

Intramasseteric Schwannoma Derived from the Masseteric Nerve

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Summary: This report documents the intramasseteric onset of a schwannoma of the masseteric nerve, which is extremely rare. The patient was a 24-year-old woman who noticed an asymptomatic mass in the parotidomasseteric region 1 year before; a soft painless mass located near the angle of the left mandible was observed during the initial examination. No neuropathy, including sensory deficit, facial nerve paralysis, or trismus, was observed. Contrast-enhanced magnetic resonance imaging revealed an isolated neoplastic lesion within the body of the masseter muscle; the lesion exhibited low-signal intensity on coronal T1-weighted imaging and high-signal intensity on T2-weighted imaging with somewhat heterogeneous early uptake of contrast medium. The tumor was resected under general anesthesia and was found to be solid with distinct margins, enclosed within the masseter muscle, and continuous with a branch of the masseter nerve identified using intraoperative electrical stimulation. The lesion was a pale yellow solid mass encapsulated in a smooth membrane measuring 3.2×1.7×1.6 cm. Histopathological examination revealed a mixture comprising Antoni A pattern with Verocay bodies surrounded by oval nuclei exhibiting nuclear palisading, and an Antoni B pattern with loss of the characteristic cellular arrangement and separation of the cells, creating a more distinct individual tumor cell morphology. The final histopathological diagnosis was schwannoma. No complications, such as trismus or facial nerve paralysis, and no tumor recurrence were observed in the 1 year that has elapsed postoperatively. (*Plast Reconstr Surg Glob Open* 2019;7:e2175; doi: 10.1097/GOX.0000000000002175; Published online 20 March 2019.)

A schwannoma is a typically benign soft tissue tumor derived from Schwann cells, which are glial cells of the peripheral nervous system, and these tumors may arise at any site supplied by myelinated nerves. The primary sites of onset are the head and neck region and limb flexors.¹ The majority of schwannomas arise from sensory nerves and may rarely also arise from motor and sympathetic nerves.¹ In addition, there are relatively few reports of onset in the intraoral and maxillofacial region, and most of these reports describe onset in the tongue,² although tumors have also been reported to occur on the floor of the oral cavity, the mandible, the gingiva, the palate, and the buccal mucosa.³ This report documents the

intramasseteric onset of a schwannoma of the masseteric nerve, which is extremely rare.

CASE REPORT

The patient was a 24-year-old woman who noticed a gradually enlarging initially asymptomatic mass in the left parotidomasseteric region 1 year before. There was no medical history of note, and no history of trauma at the site. A soft, painless mass was observed near the angle of the left mandible on initial examination, and the mass was poorly mobile with respect to the underlying tissues. There were no superficial cutaneous abnormalities above the tumor, no regional lymphadenopathy was observed, and no neuropathy, including sensory deficit, facial nerve paralysis, or trismus, was observed. The tumor was isolated, and there were no clinical findings that raised suspicion of neurofibromatosis. Contrast-enhanced magnetic resonance imaging (MRI) revealed an isolated neoplastic lesion within the body of the masseter muscle; the lesion exhibited low-signal intensity on coronal T1-weighted imaging and high-signal intensity on T2-weighted imaging; early uptake of contrast medium was somewhat heterogeneous (Fig. 1). The soft tissue mass was resected on the following day under general anesthesia. The incision line

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Disclosure: None of the authors has a financial interest in any of the products or devices mentioned in this article.

