Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Children's Health Ireland at Temple Street

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

NATIONAL CLINICAL GUIDELINE

GASTROSCHISIS: MANAGEMENT PRIOR TO TRANSFER TO SURGICAL CENTRE

VERSION 1

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Clinical Design & Innovation
Person-centred, co-ordinated care

Contents

1.0 Introduction

Gastroschisis is characterised by the herniation of bowel and other abdominal contents through an abdominal wall defect usually located just to the right of the umbilicus. The normal insertion of the umbilical cord into the abdominal wall distinguishes gastroschisis from exomphalos, the other common abdominal wall defect where abdominal contents herniate through the umbilicus and are contained within the umbilical cord.

The incidence varies worldwide but has increased over recent years with a quoted rate of 1 – 5 per 10,000 births.1-4. In Ireland we see on average 5 – 15 each year. Survival rates are over 90% among live born infants and the outcome is primarily determined by the amount of bowel damage in utero.

As there is no covering sac the exposed bowel is often oedematous and matted due to exposure to amniotic fluid. In contrast to exomphalos, gastroschisis is rarely associated with aneuploidy or other major non-GI abnormalities.

Gastroschisis can be divided into two categories, simple and complex based on associated intestinal pathologies. Complex gastroschisis (10 – 15% of cases) is associated with other intestinal pathologies including intestinal atresia, bowel perforation, necrotic segments of bowel or volvulus.5 Rates of complications are significantly higher in this group.

2.0 Aim

Standardised care of babies with gastroschisis between perinatal centres and surgical centres. In particular:

- Management of the protruded abdominal contents
- Approach to fluid management during stabilization
- Approach to fluid management in the on-going preoperative phase prior to arrival at surgical centre

3.0 Management

3.1 Prenatal

- More than 90% of cases are prenatally diagnosed and are therefore managed at the Rotunda Hospital, the Coombe Women & Infants University Hospital and the National Maternity Hospital

- Parents receive antenatal counselling from fetal maternal medicine departments and subsequently are generally well prepared
- A normal vaginal birth is the aim in otherwise uncomplicated pregnancies
- There is a significant incidence of late preterm birth. Most of these are related to induction or semi-elective caesarean section for concern about fetal well-being and the well-being of the exposed bowel
- Median gestation in Ireland is 36.5 weeks, with a mean birth weight of 2.48kg
- Some babies require respiratory support reflecting the effect of one or more of prematurity, growth restriction, aspiration of gastric contents or perinatal asphyxia
- ***For elective or semi-elective births the perinatal team should liaise with the Irish Paediatric Critical Care Network (1800222378) and the National Neonatal Transport Service (0818 300 188) on the day of anticipated birth***

3.2 Postnatal

The principles of management during the pre-transfer period address:

1. Fluid resuscitation
2. Gastric decompression
3. Avoidance of hypothermia
4. Care of the exteriorised abdominal contents

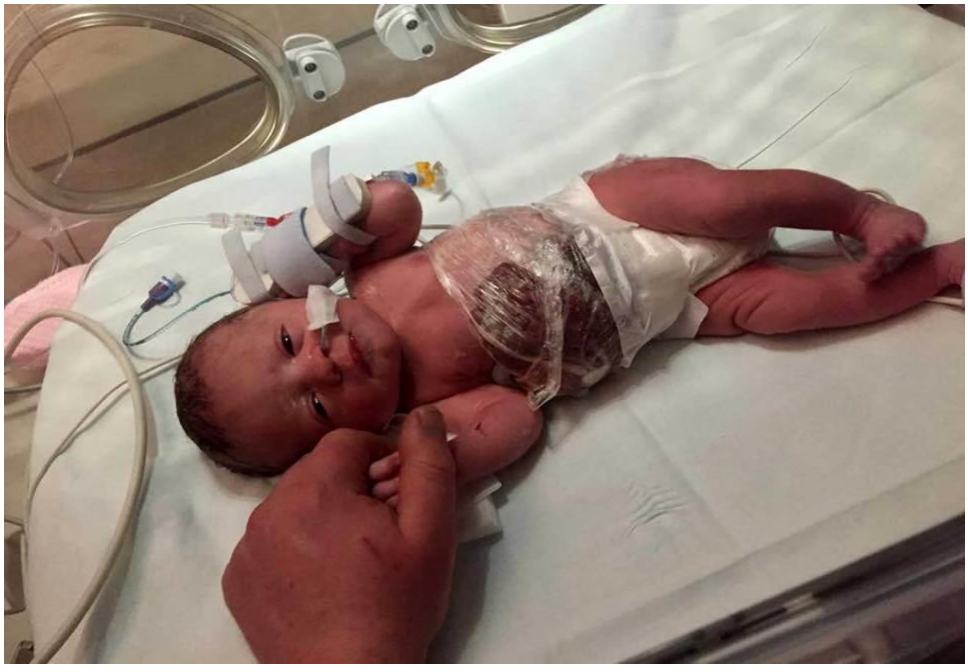
3.3 Birth Suite

- Prepare as for any anticipated high risk birth
- Manage airway, breathing and cardiovascular status as per usual practice
- In the compromised baby, to minimise gut over-distension, endotracheal intubation should be undertaken rather than prolonged mask ventilation or nasal CPAP
- Once the cardio-respiratory status has been stabilized, quickly inspect the bowel correcting any obvious twists on its pedicle or acute discoloration due to ischaemia
- Position the bowel centrally over the abdomen and wrap in cling film as described below
- Insert a large bore 10Fr orogastric/nasogastric tube and aspirate the stomach
- Leave gastric tube on free drainage and aspirate frequently to prevent gastric distension, which could cause compression of the small bowel mesentery and subsequent bowel ischaemia
- Ensure adequate thermal control

