

Situs Inversus: Open Cholecystectomy and Appendectomy: A literature Review

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Abstract

Introduction: Situs inversus is a rare autosomal disorder with transposition of abdominal and thoracic organs. The prevalence is low upto 0.04%. Investigating the disease and performing surgical procedure is difficult because of difficult anatomy. We hereby report a case of symptomatic gallstones in 86 years old patient incidentally diagnosed as case of situs inversus after appropriate investigations. We also include a review of literature.

Method: Case report and literature review.

Case: An 86-year-old male patient with pain in left hypochondrium and vomiting after meal intake. He was diagnosed as case of situs inversus after 86 years. This patient successfully underwent open cholecystectomy and prophylactic appendectomy. The recovery was smooth and diagnosed without complications on painkillers.

Conclusion: Therefore, meticulous attention is needed to diagnose and operate the disease. Ability to deal with anatomical variations and hands on surgery by skilled surgeon decreases complications and successful recovery.

Keywords: Situs inversus; Cholecystectomy; Appendectomy; Cholelithiasis

Introduction

Situs inversus is a rare autosomal disorder and occurs in 1:8,500 however, with incidence in the range of 1:5000 to 1:20,000 [1]. It is the mirror image transposition of abdominal or thoracic organs or one or other organs to opposite side of the body [2]. In association with dextrocardia it is called situs invertus totalis and exhibit complex features and difficulties to diagnose because of altered position of vessels and organs [3,4]. Approximately 20-25% of those diagnosed with situs inversus have associated congenital anomalies, such as renal dysplasia, biliary atresia, congenital heart disease, bronchiectasis, infertility and ciliary dyskinesia [5,6].

This reversed orientation of viscera whereby the gallbladder and liver are located on the left and stomach and spleen on the right possesses great surgical difficulty [7]. This atypical mirror imaging not only needs great surgical skills but also meticulous preoperative planning. Surgeons must be aware of anatomical changes in a patient of symptomatic gall stone disease [8].

Here we share our experience of left sided open cholecystectomy and appendectomy in HBSAG positive old age patient of situs inversus and discuss technical challenges encountered during procedures. We also include a short review of the literature.

Case Report

An 86-year-old male patient presented to us with pain in left hypochondrium radiating to epigastrium for last 2 days and vomiting just after talking meal. He had 3-4 episodes of vomiting containing stomach contents. The pain according to patient was severe in intensity and colicky in nature. On examination abdomen was soft, tender in left hypochondrium and Murphy's sign Positive. He was afebrile and not jaundiced. Cardiac sounds were ausculted on right side of chest. Bowel sounds were audible. Laboratory investigations showed raised TLC, HB 12.3 gm/dl, urea 46 mg/dl, creatinine 0.2 mg/dl. HBSAg was Positive and Anti HCV AB was Negative. Liver function tests were normal. The patient underwent abdominal ultrasound which showed distended, thick walled gall bladder with multiple large stones in left hypochondrium and associated pericholecystic fluid (Figure 1a).

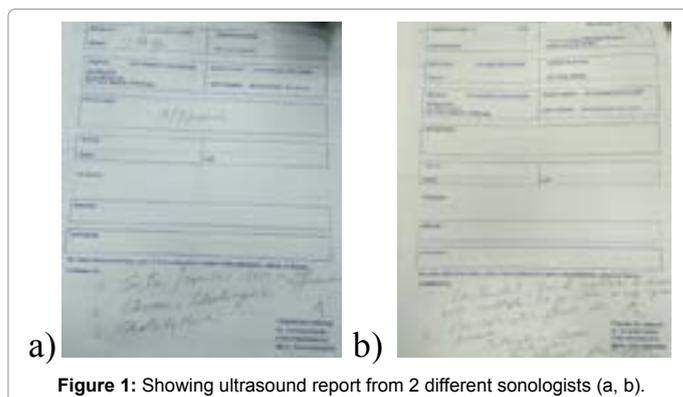


Figure 1: Showing ultrasound report from 2 different sonologists (a, b).

