

THYROIDECTOMY AND ANESTHESIA

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THYROIDECTOMY AND ANESTHESIA

Thyroidectomy may be unilateral lobectomy, isthmectomy, subtotal, neartotal or total. Surgery is performed through a skin crease incision approximately 4 cm above the sternum.

- The recurrent laryngeal nerves must be preserved.
- Parathyroid glands should be preserved.
- Large retrosternal goiters may require a sternal split.
- Up to 5% of the population has a goiter.
- Most patients are female. Approximately 10% of nodules will be malignant.

Hypothyroid	Hyperthyroid
<ul style="list-style-type: none">• Tiredness, Weakness, lethargy, decreased reflexes• Poor concentration and memory• Dry, coarse skin and hair• Cold intolerance, cold body extremities• Abnormal skin sensations like tingling, poking, numbness, chilling or burning.• Constipation• Weight gain with poor appetite• Swelling/puffiness of hands, feet or face• Decrease in heart rate• Heavy, frequent periods in women	<ul style="list-style-type: none">• Hyperactivity followed by fatigue, weakness• Anxiety, irritability, sleeplessness• Thick skin, increased sweating, hair loss• Heat intolerance, warm body extremities• Tremors, muscle weakness• Lid retraction or eyes appearing bulgy• Diarrhea• Weight loss and increased appetite• Lean, thin look• Increase in heart rate (palpitations)• Scanty, infrequent periods in women

PREOPERATIVE ASSESSMENT

- Detailed history and examination

AIRWAY:

- Tracheal deviation may be marked.
- Stridor or respiratory distress, especially when supine.
- Vocal cords movement assessed by an otolaryngologist to ensure that pre-existing laryngeal nerve palsy is recognized

CARDIOVASCULAR SYSTEM:

- Hyperthyroidism can cause tachycardia, atrial fibrillation, or heart failure.
- Large goiters may obstruct venous drainage and SVC obstruction can occur with retrosternal spread.

EYES:

- Lid retraction and exophthalmos mean that care is needed to protect the eyes from intraoperative drying or trauma.

OTHER CONDITIONS:

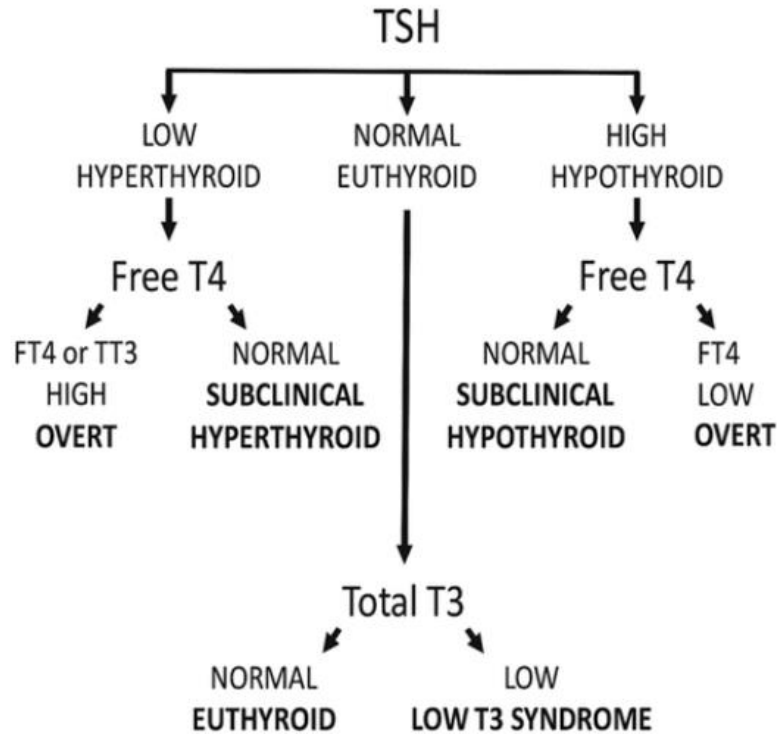
- May be part of multiple endocrine neoplasia syndromes and conditions such as diabetes mellitus, hyperparathyroidism, and pheochromocytoma must be considered.

