

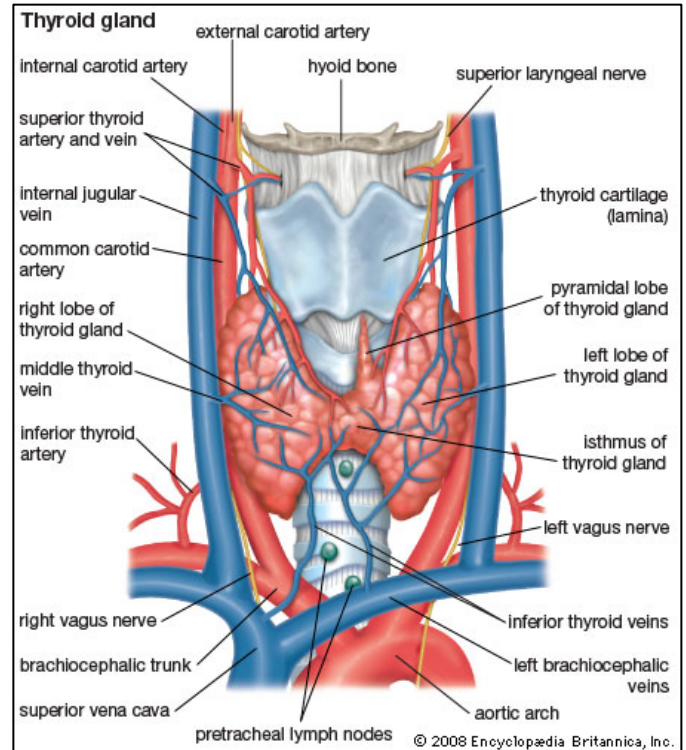
Post-Thyroidectomy Respiratory Distress

Anesthetic Pearls: Anesthetic Implications and Management of Post-Thyroidectomy Respiratory Distress

Etiology – Causes of post-thyroidectomy respiratory / airway compromise may include:

1. Post-op laryngeal edema after intubation
2. Residual effects from neuromuscular drugs, narcotics, or anesthetic agents
3. Non-surgical associated causes: MI, pneumonia, or PE
4. Surgical site bleeding directly compressing the trachea
5. Direct damage to the nerves supplying the vocal cords:
 - unilateral: may cause mild obstruction
 - bilateral or with pre-existing anatomic abnormalities: may lead to total or near total airway obstruction
6. Bronchospasm, laryngospasm, pneumothorax, or aspiration

Innervation & Vascular Supply – The thyroid and larynx are innervated by the superior laryngeal nerve and recurrent laryngeal nerve which are branches of the Vagus nerve (CN-10). The arterial supply to the thyroid gland comes from the superior and inferior thyroid arteries and at times the thyroid branch of the internal mammary artery. Cephalad to the superior pole of the thyroid, the superior thyroid artery runs with the superior laryngeal nerve to supply motor control to the cricothyroid muscle and sensory innervation to mucosa above the vocal folds. High ligation of the superior thyroid artery during thyroidectomy places this nerve at risk of inadvertent injury, which would produce dysphonia by altering pitch regulation. The inferior thyroid artery has a variable branching pattern but is closely associated with the recurrent laryngeal nerve. The recurrent laryngeal nerve supplies motor control to all muscles of the larynx (except cricothyroid muscle) and sensory innervation below the vocal folds. Unilateral injury of recurrent laryngeal nerve leads to weak / soft voice. Bilateral injury of the recurrent laryngeal nerves can result in a high squeaky voice with difficulty breathing and laryngospasm.



Management

1. Place the patient on 100% O₂ by mask
2. Assist ventilation with CPAP (encourage the patient to take slow / deep breaths)
3. Apply mechanical airway support maneuvers (jaw thrust, oral or nasal airway, assisted ventilation)
4. Suction the oropharynx to remove secretions or airway debris
5. If there is any question about the adequacy of reversal of neuromuscular blockade, check for twitches and administer additional anti-cholinesterase if appropriate
6. If stridor does not resolve and respiratory distress continues
 - a. Call for help (including the ENT surgeons)
 - b. Prepare for emergency reintubation
 - c. Administer steroids (Dexamethasone 5-20 mg IV)
 - d. Consider inhalation therapy with racemic Epinephrine
 - e. Consider the possibility of retained gauze, throat packs, or other airway foreign body
7. If **hypoxemia** occurs and cannot be corrected by typical airway maneuvers (**Be Aggressive**)
 - a. Call for the surgeon immediately
 - b. Remove any dressings from the wound
 - c. If a hematoma is found, cut the wound sutures and drain the blood
 - d. Re-intubate the trachea if there is no immediate improvement in the patient's airway (intubation may be difficult because of airway edema; consider LMA / adjuvant airway)
 - e. Perform intubation under optimum conditions in the operating room if the patient is stable
 - f. If tracheal intubation is difficult, begin trans-tracheal jet ventilation and/or cricothyroidotomy