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Navigating Cervical Vagal Schwannomas in the Parapharyngeal Space: A Case Report Unveiling Contemporary Insights and Surgical Advances

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Abstract

Aim: Report a vagus nerve schwannoma in the parapharyngeal space treated through a transcervical approach to preserve nerve function.

Background: Schwannomas are uncommon to develop from the cervical vagus nerve. These tumours often manifest as lateral neck lumps that are asymptomatic and slowly growing. Schwannomas can develop in the sympathetic trunk, spinal nerve roots, or cranial nerves. Contrary to carotid body tumours, carotid sheath tumours can be challenging to diagnose and difficult to completely remove surgically due to the vagus nerve's proximity. The preferred course of therapy is still a transcervical conservative local excision with preservation of neuronal function.

Case Description: We present a case of left-sided neck swelling in a 25-year-old woman with schwannoma of the left cervical vagus nerve. The tumour was completely excised, leaving the vagus nerve intact.

Conclusion And Clinical Significance: Schwannomas from the cervical vagus do not cause any symptoms, but they must still be removed surgically. Extracapsular enucleation and intracapsular enucleation are both surgical procedures, although intracapsular enucleation is preferable in terms of nerve preservation. Because it may be technically challenging to protect the vagus nerve during surgery. Otorhinolaryngologists must be aware of the differential diagnosis of this lesion and the treatment modalities to best manage such patients.

Keywords: Parapharyngeal space tumours, lateral neck swelling, Vagus nerve, schwannoma, transcervical approach

Introduction

Parapharyngeal schwannomas represent an infrequent occurrence, characterized by their benign nature and origin in Schwann cells within the peripheral nerve sheath. Situated within the constrained parapharyngeal space, positioned laterally to the upper pharynx, this region harbors an intricate network of nerves, vessels, and connective tissues. Schwannomas emerging from this locale predominantly stem from cranial nerves, with the glossopharyngeal nerve (CN IX) more commonly implicated than the vagus nerve (CN X).

Patients typically present with vague symptoms, such as an indolent neck mass, dysphagia, or alterations in vocal quality. Imaging modalities such as MRI and CT scans play a pivotal role, elucidating the tumour's dimensions, location, and relational dynamics with adjacent structures.

The rarity of these tumours, coupled with their distinctive anatomical niche, gives rise to challenges in both diagnostic and therapeutic modalities. Herein, we elucidate the clinical manifestation of a patient

with a cervical vagal schwannoma, showcasing a multidisciplinary approach necessitating surgical intervention for comprehensive excision while preservation in the integrity of neighbouring nerves and vasculature.

Case Decription

A 25-year-old female presented to our tertiary care facility with a chief complaint of a progressively enlarging left lateral neck swelling persisting for three months. Accompanying this, she reported a foreign body sensation in her throat over the past month. The swelling, initially inconspicuous, exhibited significant growth over the recent month. The patient denied any history of systemic symptoms, pain during swallowing, otalgia, dyspnea, or hoarseness. Her medical and surgical history was unremarkable, with no familial predisposition to malignancies or neurocutaneous disorders.

Clinical examination revealed a solitary left-sided swelling measuring 4 x 4 cms, characterized by an ovoid shape, smooth surface, ill-defined margins, and firm consistency. The mass, located from the angle of the mandible to 3 cm lateral to the hyoid bone, anterior to the sternocleidomastoid muscle, demonstrated horizontal mobility but lacked vertical displacement. Non-tender and non- compressible, the swelling elicited paroxysmal coughing upon palpation. Neck extension diminished its prominence, indicating a deeper origin than the strap muscles. Oropharyngeal inspection unveiled left tonsillar medial displacement and rightward deviation of the anterior pillar and uvula without visible pulsations (Figure 1). Laryngeal endoscopy revealed normal supraglottic, glottic, and hypopharyngeal regions with mobile vocal cords. Systemic examinations were unremarkable, and there were no signs of neurocutaneous involvement.

Considering the differential diagnoses encompassing cervical lymphadenitis, lipoma, and neurogenic neoplasms such as Schwannoma, comprehensive diagnostic imaging was pursued. Neck ultrasonography identified a well-defined oval lesion in the left parapharyngeal space, measuring 2.6 x 4.0 x 5.1 cm, with a central anechoic cystic region. Doppler assessment indicated minimal vascularity with feeding vessels originating from the left external carotid artery. Contrast- enhanced CT delineated a well-defined, heterogeneously enhancing soft tissue density lesion, measuring 3.5 x 2.9 x 4.8 cm, in the left parapharyngeal space, extending from the base of the skull to the upper border of the C4 vertebral level (Figure 2A). The lesion abutted the greater cornua of the hyoid, the left internal carotid artery, and internal jugular vein, causing compression (Figure 2B).

