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Toxic Colitis

Toxic colitis (TC) refers to an acute severe colitis which threatens life of the child. When associated with megacolon it is called toxic megacolon (TM). Toxic megacolon is an acute dilatation of the colon associated with symptoms of toxemia such as abdominal distension, constipation, reduced bowel sounds and fever, tachycardia or hypotension. The colonic dilatation can be total or segmental depending on the incipient disease that causes it. Patients can develop toxicity without megacolon. The hallmark of toxic megacolon (or colitis) is a nonobstructive transverse colonic dilatation larger than 6 cm associated with signs of systemic toxicity such as fever above 101.5 F, tachycardia and leukocytosis or anemia. The child might also present bloody stools, dehydration, altered metal status, electrolytes abnormalities and hypotension. Toxic colitis (or megacolon) is mostly a complication of ulcerative colitis but can be seen in other inflammatory disease such as Crohn, ischemic colitis, infectious colitis associated with *Clostridium difficile*, after radiation therapy or with Hirschsprung's disease. The most dreaded complication of toxic colitis with megacolon is perforation of the colon. Since many children with ulcerative colitis are in steroid therapy, the classic signs of peritonitis are absent when free perforation occurs due to a blunt systemic inflammatory response from the steroids. The microscopic hallmark of TC or TM is transmural inflammation extending beyond the mucosa into the smooth-muscle layers and serosa. The extent of dilatation correlates with the depth of inflammation and ulceration. Medications such as anticholinergics, antidepressants, loperamide and opioids negatively impact bowel motility and could be implicated in cases of TM. The prognosis with medical management of TM is poor though with tumor necrosis factor alpha inhibitors more cases can be managed medically. When TC or TM is established surgery will be needed. Total colectomy with ileostomy is the procedure of choice in the very acute situation. Later proctectomy with j-pouch ileal reconstruction can be performed.

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Musculoskeletal Deformity after Thoracotomy

Posterolateral thoracotomy is the most common surgical approach for thoracic and cardiovascular procedures in children. This type of procedure many times is performed dividing the latissimus dorsi and serratus anterior muscle which results in postoperative muscular atrophy hence the development of thoracic and spinal deformities. The thoracotomy incision can result in long-term physical impairment and chest wall deformity. Typical deformity findings after thoracotomy include wing scapula, anterior chest wall deformity, rib fusion and scoliosis. Damage to the innervation of the serratus anterior muscle can contribute to the chest wall deformity. The rate of sequela is not affected by age or birth weight at time of the procedure. The majority of deformities develop at three to four years after surgery thus a long follow up is needed to evaluate these children for musculoskeletal deformities. Musculoskeletal deformity develops in 25% of children who have undergo one or more thoracotomies. Division of the serratus anterior muscle is the only independent risk factor associated with an increased incidence and risk of developing a musculoskeletal deformity. The incidence rate of any musculoskeletal deformity (scoliosis, scapular winging or chest wall anomaly) in children who had undergone a right posterolateral thoracotomy for repair of esophageal atresia is 2.92 per 100 child-year. A rate which decreases to 1.82 when muscle sparing thoracotomy is utilized preserving both the serratus anterior and latissimus muscle. Muscle sparing thoracotomy does diminish the postoperative occurrence of musculoskeletal deformity. A classic muscle-sparing thoracotomy often allows excellent exposure of the lung and thoracic structures in neonates, infants, and young children. Ribs should never be resected in children. Tight closure can lead to rib fusion and increase the chances of chest asymmetry and deformity. Rib fusion takes longer to develop and leads to thoracogenic scoliosis. Thoracoscopy has less impact on the thoracic wall compared with open thoracotomy.

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Sclerotherapy for Rectal Prolapse

Rectal prolapse is a relatively common condition in children with a peak incidence between one and three years of age when toilet training is occurring. Male predominance occurs in most cases. Rectal prolapse can be partial when only protrusion of the mucosa from the anal verge occurs, or complete when the full thickness of the rectum prolapses. The cause of rectal prolapse can be anatomic such as a vertical configuration of the sacrum, greater mobility of the sigmoid colon, loose attached rectal mucosa and absence of Houston's valve in most cases. Children with prolapse have lower basal and squeeze pressures during anorectal manometry when compared with normal control. Diagnosis of rectal prolapse is made by physical exam and history. Prolapse of mass, bleeding after defecation, diarrhea, prolapse rectum and constipation are the most common signs and symptoms. Most (> 80%) children with rectal prolapse do not need specific surgical treatment if constipation, parasites and excessive straining are managed. Children that fail medical therapy will eventually need some surgical management. Injection sclerotherapy is the first surgical method used to manage rectal prolapse and is likely to cure the child with one or two injections 80% of the time. Transrectal sclerotherapy is performed with 50% saline solution, ethyl alcohol or cows milk. A volume of 0.50 ml/kg of sclerosant divided over four quadrants appears a prudent volume to managed rectal prolapse. Older scholar children and those overweight are likely to experience recurrence eventually needing an operation. If sclerotherapy fails then the Thiersch procedure is recommended. The Thiersch procedure is a minimally invasive procedure involving placing a suture encircling the anal canal under the skin. The aim is to narrow the relaxed anal sphincter and cause proliferation to form adhesions within the surrounding tissue. If sclerotherapy and Thiersch procedures fail, then other more sophisticated major abdominal or perineal procedure such as stripping of the mucosa or rectopexy should be used.

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