



# **PEDIATRIC SURGERY Update** © **Vol. 38 No. 01 JANUARY 2012**

## **Dopamine-producing Pheochromocytoma**

Pheochromocytomas are neuroendocrine tumors that produce, metabolize and secrete catecholamines such as norepinephrine and epinephrine. In very rare occasions hormonally active pheochromocytomas can produce and secrete only dopamine as the only catecholamine. Predominance of dopamine in these tumors and lack of production of other catecholamines is due to deficiency in tumor cells of dopamine-β-hydroxylase, the enzyme that converts dopamine into norepinephrine. Dopamine-producing pheochromocytomas are usually found as extraadrenal paragangliomas. Clinically patients harboring these tumors are normotensive. Most patients are diagnosed after identifying the adrenal or extraadrenal position of the tumor during incidental imaging or as the result of symptoms caused by the space-occupying tumor. Due to lack of hormonally associated symptoms these tumors can grow into large size. Tumors that produce dopamine can be identified by high plasma or urine concentrations of dopamine, or high plasma levels of free methoxytyramine. The incidence of malignancy is higher in this type of pheochromocytoma. Nausea, vomiting, flushing and orthostatic hypotension are a few of the symptoms exhibited by these patients. MRI is the imaging of choice to localize these tumors. Management consists of resection of the tumor. Persistent elevation of blood pressure after tumor resection have been documented. PET-Scan is more specific than MIBG in localizing residual disease.

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## Laparoscopy for Ventriculoperitoneal Shunts

Ventriculoperitoneal (VP) shunt is the standard treatment for hydrocephalus in children and adults. Malfunctioning VP shunts causing increase intracranial pressure needs surgical revision. Such malfunctioning can occur due to obstruction from peritoneal adhesion, multiple infections, ascites and pseudocysts formation, or mechanical causes such as catheter fracture, disconnection, migration and misplacement. VP shunt failure is common with 25-40% occurring within the first year, and 50% by the second year. Laparoscopy has an important role in initial VP shunt placement and later revisions. Laparoscopy reduce the trauma to the abdominal wall decreasing adhesion formation and optimizing visualization during placement. With VP shunt failure laparoscopy can be both diagnostic and therapeutic. While visualizing the entire abdominal cavity the causes of failure can be identified, lysis of adhesions can be performed, retrieval of disconnected shunt can be accomplished, flow of CSF fluid can be observed and proper placement of the catheter can be obtained. The technique is safe with a very low morbidity rate. The use of laparoscopy assisted VP shunt revision is advocated for patients with multiple previous shunt revisions, prior abdominal surgery, previous intraperitoneal infections, broken devices, obesity or CSF pseudocysts.

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## Magnet-assisted Laparoscopic Surgery

Magnets have been introduced in the armamentarium of laparoscopic surgery to recapture the triangulation that is affordable by conventional laparoscopy while decreasing the number and size of the abdominal incisions utilized. Specialized magnetic grasper are inserted into the peritoneal cavity through the port cannula and attached to intraabdominal organs. These magnets are controlled by another external magnet placed on top of the abdominal wall. The magnet grasper moves to provide further traction on an organ without the additional need of another port. With the magnet you can retract the liver, stomach, lung tissue, gallbladder providing traction and facilitating exposure. Magnet-assisted laparoscopy is safe and effective means of

reducing the number and size of abdominal incisions while improving exposure, triangulation, and the ergonomics of the procedure.

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