Scope: Departmental
Document Type: Clinical Practice Guideline
Approved on: 2023-11-30
Next Review Date: 2026-11-30

Isolated Duodenal Atresia Neonatal Care Pathway

Version: 1

1.0 Introduction

- Duodenal atresia is a congenital obstruction of a portion of the lumen of the duodenum of the small intestine [1,2]. It is one of the more common intestinal anomalies in pediatrics, occurring in approximately 0.9 infants per 10,000 live births worldwide [2]. The majority of cases are isolated and with surgical correction, have an excellent prognosis [3]. However, outlook is also determined by pre and post-operative management, along with the ability to identify and manage the thirty percent of infants with associated anomalies [4].

Target Users

- Any individuals who may be involved in the care of neonates with duodenal atresia, including: Registered Nurses (RNs), Nurse Practitioners (NP), Physicians, Surgeons, Dietitians, Registered Respiratory Therapists (RRT), Social Workers, and the NICU parent liaison.

Target Patient Population

- Neonates admitted to the NICU at the Hospital for Sick Children with a known or presumed diagnosis of uncomplicated duodenal atresia, and a gestational age of greater than 36+0 weeks.
- Neonates born before 36+0 weeks' gestational age, those anomalies associated duodenal atresia (trisomy 21, annular pancreas, additional intestinal atresia, etc.), and those with other complications that may affect their care trajectory, should not have their NICU hospitalization guided by this pathway[4].

Implementation Plan

- Key stakeholders (RNs, NPs, neonatologists, and surgeons) were involved in the development, advocacy, and dissemination of this clinical pathway.
- Implementation was discussed in detail during a Neonatal Surgical Interest Group (NSIG) meeting. It was decided that dissemination would occur through email communication, screen savers used on unit computers to advertise the pathway, engaging and educating the clinical support nurse group on its use, and using members of NSIG to conduct bedside in-services on the pathway with RNs and physicians.
- The pathway will be posted at the bedside of every neonate admitted with duodenal atresia to remind staff of pathway utilization.
- The Neonatal NP Group will advocate for pathway utilization and remind the team to review it daily during bedside rounds.

Facilitators to Implementation

- Ability to better standardize the approach to care of infants with duodenal atresia to allow these patients and their families to experience a smoother hospitalization and transition out of intensive care.
- Parents will be engaged in the process of their child's care by having the pathway posted at the bedside to facilitate discussion of care between parents and providers.

Barriers to Implementation

- Adoption by staff due to lack of familiarity with the pathway. This will be overcome through education and promotion of the pathways use during bedside rounds.

Potential Impacts

- Decreased length of stay in the NICU
- Improve patient safety through streamlined care
- Enhance the parent experience by providing some anticipatory guidance on the trajectory of their child's care.

2.0 Isolated Duodenal Atresia Neonatal Care Pathway (Gestational age ≥ 36 weeks) Printable version

SickKids

Isolated Duodenal Atresia Neonatal Care Pathway (Gestational age ≥ 36 weeks) — Targeted NICU Length of Stay: 7 Days

