

A Rare Case of Longstanding Complication Following a Total Thyroidectomy: An Incident Reporting

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Abstract

Introduction: Vocal cord palsy after thyroid surgeries is a known complication. Most common cause is intraoperative iatrogenic injury to recurrent laryngeal nerve (RLN). Careful intraoperative dissection and identification of the complication in the immediate postoperative period can prevent grave consequences. Delayed presentation of vocal cord palsy is known but delay up to one month and patient surviving with symptoms for one year is extremely rare. Several theories have been postulated regarding survival.

Case report: We report a case of a middle aged female who first developed subcutaneous emphysema following thyroidectomy and then presented with recurrent complaints of dyspnoea and stridor for about a year, later diagnosed to have bilateral RLN injury, managed with tracheostomy twice and subsequently treated with laser cordectomy.

Conclusion: Tracheomalacia should be suspected in all long standing goitres. RLN palsy generally, an intraoperative complication should be assessed thoroughly in immediate post-operative period to improve the outcome of every thyroid surgery. Delayed palsies may be difficult to assess and diagnose and should be ruled out. Prevention is always better than cure: hence wherever possible an intraoperative nerve monitoring should be done.

Keywords: Recurrent laryngeal nerve, Subcutaneous emphysema, Thyroidectomy tracheostomy, Vocal cord palsy

Introduction

Thyroidectomy is an interesting and challenging day to day surgery. It is often associated with complications such as bleeding, tracheomalacia, RLN injury, hypoparathyroidism and so on [1]. Patients with long standing goitre are particularly prone to develop tracheomalacia in the postoperative period. Nerve injuries be it RLN or Superior laryngeal nerve (SLN) are often intraoperative complications diagnosed in immediate postoperative period [2]. Bilateral RLN injury leads to dyspnoea and often life threatening glottic obstruction causing a major concern after any thyroid surgery [3]. As anaesthesiologists, we must always assess and visualize the cord movements and confirm the leak test immediately after the surgery in order to prevent a tumultuous post-operative course.

Case Report

A 35 year-old-female patient weighing 72 kgs, presented with change in voice and breathlessness at our emergency department. Patient had history of euthyroid diffuse multinodular goitre over 20 years and had undergone total thyroidectomy 1 month ago at another hospital. She had complaints of coughing, breathlessness, stridor and subcutaneous emphysema of neck (Fig. 1).

An emergency tracheostomy was planned to relieve these unusual symptoms. On exploration a tracheal rent was identified which was

repaired and tracheostomy was done under local anaesthesia and monitored anaesthesia care. Post-operatively, she was monitored in the intensive care unit (ICU) for 3 days and later shifted to the ward. Patient was discharged after a month after successful decannulation and closure of the tracheostomy. Patient did not recover completely and continued to have similar complaints with repeated hospital visits. Over the course of 1 year she had visited the hospital 6 times and received symptomatic treatment with steroids and nebulization. The incidence we report here was her 7th visit to the hospital when she complained of increased breathlessness and stridor causing respiratory embarrassment. A delayed bilateral RLN injury was then suspected and an emergency tracheostomy was performed under general anaesthesia.

Patient was planned to be intubated under spontaneous ventilation as we anticipated difficult airway attributing to obesity and possible subglottic stenosis due to previous tracheostomy; we also intended to visualise the vocal cord movements in order to rule out vocal cord palsy. Anaesthesia was induced with sevoflurane on spontaneous ventilation. However on direct laryngoscopy, vocal cords could not be visualized completely (Cormack Lehane grade 3). A ventilating bougie guided intubation was done after two attempts of failed intubation using a cuffed endotracheal tube size 5.0. After confirming the tube in trachea with a satisfactory end tidal CO₂ trace on the monitor, the plane of anaesthesia was deepened with Propofol, fentanyl and, vecuronium administered for neuromuscular blockade. Intraoperatively peak airway pressures continued to be high and there was profuse bleeding at the incision site as was expected by the surgeon. Visualization in the surgical field was difficult, prolonging the duration of simple tracheostomy. Patient was shifted to ICU on T-piece with spontaneous breathing.

On post operative day 2, a fiberoptic bronchoscopy was performed

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Figure 1: X-ray Neck demonstrating subcutaneous emphysema

and the vocal cords were visualized in an adducted state (Fig. 2). The patient was then referred to an otorhinolaryngologist; who confirmed the diagnosis of bilateral vocal cord palsy on stroboscopy and she underwent a laser cordectomy. Patient followed up by us, she was relieved of the symptoms and had improvement in her voice.

