

CASE REPORT

Laparoscopic Cholecystectomy with Left Ovarian Cystectomy in Situs Inversus Totalis: A case report

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Abstract

Situs Inversus Totalis (SIT) is a infrequent autosomal recessive genetic condition with challenging anatomy due to mirror positioning of intra-abdominal organs, demanding increased skills to the surgeon with technical modifications to perform laparoscopic surgery safely in various surgical diseases. We report a case of a 30-year-old female presenting with recurrent epigastric pain and dysmenorrhea, diagnosed as SIT with left ovarian chocolate cyst and chronic calculus cholecystitis. After excluding associated anomalies, we safely performed laparoscopic cholecystectomy and left ovarian cystectomy through a common group of ports with technical modifications, resulting in good cosmesis. Performing a laparoscopic cholecystectomy with the surgeon standing between the patient's legs split is more ergonomic and comfortable than standing on the patient's right side. Hence, laparoscopic surgeries in situs inversus totalis with multiorgan diseases are safe and feasible; however, appropriate tailor-made technical modifications are needed to reduce exhaustion and difficulties during operation.

Key-words: Dextrocardia; mirror images; French position; chocolate cyst

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Introduction

Situs Inversus Totalis (SIT) is a rare autosomal recessive genetic condition with surgically challenging anatomy due to the complete mirror-image transposition of organs in the thorax and abdomen. Laparoscopic surgical procedures in these patients demand excellent visuomotor skills of the surgeon with technical modifications.¹ The most frequent surgical procedure is laparoscopic cholecystectomy (LC) for gallstones in SIT [1]. However, there are few reports on combining LC with other surgical procedures like an appendectomy [2]. The challenges in SIT are planning ergonomically feasible working ports and positioning the operating team to work in a complex anatomical environment. Herein, we report a case of SIT diagnosed with symptomatic left ovarian chocolate cyst and chronic calculus cholecystitis, managed by laparoscopic surgery through a common group of working ports. We discuss the technical challenges with tips to overcome them.

Case Report

A 30-year-old female presented with recurrent episodes of epigastric pain and dysmenorrhea for the last six months, not responsive to medical management. Evaluation with ultrasonography revealed a left-sided liver and gallbladder with multiple calculi and a left ovarian

cyst of about five cm in size. Rest all abdominal organs were in the mirror-image opposite location.

The ovarian cyst was the provisional diagnosis of a chocolate cyst on a magnetic resonance imaging scan. Chest X-ray revealed dextrocardia; thus, the diagnosis was confirmed to be SIT. The patient was planned for LC with left ovarian cystectomy (LOC). LC was performed in the leg split or French position, with the operating surgeon standing in between the patient's legs, the camera surgeon to the patient's right and the assisting surgeon on the patient's left side. Two monitors were placed, one towards the patient's upper left and the other at the right leg-end of the patient, for ovarian cystectomy. The pneumoperitoneum was created using a veress needle, and the primary 10mm port was placed at the supraumbilical area. The patient was positioned in a reverse Trendelenburg position and left shoulder up for safe dissection of the Calot's triangle under vision. After diagnostic laparoscopy, two working ports of 5 mm in the epigastric and 10 mm in the left subcostal area along the midclavicular line were placed under view [Figure 1]. The ports were placed about an inch below the usual positions to minimise the effects of the instrument crossovers while dissecting the Calot's triangle and utilising the same group of ports for the left ovarian cystectomy. The gallbladder fundus retracting port was placed in the left flank (Figure 2a & b). The

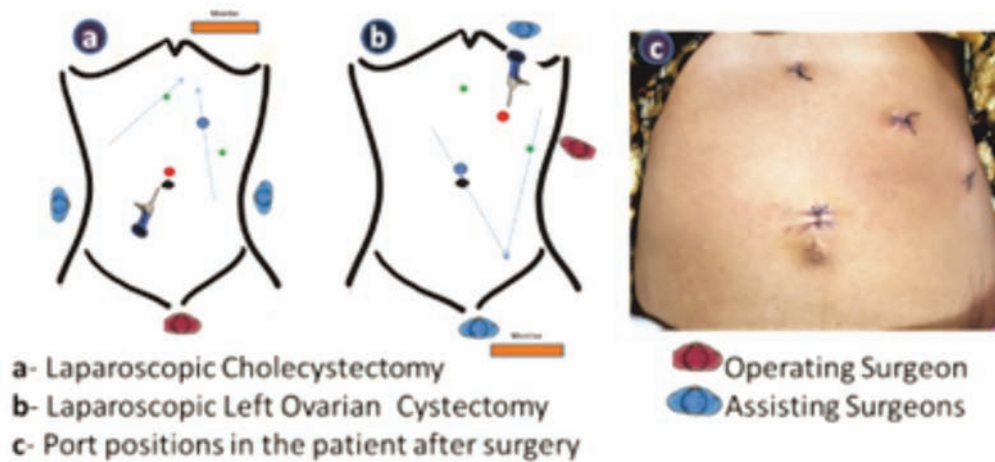


Figure 1: (a) Port positions for laparoscopic cholecystectomy in French position (b) Port positions for laparoscopic left side ovarian cystectomy (c) Final scars after surgery

