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REVIEW ARTICLE

Parapharyngeal Hemangiopericytoma: the Role for Mandibular Proximal Segment Replantation—Review of Literature

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Abstract

Pharyngeal hemangiopericytoma is a rare tumor .Surgical access to space has been selected based on the location of the tumor in this space, size, and type of pathology. Hemangiopericytoma requires extracapsular dissection. Hemorrhagic nature and tight attachment to adjacent tissues are the other reasons for choosing the surgical approach with the best access. The patient was a 55-year-old female with left-sided facial swelling and dumbbell-shaped lesion involving buccal and lateral pharyngeal space. Brisk hemorrhage happened during biopsy. Submandibular incision, osteotomy of mandibular angle, and temporary proximal segment removal were done. Extracapsular dissection of the lesion performed under direct vision. Proximal segment was returned to the original location and internally fixed with miniplate. Postoperative course was without complication. Mandibular proximal segment replantation technique should be used to treat parapharyngeal tumors with a hemorrhagic tendency.

Keywords Hemangiopericytoma · Mandibular osteotomy · Parapharyngeal tumors

Introduction

Parapharyngeal tumors are mainly composed of neurogenic or minor salivary gland origin [1]. Tumors with vascular origin or malignancies also have been mentioned in this space. The lateral pharynx is located lateral to the medial pterygoid muscle, and some important anatomic structures such as internal jugular vein, carotid arteries, lower cranial nerves (IX, X, XI, and XII), and sympathetic chain are located in this important space [2, 3]. Styloid process divides this space into pre- and poststyloid compartments [4]. Single or double mandibular osteotomies are designed to get access to this region [5, 6]. Midline mandibular osteotomy or osteotomies anterior to the mental foramen are designed to preserve both the lip sensation with avoiding inferior alveolar nerve and access to the lateral pharynx through upward rotation of osteotomized segment [7]. Intraoral approach with restricted access has limited role in surgery of parapharyngeal tumors [8]. Dislocation of the mandibular condyle and removal of styloid process through extra oral approach is also reported as a way to get access to this space [9].

Double osteotomies of the mandible in subcondylar and symphyseal region with upward displacement of osteotomized segment are the most accepted way to get access to parapharyngeal tumors with vascular origin [10]. Another way is mandibular proximal segment replantation is presented here for special cases. Advantages and disadvantages of this method are discussed.

Case Report

The patient was a 55-year-old female who had been diagnosed with hemangiopericytoma which had been expanded from buccal to lateral pharyngeal space on the left side (Fig. 1). The patient felt globous sensation in the throat,

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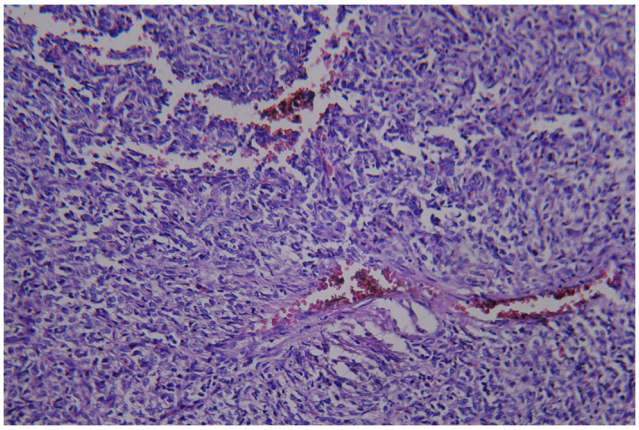

Fig. 1 "Staghorn" blood vessels with surrounding pericytes and moderately cellular fibrous proliferation and scattered dense collagen bundle (H&E, × 100)

and she was also aware of a lesion 1 year before. The swelling of the face was appeared on the left side. In clinical examination, the cranial nerve was normal.

The difficulty in controlling bleeding during biopsy by intraoral approach when the size of the lesion is large, it leads us to choose the appropriate surgical procedure to control bleeding during surgery. Preoperative embolization was not performed.

Submandibular incision was used to get access to the left mandibular ramus/body. Coronoidectomy was done, and straight body osteotomy was performed in edentulous space.

