 Constipation is Not Black and White  
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1. The diagnosis of functional constipation in children should be made using
   A. a radiograph.
   B. colonic transit time (CTT).
   C. ROME criteria.
   D. anorectal manometry.

   **Correct Answer: C**

**Rationale**
Rome III Criteria are the clinical criteria for all functional conditions, including functional constipation. The criteria combine questions by history as well as signs on physical exam. Imaging, some of which can be invasive, is not necessary for a diagnosis.

**References**
1. Evaluation and Treatment of Functional Constipation in Infants and Children: Evidence-Based Recommendations from ESPGHAN and NASPGHAN

2. The treatment of functional constipation, in addition to education, involves:
   A. a psychologist.
   B. enemas when symptoms are bad.
   C. softening the stool for several months.
   D. an additional cup/day of fluid intake.

   **Correct Answer: C**

**Rationale**
The most common treatment in children involves the use of osmotic agents such as PEG3350 that soften stool and can be used for both disimpaction and maintenance. While the optimal duration of use is not well established, expert opinion states that maintenance therapy should continue for at least 2 months. The use of ‘prn’ treatments is not appropriate for anything more than mild constipation, and generally enemas are avoided given that PEG and enemas are equally effective for fecal disimpaction. While empiric advice is usually given to increase fluids, there is not evidence to support increased fluid consumption in the treatment of functional constipation.
While constipation certainly does have a high impact on QOL, there is little evidence for a benefit to psychology/behavioral therapy in addition to the osmotic laxatives. Biofeedback therapy has been proven useful in adults but not in children. If a patient has behavioral abnormalities, a mental health provider may be of help but does not need to be recommended on a routine basis.

References
1. Evaluation and Treatment of Functional Constipation in Infants and Children: Evidence-Based Recommendations from ESPGHAN and NASPGHAN

Pitfalls in Chest and Abdomen
Richard Markowitz, MD, FACR

3. When we see an abnormality but interpret it incorrectly, this type of error is:
   A. cognitive.
   B. systematic.
   C. perceptual.
   D. negligent.

Correct Answer: A

Rationale
We correctly identified that an abnormality is present but came to an erroneous conclusion. Answer B is incorrect. The error did not involve any organizational or technical component. Answer C is incorrect. We saw the abnormality and understood that it was not a normal finding. Answer D is incorrect. Negligence is a legal concept. Errors may be unavoidable and almost always unintentional but not necessarily negligent.

References

4. This 4 month old presents with chronic noisy breathing. Which diagnosis should you suspect?
   A. Thymic teratoma
   B. Lymphoma
   C. Bronchitis
   D. Vascular ring

Correct Answer: D

Rationale
The abnormal configuration of the trachea suggests a vascular ring anomaly, which might be overlooked if the trachea is not specifically examined. Answer A is incorrect. The mediastinal outline of the thymus is normal for an infant of this age. Answer B is incorrect. Lymphoma is rare at this age and there are no diagnostic findings present. Answer C is incorrect. Bronchitis is a clinical diagnosis with few, if any, radiographic manifestations.
Pediatric Fluoroscopy: Tips and Tricks
Steven J. Kraus, MD

5. Shown is an oblique voiding image from a VCUG in a 3 yo male who had rectoprostatic type anorectal malformation repaired as an infant. The finding the arrows denote is:
   A. residual of the original fistula.
   B. rectoprostatic reflux.
   C. ejaculatory duct reflux.
   D. seminal vesicle reflux.

Correct Answer: A

Rationale
The rectoprostatic fistula is a connection from the rectum to the prostatic urethra in a boy with imperforate anus. When it is surgically divided, sometimes a portion of it on the urethral side is left connected to the urethra, the “residual of the original fistula” or ROOF, previously referred to as a posterior urethral diverticulum. On VCUG, it is usually a short, blind-ending, tubular structure emanating from the posterior urethra in the midline.

Answer B is incorrect. Rectoprostatic reflux usually occurs bilaterally and in the context of high pressure voiding. Signs of high pressure voiding that are NOT seen in this example include (1) dilation of the posterior urethra due to either prominent valvulae colliculi as in posterior urethral valves or incomplete opening of the urethral sphincter in patients with bladder sphincter dyssynergia of neurogenic bladder; (2) bladder wall thickening or trabeculation and prominence of the interureteric ridge as might be seen in chronic bladder outlet obstruction or neurogenic bladder.

