



# **PEDIATRIC SURGERY Update** 8

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### **MIS for Children Cancer**

Minimal invasive surgical (MIS) procedures through the use of laparoscopy and thoracoscopy have evolved slowly in the actual management of children with solid abdominal tumors and cancer in other sites of the body. The main indication is biopsy or simply determination of resectability of large abdominal tumors not amenable to immediate surgical therapy, along with thoracoscopic biopsy of lung metastasis. Adequate tissue with minimal surgical trauma can be obtained in most of these children. In the case of neuroblastoma, thoracoscopy has been also useful in resection of residual tumors and primary tumors of the posterior mediastinum. The efficacy of laparoscopic adrenalectomy for metastatic lesions, benign tumors, and small to medium neuroblastomas (two to 4 cm in diameter) is well established. Trocar site metastasis can be averted by retrieving the specimen within an endobag. Ovarian tumors are amenable to laparoscopic resection following strict protocol observation and managing of tissue extraction. The length of hospital stay, time to start postoperative feeding, time to start postoperative chemotherapy and postop discomfort (postoperative pain, analgesics requirement, postoperative ileus) is significantly shorter in the group of patients who undergoes MIS procedures. Role of MIS in Wilms tumor, rhabdomyosarcoma and hepatoblastoma is limited to biopsy and staging. MIS can be used safely and successfully to diagnose children with suspicious solid neoplasms.

#### **References:**

- 1- Sailhamer E, Jackson CC, Vogel AM, Kang S, Wu Y, Chwals WJ, Zimmerman BT, Hill CB, Liu DC: Minimally invasive surgery for pediatric solid neoplasms. *Am Surg.* 69(7):566-8, 2003
- 2- Iwanaka T, Arai M, Kawashima H, Kudou S, Fujishiro J, Imaizumi S, Yamamoto K, Hanada R, Kikuchi A, Aihara T, Kishimoto H: Endosurgical procedures for pediatric solid tumors. *Pediatr Surg Int.* 20(1):39-42, 2004
- 3- Saad DF, Gow KW, Milas Z, Wulkan ML: Laparoscopic adrenalectomy for neuroblastoma in children: a report of 6 cases. *J Pediatr Surg.* 40(12):1948-50, 2005
- 4- Iwanaka T, Kawashima H, Uchida H: The laparoscopic approach of neuroblastoma. *Semin Pediatr Surg.* 16(4):259-65, 2007
- 5- Leclair MD, Sarnacki S, Varlet F, Heloury Y: Minimally-invasive surgery in cancer children. *Bull Cancer.* 94(12):1087-90, 2007
- 6- Chan KW, Lee KH, Tam YH, Yeung CK: Minimal invasive surgery in pediatric solid tumors. *J Laparoendosc Adv Surg Tech A.* 17(6):817-20, 2007

### **Splenic Trauma: Embolization**

The spleen is the most commonly injured visceral organ in blunt abdominal trauma in both adults and children. Most children with splenic trauma are managed conservatively

and the need for surgical intervention is very rarely utilized. When the need for surgery arises splenic preservation is tried by all means. For such purpose various suture techniques, biomaterials and resorbable prostheses are utilized. Splenic artery embolization (SAE) is another useful technique in the management of blunt splenic injury. SAE is performed when patients has the following CT angiographic criteria: (1) extravasation of contrast material extending beyond or within the splenic parenchyma, (2) arterial disruption or major arteriovenous fistula, or both. Major complications occurs in 25% of the SAE-treated patients and included total splenic infarction, splenic atrophy, and postprocedure bleeding. Minor complications are more common and included fever, pleural effusion, and partial splenic infarction. Proximal splenic artery embolization in children may be a safe therapeutic alternative to either conservative or surgical management in spontaneous splenic rupture and even after delayed rupture. Preservation of splenic tissue with a reduced risk of repeated hemorrhage can be obtained with proximal splenic artery embolization. Splenic salvage rate goes beyond the 90% in reported series.

