

# A Patient with Crohn's Disease Presenting with a Picture Mimicking a Strangulated Incisional Hernia: A Case Report

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## Abstract

**Objective:** To report a case of Crohn's disease that presented with a clinical picture mimicking a strangulated incisional hernia.

**Case Report:** A 33-year-old Saudi male patient presented to the Emergency Department (ED) with vomiting, pain, and swelling at the right iliac fossa after lifting heavyweight objects two days earlier. The patient had a past history of appendectomy through a transverse incision nine years earlier. Clinically, the patient was vitally stable. He had tenderness at the right iliac fossa, and rebound tenderness. A tender swelling (6 x 8 cm) was observed underneath the previous scar. It was firm, not expansile on cough, and not reducible, with no redness or skin changes. The laboratory report showed normal results for complete blood count, apart from slight leukocytosis. Blood electrolyte levels, renal and liver function tests were normal. Plain CT abdomen showed a defect in the transversus abdominis muscle with the presence of swelling beneath the oblique muscles associated with air, which were connected to the bowel. The preliminary diagnosis was a "strangulated incisional hernia". After laparotomy, the swelling showed pus within the external oblique aponeurosis, with a fistula tract connected to the ileum. After abdominal exploration, the inflammation was observed to be limited to the ileum and cecum with no other abnormality noted. Ileocecectomy was done with side-to-side anastomosis between the ileum and ascending colon. The resected part was sent for histopathology, which confirmed the characteristics of Crohn's disease.

**Conclusions:** The diagnosis of Crohn's disease remains challenging. Its management is multi-disciplinary. Surgical management is dependent on disease location and severity. It seems that early surgery is gradually going to play a more important role in the multidisciplinary management of Crohn's disease, rather than being a last-resort therapy.

**Key Words:** Crohn's disease, Diagnosis, Surgical management, Case Report.

## Introduction

Crohn's disease is a chronic, granulomatous, transmural patchy inflammatory bowel disease, which can affect the entire gastrointestinal tract and also extra-intestinal organs. It is associated with local and systemic complications. Crohn's disease has the highest incidence and prevalence rates in Western countries, with a peak incidence in young adulthood (1).

By the end of 2017, the highest prevalence rates of Crohn's disease were in Europe (322 per 100,000 in Germany) and North America (319 per 100,000 in Canada). Despite the fact that the incidence in developed Western countries is stabilizing, the burden of costs associated with solving emerging problems remains high. By the end of 2019, its prevalence exceeded 0.3% of the total population in many other regions of the world(2).

In Saudi Arabia, the disease is yet not well-documented. However, the drastic changes in diet and lifestyle, as well as increasing smoking among younger generations may partially be responsible for an increasing trend of Crohn's disease (3).

Over the past decades, incidence and prevalence rates of Crohn's disease have been increasing most in newly industrialized countries. This suggests that the still unclear etiology may be related to industrialization and westernization of lifestyle (4-6).

According to the Montreal classification, Crohn's disease can be divided into ileal (L1), colonic (L2), ileocolonic (L3) and isolated (L4) upper disease (which can also be added to the first three when concomitant), and behavior can be divided into non-stricturing and non-penetrating (B1), stricturing (B2) and penetrating (B3) types with or without the perianal disease (7).

van Praag et al. (8) noted that, patients with Crohn's disease typically present with transmural, penetrating disease of the terminal ileum or colon. Since Crohn's disease is known for its intermittent and relapsing courses, many different therapies have been studied. Usually, medical therapy is started as the first line of treatment, whereas surgery is considered a last treatment resort when medical therapy fails.

This study aims to report a case of Crohn's disease that presented with a clinical picture mimicking a strangulated incisional hernia.

