



Complications in colorectal surgery

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ABSTRACT

Colorectal pediatric surgery is a diverse field that encompasses many different procedures. The pullthrough for Hirschsprung disease, the posterior sagittal anorectoplasty for anorectal malformations including complex cloaca reconstructions and the ileal pouch anal anastomosis for ulcerative colitis and familial adenomatous polyposis present some of the most technically challenging procedures pediatric surgeons undertake. Many children prevail successfully following these surgical interventions, however, a small number of patients suffer from complications following these procedures. Anticipated post-operative problems are discussed along with medical and surgical strategies for managing these complications.

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Hirschsprung disease

Hirschsprung disease (HD) affects approximately 1 out of every 5000 live births and is diagnosed in the neonatal period in up to 90% of patients. Transanal resection and pullthrough of the aganglionic bowel with or without laparoscopy or laparotomy is the surgical procedure most commonly performed to treat the condition. The technique of resection (e.g., Duhamel, Soave, or Swenson) varies between surgeons and centers but all have an inherent risk of complications. While the majority of infants with HD do well postoperatively, a subset encounters difficulties that can be either related to the disease itself or to the surgical procedure. The purpose of this section is to discuss the complications that are attributable to the surgical intervention(s).

Little is written on the early complications of HD. Transanal surgery and surgery in the deep pelvis have the potential for catastrophic surgical complications. Anastomotic leak is a rare complication in this population but when we encounter a large size discrepancy at our anastomosis we often perform a tapering procedure in conjunction with a protective ileostomy. This is often seen in the late diagnosis Hirschsprung patient. Early complications are often due to dissection in the wrong plane and include acquired rectourethral fistula, rectovaginal fistula, neurogenic bladder, and chronic abscess including cuff abscess. The long-term treatment of a chronic fistula, whether it be rectourethral, rectovaginal, or rectocutaneous is best served by diversion and typically requires a redo pull-through procedure that puts healthy

rectal wall opposing the fistula tract. Chronic abscesses can be due to a leak at the anastomosis or retained tissue (often mucosa) within a rectal cuff. Attempts at conservative therapy including antibiotics, bowel rest and drainage procedures can temporize these complications but often a redo pullthrough is required to ultimately treat the situation. One should always consider a diverting ileostomy or colostomy after performing a pull-through procedure where there is perceived uncertainty regarding the dissection or anastomosis.

One major group of complications falls under the category of obstruction. Several of the obstructive causes are not directly related to the surgical procedure and are more reflective of the disease itself. These causes include gastrointestinal motility disorders, internal anal sphincter achalasia, and acquired megacolon due to stool withholding.¹ We will not discuss these here. The 2 main groupings under the obstructive category that bear discussion are mechanical complications and persistent aganglionosis. The work up and treatment algorithm are outlined in [Figure 1](#).

Mechanical obstruction after surgery for HD has multiple causes and is dependent on the surgical approach used at the initial surgery. Patients who have undergone a Soave or Swenson resection can develop a stricture at the anastomosis in the anal canal. The etiology of the stricture is presumably related to poor blood supply at the anastomosis. Strictures can be treated successfully with repeat dilations in many cases.² Difficult to dilate strictures have been treated with steroid injection into the stricture.³ However, strictures that are recalcitrant to multiple dilations should be addressed with redo pullthrough. HD patients who have undergone Soave or Swenson resections can also have obstruction due to twisting of the bowel as it is pulled through the anal canal. A twisted pullthrough must be surgically revised and

