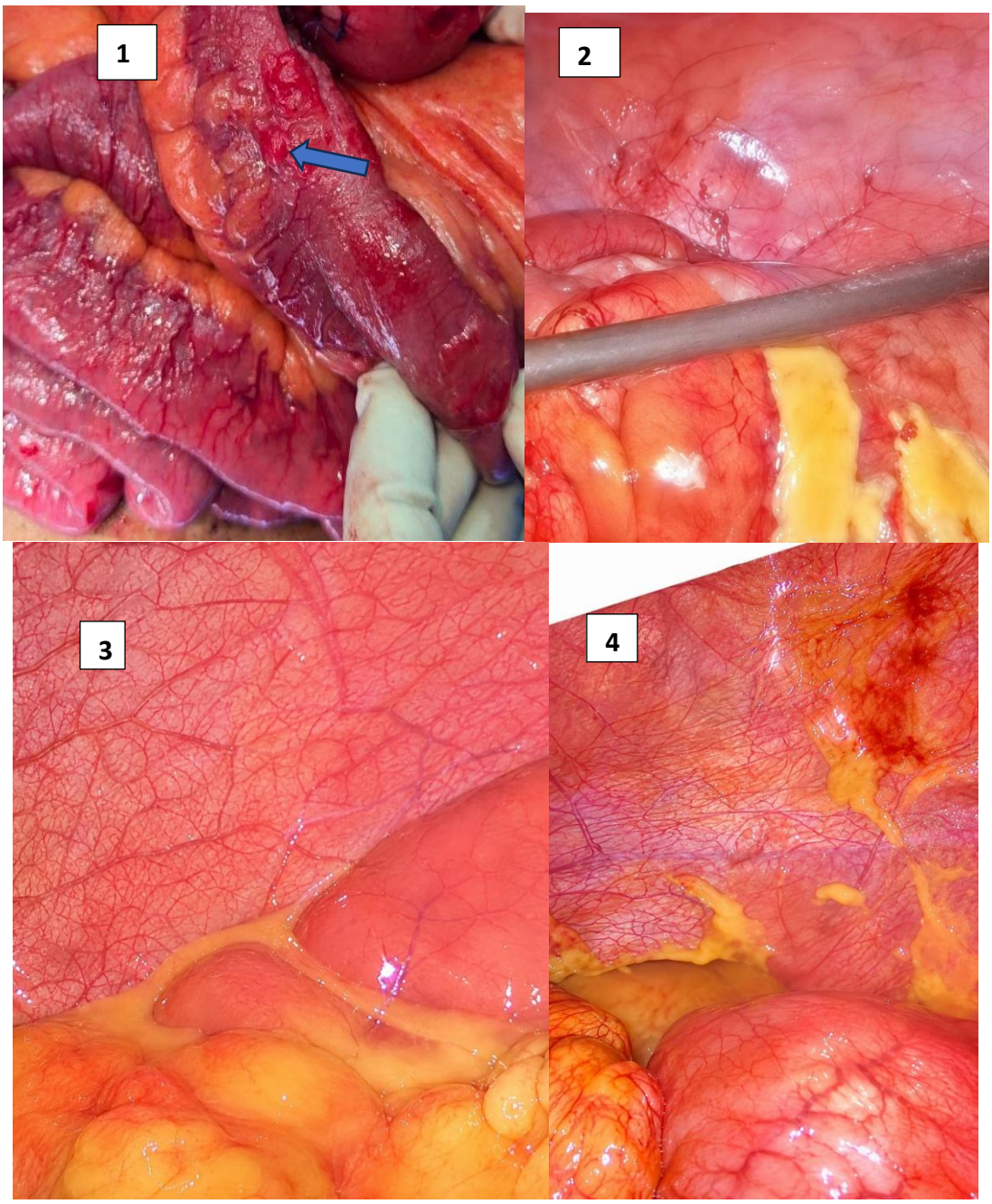
1- Multiple pockets of pneumoperitoneum within adjacent mesentery as marked with an arrow.
2 & 3- Inflamed ileal segment with transmural defect

Following initial resuscitation and anaesthetic assessment, the patient was taken up for emergency diagnostic laparoscopy. On laparoscopic inspection, approximately 250 ml of purulent fluid was noted in the pelvis, paracolic gutters, subhepatic space, and other quadrants, which was evacuated and sent for culture. An ileal perforation was visualised about 150 cm proximal to the ileocaecal junction with surrounding fibrinous flakes, along with multiple serosal nodules, strictures, and skip lesions in the small bowel and an oedematous terminal ileum. In view of the edematous, friable ileum, presence of a perforation, and dense adhesions, the procedure was converted to a midline laparotomy.

The perforated ileal segment, including approximately 5 cm margins on either side, was resected using a linear stapler, and a functional side-to-side stapled ileo-ileal anastomosis was fashioned.