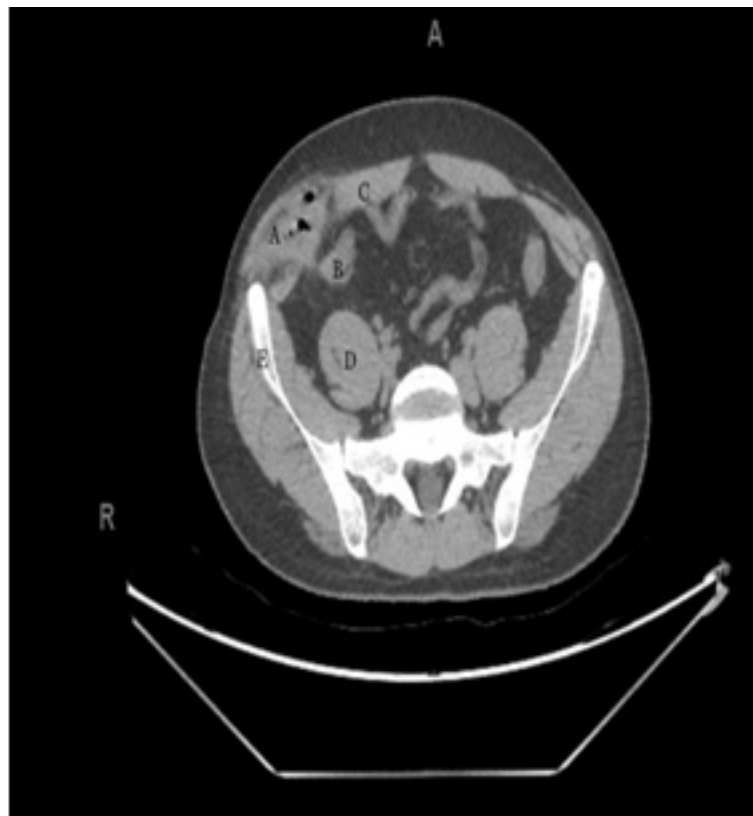
## Case Report

On April, 2nd, 2022, a 33 year old Saudi male patient presented to the Emergency Department (ED) in King Abdullah Hospital, Bisha City, Saudi Arabia, complaining of pain in the right iliac fossa associated with a swelling in the same area, that came to his attention after lifting heavyweight objects two days earlier, followed by frequent vomiting.

The patient had a past history of acute appendicitis nine years earlier. The patient's hospital record indicated that he underwent appendectomy through a transverse incision. The appendix was removed, pus was controlled, and a drain was left during the patient's hospital stay for four days. The histopathology report of the removed appendix showed acute appendicitis on top of a chronic picture.

