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Evaluation and Management of a Patient with a Common Gastrointestinal Condition

Description of the Activity	Pediatric surgeons must be able to evaluate and manage common gastrointestinal conditions in children, including pyloric stenosis, intussusception, and gastroesophageal reflux disease (GERD) as a complication of enteral access, regardless of the clinic or resource setting.
Functions	❖ Nonoperative/Preoperative • General ○ Synthesize essential demographic information from the patient's medical record, history, and physical examination (e.g. age, comorbidities) to develop a differential diagnosis. ○ Triage the patient for resuscitation, evaluation, and management based on acuity. ○ Obtain informed consent, describing the indications, risks, benefits, alternatives, and potential complications of the planned operation, including nuances relevant to the patient's individual condition and comorbidities, and ensure familial understanding. Document the informed consent discussion in the medical record. ○ Devise an operative plan, and communicate it to members of the operative team (anesthesia, nursing, techs, assistants), including patient position, anesthesia needs, special instrumentation, and postoperative planning. • For a patient with pyloric stenosis: ○ Order and interpret diagnostic imaging to establish the diagnosis of pyloric stenosis (ultrasound, upper GI series). ○ Evaluate and initiate resuscitative measures to correct physiological derangements. ○ Determine when the patient is sufficiently resuscitated to safely undergo surgical pyloromyotomy. • For a patient with enteral access: ○ Establish the need for enteral access by obtaining a feeding and growth history to evaluate the patient for dysphagia, failure to thrive, or other congenital abnormalities, such as esophageal atresia. ○ Evaluate the patient for presence and severity of GERD based on the patient's clinical history and physical examination, and determine the need for additional diagnostic testing (upper GI series, endoscopy). ○ Discuss the risks and benefits of surgical and nonsurgical options for prepyloric and postpyloric enteral feeding access. • Intussusception ○ Order and interpret diagnostic imaging to establish the diagnosis of intussusception (abdominal x-ray, ultrasound). ○ Evaluate and initiate resuscitative measures to correct physiological derangements. ○ Customize treatment options of observation, air enema reduction, or surgical reduction based on presentation, including: ▪ Age ▪ Diagnostic uncertainty ▪ Duration of symptoms ▪ Hemodynamic instability ▪ Location of intussusception ▪ Peritonitis

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❖ Intraoperative

- Manage the perioperative environment, including room setup, preprocedural time-out, specimen processing, instrument counts, wound classification, and debriefing.
- For a patient with pyloric stenosis:
  - Perform an open or laparoscopic pyloromyotomy.
  - Ensure the patient is positioned correctly and relevant equipment is available.
  - Ask for the correct instruments and sutures.
  - Identify the borders of the pylorus and the appropriate depth for the myotomy.
  - Perform the relevant steps of the procedure efficiently.
- Manage operative complications or unexpected intraoperative findings, including:
  - Normal pylorus
  - Pyloric perforation
- Manage a patient with GERD who requires enteral access:
  - Perform an open or laparoscopic gastrostomy.
  - Position the patient, and ensure the presence of relevant equipment and sutures.
  - Identify the correct gastrostomy tube sizes.
  - Perform the relevant operative steps efficiently, remaining cognizant of abnormal anatomy.

- Perform an open or laparoscopic Nissen fundoplication.
  - Position the patient, and ensure the presence of relevant equipment and sutures (esophageal dilators/bougies).
  - Perform the relevant operative steps efficiently with particular attention to esophageal and hiatal dissection and tension of fundoplication.
- Manage operative complications or unexpected intraoperative findings, including:
  - Esophageal perforation
  - Hiatal hernia
  - Malrotation
  - Microgastria
- For a patient with intussusception:
  - Perform an open or laparoscopic intussusception reduction.
  - Position the patient, and ensure the presence of relevant equipment/sutures.
  - Perform the relevant operative steps efficiently with particular attention to tissue handling.
  - Manage operative complications or unexpected intraoperative findings, including:
    - Intestinal ischemia or necrosis
    - Lead point
    - Lymphadenopathy
    - Meckel diverticulum
- Communicate patient-specific needs to the health care team.

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	❖ Postoperative • Provide routine postoperative care, including follow-up. • Recognize and manage complications after pyloromyotomy, including: ○ Feeding intolerance ○ Incomplete myotomy ○ Leak ○ Poor weight gain • Recognize and manage complications after gastrostomy or fundoplication, including: ○ Gastrostomy dislodgement/replacement (early vs late) ○ Persistent GERD or pseudoachalasia • Recognize and manage complications after an air enema or surgical intussusception reduction, including recurrent intussusception. • Communicate patient-specific needs to the health care team.
Scope	❖ In scope ❖ Diagnoses ○ Congenital neurologic/neuromuscular ○ Discussion for nasojejunal tube ○ Dysphagia ○ Failure to thrive ○ Hypertrophic pyloric stenosis ○ Ileocolic intussusception ○ Indications for gastrostomy in a neonate ○ Intussusception ○ Pathologic lead point versus viral lymphadenopathy ○ Severe reflux/GERD (including discussion for Nissen fundoplication or another surgical choice) ○ Small bowel intussusception ○ Younger child (< 3 years) versus older child ❖ Procedures ○ Antireflux surgery ○ Gastrostomy: laparoscopic, open (tube vs button), laparoscopic-assisted percutaneous endoscopic gastrostomy ○ Intussusception: radiologic reduction, laparoscopic versus open, reduction versus resection ○ Pyloromyotomy: laparoscopic or open

