



## Dextrocardia with situs inversus — a case report

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### ABSTRACT

Situs inversus totalis with dextrocardia was detected incidentally in a 60-year-old cadaver in routine dissection kept for undergraduate medical students. It was found that some of visceral organs such as stomach and spleen were located on right side. Liver and gallbladder on left. Both right lung and left lung were bilobed. Heart was flattened directed to right with transposition of great vessels. The report showed that dextrocardia with situs inversus existing in one in ten thousand population. Complete situs inversus may form part of multiple malformational syndromes such as Kartagener syndrome with autosomal recessive transmission, which represent 20-25% cases. Situs inversus is generally autosomal recessive condition although it can be X-linked or found in identical mirror twins. © IJAV. 2011; 4: 86–89.

**Key words** [dextrocardia] [situs inversus] [transposition of great vessels] [elementary malrotation] [rare anomaly]

### Introduction

Dextrocardia is an abnormal congenital positioning of heart. Instead of heart forming in fetus on left side, it flips over and forms on right side. There are several types of dextrocardia also called looping defects. Situs inversus totalis also called situs transversus, a congenital condition in which major visceral organs are reversed or mirrored from normal positions. Many people with situs inversus unaware of their unusual anatomy until they seek medical attention for unrelated conditions [1]. In one case report found that stomach and spleen are located on right side, while liver on left side [2]. In a related report of chronic gallbladder inflammation, situs inversus with liver and gallbladder on left side was observed. Gallbladder was located in epigastric area towards left side and spleen on right, discovered in a 76-year-old man [3]. A case of dextrogastric, multiple jejunal atresia and inverse rotation of intestine with levocardia in a neonate was reported [4]. We describe a case of dextrocardia with right and left bilobed lungs and situs inversus totalis.

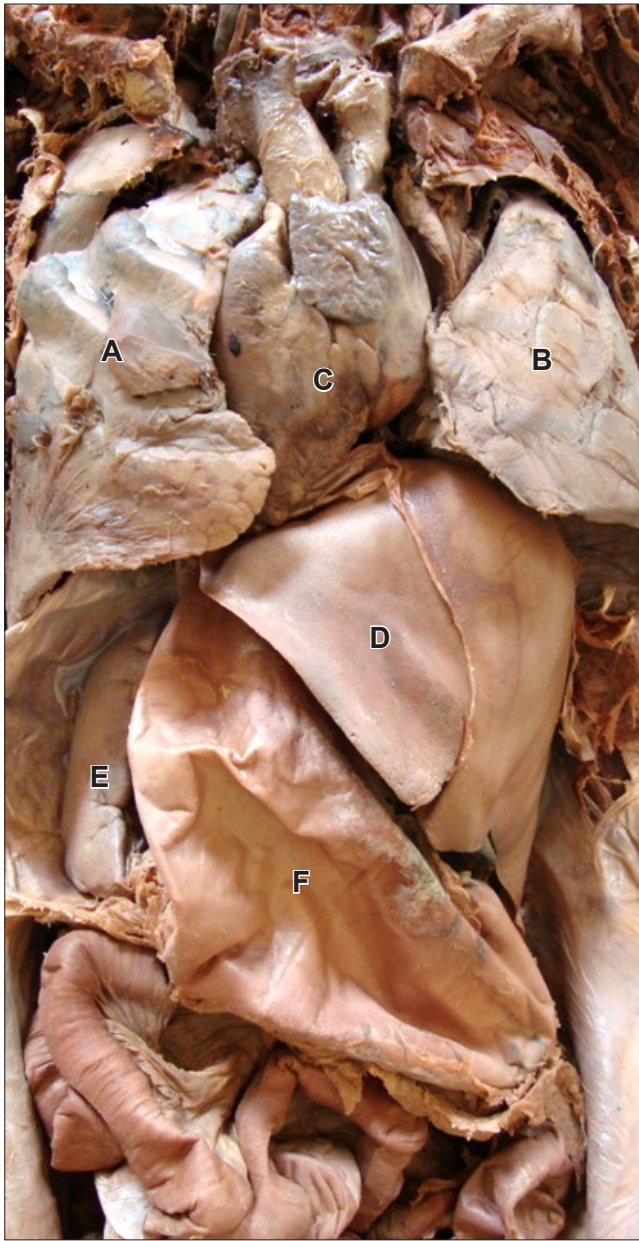
### Case Report

During routine supervision of dissection of formalin fixed cadavers for 150 level medical students in our Medical College, situs inversus was observed in one of the male cadavers out of 24 cadavers (20 male 4 female) dissected as part of medical training in human anatomy (Figure 1).

