Farabi Tıp Dergisi 3(1):24-27,2024
Farabi Medical Journal 3(1):24-27,2024
https://doi.org/10.59518/farabimedj.1261743

FARABİ TIP DERGİSİ
FARABI MEDICAL JOURNAL

Olgu Sunumu
Case Report

https://dergipark.org.tr/tr/pub/farabimedj

Laparoscopic Colecystectomy in a Patient with Situs Inversus Totalis

Situs İnversus Totalis Tanılı Hastada Laparoskopik Kolesistektomi

Mehmet Ulusahin[1,a,*], Arif Burak Cekic[1,b], Reyyan Yildirim[2,c], Serdar Turkyilmaz[3,d]

[1]*Karadeniz Technical University, Faculty Of Medicine, Department of General Surgery, Trabzon, Turkey*
[2]*Hopa State Hospital, General Surgery Clinic, Artvin, Turkey*
[3]*Medical Park Trabzon Karadeniz Hospital, General Surgery Clinic, Trabzon Turkey*

[*]*Corresponding author e-mail: ulusahinmehmet@hotmail.com*

[a]*https://orcid.org/0000-0002-0212-2103*
[b]*https://orcid.org/0000-0002-1460-6949*
[c]*https://orcid.org/0000-0003-3417-7245*
[d]*https://orcid.org/0000-0002-2619-3336*

ABSTRACT

Situs inversus totalis (SIT) is a rare clinical condition with autosomal recessive inheritance in which visceral organs are replaced as a mirror image. In this paper, we present the case of a 44-year-old female with SIT who underwent laparoscopic cholecystectomy (LC) due to multiple attacks of cholecystitis and gallbladder stones. Since the patient had SIT, the operation was performed by modifying the placement of the operating team and the operating table. No adverse events were encountered during the operation. The patient was discharged the next day without any complications in the postoperative clinic follow-ups. Due to organ displacement, LC in individuals with SIT is susceptible to complications. These operations should be performed with the utmost care by surgeons with sufficient experience.

Keywords: Cholelithiasis, Laparoscopic cholecystectomy, Left-sided gallbladder, Situs inversus

ÖZET

Situs inversus totalis (SİT) otozomal resesif geçiş gösteren, visseral organların ayna görüntüsü şeklinde yer değiştirdiği nadir bir klinik durumdur. Bu yazıda SİT tanısı olan 44 yaşında bir bayan hastada geçirilmiş kolesistit atakları ve safra kesesi taşı nedeni ile uygulanan laparoskopik kolesistektomi (LK) vakası sunulmuştur. Hastanın SİT olması nedeni ile operasyon ekibi ve ameliyat masasının yerleşimi modifiye edilerek operasyon gerçekleştirildi. Ameliyat esnasında herhangi bir olumsuz durum ile karşılaşılmadı. Postoperatif servis takiplerinde herhangi bir komplikasyon ile karşılaşılmayan hasta ertesi gün taburcu edildi. SİT tanılı hastalarda LK organların yer değiştirmiş olması nedeniyle komplikasyonlara açıktır. Bu operasyonlar yeterli tecrübeye sahip cerrahlarca azami dikkat içerisinde gerçekleştirilmelidir.

Anahtar Kelimeler: Kolelitiazis, Laparoskopik kolesistektomi, Situs inversus, Sol yerleşimli safra kesesi

Geliş Tarihi/Received Date: 07.03.2023 | *Kabul Tarihi/Accepted Date: 21.05.2023*

INTRODUCTION

Situs inversus totalis (SIT) is a rare clinical condition that is autosomal recessively inherited with a prevalence between 1/5000-1/20000.[1] In these patients, visceral organs are reversed as their mirror images. Surgical operations on this patient group may be considered more challenging due to the changed anatomy.[1-3] Laparoscopic cholecystectomy (LC) is a frequently performed operation type in surgery of gallbladder diseases.[2] Sometimes, complicated cases may be faced due to broad variability in the anatomic variations of the biliary tree.[1] For performing these operations with the minimum complication, international standards related to intraoperatively followed steps have been developed and many surgeons follow these standard steps. In this paper, a LC case was performed on a 44-year old female with a SIT diagnosis.

