



## Case Report

# LAPAROSCOPIC CHOLECYSTECTOMY IN A CASE OF SYMPTOMATIC CHOLELITHIASIS WITH SITUS INVERSUS TOTALIS

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### Abstract

Laparoscopic cholecystectomy is one of the commonest surgical procedures carried out in the world now a days. Chronic cholecystitis in a patient with situs inversus totalis may pose diagnostic and therapeutic challenges specially while laparoscopic cholecystectomy is to be carried out. We discuss one such case and make an outline how the diagnosis was made and the pitfalls encountered during surgery and how they were overcome.

**Key Words:** Laparoscopic cholecystectomy, situs inversus totalis

### Introduction

Situs inversus totalis is a congenital abnormality with an autosomal recessive genetic predisposition. In 1600 the first known case of situs inversus in human was reported by Fabricius<sup>1</sup>. It describes an anomaly that is a perfect mirror image of the normal physiological position of the visceral organs with preservation of anteroposterior relationship<sup>2</sup>. The condition may affect the thoracic organs, abdominal organs or both<sup>3</sup>. Its incidence varies from 1:5000 to 1:20000.<sup>4</sup> There is no direct evidence that situs inversus predisposes to cholelithiasis<sup>5</sup>.

During the recent years laparoscopic surgery has developed rapidly. Today, laparoscopic cholecystectomy is the gold standard for gallbladder removal and is the most common laparoscopic surgical procedure of the world. Although laparoscopic cholecystectomy can be performed safely in patient with situs inversus totalis by an experienced surgeon, laparoscopic cholecystectomy in situs

inversus totalis is technically more demanding than in patients with orthotropic anatomy and requires reorientation of visuomotor skills to the left upper quadrant<sup>6</sup>.

There have been 50 documented cases in literatures around the world on laparoscopic cholecystectomy in a situs inversus patient until 2013<sup>7</sup>. The case reported is the 1<sup>st</sup> documented case in Bangladesh to the best of our knowledge. We have discussed the clinical diagnosis, preparation, operation theater arrangements and technical difficulties that we have faced in our setting.

### Case Report

A 27-year-old woman presented to us with a history of intermittent pain in the left upper quadrant of abdomen for one year. The pain used to radiate to the left suprascapular region and aggravated by fatty food with concomitant digestive problems. On examination there was no jaundice and pyrexia. Apex beat was in the right 5<sup>th</sup> intercostal space in the midclavicular line. She had slight epigastric tenderness.

An ultrasound scan of upper abdomen identified the gallbladder containing multiple gall stones of variable size and CBD of normal diameter. Gallbladder and larger anatomical lobe of liver lying on the left side and spleen was visualized in the right upper quadrant. CXR and ECG were done which along with ultrasound

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confirmed situs inversus totalis. Finally diagnosis of cholelithiasis with situs inversus totalis was made and patient prepared for laparoscopic cholecystectomy.

The approach in the operating room required modification. The surgeon and the assistant were positioned on the right side of the patient and the scrub nurse on the left. A head-end-up and left-side-up positioning of the patient was adopted to optimize views of the gallbladder and the Calot's triangle. A 4-port technique was used—an umbilical (10mm), an epigastric (10mm) and two lateral subcostal (5mm) ports. Initial inspection confirmed a left-sided liver and gallbladder. There was a total situs inversus with the spleen on the right side, the greater curve of the stomach to the right and the caecum to the left. The epigastric port (10mm) was just to the left of midline in the subxiphoid position with the tip on the peritoneal aspect to the left of the falciform ligament. This port was one of the two main operating ports and the instruments used were controlled by the left hand of the surgeon. It was used for retraction of the Hartmann's pouch of the gallbladder initially and later for passing the clip applicator.

