A parapharyngeal space schwannoma arising from the vagus nerve: A case report

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A B S T R A C T

INTRODUCTION: Tumours of the parapharyngeal space are rare. Only 0.5% of head and neck tumours occur in this space. Surgical excision of parapharyngeal space lesions is challenging because of the anatomical complexity of the area.

PRESENTATION OF CASE: A 31-year-old male patient was referred by his general dental practitioner for removal of lower wisdom teeth due to multiple episodes of pericoronitis. At the initial examination, an incidental finding was made of a large fluctuant posterior oropharyngeal swelling. A fluid aspirate was taken from the lesion but this was inconclusive. The patient underwent an urgent MRI and CT neck revealing a large parapharyngeal mass. An incisional biopsy of the lesion confirmed the presence of a vagal nerve schwannoma which was subsequently removed via a transcervical approach.

DISCUSSION: Due to their slow growing and painless nature, they are often not detected until they are large enough to palpate or visualise. It may cause secondary symptoms such as dysphagia, hoarseness and nasal obstruction. This case represents a typical presentation of a parapharyngeal schwannoma and reiterates the subtle and often ambiguous nature of the lesion.

CONCLUSION: Vagal schwannomas in the parapharyngeal space are rare. They usually present in the form of an isolated intraoral or neck mass. A positive diagnosis is made on imaging and confirmed by histopathological examination. Complete surgical excision is the treatment of choice and recurrence rates are low.

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1. Introduction

Tumours of the parapharyngeal space (PPS) are rare and account for only 0.5% of all head and neck neoplasms [1]. These tumours have different histological origins such as salivary gland tumours, schwannomas, neurofibromas and paragangliomas. Most of these lesions are benign but 20% have malignant transformation [2].

PPS tumours may remain undetected for long periods of time and usually remain asymptomatic until they become large enough to displace and compress nearby structures. Surgical excision of tumours from the parapharyngeal space is difficult due to the complex anatomy of the region which contains numerous neurovascular structures, as well as the difficult surgical approach to the area.

We present a rare case of a vagal nerve schwannoma arising in the parapharyngeal space of a 31-year-old patient which was surgically removed via a transcervical approach. This work has been reported in line with the SCARE criteria [3].

2. Presentation of case

A 31-year-old male patient was referred to the Oral and Maxillofacial Department at Basildon and Thurrock University Hospital with a two year history of bilateral pericoronitis from lower wisdom teeth. Clinical examination revealed left side lymphadenopathy and bilateral impacted lower wisdom teeth. During this assessment, an incidental finding was made of a large left sided oropharyngeal mass. The swelling measured 3 x 3 cm and was fluctuant in consistency. There was no significant medical or family history. Cranial nerve examination was unremarkable.

The patient underwent removal of both lower wisdom teeth under general anaesthesia, and fluid was aspirated from the oropharyngeal swelling to be investigated. The cytology report confirmed the presence of hemorrhagic cells and the findings were not contributory. As the oropharyngeal mass was still present at a two week review appointment, the patient was sent for an urgent MRI and CT Neck with contrast. The computed tomogram (Fig. 1)

**Abbreviation**: PPS, parapharyngeal space.

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reported a well defined, homogenous 62 × 55 mm low density collection in the left masticator space extending into the left parapharyngeal space with displacement of the oropharyngeal space. The MRI (Fig. 2) also showed that there was deformity of the pterygoid plates indicating that the lesion was slow growing. Following the MRI and CT scans, an urgent GA biopsy was carried out.

The surgical specimen was then sent for formal histopathological examination. Gross pathological analysis showed an irregular mass of haemorrhagic and necrotic mucosa with a central defect measuring 60 × 50 × 30 mm. Histological sections showed the wall of a cavity, the outside of which was formed by dense sclerotic collagen, transitioning into the edge of a spindle cell tumour exhibiting hypo and hyper cellular areas. In many places there were scattered hyper chromatic nuclei, areas of haemosiderin deposition and fragments of black amorphous debris, consistent with ancient change. The morphological features were in keeping with a schwannoma with ancient/degenerative changes (Fig. 3).

The patient was discussed at a multi-disciplinary team meeting. A wide local excision of the schwannoma was planned. The patient had a preoperative tracheostomy, and access to the lesion was gained via a transcervical approach from the mental symphysis to mastoid tip. A subplatysmal flap was raised, with preservation of the marginal mandibular nerve. Lingual and hypoglossal nerves were identified and spared, and the internal jugular vein was transected. A well-encapsulated, firm mass was identified as the schwannoma and was excised. The pseudo capsule was left in situ.

At regular follow-up appointments, the patient’s recovery is progressing well. Neurological function has been preserved and there has been no clinical evidence of recurrence.

3. Discussion

Schwannomas, also called neurilemmomas are typically benign, slow growing and asymptomatic tumours derived from proliferating Schwann cells of peripheral, cranial or autonomic nerves [4]. Approximately 45% of all extra-cranial schwannomas occur in the head and neck region, with less than 1% affecting the oral cavity [5]. A schwannoma can affect any of the cranial nerves with the exception of the olfactory and optic nerves as these do not contain a schwann cell sheath. They most commonly originate from the V, VII, IV, X, XI and XII cranial nerves. Most schwannomas found in the head and neck region originate from the vagus nerve [6]. There is no sex predilection and they tend to affect patients between 30 and 60 years of age [7].

Clinically, schwannomas usually present as asymptomatic slow growing masses. The symptoms depend on the anatomical location of the tumour and nerve of origin. Pain and paraesthesia has been reported in up to 50% of cases [8]. Other symptoms can include; dysphagia, difficulty breathing and hoarseness.

The PPS is a potential space in the shape of an inverted pyramid. It is bounded by the skull base superiority and the hyoid bone inferiorly. The PPS is divided into two compartments; the pre and post-styloid compartments. The post-styloid compartment of the space contains the internal jugular vein, carotid artery, cra-
Parapharyngeal space schwannomas are extremely rare and usually present with a painless, slowly progressive swelling in the neck. Preoperative diagnosis can be difficult and investigations such as CT and MRI can be very useful for surgical planning and identifying the nerve of origin. Complete surgical excision is the treatment of choice which can be achieved via a number of different surgical approaches. Recurrence is uncommon and in this case, our patient has been periodically reviewed for one year with no signs of recurrence.

**Conflicts of interest**

All authors declare that they have no conflicts of interest.

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**Ethical approval**

Ethical committee approval was not needed for this case report.

**Consent**

Informed consent was obtained from the patient for publication of this case report and accompanying images.
Author’s contribution

The idea of the case report was conceived by Conor Carroll. Conor Carroll and Manish Jagatiya carried out the literature review. The paper was written by both Conor Carroll and Manish Jagatiya. All authors contributed to the refinement of the case report. Jamal Siddiqi was the senior consultant in charge of the case and carried out the treatment plan. Dr Dia Kamel provided the photomicrographs of the histology slides to confirm the diagnosis.

Guarantor

Conor Carroll and Manish Jagatiya.

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