Ultrasound-guided fine needle aspiration cytology confirmed a benign spindle cell tumour, indicative of Schwannoma arising from the cervical vagus nerve. Cardiopulmonary evaluations ensured fitness for the impending procedure. A transcervical approach was employed for extracapsular excision under general anaesthesia (Figure 3A). The surgical specimen, a well- circumscribed 4 x 4 x 3 cm mass, was identified as originating from the vagus nerve at the carotid bifurcation (Figure 3B). Monobloc excision, preserving the vagus nerve (Figure 3C), was accomplished and meticulous preservation of surrounding structures, including the hypoglossal nerve, internal jugular vein, and carotid artery bifurcation (Figure 3D). Postoperatively, the patient exhibited no voice alterations, dysphagia, or Horner's syndrome. Laryngeal endoscopy on day 3 confirmed normal vocal cord mobility.

Histopathological analysis of the excised tumour revealed a biphasic composition with Antoni A and Antoni B cells, along with Verocay bodies and nuclear palisading (Figure 4), confirming the diagnosis of Schwannoma. A one-month follow-up revealed complete wound healing and an uneventful recovery.

Discussion

The presented case highlights the diagnostic and therapeutic challenges associated with cervical vagal Schwannomas, emphasizing the importance of a comprehensive multidisciplinary approach. The literature consistently underscores the rarity of vagal Schwannomas, and their potential to manifest with diverse clinical presentations, often mimicking other more common neck masses [1].

Diagnostic imaging, including ultrasound and contrast-enhanced CT scans, played a pivotal role in characterizing the lesion's location, dimensions, and

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its relationship with adjacent vascular structures [2]. The ultrasound findings align with studies emphasizing its utility in identifying the cystic components within Schwannomas [3]. Furthermore, the efficacy of fine needle aspiration cytology, as demonstrated in this case, in distinguishing benign spindle cell tumours aids in guiding subsequent management strategies [4].

The transcervical approach adopted for tumour excision aligns with contemporary surgical principles, emphasizing minimal invasiveness while ensuring complete resection [5]. The meticulous dissection technique, as described in the case, mirrors recommendations in the literature to preserve vital structures and minimize postoperative complications [6].

Histopathological analysis of the excised specimen revealed biphasic Antoni A and Antoni B components, consistent with the typical Schwannoma architecture. The presence of Verocay bodies, a hallmark of Schwannomas, further supported the definitive diagnosis [7].

Postoperatively, the absence of complications and the prompt restoration of normal laryngeal function underscore the effectiveness of the chosen surgical approach. Such outcomes align with studies emphasizing the feasibility and safety of extracapsular excision for vagal Schwannomas, with preservation of nerve function [8].

Follow-up examinations and imaging, crucial for assessing recurrence and ensuring complete recovery, were not only consistent with standard postoperative care protocols but also reflective of the favourable prognosis associated with timely intervention [9].

Conclusion

In conclusion, the presented case underscores the intricacies in diagnosing and managing cervical vagal Schwannomas, emphasizing the significance of a multidisciplinary approach. Through meticulous diagnostic imaging and surgical intervention, guided by contemporary principles, successful extracapsular excision was achieved, preserving critical anatomical structures and ensuring a favourable postoperative outcome. The case contributes to the limited literature on vagal Schwannomas, reiterating the importance of continued research to refine diagnostic strategies and optimize treatment modalities for these uncommon neurogenic tumours.

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Figure 1: showing medial displacement of the left tonsil

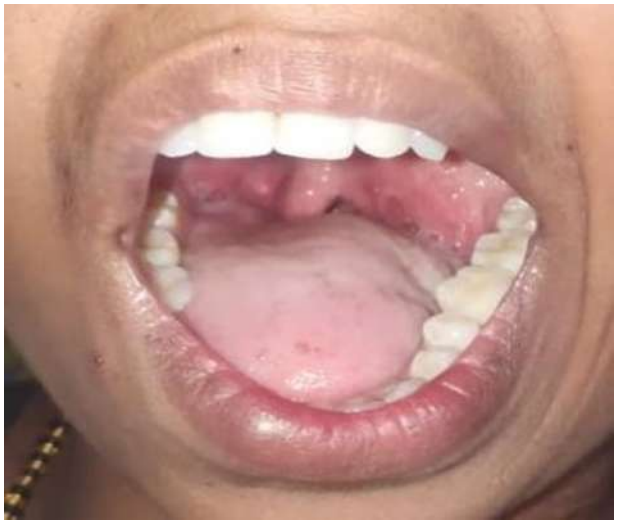

Figure 2: A) CT film (sagittal view): Showing well-defined mass in left parapharyngeal space extending from the base of the skull to the upper border of the fourth cervical vertebra, B) CT film (axial view): showing well-defined mass with lateral displacement of the internal carotid artery and internal jugular vein, causing compression

