

What is Endocrine Surgery?

Endocrine Surgery is the discipline of surgical management of endocrine disorders, including the understanding of disease process, technical mastery and comprehensive care of surgical endocrine diseases of the neck and abdomen.

Thyroid



The thyroid gland is a butterfly shaped gland in the center of the neck. The thyroid gland produces the thyroid hormones T3 (triiodothyronine) and T4 (thyroxine). These hormones regulate the growth and function of many systems of the body and they set the pace of the metabolism. **Hypothyroidism** is when the thyroid under produces hormones. **Hashimoto's thyroiditis** is an auto-immune disease in which the immune system attacks the thyroid gland resulting in hypothyroidism. **Hyperthyroidism** is overproduction of thyroid hormone. **Graves' disease** is also an autoimmune disease however in this case the result is excessive thyroid hormone

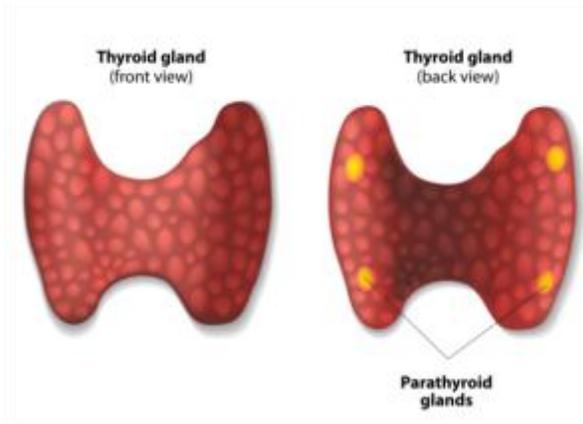
levels and hyperthyroidism.

Goiter is a term for enlargement of the thyroid gland. The enlargement can be diffuse, due to one nodule or due to multiple nodules. **Nodules** are growths within the thyroid gland. Nodules can be benign or malignant. Nodules are evaluated with a neck ultrasound. Nodules greater than 1cm or with suspicious features should be sampled with a fine needle biopsy to rule out a thyroid cancer. Larger nodules can exert pressure on local structures such as the trachea, esophagus, and nerve to the voice resulting in trouble breathing, swallowing or speaking. Thyroid surgery is indicated when nodules cause compressive symptoms, when nodules are cancerous and when nodules are suspicious on fine needle aspiration.

Thyroid cancer is cancer originating in the thyroid gland. There are 4 types of thyroid cancer: papillary carcinoma, follicular carcinoma, medullary carcinoma and anaplastic thyroid cancer. Surgery is the main treatment for thyroid cancer. The extent of surgery and the adjuvant treatments are determined by the extent of the disease.

Thyroidectomy is the removal of thyroid tissue. A **lobectomy** is removal of one side of the thyroid. A **total thyroidectomy** is removal of the entire thyroid gland. **Neck Dissection** is removal of the lymph nodes adjacent to the thyroid gland.

Parathyroid



The parathyroid glands are 4 small glands located in the neck adjacent to the thyroid gland. They regulate the blood calcium level. **Hyperparathyroidism** occurs when one or more parathyroid gland produces excessive parathyroid hormone (PTH). The diagnosis is made with laboratory studies. The symptoms of hyperparathyroidism are kidney stones, bone loss, fractures, fatigue, malaise, memory loss, depression, irritability and digestive problems.

Parathyroidectomy is the remove of one or more parathyroid glands. Localization studies can be used to help identify which parathyroid gland(s) are

causing the problem. **Focused minimally invasive parathyroidectomy** is a directed surgery guided by the preoperative radiology studies to remove the abnormal parathyroid gland. **Four-gland exploration** is a comprehensive evaluation of all four parathyroid glands. **Intra-operative Parathyroid Hormone (IOPTH) monitoring** involves testing the PTH level before surgery and in the operating room after the abnormal gland resection to guide the extent of the parathyroid surgery and confirm a biochemical cure.

Adrenal



The adrenal glands are small glands that sit on top of the kidneys. The gland has an inner core called the medulla and an outer layer named the cortex. The medulla makes epinephrine and norepinephrine. The cortex makes hormones that help regulate the heart, kidneys, GI tract, bones, genitalia, and immune system. Diseases of the adrenal glands are usually caused by over production or under production of these key hormones. **Adrenal nodules** can arise within the adrenal gland. Adrenal nodules can be non-functional (not hormone producing) or functional (hormone producing).

Functional adrenal nodules can cause imbalances in hormone levels. An **aldosteronoma** is an adrenal nodule that produces too much aldosterone causing problems with blood pressure and fluid balance. **Cushing Syndrome** occurs when there is an excess of cortisol in the blood. In some cases a tumor in the adrenal gland can be the source of the excessive cortisol

production. **Pheochromocytoma** is a tumor of the adrenal medulla that produces too much adrenaline. The excessive adrenaline can cause severe hypertension and increase the risk of cardiovascular disease, heart attack and stroke. Imaging studies are used to identify the site of the excessive hormone production.

Adrenalectomy is the removal of the adrenal gland. Adrenal surgery is recommended for functional adrenal tumors, for adrenal nodules with suspicious imaging characteristics, and for **adrenal cortical carcinoma**, cancer of the adrenal gland.