

CASE STUDY / CASE REPORT

Anomalous Malrotation of Intestine with Ileocecal Junction in the Left Iliac Fossa: A Cadaveric Case Report

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Intestinal malrotation is a rare congenital anomaly resulting from abnormal rotation and fixation of the midgut during embryological development. While most cases are identified clinically in neonates or children, incidental findings during cadaveric dissection provide valuable insights into anatomical variations. We report a unique case of anomalous malrotation in which the ileocecal junction was located in the left iliac fossa, discovered during undergraduate teaching dissection at JMN Medical College.

Key Words: Ileocecal junction, Intestinal malrotation, Left iliac fossa, Midgut rotation

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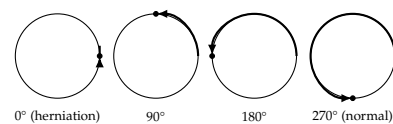
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I. INTRODUCTION

Normal embryological development of the midgut involves a 270° counterclockwise rotation around the superior mesenteric artery, resulting in the caecum and ileocecal junction being positioned in the right iliac fossa¹. Malrotation occurs when this process is incomplete or abnormal. Such anomalies are rarely documented in cadaveric studies, making this case noteworthy for both anatomical education and clinical relevance.

Figure 1: Stages of Normal Midgut Rotation



Schematic of the four canonical stages of midgut rotation around the superior mesenteric artery axis, from pre-rotation herniation (0°) through to the normal post-rotation position (270°, caecum in right iliac fossa). Non-rotation and incomplete rotation, as in the present case, arrest at an intermediate stage.

II. CASE DESCRIPTION

During routine undergraduate cadaveric dissection of an adult male cadaver in the Department of Anatomy at JMN Medical College, the caecum and ileocecal junction were found in the left iliac fossa instead of the right. The ascending colon was shortened and displaced, with small intestinal loops occupying atypical positions. No pathological adhesions or surgical scars were noted, supporting a congenital anatomical variant without evidence of previous abdominal surgery. The finding was demonstrated to undergraduate students, highlighting the importance of recognizing anatomical variations that may have clinical implications.

The small intestine was located on the right side of the abdomen, while the large intestine was situated on the left side. The superior mesenteric vein was found to the left of the superior mesenteric artery. No abnormal peritoneal band (Ladd band) was identified. **Thoracic and cardiac disposition were not assessed as part of this dissection;** the abdominal findings alone cannot establish whether this cadaver had accompanying situs inversus or other laterality anomalies.

III. DISCUSSION

Malrotation is typically diagnosed in living patients due to symptoms such as volvulus or obstruction². In cadaveric studies, such anomalies provide direct evidence of developmental variation and enrich anatomical teaching. The presence of the ileocecal junction in the left iliac fossa is extremely rare and may complicate clinical diagnosis in living patients, as it can mimic left-sided abdominal pathologies³. Documentation of such cases enhances awareness among clinicians and anatomists, ensuring better interpretation of imaging and surgical findings.

Anomalous malrotation of the intestine with the ileocecal junction in the left iliac fossa indicates a congenital anatomical defect in which the midgut fails to rotate and fixate properly during foetal development. In this specific variant — often categorized under intestinal

non-rotation — the usual 270° counterclockwise rotation is incomplete, typically arresting at 90°.

Torres and Ziegler⁴ described the embryological basis and clinical spectrum of malrotation, emphasizing that abnormal positioning of the caecum and ileocecal junction can lead to diagnostic confusion and potentially life-threatening complications. In our cadaveric case, the ileocecal junction was found in the left iliac fossa, an exceptionally rare anatomical variation that underscores the diversity of malrotation presentations.

Adult presentations of malrotation are uncommon but increasingly recognized. Matzke et al.⁵ reported successful laparoscopic management of adult malrotation with cocoon deformity, highlighting that surgical intervention remains the definitive treatment when symptomatic. Similarly, von Flüe et al.⁶ documented both acute and chronic presentations of non-rotation in adults, reinforcing that malrotation may remain silent until adulthood or present with nonspecific abdominal complaints. Wang and Welch⁷ earlier emphasized that anomalies of intestinal rotation in adolescents and adults often mimic other abdominal pathologies, complicating diagnosis.

The clinical relevance of our cadaveric finding lies in its potential to mimic left-sided abdominal conditions. Jacobs⁸ and Ozick et al.⁹ discussed diverticulitis and diverticular disease as common causes of left iliac fossa pain. In a living patient, a left-sided ileocecal junction could easily be misinterpreted as sigmoid or descending colon pathology, leading to misdiagnosis and inappropriate management. Thus, awareness of such rare anatomical variations is crucial for surgeons, radiologists, and clinicians.

From an educational perspective, cadaveric dissection remains invaluable in exposing medical students to anatomical variations beyond textbook norms. Documenting such anomalies enriches anatomical literature and bridges embryological theory with clinical practice.

Limitations

This report describes abdominal visceral disposition only. The thoracic cavity and cardiac

position were not assessed during the present dissection; therefore, a co-occurring laterality anomaly such as situs inversus or heterotaxy cannot be confirmed or excluded. This limitation should be considered when interpreting the anatomical findings.

IV. CONCLUSION

This cadaveric case highlights a rare variant of intestinal malrotation with the ileocecal junction in the left iliac fossa. Such findings underscore the importance of cadaveric dissection in medical education, offering students first-hand exposure to anatomical variations that may have significant clinical relevance.

Learning Points

- Rare anatomical variation: the ileocecal junction in the left iliac fossa due to malrotation is an uncommon finding.
- Educational value: cadaveric dissection provides invaluable opportunities to observe and document rare anomalies.
- Clinical relevance: such variations may mimic left-sided abdominal pathologies, complicating diagnosis in living patients.
- Embryological insight: reinforces the importance of understanding midgut rotation and its deviations.
- Documentation importance: recording anomalies contributes to medical literature and enhances anatomical and clinical knowledge.

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