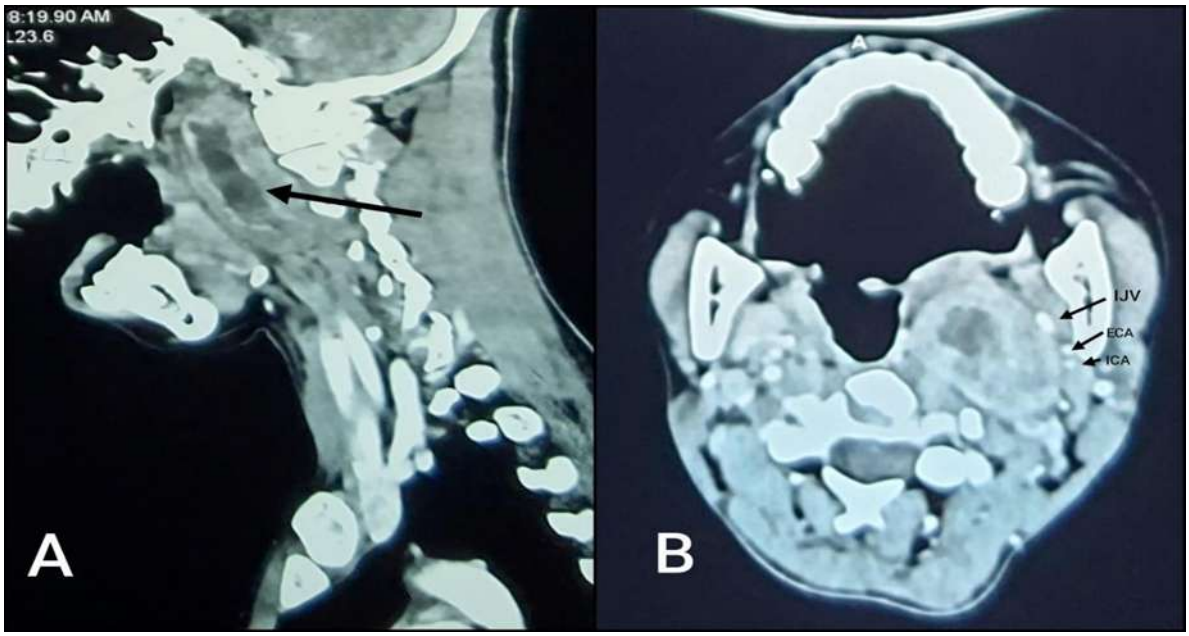

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Figure 3: A) Horizontal skin incision beginning at the level of the cricoid cartilage and extending up to two fingers below the point of the mastoid bone B) A single well- circumscribed, encapsulated, firm mass arising from the vagus nerve at the level of carotid bifurcation measuring approximately 4 × 4 × 3 cm, C) monobloc excision, leaving the vagus nerve intact, D) the intact hypoglossal nerve, internal jugular vein, and carotid artery with its bifurcation.