Soft tissue attached to the proximal segment was dissected (Fig. 2). Inferior alveolar neurovascular bundle was sharply sectioned in osteotomy gap, and proximal segment was removed. Blunt extracapsular dissection around the hemangiopericytoma was done. Hemorrhage control under direct vision was performed. The lesion was

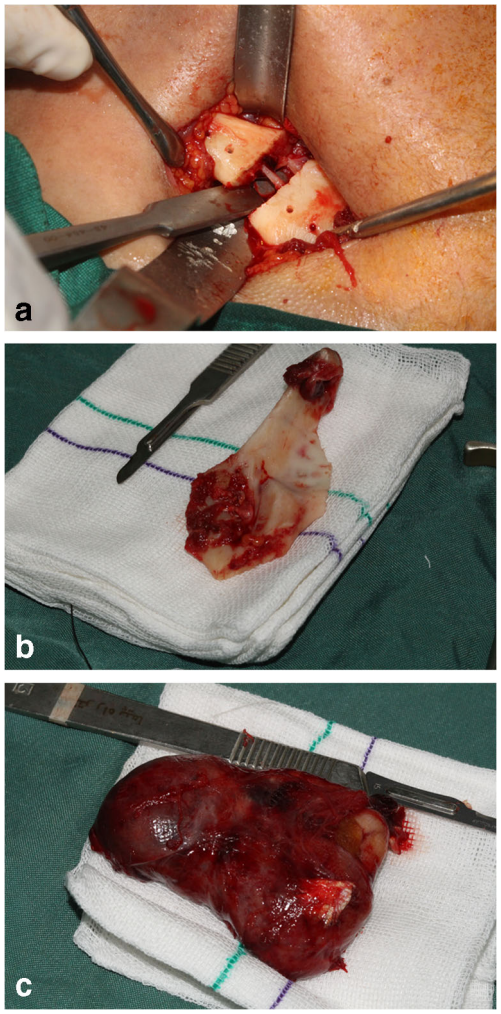

Fig. 3 **a** Inferior alveolar neurovascular bundle in osteotomy gap. **b** Proximal segment is out of the body without coronoid process. Note to thinning of the bone in medial side of the ramus due to pressure resorption. **c** En block removal of the lesion (5 × 7 × 3.5 cm and 55 g weight)

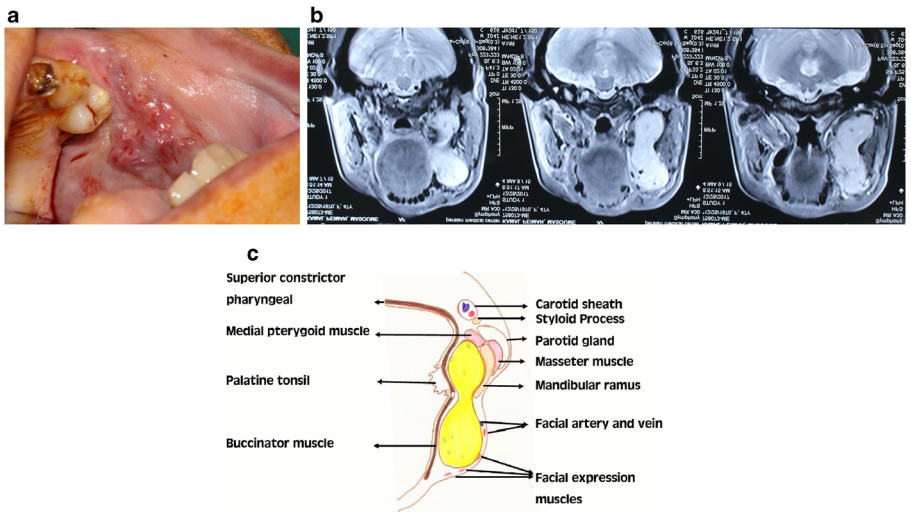

Fig. 2 **a** Intraoral photograph of the hemangiopericytoma. **b** Dumbbell-shaped extension of the lesion from buccal space to parapharyngeal space in left side. **c** Schematic picture

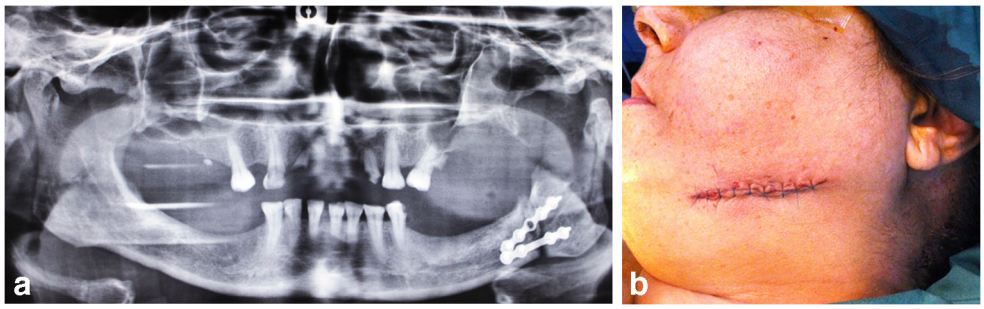

Fig. 4 **a** Replacing back the proximal segment and internal fixation by two miniplates. **b** Skin incision is sutured

removed as a single piece, and Surgicel was used to fill the dead space, to control the hemorrhage bed (Fig. 3).

