



The Thyroid Gland

The thyroid gland is one of the most important organs in the Endocrine System (hormone secreting glands) of the human body. The thyroid gland secretes T3 and T4 (Thyroxine), hormones which are crucial in the normal functioning of most structures of the human body. The thyroid gland works in synchrony with all other hormone secreting glands and in a sense is the “conductor of the orchestra” of the Endocrine System.

The thyroid gland is situated anatomically in the neck, overlying the upper rings of the trachea (windpipe) and the larynx. There are two lobes, laterally, with a central isthmus, joining the two lobes and overlying the trachea.

The precise anatomy of the thyroid gland was demonstrated in the dissections of Theodore Kocher of Berne, Switzerland. He performed over 3000 thyroidectomies and was awarded the Nobel Prize for his work in 1908.

Diseases of the thyroid may be “functional” or “structural” in nature. “Functional” pathology relates to excess or reduced secretion of the thyroid gland, leading to clinical symptoms affecting every system of the body. “Structural” disease consists of an enlarged thyroid (goitre). A thyroid enlargement may be “smooth” (diffuse), or “nodular” in nature.

Diffuse goitres may be due to iodine deficiency, congenital enzyme abnormalities, and other hereditary conditions. Graves disease (thyrotoxicosis) is a smooth, over-secreting goitre.

Nodular disease may be “single” nodules or “multinodular” goitre (MNG).

MNG is treated conservatively in the majority of cases. 25% of women between the age of 20 and 40 years have small, incidental MNG’s which are of no consequence. Surgery in MNG is reserved for the following clinical indications: large MNG’s causing symptoms of compression in the neck; cosmetic aspects; a large, “dominant” nodule which may carry a risk of malignancy; “toxic” nodular goitre.

The overall risk of malignancy in MNG is well below 1%. Formerly, this risk was considered much higher and hence patients in the 1960’s and 70’s frequently underwent unnecessary surgery.

Single thyroid nodules carry much greater significance pathologically than MNG. 15% are low grade (well-differentiated) thyroid malignancies.

THE THYROID GLAND (CONT.)

Single/dominant nodules require cytology (needle biopsy) performed with ultrasound guidance. This will diagnose thyroiditis, benign nodular conditions, high grade anaplastic cancers, lymphoma and metastatic cancer to the thyroid, such as melanoma. However, cytology cannot reliably distinguish benign colloid nodules/adenomas, from well-differentiated (low grade) thyroid cancers. A large, single nodule frequently requires surgical excision to establish a definite histological diagnosis. The appropriate anatomically-based operation is a hemi-thyroidectomy (lobectomy). A proven thyroid cancer requires a total thyroidectomy, the contralateral lobectomy often performed as a separate procedure, once the final pathology is established.

Planned thyroid surgery requires an assessment by an Anaesthetist, in advance, at the SAH Pre-Admission Anaesthetic Clinic. Indirect laryngoscopy by an ENT Surgeon is mandatory prior to surgery.

Thyroid surgery strictly obeys anatomical planes and requires careful identification and preservation of key anatomical structures. These include the recurrent and external laryngeal nerves, on both sides of the gland, and the four parathyroid glands. The surgery is performed through a limited incision in the neck, carefully placed within the lines of Langer in an effort to give the best possible cosmetic outcome. A team approach is maintained in the operating room. Usual precautions against deep vein thrombosis and infection are instituted.

The post-operative course includes two to three days in hospital, followed by a week resting at home, with a return to limited, normal activities within ten to fourteen days of the surgery, dependent on the nature of the operation. Some "tightness" and swelling of the neck persists for eight weeks. Longterm thyroid replacement therapy (Thyroxine) is required following a total thyroidectomy.