

Doubling of the Left Recurrent Nerve: Surgical Risk During Thyroidectomy - Two Case Reports

Tsierie-Tsoba A^{1*}, Mounzeo Ndinga D², Ngouoni GC¹, Otouana Dzon HB³, Elion Ossibi P⁴, Ondzotto GW¹, Kepabi W¹, Itié-É-Odzili FA¹, Ondzotto G¹

¹ENT-CCF Department, Brazzaville University Hospital Centre

²Occupational Injury and Forensic Medicine Department, Blanche Gomes Mother and Child Specialist Hospital

³ENT-CCF Department, Talangaï Referral Hospital

⁴Visceral Surgery Department, Brazzaville University Hospital Centre

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*Corresponding author: Tsierie-Tsoba A

ENT-CCF Department, Brazzaville University Hospital Centre

Abstract

Case Report

Duplication of the recurrent nerve is a rare anatomical variation. It constitutes a real anatomical trap during thyroidectomy. The recurrent nerve is located based on the inferior thyroid artery, Gruber's ligament and the inferior horn of the thyroid cartilage. However, Doppler ultrasound and monitoring remain effective methods for not only determining the position of the recurrent nerve but also eliminating any anatomical variations that pose a functional risk, sometimes life-threatening, during thyroidectomy. We report two cases of left recurrent nerve splitting during total thyroidectomies.

Keywords: Recurrent nerve-Thyroidectomy- Thyroid artery-Brazzaville.

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INTRODUCTION

Thyroidectomy is one of the therapeutic options for several thyroid disorders. This surgery requires near-perfect knowledge of the anatomy of the neck, particularly that of the thyroid gland, the inferior laryngeal nerve (also known as the recurrent nerve) and the inferior thyroid artery. However, there are many anatomical variations of the recurrent nerve, which can pose a real surgical risk. Among these anatomical variations is the splitting of the recurrent nerve, sometimes in a V shape [1], which constitutes an anatomical trap and can lead to one of the branches being mistaken for the trunk itself or the trunk being confused with the inferior thyroid artery. The aim of this study is to report two cases of left recurrent nerve bifurcation observed during total thyroidectomies.

CLINICAL OBSERVATION N° 1

Mrs NB, aged 47, was admitted to the Otorhinolaryngology and Cervico-Facial Surgery Department on 10/08/2024 for treatment of a low anterocervical swelling that moved when swallowing, which had been developing gradually for about two years.

She is hypertensive and is being treated with Coveram 10mg, and she is diabetic and on well-balanced insulin therapy. The clinical examination on arrival noted that she was in good general health, with a blood pressure of 13/9 mmHg and a blood sugar level of 1.20g. Locally, there was a low anterocervical swelling, painless, firm, approximately 5 cm in length, mobile when swallowing, much more developed on the left side and with normal skin covering. There were no cervical lymph nodes. Nasofibroscopy showed good bilateral cordoarythenoids mobility.

Examination of the other systems was normal, as were the thyroid hormone tests. Thyroid scintigraphy was not performed (not available). Cervical ultrasound revealed a diffuse, homogeneous goitre measuring approximately 38 cc, involving both lobes. In view of these results, a total thyroidectomy was indicated and performed. Intraoperatively, it was found to be a multi-modular goitre predominantly on the left side. The right recurrent nerve was quickly located and dissected. The left recurrent nerve was found to be split, running parallel to the trachea and heading towards the ipsilateral cricotracheal angle (Figure 1). The postoperative course was uneventful. The patient was discharged on day 3 under analgesic treatment.

