

Gastroschisis Clinical Guideline

Inclusion Criteria:

- All infants born with gastroschisis

Available Resources:

Gastroschisis PFE

Prenatal Recommendations:

Antepartum Care:

- Ultrasound suspicious for Gastroschisis: refer to Maternal Fetal Medicine for detailed ultrasound exam
- *Referral for Genetics consultation*
- Referral to Pediatric Surgery
- Ongoing fetal surveillance to include ultrasound approximately *every 2 weeks* to evaluate fetal status, bowel thickening, dilatation, fluid and growth.
- Initiation of antepartum fetal monitoring with twice weekly NST/weekly AFI at 33-34 weeks or sooner if other co-morbidities (for example IUGR) are noted.
- Multidisciplinary care meeting to involve OB, MFM, Neonatology, Genetics and Pediatric Surgery

Delivery:

- Recommended delivery at a tertiary medical center
- Routine preterm delivery (less than 37 weeks) or induction is not recommended
- Vaginal delivery is recommended
 - Cesarean section only of obstetrical indications
- **Long umbilical cord (10 cm) requested**

Transport Team:

- Position patient on back and utilize bowel bag or saran wrap (if bowel bag not available) to wrap bowel and secure to patient (see figure 1). Do NOT use saline soaked gauze

Delivery Room:

- Team huddle with discussion of plan of care and clearly defined team member roles
- Advanced preparation of supplies including equipment for intubation, 8 and 10 fr salem sump, sterile bowel bag, and warm normal saline.
- Establish safe airway. Suction as needed with careful attention related to risk of bile aspiration.
Routine intubation is not recommended.
- Monitor leads can be placed on patient's upper chest and arms
- Assess temperature. Risk of hypothermia related to surface area of exposed bowel
- Assess perfusion and continue to closely monitor
- Gastric Decompression
 - Insert a Salem Sump tube on low suction (40-60 mm Hg)
 - 8 fr- preterm infant or LBW infant less than 2500 g
 - 10 fr- full term infant
- Care of the exposed bowel
 - Assess color (perfusion), shape (kinks), and size (dilatation) of bowel
 - Utilize sterile gloves when manipulating bowel
 - Position patient and bowel on right side to prevent vascular compromise
 - Prepare bowel bag with approximately 1 oz. of warm sterile normal saline to moisten the inside of the bag
 - Put baby from the nipple line down into the bag. Do not cut holes in the bag. Do not use saline soaked gauze.
- **Long umbilical cord (10 cm) requested**

Upon NICU Arrival:

- Establish a safe airway but **routine intubation is not recommended**
- Establish IV access. Avoid umbilical lines and upper extremity IV access is preferable due to placement of bowel bag
- Administer fluids. D10W @ 100 ml/kg/day
 - NS boluses for treatment of metabolic acidosis and to compensate for increased insensible losses
- Evaluate Glucose. Perform dextrose stick. IUGR patients are at risk for hypoglycemia
- Antibiotics: ampicillin and gentamicin 48 hr sepsis rule out after sending blood for CBC and blood culture.
- PICC placement upon arrival

Guidelines for Surgeon:

- Primary closure or routine silo placement are acceptable
- Operative and bedside closure are acceptable
- Silo-assisted immediate closure and suture-less closure are acceptable
- Gastric and rectal decompression are recommended as strategies to facilitate reduction
- When utilizing a silo for reduction, closure within 3 days is recommended when feasible
- Routine intubation and paralysis are not recommended for silo placement or reduction

Silo Placement at bedside

- Placement by surgeon
- Medications: Morphine or fentanyl prn for pain. **Routine paralysis is not recommended.**
- After silo is placed, wrap bottom of silo with Kurlex gauze to absorb fluid losses
- Secure silo to overhead warmer with trach string ties to keep silo contents completely perpendicular to infant abdomen. Use minimal tension in securement. Warmer bed should be in flat position.
- Antibiotics not necessary in the absence of culture positive sepsis or clinical instability or for silo presence.
- Assessment post-silo placement:
 - Respiratory status, pulses, perfusion of extremities and bowel
- Daily Silo reduction by surgeon at bedside
 - Supplies: Sucrose, umbilical tape, pain medication, if necessary
 - Assess color (perfusion), size (dilatation) of bowel after reduction
- Daily Silo dressing changes by Surgical NNP utilizing xeroform gauze and gauze kling wrap
 - If saturated dressing may be changed by bedside nurse prn
- Recommend closure within 3 days, if feasible, when using a silo

