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Antibiotic-impregnated Catheters

Central venous catheter (CVC) and peripherally inserted central catheters (PICC) are widely used in intensive and high dependency care to provide venous access for drug delivery, intravenous feeding, monitoring and blood sampling. Nosocomial bloodstream infections are associated with increased morbidity and mortality. CVC and PICC are the main source of nosocomial bloodstream infection in critically-ill children. The main consequences of catheter-related blood stream infections are increased costs due to treatment, testing and prolonged duration of stay. This infection is caused by colonization of the catheter during insertion or following migration of organisms from the patient skin or from the hub or port of the catheter into the intravascular part of the device. This risk is higher in children receiving acute care and parenteral nutrition. The best option for reducing catheter-related blood stream infection are heparin-coated or antibiotic-impregnated central venous catheter. They are impregnated with minocycline and rifampin due to their synergistic action and potential to penetrate bacterial-secreted biofilm. In the acute critical care setting, the introduction of antibiotic-impregnated CVC/PICC are associated with a significant decrease in nosocomial primary gram-positive and gram-negative bacteremia. This reduction of nosocomial bacteremia is associated with a significant decrease in catheter-related infections and cases of nosocomial multidrug- resistant bacteremia as well as a significant decrease in the length of hospital and ICU stay. In children with burns the uses of PICC are a necessity to deliver crystalloids during the phase of resuscitation. Almost 50% of these children develop bacteremia. Antibiotic-impregnated PICC lines are five times more effective in decreasing catheter-related bloodstream infection than maximal sterile barrier alone. They also decrease the need for systemic antibiotic use in ICU. Cost saving using CVC and PICC impregnated-catheters is significant.

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Handlebar Hernia

Traumatic abdominal wall hernia is produced by sudden application of a blunt force that is insufficient to penetrate the skin but strong enough to disrupt the muscle and fascia. In combination with a direct blow to the abdominal wall a sudden increase in intra-abdominal pressure may induce disruption of the abdominal musculature and fascia with the skin remaining intact. These traumatic abdominal wall hernias are categorized as Type 1: small defect such as that caused from a bicycle handlebar, Type 2: larger defect caused by high-energy transfer such as a motor vehicle crash or fall, and Type 3: defects that involve intraabdominal bowel herniation as described in deceleration injuries. Most traumatic abdominal wall hernias in children are Type 1, also called handlebar hernias. They occur in children between the ages of 5 and 14 years, mostly males. A skin contusion or abrasion is identified in most cases. The majority of handlebar hernias involved a lower abdominal wall defect and they seldom are associated with another intraabdominal injury. Diagnosis is made by history and physical examination (tender bulge or swelling). Ultrasonography and CT-Scan are important diagnostic imaging modalities utilized. Definitive management requires surgical repair of the defect to prevent complications such as bowel obstruction, incarceration, or strangulation with resultant bowel ischemia. Repair is made with primary closure of all the tissue layers or using prosthetic material if the defect is large. Whether to do a formal exploratory laparotomy is debatable due to the low incidence of associated intraabdominal injury found in review cases. In the setting of blunt abdominal trauma, the role of diagnostic and therapeutic laparoscopy is emerging as a reasonable initial option in management. Laparoscopy provides evaluation of solid organ, diaphragmatic, small bowel, mesenteric, and anterior abdominal wall injury.

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Fibrin Glue for Pilonidal Sinus Disease

Pilonidal sinus disease (PSD) is caused by hair that penetrates skin and gluteal cleft causing cyst, sinus formation, infection and abscess. Is the most common benign

disease causing school lost in adolescent children. The diagnosis is made clinically, seldom needing imaging studies. From time many surgical approaches have been utilized to remove permanently PSD. They include primary excision with closure, radical excision leaving the wound opened, incision of the sinus with curettage, marsupialization, application of phenol, cleft lift procedure, cryosurgery and laser. The lowest recurrence rates have been described for the lateral cleft lift procedure approach. Leaving the wound opened prolongs the healing process unless vacuum-assisted closure therapy is utilized. The gold standard for management of PSD in children is a lateralizing flap procedure. Fibrin glue is a biological adhesive material that is made from human fibrinogen and is being used as a sealant for the treatment of fistulae. It promotes wound healing by enhancing homeostasis and angiogenesis, stimulating macrophages and collagen production at the wound site. The use of fibrin glue to gap the closed space after excision and closure of PSD has been recently found to be very effective management strategy. Fibrin glue promotes hemostasis, sealing and healing speeding patient recovery and reducing pilonidal disease recurrence. This approach is recommended as primary treatment and for recurrence of PSD in children.

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