



Its either hypothyroidism or hyperthyroidism

Hypothyroidism :

**low thyroxin hormone secretion T3 , T4&TSH
patient should be euothyroid state at time of surgery**

- **Low BMR ,so reduce metabolism of anesthetic drugs (impaired hepatic drugs metabolism) .**
- **Heart diseases : congestive heart failure , myocardial depression , low baroreceptor function (bradycardia) .**
- **Hypoventilation & decrease spontaneous ventilation &delay recovery.**
- **Plasma low volume , anemia , hyponatremia , hypoglycemia**
- **Hypothermia due to adrenocortical insufficiency (patient should give steroid before operation) .Due to surgical stress condition .**
- **Hyperthyroidism : • high level of thyroxin hormone production**
- **Increase BMR cause weight loss & increase the volume of**



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with thyroidectomy
Dr.amassi.vakdhan@mustaqbal-college.edu.iq

٧٨٧٧ ٧٨٧٣



volume of anesthetic drugs induction to reach maximum serum level dose .

- **Hyperthermia & thyroid crisis : especially during induction because of stress of surgery & anesthesia ,it may mistaken with malignant hyperthermia. Crisis should treated with anti-thyroid , antihypertensive inotropic ,steroid ,hydration & cooling .**
- **Thyrotoxicosis associated with thrombocytopenia .**
- **Cardiovascular system : chronic hypertension , tremor (sympathetic stimulation) , congestive heart failure , atrial fibrillation & ischemic heart diseases**

When we remove the thyroid gland ?

- **Hyperthyroidism unresponsive to treatment**
- **Malignancy**
- **Large goiter**
- **Retrosternal goiter**
- **Obstructive disorders to pharynx(dysphagia) & tracheal deviation , patient can't sleep on supine .**
- **Signs of superior vena cava obstruction (engorgement of neck vessels) .**

What are your pre-operative management ?

- **Assessment of :**
- **Controlled & diagnosed hyper or hypo**
- **thyroid hormone level (euthyroid state) as much**



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as possible

- **Blood pressure control & cardiovascular complications control**
- **Air way management : large goiter, neck mobility, easy ventilate ,retrosternal, cause deviation to trachea ,assess the difficulties of ETT wither need awake intubation , fibrotic or vediolaryngoscope**

Anesthetic technique :

- **GA general anesthesia.**
- **Awake intubation .**
- **Regional anesthesia .**
- **Expected difficult air way management or un expected**
- **Premedication of sympathetic stimulation for hyperthyroidism .**
- **Hypotensive technique .**
- **Positioning of the patient after induction .**
- **Intra operative complications management .**

Tricks indicate difficult airway management :

- **Obesity**
- **Large goiter**
- **Patient give history of dysphagia (tracheal deviation)**
- **Patient give history of dyspnea on supine position**

What are the types of airway equipment you can use?



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- **Armored EET is a good choice to prevent dislodge or kinking during surgical manipulation & positioning before surgery .**
- **North EET can be used**
- **Nasal ETT**
- **LMA it make the scene easy to visualized (vocal cord movement after the operation) ,but there is risk of dislodge during positioning of the patient & surgical manipulation .**

What is your anesthetic technique in thyroidectomy ?

- **Smooth induction + Hypotensive technique + smooth recovery or awake intubation if there is tracheal deviation or collapse .**
- **before estuation we should check bilateral vocal cord movement (after patient take spontaneous ventilation) by direct visualization , fibrotic ,video laryngoscopy , to be sure normal both recurrent laryngeal nerves movement.**
- **All equipment of difficult airway management .**

When you use the awake intubation ?

- **In obese patient or patient with diagnosed OSA .**
- **Large goiter that full the neck .**
- **Goiter cause collapse or sever deviation to the trachea .**
- **MRI diagnosis of retrosternal or deviation of trachea**



How you establish the awake intubation?

- **Regional anesthesia for cervical plexus instead of GA .**
- **ENT surgeon should be ready for emergency tracheostomy .**
- **Explanation to the patient the maneuver.**
- **Patient lie supine with head up on the table .**
- **Ventilated O₂ + Sevoflurane until start to be drowsy .**
- **By video laryngoscope or fibrotic , a styled EET with Zylocaine gel lubricant .**
- **Immediately after ensure the inserting of EET in site start to give the GA .**
- **Awake extubation should done .**
- **Regional anesthesia can be done before awake intubation .**

How you Position & monitor the patient of thyroidectomy ?

- **Supine & semi seating of head , neck & shoulder .**
- **Hyperextended neck .**
- **Chin tilled back .**
- **Support under the head & shoulders .**
- **Arms are fixed beside the body .**
- **Stretching the breast of female patient to down .**
- **Starting induction by hand cannula then keep one in patient foot , to be away from the surgical field .**
- **ECG , Capnography , pulse oximetry & vital signs**



monitor .

