



PEDIATRIC SURGERY Update © **Vol. 43 No. 04 OCTOBER 2014**

Recurrent Adhesive Bowel Obstruction

Adhesive bowel obstruction (ABO) is a significant cause of morbidity following abdominal surgery in children. Readmission to hospital because of adhesions is estimated to affect up to 19% of children within four years of major abdominal surgery with almost 8% needing surgical intervention within the first two years after surgery. The rate of recurrence increases with each surgical procedure performed in the abdomen. The most common procedures observed in patients managed for ABO are appendectomy, colostomy creation/closure, Ladd's procedure, Nissen fundoplication and repair of Congenital diaphragmatic hernia in descending order of occurrence. Diagnosis of adhesive bowel obstruction is made clinically (bilious vomiting, abdominal distension and obstipation) and radiographically with simple abdominal films or CT-Scan. Clinical predictors of intestinal ischemia include fever, tachycardia, leukocytosis, localized pinpoint tenderness and evidence of complete small bowel obstruction. Initial conservative management of adhesive bowel obstruction consist of hydration, NPO and nasogastric decompression. When conservative management fails surgery will be needed to release the entrapped bowel. Recurrent episodes of ABO may occur in up to 42% of all patients. For such recurrent situations the surgeon should consider using long-tube (Jones or Thow) intraluminal stenting of the bowel. Stenting can be done through a jejunostomy or retrograde through the base of the appendix. The tube should remain at least for two weeks when new adhesions have formed. Plication (Noble) carries a high incidence of postop complications and has been abandoned. Seprafilm reduces the incidence of ABO in the pediatric patients undergoing laparotomy. Fibrin-sealed plication of the bowel has found to decrease the risk of recurring obstruction.

References:

- 1- Eeson GA, Wales P, Murphy JJ: Adhesive small bowel obstruction in children: should we still operate? *J Pediatr Surg.* 45(5):969-74, 2010
- 2- Inoue M, Uchida K, Otake K, Nagano Y, Ide S, Hashimoto K, Matsushita K, Koike Y, Mohri Y, Kusunoki M: Efficacy of Seprafilm for preventing adhesive bowel obstruction and cost-benefit analysis in pediatric patients undergoing laparotomy. *J Pediatr Surg.* 48(7):1528-34, 2013
- 3- Sprouse LR 2nd, Arnold CI, Thow GB, Burns RP: Twelve-year experience with the Thow long intestinal tube: a means of preventing postoperative bowel obstruction. *Am Surg.* 67(4):357-60, 2001
- 4- Holland-Cunz S(1), Boelter AV, Waag KL: Protective fibrin-sealed plication of the small bowel in recurrent laparotomy. *Pediatr Surg Int.* 19(7):540-3, 2003
- 5- Valkodai RR, Gurusami R, Duraisami V: Postoperative adhesive intestinal obstruction: The role of intestinal stenting. *J Indian Assoc Pediatr Surg.* 17(1):20-2, 2012
- 6- Fazel MZ, Jamieson RW, Watsn CJE: Long-term follow-up of the use of the Jones' intestinal tube in adhesive small bowel obstruction. *Ann R Coll Surg Engl* 91: 50-54, 2009

Accessory Hemidiaphragm

An accessory hemidiaphragm (AHD) is a very rare thoracic anomaly in children in which the hemithorax is divided by a transverse fibromuscular septum separating the affected hemithorax into two cavities. It most commonly occurs in the right side and the septum attaches anteriorly and medially to the central tendon of the thoracic diaphragm and pericardium. The septum has serosal lining, is fibrous, but it can contain striated muscle. Lung is trapped under the septum causing hypoplasia or agenesis with anomalous vascular connections. The anomaly is believed to occur due to the result of the lung bud growing into the posthepatic mesenchymal plate which normally forms the greatest part of the diaphragm. The child can develop respiratory, cardiovascular or be asymptomatic. Symptoms in the majority of cases are related either to inability of the trapped lung to expand or because of the previously described anomalous vessels. Though the diagnosis of AHD can be suspected in plain chest films, it will need a CT-Scan or MRI for final confirmation. It is important to describe well the associated cardiovascular anomalies. On bronchoscopy the bronchi to trapped lobes are narrow and they are crowded together toward the back of the affected hemithorax. Management of the symptomatic child with compromised lung function due to AHD consists of excision along with the entrapped lung tissue. This can be performed by open thoracotomy, thoracoscopy or through a subcostal laparotomy depending on the anatomy and extent of the lesion. Simultaneous or metachronous repair of an associated cardiovascular defect might be needed in some patients. Excision of the accessory diaphragm does not necessarily solve the problem of coexisting lung hypoplasia.

