

Importance of recognition of external branch of SLN in thyroid surgeries

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Abstract

Introduction and Objective: The superior laryngeal nerve is one of the most commonly encountered nerves during thyroidectomy and can be a real challenge to the operating surgeon owing to its location. The SLN has been accredited with a much a smaller amount of importance in the clinical scenario as compared to the RLN. In this study we aimed to compare the post operative complications in those cases in whom all 4 were identified versus those in whom only RLN was recognized and conserved bilaterally.

Keywords: Thyroidectomy, SLN, External branch, Motor innervations, Phonation.

Introduction

The SLN can be a real challenge to the surgeon operating in its area. The SLN has been accredited with a smaller amount clinical importance than the RLN. The SLN regularly is referred to as the uncared for nerve during thyroid surgery, although damage of this nerve is known to cause considerable disability. The elevated frequency phonation, mainly in females and those whose specialization needs voice is the responsibility of the cricothyroid whose sole nerve supply is the external branch of the SLN and harm to this has a propensity to be manifested with symptoms like a voice change, voice, decrease in the frequency of the voice range.

Materials and Methods

75 cases of patients who were aged between the years 18-65 and who underwent thyroid surgeries who were by the procedure of extracapsular dissection at a tertiary care hospital over a period of two years, were included in the study. The external branch of the SLN was carefully identified using the classification (Fig. 1) that was proposed by Friedman and in the post operative period the patients were clinically evaluated for any changes in voice related to injury to the external laryngeal nerve like voice hoarseness, incapability to generate high pitch voice, trouble with high pitch, the following these were evaluated at 3 days, 1,3, and 6 months respectively. Furthermore, patients underwent indirect laryngoscopy, and voice recording.

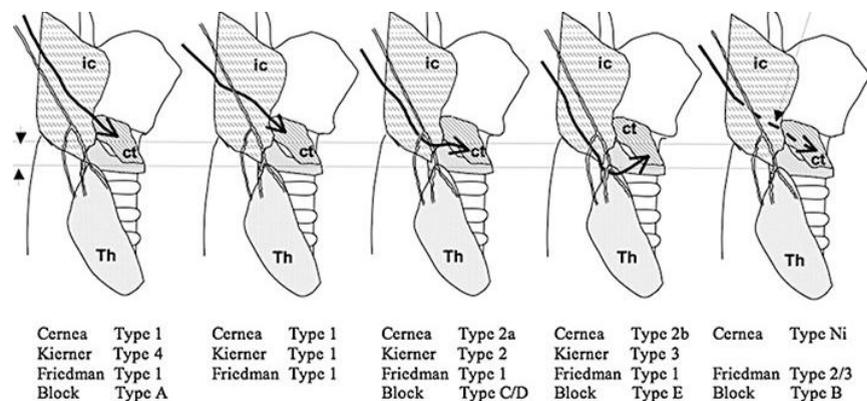


Fig. 1: Cernea, kierner, friedman and block variants of the external laryngeal nerve

Results and Analysis

In 63 patients (84%) the external laryngeal nerve was identified and preserved. In 12 patients (16%) identification of the external laryngeal nerve was not possible. one of the patients had an iatrogenic RLN damage. Three patients had a transient RLN paresis which recovered after one month. Friedman type 1 were

53 cases, Friedman type 2 were 8 and Friedman type 3 were 2 cases.

Discussion

The external laryngeal nerve is a branch of the SLN which in turn was a branch of the vagus nerve. cricothyroid sole nerve supply is the external branch of the SLN¹⁻³ The external laryngeal nerve which is the smaller branch, innervates the cricothyroid muscle and

also branches into the pharyngeal plexus and the superior portion of the inferior pharyngeal constrictor.⁴

Cryoid muscle tightens the vocal cords and has a role to play in vocal frequencies higher than 150 Hz, that is in the elevated tones of female voice.⁵ Keeping in mind the end goal to distinguish the outside laryngeal nerve and to save it different strategies are recognized which incorporate separating and individual ligation of the better post vessels nearby than the thyroid container; distinguishing the outer laryngeal nerve before securing the vasculature in a similar way; and neuromonitoring of the outside laryngeal nerve amid thyroidectomy.⁶⁻⁸

Friedman quoted that the external laryngeal nerve is at risk in all patients until it has been identified.⁹

Robinson et al. found that there was a drastic reduction in maximum phonation time and the range of frequencies, and the noise-to-harmonics ratio were abnormally high¹⁰ in those whom the nerve was damaged.

Eckley et al. evaluated the external laryngeal nerve functions in 56 patients as a consequence of external laryngeal nerve damage, which was confirmed by electromyography and laryngostroboscopy and found that singers had the worst hit¹¹ In patients with external laryngeal nerve damage who were not singers.

The exact data of the incidence of injury to the external laryngeal nerve after thyroid surgery is not clear, but studies have recorded the electromyographic incidence of external laryngeal nerve damage after thyroid surgery from 0% to 58%.³ Cernea's classification of external laryngeal nerve based on the potential risk of injury to the nerve found the highest risk in cases with large goitres.¹²

Aina et al. in their study found that when the weight exceeds hundred grams then around fifty percent of the external laryngeal nerve cross below the apex of the thyroid lobe where they are at high risk of injury.¹³

Conclusion

We suggest that the surgeon uses the Friedman technique to detect the SLN in thyroidectomy so that the risk of injury is reduced.

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