



PEDIATRIC SURGERY Update © **Vol. 31 No. 04 OCTOBER 2008**

Ethanol Lock

Children needing long-term parenteral nutrition or chemotherapy will do so with the help of a central venous catheter (CVC). With each episode of thrombosis or catheter-related infection (CRI) the rate of catheter turnover will increase and fewer veins will be accessible for such purposes. Most CRI can be managed with systemic antibiotics without removing the catheter. The use of 70% ethanol lock solution has been described for prevention and management of catheter-related infections in children and adults. Ethanol lock denatures proteins and is rapidly bactericidal and fungicidal in vitro, exhibits thrombolytic effects eliminating the need to maintain catheter patency. Ethanol lock has been used to dislodge lipids clots in occluded catheters. Patients who received prophylactic ethanol lock therapy have a 95% decrease in catheter replacements required. The use of antibiotic-lock therapy for CRI prevention has the theoretical disadvantage of increased antibiotic resistance. The ethanol lock volume can be something between 0.5 and 1 ml. Whether degradation of silicone catheters occurs with repeated ethanol instillation is unknown, but it should not be used with polyurethane catheters as it degrades the internal lumen. No severe clinical side effects of ethanol flush are observed. Mild symptoms that could occur include tiredness, headaches, dizziness, nausea, and light-headedness.

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Splenectomy for SCD

Sickle cell disease (SCD) is a chronically hemolytic debilitating condition causing recurrent packed blood cell transfusions in children to manage or prevent complications such as anemia, stroke, acute chest syndrome, severe pain syndrome or splenic sequestration. The

major indication for splenectomy in children with SCD consists of recurrent splenic sequestrations² episodes and severe hemolysis due to secondary hypersplenism. Clinically the sequestration is characterized by hypovolemia, worsening anemia, extreme reticulocytosis and a tender enlarged spleen. Hypersplenism is characterized by anemia, thrombocytopenia, or neutropenia usually associated with splenomegaly. Restoration of blood volume and circulating red cell mass forms the basis of management of sequestration episodes and hypersplenism in SCD children. Splenic sequestrations occur more often in children less than six years of age. Total laparoscopic splenectomy is recommended after managing the acute event to prevent further recurrences of splenic sequestration crisis and reverse hypersplenism. Lap splenectomy, even in functional asplenic (small spleens) individuals reduce the transfusion requirements (reducing iron overload), maintaining stable hematologic parameters and decreasing red cell turnover. The rate of postoperative acute chest syndrome is smaller with laparoscopic than open splenectomy. The risk of overwhelming postsplenectomy sepsis crisis has decreased significantly over the years due to preoperative immunization and use of prophylactic antibiotics.

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Pulmonary Arteriovenous Fistula

Congenital pulmonary arteriovenous fistula (PAVF) is a rare vascular malformation where an abnormal connection develops between an artery and a vein in the lung of a child. The arteriovenous connection can be tortuous or direct aneurysmal and lacks an intervening capillary bed. Females are more often affected than males. PAVF can be either large or small, multiple or diffuse and unilateral or bilateral. The congenital variant of PAVF can be caused by a cavernous hemangioma, while the acquired form occurs after heart surgery, trauma, actinomycosis, amyloidosis, hepatic cirrhosis or cystic fibrosis. Symptoms include cyanosis, digital clubbing, exertional dyspnea, hemoptysis and hemothorax. Most PAVF cases affect the lower lobes. Diagnosis is made with angiography or 3-dimension spiral CT. Main indication for surgery is hypoxemia and prevention of neurological sequelae due to embolization. Management can entail segmentectomy, lobectomy, pneumonectomy, or recently the use of embolization with metal coils or silicon balloons. Excision has good results when the PAVF is single, large and located in one lobe.

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