

CASE REPORT

A Transoral Excision of a Deep Parotid Lobe Lesion Using Ultrasound-Guided Wire Localization: A Multi-disciplinary Team Approach

A. Tahim¹ · H. Aludden¹ · S. Jawad¹ · Z. Sadiq¹

Received: 22 January 2018 / Accepted: 16 July 2018 / Published online: 26 July 2018
© The Association of Oral and Maxillofacial Surgeons of India 2018

Abstract

Purpose Removing deep parotid lobe lesions often requires a mandibulotomy procedure which carries with it a risk of significant morbidity. A transoral approach may help mitigate against complications but is technically demanding due to limited access in an area with a close relation to the internal carotid artery.

Methods We describe a multi-disciplinary approach with the use of intraoral ultrasound-guided wire localization of a low-grade acinic cell carcinoma located in the deep lobe of the right parotid gland.

Results Our multi-disciplinary approach facilitated the complete removal of this deep lobe parotid lesion via a transoral approach with minimal post-operative sequelae or complications.

Conclusion In selected cases, with appropriate expertise, this dynamic approach can potentially be used even for malignant disease to limit post-operative morbidity when managing small deep parotid lobe lesions.

Keywords Intraoral ultrasound · Deep parotid lesion · MDT · Acinic cell carcinoma

Introduction

Several approaches have been described to access and remove deep parotid lobe lesions. Along with post-operative scarring in an aesthetically conspicuous region, there are significant risks of facial nerve injury and, when an access mandibulotomy procedure is required, the risk of transection of the inferior alveolar nerve. Historically, the rate of facial nerve injury in primary deep lobe of parotid surgery has been reported as 6.5%, but it has been reported as high as 50% [1, 2]. A transoral approach may help mitigate against such complications but it is technically demanding due to limited access in an area with a close relation to the internal carotid artery. This report describes a multi-disciplinary peri-operative approach with the use of ultrasound-guided wire localization of a low-grade acinic cell carcinoma located in the deep lobe of the right parotid gland to facilitate its removal via a transoral approach.

Case Report

A 45-year-old female patient presented with an asymptomatic incidental 18-mm lesion in the right parapharyngeal space, which was found on magnetic resonance imaging (MRI) carried out for evaluation of unrelated hyperprolactinaemia. She had no other significant medical co-morbidities. The lesion was not visible or palpable on examination. There was no cervical lymphadenopathy, and she had a House-Brackmann score of 1.

Ultrasound imaging revealed a well-defined lesion arising from the deep aspect of the right parotid. On MRI, the lesion abutted the surface of the right internal carotid at the level of C1, separated by a thin fat plane (Figs. 1, 2). Anteriorly, the lesion abutted the medial pterygoid muscle.

✉ A. Tahim
arpantahim@doctors.org.uk

¹ Present Address: Department of Head and Neck Surgery, University College London Hospital, 250 Euston Rd, Bloomsbury, London NW1 2BU, UK



Fig. 1 Axial view of MRI scan of the head and neck illustrating site of lesion (marked with white arrow) and relation to medial pterygoid and carotid vasculature

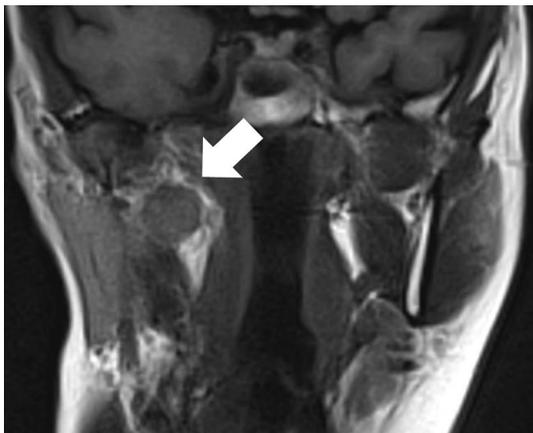


Fig. 2 Coronal view of MRI scan of the head and neck illustrating site of lesion (marked with white arrow)

There was no evidence of infiltration or metastatic spread. Histological sampling confirmed an acinic cell carcinoma.

