CASE REPORT

Mental Nerve Schwannoma

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Abstract

Schwannomas are benign, painless, slowly growing tumors that arise from Schwann cells that surround the neural sheath. Clinical symptoms and signs are often nonspecific and inconclusive. Diagnosis is confirmed by fine needle aspiration cytology, histopathological examination, and immunohistochemical positivity for S100. They show a good prognosis overall with minimal rates of recurrence and transformation to malignancy.

Keywords: Immunohistochemistry, Mental nerve, MRI, Schwannoma, Surgery.

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Introduction

Schwannomas are slowly growing, benign, perineural tumors of neuroectodermal origin arising from Schwann cells that surround the neural sheath.[1] About 25–45% of these tumors arise in the head and neck region,[2] commonly from the cranial nerves (CNs) IV, V, VII, VIII, X, XI, and XII. We present a case report of a rare schwannoma arising from the mental nerve.

Case Description

A 24-year-old male presented with the complaint of a painless, slowly progressing swelling over the left side of lower jaw for 6 months. Examination revealed a solitary 2 cm × 1 cm smooth swelling in the oral cavity on the buccal mucosa opposite lower canine and first premolar which was, soft, nontender, and well-defined with normal overlying and surrounding mucosa. Patient had a history of similar complaint 15 years ago and had undergone external excision for the same.

On contrast-enhanced computed tomography (CT) scan, a soft tissue nodule measuring 13 × 12 mm was noted in the left inferior margin of mandible, anteroinferior to the mental foramen, predominantly in the subcutaneous plane, showing hyperenhancement of cyst wall, giving the impression of a salivary gland tumor, dental cyst, or vascular malformation (Fig. 1).

The lesion was excised under general anesthesia using an intraoral approach, after taking an intraoral incision over the buccal mucosa overlying the swelling, preserving the mental nerve (Fig. 2). On gross examination, the lesion was a gray-white, well-encapsulated soft tissue mass. On microscopy, it was a well-encapsulated, benign tumor composed of cellular (Antoni A) areas with Schwann cells arranged in diffuse sheets and fascicles intermingled with scanty hypocellular (Antoni B) areas that showed myxoid change and hemorrhage (Fig. 3). The final histopathological diagnosis was schwannoma.

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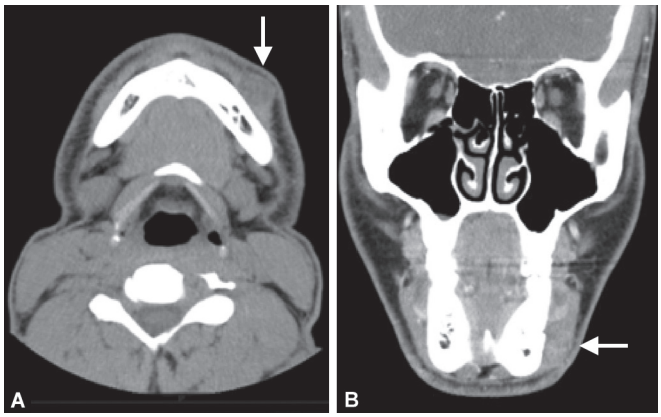
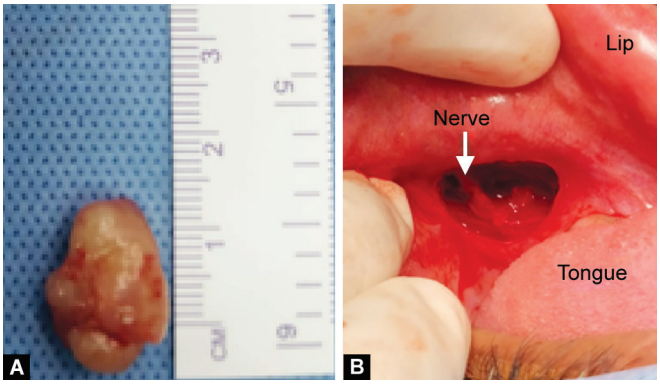
Discussion

Schwannomas are benign tumors that arise from Schwann cells encapsulating the nerves. They involve both CN and peripheral nerves in the head and neck region and mostly appear in the tongue and less commonly in the floor of the mouth, palate, buccal mucosa,