Suture-less Closure at bedside

- Performed by surgeon at bedside
- Neonatologist to provide conscious sedation
- Supplies: ½ cm Sterile strips, Benzoin, Mepilex 10x10 with boarder, sweetease, Morphine/ Fentanyl for pain management, dressing tray, sterile gown and gloves
- **Endotracheal intubation not recommended for suture-less bedside closure**



Post-operative Interventions:

- Gastric Decompression
 - Insert a Salem Sump tube on low intermittent suction (40-60 mm Hg)
 - 8 fr- preterm infant or LBW infant less than 2500 g
 - 10 fr- full term infant
- NPO, TPN for full nutritive support. Consider SMOF Lipid
- Monitoring:
 - Risk of compartment syndrome: abdominal hypertension causes decreased blood flow to the kidneys and results in oliguria, decreased cardiac venous return and possibly intestinal ischemia
 - Monitor urine output, capillary refill in distal extremities, pulses, and abdominal distention
- Antibiotics
 - Recommend discontinuation of antibiotic therapy 24 hrs. after abdominal closure in the absence of culture-positive sepsis or clinical instability
- Pain management after primary operative closure:
 - IV acetaminophen 10 mg/kg/dose Q 6 hours around the clock for 24 hours with re-evaluation of need to renew IV acetaminophen on a daily basis
 - IV Morphine 0.05-0.1mg/kg/dose Q2 hours PRN severe pain
 - Recommend discontinuation of narcotics within 48 hours of abdominal closure
- Closure site dressing:
 - First dressing change to be performed by surgeon or NNP
 - Use of wound vac to aid closure healing per surgeon
- Enteral feeding plan:
 - Early initiation of trophic feeding (≤ 20 ml/kg/day) and ≤ 48 hrs. after gastric output becomes non-bilious
 - Recommend use of maternal breast milk for feeding initiation
 - Recommend oral feeds
 - Recommend use of Surgical NICU feeding guideline #2 (advancing feeds 20 ml/kg/day to start) in term infants
 - Preterm infants: recommend appropriate NICU weight-based guideline
 - Recommend removal of central venous catheters at 120 ml/kg/day enteral feeds

Discharge Considerations:

- Pediatric Surgery follow up appointment
- GI follow up appointment, if applicable

Figure 1: Transport



References

- Haddock, C., Al Maawali, A. G., Ting, J., Bedford, J., Afshar, K., & Skarsgard, E. D., (2018). Impact of multidisciplinary standardization of care for gastroschisis: Treatment, outcomes, and cost. *Journal of Pediatric Surgery*, 53(5) 892-897. <https://doi.org/10.1016/j.jpedsurg.2018.02.013>
- Hong, C. R., Zurakowski, D., Fullerton, B. S., Ariagno, K., Jaksie, T., & Mehta, N. (2018). Nutrition delivery and growth outcomes in infants with gastroschisis. *Journal of Parenteral and Enteral Nutrition*, 1-7. <https://doi.org/10.1002/jpen.1022>
- Hood, E. & Zimmermann, B.T. (2013). Abdominal wall defects. In Browne, N.T., Flanigan, L.M., McComiskey, C.A., & Pieper, P (Eds.), *Nursing Care of the Pediatric Surgical Patient* (277-291). Burlington, MA: Jones & Bartlett Learning.
- Pet, G. E., Stark, R. A., Meehan, J. J., & Javid, P. J. (2017). Outcomes of bedside sutureless umbilical closure without endotracheal intubation for gastroschisis repair in surgical infants. *American Journal of Surgery*, 213(5) 958-962. <https://doi.org/10.1016/j.amjsurg.2017.03.017>
- Williams, S. L., Leonard, M., Hall, E. S., Perez, J., Wessel, J., & Kingma, P. (2017). Evaluation of early onset sepsis, complete blood count, and antibiotic use in gastroschisis. *American Journal of Perinatology*, 35(4), 385-389. <https://doi.org/10.1055/s-0037-1607420>.
- Youssef, F., Laberge, J. M., Puligandla, P., & Emil, S. (2017). Determinants of outcomes in patients with simple gastroschisis. *Journal of Pediatric Surgery*, 52(5) 710-714. <https://doi.org/10.1016/j.jpedsurg.2017.01.019>

Evidence-Based Medicine Committee Approval: 3-21-2018
Original Clinical Guideline: 3-21-2018

Reassess the appropriateness of Care Guidelines as condition changes and 24 hrs after admission. This guideline is a tool to aid clinical decision making. It is not a standard of care. The physician should deviate from the guideline when clinical judgment so indicates.