

Difficult Intubation in Thyroidectomy for Case of Huge Goiter- A Case Study.

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ABSTRACT

The aim of this case report is to 'analyse anaesthesio-logic preoperative assessment, intraoperative difficulties & management of postoperative complications'. A special attention to difficult airway intubation was given.

The attending anaesthesiologist may have to face various difficulties while administering anaesthesia to patients of thyroidectomy. The challenging scenarios can be encountered at any stage, it may be - preoperative, intraoperative or postoperative stage. The incidents of difficult intubation with thyroid swellings are 02-12.7% and that of failed intubation are 0.3-0.5%. Preoperatively, deranged thyroid physiology warrants optimal preparation, while anticipated difficult airway due to enlarged thyroid gland further adds to the anaesthetic challenges. Cardiac complications are equally challenging as also the presence of various comorbidities which make the job of anaesthesiologist very difficult.

A 'GOITER' is an enlarged thyroid gland, located in the anterior triangle of neck. It weighs about 20 grams, lies against C5 to T1 vertebra⁽¹⁾. Thyroid hormone secretes thyroid hormone, triiodothyronine, calcitonin⁽²⁾. Huge goitres can cause upper airway obstruction due to displacement and rotation of larynx and edema of adjacent structures. Thyroid storm can occur during intra-operative and post-operative period in inadequately prepared surgical patients. Postoperatively, numerous complications can develop that include haemorrhage, laryngeal oedema, nerve palsies, tracheomalacia, hypocalcemic tetany, laryngeal spasm, surgical emphysema, pneumothorax, etc. The detailed pre anaesthetic assessment of symptoms, airway assessment, blood profile and imaging studies are the cornerstones for the anaesthetic management. In the present case study, the management of difficult airway management and challenges during administration of anaesthesia are discussed.

CASE REPORT

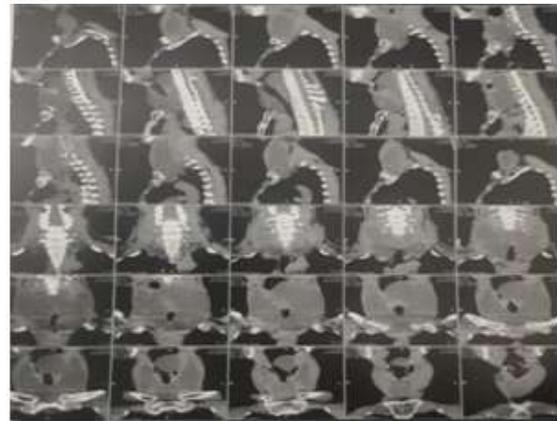


Fig.no.-01, Fig.no. – 02

A 47 year/male (Height-152 cm, Weight-55kg) presented with progressively enlarged anterior neck swelling, hoarseness of voice since

last two years and dysphagia since last 6 months. No cough, dyspnoea, noisy breathing, syncope was elicited. He was not taking any medicines for these

complaints. Examination revealed normal vital signs. Complete blood count, renal profile was normal. The latest thyroid function test was - T3 - 1.11 ng/ml, T4 - 4.8 mcg/dl and TSH - 0.37 uIU/dl. No symptoms were suggestive of hyper or hypothyroidism upon review. A firm neck swelling with dilated superficial veins was found to extend below the chin (Fig. 1). No bruit was heard and no oedema of the upper body was elicited. He was euthyroid clinically. Neck flexion and rotation were normal, and he had adequate mouth opening and the Mallampati score was 2. Indirect laryngoscopy noted normal vocal cords. His systemic examination showed no other abnormalities.

USG neck shows right lobe of thyroid enlarged in size measuring 119 X 54 X 40 mm with multiple cysts seen in it. Normal parenchyma is replaced by cysts. Only cysts seen in parenchyma. Left lobe of thyroid enlarged in size measuring 117 X 67 X 48 mm with multiple cysts seen in it. Isthmus enlarged measuring 23 mm. Carotid vessels & internal jugular vein with its branches appears normal.

CT head & neck shows there is significant enlargement of both lobes of thyroid as well as the isthmus which is replaced by variably sized hypodense cystic lesions causing its enlargement. There is mild luminal compromise of trachea. One of the cysts of size 4.4 x 4.7 cm is extending superiorly in the aortocaval region on left side causing significant luminal compromise of oropharynx displacing the epiglottis anteriorly. It is also causing compression of the left pyriform fossa and displacement of left aryepiglottic fold. Inferiorly it is reaching up to the superior margin of sternal with mild extension into the superior mediastinum. Significantly enlarged thyroid replaced by multiple variably sized cystic lesions with extension and mass effect as described above. Findings are suggestive of neoplastic aetiology likely benign.