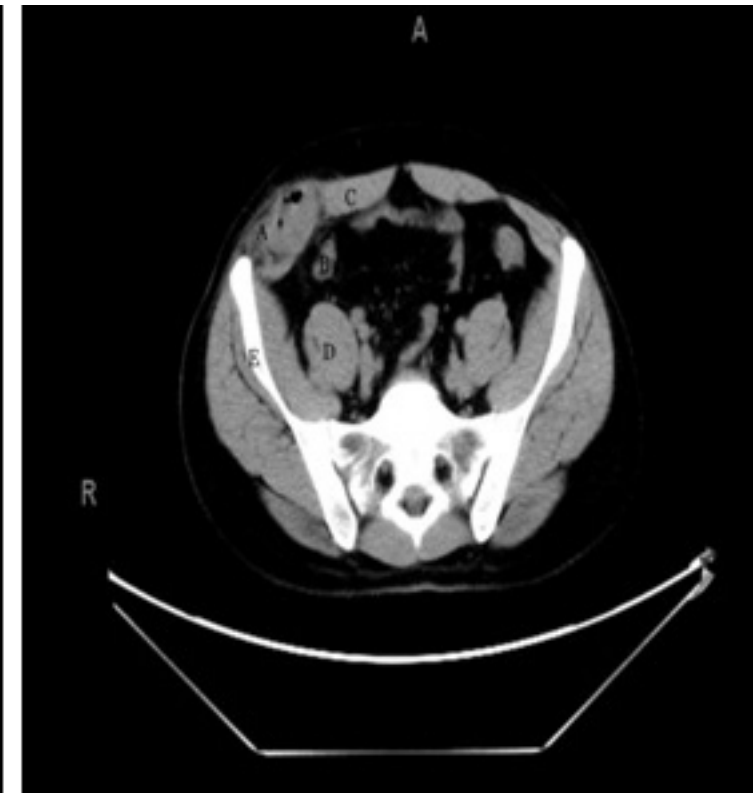
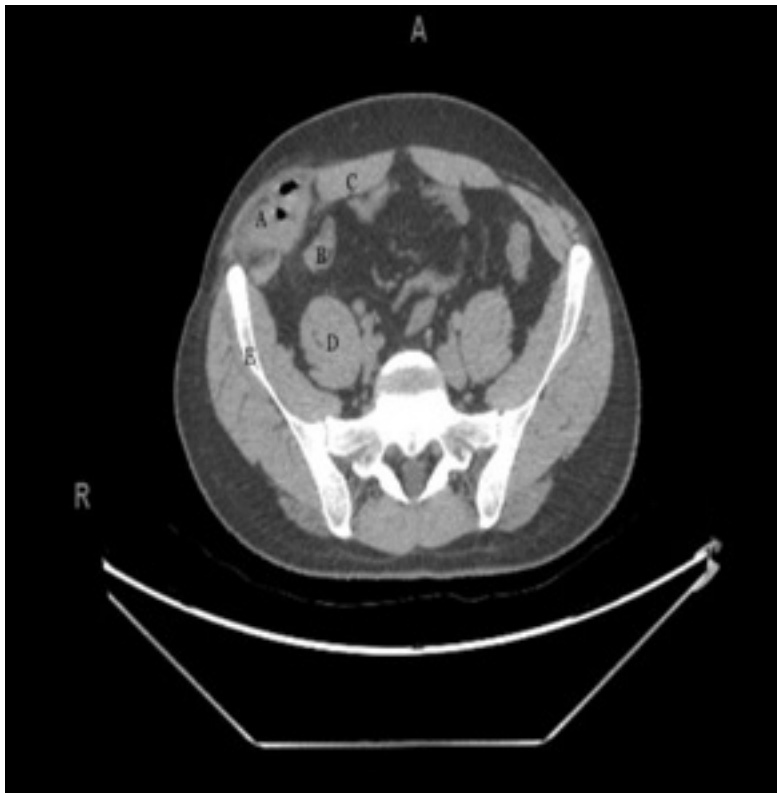
Clinically, the patient was vitally stable. He had tenderness at the right iliac fossa, and rebound tenderness. A tender swelling (6 x 8 cm) was observed underneath the previous scar. It was firm, not expansile on cough, and not reducible, with no redness or skin changes.

The laboratory report showed normal results for complete blood count, apart from slight leukocytosis. Blood electrolyte levels, renal and liver function tests were normal. Findings of X-ray chest and abdomen were also normal. CT abdomen with double contrast was advised for the patient, but this was denied due to a previous history of hypersensitivity to the used contrast medium. Therefore, a plain CT abdomen was performed and showed a defect in the transversus abdominis muscle with the presence of swelling beneath the oblique muscles associated with air, which were connected to the bowel (Photos 1-4).



**Photo (1):** Plain abdominal CT showing A) The swelling; B) the small bowel; C) Rectus abdominis muscle; D) Psoas major muscle; E) iliac bone

**Photo (2):** Plain abdominal CT showing the small bowel (B) connected to the swelling (A) with the swelling having air inside, C) Rectus abdominis muscle; D) Psoas major muscle; E) iliac bone



**Photo (3):** Plain abdominal CT showing the small bowel (B) is separate from the swelling (A); the swelling lies between the rectus abdominis muscle (C) and the iliac bone (E).

**Photo (4):** Plain abdominal CT showing the swelling (A) is outpouching a defect in the transversalis abdominis muscle

**Photo (5): The terminal ileum delivered through the incision.**  
There is evidence of mesenteric fat creeping on the bowel wall (Crohn's disease sign)



The preliminary diagnosis was a “strangulated incisional hernia”. Our patient was led to the operative theater for exploration. We started with a McBurney incision, but with subsequent dissection, it was decided to convert to laparotomy, because we thought that the swelling was post-appendectomy incisional hernia. However, the swelling showed pus within the external oblique aponeurosis, with a fistula tract connected to the ileum. The ileum and cecum were delivered through the incision. Both the ileum and the cecum were severely inflamed, with dusky walls, mesenteric creeping fat on the ileal wall, and very fragile mesentery (Photo 5). Therefore, the definite diagnosis was settled as: “Crohn's Disease”.

