



NCCU CLINICAL GUIDELINES
SECTION: 13

SURGICAL CONDITIONS

Section 13: surgical conditions
Malrotation / volvulus of the intestines
Date last reviewed: June 2010
Date this revision: April 2014
Review date: April 2017

Neonatology Clinical Guidelines
King Edward Memorial/Princess Margaret Hospitals
Perth Western Australia
Authorised by Neonatal Coordinating group

MALROTATION / VOLVULUS OF THE INTESTINES

Malrotation is a congenital condition of the gut with serious, potentially fatal sequelae. The malrotated gut is prone to volvulus resulting in bowel obstruction and gangrene secondary to occlusion of the branches of the mesenteric artery. Intestinal obstruction due to malrotation can also result because of congenital fibrous bands.

60–80% of all cases of malrotation present in the first month of life, mostly in the first week.

KEY POINTS

- Bilious vomiting is an important sign of malrotation and must be promptly investigated.
- Presence of normal lactate levels, blood pressure, urine output, blood gases do not rule out the diagnosis of intestinal gangrene secondary to malrotation/volvulus.

CLINICAL PRESENTATION

1. Bilious vomiting must be promptly investigated even if the abdomen is soft and non-tender.
2. Presence of distended tender/non tender abdomen in any neonate should prompt an investigation to rule out malrotation/volvulus irrespective of the presence or absence of vomiting.
3. Even though bilious aspirates can be a sign of dysmotility in extremely premature infants, persistently prolonged bilious aspirates lasting more than a few weeks should raise the suspicion of malrotation necessitating investigation.
4. Presence of chylous fluid in the inguinal hernia sac during inguinal hernia repair should alert the surgeon and the neonatologists to the possibility of associated malrotation.

INVESTIGATIONS AND MANAGEMENT

Clinical judgement and prompt discussion with the surgeons is essential in unwell infants 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.

1. Keep baby nil by mouth. Insert naso/oro-gastric tube, check aspirates for presence of bile. Keep GT on open drainage.
2. Insert IV cannula, collect blood for sepsis screen, blood gas, glucose and blood group.
3. Start IV Fluids and IV antibiotics (penicillin, gentamicin and metronidazole).

RADIOLOGICAL INVESTIGATIONS

Plain X-ray of the abdomen is not enough to diagnose or rule out malrotation. Dilatation of multiple loops of small bowel on plain Xray can signify volvulus with extensive gut ischaemia due to underlying malrotation. Obtain both antero-posterior and lateral decubitus view of abdomen to rule out any gas under diaphragm.

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 investigation is an emergency investigation and should not be deferred for any reason. 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.

Doppler ultrasound of the abdomen can sometimes detect the lack of intestinal perfusion in volvulus, but is not a definitive test. Ultrasound and contrast enema provide useful additional information but are not sufficiently accurate to exclude malrotation. Hence, while it is important to arrange an urgent Doppler ultrasound of the abdomen, one should not be reassured by the presence of good intestinal perfusion.

SURGICAL AND POST-OPERATIVE MANAGEMENT

Ladd's procedure by laparotomy/ laparoscopy is preferred treatment for children diagnosed with malrotation/volvulus.

Post-operative management of these children includes analgesia (with morphine), fluid restriction for avoiding SIADH, continuous monitoring of vital parameters and intake-output chart. It is desirable to check position of endotracheal tube with chest x ray if not done preoperatively, blood gas and electrolytes. [See General Post Operative Care](#)

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