Transposition of great vessels was observed. Four branches were observed from right arched aorta which were right subclavian artery, right common carotid artery, left common carotid artery and left subclavian artery (Figure 2). Both lungs had one oblique fissure only, which divided each lungs into two lobes (Figures 3,4). In our case the liver was on left side. Stomach and spleen with multiple notches were found on right side (Figure 5). There was malrotation of intestinal loops and thereby lodging ascending colon, cecum and appendix on left side; sigmoid colon on the right (Figures 6,7).

### Discussion

Dextrocardia with situs inversus is a rare condition occurring in about one in ten thousand. This anomaly may not be diagnosed until late life in some cases and it is associated with primary ciliary dyskinesia and splenic malformations [2]. It may be total or incomplete in 10% cases. Levocardia with situs inversus associated with cardiac anomalies. In a case study, two cases of dextrocardia with situs inversus were reported. First patient (35-year-old male) with respiratory symptoms. Second patient (14-year-old male) presented with cardiac symptoms [5]. In another case, clear cell carcinoma of kidney was reported with situs inversus [6]. A case of situs inversus associated with congenital duodenal obstruction was described [2].

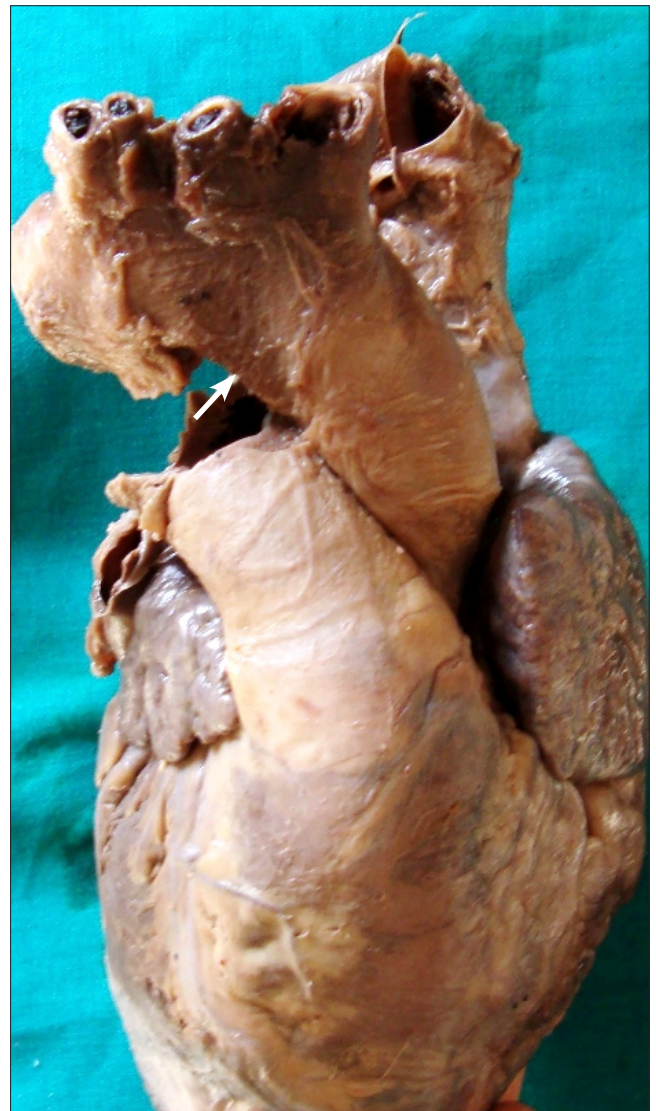


**Figure 1.** Situs inversus totalis, transposition of organs in situ. (A: right lung; B: left lung; C: heart with right arch of aorta; D: liver; E: spleen; F: stomach)

In this case report, we observed a male cadaver showing dextrocardia with transposition of great vessels, bilobed lungs and transposition of abdominal viscera. The mechanism responsible for malrotation of intestinal loops yet to be understood. Evidence from the literature had it that the direction of rotation under influence of forces exerted by adjacent organs on intestines and its mesentery. Dextrocardia with situs inversus is asymptomatic.

