Introduction

Duodenal atresia is a congenital obstruction of a portion of the lumen of the duodenum of the small intestine. It is one of the more common intestinal anomalies in pediatrics, occurring in approximately 0.9 infants per 10,000 live births worldwide. The majority of cases are isolated and with surgical correction, have an excellent prognosis. 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.

Target Users

- Any individuals who may be involved in the care of neonates with duodenal atresia, including: Neonatal Registered Nurses (RNs), Nurse Practitioners (NP), Physicians, Surgeons, Dieticians, 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 >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.
Isolated Duodenal Atresia Neonatal Care Pathway

Recommendations

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

<table>
<thead>
<tr>
<th>DAY OF ADMISSION</th>
<th>DAY 2 - 3 POST ADMISSION (pre-operatively)</th>
<th>ENR 8 - 5 POST ADMISSION (post-operatively)</th>
<th>DAY 5 - 7 POST ADMISSION AND BEYOND</th>
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</thead>
<tbody>
<tr>
<td><strong>Goals</strong></td>
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<tr>
<td>Provide required respiratory support</td>
<td>Provide required respiratory support</td>
<td>Provide required respiratory support</td>
<td>Remove returns of bowel function</td>
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<tr>
<td>Decompression of gastrostomy (GG) tract</td>
<td>Decompression of gastrostomy (GG) tract</td>
<td>Decompression of gastrostomy (GG) tract</td>
<td>Initiate feeds when ready. Score for oral feeding readiness</td>
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<tr>
<td>Provide fluid management to maintain fluid balance</td>
<td>Provide fluid management to maintain fluid balance</td>
<td>Provide fluid management to maintain fluid balance</td>
<td>Engage parents in care provision</td>
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<tr>
<td>Complete physical examination to identify potential associated conditions (eg Joyner's tear)</td>
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<td>Transition to U8</td>
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<tr>
<td>Establish baseline vital signs</td>
<td>Establish baseline vital signs</td>
<td>Establish baseline vital signs</td>
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<tr>
<td>Complete baseline lab tests</td>
<td>Complete baseline lab tests</td>
<td>Complete baseline lab tests</td>
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</tbody>
</table>

**Transfer to SickKids as soon as possible after birth call**
- Initiate Neonatal Admit Formcompletion order set
- General Surgery team completes consultation
- General Surgery team obtains surgical consent

**Fluid Management**
- IV fluids
- Total fluid intake: 60 - 80 ml/kg/day
- NGT to low intermittent suction
- Replace NGT lines
- Maintain administration of W Buds
- Consider starting parental nutrition
- Complete admission labs as per order set

**Vigilance**
- Abdominal X-Ray: obtain abdominal x-ray prior to placing nasogastric tube (NGT) in low intermittent suction
- Ruleout: to maintain air in GI tract to assess for presence of a "double bubble" or air filled bubble in stomach and second air filled bubble in duodenum
- Feeding x-ray: consider completion of esophagogram pre-operatively if clinically indicated or per surgical request

**Vascular Access**
- Subcutaneous injection of IGIC PCC insertion
- Routine antibiotics not required unless clinically indicated (respiratory risk factors)

**Consult Team**
- Consider abdominal ultrasound (as per surgical team)
- Genetic/hematology analysis, if indicated
- Social Work referral, if indicated

**Nursing**
- Introduce team and review plan of care
- Neonate consult LC and nursing to encourage pumping and storage of breast milk

**External Resources**
- Anesthesiology consult
- Consult Parent Liaison for transition planning
- Identify postnatal projected transfer date

**SickKids**
- Review neonate’s clinical status and expectations for the next 60 hours with parents
- Review transition planning to SickKids
- LC and nursing to encourage pumping and storage of breast milk

**SickKids**
- Complete SickKids tour and review transition plan
- LC and nursing to encourage pumping and storage of breast milk

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Implementation of CPG

Implementation Plan

- Key stakeholders (RNAs, 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, screensavers 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 in early stages due to lack of familiarity with the pathway. This will be overcome through education and promotion of the pathways use during bedside rounds daily.

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.
Key outcome indicators for monitoring and audit purposes

- Length of stay, patient and parent experience

Evaluation of CPG

- This clinical care pathway will be evaluated on a monthly basis through the completion of audits on length of stay for this population. The target length of stay is 7 days. Any infants with duodenal atresia exceeding this length of stay will be evaluated and changes will be made to the pathway as necessary.
- The number of patient days will be reported through the hospital executive and the target length of stay will be adjusted based on those numbers.

Related Documents

Pain Management Guidelines for Post-operative Pain in the NICU

References

Guideline Group and Reviewers

Guideline Group Membership:

1. Neonatal Surgical Interest Group
2. Hazel Pleasants-Terasita, Nurse Practitioner, NICU
3. Stephanie Bernardo, Nurse Practitioner, NICU
4. Nicole Da Silva, Nurse Practitioner, NICU

Internal Reviewers:

1. Christopher Thomlinson, MD
2. Kyong Soon Lee, MD
3. Christine Elliot, RN Quality Leader
4. General Surgery Team
5. NICU NiQ Committee
6. Quality Management

Attachments:

Duodenal Atresia Pathway_July18.pdf