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Case Report

Extragingival peripheral ameloblastoma of the parapharyngeal space: a case report and review of the literature

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Abstract: Peripheral ameloblastoma (PA) is rare. It occurs in the extraosseous region and makes up approximately 2% to 10% of all ameloblastomas, but the extragingival PA is rarer. Only 13 cases of PA were reported at the extragingival site. In the current report, the unusual case of a 52-year-old male is presented. The patient exhibited a painless irregular mass in the right parapharyngeal space, which infiltrated the soft palate and the medial pterygoid, as observed by computed tomography and magnetic resonance imaging. Hematoxylin and eosin-stained sections and immunohistochemical examination revealed a diagnosis of PA. It must be noted that histopathology results may be incorrectly interpreted as basaloid squamous cell carcinoma, peripheral ossifying fibroma and peripheral giant cell granuloma. The primary symptom of extragingival PA is often misdiagnosed, which has been admitted to be a pivotal cause of therapy failure in patients.

Keywords: Peripheral ameloblastoma, parapharyngeal space, clinical characteristic, differential diagnosis

Introduction

Ameloblastoma is a kind of neoplasm derived from odontogenic epithelium. It is generally benign, slow-growing but locally invasive [1]. According to the histological classification of odontogenic tumor by the World Health Organization (WHO) in 2005, ameloblastoma can be classified into four subtypes: solid/multicystic type, unicystic type, desmoplastic type and extraoseous/peripheral type. As reported, the peripheral ameloblastoma (PA) only makes up approximately 2% to 10% of all ameloblastomas [1, 2], thus it is believed to be the rarest subgroup. Histologically, PA has several typical pathological characteristics of the intraosseous, infiltrating ameloblastoma [3]. Clinically, a majority of PAs were painless exophytic growth with smooth, pebbly or granular surface [4]. Additionally, PA just infiltrates the surrounding soft tissues but not the underlying bone and is usually confined to the gingival or alveolar mucosa of the mandible and maxilla [2, 5]. In the mandible, the most affected location is the lingual gingiva of the premolar region, followed by the anterior region [2, 5]. The maxilla also is the most common site, especially the soft palatal tissue of the tuberosity area [2]. As we know, extragingival PA is extremely rare. Just 13 cases of PA were reported at the extragingival site. In the current report, we present the first case of extragingival PA located in the parapharyngeal space of a 52-year-old male and review the current literature regarding the clinical characteristic and differential diagnosis of extragingival PA. Patient provided written informed consent.

Case report

A 52-year-old male sought for treatment in our hospital due to painless mass in the right parapharyngeal space. The lesion was asymptomatic and had been slowly growing for about 3 years. The patient reported no prior surgeries but affirmed he had suffered from left-sided facial paralysis for ten years and was positive for hyperglycemia and hypertension.

Oral examination revealed a dark red mass, which covered the right parapharyngeal space