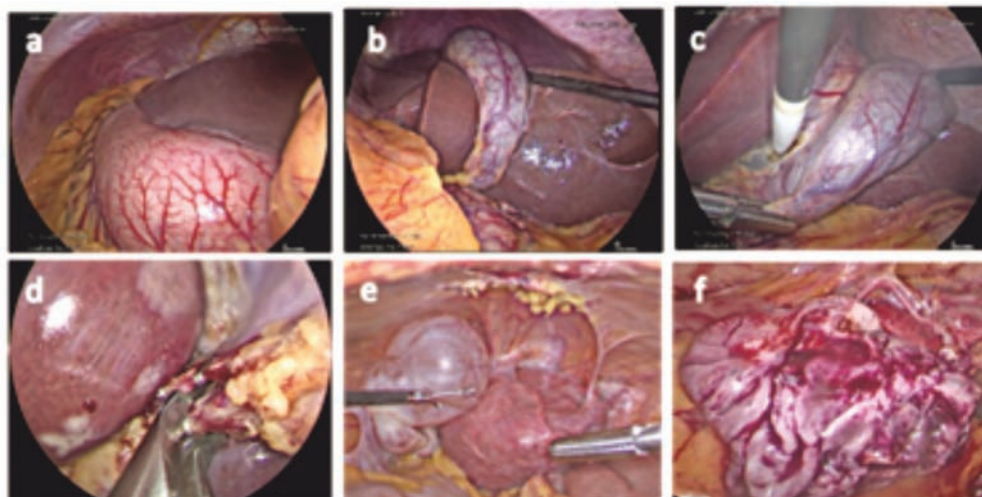


Figure 2: (a) Diagnostic laparoscopy revealing situs inversus with the left lobe of liver and stomach on the right side (b) Gall bladder on the left side (c) Laparoscopic cholecystectomy proceeding with the working ports through the epigastric and left subcostal ports (d) Cystic duct and artery clipped through the supraumbilical port with the camera shifted to the left subcostal port (e and f) Laparoscopic left ovarian cystectomy through the same group of ports which revealed a chocolate cyst.

dissection of the Calot's region was carried on through the left midclavicular line port for the surgeon's right hand and the left hand through the epigastric port (Figure 2c). The cystic artery and duct clipping were through the supraumbilical port, with the camera shifted to the left subcostal port for ease of application along the axis (Figure 2d). With the patient position changed to Trendelenburg position and the operating surgeon shifting to the patient's left, ovarian cystectomy proceeded smoothly with the same four ports (Figure 2e&f). The camera shifted to the left midclavicular line, and the supraumbilical and left anterior axillary lines were used as both working ports. After ensuring proper haemostasis, we retrieved the specimen through the supraumbilical port.

The postoperative course was smooth, and the patient was discharged on the second postoperative day. The histopathological evaluation confirmed chronic calculous cholecystitis and a left

ovarian chocolate cyst.

Discussion

Laparoscopic surgical procedures for multiorgan diseases in situs inversus totalis can be done safely and comfortably by an experienced surgeon with tailor-made technical modifications to tackle the challenges with the advantage of relatively decreased postoperative pain and improved cosmesis. The two techniques used commonly for laparoscopic cholecystectomy are the "American mirror (AMT)" and French mirror technique (FMT)" of port placement and position of the surgeon [1]. In "AMT", dissection is done through the epigastric and right subcostal port and the surgeon standing on the right. The "FMT" dissection is done by a right subcostal and a left flank port with the surgeon standing between the patient's legs [1]. In our case, we followed the "FMT"

but with the ports placed in a modified position as described by a few authors [3,4]. As a minimal access surgeon, one is well-versed in operating in this position while repairing hiatus hernias or bariatric surgeries. Suppose a surgeon uses the left midclavicular port for dissection with retraction done by the left hand via an epigastric port. There will be instrument crossovers in that case, which may make the hand movement ergonomically difficult [5]. In contrast, using the left hand to dissect the structures will be only feasible by limited surgeons gifted with ambidexterity. There are few reports where patients of SIT underwent laparoscopic multiorgan surgeries like cholecystectomy with appendectomy² or ovarian cystectomy [6]. We believe our method to be unique, as a safe and ergonomically feasible performance of laparoscopic cholecystectomy and ovarian cystectomy was possible with planned placement of working ports resulting in good cosmesis. Hence, laparoscopic surgeries in situs inversus totalis with multiorgan diseases are safe and feasible; however, appropriate tailor-made technical modifications are needed to reduce exhaustion and difficulties during operation.

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