References:

- 1*- Radhakrishnan J, Bean J, Piazza DJ, Chin AC: Accessory hemi diaphragm. *J Pediatr Surg.* 49(8):1326-1331, 2014
- 2- Wille L, Holthusen W, Willich E: Accessory diaphragm. Report of 6 cases and a review of the literature. *Pediatr Radiol.* 4(1):14-20, 1975
- 3- Becmeur F, Horta P, Donato L, Christmann D, Sauvage P: Accessory diaphragm--review of 31 cases in the literature. *Eur J Pediatr Surg.* 5(1):43-7, 1995
- 4- Kimura M, Asao M, Kawano Y, Inakazu T, Hamamoto K, Oda T: Scimitar syndrome with an accessory diaphragm and an absent right superior vena cava. *Jpn J Surg.* 16(4):284-7, 1986
- 5- Hart JC, Cohen IT, Ballantine TV, Varrano LF: Accessory diaphragm in an infant. *J Pediatr Surg.* 16(6):947-9, 1981
- 6- Izeldin OM(1), Ahmed ME: Presentations of agenesis of the hemidiaphragm in an adult. *Saudi Med J.* 29(3):441-3, 2008

*Best review

Peritoneal Dialysis with VP Shunts

Peritoneal dialysis (PD) is the preferred method for end-stage renal disease children needing chronic dialysis support. Ventriculoperitoneal shunts (VPS) are routinely used to managed hydrocephalus especially in children with spina bifida. A small number of children with VPS will need chronic dialysis support using PD. These means two foreign bodies are within the abdominal cavity simultaneously creating fear of ascending (meningitis from peritonitis) or descending (meningitis to peritonitis) infections and VPS

dysfunction. Studies have demonstrated a rate of one peritonitis per 19 months use in children with simultaneous VPS and PD catheters with an absence of meningitis in cases with peritonitis. Regarding the possibility of a higher rate of VPS malfunction with the automated cycler dialysis in the supine position overnight and filling of less than 1,000 ml/m² for any day dwell, it seems very unlikely that the intraperitoneal pressure would ever persistently exceed the CSF pressure and inhibit VPS function. Besides the design of the VPS currently in use which allows CSF to flow in one way only, avoids reflux to the ventricles. There is a small inherent risk of chronic encapsulating peritonitis developing with loss of absorptive capacity. Concurrent use of a VPS and PD is a safe and acceptable option in the rare child requiring dialysis and a cerebral fluid shunt with no evidence to support an increased risk of peritonitis, ascending ventricular infections, or shunt dysfunction. Either the VPS and/or the PD catheter can be placed laparoscopically.

References:

- 1- Jachimiak B, Jarmoliaski T: [A child with myelomeningocele as a dialytic patient]. *Przeegl Lek.* 3:176-9, 2006
- 2- Grunberg J, Verocay MC, Rebori A, Pouso J: Comparison of chronic peritoneal dialysis outcomes in children with and without spina bifida. *Pediatr Nephrol.* 22(4):573-7, 2007
- 3- Johnson BW, Pimpalwar A: Laparoscopic-assisted placement of ventriculo-peritoneal shunt tips in children with multiple previous open abdominal ventriculo-peritoneal shunt surgeries. *Eur J Pediatr Surg.* 19(2):79-82, 2009
- 4- Ram Prabahar M, Sivakumar M, Chandrasekaran V, Indhumathi E, Soundararajan P: Peritoneal dialysis in a patient with neurogenic bladder and chronic kidney disease with ventriculoperitoneal shunt. *Blood Purif.* 26(3):274-8, 2008
- 5- Grunberg J, Rebori A, Verocay MC: Peritoneal dialysis in children with spina bifida and ventriculoperitoneal shunt: one center's experience and review of the literature. *Perit Dial Int.* 23(5):481-6, 2003
- 6- Dolan NM, Borzych-Duzalka D, Suarez A, Principi I, Hernandez O, Al-Akash S, Alconchar L, Breen C, Fischbach M, Flynn J, Pape L, Piantanida JJ, Printza N, Wong W, Zaritsky J, Schaefer F, Warady BA, White CT: Ventriculoperitoneal shunts in children on peritoneal dialysis: a survey of the International Pediatric Peritoneal Dialysis Network. *Pediatr Nephrol.* 28(2):315-9, 2013

*** Edited by: Humberto Lugo-Vicente, MD, FACS, FAAP**

Professor of Pediatric Surgery, University of Puerto Rico - School of Medicine,
 Rio Piedras, Puerto Rico. Director - Pediatric Surgery. San Jorge Childrens Hospital.
 Address: P.O. Box 10426, Caparra Heights Station, San Juan, Puerto Rico USA 00922-0426.
 Tel (787)-999-9450 Fax (787)-720-6103 E-mail: titolugo@coqui.net
 Internet: <http://home.coqui.net/titolugo>

© *PSU* 1993-2014
 ISSN 1089-7739