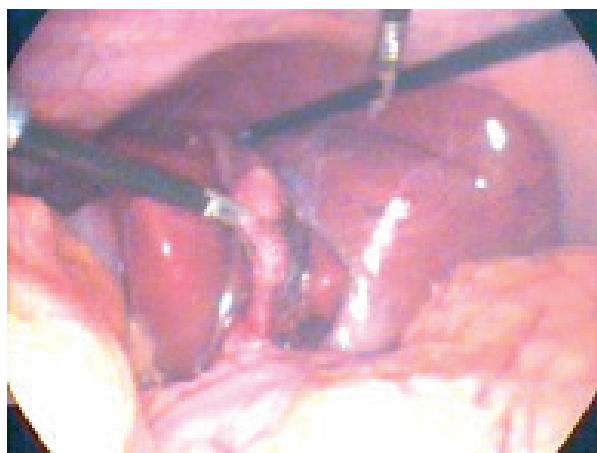


**Fig.-1:** Introduction of trocar at left subcostal port



**Fig.-2:** Grasping at the fundus of gallbladder with a forceps

The medial of the two lateral subcostal ports (5mm) was placed about 5cm subcostally just lateral to the nipple line. This was the second of the two main operating ports and was used for passing the dissector, scissors, hook diathermy and the suction-irrigation apparatus as necessary. This port and its instruments were controlled by the right hand of the surgeon. The lateral subcostal port (5mm) was placed about 5 cm subcostally close to the anterior axially line and was used by the assistant to retract the fundus of the gallbladder cranially.



**Fig.-3:** Skeletonization of the cystic duct

Dissection of the Calot's triangle, identification of the cystic duct-common hepatic duct junction, skeletonization of the cystic duct and the cystic artery before clipping and dissection of the gallbladder proceeded as usual. There was no anomaly noted. The gallbladder was delivered through the epigastric port.

The patient made an uneventful recovery and was discharged home within 24 hours following operation.

### Discussion

There are several aspects of management of gallstones in patients with situs inversus that are worth highlighting. While there is no evidence to suggest that gallstones are more or less common in people with situs inversus, the presentation with left upper quadrant pain may delay the diagnosis of symptomatic gallstones. It has been reported that about a third of patients with situs inversus and symptomatic gallstones may, however, present with epigastric pain and about 10% of patients may present with right-sided pain<sup>6</sup>. Patients with situs inversus who are scheduled for laparoscopic cholecystectomy should

be assessed pre-operatively for any potentially serious cardiac and respiratory abnormalities.

As the unusual orientation while operating on a left-sided gall bladder requires mental adaptability and manual dexterity to cope with any evolving difficult or potentially dangerous intra-operative situation, laparoscopic cholecystectomy in patients with situs inversus should be performed by an experienced laparoscopic surgeon. While there is no evidence to suggest that there is an increased risk of bile duct injuries in patients with situs inversus, the orientation and ergonomic challenges may result in an increased operative time<sup>6</sup>. Our total operating time was 70 min. Positioning of the surgical team and port placements described in the literature are often a mirror image of the protocols used for conventional laparoscopic cholecystectomy. However, the ergonomics of a right-handed surgeon standing on the right side of the patient demand that either he crosses hands so as to allow the right hand to operate through the epigastric port or use the assistant to retract the Hartmann's pouch from the left side or as we have described here, use the epigastric port to retract with the left hand and operate with the right hand through the lateral subcostal port. The surgeon standing at the foot end, in between the legs of the patient while the patient is in a Lloyd-Davis position, is an alternative, as is delegating to a left-handed surgeon.

### Conclusion

Cholelithiasis occurring in with situs inversus totalis is rare and may present a diagnostic problem. The findings during the operation should be checked with other members of the operating team and care must be taken for the concentration of the operative team and arrangement of the equipment setup in the

operation room. Laparoscopic cholecystectomy is feasible and safe in such patients provided it is performed by expert laparoscopic surgeon who takes time in clearly demonstrating the extra hepatic mirror image anatomy of the biliary tree.

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