	DAY OF ADMISSION	DAY 2 - 3 POST ADMISSION (pre-operative)	DAY 3 - 5 POST ADMISSION (post-operative)	DAY 5 - 7 POST ADMISSION AND BEYOND
Goals	• Provide required respiratory support • Decompression of gastrointestinal (GI) tract • Provide fluid management to maintain fluid balance • Complete physical examination to identify potential associated conditions (eg Trisomy 21) • Establish baseline vital signs • Complete baseline lab tests	• Provide required respiratory support • Operative repair • Maintain fluid balance • Establish parenteral nutritional support • Establish central vascular access • Engage parents in care provision	• Provide required respiratory support • If intubated, extubate as soon as safely possible • Maintain fluid balance and nutritional support	• Await return of bowel function • Initiate feeds when ready. Score for oral feeding readiness • Engage parents in care provision • Transition to 5B
Routine Management	• Transfer to SickKids as soon as possible after bridge call • Initiate *Neonatal Admit Bowel Obstruction* order set • General Surgery team completes consultation • General Surgery team obtains surgical consent **Fluid Management** • NPO • Total fluid intake: 60 - 80 ml/kg/day • NGT to low intermittent suction • Replace NGT losses • Maintain administration of IV fluids Initial IV solution: D10W Consider starting parenteral nutrition • Complete admission labs as per order set **Imaging** • **Abdominal X-Ray**: obtain abdominal x-ray ***prior to*** placing nasogastric tube (NGT) to low intermittent suction **Rationale:** to maintain air in GI tract to assess for presence of a "double bubble"; ie first air filled bubble in stomach and second air filled bubble in duodenum • Echocardiogram: consider completion of echocardiogram pre-operatively if clinically indicated or per surgical request **Vascular Access** • Submit requisition for IGT PICC insertion **ID** • Routine antibiotics not required unless clinically indicated (sepsis risk factors)	• Initiate parenteral nutrition (PN) (if not already started) • Fluid management as per *NICU Pre and Post-operative Fluid Management Guideline* • Monitor and replace NGT drainage 1:1 with 0.9% NaCl and KCL 20 mmol/L • Determine timing of IGT PICC insertion • IGT PICC preferred prior to transfer to 5B 1) cuffed catheter reduces dislodgement risk 2) allows for blood sampling • Check blood culture result, if completed	• Assess and provide analgesia as required • Continue to monitor and replace NGT drainage 1:1 with 0.9% NaCl and KCL 20 mmol/L • Assess fluid and electrolyte balance • Resume parenteral nutrition (PN) • Administer antibiotics as per surgeon recommendation • Assess incision and provide wound care **Respiratory** • Use of non-invasive respiratory support is contraindicated (ie CPAP or non-invasive ventilation) • Provide invasive ventilation support as required • Assess readiness for extubation • Spontaneous breathing trial (SBT) twice daily by respiratory therapy	• Monitor NGT output (volume and color) • Monitor stooling pattern • Initiate feeds when ileus resolves. • Liaise with surgical team regarding initiation and advancement of feeds. • Maintain PICC until: 1. Full feeds established (ie TFI 150-160ml/kg/day) 2. Steady weight gain demonstrated • Medical team completes *Neonatal Transfer Summary Note* • Nursing completes *Transfer Navigator*
Consults /Tests	• Consider abdominal ultrasound (as per surgical team) • Genetic/chromosome analysis, if indicated • Social Worker referral, if indicated	• Anaesthesia consult • Consult Parent Liaison for transition planning • Identify preliminary projected transfer date	• Consult 5B General Surgery Resource Team to prepare patient for transfer and identify projected transfer day	• Initiate additional LC support for breastfeeding when >50% of target enteral volumes • OT consult if feeding difficulties
Family / Caregiver	• Introduce team and review plan of care • Lactation consultant (LC) and nursing to encourage pumping and storage of breast milk	• Review neonate's clinical status and expectations for the next 48 hours with parents • Review transition planning to 5B • LC and nursing to encourage pumping and storage of breast milk	• Complete 5B tour and review transition plan • LC and nursing to encourage pumping and storage of breast milk	• Complete well baby care teaching • Ensure transition planning complete • Follow-up appointment to be arranged by general surgery

3.0 Related Documents

Neonatal Post Operative Pain Guidelines
Respiratory Management of Neonates with Gastrointestinal Abnormalities (NICU)

4.0 References

1. Kimura, K., & Loening-Baucke, V. (2000). Bilious vomiting in the newborn: Rapid diagnosis of intestinal obstruction. American Family Physician*, 61*, 2791-2798.
2. Adams, S. D., & Stanton, M. P. (2014). Malrotation and intestinal atresias. Early Human Development *,90*, 921.
3. Murshed, R., Nicholls, G., & Spitz, L. (1999). Intrinsic duodenal obstruction: Trends in management and outcome over 45 years. British Journal of Obstetrics and Gynaecology*, 106*, 1197-1199.
4. Kimble, R. M., Harding, J., & Kolbe, A. (1997). Additional congenital anomalies in babies with gut atresia or stenosis: When to investigate, and which investigation. Pediatric Surgery International*, 12*, 565.
5. Dalla Vecchia, L. K., Grosfeld, J. L., & West, K. W. (1998). Intestinal atresia and stenosis: A 25-year experience with 277 cases. The Archives of Surgery*, 133*, 490-497.

5.0 Guideline Group and Reviewers

Guideline Group Membership

- Neonatal Surgical Interest Group
- Hazel Pleasants-Terashita, Nurse Practitioner, NICU
- Stephanie Bernardo, Nurse Practitioner, NICU
- Nicole Da Silva, Nurse Practitioner, NICU

Internal Reviewers

- Christopher Thomlinson, MD
- Kyong Soon Lee, MD
- Christine Elliott, RN Quality Leader
- General Surgery Team
- NICU QM Committee
- Quality Management

Attachments: Duodenal Atresia Pathway_July18.pdf