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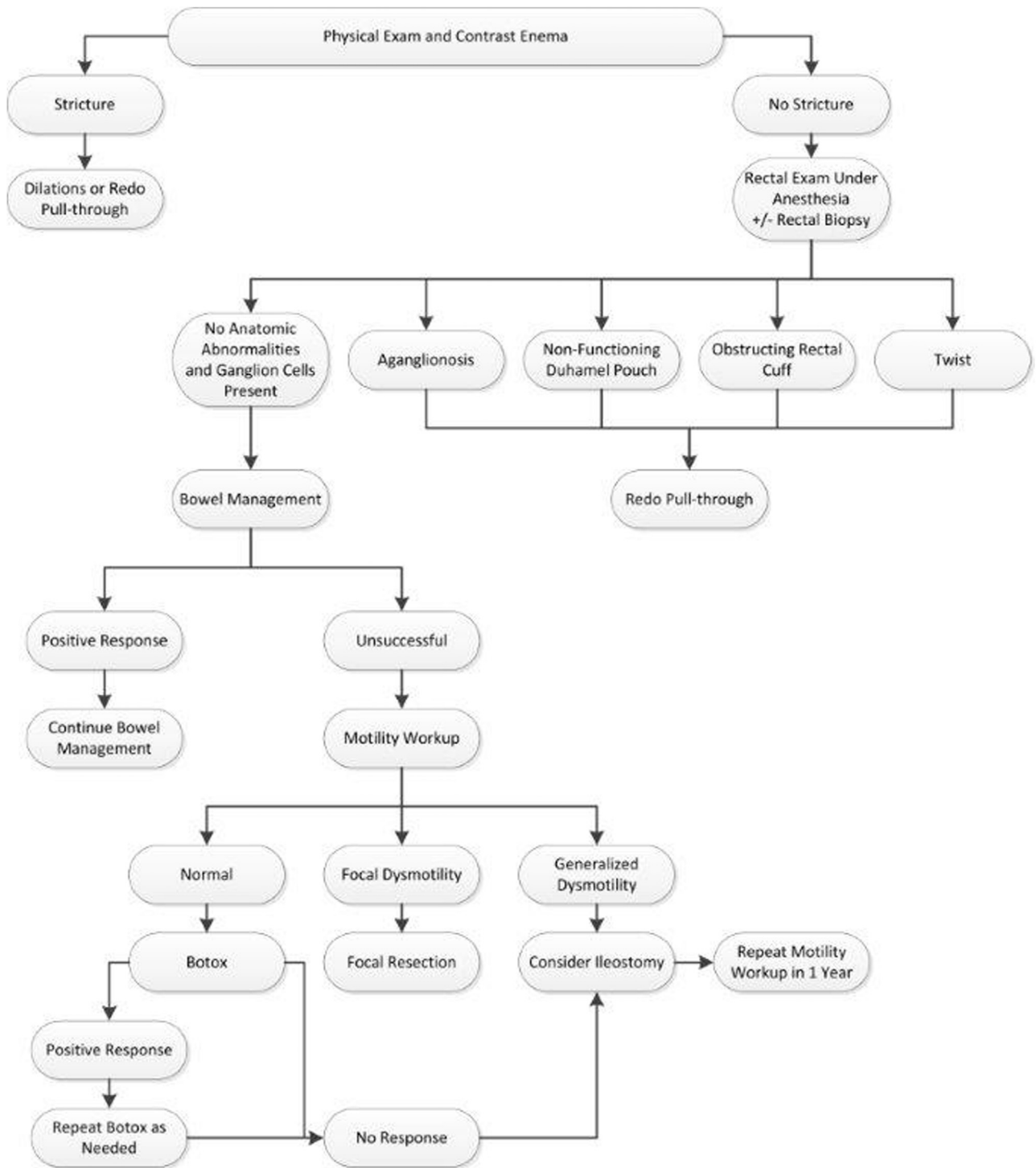


Fig. 1. Algorithm for the diagnosis and treatment of a patient with obstructing symptoms following a pull-through procedure for Hirschsprung disease.

resutured in the correct orientation. This complication can be prevented by paying careful attention to the orientation of the colon as it is pulled through and placing marking stitches along the colon wall to maintain a sense of proper alignment. Placing a curved clamp across the end of the bowel is another technique that has been used to maintain the orientation of the bowel during the transanal pullthrough.⁴ It has been described and is our technique to pass a large catheter (typically a 24-Fr urinary catheter) through the cut end of the intended anastomosis prior to suturing. If this catheter passes easily into the distal colon, then

it is unlikely that the bowel is twisted. Obstructive symptoms have been described in patients who initially underwent a Soave resection with the cuff causing extrinsic compression on the pulled through colon. This can be addressed by resecting the cuff and potentially resecting dilated bowel above the cuff if necessary (Figure 2). Good outcomes have been reported with relief of obstructive symptoms in these patients.⁵ Construction of a shorter cuff, often described as 1–3 cm in length, may help decrease the risk of obstruction if performing a Soave resection.⁶ Patients who have had a Duhamel resection can experience obstruction if the

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