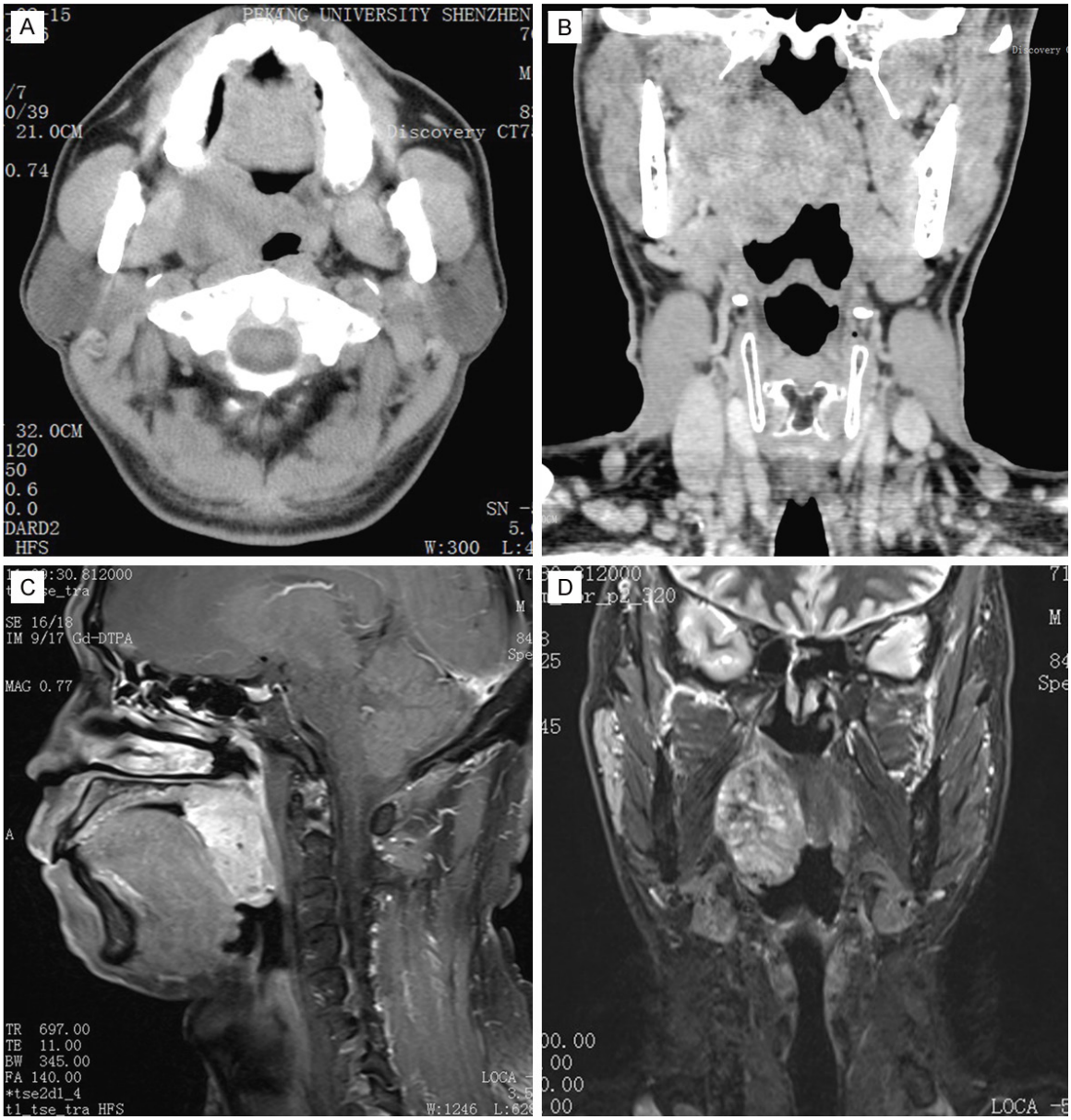

Figure 1. CT scan reveals a lesion in the right parapharyneal space (A and B). MRI scan reveals a lesion in the right parapharyneal space and invade to the soft palate and the oropharyngeal wall (C and D).

with ulceration. The lesion was medium texture, unclear boundary, fixed and painless mass on palpation. Moreover, the mass, which was approximately 50 mm in diameter, crossed midline, even invaded the soft palate and hard palate. The remaining oral cavity and head and neck examination did not discover lesions, masses, lymphadenopathy or other abnormalities.

Computerized tomography (CT), Magnetic resonance imaging (MRI) and incisional biopsy were subsequently performed. CT examination demonstrated a mass sized 38*32*50 mm in the right parapharyngeal space and did not show any obvious radiographic invasion of the alveolar bone. CT suggested the possibility of a malignant tumor, because an unclear margin infringed the soft palate and a part of medial pterygoid. Furthermore, MRI revealed an ill-defined, irregular mass, which was measured at 45*31*50 mm in the right parapharyngeal space and showed the lesion extending to the soft palate, the mucosa of the oropharyngeal wall and a part of medial pterygoid from the right parapharyngeal space. Therefore, MRI also suggested the mass could be a malignant tumor (**Figure 1**). Incisional biopsy was subse-

