

Laparoscopic cholecystectomy in a patient with situs inversus: Advantage of 30° scope

Omer Topuz¹, Selim Sozen², Ahmet Feran Agachan³,
Mustafa Tukenmez⁴, Umit Erkan Vurdem⁵

ABSTRACT

Laparoscopic cholecystectomy is one of the commonest surgical procedures carried out in the world today. Symptomatic gallstones needs surgery also patients with situs inversus. We discuss our case and problems encountered during surgery and how to solve them. A 50-year-old male presented with recurrent epigastric and left hypochondriac pain for the last year. A diagnosis of gallstones in a patient with situs inversus totalis was made following clinical examination and radiological investigation. Laparoscopic cholecystectomy was subsequently performed and the patient made an uneventful recovery. Situs inversus presenting with symptomatic gallstones is very rare. Laparoscopic cholecystectomy and other abdominal surgical operations are more difficult in patients with situs inversus hence they are rarely practiced.

KEY WORDS: Situs inversus, Laparoscopic cholecystectomy, Technique.

Pak J Med Sci July - September 2011 Vol. 27 No. 4 929-931

How to cite this article:

Topuz O, Sozen S, Agachan AF, Tukenmez M, Vurdem UE. Laparoscopic cholecystectomy in a patient with situs inversus: Advantage of 30° scope. Pak J Med Sci 2011;27(4):929-931

INTRODUCTION

Situs inversus totalis is a rare congenital disorder occurring in 0.01% of the population and have a reported incidence of 1:5,000 to 1:20,000 hospital admissions.¹⁻⁴ It is characterized by the transposition of the major thoracic organs and all the abdominal organs to the side opposite to normal position in the body. The liver and gall bladder are located on the left, while the stomach and the spleen are on the right. The normal development requires a 270 degree counter clockwise rotation that yields the normal anatomy. In situs inversus totalis, the 270 degree

rotation is in the clockwise direction. The exact etiology is unclear; however, it is thought to be due to a single autosomal recessive gene of incomplete penetration. The male to female ratio is 1:1 and there is no racial predilection.^{1,3}

Although situs inversus is not pathological by itself, it may be associated with several syndromes. Varied presentations may impose challenges in the diagnosis and management of such patients.^{4,5} About 40 upper and lower abdominal laparoscopic procedures have been reported in patients with SIT with the majority being laparoscopic cholecystectomies. In almost all cases, technical difficulties and longer operative times have been described during these operations.^{2,3} Laparoscopic cholecystectomy is one of the common surgical procedures carried out in the world today and is the gold standard treatment for symptomatic gall stone disease. Laparoscopic cholecystectomy and other abdominal surgical operations are more difficult in patients with situs inversus hence they are rarely practiced.^{6,7}

CASE REPORT

We present our experience of laparoscopic cholecystectomy in a patient with situs inversus totalis and

1. Omer Topuz, MD,
2. Selim Sozen, MD,
3. Ahmet Feran Agachan, MD,
4. Mustafa Tukenmez, MD,
5. Umit Erkan Vurdem, MD,
- 1-5: Training and Research Hospital, Kayseri, Turkey.

Correspondence:

Omer Topuz, MD,
Training and Research Hospital General Surgery Clinic,
Kayseri, Turkey.
E-mail: drotopuz@yahoo.com

* Received for Publication: April 11, 2011

* Accepted: June 26, 2011

discuss the problems encountered during surgery. A 50-year-old male presented with recurrent epigastric and left hypochondriac pain for the last year. He did not have any history of hematemesis, melena or jaundice. Physical examination revealed mild tenderness in the left upper quadrant. The apex beat was in the right fifth intercostal space, mid-clavicular line. Chest X-ray and ECG confirmed diagnosis of dextrocardia. Abdominal USG showed that liver was seen in the left upper quadrant with calculi in the gall bladder and the spleen was seen in the right upper quadrant. There was no evidence of common bile duct or intrahepatic duct dilatation. The liver function tests were normal. Abdominal computed tomography showed situs inversus totalis (Fig-1). Laparoscopic cholecystectomy was planned for symptomatic cholelithiasis.

