



PEDIATRIC SURGERY Update © **Vol. 31 No. 01 JULY 2008**

Prophylactic Antibiotics

Antibiotics have an important role in preventing wound infections during emergent and elective surgery. The most critical factors in prevention of postoperative wound infections are sound judgment and proper technique of the surgeon and surgical team. Antibiotic prophylaxis in surgery is governed by such factors as: surgical wound classification (most important), host immune system function and immune competence, host nutritional status, type and prolongation of the surgical procedure, hospital vs. community emerging \oplus difficult to manage \boxtimes strains, and emergency vs. elective procedure. According to wound type, clean procedures (hernias, excisions, biopsy) need no use of prophylactic antibiotics. Clean contaminated procedures (surgery entering airway, bowel, breast, urinary or bile lumen) should receive one preoperative dose of broad spectrum antibiotic followed by 24 hours postoperative prophylaxis. Contaminated and dirty surgical procedures (empyema, non-prepared bowel perforation, perforated appendicitis, infected urinary tract) should receive preoperative double antibiotic therapy continued according to individual laboratory and clinical condition in the postoperative period. Special considerations such immune, asplenic and nutritional compromised hosts should receive antibiotic prophylaxis. Prolonged procedures beyond three hours should receive an intraoperative dose. Long-term hospitalized children submitted to surgery should receive high graded antibiotic therapy due to colonization with antibiotic resistant strains.

References:

- 1- ACS Surgery: Principles and Practice, Chapter 1: Basic Surgical and Perioperative Considerations, pages 9 and 13, 2006
- 2- Lee Nichols R: Preventing Surgical Site Infections: A Surgeon's Perspective. Emerging Infectious Diseases, 7(2): 220, 2001
- 3- Ichikawa S, Ishihara M, Okazaki T, et al: Prospective study of antibiotic protocol for managing surgical site infections in children. Journal of Pediatr Surgery 42: 1002-1007, 2007

Playground Injuries

Children sustaining injuries from playground equipment constitute a common cause of visiting the emergency room of Children hospitals. Injuries are usually minor, but sometimes serious head or extremity injury or even death can occur. Injuries consist of fractures (most common), contusion/abrasions, laceration, hematomas, strains/sprains and brain injury. In order of frequency monkey bars are responsible from the majority of cases, followed very closely by swings and slides. Geographically, they occur with almost the same frequency at school, recreation/sporting facilities and home. Body area injured consist of the upper extremity (most common), followed by head/neck, lower extremity and trunk. Most of the children are managed and released the same day. Monkey bars injuries

are usually fractures, while swings at school cause most brain injuries (mechanism: a young child moves behind a moving swing). Upper extremity fractures due to climbing account for the majority of hospitalizations. Older children sustained more injuries on climbing apparatus, where younger children sustained more injuries on slides. Removing and replacing unsafe equipment is an effective strategy for preventing playground injuries.

References:

- 1- Lillis KA, Jaffe DM: Playground injuries in children. *Pediatr Emerg Care.* 13(2):149-53, 1997
- 2- Macarthur C, Hu X, Wesson DE, Parkin PC: Risk factors for severe injuries associated with falls from playground equipment. *Accid Anal Prev.* 32(3):377-82, 2000
- 3- Phelan KJ, Khoury J, Kalkwarf HJ, Lanphear BP: Trends and patterns of playground injuries in United States children and adolescents. *Ambul Pediatr.* 1(4):227-33, 2001
- 4- Howard AW, MacArthur C, Willan A, Rothman L, Moses-McKeag A, MacPherson AK: The effect of safer play equipment on playground injury rates among school children. *CMAJ.* 172(11):1443-6, 2005
- 5- Loder RT: The demographics of playground equipment injuries in children. *J Pediatr Surg.* 43(4):691-9, 2008

Internal Hernias

Internal hernias are a rare cause of bowel obstruction (5%) in children and adults. These mesenteric defects are most commonly acquired or congenital in nature. Acquired internal hernias occur postoperatively resulting from incomplete closure of surgically created mesenteric defects. Congenital mesenteric defects represent 10% of all internal hernias. Pathogenesis of these congenital defects includes regression of the dorsal mesentery, enlargement of a hypovascular area and compression of mesentery by the colon. Most congenital mesenteric defects that lead to herniation occur in the small bowel mesentery, are 2 to 3 cm wide and trap a loop of ileum. Herniation of small bowel through the falciform ligament and Winslow's foramen has also been reported. Clinically, children shows sign of intermittent small bowel obstruction, nausea, vomiting, abdominal pain and distension which can follow into bowel incarceration or strangulation. Preoperative diagnosis is difficult and a high index of suspicion is needed to order appropriate studies for diagnosis such as upper bowel contrast studies or CT-Scan. Misdiagnosis results in delayed exploration which leads to bowel necrosis and death. Surgical exploration is the only means of definitive diagnosis.

References:

- 1- Ozen A, Ozdemir A, Coskun T: Internal hernia in adults. *Int Surg.* 83(2):167-70, 1998
- 2- Moran JM, Salas J, Sanjuán S, Amaya JL, Rincón P, Serrano A, Tallo EM: Paramesocolic hernias: consequences of delayed diagnosis. Report of three new cases. *J Pediatr Surg.* 39(1):112-6, 2004
- 3- Agresta F, Michelet I, Candiotti E, Bedin N: Incarcerated internal hernia of the small intestine through a breach of the broad ligament: two cases and a literature review. *JSLS.* 11(2):255-7, 2007
- 4- Mboyo A, Goura E, Massicot R, Flurin V, Legrand B, Repetto-Germaine M, Caron-Bataille S, Ndiaye J: An exceptional cause of intestinal obstruction in a 2-year-old boy: strangulated hernia of the ileum through Winslow's foramen. *J Pediatr Surg.* 43(1):e1-3, 2008
- 5- Gingalewski C, Lalikos J: An unusual cause of small bowel obstruction: herniation through a defect in the falciform ligament. *J Pediatr Surg.* 43(2):398-400, 2008
- 6- Page MT, Ricca RL, Resnick AS, Puder M, Fishman SJ: Newborn and toddler intestinal obstruction owing to congenital mesenteric defects. *J Pediatr Surg.* 43(4): 755-758, 2008

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

Professor /Academic Director of Pediatric Surgery, University of Puerto Rico - School of Medicine,
Rio Piedras, Puerto Rico.

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* 1993-2008
ISSN 1089-7739