Histopathological examination of the resected ileal specimen showed features consistent with Crohn's disease, including fissuring ulceration, transmural predominantly acute inflammation with focal perforation and serositis, focal granulomatous and foreign body giant-cell reaction, pyloric gland metaplasia, and areas of fat necrosis in the mesenteric adipose tissue.

Postoperatively, the patient had an uneventful recovery: he tolerated oral diet, passed stools, he was discharged home in a clinically stable condition on postoperative day six with advice regarding, medical therapy for Crohn's disease, and the need for regular follow-up.



Intra-operatives Images-(1-4)

1. Nodules in the ileum marked with arrow, consistent with crohn's disease
2. Fibrinous flakes covering the bowel
3. Purulent material in the RIF
4. Pus flakes seen adherent to the abdominal wall

DISCUSSION:

Crohn's disease is a chronic, relapsing inflammatory bowel disease characterised by segmental, transmural inflammation that can affect any part of the gastrointestinal tract from mouth to anus, although it most commonly involves the terminal ileum and colon.(1,2) Patients typically present in the second to fourth decades of life with abdominal pain, recurrent diarrhoea, weight loss and, in younger individuals, impaired growth or failure to thrive.(1,2) Small-bowel perforation is an uncommon but serious surgical emergency within the spectrum of Crohn's-related complications, occurring less frequently than obstruction, fistula or abscess formation.(4,5) Case reports and larger series consistently indicate that free perforations most often arise from the terminal ileum, with jejunal and colonic perforations described as less common in comparison to the latter. Spontaneous free peritoneal perforation is a rare but recognised event in thecourse of Crohn's disease, with an estimated frequency of roughly 1–3% of the patients , and in many reported cases it represents the first clinical manifestation of the disease.(6–8) Our patient fits the typical pattern of distal ileal perforation but differs from many reports in that he had a pre-existing diagnosis of Crohn's disease, discontinued follow-up and maintenance therapy, and subsequently presented with generalised peritonitis, highlighting how loss to follow-up and non-adherence can allow progression to life-threatening complications.

The underlying mechanism in such cases is thought to be a penetrating disease phenotype, in which transmural inflammation and deep fissuring ulcers weaken the bowel wall and predispose to micro perforation, abscess formation, fistulae and, occasionally, free perforation into the peritoneal cavity.(1,2) In our patient, histopathology showed fissuring ulceration, transmural predominantly acute inflammation with focal perforation and serositis, granulomatous and foreign-body giant-cell reaction and areas of fat necrosis, while intra-operative findings included multiple serosal nodules, strictures, skip lesions and an oedematous terminal ileum—features that are all in keeping with extensive transmural Crohn's disease rather than an isolated mechanical or traumatic perforation.

Large series of Crohn's disease complicated by free perforation regard emergency surgery with resection of the perforated segment as the standard of care, and simple suture repair alone is generally discouraged because of higher rates of leakage and recurrent sepsis.(6–8) Primary anastomosis is usually performed when local conditions and the patient's physiological status are favourable, whereas extensive disease, gross peritoneal contamination or marked systemic compromise often warrant creation of a diverting stoma. The ECCO-ESCP surgical consensus similarly lists free perforation with generalised peritonitis as a clear indication for urgent operative management in Crohn's disease and recommends limited resection of diseased bowel with avoidance of unnecessarily long small-bowel resections, taking into account disease extent and the patient's nutritional and immunosuppressive status when deciding between primary anastomosis and staged procedures with diversion.(10) In our case, the presence of a relatively short perforated ileal segment, controlled intra-operative conditions and the patient's young age and haemodynamic stability supported the decision to perform segmental ileal resection with primary stapled ileo-ileal anastomosis without diversion, which resulted in an uncomplicated postoperative course.

CONCLUSION:

Free perforation of the small intestine is a rare but life-threatening complication of Crohn's disease and should be considered in any patient with known or suspected Crohn's who presents with an acute abdomen and peritonitis.(6–8) In developing countries, however, most non-traumatic ileal perforations are still attributable to enteric fever, intestinal tuberculosis and non-specific ulcers, with Crohn's disease and malignancy accounting for only a minority of cases.(11–13) Careful correlation of clinical context, intra-operative findings and histopathology—looking for typhoid ulcers, caseating granulomas of tuberculosis or the non-caseating transmural granulomatous pattern of Crohn's disease—is therefore essential to establish the correct aetiology and guide definitive therapy.(1,2,6,7,11–13) Our case illustrates that, even in a region where typhoid and tuberculosis predominate as causes of ileal perforation, Crohn's disease-related perforation should not be overlooked, and it underscores the importance of long-term follow-up and adherence to maintenance therapy to prevent such severe penetrating complications in young patients.(1,2,6–8)

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