# Controversial role of laparoscopic appendicectomy vs steroids in a patient with provisional diagnosis of crohn's disease: A case report

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## ABSTRACT

Crohn's disease can originate in and be confined to the appendix, yet manifest clinical symptoms leading to the emergency laparoscopy. Preoperative radiologic findings can be similar to those of suppurative appendicitis. Here, we report the case of a 28-year-old female who had a provisional diagnosis of Crohn's disease based on radiological finding but later on, diagnosed to have a perforated appendix.

**Keywords:** *Appendicitis, Crohn's disease, Distal ileitis, Laparoscopy.*

Crohn's disease (CD) is a chronic inflammatory bowel disorder characterized by a transmural inflammatory reaction and may involve all parts of the gastrointestinal (GI) tract from the mouth to the anus. Although granulomas are regarded as the characteristic feature of CD, their absence does not rule out the diagnosis [1]. CD can involve the appendix by an extension from the terminal ileum or the cecum and present as acute or subacute appendicitis. Imaging modalities utilized in the emergency setting to evaluate the right lower quadrant (RLQ) pain include computed tomography (CT), ultrasound (US), and magnetic resonance imaging (MRI). These modalities are used for patients with non-specific symptoms.

Crohn's disease can present with abdominal pain that mimics appendicitis. The principal distinguishing features of acute appendicitis are its onset without any pre-existing history of chronic bowel symptoms or family history of inflammatory bowel disease (IBD). Certain studies have shown that an appendicectomy was a risk factor for developing Crohn's disease [2,3], whereas, some concluded that it was protective [4,5] and other studies drew no conclusions.

We herein describe the case of a 28-year-old female who presented with RLQ pain and had a confounding diagnosis of acute appendicitis and distal terminal ileitis on Computed tomography (CT) scan raising the suspicion of Crohn's disease, who ultimately underwent laparoscopic appendicectomy for a perforated appendix with proven histology.

## CASE REPORT

A 28-year-old female presented to the Emergency with less than 24 hours history of RLQ pain. Not known to have any surgical or medical conditions, no family history of inflammatory bowel diseases or malignancies. She was in the mid-cycle of her menstrual period and never known to have any issues with her bowel habits. She described the pain as a dull ache in the right-side lower abdomen. It was non-radiating, constant pain progressively got more uncomfortable. No relieving or aggravating factors. She denies having any nausea, vomiting, fever, diarrhoea, peri-rectal bleeding, weight loss or urinary symptoms. Upon review, her pain improved with simple analgesia.

On physical examination, the patient looked comfortable and had normal vitals. She had a soft, mildly tender RLQ, without peritonism. Direct rectal examination was unremarkable (no blood or mucus or masses).

Blood investigations including White cell count, C-reactive protein (CRP) and Urine analysis were all normal. Ultrasound (USG) Abdomen/pelvis was normal with a large right ovarian cyst. The patient spiked a temperature of 38.9 degrees overnight and complaint of worsening of abdominal pain. A CT scan of the abdomen was organized which showed that the long segment of distal ileum is inflamed. There was a mural enhancement,

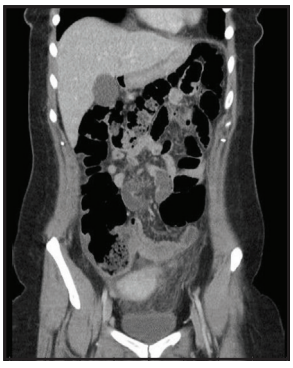

**Figure 1: Initial CT abdomen on presentation revealed acute appendicitis. In addition to this, the long segment of the distal ileum not immediately adjacent to the appendix is inflamed in keeping with distal ileitis, possible Crohn's disease.**

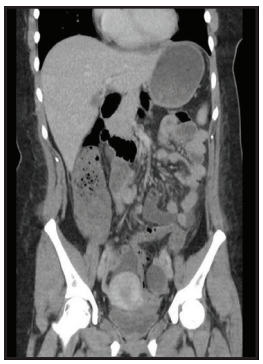

**Figure 2: CT abdomen on representation showed free fluid in the pouch of Douglas. The possibility of a perforated appendiceal abscess is raised although the appendix cannot be identified.**

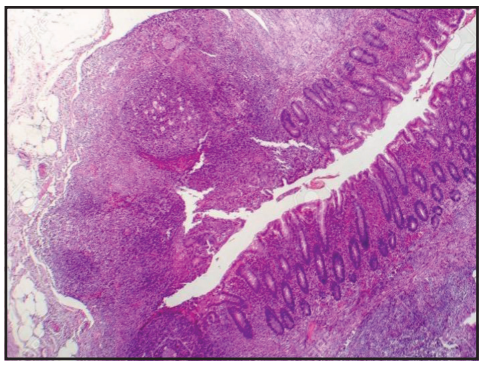

**Figure 3: Histology showed the suppurative and focally gangrenous appendicitis with the prominent periappendicitis and perforation at the base.**

thickening and marked surrounding inflammatory stranding in the lower abdomen to the pelvis and terminal ileum appears to be spared. On the other hand, the appendix also appears inflamed and thick-walled consistent with the findings of acute appendicitis with no signs of perforation and peri-appendiceal abscess (Fig. 1). In addition to this, the long segment of distal ileum not immediately adjacent to the appendix is inflamed in keeping with distal ileitis raising the possibility of Crohn's disease.

