



PEDIATRIC SURGERY Update ©

Vol. 38 No. 04 APRIL 2012

Ovarian Transposition

Ionizing radiation used in adjuvant management of malignancy can have an adverse effect on gonadal function at all ages. The ovaries are exposed to significant doses of irradiation when radiotherapy is used to manage pelvic and abdominal malignant diseases such as Hodgkin's lymphoma, cervical and rectal cancer to children before childbearing age. Half of the follicles are lost when a dose of 4 Gy is used. The risk of premature ovarian failure increases significantly with increasing doses of abdominal pelvic irradiation. Ovarian transposition or repositioning the ovaries out of the irradiation field can preserve ovarian function before pelvic irradiation. Ovarian transposition can be done laparoscopically prior to pelvic irradiation. The procedure can reduce damage caused by radiotherapy but does not protect against damage caused by systemic chemotherapy. The laparoscopic procedure for ovarian transposition is highly efficient, can be done as outpatient and is associated with few postoperative complications. Proper location to fix the transposed ovaries depends on the planned irradiation field. For cervical cancer the ovaries are transposed high and lateral above the pelvic rim, while for pelvic lymph node irradiation they are placed medially or preferably laterally. Surgical complications reported include injury to the ovarian vasculature, fallopian tube infarction and ovarian cyst formation.

References:

- 1- Hays DM, Fryer CJ, Pringle KC, Collins RD, Hutchinson RJ, O'Neill JA, Constone LS, Heller RM, Davis PC, Nachman J, et al: An evaluation of abdominal staging procedures performed in pediatric patients with advanced Hodgkin's disease: a report from the Childrens Cancer Study Group. *J Pediatr Surg.* 27(9):1175-80, 1992
- 2- HÅoury Y, Guiberteau V, Sagot P, Plattner V, Baron M, Rogez JM: Laparoscopy in adnexal pathology in the child: a study of 28 cases. *Eur J Pediatr Surg.* 3(2):75-8, 1993
- 3- Williams RS, Littell RD, Mendenhall NP: Laparoscopic oophorectomy and ovarian function in the treatment of Hodgkin disease. *Cancer.* 86(10):2138-42, 1999
- 4- Meirou D, Nugent D: The effects of radiotherapy and chemotherapy on female reproduction. *Hum Reprod Update.* 7(6):535-43, 2001
- 5- Terenziani M, Piva L, Meazza C, Gandola L, Cefalo G, Merola M: Oophorectomy: a relevant role in preservation of ovarian function after pelvic irradiation. *Fertil Steril.* 91(3):935.e15-6, 2009
- 6- Han SS, Kim YH, Lee SH, Kim GJ, Kim HJ, Kim JW, Park NH, Song YS, Kang SB: Underuse of ovarian transposition in reproductive-aged cancer patients treated by primary or adjuvant pelvic irradiation. *J Obstet Gynaecol Res.* 37(7):825-9, 2011
- 7- Morris SN, Ryley D: Fertility preservation: nonsurgical and surgical options. *Semin Reprod Med.* 29(2):147-54, 2011

Adrenal Cysts

Adrenal cysts are rare, usually found incidentally during autopsy series. Adrenal cysts are usually asymptomatic; mostly an occasional discovery during ultrasound or CT done for other reason. Acute abdominal or flank pain may be presented in some cases. From the histological point of view adrenal cysts are vascular or endothelial, hemorrhagic or pseudocyst and epithelial-lined or "true" adrenal cysts. Less than 10% of adrenal cysts are malignant. The most common types are epithelial and pseudocysts. Intra-cystic hemorrhage spontaneously or post-traumatic may be present. Due to the asymptomatic nature of the cyst they can attain large sizes usually in the range of 10 cm when diagnosed. Preoperative CT-guided aspiration for cytology and biopsy are useful technique to establish a diagnosis. Resection of the cyst should be performed for cysts larger than 3 cm, symptomatic, suspicion of malignancy, hormonally active or rapidly enlarging. Either laparoscopic or open are standard methods to remove the cyst along with the adrenal gland associated. Laparoscopic adrenalectomy or cyst unroofing is a safe and effective treatment for benign adrenal cysts with the advantages of a shorter hospital stay, less blood loss and enhanced cosmesis.