CASE REPORT

A 44-year-old female patient admitted to the general surgery polyclinic due to the suggestion of an elective cholecystectomy operation. Her SIT diagnosis was known and she had no additional problems. She had been hospitalized twice due to an abdominal pain complaint, and elective cholecystectomy was suggested after she was treated with antibiotherapy. Her complete blood count was normal, and there was no sign of abdominal pain in the abdominal examination. Her heart was detected on the right side as expected in SIT on the chest X-ray (Figure 1). A left-sided gallbladder, including multiple millimetric stones, was identified in an abdominal ultrasonographic (USG) examination. In the previous admission of the patient, left-sided liver and gallbladder had been identified in magnetic resonance imaging (MRI) (Figure 2). LC was performed on the patient.

The placement of the surgical team and equipment was modified for patient with SIT. The surgeon and camera assistant were on the right side of patient, whereas the first assistant and nurse were on the left side. A monitor was placed near to patient's left shoulder. First, it was entered into the abdomen through the supraumblical dissection with a 10-mm optical trocar. After pneumoperitoneum had been created, the abdominal cavity was explored with a 0-degree camera. A camera has been used through this trocar during operation. Then, a 10-mm, a 5-mm and a 5 mm trocar were placed on the epigastric area, the left subcostal midclavicular area and the left subcostal anterior axillary area, respectively (Figure 3). Traction was performed through 5-mm trocar, which was held at leftmost by first assistant as he held the fundus of the gallbladder. The operation was continued as the surgeon used a holder with his right hand through another 5-mm trocar and using L-hook and dissector with his left hand through a 10-mm trocar at the epigastric region. Dissection was started from the Callot triangle with dissector used through the epigastric port by the left hand. Choledoch, cystic duct and cystic artery were explored. The cystic duct and cystic artery were cut after critical view of safety was seen and clips were placed. The gallbladder was divided from liver bed by dissection with the help of L-hook. The gallbladder was removed through the camera port above abdomen with specimen bag. Total duration of operation was 40 minutes. The patient was discharged at next day after monitoring without problem. Written informed consent was obtained from the patient who participated in this case.

DISCUSSION

Situs inversus is a rare clinical condition with autosomal recessive inheritance. It has partial and total forms. Organs in the abdomen or thorax are reversed as their mirror image in partial form, whereas organs in both cavities are reversed in total form.[2] Our patient had a previously known SIT diagnosis.

Many surgeries can be performed without complications in patients with a SIT diagnosis. In the literature, many laparoscopic operations, such as splenectomy, colorectal surgeries, appendectomy and gastrectomy have been successfully performed in patients with SIT diagnosis.[4,5] LC is a frequently performed operation in gallbladder diseases. Although LC is frequently performed, sometimes serious complications, which can be even fatal may occur due to anatomic variations. Reversed organs as their mirror image in patients with a SIT diagnosis increase the difficulty of LC operations, which are already prone to anatomic variations.[1,2] The right hand is dominantly used during standard LC for right-sided gallbladder, and many important steps such as dissection, clipping and cutting may be easily performed through a trocar placed on the epigastric region by surgeons who are usually right-handed.

