

## Acute Abdominal Pain Revealing Chilaiditi Syndrome

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### Abstract

### Case Report

Chilaiditi sign is a rare phenomenon characterized by the radiological observation of segmental interposition of the colon or small intestine between the liver and the diaphragm. It may manifest asymptotically or be accompanied by a range of clinical symptoms, from mild abdominal pain to acute intestinal obstruction. When symptoms are present, it is termed Chilaiditi syndrome. Typically, management of Chilaiditi syndrome is conservative; however, surgery may be necessary in cases of complications or failure of conservative therapy.

**Keywords:** abdominal pain, Chilaiditi syndrome, CT scan, conservative treatment.

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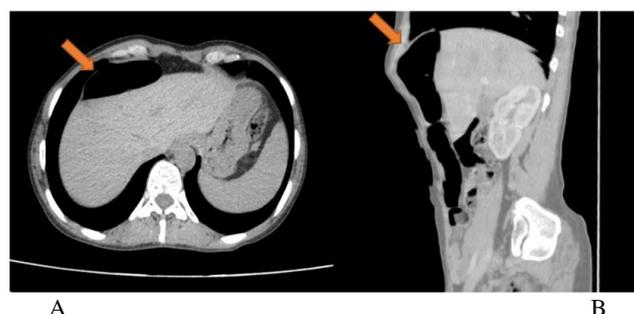
## INTRODUCTION

Chilaiditi syndrome is a rare condition in which a segment of the small or large intestine is interposed in between the diaphragm and the liver. This case report presents a patient who was admitted to the Department of Emergency Medicine for acute abdominal pain, and then diagnosed with Chilaiditi syndrome.

## CASE REPORT

We present a case of a 51-year-old adult admitted to the emergency room with severe right hypochondrial pain of a cramping nature, radiating to the right shoulder, and associated with food vomiting over the past 2 days. During history-taking, the patient reported similar episodes occurring over the past 4 years, at a frequency of 1 to 2 episodes per year, which resolved spontaneously. There was no history of gallstone pathology, chronic liver disease, pancreatic disease, or

lung disease. On clinical examination, the patient had normal blood pressure, respiratory rate, heart rate, and was afebrile. Abdominal examination revealed mild tenderness in the right hypochondrium, a negative Murphy's sign, without hepatosplenomegaly or ascites. Urgently required laboratory tests, including complete blood count (CBC), C-reactive protein (CRP), lipase, and liver function tests, were normal. Abdominal ultrasound and plain abdominal X-ray showed no abnormalities. Due to the intensity of the pain, an abdominal CT scan was performed, revealing interposition of the right colic angle and transverse colon between the liver and the right hemidiaphragm, consistent with Chilaiditi sign, without signs of complications. Based on this assessment, the diagnosis of Chilaiditi syndrome was established. Therapeutic management involved cessation of feeding, intravenous fluid administration, and analgesia. After 6 hours, the patient's pain resolved, allowing for the resumption of feeding without recurrence.



**Figure 1: (A) axial section. (B) Sagittal section. Both show a colon loop interposed between the liver and the right diaphragm (red arrow)**

## DISCUSSION

Chilaiditi syndrome refers to the temporary or permanent interposition of the colon or small intestine in the inter-hepatic diaphragmatic space, resulting in symptoms. The isolated and asymptomatic presentation of such a condition is termed the Chilaiditi sign.

This anatomical anomaly is rare and is typically incidentally detected on chest X-rays or plain abdominal X-rays, with an incidence ranging from 0.025 to 0.28%. It occurs more frequently in men than in women (male-to-female ratio: 4/1) [1, 2].

The interposition of the colon or small intestine in the inter-hepatic diaphragmatic space was first described by Beclere in 1899[3]. The term "Chilaiditi sign" was coined after the Greek radiologist Dimitrios Chilaiditi, who first described it in 1910 in a series of three cases [3].

Under normal anatomical conditions, the suspensory ligaments of the liver, the mesocolon, and the falciform ligament are arranged to minimize the space around the liver and prevent the interposition of the colon. However, several factors may contribute to the pathological interposition of the colon, including intestinal factors (abnormal motility, elongated colon/mesentery, congenital malposition), liver factors (reduced liver size, laxity of liver-suspending ligaments), diaphragmatic factors (elevated diaphragm), and other factors (ascites, obesity, pregnancy, aerophagia, psychotropic drugs, and endoscopic procedures) [2,4,5].

Typically, interposition of the intestine in the inter-hepatic diaphragmatic space can take three forms: interposition of the colon, interposition of the small intestine, or interposition of both. The most common form is interposition of the colon, with the interposition of the stomach being observed very rarely [6].

Clinically, digestive symptoms are the most common, including abdominal pain, nausea, vomiting, and constipation, followed by respiratory distress and, less frequently, pseudo-anginal chest pain.

Diagnosis of Chilaiditi syndrome relies on radiological imaging, particularly abdominal X-rays. The presence of air beneath the right diaphragmatic hemi-cupola on the abdominal X-ray, known as the Chilaiditi sign, is indicative. This sign must be distinguished from conditions requiring emergency surgery, such as pneumoperitoneum or subphrenic abscess [8]. A positive diagnosis of Chilaiditi syndrome on radiological images requires specific criteria: elevation of the right diaphragmatic hemi-cupola above the liver by the intestine, distension of the colon by air illustrating a pseudo pneumoperitoneum, and lowering of the superior margin of the liver below the level of the left diaphragmatic hemi-cupola [9]. Additionally, the position of the air should remain unchanged with

changes in the patient's position. In cases of uncertainty, abdominal and pelvic CT scans can confirm the diagnosis and potentially prevent unnecessary surgery [2].

Complications of Chilaiditi syndrome are rare and include cecal volvulus, splenic angle or transverse colon volvulus, cecal or sub-diaphragmatic appendix perforation [10]. Undiagnosed Chilaiditi syndrome increases the risk of perforation during percutaneous liver biopsy or colonoscopy [8]. Chilaiditi syndrome may resolve spontaneously or progress chronically [11]. Treatment typically involves conservative measures such as bed rest, hydration, nasogastric decompression, a high-fiber diet, and enemas or laxatives [12]. Surgery may be necessary in rare cases of complications such as refractory ileus, colonic volvulus, or intestinal ischemia, and options include colectomy, hepatopexy, or laparoscopic colopexy[4].

## CONCLUSION

In conclusion, Chilaiditi syndrome is a rare anatomical anomaly. The presence of abdominal pain with air under the diaphragm often raises concerns of a surgical emergency, but careful evaluation and detailed imaging studies are essential for accurate diagnosis and to avoid unnecessary surgical interventions.

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