Technique: The patient was placed in the supine position with both the surgeon and camera-man on his right side and the assistant on the left side. Monitor was placed at the left side. The pneumoperitoneum was created by using a Veress needle. A 10 mm trocar was introduced through an umbilical incision. A 10mm 30 degree laparoscope was introduced through the umbilical port. There was a total reversal of the position of all the organs. A 10mm trocar was inserted in the subxiphoid area in the mid-line. Two 5mm trocars were introduced in the left mid-clavicular and left anterior axillary lines. A grasper was introduced through the anterior axillary cannula to hold the fundus of the gallbladder and it was pushed laterally to the cephalic position.

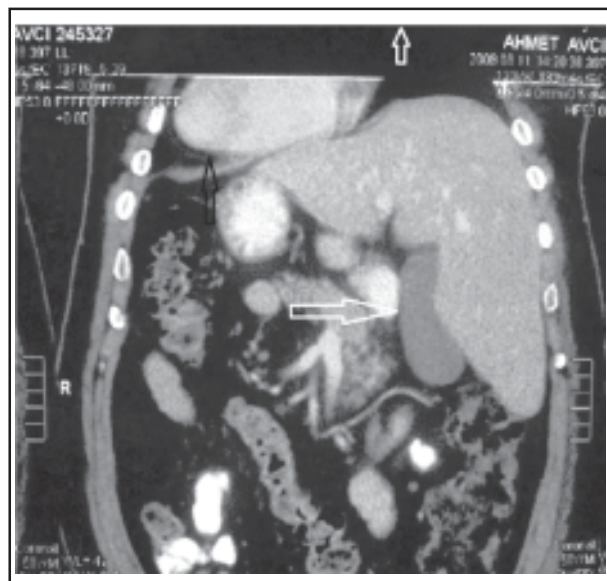


Fig-1: Abdominal tomography shows left sided liver and gallbladder (white arrow), right sided heart (black arrow).

Another grasper was introduced through the medial cannula for holding Hartmann's pouch and for manipulating it. This was initially held by the right hand of the surgeon. The surgeon first used dissector with left hand through the subxiphoid trocar.

Conflict between grasper and dissector for a right handed surgeon was hard to solve. Then the surgeon changed grasper with dissector. After this change grasper was inserted from subxiphoid trocar and used to retract hartmann's pouch by surgeon's left hand. The surgeon took dissector with his right hand and inserted through the medial 5mm trocar. Dissection of callot triangle was easier after this maneuver. Grasper was used to retract hartmann's pouch medially while camera was showing from lateral and laterally while camera was showing from medial (Fig-2). Usage of 30 degree laparoscope was also helpful. The application of the clips to both cystic artery and duct was performed through the subxiphoid port. The operation took nearly 45 minutes and was completed successfully. The patient was discharged without any event on the first postoperative day.

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. The incidence is thought to be in the region of 1:5000 to 1:20000. This condition may be associated with

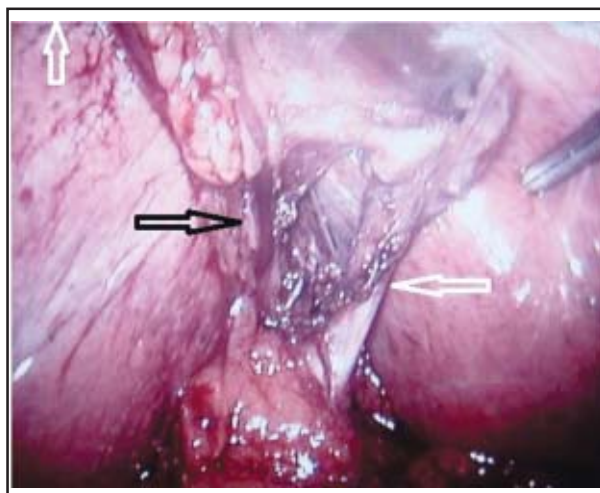


Fig-2: Dissection of Callot's triangle, cystic artery (black arrow) and cystic duct (white arrow) can be seen. 30 degree camera was showing from medial.

