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# Role of Imaging in Situs Inversus Totalis- Case report

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**Abstract**
*Situs inversus is a congenital anomaly. There is transposition of the abdominal organs, viscera and vasculature, and if there is dextrocardia it is known as situs inversus totalis.(1) We report case of situs inversus in 26 years old male.*

## Introduction

It was described by Matthew Baillie in the 16th century. Is a, congenital condition, with an overall frequency estimated to be approximately at 1/10000 live births.

Situs inversus is a rare condition with a genetic predisposition, etiology lies in the mutation of chromosome no 12, which is critical for recognition of right sidedness (2).

Even though there is transposition of organs in situs inversus, the survival rate is good but if situs inversus is associated with other congenital anomalies the survival rate is low.

So prenatal diagnosis is essential to detect any associated anomalies to bring down mortality rate(3).

This anomaly is discovered incidentally, particularly to investigate blunt abdominal trauma or infection.

Situs inversus is a congenital anomaly of positioning of internal viscera characterized by transposition of abdominal viscera, and if associated with right sided heart it is called situs inverses totalis.

This condition is generally an autosomal recessive genetic condition. It may not be associated with dextrocardia, also known as situs inversus totalis[4].

It is abdominal, thoracic or both.

Investigation of choice-

CT ABDOMEN THORAX

USG

The sensitivity of CT Abdomen is 95-98 % in the diagnosing of situs condition.[10]

Developmentally defect lies in the nodal movement of cilia present on the primitive node of the developing notochord.

## Case Report

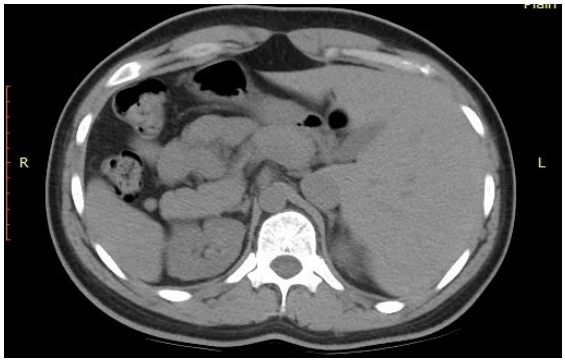
A 26 -year-old male presented to the Emergency Department with chronic pain in abdomen. Vitals were stable, on examination per abdomen there is pain in the epigastrum and right hypochondrium. Patient was managed with pain killers and USG was advised. USG showed hernia in the diphram, so patient was admitted and further investigated.

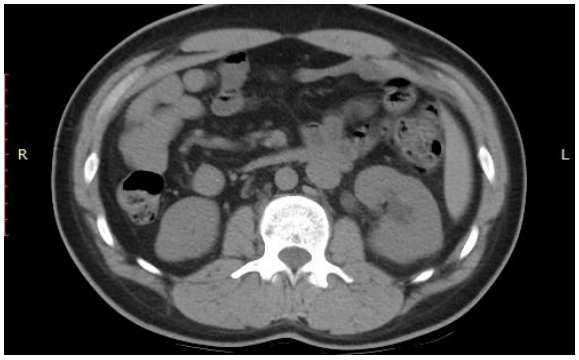
After admission and examination for assessment of pain he was referred to the Medical Imaging Center for thoracic and abdominal CT scans.

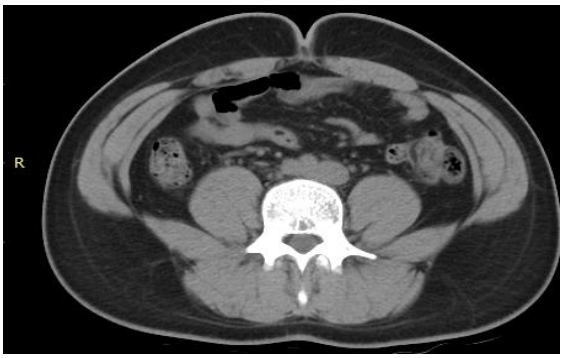
We discovered a situs inversus totalis on the left side of his liver. The heart was located on the right side of the thorax, the stomach and spleen on the right side of the abdomen and the liver and gall bladder on the left side. Blood vessels (Aortic arc, carotid artery, SVC and IVC), nerves, the alimentary tract and intestines were also transposed.

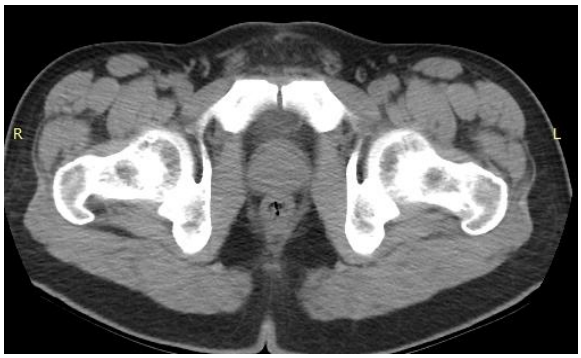
The thoracic abdominal organs and viscera were completely reversed.

