Surgically excising an intraoral schwannoma of the soft palate using a buccinator flap: A case report

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ABSTRACT

INTRODUCTION: Schwannomas are benign tumors derived from Schwann cells. However, schwannomas in the soft palate is considered rare.

PRESENTATION OF CASE: We report a case of a 17-year-old girl who presented with a 20-mm nodular lesion in the soft palate. After surgical resection, a buccinator musculomucosal flap was used for soft palate reconstruction. At 6 months post-operation, velopharyngeal insufficiency was not observed.

DISCUSSION: In this report, palatal muscles are examined, and the necessity of palatal muscle preservation and reconstruction of the defect in the soft palate mucosa after surgical resection of a schwannoma in the soft palate is presented.

CONCLUSION: Following resection of an approximately 20 × 19-mm-sized schwannoma of the soft palate, which is a relatively rare site of occurrence for schwannomas, we performed reconstruction of the defect using a BMMF to prevent scar contracture. This was an effective method of reconstruction in consideration of velopharyngeal function.

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1. Introduction

A schwannoma is a tumor arising from Schwann cells and was first described as a distinct pathological entity by Verocay in 1908 [1]. Later, in 1935, Shout recognized the histological origins of a tumor arising from Schwann cells and thus called it a schwannoma [2]. Approximately 25–40% of schwannomas occur in the head and neck regions, of which 1–12% affect the intraoral area, most frequently the tongue or mouth floor [3].

Intraoral schwannoma is not commonly seen in the palate. Such lesions are usually treated by conservative surgical excision with no reported risk for velopharyngeal insufficiency [4]. However, in the soft palate, which are important in the proper functioning of palatal muscles such as tensor veli palatini and levator veli palatini muscles.

In this report, palatal muscles are examined, and the necessity of palatal muscle preservation and reconstruction of the defect in the soft palate mucosa after surgical resection of a schwannoma in the soft palate is presented. This case report is in line with the SCARE criteria [5].

2. Case presentation

The patient was a 17-year-old girl who began to notice swelling of her soft palate one year prior to presentation, but she had taken no prior action. She later demonstrated pharyngeal pain and redness, prompting her to visit our department for examination. She had no particular past history of illness.

Initial physical examination revealed a nodular lesion in the soft palate approximately 20 × 19 mm in size (Fig. 1a). The tumor was not visible in the nasal mucosa on nasal endoscopy (Fig. 1b). T1-weighted magnetic resonance imaging (MRI) showed the lesion with low signal intensity, while T2-weighted MRI demonstrated the lesion with pale and uneven high signal intensity. A contrast-enhanced fat suppression T1-weighted MRI demonstrated a strong but uneven contrast effect (Fig. 2). The tumor was 20 × 19 × 17 mm in size (Fig. 3a).

Histopathologically, the tumor demonstrated hyperplastic spindle cells with strong S-100 protein reactivity and nuclear palisading (Fig. 3b and c).

Following local injection of 1% xylocaine with epinephrine around the tumor under general anesthesia, the area within the 2-mm radius of the tumor was incised. The tumor bed included a portion of the levator veli palatini muscle, and simple excision was performed. No nasal mucosal defect was found from the tumor site, and an evident nerve pathway could not be confirmed. The internal nasal tissue defect was closed by reconstruction using a buccinator musculomucosal flap (BMMF). The flap has a semi-spindle shape

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Fig. 1. (a) Schwannoma of the soft palate (▼). (b) View obtained from a nasal endoscopy.

Fig. 2. Magnetic resonance imaging Schwannoma (▼).

Fig. 3. (a–c) The lesion contained Antoni type A tissue with Verocay bodies. Positive immunoreactivity of neoplastic cells for S-100.

that extends from the angle of the mouth to the defect with a maximum transverse diameter of 16 mm (Fig. 4a). The buccinator was identified and elevated until the defect could be closed using 5-0 vicryl sutures (Fig. 4b and c). The BMMF was engrafted without necrosis. Separation of the pedicle via a two-stage surgery was unnecessary. At 6 months post-operation, the patient did not demonstrate any scar contracture of the buccal mucosa or the soft palate. There was no evidence of trismus or velopharyngeal insufficiency (Fig. 5a), and recurrence was not observed (Fig. 5b).