References:

- 1- El-Hefnawy AS, El Garba M, Osman Y, Eraky I, El Mekresh M, Ibrahim el-H: Surgical management of adrenal cysts: single-institution experience. *BJU Int.* 104(6):847-50, 2009
- 2- Poiana C, Carsote M, Chirita C, Terzea D, Paun S, Beuran M: Giant adrenal cyst: case study. *J Med Life.* 3(3):308-13, 2010
- 3- Guazzoni G, Montorsi F, Rigatti P, Lanzi R, Pontiroli AE, Silvestre P, Breda G: Laparoscopic unroofing of adrenal cysts. *Eur Urol.* 31(4):499-502, 1997
- 4- Pradeep PV, Mishra AK, Aggarwal V, Bhargav PR, Gupta SK, Agarwal A: Adrenal cysts: an institutional experience. *World J Surg.* 30(10):1817-20, 2006
- 5- Lal TG, Kaulback KR, Bombonati A, Palazzo JP, Jeffrey RB, Weigel RJ: Surgical management of adrenal cysts. *Am Surg.* 69(9):812-4, 2003
- 6- Castillo OA, Litvak JP, Kerkebe M, Urena RD: Laparoscopic management of symptomatic and large adrenal cysts. *J Urol.* 173(3):915-7, 2005

Measuring IAP

The abdominal compartment syndrome (ACS) is a clinical syndrome caused by persistency elevated intraabdominal pressure (IAP) leading to decreased venous return and cardiac output, increase intracranial pressure, impaired ventilation, and kidney and bowel end-organ damage. The most common etiologies of ACS in children are isolated head trauma, abdominal trauma, surgery for abdominal wall defect, bowel ischemia/necrosis and meningococemia. The most accurate method for measurement of IAP is directly via an intraperitoneal catheter. Due to invasiveness, the indirect method of measuring IAP using the intravesical method has prevailed as the gold standard. The bladder technique requires that the bladder be infused with a certain amount of saline, to ensure that there is a conductive fluid column between the bladder and the transducer. The method uses a Foley catheter inserted into the bladder while the bladder is filled with saline. The closest correlation with intraabdominal pressure occurs when a volume of 1 ml/kg of weight is utilized in children. The higher the bladder

filling volume, the higher the overestimation of IAP. Optimal patient position for IAP measurement is supine, taken at end-expiration with the transducer calibrated to the level of the mid-axillary line. Infusion of saline at room temperature causes higher bladder pressure due to contraction of the detrusor bladder muscle. Mean IAP in critically ill children is 7 +/- 3 mm Hg. Above 12 mm Hg IAP is elevated.

References:

- 1- Chiumello D, Tallarini F, Chierichetti M, Polli F, Li Bassi G, Motta G, Azzari S, Carsenzola C, Gattinoni L: The effect of different volumes and temperatures of saline on the bladder pressure measurement in critically ill patients. *Crit Care*. 11(4):R82, 2007
- 2- Gudmundsson FF, Viste A, Gislason H, Svanes K: Comparison of different methods for measuring intra-abdominal pressure. *Intensive Care Med*. 28(4):509-14, 2002
- 3- Zengerink I, McBeth PB, Zygun DA, Ranson K, Ball CG, Laupland KB, Widder S, Kirkpatrick AW: Validation and experience with a simple continuous intra-abdominal pressure measurement technique in a multidisciplinary medical/surgical critical care unit. *J Trauma*. 64(5):1159-64, 2008
- 4- Balogh Z, Jones F, D'Amours S, Parr M, Sugrue M: Continuous intra-abdominal pressure measurement technique. *Am J Surg*. 188(6):679-84, 2004
- 5- Suominen PK, Pakarinen MP, Rautiainen P, Mattila I, Sairanen H: Comparison of direct and intravesical measurement of intraabdominal pressure in children. *J Pediatr Surg*. 41(8):1381-5, 2006
- 6- Ejike JC, Bahjri K, Mathur M: What is the normal intra-abdominal pressure in critically ill children and how should we measure it? *Crit Care Med*. 36(7):2157-62, 2008
- 7- Davis PJ, Koottayi S, Taylor A, Butt WW: Comparison of indirect methods of measuring intra-abdominal pressure in children. *Intensive Care Med*. 31(3):471-5, 2005

* 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)-786-3495 Fax (787)-720-6103 E-mail: titolugo@coqui.net
 Internet: <http://home.coqui.net/titolugo>

©PSU 1993-2012
 ISSN 1089-7739