Discussion

The known complications of thyroidectomy such as RLN palsy be it unilateral or bilateral are often diagnosed in the immediate postoperative period [2]. If undiagnosed these injuries can prove fatal at times.

We report this case to highlight the delayed presentations and diagnosis of vocal cord palsy in a patient who also incidentally presented with subcutaneous emphysema and the reasons for patient surviving such a complication.

D.N Goyal et al reported a case of delayed presentation of vocal cord palsy after about 4 days of thyroidectomy and the patient could completely recover after 3 months of initial complaints [4]. They have attributed it to the localized vasospasm that recovered over a period of time. In our case the complaints persisted for one year and she did not recover completely. A definitive diagnosis could be confirmed only after almost a year. The anticipated difficult airway due to obesity (BMI- 30.3) and presence of probable tracheal stenosis made this case further challenging. In such situation; laryngeal ultrasound, fiberoptic bronchoscopy or video laryngoscopes can be of help but in times of emergency these aids were not available to us.

Eisele DW et al reported in their study that dysphonia continuing after 6 months of surgery is most commonly permanent and is due to surgical injury to the nerve [5]. Bilateral partial RLN injury is much more catastrophic, as both vocal cords may assume a median or paramedian position and cause airway obstruction and tracheostomy may be required [2]. In our case the injury to RLN did not cause complete obstruction of airway. The partial blockade of the glottis opening led to recurrent stridor, cough and dyspnea.

In our case the presentation of subcutaneous emphysema along with

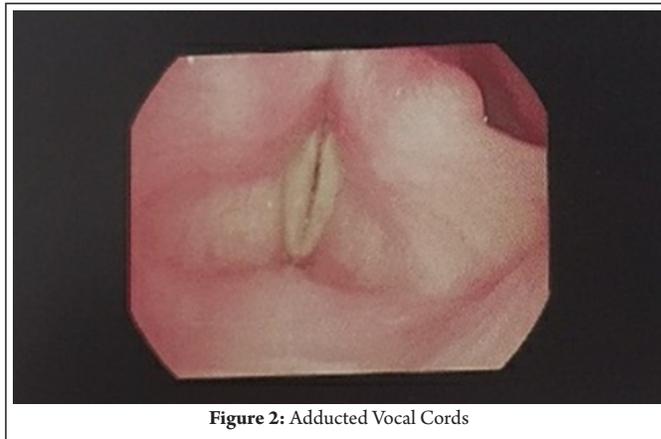


Figure 2: Adducted Vocal Cords

stridor had multiple differential diagnosis, but a detailed history could lead to correct pathogenesis which is a very rare presentation. The tracheal cartilage underwent degeneration due to extrinsic compression by the large longstanding goitre causing tracheomalacia [6]. We hypothesize that the bilateral vocal cord palsy must have resulted in the tracheal rent due to pressure which might have gone unnoticed until it caused subcutaneous emphysema.

Generally, a bilateral vocal cord palsy or tracheomalacia presents with stridor and respiratory distress in the immediate postoperative period [7]. However, this particular patient not only presented late but also managed to survive with the iatrogenic bilateral RLN injury for a year without fatal outcomes. This can be explained by the following possible alternatives.

Galen anastomosis: The RLN divides into anterior and posterior branch and these branches develop collaterals with superior laryngeal nerve and are sensory in nature, causing partial preservation of vocal cord function [7].

Cricothyroid connection branch (branch of SLN) continues as “the human communicating nerve” which is an additional motor supply to the intrinsic laryngeal muscles and is important following RLN injury and reinnervation [7].

Neuroplasticity: The distal axotomy in the intact RLN loses contact with higher cortical centres. Synapses from cortical neurons reappear on the secondary motor neurons as the neurons manage to regenerate and re-establish contact with the target organ (plasticity) [7].

Prevention is better than cure, hence whenever possible an intraoperative nerve monitoring should be done. RLN monitoring was previously done through needles inserted into the intrinsic laryngeal muscles, now-a-days thyroarytenoid depolarization is recorded through surface electrodes on the endotracheal tube. In our case since the patient was not operated for thyroid surgery at our hospital the events during the course of surgery and immediate post-operative period could not be taken into consideration [8].

Conclusion

Tracheomalacia following thyroidectomy should be suspected in all long standing goitre. RLN palsy generally should be immediate post-operative complication but delayed presentation though rare should be part of differential diagnosis in a patient presenting with change in voice, breathlessness and stridor. A comprehensive assessment is required to improve the post-operative outcome of the patient.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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