3. Discussion

On MRI, schwannomas demonstrate low signal intensity in T1-weighted images, high signal intensity in T2-weighted images, and a contrast effect in gadolinium-diethylenetriamine pentaacetic acid-enhanced images [6]. These same findings were observed in the present case. The positional relationship between palatal muscles and tumor is also observed by MRI. It is useful to conduct nasal endoscopy to observe the nasal mucosa and confirm the absence of tumor exposure [7].
Treatment for schwannomas consists of surgical resection. Chawla et al. [7] reported no problem with the healing of a schwannoma of approximately 10 mm in size that involved the soft palate; natural epithelialization occurred without performing simple defect closure. However, closure and natural epithelialization engender the risk of scar contracture and velopharyngeal insufficiency [8]. Therefore, soft palatal defects, which are equal to or greater than 1 cm, require surgical reconstruction because simple closure would be inadequate. Typical soft palate reconstruction may involve various types of flaps depending on the size and site of the defect. For malignant tumors, reconstruction employs a free flap due to the wide area of resection. Free flap reconstruction, a form of static reconstruction, often results in velopharyngeal insufficiency [9]. In the present case, part of the levator veli palatini muscle was missing, the nasal mucosa was intact, and there was a defect of approximately 20 mm in size in the mucosa on the right side of the soft palate.

Free buccal mucosal graft (FBMG) and tongue flap can be considered for deficiency of the soft palate. In FBMG, postoperative management such as poor engraftment due to soft palate movement is difficult. Moreover, with tongue flap, functional impairment is possible due to compensation for large defects and restriction after surgery. Therefore, when the invasion is small, flap elevation is simple, and engraftment is good, BMMF is considered useful for reconstruction of mucosal defect of the soft palate defect. Therefore, we selected to close the wound using a unilateral BMMF.

In 1975, Kaplan et al. [10] used a buccal mucosal flap (BMF) to repair a soft palate mucosal defect. Their operative procedure included the use of a BMF on the nasal side for cleft palate, as can be used for unilateral or bilateral cleft lip and palate. Maeda et al. [11] later elevated the buccinator with the mucosal flap as a musculomucosal buccal flap, which they used to cover the oral side of the soft palate after moving it posteriorly. Bozola et al. [12] called it the buccinator musculomucosal flap. They provided detailed anatomical description of the flap and reported its effectiveness. Pribaz et al. [13] also elevated the facial artery to create a flap and called it facial artery musculomucosal flap. By including the facial artery, they were able to elevate and create a longitudinal flap, which could be used in intraoral reconstruction and reconstruction around the lips. The buccinator muscle receives favorable blood flow primarily from the buccal artery, a branch of the maxillary artery [12]. Therefore, the BMMF can be easily elevated, and with the appropriate size, it can be easily engrafted easily. The length and width to which the BMMF can be elevated are considered the angle of the mouth and the width that can be closed, respectively. The maximum width of the flap is reported to be 15–20 mm [10,14]. Although the maximum width of the flap harvesting site was 16 mm, sufficient closure was achieved. Obviously, the width that can be harvested depends on the age and height of the patient. Therefore, the maximum width must be determined on a case-by-case basis. In addition, given that trismus can be a complication on the donor side, bilateral elevation is considered for patients who demonstrate large defects. This technique has yielded favorable results [15].

At 6 months post-operation, the patient did not demonstrate trismus or velopharyngeal insufficiency associated with scarring or contracture. We plan to continue further follow-up of this patient.

4. Conclusion

Following resection of an approximately 20 × 19-mm-sized schwannoma of the soft palate, which is a relatively rare site of
occurrence for schwannomas, we performed reconstruction of the defect using a BMMF to prevent scar contracture. This was an effective method of reconstruction in consideration of velopharyngeal function.

**Conflicts of interest**

We have no conflict of interest

**Sources of funding**

Our study sponsors had no such involvement.

**Ethical approval**

A case report is exempt from ethical approval in our institution.

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

**Author contribution**

Study concept or design, data collection, data analysis or interpretation and writing the paper were made by Dr. Naoki Murakami.

Review the manuscript was made by Dr. Yasuhiro Fukuya.

**Registration of research studies**

None.

**Guarantor**

Dr. Naoki Murakami.

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