

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

## International Journal of Surgery Case Reports

journal homepage: [www.casereports.com](http://www.casereports.com)

# Soft palate resection and secondary healing not to impair the velopharyngeal function? – Diagnosis and treatment of an intraoral schwannoma: A case report

Lukas Sebastian Fiedler

Otorhinolaryngology and Head and Neck Surgery, Klinikum Mutterhaus der Borromäerinnen Mitte, Feldstraße 16, 54290, Trier, Germany

## ARTICLE INFO

## Article history:

Received 19 November 2020

Received in revised form

23 November 2020

Accepted 24 November 2020

Available online 26 November 2020

## Keywords:

Schwannoma

Intraoral

Resection

Secondary healing

Velopharyngeal

Function

Insufficiency

Soft palate

## ABSTRACT

**INTRODUCTION:** Schwannomas are benign lesions arising from the nerve sheath, commonly located in the head and neck. Intraoral schwannomas mostly occur in tongue and lips and are rarely located in the soft palate.

**PRESENTATION OF CASE:** We describe the diagnostic assessment and treatment of 18-year old male presenting with an intraoral mass on the soft palate.

**DISCUSSION:** The treatment of choice in peripheral nerve sheath tumors is conservative resection and due to location and impairment, reconstruction. Secondary healing of soft palate defects is rarely described in the literature.

**CONCLUSION:** With this case report, we demonstrate the feasibility of secondary healing after resection of a 3,0 × 1,9 × 2,1 cm schwannoma in the soft palate, resulting in no postoperative impairments, especially due to velopharyngeal function in a follow-up period of 2 months.

© 2020 The Author. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Neurogenic tumors are classified as rare and can occur in different regions all over the body [1]. Schwannomas are benign solid tumors arising from Schwann-cells that produce the myelin sheath of peripheral nerves [2]. Malignant transformation of Schwannomas is stated around 1% [3]. This entity seems to mostly occur in the head and neck [4], approximately 25–45% of all schwannomas seem to affect this anatomic region [5]. Overall neurogenic tumors are the least common intraoral lesions [6].

The presentation, clinical features and treatment of this entity is described by a representative count of case series and reports [3–5,7,8]. However, 1–12% of schwannomas affect the intraoral area, most frequently the tongue or mouth floor followed by palate, gingiva, vestibule and lips [9]. Appearance on the soft or hard palate is classified as not commonly seen [10]. The hard palate is more commonly affected, one-third of the palatal lesions affect the soft palate [6]. Normally, these tumors present as painless asymptomatic masses but can be oligosymptomatic due to the region of origin.

The cure requires full surgical excision with clear margins to prevent a recurrence [7]. This can lead to problems due to the

functional preservation of the surrounding area of resection and reconstruction techniques can be result in, pain and other sequelae. Our case report demonstrates a rare entity and proofs the possibility of secondary healing to preserve velopharyngeal function in large combined soft palate defects.

This manuscript is aligned to the SCARE criteria [11].

## 2. Case presentation and timeline

An 18-year old male patient presented in our ENT department in a community care hospital with a non-progressing swelling of the left soft palate within the last days. He had punctured the lesion himself with a toothpick. The patient had noticed a tumor about 6 months ago, without a prior clinical presentation. The day after the prior presentation the patient represented in our outpatient department with odynophagia. The medical and family history was clear and showed no past surgical or medical record.

Initial ENT examination revealed a two on two-centimetre exophytic lesion on the left side of the soft palate (Figs. 1 and 2).

A CT scan revealed a 3,0 × 1,9 × 2,1 cm solid tumor of the left soft palate without any signs of infiltration (Fig. 3).

Panendoscopy and biopsy under general anaesthesia were performed two weeks after the prior presentation and histopathologically revealed spindle cells with a high immunoreactivity for S-100 (Antoni A), therefore a schwannoma. Further three weeks

E-mail address: [lukas.fiedler@mutterhaus.de](mailto:lukas.fiedler@mutterhaus.de)



Fig. 1. First presentation after self-puncture by a toothpick.

