Open Cholecystectomy in Kartagener’s Syndrome: A Case Report

Ganaie Ab Rashid¹, Lone Irshad Ahmad², Sheikh Jan Mohammad³, Bali Harbinder Pal Singh⁴, Malik Nazneen Shafi⁵, Samiera Hassan⁶

¹Lecturer, Postgraduate Department of Surgery, Government Medical College Srinagar, Jammu and Kashmir, India
²Senior Resident, Postgraduate Department of Surgery, Government Medical College Srinagar, Jammu and Kashmir, India
³Postgraduate Department of General Medicine, Government Medical College Srinagar, Jammu and Kashmir, India
⁴Senior Resident, Postgraduate Department of Surgery, Government Medical College Srinagar, Jammu and Kashmir, India
⁵Medical officer, Jammu and Kashmir Health services, Jammu and Kashmir, India
⁶Medical Officer, Postgraduate Department of Social and Preventive Medicine Government Medical College Srinagar, Jammu and Kashmir, India

INTRODUCTION

Situs inversus viscerum is an autosomal recessive disorder, in which organs are transposed from their normal location to the opposite side of the body. The incidence of situs inversus viscerum occurrence ranges from 1:10000 to 1:20000 [1]. Situs inversus may be total including abdominal and thoracic viscera (situs inversus totalis), or more rarely, partial (situs inversus partialis). Situs inversus totalis associated with bronchiectasis, chronic sinusitis, and deficient tracheobronchial cilia is known as the Kartagener’s syndrome [2, 6]. There is no current evidence that situs inversus predisposes to cholelithiasis [3]. In the published literature, there have been only about 40 cases of open cholecystectomy in prelaparoscopic era and 20 reports of laparoscopic cholecystectomy in patients with situs inversus [4-7]. Although laparoscopic cholecystectomy can be performed safely in patients with situs inversus totalis, it is more demanding than in patients with orthotopic anatomy [7]. In difficult cases, open cholecystectomy can be unavoidable [8].

CASE REPORT

A 35-year old female, married for 5 years, never conceived, normotensive, non-diabetic presented with chief complaints of left upper quadrant pain for 2 years. She was referred to our hospital with ultrasonographically documented cholelithiasis with situs inversus. General physical examination was normal. Patient had bilateral inspiratory crepitations at lung bases and apex beat was palpable in the right 5th intercostal space with no added sound or murmur. The hematological and biochemical parameters were normal. On chest x-ray, cardiac shadow was on the right side of chest suggestive of dextrocardia. Abdominal ultrasound showed situs inversus viscerum and cholelithiasis with a single 29 mm stone in the gall bladder. Bronchiectatic changes in chest and dextrocardia with normal vasculature were noted on computed tomography of the chest. Contrast enhanced computed tomography of abdomen revealed situs inversus totalis with preservation of antero-posterior relationship of viscera. Frontal sinusitis was present on the computed tomography of head and paranasal sinuses. Pulmonary function tests were consistent with obstructive pattern. Pulmonary artery hypertension was present on echocardiography. Due to her compromised cardiopulmonary functions patient was at high risk of complications with laparoscopic cholecystectomy. Patient underwent open cholecystectomy through left sub costal incision.
Postoperative period remained uneventful and patient was discharged from the hospital on the 3rd postoperative day and the left nasal passage was narrow with a small mass protruding from the nasal cavity. The right nose could not detect smell and cold spatula and cottle tests were negative for the right nose suggestive of complete obstruction. The left nose could still detect smell. Endoscope could not be inserted into the right nasal cavity due to the complete obliteration of the cavity. Eye assessments revealed non perception of light for right eye and temporal hemianopia of left eye. Neurological assessments, cardio-respiratory and abdomen examinations were otherwise normal. There were no cervical lymphadenopathy or neck masses.

Contrast enhanced computed tomography (CECT) showed a large ill-defined heterogenous contrast enhancing mass occupying the nasal cavity, nasopharynx, ethmoid bone, sphenoid sinus, cavernous sinus and sella. The lesion measured about 7.3 cm x 5.6cm x 6.7cm. Destruction of the nasal bone, bilateral lamina papyracea, cribriform plate and surrounding tissues was present. No enhancing lesion was noted within the brain parenchyma. Gray and white matter was preserved. Histopathological examination (HPE) of the biopsy from the nose mass confirmed the diagnosis of follicular thyroid carcinoma. Her chest radiograph was normal with no evidence of pulmonary metastases. A CT scan of the abdomen was also normal with no liver metastases. In addition, complete blood count, thyroid function tests, liver and kidney function tests were also normal. The patient was counseled intensively and advised palliative radiotherapy. Palliative low dose radiotherapy of about 20-30Gy was planned to give in 5 to 10 fractions. However, patient refused treatment. She was also referred to neuro-ophthalmology, neurosurgery and oncology units for further management but again she declined. She was given daily nasal packing to stop bleeding as recurrent epistaxis might predispose her to develop anemia and hypovolemic shock in severe case.

Patient was discharged 3 days later but she did not keep her follow-up appointments. Hospital staff went to her house 1 week later to visit her but found that she has moved to another location else and could not be contacted.

**DISCUSSON**

Kartagener’s syndrome and left sided gall bladder are rare anomalies and only few cases are described in literature. In 1600, Fabricius reported the first known case of situs inversus in humans [2]. In situs inversus partialis, transposition is confined to either the abdominal or thoracic viscera. In situs inversus totalis, both abdominal and thoracic viscera are involved [9]. The frequency of cholelithiasis in patients with situs inversus totalis is similar to that in general population [9]. However, the condition may be challenging to diagnose due to left sided gall bladder. Although there is no evidence that the incidence of gallstones is greater in patients with situs inversus totalis, a presentation with left upper quadrant pain can lead to diagnostic confusion [5, 7].

While both laparoscopic and open cholecystectomy procedure are possible in situs inversus totalis, we preferred open cholecystectomy as the patient had associated bronchiectasis and decreased cardiopulmonary reserve. In patients with situs inversus, the mirror image anatomy poses difficulty in orientation during laparoscopic cholecystectomy. The surgeon must appreciate that care should be taken...

**Figure 1:** Chest tomogram showing dextrocardia

![Figure 1](image1)

**Figure 2:** Chest CT showing bronchiectasis

![Figure 2](image2)
Figure 3: CT abdomen showing liver and gall bladder on left side and spleen on right side and situs inversus viscerum

to set up the operating theatre in the mirror image of the normal set-up for cholecystectomy, and that right handed surgeons must modify their technique to adapt to the mirror image anatomy [6]. In our case, surgical team changed sides with the primary surgeon on the patient’s left and the first assistant on the right. Cholecystectomy was performed through left subcostal incision. Cystic artery and cystic duct were dissected and ligated. Gallbladder was dissected from the liver bed and cholecystectomy performed as in conventional retrograde cholecystectomy. Wound was closed primarily without a drain. Although open cholecystectomy in patients with Kartagener’s syndrome is demanding, an experienced surgeon can perform it safely after proper evaluation of the patient. Thus, open cholecystectomy may be an option for this kind of surgery, even in patients with Kartagener’s syndrome.

REFERENCES