

Case Report

Resection of Laterocervical Schwannoma through a Robot-Assisted Axillary Approach: A Case Report

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Abstract

Schwannoma is a benign tumor arising from schwann cells in peripheral, cranial, and autonomic nerve sheaths. It is rarely found in the head and neck. It is usually asymptomatic, biochemically non-secretory and functionally inactive. In this study, a 23-year-old woman patient presenting with a nodule (12x13x20 mm) outside the thyroidal tissue and diagnosed as a schwannoma after total excision was presented.

Keywords: Axillary approach; Laterocervical schwannoma; Robot-assisted resection

Introduction

Schwannomas (or neurinomas) are benign nerve neoplasm that may originate from peripheral nerve of the body. In a percentage between 25% and 45% schwannomas involve cranial nerve as IV, V, VII, X, XI, XII, or the sympathetic and peripheral nerve [1,2,3,4]. The most affected cranial nerve is the vagus nerve; schwannomas arising from the vagus nerve are extremely rare in children, with only 15 cases reported in the world literature [5]. Other locations of neck schwannomas described in the literature, in addition to the laterocervical and parafaryngeal, are the retropharyngeal and laryngeal location.

Usually the patient requires medical ENT specialist advice for the appearance of a laterocervical swelling without referring to particular

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disturbance. Ultrasound as a first level examination, possibly accompanied by a CT scan of the neck, allows an appropriate study of the neoformation [2].

Open surgery of the neck to date has represented the therapeutic option of choice for the excision of these neoplasms [3]; in recent times, robotic surgery has given the possibility of guaranteeing complete surgical excision in the face of less extensive surgical accesses with a gain in postoperative recovery and aesthetic result, very important especially in younger patients [4].

Patient and Method

Patient

The 23-year-old woman patient, followed by the endocrinologist specialist for a thyropathy, came to our observation following the execution of a thyroid ultrasound in which it highlighted the presence on the right, of a nodule, apparently not vascularized, outside the thyroidal tissue, with dimensions of 12x13x20 mm. The physical examination showed palpation a swelling with regular contours, partially mobile on the deep planes, at the level of the third-fourth laterocervical level on the right; nothing to report to the left. No tumor markers were performed.

The initial diagnostic hypothesis, in relation to the anatomical site of the neoformation and to the haematochemical tests performed in the endocrinological controls was of suspected parathyroid adenoma. For this reason no further second level radiologic examinations were performed. In the hypothesis of a neoformation originating from the cranial nerves we would have required an MRI that shows specific signs of neural sheath neoplasms. In the suspicion of a parathyroid adenoma, an ultrasound-guided needle aspiration was performed; the result of the cytological examination did not highlight the presence of epithelial cellular elements and negative for neoplastic cells. The lack of a certain histological diagnosis in addition to the patient's desire to carry the mass, led us to the decision to perform a robot assisted excision to minimize the surgical trauma, even considering the young age of the patient.

Surgical Procedure

The patient was placed on the operating bed in supine position and performed endotracheal intubation; the right arm has been rotated upwards so as to expose the axillary cable as much as possible. A skin incision of about 5 centimeters was made in the right armpit (Figure 1) and then a detachment was performed above the pectoralis major muscle keeping the skin and platysma muscle flap at the top.

Through this dissection plane a tunnel was sculpted until the sternocleidomastoid muscle was visualized; at this point, the clavicular and sternal heads are isolated and the dissection continued in the vascular triangle between the two muscular heads. The positioning of a Chung's retractor increased visual exposure on the thyroid and laterocervical space.



Figure 1: Drawing of the skin incision at the level of the lateral margin of the right pectoralis major muscle.

The Da Vinci Surgical System Xi (Intuitive Surgical Sunnyvale, CA, USA) was introduced; the 30° endoscope, left and right robotic arm were inserted through the axillary incision. Chung's retractor, elevating the skin flap, allows obtaining a wide viewing and maneuvering space, avoiding that the robotic arms can come into conflict during surgical maneuvers.

The neoplasm has been progressively detached from the surrounding planes and removed; extemporaneous histological examination at the freezer did not show the presence of epithelial cells. The macroscopic aspect deposited for a schwannoma (Figure 2); in this regard, a rosary aspect of the omolateral recurrent laryngeal nerve was also reported (Figure 3).