It is dangerous if not diagnosed prior to surgery. It may be diagnosed by routine medical examination when cardiac function is examined. Situs inversus also complicates organ transplantation operation as donor organs will almost certainly come from situs sollicitus (normal), as heart and liver have geometric problems while placing the organs into cavity, shaped in mirror image. Orientation of these blood vessels also reversed necessitating steps to be taken so that blood vessels join properly.

Therefore in conclusion situs inversus is rare with incidence of one in ten thousand. Surgeons and radiologists beware of this anomaly, during preoperative and surgical management. Encourage routine premedical examination helps the patient aware of his condition, thereby preventing wrong diagnosis possibly death due to delay in surgical management.



**Figure 2.** Dextrocardia with transposition of great vessels. **Arrow** shows right aortic arch.



Figure 3. Right lung. *Arrow* shows the *oblique fissure*.



Figure 4. Left lung. *Arrow* shows the *oblique fissure*.

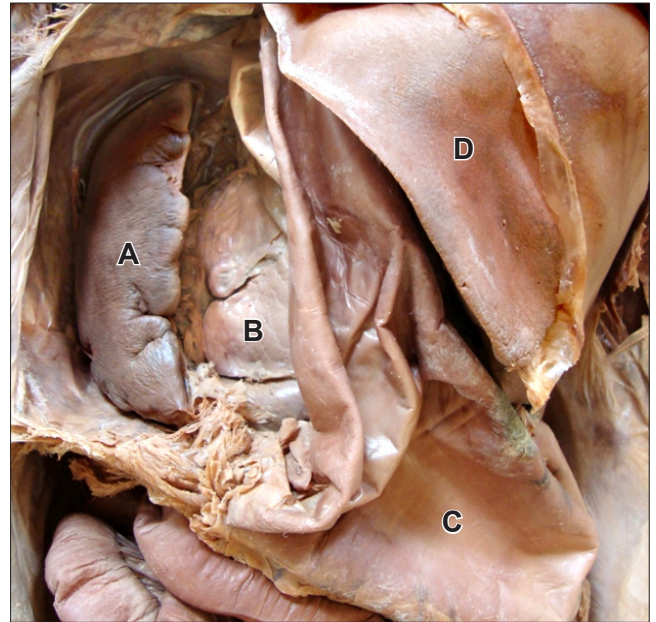
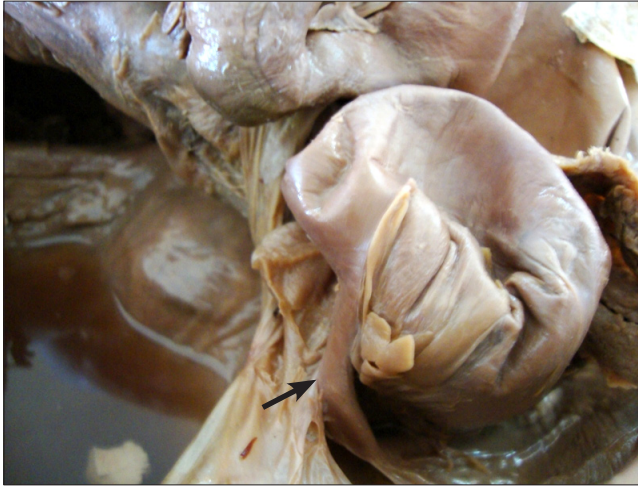


Figure 5. Transposition of abdominal organs. (*A: spleen; B: pancreas; C: stomach; D: liver*)



Figure 6. Transposition of intestinal loops. (*SI: small intestine; LI: large intestine*)



**Figure 7.** Caecum in left iliac fossa. *Arrow* shows the *vermiform appendix*.

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