- Insure your fixation of ETT
- Close monitor to the ventilator & circuit to avoid risk of disconnection .

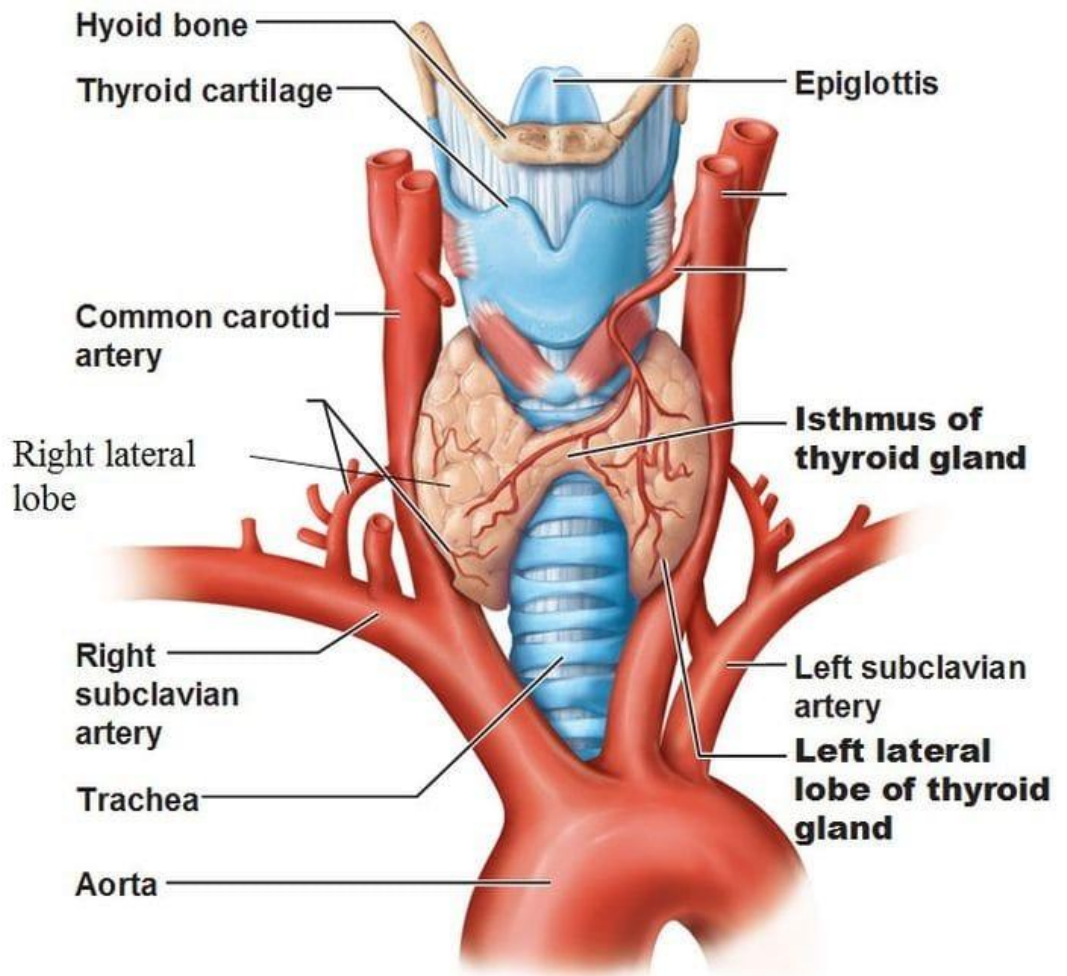
At the end of the surgery the surgeon may need to increase blood pressure of the patient to see if there is any hidden bleeding ,so we start to stop the hypotensive technique & may give vasopressor to increase the blood pressure of the patient (ephedrine)

.

Post-operative complications :

- Coughing , laryngospasm , respiratory depression
- Coughing should reduce by premedication opioid & even lidocaine intravenously or topically .
- Hematoma or bleeding .
- Recurrent laryngeal nerve palsy unilateral or bilateral that may need re intubation that will be difficult because of airway edema , tracheostomy may establish .
- Tracheomalacia due to long time pressure of thyroid gland on the trachea that may need respiratory support .
- Hypocalcaemia when accidental removal of parathyroid glands both or unilateral .