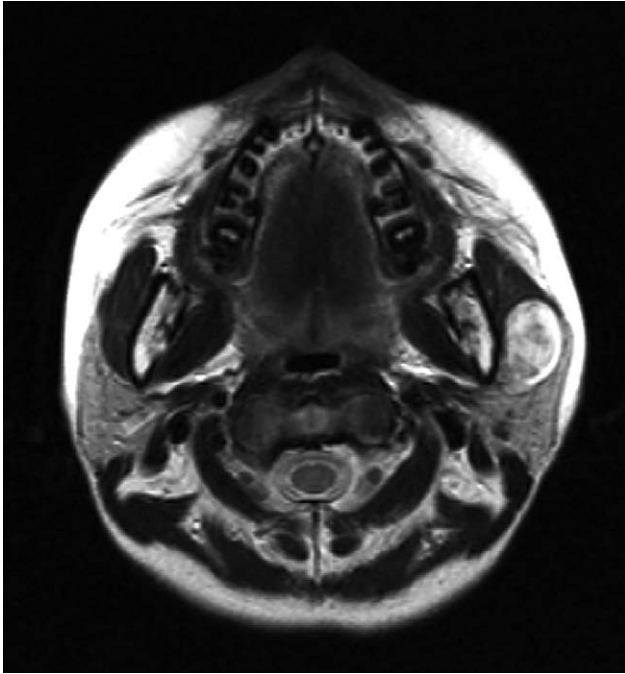


Fig. 1. Contrast-enhanced magnetic resonance images. An isolated neoplastic lesion measuring 26×16mm is observed within the body of the left masseter muscle showing high-signal intensity on T2-weighted imaging and somewhat heterogeneous early uptake of contrast medium.

was designed to run from the tragus along the auricular lobe to the angle of the mandible. The facial nerve trunk was identified anterior to the auricular cartilage, and the superficial parotid gland tissue was gradually dissected along each of the branches of the facial nerve and elevated rostrally (Fig. 2). During surgery, the tumor was not located within the parotid gland, but instead was palpable beneath the masseter muscle fascia. The body of the muscle was then incised in the direction of the masseter muscle fibers to approach the intramuscular tumor. Macroscopically, the tumor was solid with distinct margins, enclosed within the masseter muscle, and continuous with a branch of the masseter nerve, which was identified using intraoperative electrical stimulation (Fig. 3). Dissection was performed under microscopic guidance and gradual manipulation, and it was thus possible to perform excision with minimal injury to the masseteric nerve. The lesion was a pale yellow solid mass encapsulated in a smooth membrane measuring 3.2×1.7×1.6cm. The masseter muscle was repaired with an absorbable suture, and the facial nerve trunk and its branches were covered by the rostrally elevated superficial parotid gland tissues, and the wound was closed as designed. Histopathological examination revealed that the tumor had a fibrous capsule and a mixture of an Antoni A pattern, with dense proliferation of spindle-shaped cells with specific directionality and Verocay bodies surrounded by oval nuclei exhibiting nuclear palisading, and an Antoni B pattern with loss of the characteristic cellular arrangement and separation of the cells, creating a more distinct individual tumor cell morphology (Fig. 4). S-100 staining was positive and based on the abovementioned findings,



Fig. 2. Preoperative findings of intramasseteric schwannoma. A soft subcutaneous mass measuring approximately 30mm is seen in the left preauricular region. The mass was poorly mobile with respect to underlying tissues.

the final histopathological diagnosis was a schwannoma. One year has elapsed postoperatively, and we have observed no complications, such as infection, pain, trismus, or facial nerve paralysis, and no tumor recurrence.

DISCUSSION

There are isolated reports of schwannomas arising from cranial nerves such as the facial nerve, the auditory nerve, and the hypoglossal nerve,⁴ although reports of schwannomas arising in the masseteric nerve are extremely rare. We searched the literature and found a total of 6 reports in English, including the present report, that document the onset of an intramasseteric schwannoma.⁵⁻⁹ It is usually difficult to clarify the nerve of origin of schwannoma in the intraoral and maxillofacial region, although in most cases, this condition is painless and the tumor grows slowly, which is why dysfunction of the nerve of origin is rarely observed before and after surgery.¹⁰ Furthermore, it is considered difficult to diagnose an intramasseteric schwannoma using either clinical symptoms or imaging diagnosis.⁷ This is also evident in the present case; despite the fact that the tumor was obviously continuous from the branches of the masseteric nerve, no clinical symptoms, such as trismus, were observed before or after surgery, so it was impossible to diagnose the intramasseteric schwannoma preoperatively.