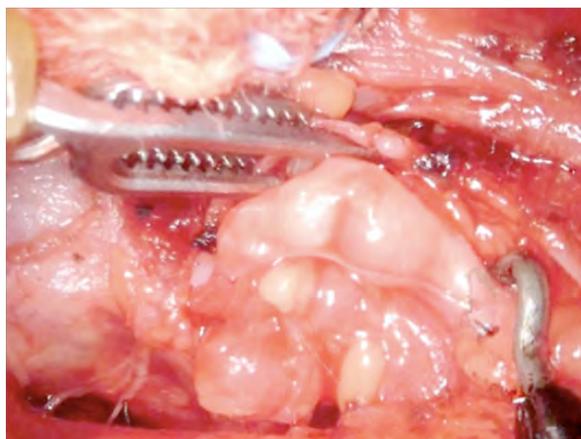


Figure 2: Characteristic rosary conformation of the schwannoma of the right recurrent laryngeal nerve.

Results

The total operative time was 76 minutes. The postoperative course was without complications; drainage was removed on the second postoperative day and the patient discharged. Definitive histological examination confirmed that the neoplasm was actually a neoplasm of the size of 22x13 mm with a morphological and immunophenotypic picture compatible with a schwannoma (S100+, Actin+, proliferation index Ki67+: 2%).

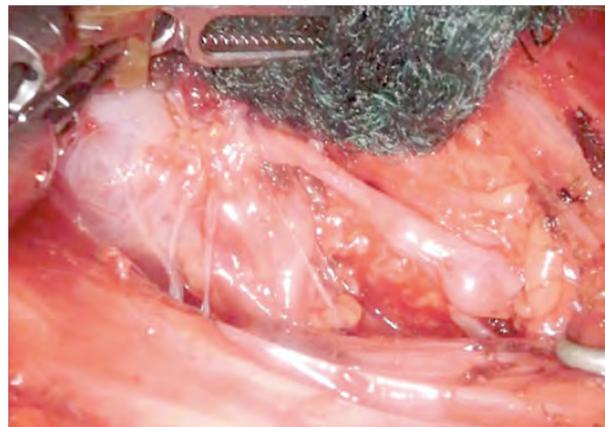


Figure 3: Identification of the right recurrent laryngeal nerve upon its entry into the larynx.

Discussion

We have described the first case in literature of an exeresis in robotic surgery of a laterocervical schwannoma. Certainly, to date, the gold standard for this type of pathology is an open surgery, which allows a very wide operating field, however, against larger surgical injuries with consequent dilation of the patient's recovery time and worse aesthetic results.

The robotic surgery, even if performed in a narrower operative field, allows a wide vision of the laterocervical anatomical spaces, with an enlargement and a contrast of colors that makes evident anatomical details otherwise not recognized to the naked eye; for this reason a correct execution and orientation of the subcutaneous tunnel previously described is indispensable.

Our patient, a young woman of 23, was discharged on the second postoperative day without any visible wound at the laterocervical level and without any noticeable discomfort.

To say that the aesthetic factor is the only advantage of robotic surgery appears to be quite reductive, especially considering the faster recovery times compared to open surgery, due to the lower invasiveness and greater surgical precision that this method also allows at the neck level.

The most frequent postoperative complications are super imposable between the two accesses: paresis-paralysis of the vocal cords (2.6 of cases, definitive in 13.8% of these cases and transient in 86.2%), hematomas, seromas, infection of the surgical site 3% of cases had transient brachial nerve paralyse due to overstretching of the lesion side arm which resolved with conservative treatment. Only nine studies reported the discharge time, with a mean of 2.4 ± 1.2 days after surgery. The postoperative cosmetic results were good. The small incision scar in the axilla was completely covered when the patient's arm in natural position. Most of the subjective parameters (hypoesthesia or paraesthesia in the neck or anterior chest wall and difficulty swallowing) improved within 6 months.

Conclusion

The approach to laterocervical neofomations can be performed in robotic surgery at least with the same safety as open surgery, with the

advantage of having better precision and surgical vision and reduced recovery times for patients. Important is a correct surgical training both for axillary access and for the management of the robotic arms; this becomes fundamental for the robotic approach to become over time the gold standard for the surgery of these laterocervical neofor-mations, especially in some categories of patients.

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