Kartagener's syndrome (bronchiectasis, sinusitis, and situs inversus) and cardiac anomalies. There is no current evidence that situs inversus predisposes to cholelithiasis.³⁻⁷

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.⁷ Previous reports have confirmed that situs inversus is not a contraindication for laparoscopic cholecystectomy.⁸

The procedure is, more difficult than standard laparoscopic cholecystectomy 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. 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.^{1,8}

The orientation and ergonomic challenges will usually result in an increased operative time. Operation time ranging from 15 to 75 minutes has been reported in the literature.⁵ There are few reports suggesting that the retraction of Hartman's pouch by the assistant from the midclavicular port may help the surgeon to perform surgery by using his or her right hand through the epigastric port.⁵

Although laparoscopic cholecystectomy has been described in patients with situs inversus, no standard technique has been described. The surgeon may get to operate on such patients only once in his or her lifetime and will not get a second case to improve on technique. The encountered difficulties have been well highlighted.³

We are presenting our laparoscopic cholecystectomy in a patient with situs inversus and discuss the problems encountered during surgery and how to solve them. The biggest problem in patients with situs inversus totalis undergoing laparoscopic surgery is unfamiliar anatomy of visceral organs. This change

also changes the surgeon to an unexperienced surgeon. Dissection of callot's triangle is the most difficult part of operation.

Hamdi J et al reported that dissection from the mid-clavicular cannula with right hand with the lateral displacement of the neck of the gallbladder using the left hand through the subxiphoid cannula is difficult because the tip of the dissector will lose its perpendicular angle to the dissection plane and become positioned with a very narrow angle.¹ We solved that problem using a thirty degree telescope and retracting hartmann's pouch medially while camera was showing from lateral and laterally while camera was showing from medial. Medial dissection will be easier while camera was showing from medial and lateral dissection will be easier while camera was showing from lateral.

REFERENCES

1. Hamdi J, Hamdan OA. Laparoscopic cholecystectomy in situs inversus totalis. *Saudi J Gastroenterology* 2008;14(1):31-32.
2. Kenny PK, Laparoscopic Nissen fundoplication in patient with situs inversus totalis: An ergonomic consideration. *J Laparoendoscopic & Advanced Surgical Techniques* 2006;16(3):271-273.
3. Nursal TZ, Baykal A, Iret D, Aran O. Laparoscopic cholecystectomy in a patient with situs inversus totalis. *J Laparoendoscopic & Advanced Surgical Techniques* 2001;11(4):239-241.
4. Oms LM, Badia JM. Laparoscopic cholecystectomy in situs inversus totalis: The importance of being left handed. *Surg Endosc* 2008;17:1859-1861.
5. Jindal V, Misra MC, Bansal VK, Choudhury N, Garg SK. Technical challenges in laparoscopic cholecystectomy in situs inversus. *J Laparoendosc Adv Surg Tech A* 2010;20(3):241-243.
6. Machado NO, Chopra P. Laparoscopic cholecystectomy in a patient with situs inversus totalis: feasibility and technical difficulties. *JSL* 2006;10(3):386-391.
7. Ghosh N, Roy A, Bhattacharya SK, Mukherjee S, Saha M. Laparoscopic Cholecystectomy in Situs Inversus, a Modified Approach. *The Internet J Surgery* 2009;19(2) (Online).
8. McKay D, Blake G. Laparoscopic cholecystectomy in situs inversus totalis: A case report. *BMC Surgery* 2005;17;5:5.