On a provisional diagnosis of CD, the patient was started on oral steroids and intravenous (IV) antibiotics (Piptaz 4.5 gm TDS) with an ongoing gastroenterology review. Her blood levels revealed a raised white blood count (WBC) of 16000/mm$^3$ and CRP of 130 mg/dl. At day 4 post-admission, her pain improved but not completely gone. CRP and WCC were improving and the abdomen was less tender than before on examination. She was discharged on oral Prednisone 40mg bd and oral antibiotics (Augmentine Duo forte) with a plan for outpatient colonoscopy.

Next day, the patient represented to the emergency department with worsening of RLQ pain. Her observations remain normal with tenderness over the epigastric and RLQ with no signs of peritonism. She had a raised CRP of 160 mg/dl and WBC of 21000/mm$^3$. A repeat CT scan (Fig. 2) showing a perforated appendix with an abscess. After discussing the case with the surgical consultants, a decision was made to take the patient for laparoscopic appendicectomy.

She underwent laparoscopic appendicectomy, limited caecectomy, and washout. Operative findings were perforated appendix at the base, pus in all the 4 quadrants and inflammatory omental adhesions to the anterior abdominal wall in right iliac fossa (RIF).Terminal ileum appeared secondarily inflamed and no obvious features of Crohn's disease. At postoperative day 2, the patient had a good recovery, discharged home on oral antibiotics and outpatient Colonoscopy. Histology of the appendix showed suppurative features and terminal ileum showed periappendicular inflammation and normal small bowel. No granulomata were found (Fig. 3). A diagnosis of Acute Appendicitis imitating CD was made.

A few weeks later, colonoscopy was performed which showed no gross pathology. Biopsy samples from the colon and terminal ileum were normal. A 6-month follow-up in the clinic revealed healthy patient with complete resolution of her symptoms.

## DISCUSSION

The CT diagnosis of acute appendicitis includes distended or thickened appendix with or without appendicolith, greater than approximately 5-7 mm in size. The management of a patient with clinical appendicitis and undiagnosed Crohn's disease remains difficult to clarify. Several studies have argued that the risk associated with appendicectomy may not be biological, but an effect of a diagnostic bias [2,6]. Patients with small bowel disease commonly present with RLQ pain that may mimic appendicitis. Some authors have reported that perforated appendicitis was associated with a greater risk of developing Crohn's disease compared with non-perforated appendicitis. For neither of the two, however, did the excess risk persist beyond 5-years [7,8].

Our patient had clinical and radiological findings supporting both acute appendicitis and Crohn's disease which was a diagnostic dilemma. The radiological findings and the response to treatment supported the diagnostic bias to the CD. Consideration was also given to the diagnosis of an isolated CD of the appendix, an uncommon chronic appendicitis with histological findings (granulomas) resembling a CD. This rare presentation of CD is confined to the appendix and progression to systemic disease is rarely noted.

Microscopically, the histologic features are characterized by transmural chronic inflammation with marked fibrous thickening of the wall, lymphoid aggregates, small non-caseating granulomas, ulcerative mucosal change, crypt abscesses, muscular hypertrophy, and neural hyperplasia [9].

The differential diagnosis includes ovarian pathology, diverticulitis of the appendix, sarcoidosis, actinomycosis, and Yersinia infection [10]. Actinomycosis also results in a vague granulomatous tissue reaction; however, actinomycosis shows neutrophilic abscess formation with floating bacterial colonies (sulphur granules). Yersinia infection results in a necrotizing granulomatous reaction in the appendiceal mucosa or submucosa and shows microabscess formation.

The reluctance to intervene surgically on initial presentation in a patient with a suspected CD was another barrier to diagnosis. However, the decision to operate upon representation was based on the raised inflammatory marker and CT Abdomen findings and worsening of pain, in the absence of any histopathology/ Colonoscopy to confirm CD.

## CONCLUSION

We described the case report of suspected CD in patients who underwent appendicectomy and summarized the common characteristic histologic findings along with a review of the literature.Even though the role of laparoscopy in a patient with suspected CD is controversial, however, laparoscopy has added benefits where endoscopic, histological and radiological findings do not provide a definitive answer in the patient who clinically do not respond to the medical management and have multiple presentations with RLQ pain.

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