

## Elective laparoscopic cholecystectomy in a 75-year-old woman with situs viscerum inversus totalis

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### Abstract

*Situs viscerum inversus totalis is a rare disorder presenting with complete transposition of thoracic and abdominal viscera. It is associated with certain organ anomalies, but it is not a predisposing factor to cholecystolithiasis. To date, fewer than 100 cholecystectomies in patients with situs inversus have been published worldwide. We report a case of a 75-year-old woman referred to our hospital with abdominal pain in the left hypochondrium. Situs inversus totalis and acute calculous cholecystitis were diagnosed and successfully conservatively treated with antibiotics. The patient underwent elective laparoscopic cholecystectomy 3 months later. The procedure and postoperative course were uneventful and the patient recovered well. The clinical presentation of these patients with cholecystolithiasis may be confusing and vague and the correct diagnosis delayed. Laparoscopic cholecystectomy is the gold standard in the treatment even though the operation requires some modifications in operating theatre arrangement and position of the surgical team. Most surgeons are right-handed, and to operate laparoscopically in the "mirror image" anatomical situation using mainly the left hand for dissection may be stressful, uncomfortable and more time-consuming. Some recommendations to overcome this issue have been published. In conclusion, the above-mentioned anomaly may cause some risk and delay of the exact diagnosis, but it is not dangerous in itself. Laparoscopic cholecystectomy is a safe procedure, even in the case of acute cholecystitis, if performed by an experienced laparoscopic surgeon. The most dangerous is always an incautious and too self-confident surgeon.*

**Key words:** acute cholecystitis, elective laparoscopic cholecystectomy, situs viscerum inversus totalis.

### Introduction

Situs viscerum inversus totalis is quite a rare entity with incidence ranging between 1 : 5000 and 1 : 20 000 [1-3]. It is an autosomal recessive inherited transposition of thoracic and abdominal viscera. Although it is not pathological in itself, it may be associated with some anomalies, predominantly cardiac ones, that can be potentially life-threatening [1, 4].

There is no predisposition to cholecystolithiasis in situs inversus patients however [5].

We report a case of a 75-year-old woman who underwent elective laparoscopic cholecystectomy 3 months after conservative treatment of acute calculous cholecystitis. Possible difficulties and some technical aspects of laparoscopic cholecystectomy in situs inversus patients are mentioned and highlighted.

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## Case report

A 75-year-old woman was referred to the emergency department with a 2-day history of epigastric pain radiating to the left hypochondrium. She had no nausea or fever. On examination she had tenderness in the left upper abdominal quadrant, leukocytosis  $15\,200/\text{mm}^3$  and C-reactive protein was elevated at 25 mg/l. All other laboratory tests were normal. An abdominal ultrasound showed situs inversus with liver on the left side and spleen on the right. The diagnosis of acute cholecystitis with wall thickening up to 20 mm and multiple gallstones was made. No dilation of the common bile duct or presence of free fluid in the abdominal cavity was identified. The patient was treated conservatively with

antibiotics for 5 days and then discharged in good condition to be admitted for elective laparoscopic cholecystectomy 3 months later. Prior to surgery a computed tomography (CT) scan (Figures 1, 2) was performed that confirmed situs viscerum inversus totalis and hydropic gallbladder with two stones of 30 mm and 15 mm in diameter.

The operating theatre equipment was arranged as a “mirror image” of the normal position in usual laparoscopic cholecystectomy. The surgeon and the second assistant (laparoscopist) were positioned on the right side of the patient, with the first assistant and scrub nurse on the left. We used the 4-port technique – two 10-mm ports (subumbilical, medial epigastric) and two 5-mm ports (midclavicular and anterior axillary line on the left).