Figs 1A and B: Radiology of lesion



Figs 2A and B: Intraoperative preservation of nerve (right) and gross morphology of lesion (left)

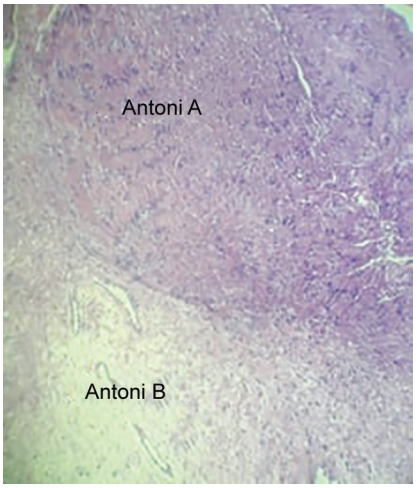


Fig. 3: Histopathology of tumor

gingiva, and parotid gland and rarely in the lower lip.[3] Among the CNs, they most often arise from CNs IV, V, VII, VIII, X, XI, and XII, with the CN X and sympathetic chain schwannomas being more common.[4] These tumors do not show any sex predilection and are usually found in young- and middle-aged people.[2] They present as solitary masses which are well-encapsulated, slow-growing, and often asymptomatic.[2,3]

Schwannomas of the lower lip are related to the mental nerve, first described by Das Gupta et al.[5] The mandibular division of the trigeminal nerve gives rise to the inferior alveolar nerve from which the mental nerve arises and provides sensation to the lower lip, mental prominence, and labial gingivae of the mandibular teeth. Clinical symptoms of a schwannoma are nonspecific, and appearance is similar to other mucosal lesions.

Diagnosis can be supported radiologically and confirmed with fine-needle aspiration cytology (FNAC)[6] and immunohistochemistry (IHC).[2,3] On CT scans, schwannomas may show hypo-, iso-, or hyperattenuation, with variable texture (homogeneous or heterogeneous) and enhancement.[7] They appear as homogeneous, well-circumscribed masses displaying high-signal intensity on T2 and a comparatively low signal on T1-weighted images on MRIs.[8] In T2-weighted images, a "target sign" originally described for neurofibromas has also been noted in schwannomas as low to intermediate central signal intensity with high peripheral signal intensity. The pathologic correlates for this appearance on imaging are the hypercellular Antoni A bodies and relatively hypocellular Antoni B bodies.[9] Das et al. have reported a "reverse target sign" consisting of central hyperintense and peripheral intermediate signal intensity.[10]

Characteristic histopathological features are encapsulation and tumor composed of alternating hyper- and hypocellular regions that are known as Antoni A and Antoni B regions, respectively. The Antoni A region is hypercellular and comprised of monomorphic, spindle-shaped Schwann cells that contain pointed basophilic nuclei and ill-defined eosinophilic cytoplasm. Occasionally, Verocay bodies, which are made up of spindle-shaped palisading cells around eosinophilic fibrils, may be seen in the Antoni A area. Secondary changes like hemorrhage, cystic degeneration, thick hyalinized vessels may be seen in the Antoni B areas.[2] On immunohistochemistry, intense S100 protein reaction for cytoplasmic and nuclear patterns is indicative of neural origin. Negative results for C-kit protein, desmin, and smooth muscle actin eliminate the likelihood of smooth muscle and stromal tumors.[2]

Differential diagnosis includes lipoma, hemangioma, lymphangioma, dental cysts, and salivary gland tumors which can be differentiated from schwannomas on histopathologic examination.

Surgical treatment with preservation of the nerve followed by a good prognosis has been universally reported in studies. The reported rate of recurrence of extracranial schwannomas in literature is 1.4%.[11] Malignant transformation is rare, and reported incidence in literature varies from 8 to 13.9%.[1]

Conclusion

Schwannomas of the mental nerve are rare tumors with low rates of recurrence and malignant transformation and can have overlapping clinical and radiological features with other oral lesions. A high level of suspicion is required in their diagnosis which can be aided with IHC and FNAC. Intraoperatively, with careful dissection, inadvertent injury to the nerve and resulting paresthesia of the lower lip can be avoided.

Clinical Significance

Schwannoma of the mental nerve is rare, with only nine documented cases. This report will help clinicians with the diagnosis and treatment of these lesions.

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