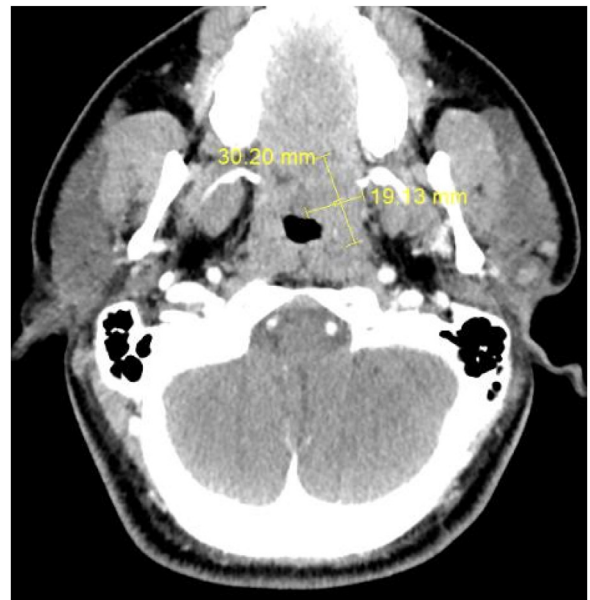


Fig. 3. Axial CT scan with an inhomogeneous solid tumor of the left soft palate 3 on 2 cm.

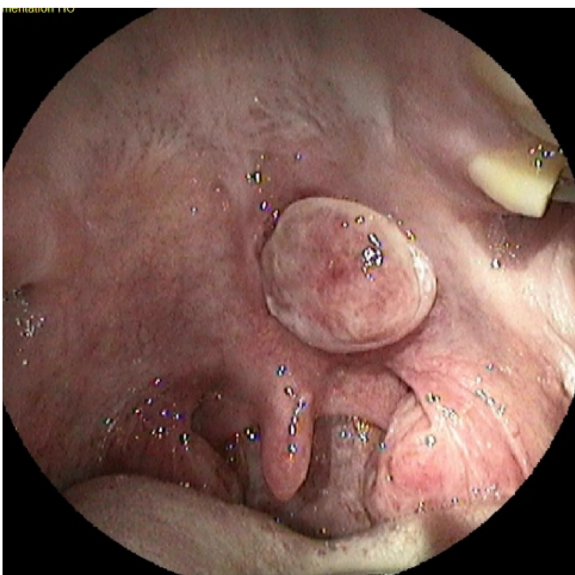


Fig. 2. Preoperative presentation of the schwannoma three weeks after panendoscopy and biopsy 3.



Fig. 4. The defect after in sano resection two days postoperatively.

later following the panendoscopy and biopsy we performed the resection of the tumor on the left soft palate with a 2–3 mm safety margin to the visible border of the tumor. The resection, performed by a consultant included the mucosa and muscle layer partially, we could prevent a perforating defect. Histopathologically, a non in sano resection was unveiled, therefore a Re-resection by the same surgeon in the anterior resection region within the in the mucosal and muscle layer was performed (Fig. 4).

**3. Follow up**

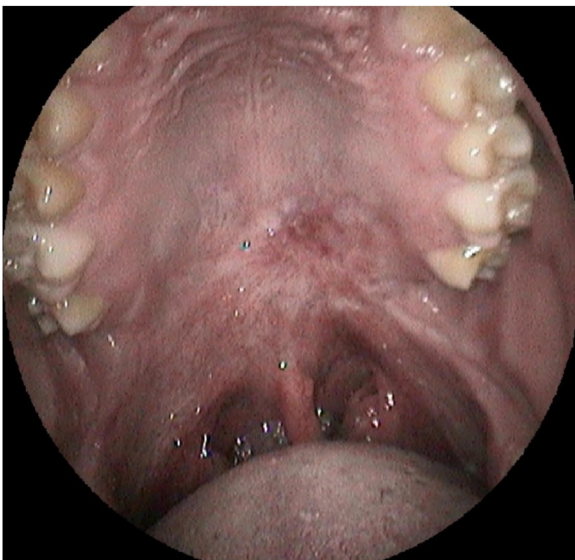
Even though knowing different strategies closing a soft palate defect [12], we decided to await secondary healing not to affect the velopharyngeal function. Our follow up eight weeks following Re-resection (Fig. 4) of the schwannoma showed no signs

of velopharyngeal regurgitation, phonation disorders or soreness (Fig. 5).