Proximal segment was returned to the original location. The patient was placed in intermaxillary fixation (IMF) position, and, according to the preosteotomy markings, proximal and distal segments were fixed by two miniplates. Finally, skin incision was sutured (Fig. 4).

The patient was followed up for 2 years, and no evidence of recurrence or cranial nerve injuries was observed.

Discussion

Hemangiopericytoma is a rare vascular tumor [11]. Fifteen to thirty percent of them occur in head and neck region [12]. The pharyngeal space is a rare place for this tumor [13]. Table 1 shows all reported cases of parapharyngeal hemangiopericytoma in PubMed search of English-language literature [11–22].

Surgical approaches for this hemorrhagic tumor are often done through cervical incisions with transparotid/transmandibular route [23]. Ligations of carotid artery and preoperative embolization are two controversies in this topic. Parotidectomy or removal of submandibular salivary gland is also recommended to get access in special situations.

In the past, the condylar replantation has been used to manage severely dislocated mandibular condyle fracture, multilocular OKC in ramus, and ameloblastoma [24–26].

Since the lateral pharyngeal schwannoma or pleomorphic adenoma is loosely attached to the surrounding tissues, it is

Table 1 Parapharyngeal hemangiopericytoma

N	Age (year/sex)	First author, year	Size (cm) (left/right)	Preoperative embolization	Surgical approach	FNAC/biopsy	Postoperative radiotherapy	Symptom/course
1	44/M	Villarreal IM, 2014 [11]	5.7 × 4.6 × 2.8 (MRI)/left	−	Transparotid and transmandibular	−	−	Incidentally found during sleep apnea study
2	66/M	Fareed MM, 2012 [14]	6.5 × 7.5 × 3.5 (CT)/left	+	Parotidectomy and cervical incision	No attempt	+	Difficulty in swallowing/3-months
3	54/F	Fountoulakis EN, 2011 [15]	3.5 × 2.8 × 3 (MRI)/left	−	Cervical incision with stylomandibular tenotomy	Biopsy: without result	−	Chronic headache/2 years
4	30/M	Dimri K, 2010 [13]	8.5 × 7.5 × 6 (MRI)/left	−	Transparotid and trans mandibular and superficial parotidectomy and submandibular gland excision	FNA: spindle cell tumor	+	Painless mass on the left side of face/4 years
5	36/F	Shaia WT, 2006 [16]	5.5 × 3.1 × 5.1 (CT) right	+	Cervical incision	−	−	Right-sided facial paresthesia/6-weeks
6	22/F	Llorente JL, 1999 [17]	5 × 4 cm (gross pathology) left	+	Parotidectomy incision and styloid process removal	Representative biopsy with severe epistaxis	−	Slight pharyngeal pain/1 year
7	59/M	Robb PJ, 1987 [18]	4 × 3 × 1.5 cm left	−	Transcervical	−	+	Painless mass in left week/6 months
8–13	–	Five other cases in English-language literature have been reported as part of articles without details [12, 19–22]						
Total	13							

easy to dissect by blunt dissection [27]. Vascular tumors such as hemangiopericytoma with hemorrhagic tendencies that have tight attachment to surrounding tissues require more visibility and greater access during surgery for extra capsular dissection [28].

Due to the "Staghorn" blood vessels with surrounding pericytes, this tumor tends to bleed during surgery [14]. Another reason is vasodilatation in the vicinity of the neoplasm [29]. Compared with mandibular surgery, the proposed method has better access and lower cutaneous length. Compared with mandibular swing procedure, the condylar replantation technique has better access and less skin incision [30].

The worst fault of condylar replantation technique is inferior alveolar neurovascular bundle sectioning, but reanastomosis is possible.

Conclusion

Mandibular proximal segment replantation technique can be used to get access to large lateral pharyngeal tumors with hemorrhagic tendencies.

Compliance with Ethical Standards

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

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