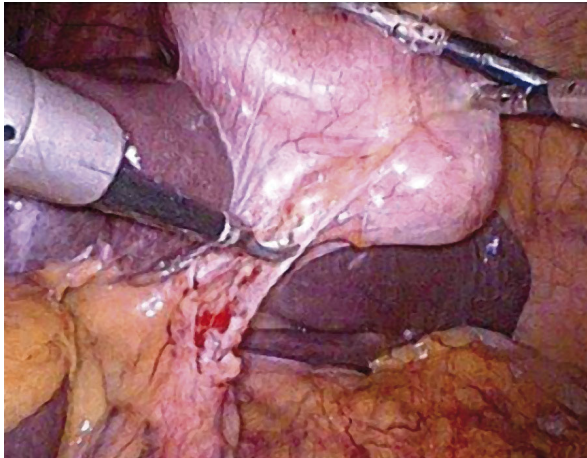
The gallbladder was hydropic with multiple stones, oedematous thickened wall (Figure 3) and very difficult to grasp. The surgeon was right-handed, and to avoid any discomfort the greater part of the procedure (dissection in Calot’s triangle, clipping) was performed through the medial epigastric port by his right hand. Traction of Hartmann’s pouch and grasping of the fundus were performed by the first assistant through both 5-mm ports in the left subcostal area. After dissection and clipping of the cystic duct and artery, the gallbladder was retrogradely separated from its bed by electrocautery and then extracted in a retrieval bag through the subumbilical port after changing the position of the camera. The total operation time was 70 min and blood loss 30 ml. The patient recovered well and was discharged on the third postoperative day.



**Figure 1.** CT scan showing situs viscerum inversus totalis (coronal view)



**Figure 2.** Abdominal CT showing gallstone in fundus (coronal view)



**Figure 3.** Intraoperative picture of hydroptic gallbladder on the left side

## Discussion

Situs viscerum inversus is an uncommon entity and if unknown the clinical presentation of patients with cholelithiasis may be confusing and vague and the correct diagnosis delayed. About 30% of patients with situs inversus and symptomatic cholelithiasis present with epigastric pain and 10% of patients may present with pain on the right side [2, 6].

In spite of the incidence of about 1 : 5-20 000, less than 40 “open” cholecystectomies in the pre-laparoscopic era were published [2, 7].

Since Campos and Sipes in 1991 first reported successful laparoscopic cholecystectomy in a situs inversus patient, another 55 case reports and series have been described and this procedure has become the gold standard in the treatment of cholelithiasis in these patients [8]. In 2011, Han *et al.* published the first case of single-incision multiport laparoscopic cholecystectomy in a situs inversus patient [9].

The operation requires some modifications in operating theatre arrangement and position of the surgical team. Most authors are in agreement about the so-called “mirror image” with the surgeon and second assistant standing on the right side of the patient and the first assistant and scrub nurse on the left. Some minor modifications, with the surgeon standing between the abducted legs of the patient (Lloyd-Davis position), were also reported [10].

Most surgeons are right-handed, and to operate laparoscopically in a “mirror image” anatomical situation using mainly the left hand for dissection may be stressful, uncomfortable and more time-consum-

ing. Some recommendations to overcome this issue have been published: changing right and left hand for dissection, crossing laparoscopic tools to dissect in Calot’s triangle with the right hand from the port in the left subcostal, or just performing dissection by the right hand from the epigastric port while the first assistant grasps the fundus and performs retraction of Hartmann’s pouch to allow the surgeon to work in a more ergonomic position [10-12].

However, left-handed surgeons have a clear advantage in situs inversus patients because they are able to alternate the performance of dissection manoeuvres between left and right hand [7, 13]. Anyway, although the exact operating time is not very often reported, laparoscopic cholecystectomy in situs inversus takes more time than the conventional one and requires an experienced laparoscopic and hepatobiliary surgeon. On the other hand, no conversion to open surgery has been reported so far. This may be due to the extra precaution that is taken while carrying out the laparoscopy and, secondly, authors tend to report successful cases in such a challenging situation [13].

## Conclusions

The above-mentioned anomaly may cause some risk and delay of exact diagnosis, but it is not dangerous in itself. Laparoscopic cholecystectomy is a safe procedure, even in the case of acute cholecystitis, if performed by an experienced laparoscopic surgeon. The most dangerous is always an incautious and too self-confident surgeon.

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