

Managing chilaiditi syndrome in laparoscopic surgery

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Chilaiditi syndrome is a rare condition in which a portion of the colon, typically the hepatic flexure, becomes interposed between the liver and the diaphragm.^[1] This anatomical anomaly can mimic more serious conditions, such as pneumoperitoneum, on imaging and may be associated with symptoms like abdominal pain, nausea, or respiratory distress due to compression of the diaphragm.

^[2] In most cases, Chilaiditi syndrome is asymptomatic and discovered incidentally on radiographs or Computed Tomography (CT) scans. However, when symptoms arise or when the condition complicates surgical procedures, particularly in the upper abdomen, careful preoperative planning is essential. The syndrome can pose challenges during surgeries like laparoscopic cholecystectomy, as it alters the usual anatomical landmarks, potentially increasing the risk of bowel injury or complicating access to the liver and gallbladder.

The clinical significance of Chilaiditi syndrome lies in its potential to complicate both diagnosis and treatment of abdominal conditions. Due to the abnormal positioning of the colon between the liver and diaphragm, Chilaiditi syndrome can be misinterpreted as a more urgent pathology, such as pneumoperitoneum, leading to unnecessary interventions. In symptomatic cases, patients may present with abdominal pain, bloating, nausea, or even respiratory difficulties from diaphragmatic compression.

^[3] For surgeons, the condition presents additional challenges during abdominal surgeries, especially laparo-

scopic procedures, where altered anatomy increases the risk of bowel injury and complicates trocar placement and organ exposure. Recognizing Chilaiditi syndrome preoperatively is crucial, as it allows for appropriate planning and technique modifications to ensure safe and effective surgical outcomes.

In the management of uncomplicated, asymptomatic patients with Chilaiditi syndrome, no specific treatment is generally required.^[4] Since the condition is often discovered incidentally during imaging for unrelated issues, most patients do not exhibit symptoms and can be managed conservatively.^[5]

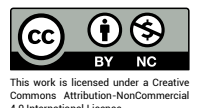
In Chilaiditi syndrome, the anatomical changes primarily involve the abnormal interposition of the colon between the liver and diaphragm, which can significantly affect the normal spatial relationship of the gallbladder. The gallbladder, typically positioned on the undersurface of the liver, may become less accessible due to the displacement of the liver and the presence of the interposed colon. This altered anatomy complicates the surgical approach, particularly during procedures like laparoscopic cholecystectomy. The liver may be positioned lower than usual, making traditional trocar placements less effective and increasing the risk of bowel injury. These changes necessitate careful preoperative imaging and intraoperative modifications



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Case

We present the case of an 84-year-old male with a history of biliary pancreatitis and cholelithiasis, who was scheduled for laparoscopic cholecystectomy. Preoperative imaging revealed Chilaiditi syndrome, with the colon interposed between the liver and diaphragm (Fig. 1). During surgery, the anatomical correction of the colon was straightforward, and the colon was easily reduced. However, the liver was found to be displaced lower than usual due to the syndrome, necessitating the insertion of trocars at lower points than standard laparoscopic practice (Figs. 2 and 3). Since the intestines are unusually located in the

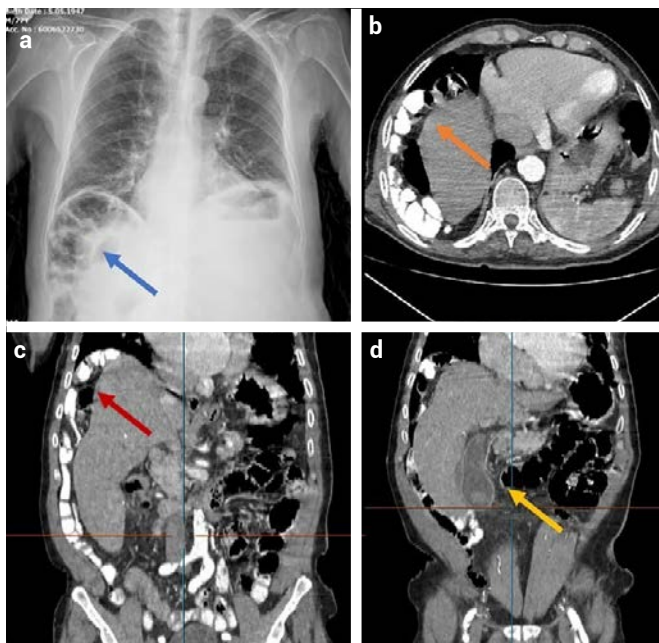


Figure 1. The preoperative images of an 84-year-old male patient with Chilaiditi syndrome (a) demonstrate a pneumoperitoneum-like appearance under the right diaphragm on a chest X-ray (blue arrow). Computed tomography (b and c) reveals the colon between the liver and diaphragm, while (d) shows the gallbladder below the level of the umbilicus.