The Thyroid Gland



Gross anatomy of the thyroid gland, anterior view

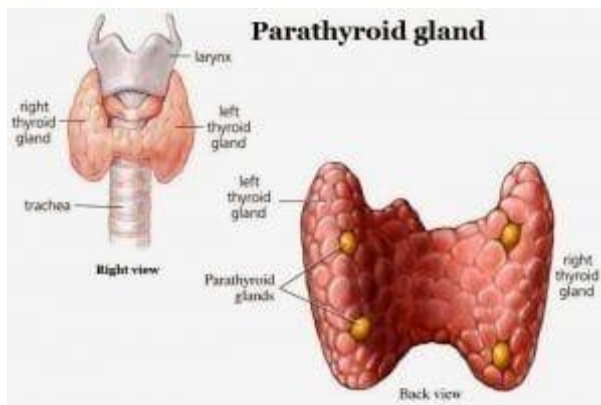


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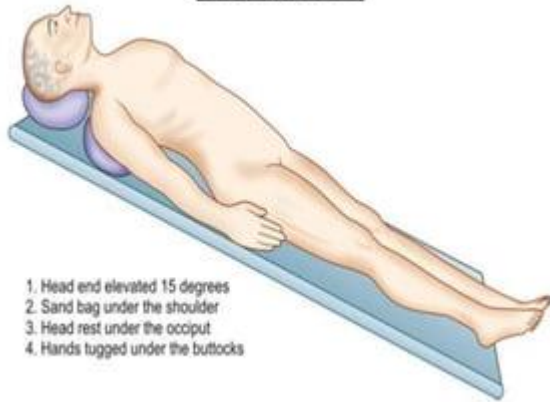
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Procedure



1. Head end elevated 15 degrees
2. Sand bag under the shoulder
3. Head rest under the occiput
4. Hands tucked under the buttocks

Fig. 6.70: Position of the patient for thyroid surgery. Head end elevated, sand bag under the shoulder.