After exploration of the whole abdomen, the inflammation was observed to be limited to the ileum and cecum with no other abnormality noted. Ileocecectomy was done with side-to-side anastomosis between the ileum and ascending colon. The resected part was sent for histopathology, which revealed transmural intestinal wall inflammation, marked edema, extensive hemorrhagic areas, mixed inflammatory cell infiltrate, lymphoid aggregate, and many congested blood vessels extending throughout all layers of the intestinal wall with the presence of non-caseating granuloma. The mesentery showed multiple lymph nodes with features of reactive hyperplasia. No neoplastic pathology was noted. The whole abdomen was explored for other abnormalities of Crohn's disease.

A drain was left in the pelvis and the abdomen was closed. The histopathology report confirmed the characteristics of Crohn's disease for the resected part.

In the postoperative period, the patient was kept fasting for two days, then a clear liquid diet was allowed. A drain was left in place for four days and then was removed. The patient was started on broad-spectrum antibiotics till the results of the culture and sensitivity testing revealed *E. coli*, and he was started on I.V. Ceftriaxone 1 gm BID, and I.V. Metronidazole 500 mg TID was commenced initially for two days, then he continued receiving Ceftriaxone alone for five days. Finally, the patient was discharged home in good general condition and with a clean wound.

At follow-up, one week later, the patient was referred to the Medical Department within the hospital for further management of his condition.

## Discussion

The preliminary diagnosis of our case was a "strangulated incisional hernia". This preliminary diagnosis was based on full history taking and clinical examination of our case. Moreover, laboratory findings were inconclusive apart from the slight leukocytosis; blood electrolytes, renal and liver function tests were all normal. Therefore, the diagnosis was mainly based on his presenting symptoms suggestive of intestinal obstruction, the observed swelling at the right iliac fossa, and his past history of appendectomy through a transverse incision.

This case presentation supports the notion that Crohn's disease can be tricky to diagnose because its symptoms can mimic various other conditions (9). Babayeva et al. (2) added that only a detailed collection of the patient's history and a precisely adjusted examination plan can provide enough material to establish the correct diagnosis. Lack of physician awareness of immune-inflammatory diseases, and, in certain cases, limited availability or accessibility of some diagnostic methods, can lead to diagnostic errors.

Wei et al. (10) reported that many Crohn's disease cases were misdiagnosed. Most of these misdiagnosed Crohn's disease cases had normal abdominal physical examinations. The definitive diagnosis of Crohn's disease was especially difficult because their clinical presentations were equivocal and nonspecific. Their laboratory features were also non-specific, with anemia (11-15), raised erythrocyte sedimentation rate (11-12; 16), or raised C-reactive protein (12; 16-17). Other laboratory features were normal or not described.

Although a CT abdomen with double contrast was advised for the patient, a plain CT abdomen was performed instead because of the patient's known history of hypersensitivity to the used contrast medium. The definitive diagnosis could be reached after laparotomy with observation of severely inflamed ileum and the cecum, and mesenteric creeping fat on the ileal wall.

Panés et al. (18) stressed that cross-sectional imaging techniques, including computed tomography (CT), and magnetic resonance imaging, have come to the forefront in the management of Crohn's disease. These techniques are all useful and provide similar accuracy for making the initial diagnosis, monitoring disease activity, and identifying complications (e.g., fistulas, and abscesses). They complement endoscopy because they can identify extraluminal pathology and examine the gastrointestinal tract not accessible to endoscopic procedures. If the patient can tolerate the contrast load, CT and magnetic resonance enterography are preferred to standard CT and magnetic resonance imaging protocols.

CT diagnosis is needed to tell Crohn's disease apart from other conditions, for its inflammatory process determination and reference effect on involved bowel wall, extraluminal, and mesentery complications (19-20). Morphology of the bowel wall is key for the diagnosis. In Crohn's disease, the bowel wall circumferential thickening is usually symmetric and concentric. Other features of Crohn's disease include intestinal stenosis, fistula formation, multiple levels, or segmental involvement (21-22).

CT studies provide the most consistent results but have the downside of radiation exposure. Magnetic resonance studies have no radiation exposure, but are expensive, may have limited availability, and are more difficult for patients to tolerate. Ultrasonography is readily available and has no radiation exposure, but it is highly operator-dependent and can be limited by body habitus. Choosing which modality to pursue depends on the patient's age, pregnancy status, current clinical condition, local expertise, and availability (18; 23-24). Wei et al. (10) added that although a CT scan to determine the morphology of the bowel wall is a key to correct diagnosis, each case of Crohn's disease still had challenges for diagnosis and administering the appropriate treatment.