Another ultrasound by other sonologist to confirm diagnosis showed liver and gall bladder in left hypochondrium and diagnosed Situs invertus (Figure 1b). Chest X-ray showed transposition of thoracic organs and heart shadow on right side. It was an incidental diagnosis of situs invertus totalis. The patient was offered cholecystectomy operation (Figures 2a and 2b). Although laproscopic cholecystectomy is emerging and safe but keeping in view patient screening report surgeons decided to carry out open cholecystectomy. Left sided open cholecystectomy and appendectomy was performed through extended Kocher and Mcburney incisions, respectively. The surgeon was standing on left side of the patient and assistant on right side. The surgeon dealt this case technically because of different hand movements specially while dissecting Calot's triangle. The gallbladder was distended and surrounded by adhesions.

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Identification of Calot's triangle was difficult because the anatomy could not be clearly identified as a result of the previous inflammation. The distended gallbladder with multiple stones was removed (Figure 3). Open Appendectomy was performed alongside. Appendix was in left iliac fossa and it was prophylactically removed. Patient underwent smooth recovery and discharged on 3rd postoperative day on painkillers.

Discussion

Situs inversus is a diagnostic dilemma especially in a patient with an unknown history of this condition. The diagnosis of gallstone disease is difficult because of left sided pain although a few of patients develop epigastric pain [9,10]. Though situs invertus is associated with multiple congenital anomalies but it does not make patient prone to gall stones [5]. The incidence of cholelithiasis is same in situs inversus as in the general population. The presentation of disease is different as they present with pain in left hypochondrium than right hypochondrium [7]. Laparoscopic cholecystectomy is the gold standard treatment for symptomatic gall stone disease in normal population. The first known report on laparoscopic cholecystectomy in a patient with situs inversus was by Campos and Sipes in 1991 [5]. According to search 37 cases of gall bladder pathology were managed through laparoscopic cholecystectomy without complications [11,12]. Our patient presented with pain in left hypochondrium and diagnosed incidentally as a case of situs inversus totalis on the basis of abdominal ultrasound, chest X-ray and clinical examination of chest and abdomen. Though laproscopic surgery is best and safe procedure but because of patient HBSAg screening report the patient underwent open surgery. The procedure was carried out in 55 min, though longer than conventional operation which can be explained by the modification in the ergonomics made to adjust to the mirror image anatomy. No matter which procedure is adopted whether open or laproscopic, it is important to clearly dissect cystic artery and cystic duct, stay close to gallbladder bed and clearly remove it from bed [13]. Keeping grip over difficult anatomy is of outmost importance. The

surgeon and anesthesia team should exclude other congenital anomalies before embarking on to surgery especially biliary atresia. Great attention and expertise are needed in such cases [14].

Literature Review

- Situs invertus is not an etiological factor for gall bladder stones [5].
- Diagnosis is difficult and great attention is needed to exclude other diagnosis and know anatomical difficulties [8].
- Laproscopic cholecystectomy is best and safe procedure to be carried out and left handed surgeons can deal with complications quite easily [11,12].
- An experienced surgeon is required to operate who can deal with complications [10].
- Vascular anomalies can be ruled out by appropriate investigations like angiography [7].
- Time taken for surgery can be longer than usual operation because of difficult anatomy and dissection [15].

Conclusion

Cholecystectomy in situs inversus is not easy to perform and technically challenging. These patients must be carefully investigated to rule out associated congenital anomalies. While operating on these patients, extreme care is required for proper recognition of the reversed anatomy. A skilled laparoscopic and general surgeon can carry out operation smoothly and with ability to deal complications. In future highly, skilled operation like minimal invasive and Robotic surgery will take control even in this kind of patients.

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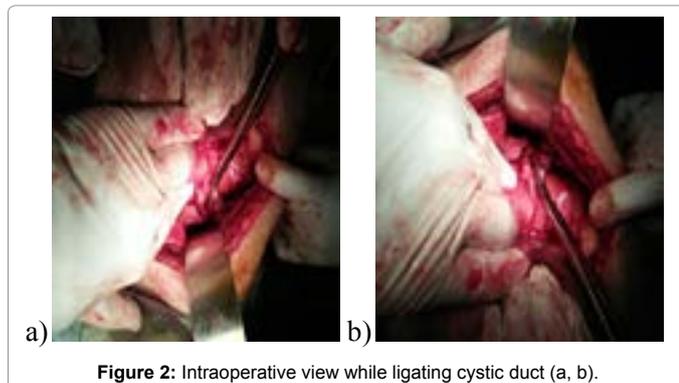


Figure 2: Intraoperative view while ligating cystic duct (a, b).



Figure 3: Showing removed gall bladder with multiple stone along with appendix also shows round large gallstone.

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