Answer C is incorrect. Ejaculatory duct reflux is usually to the right or left of the urethra extending from the verumontanum as a tubular structure retrograde and extending as the vas deferens toward the inguinal canal, then extending through the spermatic cord turning towards the scrotum, beginning at the epididymis.

Answer D is incorrect. Seminal vesicle reflux appears similar to ejaculatory duct reflux initially but ends in a series of small blind ending curved tubes rather than the vas deferens.

References
6. Fluoroscopy clip performed in a child with tracheostomy and choking with feeding. The swallow study shows
   A. tracheal aspiration.
   B. cricopharyngeal achalasia.
   C. primarily oral phase dysphagia.
   D. an abnormality of cortical brain.

   **Correct Answer: B**

   **Rationale**
   Cricopharyngeal achalasia (CPA) is an abnormality of the esophageal phase of swallowing, due to failure of complete relaxation of the cricopharyngeus muscle, which is also the upper esophageal sphincter of the esophagus. On the fluoroscopic clip from the VSS, anterior to the C5-6 level there is a round filling defect of the posterior aspect of the barium column, which is the cricopharyngeus muscle incompletely relaxing resulting in incomplete passage of the barium and retropulsion of some barium back into the pharynx. This residue can sometimes be regurgitated, but may also be aspirated (not seen in this clip).

   Answer A is incorrect. Despite the retropulsion of barium back into the pharynx, contrast is not seen beneath the vocal cords to suggest aspiration, although this is a possibility in patients with CPA, especially from the residue in the pyriform sinuses that can overflow into the airway between swallows or during breathing.

   Answer C is incorrect. Oral phase abnormalities occur during bolus formation in the oral cavity and transport of the bolus to the posterior aspect of the tongue, generally involving the lips and tongue, which are not the primary swallowing problem in this patient.

   Answer D is incorrect. CPA is an abnormality of the esophageal phase of swallowing, which is controlled by brainstem function. The oral phase of swallowing is controlled by cortical brain function.

   **References**

Secrets of the Experts: 5 Things I Learned the Hard Way in GI Imaging
*Michael J. Callahan, MD*

7. Regarding errors in interpretation of implanted endovascular catheters and enteric tubes, which of the following is TRUE?
   A. Interpretive errors are common in both.
   B. Errors in interpretation of enteric tube placement are more common than those for endovascular catheters
   C. The majority of errors can be classified as potentially major or severe events.
   D. Most interpretive errors are technical.

   **Correct Answer: C**
Rationale
The majority of errors in interpretation of implanted endovascular catheters and enteric tubes can be classified as potentially major or severe events. In a recent study by Fuentealba and Taylor, 78% (39/50) errors were classified as severe or potentially major. Answer A is incorrect. Errors in interpretation of implanted endovascular catheters and enteric tubes are relatively infrequent. Device-related diagnostic errors accounted for 50/4084 (1.2%) radiologic errors in the study by Fuentealba and Taylor.

Answer B is incorrect. Errors in interpretation of endovascular catheters are more common than enteric tubes, possibly due to the higher number of these types of catheters placed. Answer D is incorrect. Most errors are cognitive, related to faulty image interpretation. A technical error occurred in only 1 of the 50 cases in the recent study by Fuentealba and Taylor.

References

8. Which of the following radiographic findings is most specific for a high-grade small bowel obstruction?
   A. Air-fluid levels of different heights in the same small bowel loop
   B. Mean small bowel air-fluid width greater than or equal to 15 mm
   C. Dilated air-filled colon
   D. Collapsed stomach

Correct Answer: A

Rationale
Although multiple radiographic findings are typically required to diagnose a small bowel obstruction (SBO) accurately, in the correct clinical context the presence of air-fluid levels of differential height in the same small bowel loop are concerning for a SBO, particularly if the small bowel loop is dilated.

Answer B is incorrect. Mean small bowel air-fluid level width of 25 mm or greater is a very specific predictor of small bowel obstruction in adults. Dilation of small bowel 3 cm or greater is also very specific for SBO in the correct context. Notably small bowel size is difficult to assess in pediatric patients because of the wide range of normal, which changes with patient age.

Answer C is incorrect. The hallmark of a SBO is dilated bowel proximal to the site of obstruction, and decompressed distal bowel. Answer D is incorrect. The hallmark of a SBO is dilated bowel proximal to the site of obstruction, which can involve the stomach if the obstruction is proximal enough.

References
1. Lappas JC, Reyes BL, Maglinte DD. Abdominal Radiography Findings in Small-Bowel Obstruction: Relevance to Triage for Additional Diagnostic Imaging; AJR 2001;176:167–174