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Case Report

Recurrent Laryngeal Nerve Injury Following Thyroidectomy Challenges to the Anaesthesiologist

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ABSTRACT

Injury to the Recurrent Laryngeal Nerve is uncommon, but one of the complications of thyroidectomy.

We report a case of 40 years old female, who underwent total thyroidectomy, following which developed recurrent laryngeal nerve injury and vocal cord palsy, which was diagnosed immediately and managed successfully.

Introduction

The recurrent laryngeal nerve is the branch of the vagus nerve, the Xth cranial nerve. It supplies the intrinsic muscles of larynx except for the cricothyroid muscle and the sensory supply of the larynx below the vocal cord.

The common cause of Recurrent Laryngeal Nerve injury is thyroidectomy and parathyroidectomy. A second common cause is secondary to tumors

Arytenoid dislocation due to Endotracheal intubation is also a remote possible cause [1].

Case Report

We are reporting a case who developed left Recurrent Laryngeal Nerve palsy immediately after total thyroidectomy.

50 years old female, 60kg weight, swelling in front of the neck for 10 years, increasing in size since 6 months, generalized weakness, and excessive menstrual bleeding.

Diagnosed as hypothyroidism, put on Tab. Eltroxin100 micro gm. She was posted for total thyroidectomy.

Investigations

- Thyroid Function Test- T3 - 0.6 NG, T4- 14.6 mcg, TSH- 0.6 mcg
- Renal Function Test- normal
- Diabetic profile- normal
- Coagulation profile- normal
- X-Ray chest- PA and Lateral view- no evidence of deviation and compression of the trachea
- USG neck- multiple ill-defined bilateral hyperechoic noted with increased vascularity, features suggestive of thyroiditis, multiple cervical lymph nodes in right side Ib and left IIIb
- CT neck- no retrosternal extension
- Oto rhino laryngology opinion- Video laryngoscopy done, vocal cords visualized, normal appearance and movements of vocal cord, movement good., no structural abnormalities, no pooling, Ear- N, Nose- N
- Fine Needle Aspiration Biopsy & Histo Pathological Examination - Moderately cellular smear shows benign follicular epithelial cells arranged in cluster and scattered singly. Many follicular cells exhibiting hurtle cell changes are noted. Occasional epithelial cells with lymphoid

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impingement are also seen. The background shows scant colloid mixed inflammatory cells and RBC, suggestive of colloid goiter

The patient was assessed under ASA II, MMS II Advised T. Alprazolam 0.25 mg previous night, T. Eltroxin to be taken early morning with a sip of water.

Anaesthetic technique

Inj. Ranitidine 50 mg., Inj. Ondensterone 4 mg, given intravenously.

Premedicated with Inj. Midazolam 1 mg., Inj. Glycopyrrolate 0.2 mg. IV

Monitors applied are Pulse oximetry, ECG, NIBP, EtCO2, Temperature.

After adequate preoxygenation patient was induced with Inj. Thiopentone 400mgm, Inj. Suxamethonium 100 mg to facilitate intubation.

Intubated smoothly with 7.0 mm ID, flexometalic Endotracheal tube, cuff inflated.

Anaesthesia maintained with Inj. Vecuronium, Fentanyl 100microgram, N20 +O2+ Sevoflurane 0.5% + IPPV

Inj. Paracetamol 1gm IV and Inj. Tramadol 50 mg IV as analgesia.

A total thyroidectomy was done, and bleeding was minimal about 100 ml.

The Cuff leak test was positive indicating no tracheomalacia.

Post-surgery scenario

After reversal with Neostigmine + Glycopyrrolate, the patient was fully awake, oriented, responding to oral commands, maintaining adequate tidal volume.

The patient was extubated.

Post extubation

Following extubation, the patient developed stridor, became tachypneic, Respiratory rate – 42 /mint, and SPO2 dropped below 80%.

The patient was given FIO2 100% with Larson's jaw thrust, the saturation did not improve.

Inj. Hydrocortisone 100mgm, Inj. Calcium gluconate 1gm IV was given.

After a dose of Midazolam 1mgm, direct laryngoscopy was done to visualize the vocal cord.

ENT opinion – Restricted movement of abduction Movement of both vocal cords, more on the left side.

In view of incomplete abduction, the Patient was intubated with oral ETT 7.0 mm ID, Inj. Vecuronium 4mgm was given, sent to the ICU, and connected with a ventilator.

Follow up in ICU

Inj. Midazolam + Fentanyl infusion was started.

On day 2, a trial extubation was done, and again the patient developed stridor.

Hematoma in the surgical site was ruled out.

The patient was again intubated after a dose of Inj. Propofol 80 mg.

On day 4, tracheostomy was decided after a team discussion with the ENT surgeon.

Tracheostomy plan

The patient was shifted to OR, tracheostomy was done, after Inj. Propofol + Fentanyl 100mgm+ Sevoflurane 2% assist spontaneous ventilation.

After the removal of the Endotracheal tube, fiberoptic bronchoscopy was done and the vocal cord was visualized.

There was no movement in the left side vocal cord, which confirms the partial injury to the left recurrent laryngeal nerve, and abductor muscle going for paralysis, so the vocal cord is in the adducted position.

Discussion

Injury to the RLN and consequent disorders of vocal cord movement is a typical complication in thyroid and parathyroid surgery [2].

In our case, there was partial RLN palsy, that occurred immediately after thyroidectomy.

Partial RLN injury produces abductor laryngeal paralysis. The vocal cord assumes a median or paramedian position.

Accurate diagnosis can be made only by visualizing the cord while the patient is awake. This requires laryngoscopy as soon as possible postoperatively [3].

In this patient, preoperative laryngoscopy was done by an ENT surgeon and movement of both vocal cord normal.

Laryngoscopy done on the surgical table inside the operating room, both vocal cord movement and abductor movement is restricted, more on the left side

In the ICU, after trial extubation, a laryngoscopy was done, and the same finding was confirmed.

After tracheostomy, FOB was done, and again the findings confirmed, that is the absent movement of the left side vocal cord.

Conclusion

Recurrent laryngeal nerve [RLN]: The RLN is also a branch of the Vagus nerve. The left RLN is found inferior to the aortic arch and posterior to the ligamentum arteriosum. The right Vagus continues posteriorly to the root of the right lung giving off the right RLN which loops around the right subclavian artery.

Since the left nerve has a long course, it is more prone to injury than the right.

Bilateral RLN injury causes stridor and laryngeal obstruction from trauma or oedema causes stridor and laryngeal obstruction as a result of unopposed adduction of the vocal cords and closure of the glottis aperture [4-7].

We immediately diagnosed RLN injury and abductor palsy, intubated immediately, and planned elective

ventilation, On the fourth POD, a Tracheostomy was done and chest physiotherapy was given in the ICU.

The patient was trained in tracheostomy cleaning, and respiratory exercise, discharged, and advised review after a week.

Tracheostomy is a safe procedure and gives a good alternative to delayed endotracheal extubation in post-thyroidectomy patients expected to have respiratory failure in places where post-operative anaesthetic care is lacking [5-6].

In large goiters with obstructive symptoms, preoperative tracheostomy is planned.

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