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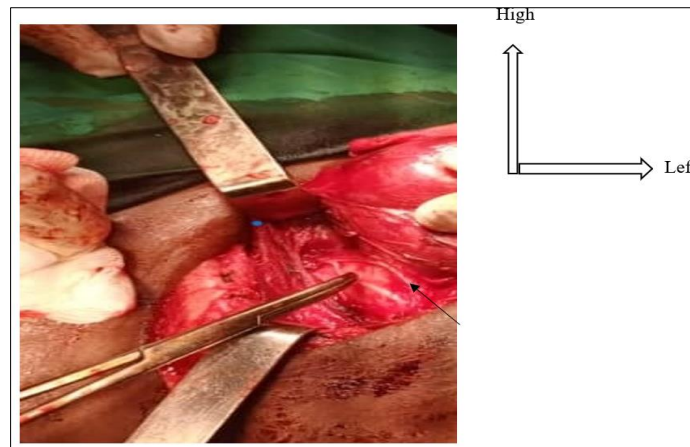


Figure 1: Split of the left récurrent nerve

CLINICAL OBSERVATION N° 2

Mrs. KJ, 30 years old, who consulted on 08/20/24 for the management of low anterocervical tumefaction without other associated signs. She has no particular pathological history. The clinical examination had found a low anterocervical swelling, painless and mobile at swallowing, about 5cm from the major axis, firm and with normal coating skin. The nasofibroscope showed no bilateral cordoarythenoid abnormality. The rest of the clinical examination was normal.

The thyroid hormone balance was normal. The cervical ultrasound had highlighted an asymmetric multiheteronodular goiter. In view of these results, a total thyroidectomy was indicated and performed. Intraoperatively, it was a bulky multi-modular hypervascularized goiter predominant on the left. We discover the presence of the split left recurrent nerve, parallel to each other, running along the trachea up to the left crico-trachial angle (**figure 2**). The operating suites were simple. The patient went out on day 3.



Figure 2: Splitting of the left recurrent nerve

DISCUSSION

Thyroidectomy is one of the procedures performed in cervical surgery. It is based on the systematic dissection and preservation of the recurrent nerve in order to address the risks of non-negligible vital and functional complications [2,3].

The data from the literature are variable or even divergent, but the existence of two or three extra-laryngeal branches is not uncommon, especially on the right [4].

In our cases, the extra laryngeal bifurcation was observed on the left and parallel to the trachea up to the

entrance into the oeso-tracheal dihedral angle. This variation can probably be linked to an anomaly in the development of the gill arches [5-6].

However, the lower thyroid artery facilitates the externalization of the thyroid lobe as well as the detection and dissection of the recurrent nerve during thyroidectomy. However, it may be absent in some cases [3] or even repeated in others.

Indeed, as soon as the recurrent nerve is detected, its superficial surface is cleared and a Redon dissector tunnells the overlying tissues in order to follow the recurrent nerve until its laryngeal penetration.

In our opinion, the tunnelisation of the recurrent nerve facilitates the clearance of the posterior face of the gland allowing its ablation.

Many authors believe that the recurrent nerve must be identified using the landmarks that are: the lower thyroid artery, the Gruber ligament, and the lower horn of the thyroid cartilage [7-8].

The identification modes of the recurrent nerve are numerous. In our series, the recurrent nerve was identified by the lateral pathway as indicated by several authors especially in simple cervical goiters or thyroid nodules [9-10].

However, this route can be difficult or even impossible in large plunging goiters and sometimes in front of patients with short necks. Other authors, on the other hand, use the retrograde pathway of the recurrent nerve since its entry into the crico-trachial angle in order to quickly identify it [11].

The recurrent nerve and the lower thyroid artery are two important landmarks to easily perform a thyroidectomy, with sometimes the possibility of severing the lower thyroid artery. However, this practice is a risk when the absent or present thyroid artery has been confused with the trunk of the recurrent nerve before the doubling.

In our cases, the research and identification of the recurrent nerve is done intraoperatively and in open air. However, some authors recommend performing a Doppler ultrasound to identify the position of the lower thyroid artery and monitoring the recurrent nerve, which is a safe, simple, and effective method for intraoperative monitoring during thyroidectomy. [12]

CONCLUSION

The splitting of the recurrent nerve remains and remains an anatomical trap during a thyroidectomy. It must be necessarily sought, identified and dissected during the thyroidectomy. However, the use of a neurostimulator allows not only to distinguish it from the lower thyroid artery, but also to allow for finding a possible variation in type of split.

Conflicts of Interest: The authors declare no conflict of interest.

Contribution of the Authors

All authors contributed to the conduct of this work and also declare that they have read and approved the final version.

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