Hypertrophic Pyloric Stenosis / Pyloromyotomy Care Guideline Incorporating ERAS Principles

Inclusion Criteria: Children < 3 months of age with projectile and/or frequent episodes of non-bilious emesis, ultrasound at CHOC confirms pyloric stenosis

Exclusion Criteria: Suspected sepsis, bilious vomiting suggesting intestinal obstruction, presence of significant comorbidities or chronic conditions which would alter the approach to care

Preoperative History, Diagnosis, and Interventions

- Obtain pyloric ultrasound (US Pylorus) and Basic Metabolic Panel
  - If US positive without fluid passing through pylorus, admit to Pediatric Surgery.
  - Obtain peripheral IV access as soon as possible
  - Make patient NPO and start D5NS at 1.5x maintenance rate.
  - Review BMP results
    - Fluid resuscitate per the below algorithm
- Correct electrolytes, if abnormal
  - Targets: Potassium (K^+) ≥ 3, Chloride (Cl^-) ≥ 100, Bicarbonate (HCO_3) ≤ 30
- To OR for pyloromyotomy once electrolytes are balanced and infant is adequately fluid resuscitated
- Integrate ERAS principles:
  - Educate patient and family on operative procedure, post-operative care, including appropriate expectation of post-operative care and discharge criteria
  - Patient and family education materials are distributed to the family

Postoperative Assessment

- Vital signs q1h x 2, then Q4h per floor routine
- Strict I/O
- Apnea monitor
- Pain Assessment and Management (Refer to Patient Care Policy F918)

Postoperative Interventions

- Integrate ERAS principles:
  - Feeding ad lib once recovered from anesthesia
  - IVF D5NS+20mEq KCl
  - Do not hold feeds for emesis
  - Saline Lock IV once tolerates 2 feeds at goal volume
  - Notify MD for > 3 large emesis or UOP < 1mL/kg/hr over 6hr
  - Pain management with acetaminophen 15mg/kg PO or PR rectal q4h PRN pain
  - Age-appropriate activity as tolerated

Discharge Criteria

- VS stable, afebrile x 24h
- Tolerating breast milk or formula feeds (max 60mL) x 3 feedings and clinically hydrated without IV fluids
- Abdomen soft and non-distended, without significant tenderness
- Pain well controlled with PO or PR acetaminophen

Information/Recommendations/ Considerations

- Hypertrophic pyloric stenosis (HPS) is one of the most common gastrointestinal disorders during early infancy, with the incidence of 1:1000 live births; most common between the ages of 3 and 6 weeks of life, but can occur as soon as 2 weeks of life and up to 12 weeks of life.
- Hypertrophy of the circular muscle of the pylorus results in constriction and obstruction of the gastric outlet.
- Gastric outlet obstruction leads to non-bilious, projectile emesis, loss of hydrochloric acid with the development of hyperchloremic & hypokalemic metabolic alkalosis, dehydration and possible hyperbilirubinemia.
- Preoperative intervention includes IV fluid resuscitation and electrolyte repletion.
- Surgical myotomy is the primary approach to the treatment of HPS.
- Morphine should be avoided in this patient population. If pain is inadequately controlled by acetaminophen, patient should be assessed by provider prior to prescribing morphine.
- Patients with persistent post-op vomiting will be managed on an individualized basis.
- If patient continues to have emesis beyond postoperative day one, consider starting famotidine.
- DO NOT place NG tube in patients status post pyloromyotomy.

Patient Education

- Pyloric Stenosis Handout located on PAWS in Patient and Family Education

Approved Evidence Based Medicine Committee
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Hypertrophic pyloric stenosis resuscitation flowsheet

Ultrasound-proven pyloric stenosis

- Assess urine output and obtain BMP
- Obtain PIV access and start D5NS @ 1.5x maintenance per care guideline
- Further fluid resuscitation dependent upon urine output (UOP) and degree of electrolyte imbalance

MILD:
Cl^- ≥ 100
and
HCO_3^- ≤ 30
and
UOP ≥ 1mL/kg/hr

NS bolus 20mL/kg IV x1 over 30 minutes

MODERATE:
Cl^- 85 - 100
and / or
HCO_3^- 30 - 40
and / or
UOP < 1mL/kg/hr

NS bolus 20mL/kg IV x2 over 60 minutes

SEVERE:
Cl^- < 85
and / or
HCO_3^- > 40
(presumed low UOP)

Consider transfer to PICU while starting NS bolus 20mL/kg IV x 3 over 90 minutes total – each bolus to run over 30 minutes

Recheck BMP 1hr after infusion complete

Are electrolytes balanced?

Potassium (K^+) ≥ 3
Chloride (Cl^-) ≥ 100
Bicarbonate (HCO_3) ≤ 30

YES → To OR for pyloromyotomy

NO → Continue further fluid resuscitation per this algorithm

Hypertrophic Pyloric Stenosis / Pyloromyotomy Care Guideline References

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