PEDIATRIC SURGERY *Update* ©
Vol. 45 No. 06 DECEMBER 2015

Hair Tourniquet Syndrome

Hair tourniquet syndrome (HTS) refers to hair or other thread fiber becoming tightly wrapped circumferentially around an appendage of the child causing strangulation and compromised blood flow. Appendages affected in such syndrome include in order of preference toe, finger, uvula, tongue or genital structure (penis and clitoris). The third toe is the most frequent affected digit. Erythema and circumferential cut with distal edema is typical compromising the distal venous and lymphatic drainage of the appendage involved (compartment syndrome). Further edema leads to interruption of arterial blood supply causing ischemic injury, tissue necrosis and autoamputation. This process can occur over hours to weeks. It is important to distinguish HTS from congenital constriction band syndrome (amniotic band syndrome, Streeter's dysplasia), the latter being a rare congenital condition that is associated with other musculoskeletal disorders. The typical case is a 5 month old infant. Males and female are equally affected. Hairs are suppled and stretched easily when wet and contract when dry, and the circular configuration results in hydrogen-bonds giving a firmer hold. The high tensile strength of hair makes it an effective tourniquet. Management consists of release of the strangulation under either local or general anesthesia urgently. The constricting hair or fiber may be mechanically removed or depilatory agents may be used. A short longitudinal incision (peritendinous) placed perpendicular to the constricting band can be dorsally made in the digit all the way to the bone to facilitate a definitive release since severe inflammation can deeply bury the offending agent. The strand of hair will be then be seen and removed completely. Antibiotic coverage should be provided as appropriate.

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Blunt Cardiac Injury

Injury to the chest can cause trauma to the heart. Blunt cardiac injury (BCI) is rare in

children. Mechanisms associated with such trauma include thrusting of the heart against the chest wall as a direct result of sudden acceleration or deceleration, compression of the heart between the sternum and the vertebral column, and a sudden violent increase in intrathoracic pressures associated with crushing chest or abdominal injuries. Most cases occur after motor vehicle accidents. Most (95%) BCI is cardiac contusion followed by valvular dysfunction and ventricular septal defects. Other sequelae such as hemopericardium, pericardial effusion, arrhythmias, cardiac aneurysm, and myocardial rupture may only occur after some delay emphasizing the need for observation and serial evaluation. Free wall rupture is lethal. Chest pain is present in 50% of neurologically responsive children. The most useful investigations in suspected cases of myocardial contusion are serial cardiac troponins, an initial and repeat ECG, echocardiography and arrhythmia monitoring. Troponin 1 level is a sensitive and more specific measure than CK-MB. They become elevated within hours of injury and remain elevated for 4-7 days. Levels above 8.0 ng/ml are associated with a fatal outcome. Troponin is also very useful in cases of non-accidental chest trauma, such as child abuse. In general, patients with myocardial contusion have a favorable outcome. Normalization of cardiac troponin can help to risk-stratify patients. VSD after BCI is also very rare, occurs more commonly in the muscular septum followed by the membranous portion due to initial damage of the nutrient vessels supplying the septum. Conduction anomalies, such as RBB and AV block, along with arrhythmias such as tachycardia and extrasystole or ventricular fibrillation can occur depending on damage. Angiography is the gold standard for confirming coronary involvement.

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VATS: Spontaneous Pneumothorax

Spontaneous pneumothorax (SP) in children is usually primary and caused by rupture of a subpleural bleb or bulla in adolescent, tall and thin patients. Secondary SP occurs in children with underlying lung disease such as asthma, cystic fibrosis, emphysema or connective tissue disorder. The goals of treatment of SP consist of lung re-expansion and avoidance of recurrence. Initial management with needle aspiration or tube thoracostomy drainage have a high failure and recurrent rate. Instillation of chemicals to sclerose the pleuras through the chest tube have also a significant rate of recurrence. A

wide variety of chemical sclerosing agents have been introduced into the pleural space to achieve pleural symphysis. The most popular agents have been talc, tetracycline, and silver nitrate, which are known to cause aseptic inflammation leading to dense adhesions. Talc has the lowest recurrence rate of all chemical agents, while tetracyclines are the most innocuous. During the last decade video-assisted thoracoscopic surgery (VATS) has replaced open thoracotomy in the management of spontaneous pneumothorax. Using VATS the surgeon can resect the offending bleb or bulla and produce chemical or mechanical pleurodesis with less pain, less respiratory dysfunction, less hospital stay and better cosmetic results. VATS with blebectomy can be used during the first SP episode if there is persistent chest tube air leak, a contralateral SP develops in a known patient or he has respiratory insufficiency. The two most common complications after VATS for SP are prolonged air leak and bleeding. Prolonged leak is associated with an underlying lung disease such as asthma, cystic fibrosis or emphysema. Postoperative air leak from the staple lines probably accounts for most of the need for postop chest tube drainage. Prolonged air leak is managed with continuous chest tube suction and further chemical pleurodesis. Both factors increase hospital stay. Bleeding might occur after dense adhesions of previous recurrent episodes of SP or after intercostal artery injury from the trocars. Children with SP should avoid activities that put additional strain on the lungs including scuba diving, airplane flight and playing wind musical instruments. Late recurrence is related to formation of new bullae.

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ISSN 1089-7739