GUIDELINE

# Malrotation / Volvulus of the Intestines

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| **Scope (Staff):** | Nursing and Medical Staff |
| **Scope (Area):** | NICU KEMH, NICU PCH, NETS WA |

**Child Safe Organisation Statement of Commitment**

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

**This document should be read in conjunction with this disclaimer**

## Background

Malrotation is a congenital anomaly of the gastrointestinal tract, resulting from failure of the normal rotation and fixation of the intestines inside the abdominal cavity during fetal development. The malrotated intestines are prone to **volvulus**, leading to obstruction, ischemia, and potential gangrene, which can have fatal consequences. In some cases, **Ladd's bands** (congenital fibrous bands) cause intermittent partial obstruction, presenting with **bilious vomiting** in an otherwise well neonate.

While malrotation is often diagnosed in the **first month of life**, 30% of cases present within the first **7 days**, and 80% within the first **month** of life, with the majority appearing in the first **week**.

## Key points

- Any **bilious vomiting or aspirates** is an important sign of malrotation and must be promptly investigated. See Bilious Vomiting/Aspirates and Feed Intolerance
- Normal abdominal examination, AXR, lactate levels, blood pressure, urine output, blood gases do not rule out early intestinal gangrene secondary to malrotation/volvulus.
- Gold standard for investigating a suspected malrotation is Upper GI contrast study.
- Ultrasound of the abdomen is NOT a substitute for upper GI contrast, but can be used as the initial line of investigation in critically ill very preterm infants, who are too unstable to undergo contrast study. Close collaboration with the surgeons and radiologists is essential in such situations.

## Clinical Presentation

- Bilious vomiting must be promptly investigated even if the abdomen is soft and non-tender.
- In preterm infants (<32 weeks gestation) or those with feed intolerance and bile-stained aspirates, keep high index of suspicion—dysmotility may confound the picture. Consultant staff must always be aware of the presence of bile-stained aspirates in babies >32 weeks.
- Abdominal distention (tender or non-tender), pallor, bloody stools may indicate vascular compromise.
- Presence of congenital anomalies(e.g., heterotaxy, diaphragmatic hernia, omphalocele) increases the risk of malrotation and should lower threshold for evaluation.
- Presence of chylous fluid in an inguinal hernia sac during inguinal hernia repair may suggest underlying malrotation. See NETS WA Guidelines, Surgical Conditions

## Investigations and Management

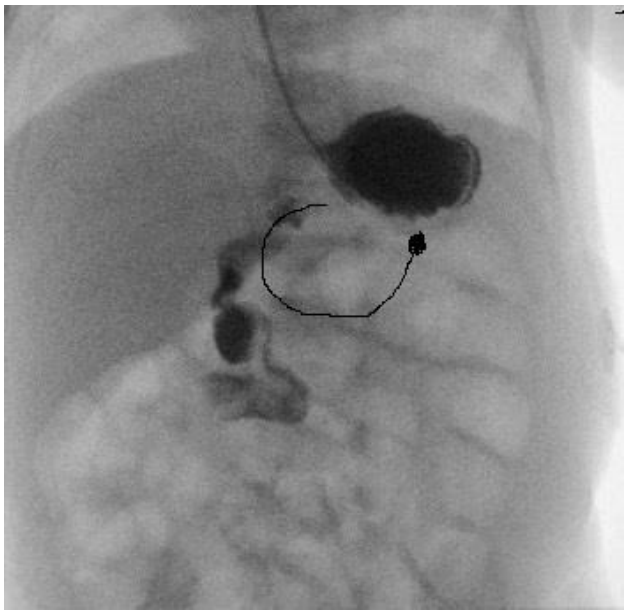
Clinical judgement and prompt discussion with the surgeons is essential in an unwell infant with a distended abdomen. Once a diagnosis of malrotation and or volvulus is confirmed, the infant should be reviewed by the surgeon as soon as possible with a view to urgent laparotomy.

- Nil by mouth, large bore naso/orogastric tube on free drainage
- Insert IV access; send blood for sepsis screen, blood gas, glucose and blood group (Sepsis: Neonatal)
- Start IV Fluids and empiric IV antibiotics (Amoxicillin/Benzylpenicillin, Gentamicin and Metronidazole).
- Assess if resuscitation fluids are required.
- Monitor urine output.

## Radiological Investigations

- Plain X-ray of the abdomen (AP and lateral decubitus) may show dilatated loops of bowel, paucity of gas, but can be normal-even in volvulus
- The gold standard imaging test for diagnosing malrotation is an **upper GI contrast study** which shows an abnormal duodenum and duodenojejunal (DJ) flexure position. This is an emergency investigation and should not be deferred for any reason, even in otherwise well infants. The normal position of the DJ flexure is to the left of the spine and at the same level or higher than the duodenal bulb. Liaise with on call radiological consultant/registrar for arranging upper GI contrast study.

- Ultrasound of the abdomen(with Doppler of superior mesenteric artery/vein) is NOT a substitute for upper GI contrast, it can be useful in a critically ill preterm infant, who are too unstable to undergo contrast study. The ultrasound can show the orientation of the superior mesenteric vessels or the presence of a volved, ischemic mass.



Contrast exits stomach and descends instead of following the path drawn.

- CT/MRI: Rare in neonates, but may play a role in complex or delayed presentations.

# Management

## Preoperative phase

- NBM, NG decompression, iv fluids and antibiotics, monitor gas
- Immediate surgical consult
- For infants needing transfer: See NETS WA Guidelines, Surgical Conditions

## Surgical intervention

- The standard corrective operation is Ladd's procedure: untwist volvulus( if present), divide Ladd's bands, broaden mesentery, place small bowel on the right and colon on the left (non-rotation position), appendectomy is often performed.
- Laparoscopic Ladd's is being increasingly used in infants.

### Post-operative care

- Pain scoring and management: Refer to Post Operative Pain and Sedation guideline.
- Monitor fluid balance closely

- Check blood gas, electrolytes, FBC, Coagulation. Verify ETT via CXR
- Continue antibiotics
- Check the surgeon’s orders on the Operation Theatre Notes.
- Discuss with the neonatal consultant
- Feeding: NBM until decision to feed is made by the surgeon
- Monitor for ileus, feeding intolerance, wound infection
- Long term- With significant bowel loss monitor for short bowel syndrome, may need parenteral nutrition for an extended period of time.

## Related CAHS internal policies, procedures and guidelines

Neonatology:

Bilious Vomiting/Aspirates and Feed Intolerance

Post Operative Care

Post Operative Handover

Post Operative Pain and Sedation

NETS WA:

Surgical Conditions

## References and related external legislation, policies, and guidelines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