DRUG TREATMENT IN HYPERTHYROIDISM:

Patients should be clinically and biochemically euthyroid prior to surgery:

- **Carbimazole** – Inhibits iodination of tyrosyl residues in thyroglobulin.
 - **Propylthiouracil** – As carbimazole but also reduces peripheral de-iodination of T4 to T3.
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- **β -blockers** – Used to control cardiovascular effects. Propranolol also decreases the extra thyroidal conversion of T4 to T3.
- **Iodine** – Potassium iodide is given for 7–10 days preoperatively. Although iodine is required for normal thyroid function, excessive doses of iodine inhibit iodide binding, reduce hormone synthesis and reduce the effect of TSH. A beneficial preoperative side effect is the reduction in vascularity of the thyroid gland. In severe or recurrent disease, radioactive iodine is used to ablate the thyroid.



PREOPERATIVE INVESTIGATION

- Thyroid function tests, FBC, U&Es, calcium, magnesium and phosphate.
(FBC= full blood Count)
(U and Es = Urea and Electrolytes)
- ECG and echo if appropriate

- Imaging. : CXR and thoracic inlet views to assess airway compression or deviation.
- CT and MRI scans: with retrosternal disease or severe stridor will delineate the degree and extent of airway narrowing

PERIOPERATIVE CARE

- Anxiolytic premedication as required.
- Usual medications (take the drugs at the morning of operation)
- Standard monitoring.
- Arterial line if significant pre-existing cardiovascular disease.
- Temperature monitoring
- Increasing temperature can be an indicator for thyrotoxic crises.
- Hypothermia in hypothyroidism as a result of decreased basal metabolism.
- Securing airway
- Intravenous induction and controlled ventilation is usually used.
- **If difficult airway expected**, options include: inhalational induction, video laryngoscope, fiberoptic scope, ventilating rigid bronchoscope, awake tracheostomy and even cardiopulmonary bypass if significant retrosternal spread. • Reinforced endotracheal tube.
- Careful neck extension provides surgical access. Recheck tube position when patient repositioned.
- Head-up tilt reduces venous engorgement.
- Protect the eyes as drapes will be placed over the head; extra care if exophthalmos present.
- Surgeons may wish to use a nerve stimulator to locate the laryngeal nerves. In such cases, muscle relaxation should not be used once intubation is completed. 'EMG endotracheal tube' or invasive techniques

using needle electrodes for monitoring the recurrent laryngeal nerve are available.

- Supplementation of β -blockade may be needed as manipulation of the thyroid may release more thyroid hormone.
- Prior to wound closure – normotension, head down tilt, for assessing hemostasis

Some surgeons request direct laryngoscopy to assess vocal cord movement at the end of surgery. In some centers, the endotracheal tube is replaced by a laryngeal mask at the end of surgery.

- Smooth emergence.
- A fibre-optic naso-endoscope can be used to assess vocal cord movement. Inhalational or intravenous induction are suitable techniques. A smaller endotracheal tube may be required.
- Surgeons should be present in case of the need for an emergency tracheostomy. • Induction in theatre.

POSTOPERATIVE CARE AND COMPLICATIONS

- Postop analgesia: LA, paracetamol, weak opiates, NSAIDs if no contraindications.
- Antiemetics as retching may increase risk of hematoma.
- Removal of thyroid does not result in resolution of thyrotoxicosis as half-life of T4 is 7 days.

COMPLICATIONS

- **Hypocalcemia**

Check serum calcium to ensure normal parathyroid function. Tetany or low serum calcium requires calcium supplementation by the intravenous or oral route.

- **Recurrent laryngeal nerve palsy**

Temporary 3%–4%, permanent

RARE COMPLICATIONS

- **Tracheomalacia** following resection of long-standing large compressive retrosternal thyroid masses. Dynamic tracheal collapse may necessitate prolonged intubation.

- **Pneumothorax** occasionally following extensive and difficult retrosternal resection.

- **Thyroid storm**

is rare condition and occurs due to uncontrolled release of thyroxine in a thyrotoxic patient and may be triggered by acute illness, surgery or trauma.

Signs include severe hyperpyrexia, tachycardia, hypertension, arrhythmias, vomiting, diarrhea and altered mental state.

Intraoperatively this may mimic malignant hyperpyrexia. It may occur postoperatively. It can prove fatal with reported mortality rates of 10%–75%. Patients should be managed supportively in ICU.

Treatment includes:

- Supplemental oxygen.
 - Temperature monitoring, antipyretics and active cooling.
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- IV fluids.
- β -blockade
- Propranolol (inhibit peripheral conversion T4 to T3).
- Esmolol for acute management (short acting, β_1 selective).
- Anti-thyroid drugs
- Carbimazole or propylthiouracil orally or via a nasogastric tube.
- Dexamethasone.
- Magnesium if hypertension and/or arrhythmia.
- Dantrolene use has been reported in these patients