#### **References:**

- 1- Uroz Tristan J, Poenaru D, Martinez Lagares F, Leclerc S, Sanchis Solera L: Selective splenic artery embolization or use of polyglycolic acid mesh in children with severe splenic trauma. *Eur J Pediatr Surg.* 5(5):310-2, 1995
- 2- Hagiwara A, Yukioka T, Ohta S, Nitatori T, Matsuda H, Shimazaki S: Nonsurgical management of patients with blunt splenic injury: efficacy of transcatheter arterial embolization. *AJR Am J Roentgenol.* 167(1):159-66, 1996
- 3- Naess PA, Gaarder C, Dormagen JB: Nonoperative management of pediatric splenic injury with angiographic embolization. *J Pediatr Surg.* 40(11):e63-4, 2005
- 4- Wu SC, Chen RJ, Yang AD, Tung CC, Lee KH: Complications associated with embolization in the treatment of blunt splenic injury. *World J Surg.* 32(3):476-82, 2008
- 5- Raikhlin A, Baerlocher MO, Asch MR, Myers A: Imaging and transcatheter arterial embolization for traumatic splenic injuries: review of the literature. *Can J Surg.* 51(6):464-72, 2008
- 6- Maurer SV, Denys A, Lutz N: Successful embolization of a delayed splenic rupture following trauma in a child. *J Pediatr Surg.* 44(6):E1-4, 2009

## **Artificial Anal Sphincter**

Fecal incontinence is a devastating social and psychological problem in children and adults. Several methods to manage this condition includes biofeedback, bowel mechanical cleansing training, dynamic graciloplasty, permanent stoma, sacral neuromodulation and implantation of an artificial anal sphincter (AAS). The success rate of AAS is approximately 75%. The artificial anal sphincter restores continence to solid stools in almost all severely incontinent patients, two-thirds of whom achieve practically normal continence. Infection has been the most serious complication, but a number of technical complications (cuff broken, rectal erosion, difficulty in evacuating) related to the device have also occurred and required revisional procedures in up to 60% of the patients. The late complications (infection and skin erosion) are the main cause of device explantation. Although morbidity and the need for revisional surgery are high, after artificial sphincter implantation anal incontinence and quality of life improve significantly. Recently, a novel artificial anal sphincter system with sensor feedback

based on transcutaneous energy transmission was developed.

**References:**

- 1- Christiansen J: The artificial anal sphincter. *Can J Gastroenterol.* 14 Suppl D:152D-154D, 2000
- 2- Lehur PA, Zerbib F, Neunlist M, Glemain P, Bruley des Varannes S: Comparison of quality of life and anorectal function after artificial sphincter implantation. *Dis Colon Rectum.* 45(4):508-13, 2002
- 3- Wong WD, Congliosi SM, Spencer MP, Corman ML, Tan P, Opelka FG, Burnstein M, Noguerras JJ, Bailey HR, Devesa JM, Fry RD, Cagir B, Birnbaum E, Fleshman JW, Lawrence MA, Buie WD, Heine J, Edelstein PS, Gregorcyk S, Lehur PA, Michot F, Phang PT, Schoetz DJ, Potenti F, Tsai JY: The safety and efficacy of the artificial bowel sphincter for fecal incontinence: results from a multicenter cohort study. *Dis Colon Rectum.* 45(9):1139-53, 2002
- 4- O'Brien PE, Dixon JB, Skinner S, Laurie C, Khera A, Fonda D: A prospective, randomized, controlled clinical trial of placement of the artificial bowel sphincter (Acticon Neosphincter) for the control of fecal incontinence. *Dis Colon Rectum.* 47(11):1852-60, 2004
- 5- Tan EK, Vaizey C, Cornish J, Darzi A, Tekkis PP: Surgical strategies for faecal incontinence--a decision analysis between dynamic graciloplasty, artificial bowel sphincter and end stoma. *Colorectal Dis.* 10(6):577-86, 2008.
- 6- Carmona Safioleas M, Andromanakos N, Lygidakis N: Anorectal incontinence: therapeutic strategy of a complex surgical problem. *Hepatogastroenterology.* 55(85):1320-6, 2008
- 7- Zan P, Yan G, Liu H, Luo N, Zhao Y: Adaptive transcutaneous power delivery for an artificial anal sphincter system. *J Med Eng Technol.* 33(2):136-41, 2009

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