LC performed on patients with a SIT diagnosis is seem to be technically prone to complications during performing steps such as dissection, clipping and cutting

through the epigastric region by right-handed surgeons.[3] For right-handed surgeons, modified techniques with 4 ports which left subcostal midclavicular port is used for major processes such as dissection and clipping, the epigastric port is used by left hand of the surgeon and the anterior axillary port under the costal margin is used by the first assistant.[1-3,6,7] However, the right hand, which uses the midclavicular port, has to mobilize much more, and fatigue in early stages may occur.[3] Therefore, there are studies suggesting that a midclavicular port placed more caudally causes more ergonomic utilization.[2,3] Also, there are surgeons using a 4-port technique, in which surgeons are placed between the patient's legs in a lithotomy position for ergonomy and reduced tiredness.[7] In different technique, the surgeon uses his right hand for major processes through the epigastric port, whereas other ports are used by assistants for traction and contratraction.[8]

The 3-port technique has been defined for left-handed surgeons.[9] Like other techniques, the camera was used through the umbilical port in the 4-port technique we used. While the surgeon was performing steps such as clipping and dissection with his/her left hand, the right hand was used for traction of the infundibulum, whereas the left subcostal anterior axillary port was used by the assistant for traction of the fundus. This technique we used has been defined before in literature and is for left-handed surgeons.[10]

As described by the literature examples above, LC in a patient with SIT is a challenging operation. In addition to adhesions caused by inflammation, there is a higher risk of serious injuries due to the reversed positioning of organs and frequent anatomical variations in the bile ducts in patients with SIT.[2,6] However, for surgeons who use both hands dominantly, a successful operation can be performed with proper knowledge of anatomy, maximum compliance with the defined rules for surgical operations, mastery of laparoscopy, and careful dissection, despite the anatomical difficulties posed by SIT.[6,9,10] In this case report, despite the technical challenges faced by the surgical team compared to the normal LC performed on the right-sided gallbladder, a LC operation was successfully performed by a surgeon with dominant use of both hands and experienced in laparoscopic surgeries. The patient was discharged in a healthy condition after a complication-free operation.

Figure 1. X-ray image of right-sided heart in patient with SIT

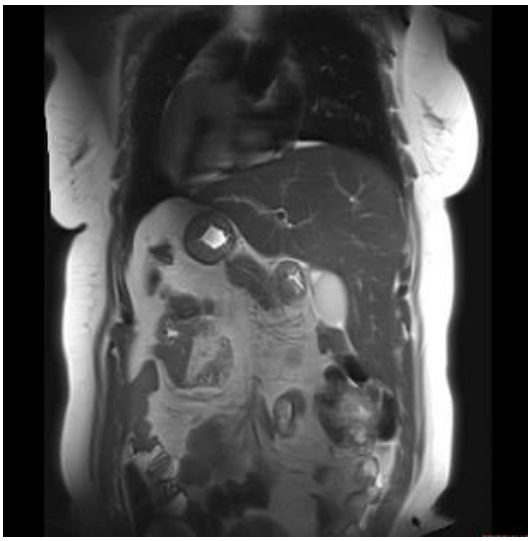

Figure 2. Left-sided liver and gallbladder are visible on abdominal MRI

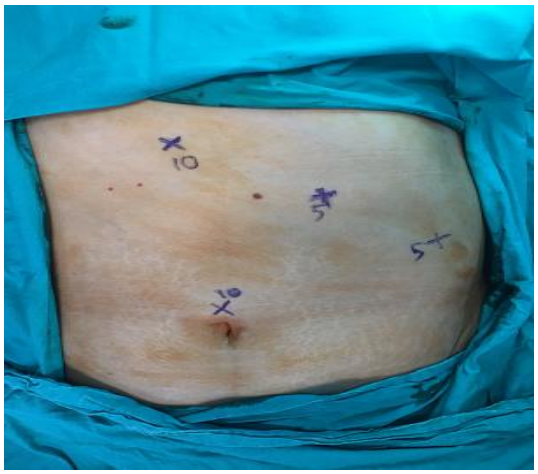

Figure 3. Entrance points of trocars to abdomen: 10 mm trocars on supraumblical and epigastric regions, 5 mm trocars on left subcostal midclavicular region and left subcostal anterior axillary region

CONCLUSION

The biliary tree is one of the areas with most anatomic variations in the body. Although LC is one of the most commonly performed operations in worldwide, anatomic variations may cause serious complications. LC, which is already prone to complications due to anatomic variations, even becomes more complicated in patients with SIT diagnosis due to reversed organs as their mirror image. The safest option for this operation is surgery performed by ambidextrous surgeons and laparoscopy surgeons with adequate anatomic knowledge and experience.