After multidisciplinary discussion emphasizing a difficult airway strategy concerning respiratory deterioration after induction, patient was accepted for surgery in a specialized team

consisting of an anaesthesiologist, general surgeon specialized in thyroid surgery and surgery residents. A written informed anaesthetic consent and high-risk consent was taken with explanation focused on risks of difficult airway, consequences of hypoxia and following induction of anaesthesia. A preoperative fasting of six hours was followed. Premedication consisted of nebulization with Duolinerespules [Levosulbutamol(1.25mg) + Ipratropium (500mcg)] and Budecortrespules [Budesonide (0.5 mg)] was given. No sedative premedication was given.

The main concern was distal airway obstruction might cause problems achieving successful endotracheal intubation and rescue transtracheal access during general anaesthesia. The primary plan was to secure the airway under optimal circumstances with placement of a cuffed endotracheal tube after intravenous induction with adequate muscle relaxation. The well-equipped difficult airway trolley was kept ready.

All standard monitors SPO₂, ECG, NIBP, ETCO₂ were attached. Direct laryngoscopy was done under light sedation and normal vocal cord function was confirmed.

Induction was done with Inj. Propofol 2mg/kg and it was confirmed that ventilation was possible only then Inj. Scoline [Succinyl Choline Chloride (20mg/dl)] was planned to be given. After induction mask ventilation was easy without the need for high pressures. Then Inj. Scoline (100mg) was given. Inj. Fentanyl 2µg/kg given iv. and then 0.5 µg/kg repeated after 30 minutes

Direct laryngoscopy using the Mackintosh blade size 3 was done. Lifting and mobilisation of thyroid swelling while intubation was done. Bougie assisted endotracheal intubation was done. A cuffed endotracheal tube with 6.5mm internal diameter was placed between the vocal cords without any resistance. Positive pressure ventilation was performed without any sign of high airway pressure or airway obstruction. SpO₂ remained above 98% and end tidal CO₂ was between 4.0-4.5 kPa.

Fig.no.03 Fig.no.04



Both thyroid lobules were easily removed by the surgeon through cervical incision with the neck in extension without significant blood loss. The recurrent laryngeal nerve was dissected by the surgeon and was easily identified without damage. The parathyroid glands were also preserved. Before extubation endotracheal tube cuff was deflated and patient could breathe around the tube. No airway collapse was anticipated and patient was extubated successfully. Direct laryngoscopy showed no laryngeal swelling and symmetric vocal cord movements. The team stated that there was no sign of tracheomalacia, vocal cord paralysis or swelling under anaesthesia. The patient woke up breathing spontaneously. There was no coughing or stridor upon extubation. After extubation there were no signs of hoarseness, stridor, external swelling or respiratory failure.

The patient was positioned upright in bed. For postoperative analgesia the patient received 1gm IV Paracetamol and 100 mg IV Tramadol Hydrochloride. Inj. Ondansetron 4mg was given IV for nausea. He was shifted to the Intensive Care department for post operative care with 2lit. oxygen through a nasal cannula. His vital signs remained stable without support and he had normal speech, absence of stridor and no respiratory distress.

Dressing of post operative wound was done on alternate day. In post operative period patient's thyroid profile, and calcium levels were monitored. After discharge Thyroxin 100 mcg was started.

CONCLUSION & RESULT

Thyroidectomy is one of the most common endocrine surgical procedure being carried out throughout the world⁽³⁾. Anaesthesia for thyroid surgery requires an anaesthetist who is

experienced in the recognition, assessment and management of a potentially difficult airway, in a patient who may also have significant comorbidities.⁽⁴⁾ The perioperative morbidity in patients with thyroid disease can be greatly reduced by proper preoperative preparation and optimization of physiological status of thyroid.⁽⁵⁾ Airway management in such patients poses unique challenges and one should be thoroughly prepared for any anticipated or unpredictable airway difficulty⁽⁶⁾. Postoperatively, any incidence of haemorrhage leading to formation of haematoma can cause respiratory distress. Extreme vigilance has to be exercised both by the surgeons and anaesthesiologist for a possible incidence of any nerve injuries and palsies, hypothermia, tracheal collapse and tracheomalacia as well as hypocalcaemia and should be managed accordingly.⁽⁷⁾ Neuromonitoring during thyroidectomy is effective in providing identification and function of laryngeal nerves. Both during elective and emergency surgery, the cardiac & nervous system have to be meticulously monitored.

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