Yin et al. (25) emphasized that creeping fat (fat wrapping) is a significant characteristic of Crohn's disease. They added that the creeping fat is a rich source of pro-inflammatory and pro-fibrotic cytokines with a complex immune microenvironment. The inflamed and stricturing intestine is often wrapped by the creeping fat, which is associated with greater severity of Crohn's disease. The large amount of innate and adaptive immune cells as well as adipocytes in the creeping fat promote fibrosis in the affected intestine by secreting large amounts of pro-fibrotic cytokines, adipokines, growth factors, and fatty acids. Moreover, the creeping fat is a potential therapeutic target for Crohn's disease treatment and a promising biomarker for predicting response to drug therapy.

Matsui et al. (26) argued that, although the diagnosis of Crohn's disease is relatively easy when classical morphological findings are present, it is quite difficult to differentiate from other diseases when only early findings or non-classical findings are present. Hisabe et al. (27) added that no diagnosis can be made based on some nonspecific findings because a substantial number of

Crohn's disease cases do not satisfy the diagnostic criteria, whose definitive diagnosis requires repeated observations.

Shepherd (28) stated that the most characteristic microscopic features of Crohn's disease are its multifocal involvement and the triad of histological features: focal ulceration, and transmural inflammation in the form of lymphoid aggregates and granulomas. Pulimood et al. (29) emphasized that it is important to take multiple biopsies from all segments of the bowel, including both endoscopically normal and abnormal areas when the diagnosis is not clear.

Therefore, the final diagnosis of Crohn's disease results from clinical findings coupled with endoscopic, histologic, radiologic, and/or biochemical testing. History, physical examination, and basic laboratory findings drive the decision to pursue the diagnosis. If the patient has a toxic presentation, standard CT should be the first test. If the patient does not have a fulminant presentation, ileocolonoscopy with biopsy should be the first test, and esophagogastroduodenoscopy should be considered for children. Cross-sectional imaging should follow so that the full extent of disease seen by endoscopy can be determined or to identify disease not visualized by endoscopy. Identifying the complete extent of the disease is important for developing a treatment plan. When ileocolonoscopy and cross-sectional imaging are negative and concern for Crohn's disease is still high, capsule endoscopy would be the next step. If this study is negative, it is moderately certain that the disease is not present (30-31).

Our case was managed surgically. Ileocectomy was done with side-to-side anastomosis between the ileum and ascending colon. One week after discharge, the patient was referred to the Medical Department for further management of his Crohn's disease.

van Praag et al. (8) noted that both disease location and behavior are most important to evaluate when determining appropriate treatment strategies. Fistulas for example often arise from abscesses caused by perforating disease activity, although abscesses can also arise from an existing fistula if the drainage is blocked. Ileal and ileocolonic Crohn's disease Consensus guidelines recognize the importance of surgery in complex ileocolonic disease with, e.g., abscesses, obstruction, or sepsis. Around 3 out of 4 Crohn's patients will undergo surgery during the course of their lives. However, over the past decades, it became apparent that earlier surgery could be applied for specific disease variants and in patients with severe disease. Extensive small bowel resections resulting in short bowel syndrome, and permanent stomata should be avoided (32).

Predominantly inflammatory ileal Crohn's strictures can be treated with medical therapy and surgery. Since the patients are primarily diagnosed and treated by physicians, medical therapy is usually started and surgery is traditionally reserved for the patients not properly responding to the

medical therapy (33-35). Ileocaecal resection can be performed with both single- and multiport laparoscopy. In single-port laparoscopy, the entire procedure can be facilitated through one extraction site, which not only improves cosmetic outcomes but is also associated with less need for postoperative pain medication (Gardenbroek et al., 2013).

In conclusion, the diagnosis of Crohn's disease remains challenging. Its management is multi-disciplinary. Surgical management is dependent on disease location and severity. It seems that early surgery is gradually going to play a more important role in the multidisciplinary management of Crohn's disease, rather than being a last-resort therapy.

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