Case Report

Laparoscopic Cholecystectomy in a Patient with Situs Inversus Totalis: A Case Report from a French University Hospital

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Abstract

Situs inversus totalis is a rare congenital anomaly characterized by a complete mirror-image reversal of thoracic and abdominal organs. This anatomical variation presents unique technical challenges during surgical procedures, including laparoscopic cholecystectomy. We present a case report of a patient with symptomatic cholelithiasis and situs inversus totalis treated successfully at a French university hospital.

Introduction

Situs inversus totalis is a rare condition, occurring in approximately 1 in 10,000 to 1 in 20,000 individuals. It is characterized by a complete transposition of thoracic and abdominal organs, creating mirror-image anatomy. While most individuals are asymptomatic, this condition poses diagnostic and therapeutic challenges, particularly during surgery. Laparoscopic cholecystectomy is the gold standard for treating symptomatic gallstone disease, but situs inversus alters anatomical orientation, necessitating modifications in the surgical approach.

Case Presentation

A 45-year-old female presented to the emergency department of the University Hospital of Lyon with recurrent left upper quadrant abdominal pain radiating to the left shoulder. She reported nausea, vomiting, and intolerance to fatty foods. Physical examination revealed tenderness in the left upper quadrant. Laboratory tests showed mildly elevated liver enzymes and C-reactive protein. Abdominal ultrasound revealed multiple gallstones and confirmed the presence of situs inversus totalis. Chest radiography showed dextrocardia, further confirming the diagnosis. The patient was scheduled for elective laparoscopic cholecystectomy.

Surgical Technique

The surgical team adjusted the standard laparoscopic technique to accommodate the reversed anatomy. The surgeon stood on the patient's right side with the assistant on the left. Port placements were mirrored: a 10-mm port was placed infraumbilically for the laparoscope, a 10-mm port in the epigastric region, and two 5-mm ports in the left midclavicular and left anterior axillary lines. Dissection of Calot's triangle required careful orientation due to the reversed anatomical structures. The cystic duct and artery were identified, clipped, and divided. The gallbladder was dissected from the liver bed and retrieved via the epigastric port. The procedure was completed without complications.

Outcome and Follow-Up

The patient had an uneventful postoperative recovery. She was mobilized on the same day, tolerated oral intake within 24 hours, and was discharged on the second postoperative day. At a two-week follow-up, she reported complete resolution of symptoms and satisfactory wound healing.

Discussion

Laparoscopic cholecystectomy is technically challenging in situs inversus patients due to reversed anatomical orientation. Surgeons must adapt to the mirror-image anatomy, which can increase operative time and cognitive load. Review of the literature suggests that while the learning curve may be steep, outcomes are comparable to patients with normal anatomy when performed by experienced surgeons. Careful preoperative imaging and planning are essential to minimize intraoperative risks.

Conclusion

This case highlights that laparoscopic cholecystectomy can be safely and effectively performed in patients with situs inversus totalis with appropriate modifications in technique. Surgeons should be aware of this rare anatomical variation to ensure optimal outcomes.

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