

## Anaesthetic management for laparoscopic cholecystectomy in patient with situs inversus totalis

Sir,

Situs inversus totalis is an autosomal recessive congenital condition in which major thoracic and abdominal visceral organs are reversed from their normal position. We report anaesthetic management of a patient with situs inversus totalis who underwent laparoscopic cholecystectomy.

A 61-year-old lady, a known hypertensive on medications, diagnosed to have situs inversus totalis presented for a laparoscopic cholecystectomy. On preanaesthetic evaluation, patient's vital parameters and biochemical investigations were within normal limits. Her chest X-ray revealed situs inversus with dextrocardia [Figure 1]. Electrocardiograph (ECG) showed T wave inversion in lead I, aVL, V<sub>2</sub> to V<sub>6</sub> with deep Q waves in lead I and aVL which was consistent with dextrocardia [Figure 2]. Echocardiography revealed dextrocardia with mild aortic regurgitation and normal left ventricular ejection fraction. Pulmonary function tests showed a peak expiratory flow rate of 200 L/min. In the operation theatre, ECG monitor was connected with left sided ECG leads on the right side and vice versa. After premedication, general anaesthesia (GA) was induced with intravenous induction agent thiopentone and muscle relaxation obtained with vecuronium. Intubation was performed with 8.0 mm internal diameter endotracheal tube and position checked by auscultation. Anaesthesia was maintained with 1% isoflurane in oxygen and nitrous oxide mixture. Regular tracheal and oral suctioning were done which revealed minimal secretions and peak airway pressures were closely monitored. The procedure was uneventful and patient made satisfactory recovery.

Anaesthetic management of a patient of situs inversus includes workup for Kartagener's syndrome and other multisystem anomalies. Kartagener's syndrome is a condition with immotile cilia and a triad of bronchiectasis, sinusitis and situs inversus which affects 20% of patients with situs inversus.<sup>[1]</sup> Congenital heart diseases are present in more than 90% of cases with situs inversus with levocardia and

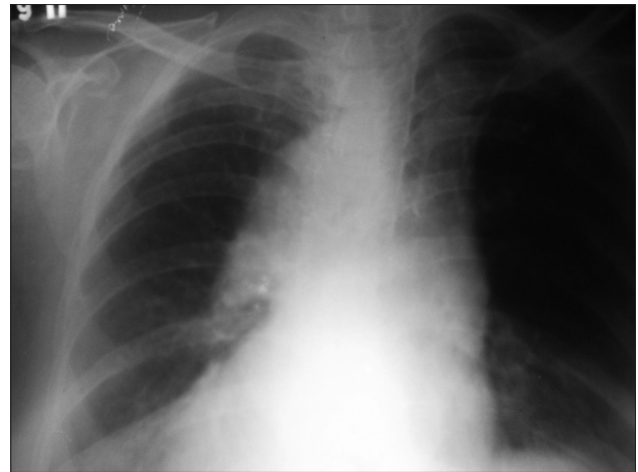


Figure 1: Chest radiograph showing dextrocardia with clear lung fields

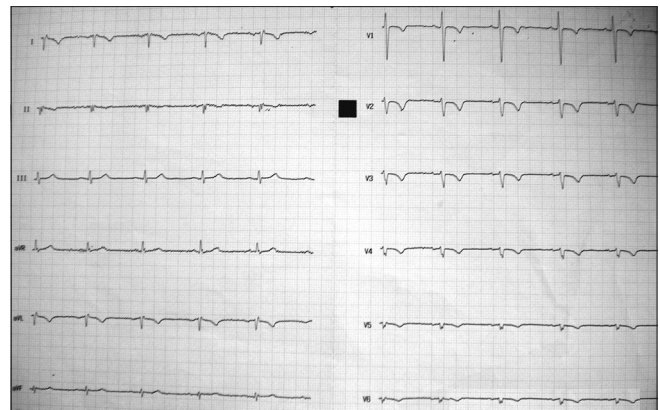


Figure 2: Electrocardiograph showing T wave inversion in anterolateral leads

in 3–5% of cases in situs inversus with dextrocardia.<sup>[2]</sup> Complete heart block is found to occur in over 20% of patients with situs inversus. Airway abnormalities may manifest as aglossia, hypoglossia or Goldenhar syndrome.<sup>[3]</sup>

Electrocardiograph electrodes if normally placed in these patients will show inverted T waves in lateral leads resembling a lateral wall myocardial ischemia. In the preanaesthetic evaluation, this may prompt unnecessary workup for suspected myocardial ischemia. Electrodes are to be placed in the mirror position for correct tracing during the surgery. During intubation left endobronchial placement of the endotracheal tube may occur, since the left bronchus is more in line with the trachea. Central venous catheter must be placed cautiously under ultrasound guidance because of the likelihood of associated vascular anomalies. During defibrillation, paddles should be placed in reverse position on the upper left and lower right of the chest. There are case

reports of prolonged paralysis after administration of succinylcholine in patients with situs inversus totalis and hence it is prudent to avoid depolarising muscle relaxants.<sup>[4]</sup> Pulmonary function tests play an important role in preoperative evaluation of the patients with Kartagener's syndrome. Physiotherapy, incentive spirometry, antibiotics and bronchodilators have a beneficial role in the preoperative preparation of the patient. It is prudent to avoid nasal intubation due to the associated sinusitis. Furthermore, inspired gases should be humidified to avoid viscid secretions. It is beneficial to induce and maintain GA with volatile anaesthetic due to the resultant bronchodilatation and reduced ventilatory depression in the early postoperative period. To conclude, apart from keeping in mind the various anomalies associated with situs inversus, appropriate modifications in anaesthesia technique is essential for smooth conduct of anaesthesia.

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