After a detailed consent process, the patient opted for this lesion to be removed via a transoral approach, involving both head and neck surgeons and radiologists. Mouth opening was facilitated using an adjustable Ferguson-Ackland mouth gag, and the tongue was retracted infero-medially using a tongue depressor. After an unremarkable examination under anaesthesia, the lesion was identified transorally by inserting a standard endocavitary ultrasound probe into the mouth and directing it superolaterally towards the right parapharyngeal space (Fig. 3). A parapharyngeal incision was made over the identified site of the lesion. The mucosa and underlying tissue were



Fig. 3 Peri-operative intraoral ultrasound of lesion performed by specialist head and neck radiologist

dissected and reflected to improve visualization. After this initial dissection, the position of the lesion was reconfirmed using ultrasound and a HawkinsTM II 12.5 cm × 20G breast localization needle (Argon[®] Medical, Amsterdam, the Netherlands) was placed in the lesion under direct ultrasound guidance by a specialist head and neck radiologist. This then facilitated wire-guided dissection to the lesion located anterior to the internal carotid artery and posterior to the medial pterygoid. With endoscopic assistance, the tumour was dissected intact, from its parotid bed and from the internal carotid artery. The internal carotid artery was not sacrificed. Further intraoperative ultrasound scanning confirmed that the tumour was removed in its entirety (Fig. 4). The mucosa was closed using resorbable sutures, and a single intraoral corrugated drain was placed.

The patient made a good recovery and was discharged on the second post-operative day, after removal of the drain. There was no numbness or visible scarring, and the post-operative House-Brackmann score was 1. Histological

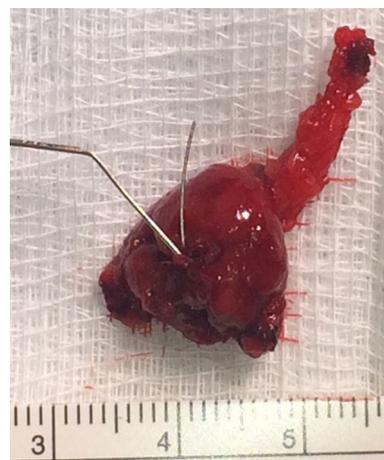


Fig. 4 Histological specimen demonstrating wire in situ after surgical removal via transoral approach

analysis revealed a low-grade acinic cell carcinoma, with evidence of residual tumour at the margin neighbouring the internal carotid artery. As a result, the patient completed a course of post-operative radiotherapy. The patient underwent regular clinical follow-up on a 6-weekly basis, and given the difficulty accessing and visualizing the primary tumour bed, yearly MRI surveillance was planned. There was no evidence of recurrence after 2 years of follow-up.

Discussion

The removal of isolated deep parotid lobe lesions is challenging due to access and proximity to other vital structures. Although these lesions have been historically managed via a transoral approach [3], this approach had largely been abandoned due to poor access, tumour visibility and the risk of neurovascular complication. As such, tumours in this region are now typically managed using a transcervical or transfacial approach with or without a mandibulotomy procedure. [4, 5].

While many surgical complications arise due to the location of such tumours, in particular the high risks of cranial nerve or vascular injury, a transcutaneous approach also leads to conspicuous facial scarring, potential risk of facial nerve injury and the sequelae of mandibular osteotomy.

As such, surgeons have made use of recent technological advances to try to limit post-operative morbidity by improving visualization via hidden approaches. To this end, endoscopic or robotic techniques have been employed—transoral, transnasal or in combination with transcervical access depending on the nature of individual lesions [6–9].

However, intraoperative localization of small tumours, such as those that arise within the deep parotid lobe, remains a significant challenge. For a number of impalpable neck lumps, preoperative ultrasound-guided wire localization has proven valuable, enabling the surgeon to better identify them during the procedure and thus facilitating their removal [10, 11].

