



PEDIATRIC SURGERY Update © **Vol. 38 No. 06 JUNE 2012**

Pulmonary Metastasectomy

The most common thoracic pediatric malignancy is pulmonary metastasis secondary to solid tumors. Survival has been improved with the use of pulmonary metastasectomy. By examining tumor types individually it is seen that certain histologies (adrenocortical carcinoma, alveolar soft part sarcoma, osteosarcoma) mandate surgical metastasectomy for patient survival. Other pediatric tumors (Wilms tumor, Ewing's sarcoma) are radiation sensitive and application of metastasectomy is controversial, though a possible benefit for Ewing's cases has been found recently when combined with radiotherapy. In Wilms, pulmonary metastasectomy is indicated if complete remission can be achieved to avoid lung irradiation. In the case of neuroblastoma, differentiated thyroid cancer, rhabdomyosarcoma, metastasectomy is seldom performed except in highly unusual situations. During metastasectomy wedge resection is more commonly performed than anatomic resection in order to minimize the volume of resected lung tissue. Significant longer survival is observed for patient after complete resection, with five or fewer metastatic nodules, unilateral disease, and disease-free interval of more than two years. Performing metastasectomy at least three months after detection might significantly improve the prognosis. Other factors associated with dismal prognosis are poor chemonecrosis and central distribution instead of peripheral location of the metastasis. The open thoracotomy approach is preferred since the pulmonary nodule must be manually palpated for an optimal resection.

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Magnet Ingestion

Most foreign body ingestion in infant and children passes through the gastrointestinal tract without causing significant sequelae. Surgical intervention is generally required if an object becomes lodged in the gastrointestinal tract or if the material has a harmful effect such as the corrosive effect of batteries. With rare-earth magnets present in many small toys, the situation can be very different. A single magnet ingestion is innocuous and is expected to pass through the GI tract. Unfortunately, a misdiagnosis and misconception that a solitary magnet has been ingested when in fact they are two or more joined together may lead to a delay in diagnosis and subsequent severe and possibly preventable complications. The ingestion of multiple magnets can cause bowel obstruction, volvulus, perforation or internal bowel fistula formation owing to pressure necrosis from magnet attraction. Pressure necrosis and fistula formation can be a gradual process resulting in minimal physical examination findings. In many of the toys the magnets are embedded in plastic parts that are easily detachable. If in the stomach, the magnet should be removed endoscopically. If the history, clinical findings and imaging are suggestive of multiple magnetic ingestion early intervention using laparoscopy or open surgery is indicated to prevent serious life-threatening complications. It is imperative health authorities give more information to parents and physicians about the potential risk of small magnetic toys in children.

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HIPEC

Hyperthermic intraperitoneal chemotherapy (HIPEC) is an alternative of management based on the fact that hyperthermia and chemotherapy have synergistic cytotoxicity for microscopic carcinomatous disease. In adults it has been applied successfully for extensive peritoneal disease associated with such tumors as mesothelioma, appendiceal, colonic, gastric and ovarian carcinoma. During closed-technique HIPEC the skin is temporarily closed and chemotherapy is delivered at supranormal temperatures. Drugs known to have synergy with hyperthermia include mitomycin C, doxorubicin and cisplatin. HIPEC has been found to be safe and improve median survival in children with dermoplastic small round cell tumor after complete surgical excision. Adult and pediatric patient undergoing HIPEC are a highly selected group who

does not have uncontrolled disease outside the abdominal cavity. HIPEC and cytoreductive surgery is not recommended for palliative purposes. Other rare instances where HIPEC has been used effectively in children include peritoneal metastasis from melanoma, signet cell colonic carcinoma and Wilms's tumor. Indications for HIPEC include resectability to no visible disease, active disease limited to the abdomen, no liver metastasis, normal liver and kidney function and disease partially responsive to neoadjuvant chemotherapy.

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