4.0 Management of Exposed Bowel

- Following assessment, the exposed bowel should be wrapped with cling film for protection and to minimize fluid and heat loss: See *Figure 1*
    - Does not need to be sterile
    - Slide large piece of cling film under the baby's buttocks and back
    - Place exposed organs on baby's abdomen (using sterile latex-free gloves)
    - Wrap cling film gently around the abdomen and exposed organs
    - **DO NOT** cover bowel with saline soaked gauze, the bowel must be visible through cling film
    - Ensure bowel edges are not exposed to drying air
    - Avoid compressing the bowel, it should remain mobile but protected
- Monitor the bowel every 15 minutes for dusky or blanching colour changes
    - Remove and rewrap as above if compression, kinking or twisting is suspected
    - **Any concerns regarding bowel colour, position or viability, discuss early with CHI surgical team, and seek senior medical advice**
- Support the intestines to prevent occlusion of the blood supply where the bowel exits the defect in the abdominal wall
    - Where possible nurse the neonate on their right side as defect usually to right of umbilicus, with the wrapped bowel supported perpendicular to the umbilicus using a rolled towel or equivalent

Figure 1 Wrapping of Gastroschisis



5.0 Perinatal NICU

5.1 General

- The objective in all babies is to stabilise and transfer quickly
- Notify the PICU bridge team when the baby is born (do not have to wait until stabilization complete) and the NNTP
- Manage the airway, breathing and any cardiovascular instability as per standard practice
- Ensure the protruded abdominal contents remain wrapped and supported as per the method described above
- Reassess the bowel status every 15 minutes to ensure it remains supported and not twisted
- Establish vascular access – ideally 2 peripheral IV cannulas (one to give maintenance fluids and one to give fluid boluses/antibiotics etc). There is no need to site central access as this will delay transfer and can be done at the surgical centre. Arterial access is not required at this stage unless there is significant respiratory or circulatory compromise
- Take blood cultures, FBC and glucose when IV inserted
- Commence intravenous benzylpenicillin, gentamicin and metronidazole
- Ensure the baby is clinically assessed for other congenital anomalies Ensure continued thermal control
- Check a capillary gas to monitor acid-base status and lactate, a venous blood gas maybe collected instead at time of IV insertion if blood flowing freely
- Monitor central and peripheral capillary refill time every 15 minutes along with heart rate and blood pressure to help guide fluid management (see section below)
- Signs of fluid depletion include:
    - Prolonged capillary refill time
    - Tachycardia
    - Hypotension
    - Metabolic acidosis +/- raised lactate

5.2 Fluids

- Insensible losses will be unavoidably high
- Commence *maintenance fluid* 10% Dextrose at 80mls/kg/day to maintain blood glucose >3mmol/L.
- Give a 20ml/kg fluid bolus of normal saline within an hour of birth

- Monitor infant regularly for evidence of fluid depletion (as above) and replace with additional boluses of 10mls/kg of 0.9% saline
- Maintain an accurate fluid balance record for all infants, including gastric losses

6.0 Transfer to Surgical Centre

If an infant is delivered outside of Dublin, unless adequate notice can be given to NNTP to be present for delivery, ***the referring hospital should transfer the patient to avoid unnecessary time delays***.

The retrieval team, either NNTP, if available, or team from referring hospital, will:

- Treat the referral as time sensitive
- Leave the gastroschisis wrapped and undisturbed after ensuring it is well supported and the bowel has remained well perfused
- Continue fluid management regime detailed above

7.0 Gastroschisis Flow sheet

Management of Gastroschisis
Contact PICU bridge (1800222378) and NNTP (0818 300 188) prior to birth

Children's Health Ireland

Resuscitation and ongoing management as per NRP Guidelines
If baby requires respiratory support, intubate

Inspect bowel
Correct obvious twists on pedicle
Slide large piece cling film under baby's buttocks and back
Place exposed organs on baby's abdomen (use sterile latex-free gloves)
Wrap cling film gently around abdomen and exposed organs (photo)
DO NOT COVER BOWEL WITH SALINE SOAKED GAUZE

Insert **large bore** 10Fr OG/NG tube and aspirate stomach
Leave on free drainage
Aspirate frequently

Insert 2 peripheral IV cannulas
Central access not required
Take blood cultures, FBC, blood gas, lactate and glucose
Commence triple antibiotics - benzylpenicillin, gentamicin and metronidazole

Give 20ml/kg bolus of 0.9% NaCl within an hour of birth
Commence *maintenance fluid* 10% Dextrose at 80mls/kg/day; maintain blood glucose >3mmol/L
Repeated 10ml/kg boluses of 0.9% NaCl as required if evidence of fluid depletion

Monitor Bowel and Fluid status every 15 minutes:
Bowel: If dusky/pale: reposition infant and bowel
If necessary, remove and rewrap
Nurse on right side, wrapped bowel supported perpendicular to umbilicus, using rolled towel or equivalent
Any concerns regarding bowel colour, position or viability, discuss early with CHI surgical team and seek senior medical advice
Fluid: Look for evidence of fluid depletion: prolonged CRT, tachycardia, hypotension, metabolic acidosis, raised lactate
Replace with additional boluses of 10ml/kg 0.9% NaCl
Maintain accurate fluid balance record, **including gastric losses**

Time sensitive transfer
If baby delivered outside Dublin, referring hospital should perform transfer to avoid unnecessary time delays

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Clinical Design & Innovation

8.0 References

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b) http://www.adhb.govt.nz/newborn/guidelines/Surgery/SurgeryAbdominalWall.htm

c) http://www.walesneonatalnetwork.wales.nhs.uk/sitesplus/documents/1034/Gastroschisis%202016%20Guideline%20final.pdf

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9.0 Guidance Document Approval Process:

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10.0 Acknowledgements

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