PEDIATRIC SURGERY *Update* ©

Vol 13 No 02 AUGUST 1999

'Official Publication of the Puerto Rico Association of Pediatric Surgeons'

Segmental Volvulus

Volvulus, an acute surgical emergency, refer to clockwise rotation of the bowel causing lymphatic, venous or arterial occlusion. In malrotation the volvulus include the midgut (from the second portion of the duodenum to mid-transverse colon). On rare occasions volvulus involve only the small bowel in a segmental fashion affecting a portion of jejunum, ileum or both. Segmental volvulus can be the result of a predisposing anatomical defects such as: congenital bands (a persistent omphalomesenteric band or Meckel diverticulum fixed to the anterior abdominal wall), acquired adhesive bands after a surgical procedure, abnormal foreshortened mesenteric defect (segmental or basilar), hanging tumors (mesenteric cyst), intraluminal lesions of the small bowel (meconium ileus), worms (Ascariasis) and even VP shunts. Clinically, the child will present with sudden intestinal obstruction (bilious vomiting, abdominal distension, signs of peritonitis) associated with variable changes of ischemic bowel (shock, metabolic acidosis and dehydration). Recognition of volvulus before infarction occurs is imperative for bowel survival. Management must be prompt and consist of counterclockwise detorsion of the affected segment, removing the anatomic cause, and depending on the viability of the affected segment, resection with anastomosis. In broad-base mesenteric root defects (basilar) pexing of the bowel may be needed. Due to the segmental nature loss of massive bowel is fortunately rarely seen.

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Macklin effect

The most common cause of pneumoperitoneum in neonates is perforated necrotizing enterocolitis followed by spontaneous gastric perforation. In rare occasions pneumoperitoneum can arise from ruptured pulmonic blebs (minute rupture in alveoli subjected to the stress of mechanical ventilation) dissecting retroperitoneally into the abdomen rather than outwardly into the pleura. This is known as the Macklin effect

published originally in 1943. Precise diagnosis of this type of “medical” pneumoperitoneum will reduce a needless laparotomy in seriously ill infants. Some suggestions pointing toward this etiology are the presence of interstitial emphysema, retrocardiac pneumomediastinum, pneumothorax, dissection of air into the soft tissues of the neck, the absence of fluid or meconium in the peritoneum and the presence of air in the stomach in a child with severe pulmonary disease (Hyaline membrane disease) on mechanical ventilation. Previous X-ray may note the absence of dilated bowel loops, edema or pneumatosis. Contrast bowel studies (with water soluble material) and peritoneal paracentesis is needed to distinguish bowel perforation from an intrathoracic origin of the air. Evacuation of the air and supportive management is all that is needed.

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Mesocolic Hernias

Mesocolic hernias (MH) are rare congenital malformations accounting for one-third of all internal hernias and arising from an error of rotation of the midgut with entrapment of the small intestine beneath the developing colon. Right (Waldeyer’s hernia) and left MH are distinct entities varying in embryological origin. Failure of rotation of the pre-arterial midgut segment associated to normal post-arterial segment rotation results in a right MH with the small bowel trapped behind the mesentery of the right and transverse colon. A left MH occurs when the unsupported area of descending mesocolon between the inferior mesenteric vein and posterior parietal attachment is ballooned by the small bowel as it migrates to the left abdominal cavity. Both MH can presents with chronic or acute abdominal obstruction, gangrene and bowel perforation. UGIS is diagnostic. Management consists of reduction, repositioning of the bowel and sparing the inferior mesenteric vessels during the repair of left MH and re-positioning the right colon to the left side of the abdomen for repair of right MH.

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