BOTTOM LINE RECOMMENDATIONS:

Intussusception

Intussusception is a process in which there is an invagination of the intestine into a subsequent segment, most commonly involving the ileocecal valve. This process occludes blood supply to the bowel and can progress from tissue ischemia to necrosis/perforation.

Intussusception is the most common abdominal emergency of early childhood and is usually idiopathic. The vast majority of cases (80%) occur in children less than 2 years, with the most frequent age range being 5-10 months. There is a small but appreciable increased risk of intussusception in the 7 days following rotavirus administration.

PRESENTATION

- Sudden onset of intermittent waves of severe abdominal pain and pallor that cause the child to cry inconsolably and draw their legs into their abdomen.
    - » Episodes of pain typically occur every 15 to 20 minutes, with slight discomfort between episodes.

- Vomiting may occur during (or after) the painful episodes, which may progress to bilious emesis with time.
    - » Because of this, early intussusception may be confused with acute gastroenteritis.

- Intussusception may present as lethargy or altered mental status, especially in young Infants.
    - » This presentation may be confused with sepsis.

- A **late** finding of intussusception is a mixture of blood and mucous in the stool that gives the appearance of "currant jelly".

- Blood is a **late** finding of intussusception and is <u>not</u> a diagnostic requirement.

- In **rare** cases, a "sausage-shaped" abdominal mass may be palpable in the right abdomen.

INVESTIGATION

Laboratory evaluations are **<u>not</u>** routinely indicated or helpful in the diagnosis or management of intussusception.

1. **Ultrasonography** is the <u>preferred</u> method to diagnose intussusception and is the first-line diagnostic tool that physicians should utilize.
    - » The classic finding will be a "target" or "bulls-eye" lesion caused by layers of intestine within intestine.
    - » Experienced institutions have a sensitivity and specificity that approaches 100%.
    - » Bedside ultrasound can be used to identify intussusception, but only with specific training. If the diagnosis is still likely after a negative bedside ultrasound, a formal ultrasound should be obtained.

2. **Abdominal radiographs** are less sensitive and specific than ultrasonography and should not be used routinely to confirm or rule out the diagnosis.
    - » If radiographs are obtained, intussusception should be considered if there is an absence of colonic gas or a "target sign" overlying the right kidney.

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MANAGEMENT

1. **CORRECT HEMODYNAMIC INSTABILITY**
   » For patients with **hypovolemic shock from vomiting** or **septic shock secondary to perforation**:
     - administer aggressive fluid resuscitation as per PALS guidelines
   » For patient with **peritonitis or other signs of perforation**:
     - administer empiric antimicrobials

2. **PROCEED TO NON-OPERATIVE REDUCTION BY AIR ENEMA IF PATIENT IS STABLE WITHOUT SIGNS OF BOWEL PERFORATION**
   » Air-enemas are preferred to hydrostatic treatments.
     - if using hydrostatic technique, a water-soluble agent is preferred over barium.
   » Pre-reduction antibiotics are of **little** value.
   » Before pneumatic or hydrostatic enema, the stomach should be decompressed and a surgery team should be readily available, as perforation can result as a complication of reduction (<1% of patients).
   » Ultrasound or fluoroscopic guidance should be utilized to confirm successful reduction and have similar success rates (80 to 90%).

3. **IF NON-OPERATIVE REDUCTION FAILS TO REDUCE THE INTUSSUSCEPTION, ARRANGE FOR A SURGICAL TEAM**
   » Transfer is indicated if the treating facility lacks a surgical team or radiologist with ultrasonography available.

POST-REDUCTION

AFTER SUCCESSFUL REDUCTION
» Recurrence occurs ~ 10% of the time but early recurrence (in the first 4-6 hours) is in the range of ~2%.
» Manage non-operatively if there is no evidence of bowel necrosis.
» Admission is recommended for any patient with suspicion of bowel necrosis or unable to tolerate oral intake following the procedure.

IF THERE IS A RECURRENCE
» Management is the same, with non-operative reduction being favored.
» Patients who have a recurrence are more likely to have a pathological lead point.

This summary is based on:

1) Beres AL, Baird R. An institutional analysis and systemic review with meta-analysis of pneumatic versus hydrostatic reduction for pediatric intussusception. *Surgery.* 2013 Aug; 154(2): 328-34.
2) Chien M, Willyerd FA, Mandeville K, et al. Management of the child after enema-reduced intussusception: hospital or home? *J Emerg Med.* 2013 Jan; 44(1):53-7.
3) Gray MP, Li SH, Hoffmann RG, et al. Recurrence rates after intussusception enema reduction: a meta-analysis. *Pediatrics.* 2014 Jul; 134(2): 110-9.
4) Soares-Weiser K, Maclehose H, Bergman H, et al. Vaccines for preventing rotavirus diarrhea: vaccines in use. *Cochrane Database Syst Rev.* 2012 Nov 14; 11:CD008521
5) Weihmiller SN, Buonomo C, Bachur R. Risk stratification of children being evaluated for intussusception. *Pediatrics,* 2011 Feb; 127(2): e296-303.