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Dextrocardia with Situs Inversus in Women with Primary Infertility: A Rare Case Report

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ABSTRACT

Background: Situs inversus totalis, also known as dextrocardia with situs inversus, is a rare congenital condition characterized by complete mirror image reversal of normal positioning of thoracic & abdominal organs. While individuals are often asymptomatic, its association with female infertility is uncommon and sparsely reported. Recognition of this condition is important during infertility evaluation to avoid diagnostic and procedural challenges.

Case Presentation: We report the case of a woman presenting with primary infertility who was incidentally diagnosed with Dextrocardia & Situs inversus during routine clinical and imaging evaluation. The patient had regular menstrual cycles and no significant past medical history. A chest X-ray, transabdominal & transvaginal ultrasonography revealed complete situs inversus, with a right-sided cardiac apex and transposition of abdominal organs. Detailed gynecological evaluation showed normal uterine morphology and ovarian reserve parameters. Further infertility work-up did not reveal additional contributory factors. The patient was counseled about the condition and its implications for reproductive management.

Discussion: Recognition of dextrocardia with situs inversus is essential for accurate interpretation of imaging findings and appropriate planning of diagnostic and therapeutic procedures. Awareness of reversed anatomy is particularly important for safe surgical interventions and assisted reproductive techniques when needed.

Conclusion: This case highlights the importance of considering rare congenital anomalies like dextrocardia

with situs inversus during infertility evaluation. Early identification allows individualized counseling and tailored reproductive management, thereby improving fertility outcomes.

CASE REPORT

A 28-year-old woman, married for six years, presented to Indira IVF Hospital, Chhatrapati Sambhajinagar, with primary infertility. She had regular menstrual cycles with normal flow and no history of dysmenorrhea. There was no history of chronic medical illness, pelvic inflammatory disease, genital tuberculosis, prior pelvic surgery, or any significant systemic disorder.

On clinical examination, her vital signs and systemic examination findings were normal. However, dextrocardia was noted, with the apical impulse palpable in the right fifth intercostal space. Ultrasonography revealed complete **situs inversus**, an adenomyotic uterus, bilateral polycystic ovaries, and an anterior wall seedling intramural fibroid (FIGO type 4). Electrocardiography showed right axis deviation, positive QRS complexes in aVR, and negative QRS, P, and T waves in lead I. Echocardiography confirmed **situs inversus dextrocardia** with normal cardiac chambers, valves, and left ventricular function.

Her ovarian reserve was satisfactory, with an anti-Müllerian hormone (AMH) level of 6.57 ng/mL, while the remaining hormonal profile was within normal limits. Semen analysis of her husband revealed **asthenoteratozoospermia**.

The couple was counseled and planned for in vitro fertilization (IVF). A minimal stimulation protocol was initiated using recombinant follicle-stimulating hormone (rFSH) 150 IU and clomiphene citrate 100 mg daily for 11 days. Final oocyte maturation was triggered using a GnRH agonist. A total of 16 oocytes were retrieved, of which seven were mature (MII). However, the oocyte quality was poor, resulting in the formation and cryopreservation of only one blastocyst of grade 5AB.

A second stimulation cycle was subsequently undertaken, yielding 18 oocytes, including eight mature (MII) oocytes. One additional blastocyst of grade 2AB was formed and cryopreserved. Diagnostic hysteroscopy was performed and demonstrated a normal uterine cavity, normal endometrial vascularity, and healthy endometrium.

For frozen embryo transfer (FET), pituitary downregulation was achieved with depot goserelin acetate 3.75 mg, followed by hormone replacement therapy (HRT) for endometrial preparation. Serial endometrial monitoring was performed. Intramuscular progesterone 100 mg daily was initiated when the endometrial thickness reached 10.1 mm. Subsequently, a double embryo transfer was performed, and luteal phase support was continued.

Fourteen days after embryo transfer, serum β-hCG was positive at 4,080 mIU/mL. Ultrasonography confirmed a **dichorionic diamniotic (DCDA) twin live pregnancy**. The patient was closely monitored throughout gestation through a multidisciplinary approach.

During the second trimester, she developed pregnancy-induced hypertension (PIH) and was commenced on antihypertensive therapy. At 35 weeks of gestation, she developed pre-eclampsia, necessitating an emergency lower segment cesarean section (LSCS). Two male infants weighing 1.8 kg and 2.0 kg were delivered. Both

neonates were admitted to the neonatal intensive care unit (NICU) for observation and evaluation. The postnatal course was uneventful, and both mother and babies recovered well.

DISCUSSION

Situs inversus is a rare congenital anomaly characterized by complete mirror image reversal of normal positioning of thoracic & abdominal organs [1,2]. Rarely, Situs Inversus can run in families, but most often it is isolated and accidental event occurring in an individual. Fabricius first explained the concept of Situs Inversus in humans [4]. The entire reversal arrangement of the abdominal and thoracic organs in situs inversus was described by Matthew Baillie.

Generally, situs inversus can present in 2 forms: Situs Inversus Totalis and situs inversus with levocardia. Most individuals with this condition are diagnosed incidentally during evaluation for other medical condition. About 2%-5% of persons with Situs Inversus Totalis have associated congenital cardiac disease of which transposition of the great vessels is the most commonly noted. It is closely associated with another condition termed primary ciliary dyskinesia. Kartagener syndrome is characterised by bronchiectasis, sinusitis and situs inversus and affects 20% of patients with situs inversus.

Diagnosis is based on clinical examination and complementary diagnostic techniques. In our study, diagnosis done by ultrasonography and echocardiography. Very few cases of maternal situs inversus during pregnancy have been reported in the literature. Generally, patients may live a normal life without any complaints. The prognosis and treatment vary and depends on the condition, its associated cardiac abnormalities and complications. From clinical management perspective, recognition of situs inversus has important procedural implications. In ART settings, operator awareness and meticulous ultrasound orientation are crucial to ensure procedural safety and success. Existing literature on ART outcomes in women with situs inversus is limited to isolated case report. These findings show that ART can bypass potential tubal or ciliary factors, making it an effective option when natural conception is delayed or unsuccessful. In this case, individualized counselling and ART planning considered altered anatomy, highlighting that situs inversus is not a contraindication to IVF. This condition, does not inherently compromise female fertility; successful ART outcomes are achievable with individualized management.

CONCLUSION

Dextrocardia with situs inversus usually remains undiagnosed, unless incidental. This case adds to the limited literature on ART in women with this condition, demonstrating successful outcomes are achievable. Challenges are not in reproductive physiology but in procedural and imaging aspects. Increased awareness is essential, particularly as more patients undergo ART. Reporting similar cases will help establish guidelines and improve ART outcomes in this rare anatomical condition.

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