Laparoscopic Approach in Patient with *Situs Inversus Totalis* and Colelithiasis

CASE REPORT

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Abstract

Background: *Situs Inversus Totalis* is a rare clinical condition that gives a mirror aspect to the position of the organs. It is a congenital condition and though it does not affect normal health or longevity, it may be a challenge in cases requiring surgical intervention.

Case: The authors report a case of cholelithiasis in a patient with previous diagnosis of *Situs Inversus Totalis*. The patient presented abdominal pain, related to eating and associated with nausea and vomiting. After the image exams, it was performed the surgical procedure, without interurrences.

Conclusion: *Situs Inversus Totalis* is a challenge for surgical approach because of the mirrored configuration of the organs, which can lead to misdiagnosis. Using image exams and a complete evaluation of the patient helps the correct management in case of surgical procedures, and consequently influence in the prognosis.

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Introduction

Situs Inversus Totalis (SIT) is a rare clinical condition characterized by the transposition of the organs to the opposite side of the body, in a mirror image aspect [1]. The incidence of SIT is 1 in every 5,000-20,000 live births [2].

Due the anatomic modifications caused by SIT, patients with this condition have more difficulties regarding successful management and interpretation of image exams [3]. Additionally, surgical procedures may be challenging [4].

Keywords

Situs Inversus; Laparoscopy;
Cholelithiasis.

There is no scientific evidence that SIT predisposes the onset of cholelithiasis, or that cholelithiasis occurs more frequently in patients with SIT [5]. However, it may be a confusing factor at the time of diagnosis, especially in patients without previous confirmation of SIT [6].

The laparoscopic technique still is the gold standard for cholecystectomy, even in patients with SIT [7]. Nevertheless, the ideal laparoscopic technique for this type of condition is debated in literature.

Case report

Patient is female, 16 years old, with previous diagnosis of SIT. She was referred to the hospital with complaints of high intensity pain in the left hypochondrium, related to eating and associated with nausea and vomiting. Laboratory tests and abdominal ultrasonography were performed, which revealed multiple gallbladder calculi of various sizes. After a preoperative evaluation, the patient was submitted to cholecystectomy with laparoscopic cholangiography.

At the surgery, the patient was placed in dorsal decubitus in pronounced proclivity with open legs. The monitor was placed to the left of the patient at head height. The surgeon positioned himself between the patient's legs, with the first assistant to his right and the instrumentals' assistant to his left (Figure 1).

The umbilical incision and puncture of the peritoneal cavity was performed with a Veress needle, and the pneumoperitoneum was made with a pressure of 12 mmHg of gas. Subsequently, the cavity was punctured with a 10 mm trocar with a protected tip and a 10mm/45° optical pass. The cavity inventory was completed with no intercurrents and the confirmation of SIT was made.

Thereafter, a 10mm trocar was inserted under direct vision below the left costal border at the level of the anterior axillary line, and another two 5mm trocars were inserted, one below the left costal border in the middle axillary line, and the other in

Figure 1: Illustration showing the position of the patient and surgical team.

Figure 2: Trocar placement for laparoscopic cholecystectomy.

the right paramedian region at 4cm from the right costal border axillary line (**Figure 2**).

The surgeon utilized the electric scissor, aspirator and clipper for clipping the artery and cystic duct with the right hand through the 10mm trocar positioned in the left anterior axillary line of the patient and the gasper, for presentation, with the left hand through the 5mm trocar to the right of the patient. The presentation of the gallbladder infundibulum was done by the traction of the fundus of the gallbladder, by the first auxiliary, through the 5mm trocar in the posterior left axillary line.

After the gallbladder traction and the infundibulum exposition, the dissection and identification of cystic artery and cystic duct was made. The cystic artery was attached with a clip, followed by its section. The cystic duct catheterization was done and the intraoperative cholangiography was performed with normal results. Finally, the catheter was removed, the cystic duct was clipped and the cholecystectomy was completed without complications (**Figure 3**).

Discussion

Situs Inversus Totalis is a rare anomalous condition that can lead to diagnostic and technical difficulties during surgery due to transposition of the organs [8]. The detection is often done occasionally, since situations such as appendicitis in patients with SIT can be confused with other processes, such as intestinal obstructions, Meckel's diverticulum, renal colic, among others [9]. The use of imaging tests such as ultrasonography, computed tomography and nuclear magnetic resonance helps in the diagnosis of SIT, allowing a better planning of the surgical approach and decreasing chances of surprises and intraoperative complications [10].

The most frequently reported laparoscopic procedures in SIT patients are appendectomy and cholecystectomy [11]. Approximately 60 cases of laparoscopic cholecystectomy in patients with SIT were found in literature, and the number of techniques described for their management was diverse [12]. The difficulties stated for laparoscopic surgery in SIT patients are related primarily to anatomical irregularities, in addition to loss of orientation of

Figure 3: Laparoscopic surgery view.

the mirror image caused by SIT, among others [13]. In this reported case the positioning adopted by the surgeon and team, as well the trocars position in relation to the patient, allowed the surgical procedure to be performed easily and effectively. Furthermore, this arrangement permitted the comfortable performance of intraoperative cholangiography with the surgeon using his hand (*Situs Solitus*), a technique already described in the literature [14] with good results, which is the reason why it was suggested the use of this position in SIT patients with cholelithiasis.

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Conflict of interest disclosures

The authors declare that there are no conflicts of interest in this case report.

Contribution

Deborah Marques Centeno, Tiago Galan de França, Marcos Antonio Neves Noronha, Carolina Mainardi, Danielle Oliveira de Sousa and Luísa Carvalho Silva: literature review, data interpretation, writing, translation and concept of the manuscript.

Acácio Augusto Centeno Neto: concept and orientation regarding the manuscript, data acquisition and methodological review of the manuscript.

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