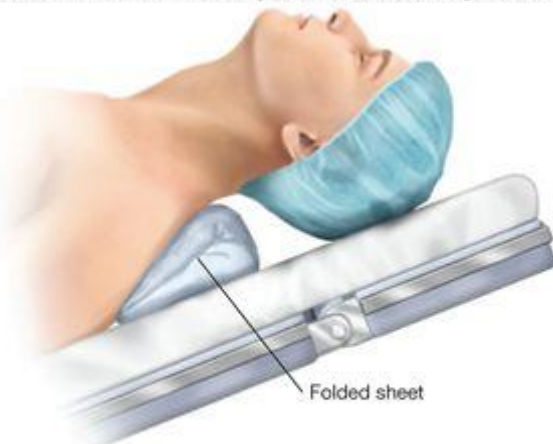
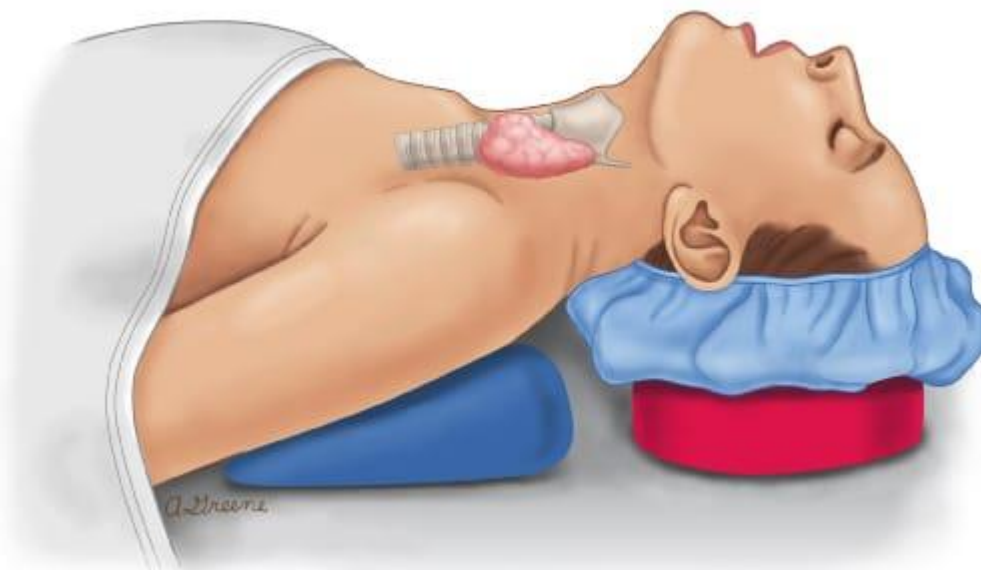
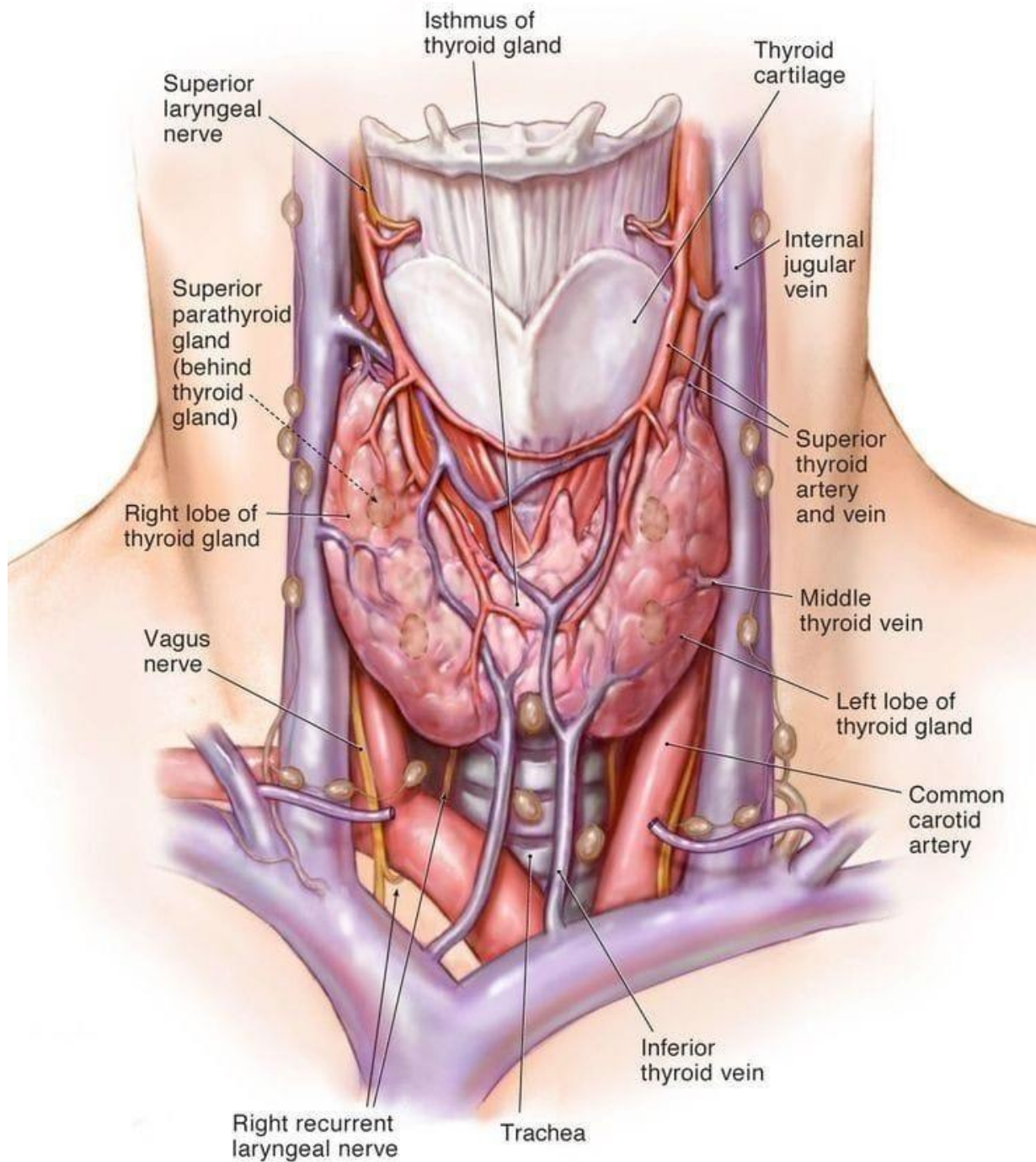


FIG 5 • Position of the neck should emphasize extension, but support. Overextension of the neck or lack of support for the head and neck can cause avoidable posterior neck stiffness postoperatively.





Thyroid Anatomy (Front View)



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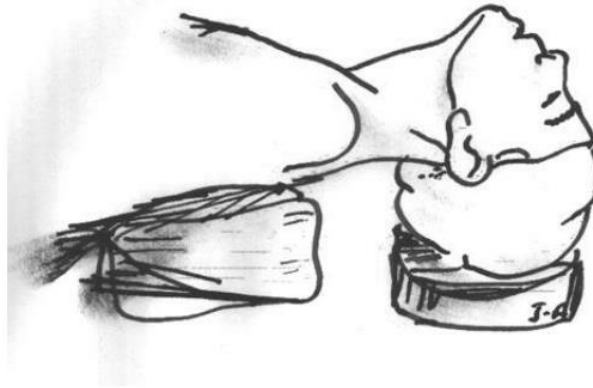
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ANESTHESIA AND POSITIONING

- Anesthesia is general
- The patient is positioned in the supine position with neck extended



Thank you
Theatrical lecture