



Successful Management of Post Extubation Stridor in a Patient with Toxic Multinodular Goitre Posted For Total Thyroidectomy

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Abstract

Post-extubation laryngeal edema is a frequent complication with potential morbidity and mortality which may lead to urgent tracheal re-intubation. Corticosteroids is being used to reduce the incidence of post-extubation laryngeal edema. Testing for cuff leak is the most important method to determine whether airway patency is decreased, the cuff leak test is neither sensitive nor specific.

Keywords: *Post extubation stridor , subtotal thyroidectomy, laryngeal edema, cuff leak test.*

Introduction

We report a case of total thyroidectomy who developed inspiratory stridor post extubation and after confirming diagnosis of laryngeal edema with a video laryngoscope the patient was managed with corticosteroids and epinephrine nebulization.

Case Report

A 35 year old male diagnosed with multinodular goitre and primary thyrotoxicosis and a known case of systemic hypertension for the past 5 years was on regular medications. He is on T.NEOMERCAZOLE 10mg TDS and T.PROPONOLOL 10mg OD for hyperthyroidism.

The patient is well nourished and weighs 60kgs, had a swelling of 8 x 6 cms in the anterior aspect of neck extending 4cms laterally, upper and lower borders were palpable, pemberton sign was negative. Swelling was firm in consistency and skin over the swelling was pinchable. He had exophthalmos, palpitations, loss of weight, heat intolerance, excessive sweating. Complaints of dysphagia and

dyspnoea for the past 3 years, all basic investigations were normal. TFT indicated hyperthyroid state with FT3 -22.79, FT4 – 8.73, TSH <0.005. ENT opinion was obtained and vocal cords mobility was intact, X- ray neck AP and lateral view was normal with no deviation and compression of trachea, X-ray chest PA view was normal. Vitals, cardiorespiratory assessment was normal, mouth opening was adequate with a mallampati score of 2.

Patient was given T.DIAZEPAM 5mg, T.RANITIDINE 150mg , T.ONDANSETRON 4mg the night before and the morning of the surgery after shifting to OT base line monitors were attached and pulse rate, BP, SpO2 were recorded then IV line secured with 18G needle and fluid was started. Patient was premedicated with MIDAZOLAM 2mg, GLYCOPYRROLATE 0.2mg, MORPHINE 10mg. After preoxygenation Inj. lidocaine hydrochloride 2% (without preservative) 1mg/kg given and was induced with Inj.propofol 2mg/kg. After confirming adequate bag and mask ventilation

Inj.succinylcholine 1mg/kg was given intravenously. Using direct laryngoscopy, B/L vocal cords visualised and 8.5" cuffed ET tube inserted and fixed at 20 cms, bilateral air entry was checked. Anaesthesia was maintained with 4L N₂O + 3L O₂ and 1.2MAC isoflurane and vecuronium was given as bolus intermittently. Vitals were monitored throughout the intraoperative period and patient was stable.

On completion of surgery, dexamethasone 0.1mg/kg and hydrocortisone 2mg/kg was given and the patient was reversed with neostigmine 3mg and glycopyrrolate 0.6mg, prior to extubation cuff leak test was done to rule out airway edema. Despite negative cuff leak test, patient developed inspiratory stridor upon extubation and SpO₂ was maintaining at 97%, video laryngoscopy was done and laryngeal edema was confirmed.

Discussion

One of the major complications of thyroid surgery is airway obstruction. Among them immediate cause of airway obstruction is due to laryngeal edema. In the first 24 hours is most likely from compressive hematoma. After 24 hours one may consider laryngeal dysfunction secondary to hypocalcemia. The major risk factors for post-extubation stridor are Prolonged ventilation, Female gender, Under-sedation (i.e. insufficiently deep; too awake), Difficult intubation (multiple attempts), Self-extubation, High BMI (over 26.5), Ratio of tube size to laryngeal size in excess of 45%, High cuff pressure, prolonged intubation attempt (>10min), oroendotracheal intubation, larger tubes, short neck, trauma patients, known airway pathology (tracheal stenosis, tracheomalacia), children, small height:internal diameter ETT ratio, agitation while intubated, recurrent intubations^[1].

After shifting the patient to ICU, emergency reintubation cart was kept ready. Laryngeal edema in this patient was managed by giving 100% oxygen, inj.dexamethasone 8mg every 4 hours^[2], Inj.hydrocortisone 100mg iv every 8th hourly^[3], patients vitals were stable and the need for reintubation was not required. Nebulization with

epinephrine was also given. Inspiratory stridor subsided within 8 hours.

Laryngeal edema is a frequent complication of intubation, In patients with difficult airway where extubation has to be done once patient is fully awake and obeying commands. Patients at high risk for post extubation respiratory insufficiency due to laryngeal edema can be identified by the cuff leak test or laryngeal ultrasound^[4], no reliable test for the identification of high-risk patients is currently available.^[5]

Cuff leak test is a non-invasive test in identifying patients with laryngeal edema, positive predictive value of this test is low. The cuff is deflated prior to extubation and air leak during inspiration/ positive pressure suggests a negative test, no air leak – positive test which suggest that the edematous mucous doesn't allow air to pass through^{[6][7]}.

Nebulized epinephrine acts on α -adrenergic receptors in vascular smooth muscle cells, causing vasoconstriction and decreased blood flow, which diminishes edema^[8]. The presence of an ETT in the larynx limits laryngeal exposure to nebulized epinephrine. The limitation of nebulizing through the ETT is that the mist is delivered only to the lower airways and upper airway is spared. So it has better efficacy if the patient is nebulized post extubation. Nebulization is given as One milligram epinephrine in 5 ml of normal saline.

The patient can also be re-intubated if there was a total obstruction but again re-intubation increases morbidity and mortality, tracheostomy can be also be done.

Conclusion

In our case patient was successfully managed with corticosteroids and adrenaline nebulization alone for post extubation stridor though many studies suggested that re-intubation is the mainstay of management if stridor not subsided within few hours and also can be avoided re-intubation morbidity and mortality. Hence predicting laryngeal edema in intubated patients is difficult, sufficient measures should be taken while extubating patients who are high risk of developing laryngeal edema.

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