**4. Discussion**

Schwannomas are benign lesions arising from the nerve sheath, firstly described by Verocay 1908 [9]. These tumors can occur all over the body, most commonly affect the head and neck, further the superficial flexors of the upper and lower limb. Within the oral cavity, this entity is rare, in the highest count it affects the anterior portion of the tongue [13]. William et al. state a male predominance in schwannomas, whereas other authors found no difference in gender distribution [9]. In our case a 2 cm tumor was found in the left paramedian area of the soft palate of an 18-year-old male patient (Fig. 2).

CT and MRI are useful preoperatively, while the diagnosis can assuredly be made by histology. Kun et al. found the correct preop-



**Fig. 5.** Secondary healing with residual mucosal scar, no distortion of the soft palate—8 weeks post OP.

erative diagnosis of 4 out of 49 cases with CT and MRI and stated that a diagnosis based on radiographic findings is hard to state [14]. To secure histology, fine needle aspiration is inconclusive [15] in most cases, whereas Immunohistochemistry can rule out differential diagnosis [6]. As we didn't know the entity of the tumor and couldn't rule out malignancy, our workup started with a CT scan to sort out an infiltration (Fig. 3). Further, we performed a panendoscopy to preclude another primary tumor and to obtain representative histology.

Histopathologic findings revealed spindle cells with a high immunoreactivity for S-100 (Antoni A), therefore a schwannoma.

Surgical excision is the treatment of choice in neurogenic tumors of the palate, recurrence is possible and malignant transformation is described as extremely rare [6,14]. In the present case we could prove a non in sano resection after the first surgical excision, therefore we conducted a Re-resection with clear margins leaving a muscle mucosal defect of 30 mm diameter.

Chawla et al. reported different types of treatment and mentioned epithelization after resection of a Schwannoma of the soft palate around 1 cm in size [16]. After the Re-resection the defect showed 30 mm diameter, concerning the mucosal and muscle layer of the soft palate (Fig. 4). The soft palate contributes to deglutition, articulation, and respiration. Reconstruction strategies aim to restore form and function [12]. To reconstruct defects of the soft palate, different strategies are mentioned and described in the literature and should address the rehabilitation of functional aspects concerning speech, swallowing and airway. Small defects can be covered by transoral approaches with a cranially pedicled ipsilateral tonsil-flap [17], a free buccal mucosal graft (FBMG) [10], buccal mucosal flap (BMF), or a buccinator flap (BMMF) with or without containing the facial artery [10]. Larger defects of the soft palate can make a free flap reconstruction necessary. Using a radial forearm flap (RFFF) can be limited by consecutive speech and swallowing disorders and therefore can lead to relatively poor results [18].

In our present case, given the diameter of the defect, we would have had to use BMMF for reconstruction. Because of risking post-operative trismus and velopharyngeal functional impairments, we decided not to use a surgical way of reconstruction and conveyed into secondary intention. Our follow up 8 weeks postoperatively demonstrated no mentionable impairments.

## 5. Conclusion

Excision outside the tumor margins is the treatment of choice to prevent recurrence and malignant transformation, which is rare in Schwannomas [14]. While the hardest thing to do in surgery is to do nothing, resection and following Re-resection resulting in a 30 mm soft palate defect after intraoral schwannoma, can be conveyed into secondary healing without any functional velopharyngeal impairments. As seen in our case, to strive full regeneration and function of the velopharyngeal apparatus, in mucosal and even muscle defects of the soft palate, secondary healing can be the option of choice.

## Declaration of Competing Interest

The authors report no declarations of interest.

## Funding

None.

## Ethical approval

Exempt from ethical approval.

## 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's contribution

Lukas S Fiedler wrote this manuscript without any contribution of others.

