

Non-recurrent Laryngeal Nerve in Thyroid Surgery

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Summary

A case of non-recurrent laryngeal nerve is reported. The non-recurrent laryngeal nerve was found on the right side and was not associated with any vascular abnormalities. The anatomy and surgical implication of this rare condition is discussed

Key Words: Non-recurrent laryngeal nerve, Thyroid surgery

Introduction

The non-recurrent laryngeal nerve (NRLN) is a rare clinical entity. In most series the incidence is reported to be less than 1%. Steadman was the first to observe a non-recurrence of the inferior laryngeal nerve in a cadaver in 1863¹. Indeed, he also noted then an anomaly of the origin and course of the right subclavian artery. He concluded that the vascular anomaly described earlier by Hunauld in 1785, was closely associated with the NRLN. Nonetheless, Bayford was the first to propose the term "dysphagia lusoria" to describe the deglutition obstruction linked to the right subclavian artery arising from the left and indenting the esophagus². We report a case of non-recurrent laryngeal nerve and discuss the anatomy and surgical implication of this rare condition.

Case Report

A fifty one year old Indian lady was seen in our clinic for painless anterior neck mass that had gradually become larger over a period of 8 years. She had no toxic symptoms, difficulty in swallowing or hoarseness of voice. On clinical

examination, a multi-nodular anterior neck mass was palpable. It measured 15 by 7cm and was firm in consistency. Ultrasound and CT scan revealed a multinodular goiter with retrosternal extension. An indirect laryngoscopic examination showed normal vocal cord function. The patient underwent total thyroidectomy and the multinodular goiter removed weighed 280 grams.

During surgery the right recurrent laryngeal nerve (RLN) was not encountered at the tracheo-oesophageal groove and a further exploration caudally failed to disclose the nerve. However, when the Zuckerkandl tubercle (ZT) of the thyroid gland was lifted up and rotated medially the NRLN was seen curving down from the top (Figure 1). The identification of the NRLN was aided by the exposure of ZT. The nerve was traced proximally and was found to be arising from the cervical plexus of the vagus nerve at the level of the superior thyroid artery. The patient was informed of her anomaly and a barium swallow was done later to search for the anomalous right subclavian artery. Neither did the barium swallow show an indentation on the esophagus nor the presence of anomalous subclavian artery.

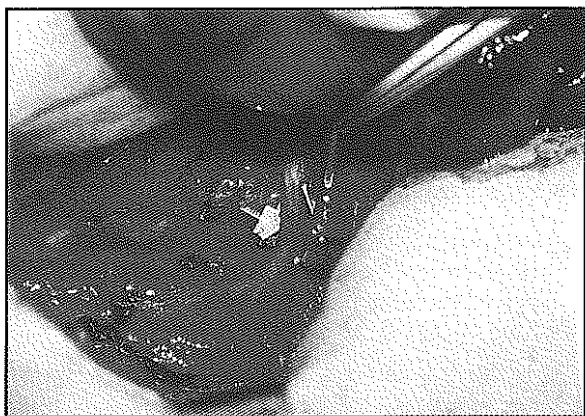


Fig. 1: The non-recurrent laryngeal nerve is encountered directly to the larynx, lateral to the Berry's ligament.

Discussion

The NRLN was encountered in our unit only after performing 585 thyroid operations in three years with an overall incidence of 0.2%. The importance of NRLN lies in its vulnerability during thyroid surgery. NRLN arises directly from the vagus nerve and in most instances the nerve is associated with right aberrant subclavian artery^{2,3}. Nonetheless, the occurrence of NRLN in the absence of vascular anomaly has also been observed in other series^{3,4}. The NRLN is usually found running directly to the larynx at the level of superior pole of thyroid. In addition Steadman *et al* described two types of NRLN passage from the vagus nerve to the right thyroid lobe: the horizontal and the descending course¹. Others have reported a small recurrent laryngeal nerve with a major non-recurrent trunk^{4,5}.

It is a good practice that no structure passing medially from the carotid sheath should be divided until after full mobilization of the thyroid gland and normal size recurrent laryngeal nerve is being identified¹. There are not only multiple branches to be considered but also the variability in the position of recurrent laryngeal nerves. Furthermore in the presence of a noticeable Zuckerkandl tubercle, the nerve can be identified confidently. When a nerve of diminished caliber is observed in the usual recurrent course, careful and meticulous dissection cephalad should be continued to demonstrate a possible merger of ipsilateral recurrent and NRLN⁵.

The clinical symptoms such as dysphagia and the presence of artery lusoria play a major role in the preoperative diagnosis^{3,4,5}. The artery can occasionally be seen on the standard chest radiograph and barium swallow. More recently an intravenous digital subtraction angiography examination has been advocated. Although more invasive, this investigation is said to be a more reliable predictor of the vascular anomaly than the use of barium swallow. However this invasive procedure was not done in this case. The NRLN is vulnerable to injury during dissection if one is not familiar with the surgical anatomy and course of this rare condition. This case draws the attention of NRLN, which was not associated with any vascular abnormalities.

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