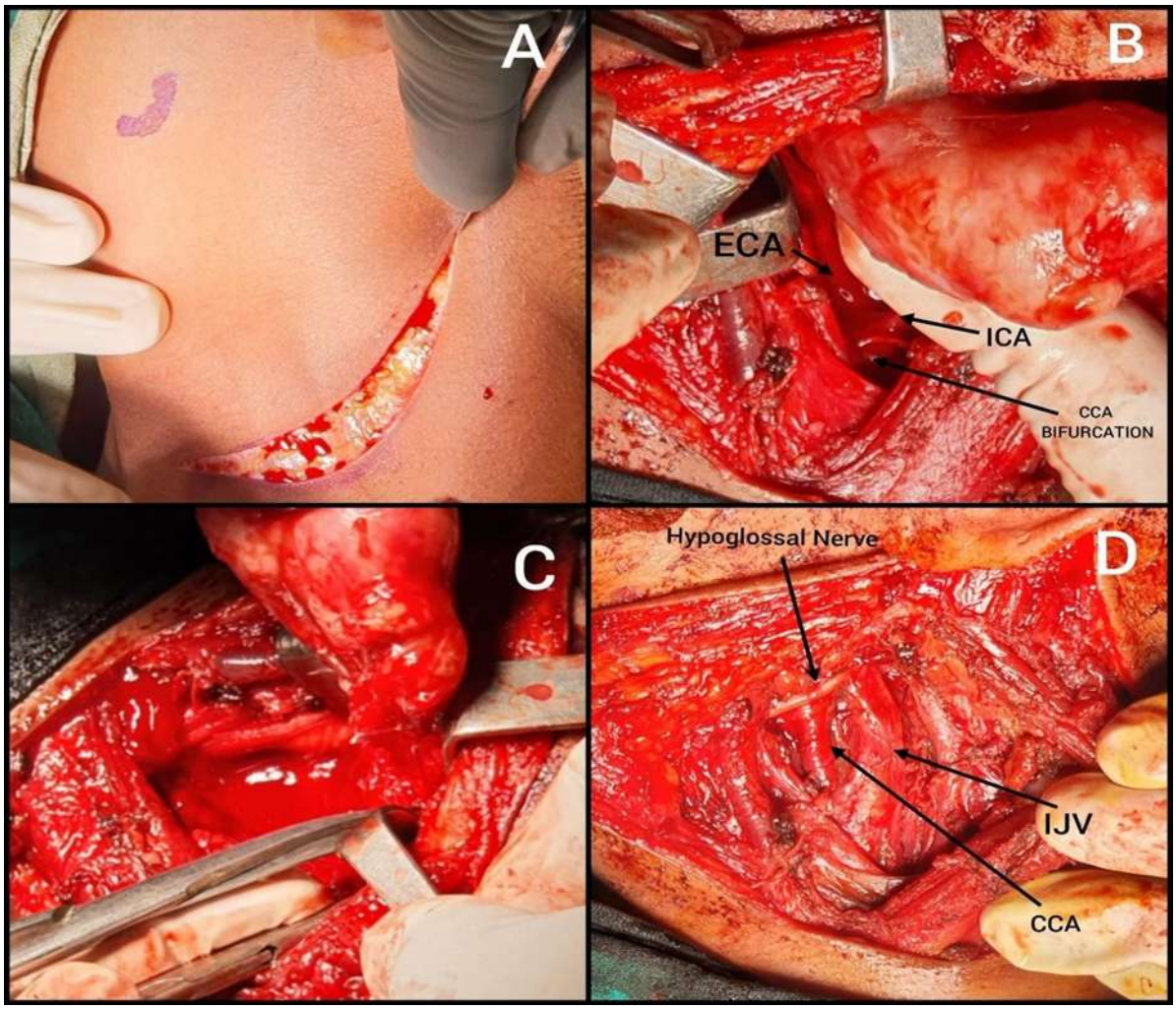

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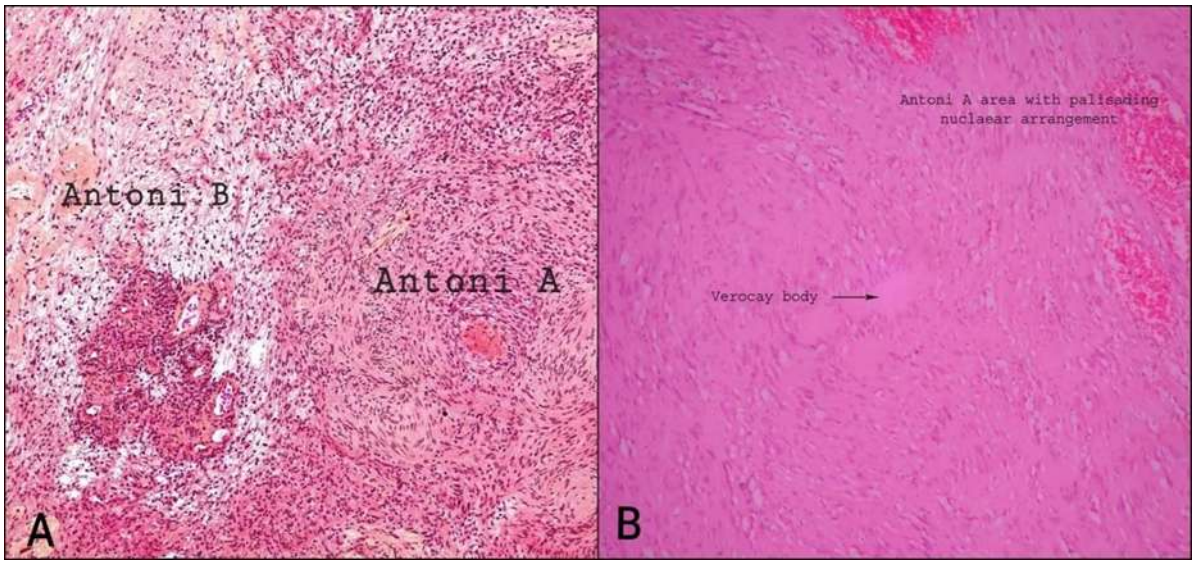
Figure 4: biphasic tumour showing compact hypercellular Antoni A areas and hypocellular Antoni B areas with nuclear palisading arrangement called Verocay body



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