

# Laparoscopic Cholecystectomy in Situs Inversus, a Modified Approach

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## Abstract

Laparoscopic cholecystectomy is now the gold standard treatment for symptomatic gall stones. Very few cases of laparoscopic cholecystectomy in patients of situs inversus have been reported in published literature. We report a case of laparoscopic cholecystectomy successfully performed in a patient with situs inversus with some modification of the conventional techniques.

## INTRODUCTION

Laparoscopic cholecystectomy is one of the commonest surgical procedures carried out in the world today and is the gold standard treatment for symptomatic gall stone disease. Situs inversus is a condition where the positions of heart and intra-abdominal viscera are just the mirror image of normal. Due to the different anatomy, laparoscopic cholecystectomy is a difficult proposition in patients with situs inversus and hence is rarely practiced.

## CASE HISTORY

A twenty-seven-year-old female presented with recurrent bouts of pain in epigastrium and left hypochondrium for the last four weeks. She did not have any history of hematemesis, melena or jaundice. Examination revealed mild tenderness in the left upper quadrant. The apex beat was in the right fifth intercostal space, mid-clavicular line.

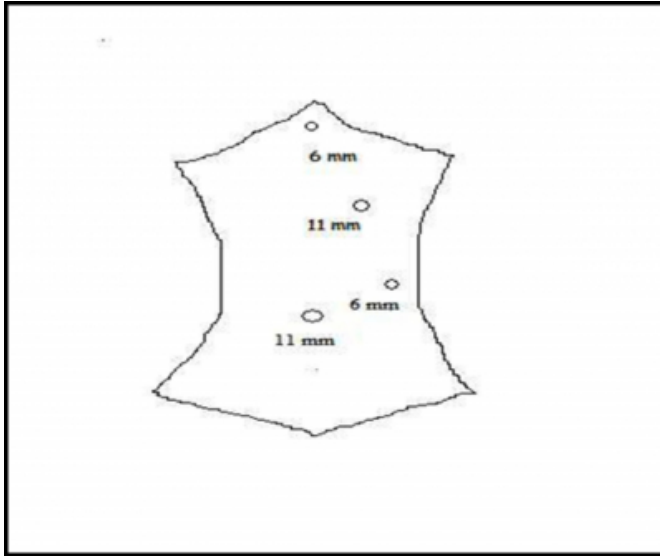
USG of the upper abdomen could detect the liver-gall bladder complex in the left upper quadrant with calculi in the gall bladder. The spleen was seen in the right upper quadrant. There was no evidence of common bile duct or intrahepatic duct dilatation. Subsequent chest X-ray and ECG confirmed diagnosis of dextrocardia. The diagnosis of calculus cholecystitis and situs inversus was made. The liver function tests were normal. Laparoscopic cholecystectomy was planned and informed written consent was taken from the patient.

From our previous experience of one case in the year 2003 we knew the difficulties of laparoscopic cholecystectomy in situs inversus. So we decided to go for a modified approach.

The surgeon stood in between the legs of the patient. The monitor was placed above the left shoulder of the patient. The camera port was at the umbilicus with the camera assistant standing against the right flank of the patient. A 6mm epigastric port, an 11mm left midclavicular port and another 6mm left anterior axillary port were the working ports. A non-toothed grasper through the epigastric port in the left hand of the surgeon was used to hold the Hartmann's pouch. The dissector, hook electrode, scissors and clip applicators were used with the right hand of the surgeon through the 11mm midclavicular port. Retraction was achieved with a toothed grasper through the left subcostal port, the assistant standing on the left of the patient. At laparoscopy, the entirety of the abdominal contents was indeed reversed. The main difficulty encountered could have been that the primary surgeon, who was right-handed, would have had to cross hands to retract Hartmann's pouch while dissecting Calot's triangle. We overcame this difficulty by interchanging the epigastric and left mid-clavicular port positions. In this way, posterior dissection became very easy. The common bile duct and cystic duct were identified, as was the cystic artery, which lay anterior to the cystic duct. The rest of the operation proceeded uneventfully. The specimen was retrieved through the umbilical port. The patient recovered satisfactorily and was discharged on the 2<sup>nd</sup> postoperative day.

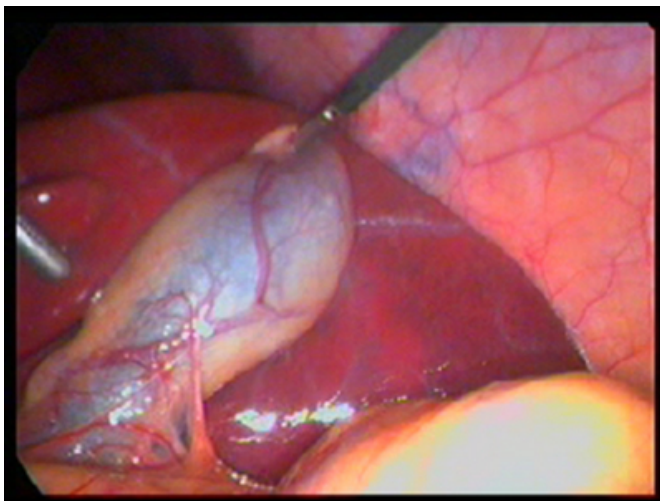
**Figure 1**

Figure 1: Port positions



**Figure 2**

Figure 2: Laparoscopic view of liver and gall bladder of situs inversus



### DISCUSSION

The situs describes the position of the cardiac atria and

viscera. Situs solitus is the normal position, and situs inversus is the mirror image of situs solitus. Situs inversus can be classified further into situs inversus with dextrocardia or situs inversus with levocardia. In 1600, the first known case of situs inversus in humans was reported by Fabricius (1). The incidence is thought to be in the region of 1:5000 to 1:20000. This condition may be associated with Kartagener's syndrome (bronchiectasis, sinusitis, and situs inversus) and cardiac anomalies (2, 3). There is no current evidence that situs inversus predisposes to cholelithiasis (4).

Previous reports have confirmed that situs inversus is not a contraindication for laparoscopic cholecystectomy (5). The procedure is, however, more difficult and care and time must be taken to re-arrange the equipment set-up in theatre, and to recognize the mirror-image anatomy which can cause difficulties with orientation (6). At least two thirds of surgeons are right handed. It is necessary for these surgeons, and their assistants, to modify their usual surgical technique to comfortably and safely carry out the procedure. Rather than the clumsy crossing of hands to retract Hartmann's pouch for dissection of Calot's triangle, we suggest reorientation of port positions, thus allowing the surgeon to work in an ergonomically more comfortable fashion.

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