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	❖ Special populations ○ GERD/severe reflux ○ Long-gap esophageal atresia ○ Pathologic lead point: Meckel diverticulum, polyps, Henoch-Schonlein purpura, tumor ○ Patients younger than 5 years ❖ Out of scope • Diagnoses/procedures ▪ Need for enteral access in a patient older than 1 year ▪ Rotational anomalies (see EPA: E&M of a Patient with a Rotational Anomaly)

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1 **Framework:** **The learner demonstrates understanding of information and has basic skills** **What a new pediatric surgery fellow should know** **Entrustment:** **The attending will show and tell or the learner acts as first assistant.**	• With active guidance, performs a focused H&P, reviews diagnostic reports, and formulates a differential that includes both medical and surgical problems • With active guidance, evaluates and initiates resuscitative measures to correct physiological or nutritional derangements • With active guidance conducts some elements of informed consent	• With active guidance, recognizes the instruments and setup required for diagnostic endoscopy based on patient age and indications for the procedure • With active assistance, performs key steps of an open or laparoscopic pyloromyotomy and demonstrates understanding of the appropriate depth for a myotomy • With active assistance, performs key steps of a laparoscopic or open enteral access/fundoplication and demonstrates understanding of tissue planes and relevant hiatal anatomy • With active assistance, performs key steps of a laparoscopic or open intussusception reduction	• With active assistance, defines the different nutritional and metabolic requirements of children at different ages • With active assistance, communicates the basic steps of the postop plan to the family and other healthcare team members, including immediate postop needs and the need for short-term follow-up
2 **Framework:** The learner demonstrates understanding of the steps of the operation but requires direction through principles and does not know the nuances of a basic case	• With direct supervision, performs a focused H&P, reviews diagnostic reports, and formulates a differential that includes both medical and surgical problems • With direct supervision, evaluates and initiates resuscitative measures to correct physiological or nutritional derangements • In an uncomplicated patient, conducts all the elements of an informed consent process and documents the discussion	• With direct supervision, consistently recognizes the instrument components to perform a diagnostic endoscopy • With direct supervision, performs key steps of an open or laparoscopic pyloromyotomy and demonstrates understanding of the appropriate depth for a myotomy • With direct supervision, performs key steps of laparoscopic or open enteral	• With direct supervision, coordinates the development of a multidisciplinary postop nutritional plan and communicates the plan to families and primary care • With direct supervision, communicates the postop plan to the family and other health care team members, including immediate postop needs and the need for short-term follow-up

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Entrustment: The learner can use the tools but may not know exactly what, where, or how to do it. The attending gives active help throughout the case to maintain forward progression or may need to take over the case at a certain point		access/fundoplication and demonstrates understanding of tissue planes and relevant hiatal anatomy • With direct supervision, performs key steps of a laparoscopic or open intussusception reduction	
3 **Framework:** The learner has a good understanding of surgical options and techniques but does not recognize abnormalities and does not understand the nuances of a complicated case Entrustment: The learner can perform the operation/task independently in the uncomplicated patient	• With indirect supervision, integrates information with patient-specific factors to design a succinct diagnostic workup and management plan for a medically complicated neonatal or pediatric surgical patient • With indirect supervision, evaluates and initiates resuscitative measures to correct physiological or nutritional derangements • In an uncomplicated patient, conducts all the elements of an informed consent process with cultural humility, individualizing the risks and benefits for the patient and documenting the discussion	• With indirect supervision, performs a diagnostic endoscopy and an endoscopic intervention (esophageal dilation) • With indirect supervision, performs key steps of an open or laparoscopic pyloromyotomy and identifies an intraop complication or unexpected finding (eg, pyloric/gastric perforation) • With indirect supervision, performs key steps of alaparoscopic or open enteral access/fundoplication and identifies intraop complications or unexpected findings (eg, microgastria, hiatal hernia, malrotation, esophageal/gastric perforation) • With indirect supervision, performs key steps of a laparoscopic or open	• With indirect supervision, coordinates the development of a multidisciplinary postop nutritional plan and communicates the plan to families and primary care • With indirect supervision, communicates a comprehensive postop plan to the family and other health care team members, including short- and long-term complications/goals of care for a complex patient

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or The attending provides passive/indirect supervision/suggestions in the complicated patient but still allows the learner to perform the operation/task themselves		intussusception reduction and identifies intraop complications or unexpected findings (eg, intestinal ischemia/necrosis, Meckel diverticulum, other pathologic lead point)	
4 **Framework:** The learner has a strong and indepth understanding of surgical options and techniques Entrustment: Can perform the operation/task independently in complicated cases or The attending may need to provide indirect supervision or suggestions in the context of extremely rare or severely complicated cases	• Independently integrates information with patient-specific factors to design a succinct diagnostic workup and management plan for a medically complicated neonatal or pediatric surgical patient • Independently initiates resuscitative measures to correct physiological or nutritional derangements • In a complicated patient, conducts all the elements of an informed consent process, with cultural humility, individualizing the risks and benefits for the patient and documenting the discussion	• Independently performs a diagnostic endoscopy and an endoscopic intervention (esophageal dilation) • Independently performs key steps of an open or laparoscopic pyloromyotomy and identifies an intraop complication or unexpected finding (eg, pyloric/gastric perforation) • Independently performs key steps of laparoscopic or open enteral access/fundoplication and identifies intraop complications or unexpected findings (eg, microgastria, hiatal hernia, malrotation, esophageal/gastric perforation) • Independently performs key steps of a laparoscopic or open intussusception reduction and identifies intraop complications or unexpected findings (eg, intestinal ischemia/necrosis, Meckel diverticulum, other pathologic lead point)	• Independently coordinates the development of a multidisciplinary postop nutritional plan and communicates the plan to families and primary care • Independently communicates a comprehensive postop plan to the family and other health care team members, including short- and long-term complications/goals of care for a complex patient