## Registration of research studies

Not applicable.

## Guarantor

Lukas S Fiedler.

## Provenance and peer review

Not commissioned, externally peer-reviewed.

## References

- [1] K.I. Desai, The surgical management of symptomatic benign peripheral nerve sheath tumors of the neck and extremities: an experience of 442 cases, *Neurosurgery* 81 (4) (2017) 568–580.
- [2] G. Li, et al., Dysphagia caused by giant schwannoma of the supraglottic oropharynx: a case report and review of the literature, *Ann. Med. Surg. (Lond.)* 20 (2017) 84–86.
- [3] S. Bondi, et al., Non-vestibular head and neck schwannomas: a 10-year experience, *Eur. Arch. Otorhinolaryngol.* 270 (8) (2013) 2365–2369.
- [4] R.T. Butler, R.M. Patel, J.B. McHugh, Head and neck schwannomas: 20-year experience of a single institution excluding cutaneous and acoustic sites, *Head Neck Pathol.* 10 (3) (2016) 286–291.
- [5] R. Yasumatsu, et al., Diagnosis and management of extracranial head and neck schwannomas: a review of 27 cases, *Int. J. Otolaryngol.* 2013 (2013), 973045.
- [6] V. Dokania, et al., Palatal schwannoma: an analysis of 45 literature reports and of an illustrative case, *Int. Arch. Otorhinolaryngol.* 23 (3) (2019) e360–e370.
- [7] R.V. Moukarbel, A.N. Sabri, Current management of head and neck schwannomas, *Curr. Opin. Otolaryngol. Head Neck Surg.* 13 (2) (2005) 117–122.
- [8] P. Sharma, et al., Clinicopathological analysis of extracranial head and neck schwannoma: a case series, *J. Cancer Res. Ther.* 15 (3) (2019) 659–664.

- [9] S. Venkatachala, R. Krishnakumar, S.A. Rubby, Soft palate schwannoma, *Indian J. Surg.* 75 (Suppl. 1) (2013) 319–321.
- [10] N. Murakami, Y. Fukuya, Surgically excising an intraoral schwannoma of the soft palate using a buccinator flap: a case report, *Int. J. Surg. Case Rep.* 49 (2018) 17–20.
- [11] R.A. Agha, et al., The SCARE 2018 statement: updating consensus Surgical CAse REport (SCARE) guidelines, *Int. J. Surg.* 60 (2018) 132–136.
- [12] C.J. Britt, et al., A review of and algorithmic approach to soft palate reconstruction, *JAMA Facial Plast. Surg.* 21 (4) (2019) 332–339.
- [13] C. López-Carriches, R. Baca-Pérez-Bryan, S. Montalvo-Montero, Schwannoma located in the palate: clinical case and literature review, *Med. Oral Patol. Oral Cir. Bucal* 14 (9) (2009) e465–8.
- [14] Z. Kun, D.Y. Qi, K.H. Zhang, A comparison between the clinical behavior of neurilemmomas in the neck and oral and maxillofacial region, *J. Oral Maxillofac. Surg.* 51 (7) (1993) 769–771.
- [15] D. Ahn, et al., Fine-needle aspiration cytology versus core-needle biopsy for the diagnosis of extracranial head and neck schwannoma, *Head Neck* 40 (12) (2018) 2695–2700.
- [16] O. Chawla, S. North, J.M. Yates, Schwannoma presenting in the soft palate of a nine-year-old boy, *Dent. Update* 38 (5) (2011) 327–328.
- [17] F. Bootz, Plastic reconstruction of small defects of the soft palate using the tonsil, *Laryngorhinootologie* 68 (4) (1989) 246.
- [18] D. McCombe, et al., Speech and swallowing following radial forearm flap reconstruction of major soft palate defects, *Br. J. Plast. Surg.* 58 (3) (2005) 306–311.

#### Open Access

This article is published Open Access at [sciencedirect.com](https://www.sciencedirect.com). It is distributed under the [IJSCR Supplemental terms and conditions](#), which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.