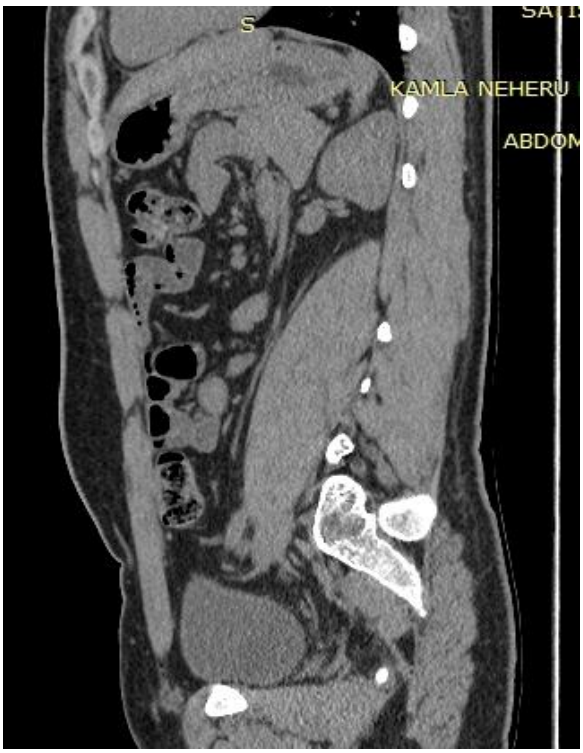
He had a pulse rate of 88 beats per minute, a blood pressure of 140/90 mm Hg. Finding suggestive of situs inversus totalis

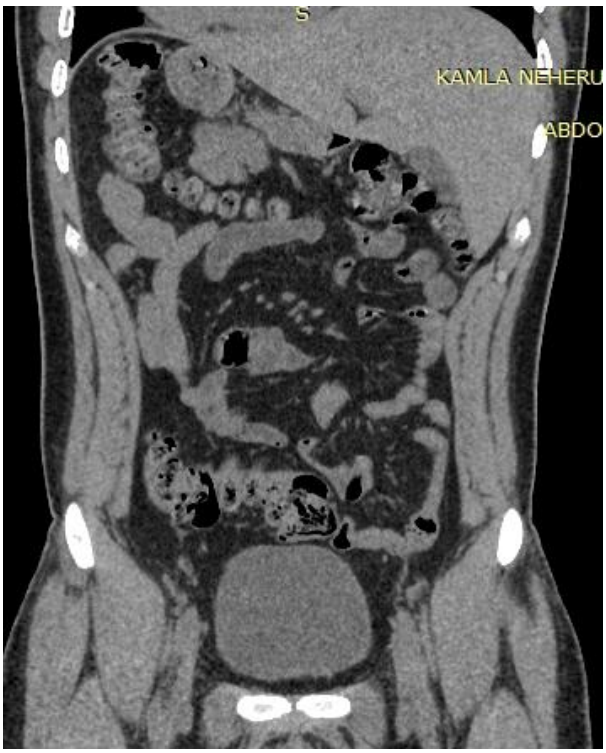


Types of situs inversus and associated syndrome

**Classification**[5]

1)Situs inversus

- Situs inversus with dextrocardia
- Situs inversus with levocardia.

2) Situs ambiguous

- Asplenic syndrome/right isomerism
- Polysplenic Syndrome/left isomerism.

**Associated syndromes** [6]

- Polysplenia
- Asplenia
- Renal agenesis
- Pancreatic fibrosis
- Kartgeners syndrome

**Discussion**

The term "situs" means location.

Situs inversus totalis is a congenital condition in which the major visceral organs are reversed from their normal position.

The normal arrangement is known as Situs Solitus in which the heart is on the left side, the stomach and spleen lie to the left, the right lobe of the liver is larger than the left, and the appendix is right-sided[7].

Dextrocardia was first seen by Leonardo da Vinci in 1452-1519, and then recognized by Marco Aurelio Severine in 1643 and described more than a century later by Matthew Ballie. Matthew Baillie described the complete mirror-image reversal of the thoracic and abdominal organs in situs inversus.

Situs inversus is present in 0.01% of the population.

The Situs inversus with Dextrocardia or Situs inversus totalis has been estimated to occuronce in about 6-8,000 live births.

Situs inversus with levocardia or situs inversus incompletes is another rare condition (1 in 22,000 of general population) in which the heart is found on the normal left side of the thorax.

Most people with situs inversus have no medical symptoms or complications resulting from the condition except difficulty in diagnosing appendicitis, auscultating heart sounds and palpation of liver.

We present a male patient with situs, without any complaints till the present status, he was diagnosed on radiological investigation, he was admitted with pain in abdomen was managed with medical line of management.

Around 3-5% of people with situs inversus have any type of functional heart defect, this is higher than the rate of heart defects in the general population, which is less than 1%.

Common congenital cardiac defects reported include transposition of the great arteries and ventricular septal defects. It is estimated that about 25% of people with situs inversus have an underlying condition called primary ciliary dyskinesia (PCD). [9]

In our patient there was no defect in the heart or any signs of PCD he was managed with medical line of management for pain in abdomen.

Till now he was not knowing about his condition, relative and patient has been explained about the condition and in future if any requirement of medical emergency this is to be keep in the mind about the rare condition which he is suffering from.

The investigation of choice-

CT ABDOMEN THORAX

USG

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**Conclusion**

In our case till now patient was not knowing about his condition, relative and patient has been explained about the condition and in future if any requirement of medical emergency this is to be keep in the mind about the rare condition which he is suffering from.

The individuals with situs inversus can lead normal healthy lives, without any complications.

Many people with situs inversus totalis are unaware of their unusual anatomy.

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