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A Prospective observational study: Clinical Spectrum and Management of Intestinal Malrotation in Adults

B.Santhi Dgo[1], M.Sabari Giriesen Ms[2], M.S.Kalyan Kumar Ms[3], B.Sampath Kumar Ms[4], R.Sibichakkaravarthy[5]

[1]Director And Professor, Institute of General Surgey, Mmc
[2,3]Senior Assistant Professor, Institute of General Surgey, Mmc
[4]Postgraduate, Institute of General Surgey, Mmc

Abstract
Intestinal malrotation, a rare congenital anomaly, is typically diagnosed in infancy but can present in adults with acute or chronic symptoms. This prospective study analyzes the clinical presentations, radiological findings, operative management, and outcomes of five adult patients diagnosed with intestinal malrotation over three years (2021–2024). All patients underwent surgery, and outcomes were assessed based on age, complexity of presentation, and postoperative complications. The study highlights increased postoperative complications with age and suggests tailored surgical strategies for better outcomes.

Introduction
Intestinal malrotation results from incomplete embryological rotation of the midgut, leading to abnormal anatomical positioning. While primarily a paediatric condition, its presentation in adults is rare, often associated with acute complications like volvulus or chronic abdominal pain. The lack of awareness and nonspecific symptoms frequently result in diagnostic delays, increasing the risk of severe outcomes. This study aims to systematically evaluate adult malrotation cases, their management, and outcomes to improve understanding and optimize treatment strategies.

Methodology
1. **Study Design:**
Prospective observational study conducted between 2021 and 2024.
1. **Population and Inclusion Criteria:**
Adults aged ≥18 years with radiologically or surgically confirmed intestinal malrotation.
Exclusion: Paediatric cases and incidental findings without symptoms.
2. **Data Collection:**
Clinical data: Age, gender, presenting symptoms.
Radiological findings: SMA-SMV axis, bowel positioning.
Surgical details: Procedures performed, intraoperative findings.
Outcomes: Postoperative complications graded using the Clavien-Dindo classification.

3. Analysis:
Cases were grouped by age (younger vs. older adults) to identify trends in presentation and outcomes.

Results

1. Demographics:
Sample size: Five adults (3 males, 2 females).
Age range: 40–58 years.

2. Presenting Symptoms:
Acute abdomen (pain, distension): 3 cases.
Chronic abdominal pain: 2 cases.

3. Radiological Findings:
SMA-SMV axis alteration in all cases.
Small bowel predominantly on the right and large bowel on the left in all patients.

4. Operative Findings and Management:
Narrow mesenteric root in all cases.
Procedures performed:
Ladd's procedure in all patients.
Segmental resection in 2 cases (perforated Meckel's diverticulum and gangrenous sigmoid volvulus).
Prophylactic appendectomy in all cases.

5. Postoperative Outcomes:
Higher complications in patients >50 years.
Common complications: Prolonged ileus, infections, wound dehiscence.
Clavien-Dindo Grades III-IV observed in older adults.

Discussion

1. Clinical Spectrum in Adults:
Adults with malrotation often present with acute symptoms requiring emergency surgery.
Chronic presentations may mimic other gastrointestinal disorders, delaying diagnosis.

2. Surgical Challenges:
Narrow mesenteric root and torsion-detorsion sequelae were universal findings.
Ladd's procedure effectively corrected anatomical abnormalities but required modifications for older adults with comorbidities.

3. Age and Outcomes:
Older adults exhibited increased postoperative complications, correlating with prolonged ischemia and chronicity of symptoms.

4. Associated Anomalies:
Perforated Meckel's diverticulum and sigmoid volvulus highlight the complexity of adult malrotation cases.
These findings suggest the need for further exploration of genetic and anatomical predispositions.

5. Clinical Implications:
High index of suspicion for malrotation is essential in adults presenting with unexplained abdominal symptoms.
Early surgical intervention reduces the risk of severe complications.

Conclusions

Adult malrotation presents a unique spectrum of clinical and surgical challenges. This study underscores the importance of timely diagnosis, meticulous surgical intervention, and individualized postoperative care. The increasing complications with age highlight the need for heightened awareness among clinicians and tailored management strategies.

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