Options for resection techniques for intramasseteric lesions include the intraoral approach,⁸ submandibular incision,⁷ and the transparotid approach, and adequate consideration is required when using any of these tech-

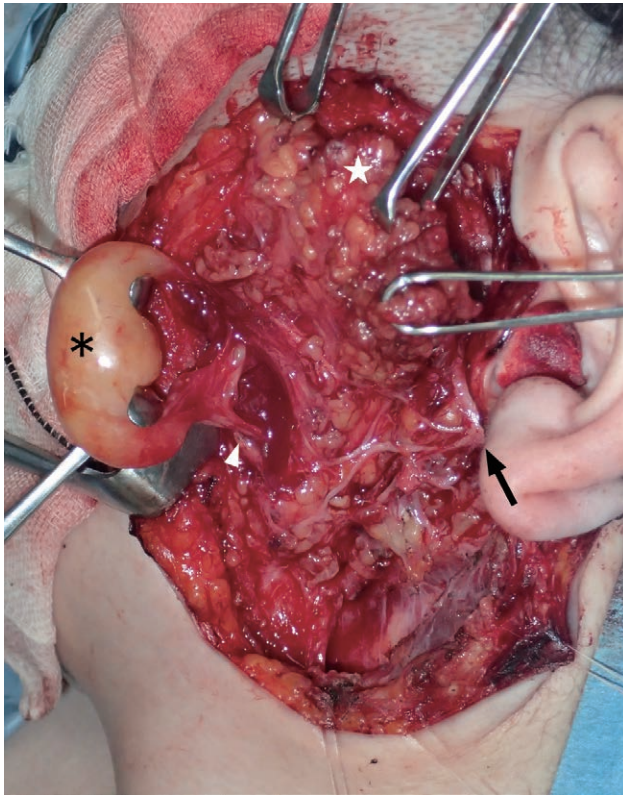


Fig. 3. Intraoperative findings of intramasseteric schwannoma. The facial nerve trunk (black arrow) is identified anterior to the auricular cartilage, with gradual dissection and rostral elevation of the superficial parotid gland tissue (white star) along each of the branches of the facial nerve. The body of the muscle is incised in the direction of the masseter muscle fibers to approach the intramuscular tumor (black asterisk). The tumor was found to be solid with distinct margins, enclosed within the masseter muscle, and continuous with a branch of the masseter nerve (white arrow head) identified using intraoperative electrical stimulation.

niques to avoid injury to the facial nerve as it runs along the surface of the masseter muscle. Endo et al.⁸ reported on the resection of an intramasseteric schwannoma using an endoscopic intraoral approach, although they concluded that due to the deep localization of the masseter muscle in the intraoral space, it is considerably difficult to excise tumors from the masseter muscle. The tumor in the present case was large, measuring ≥ 3.0 cm along the long axis, and occurred in a young woman, so we opted for a transparotid approach that involved designing an incision line that was as inconspicuous as possible, which enabled the rostral elevation of the superficial branch of the parotid gland and the protection of facial nerve when each of the facial nerve branches were dissected and exposed. After completing these steps, it was then possible to approach the body of the masseter muscle and the intramasseteric tumor safely under direct vision.

CONCLUSIONS

This report documents the intramasseteric onset of a schwannoma of the masseteric nerve. Tumor resection was performed using a transparotid approach and under

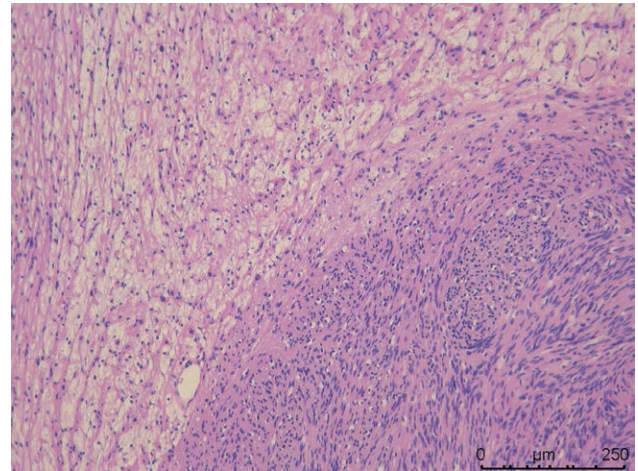


Fig. 4. Low-power image of hematoxylin and eosin-stained section. The tumor shows a fibrous capsule and a mixture of Antoni A pattern, with dense proliferation of spindle-shaped cells with specific directionality and Verocay bodies surrounded by oval nuclei exhibiting nuclear palisading, and an Antoni B pattern with loss of the characteristic cellular arrangement and separation of the cells, creating a more distinct individual tumor cell morphology. An internal hemorrhagic cyst is also seen. Scale bar: 250 μ m.

microscopic guidance, which was effective and served to avoid postoperative complications and tumor recurrence.

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