The use of intraoral ultrasound imaging is also becoming increasingly popular in managing head and neck cancer [12]. Although it is limited by the availability of appropriate hardware, its use in assessment of oral cancer tumour depth is becoming highly valued. However, its use to assess lesions in the parapharyngeal space has also been reported with some success [13]. In this case, using intraoral ultrasound to facilitate wire-guided localization of a small deep lobe parotid lesion allowed for safe intraoral access, thus limiting the risks of post-operative morbidity, while resulting in shorter operative time and limiting hospital stay in this patient. Its use in the peri-operative setting

with close involvement of the wider head and neck MDT is yet to be reported in the literature. Indeed, while such an approach would be unsuitable for larger tumours or extensive disease, in particular in cases with vascular involvement, it may be useful in appropriately counselled patients with small tumours and adequate mouth opening, provided there is appropriate radiological expertise and equipment.

Conclusion

The management of this patient involved intraoral ultrasound-guided peri-operative wire localization of a deep lobe parotid lesion involving both head and neck surgeons and specialist head and neck radiologists. This dynamic approach can potentially be used in selected cases even for malignant disease to limit post-operative morbidity when managing small deep parotid lobe lesions.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

References

1. Marchesi M, Biffoni M, Trinchi S, Turriziani V, Campana FP (2006) Facial nerve function after parotidectomy for neoplasms with deep localization. *Surg Today* 36(4):308–311
2. Ward CM (1975) Injury of the facial nerve during surgery of the parotid gland. *Br J Surg* 62(5):401–403
3. Ehrlich H (1950) Mixed tumors of the pterigomaxillary space: operative removal, oral approach. *J Oral Surg* 3:1366
4. Bozzetti A, Biglioli F, Gianni AB, Brusati R (1998) Mandibulotomy for access to benign deep lobe parotid tumors with parapharyngeal extension: report of four cases. *J Oral Maxillofac Surg* 56(2):272–276
5. Mydlarz WK, Agrawal N (2014) Transparotid and transcervical approaches for removal of deep lobe parotid gland and parapharyngeal space tumors. *Oper Tech Otolaryngol* 25:234–239
6. Iseri M, Ozturk M, Kara A, Ucar S, Aydin O, Keskin G (2015) Endoscope-assisted transoral approach to parapharyngeal space tumors. *Head Neck* 37(2):243–248. <https://doi.org/10.1002/hed.23592> (Epub 2014 Mar 20)
7. Van Rompaey J, Suruliraj A, Carrau R, Panizza B, Solares CA (2013) Access to the parapharyngeal space: an anatomical study comparing the endoscopic and open approaches. *Laryngoscope* 123(10):2378–2382. <https://doi.org/10.1002/lary.24121> (Epub 2013 May 17)

8. Casale M, Capuano F, Sabatino L, Pace A, Oliveto G, Vella P, Moffa A, Salvinelli F (2016) A safe transoral surgical approach to parapharyngeal tumor arising from deep lobe of parotid gland. *SAGE Open Med Case Rep* 4:2050313X16682131
9. Mendelsohn AH (2015) Transoral robotic assisted resection of the parapharyngeal space. *Head Neck* 37:273–280
10. Bryant JA, Siddiqi NJ, Loveday EJ, Irvine GH (2005) Presurgical, ultrasound-guided anchor-wire marking of impalpable cervical lymph nodes. *J Laryngol Otol* 119(8):627–628
11. Breeze J, Williams MD, Howlett DC (2008) Ultrasound guided localisation during the excision of an impalpable branchial cyst. *Br J Oral Maxillofac Surg* 46(8):686–687
12. Oeppen RS, Gibson D, Brennan PA (2010) An update on the use of ultrasound imaging in oral and maxillofacial surgery. *Br J Oral Maxillofac Surg* 48(7):568–569
13. Rebol J, Takac I, Bumber Z (2001) Intraoral sonographic evaluation of parapharyngeal space tumors. *J Clin Ultrasound* 29(5):302–305