Figure 2. Intraoperative image showing anatomical position of liver and gallbladder due to Chilaiditi's disease.



Figure 3. Segments of the small bowel and colon can be freely reduced and precisely repositioned.

right upper quadrant, care must be taken to avoid damaging them when using the instrument.

Considering the anatomical changes associated with Chilaiditi syndrome and the preoperative imaging findings, the surgical team proceeded with meticulous care during the laparoscopic cholecystectomy. Trocar placement was modified to account for the lower positioning of the liver, ensuring the interposed intestines were not injured (Fig. 4). Despite these adjustments, the procedure was completed without intraoperative complications. Postoperatively, the patient was closely monitored for three days due to an increased risk of respiratory complications, including atelectasis and decreased lung function, exacerbated by both his underlying Chronic Obstructive Pulmonary Disease (COPD) and the pressure exerted by the interposed colon on the diaphragm. Following appropriate respiratory management, the patient's condition stabilized, and

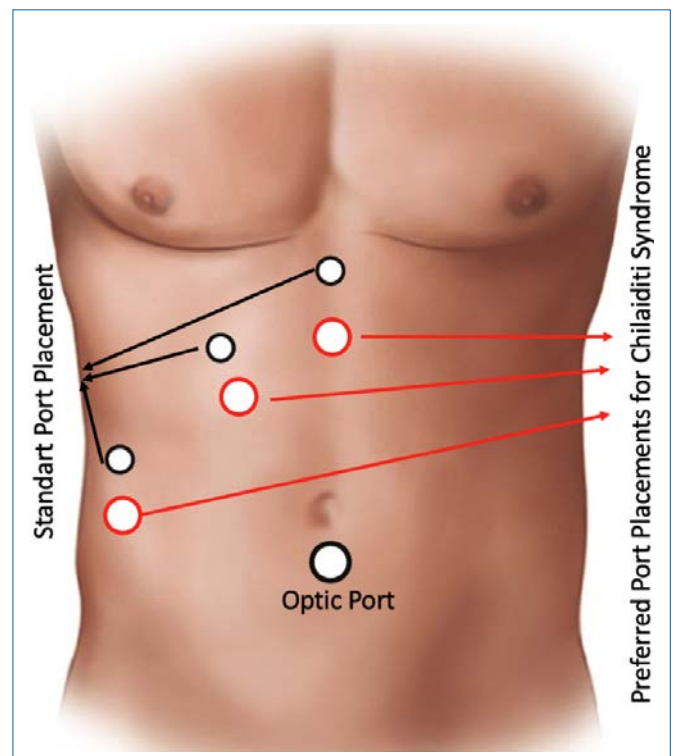


Figure 4. Preferred port placements for altered anatomical changes due to Chilaiditi syndrome.

he was discharged without any further issues. The patient was followed up postoperatively through outpatient clinic visits and imaging when necessary, during which no delayed complications were observed; considering the underlying anatomical variation, it was recommended that any future abdominal surgeries be preceded by detailed preoperative imaging to guide trocar placement and minimize intraoperative risks.

Conclusion

The presence of Chilaiditi syndrome presents a distinctive set of challenges during laparoscopic cholecystectomy, despite the relative ease with which the interposed intestine can often be reduced. While repositioning the colon is a relatively straightforward procedure, the altered anatomical relationships, particularly the change in the position of the liver, carry a risk of injury during instrument introduction. It is imperative that surgeons are mindful of these changes and adjust trocar positioning accordingly to avoid complications. Furthermore, the interposition of the colon and its pressure on the diaphragm may have implications for respiratory function, particularly in patients with preexisting pulmonary conditions.^[6] It is therefore essential that both surgical technique and postoperative respiratory care are closely monitored in order to optimize outcomes in such cases.

Disclosures

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