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Ventral Hernias

A ventral hernia is a hernia that occurs through the anterior abdominal wall muscles. Ventral hernias can be congenital or acquired. Congenital ventral hernias are the most common variety seen and include the epigastric and umbilical defects. Many umbilical defects undergo spontaneous resolution, otherwise they are usually repair with outpatient surgery after the age of two to four years. Acquired ventral hernias are usually those that developed after previous abdominal surgery described as incisional hernias, and ventral hernias that developed after conservative management of giant omphaloceles. Incisional hernias occurring through the site of a previous abdominal incision, are very rare in children and usually small-to-moderate in size. Incisional hernias are at risk of presenting with bowel incarceration and obstruction. Incisional hernias can be safely closed primarily. On the contrary, abdominal ventral hernias that develops after conservative management of a giant omphalocele are very large and difficult to manage. The nonoperative management of omphalocele, initial skin closure of gastroschisis and postoperative incisional hernias have been reported as the most common etiologies of ventral hernias in children. Repair of giant ventral hernias is very challenging. This is usually due to inadequate intraabdominal volume as a result of prolonged extra abdominal location of the viscera, which allowed the intraabdominal compartment to become hypoplastic. Reduction of the herniated viscera with tight fascial closure may result in intraabdominal compartment syndrome with a fatal outcome. Major problems associated with closure of large ventral hernia in such cases include angulation of the inferior vena cava which upon dissection and closure of the defect can cause circulatory failure and hematemesis, kinking of the suprahepatic vena cava with subsequent liver engorgement, adhesions of the liver to the skin and adhesions of the bowel to the abdominal wall causing bleeding from the liver or trauma to the bowel respectively. Routine MRI evaluation is recommended to delineate the abnormal anatomy accurately in order to prevent injury to the superficially lying venous structures during closure of the ventral hernia. The association of Beckwith-Wiedemann and Down's syndrome, Pentalogy of Cantrell and malrotation, as well as undiagnosed intracardiac anomaly contributed significantly to serious immediate postoperative morbidity during closure of these large ventral hernias. Several reconstructive methods of closure of large ventral hernias have been described, including stage silo closure, skin flaps closure, use of a prosthetic mesh (synthetic or biologic) bridge to span the fascial defect, use of tissue expansion, component separation, rotational flaps, and free flap coverage. Tissue expanders can be placed in a number of positions (intraperitoneal space, between fascial layers) to reclaim abdominal domain. The abdominal wall fascia

can be bridge using a synthetic mesh. Gore-Tex has consistently proven favorable because is inter, intestine adhere minimally to it, and it maintains its strength while having the central portion excised serially over time. Component separation technique (CST) is another alternative in the closure of these large ventral hernias. The CST is an attractive surgical option for children's ventral hernias since it uses autologous tissue with minimal functional deficiencies as compared to rotational or free flap reconstructions. The benefit of the CST is that the release of muscle layers allows an expansion of the abdominal wall and closure of the midline fascia. CST can be augmented intraoperatively with a synthetic mesh or biologic prosthetic for added fascial bridging or reinforcing onlay or underlay. The mobilization of the skin and subcutaneous tissue necessary to perform this technique predispose the child to several complications including surgical site infection, skin necrosis, hematoma, and seroma. The need for multiple laparotomies carries the attendant risk of bowel injury, enterocutaneous fistula formation and prolonged hospital stay. The use of botulinum toxin and preoperative progressive pneumoperitoneum for repair of large ventral hernia is safe and applicable.

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