Acknowledgement

This study was presented in 13th Congress of the Hepatopancreatobilier Surgery on November 1-4, 2017 in Antalya, Turkey

Authorship contribution statement

Consept and desing: MU, ABÇ, RY, ST
Acquisition of data: MU, RY
Analysis and interpretation of data: MU, ABÇ
Drafting of the manuscript: MU, ABÇ, RY, ST
Critical revision of the manuscript for important intellectual content: MU, ABÇ, RY, ST
Statistical analysis: -
Supervision: MU, ABÇ, RY, ST

Ethical approval/Informed Consent

Written informed consent was obtained from the patient who participated in this case.

Declaration of competing interest

All contributing authors declare that they have no conflicts of interest.

Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Funding

The authors declared that this study has received no financial support.

REFERENCES

1. Rungsakulkij N, Tangtawee P. Fluorescence cholangiography during laparoscopic cholecystectomy in a patient with situs inversus totalis: a case report and literature review. BMC surgery. 2017; 17(1): 43-6.
2. Phothong N, Akaraviputh T, Chinswangwatanakuln V, Trakarnsanga A. Simplified technique of laparoscopic cholecystectomy in a patient with situs inversus:a case report and review of techniques. BMC Surg. 2015; 15(1): 23-6.
3. Ahmed Z, Khan SA, Chhabra S, Yadav R, Kumar N, Vij V, et al. Our experience with surgery in situs inversus: Open peptic perforation repair and laparoscopic cholecystectomy in 1 patient and 3 patients respectively. Int J Surg Case Rep. 2016; 29: 34–8.
4. Yodonawa S, Goto Y, Ogawa I, Yoshida S, Itoh H, Nozaki R, et al. Laparoscopic splenectomy for idiopathic thrombocytopenic purpura in a woman with situs inversus: Report of a Case. Surg Today. 2010; 40(12): 1176-8.
5. Shibata K, Kawamura H, Ichikawa N, Shibuya K, Yoshida T, Ohno Y, et al. Laparoscopic total gastrectomy for advanced gastric cancer in a patient with situs inversus totalis. Asian J Endosc Surg. 2018; 11(1): 39-42.
6. Pahwa HS, Kumar A, Srivastava R. Laparoscopic cholecystectomy in situs inversus: points of technique. BMJ case reports. 2012; bcr2012006170.
7. Patle NM, Tantia O, Sasmal PK, Khanna S, Sen B. Laparoscopic cholecystectomy in situs inversus-our experience of 6 cases. Indian J Surg. 2010; 72(5): 391–4.
8. Arya SV, Das A, Singh S, Kalwaniya DS, Sharma A, Thukral BB. Technical difficulties and its remedies in laparoscopic cholecystectomy in situs inversus totalis: A rare case report. Int J Surg Case Rep. 2013; 4(8): 727–30.
9. Fernandes MN, Neiva IN, de Assis CF, Meguins LC, Fernandes MN, Meguins EM et al. Three-port laparoscopic cholecystectomy in a brazilian Amazon woman with situs inversus totalis: surgical approach. Case Rep Gastroenterol. 2008; 2(2): 170–4.
10. Oms LM, Badia JM. Laparoscopy Cholecystectomy in situs inversus totalis: The importance of being left handed. Surg Endosc. 2003; 17(11): 1859–61.

To Cite: Ulusahin M, Cekic AB, Yildirim R, Turkyilmaz S. Laparoscopic colecystectomy in a patient with situs inversus totalis. Farabi Med J. 2024;3(1):24-27. doi:10.59518/farabimedj.1261743