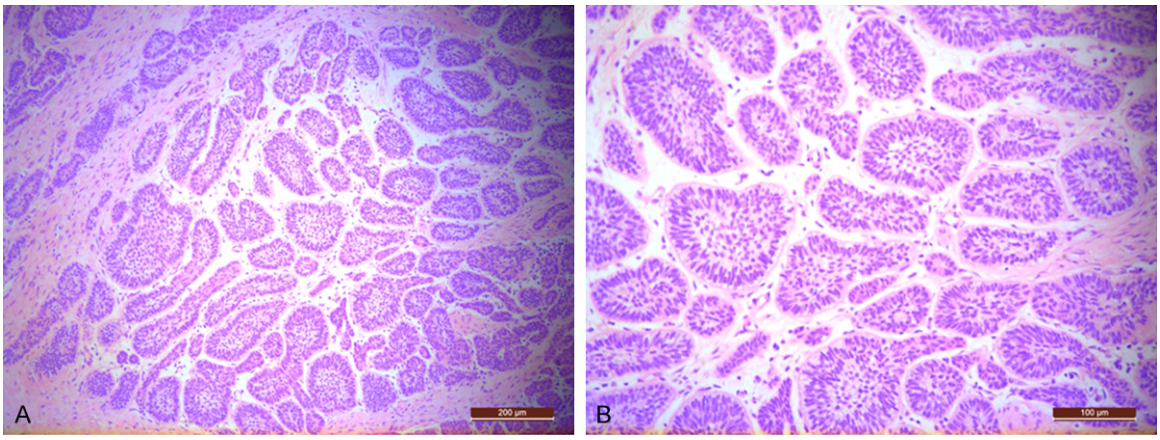

Figure 2. Pathological result of incisional biopsy of the tumor tissue obtained from the patient. (hematoxylin and eosin [H&E] stain; magnification, ×100 and ×200, respectively).

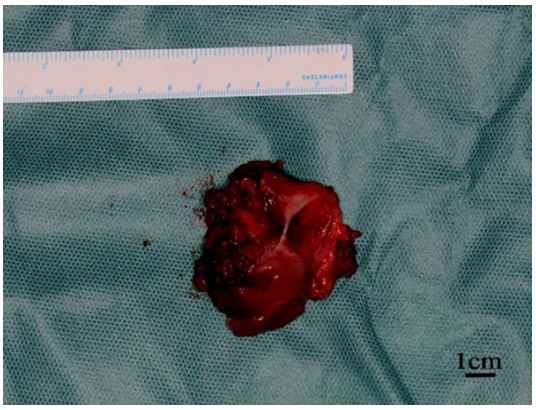

Figure 3. Gross mass was a single bit of size (50*50*40) mm.

quently performed under local anaesthetic in the circumstance. Microscopical examination disclosed a lesion constituted by numerous irregular islands of epithelium. Peripheral cells were columnar/cuboidal, palisaded, polarized and hyperchromatic nuclei with a high nucleus-cytoplasm ratio as well as a scant cytoplasm. Based on the biopsy findings, the neoplasm was considered as ameloblastoma or basaloid squamous cell carcinoma (**Figure 2**).

According to the image diagnosis and the histopathology suggestion, the patient subsequently underwent extensive resection of the lesion with anesthesia, forearm redial free skin flap for restruction and tracheotomy. Then, the excised tissue was sent for routine histopathological examination. Gross mass was a single bit of size (50*50*40) mm (**Figure 3**). Histologically, the tumor was characterized as invasive growth. Peripheral cells were in various shapes including columnar, cuboidal, palisaded, polarized and stellate reticulum-like cells appeared in the center of the epithelial islands and cells were lack of atypia (**Figure 4**). In addition, Immunohistochemical examination indicated that the tumor cells were positive for P40, P63 and Ki-67, but Ki-67 just is positive in the cells of basilar part (**Figure 5**). In conclusion, the final pathologic diagnosis was peripheral ameloblastoma.

No complications were observed during recovery. The patient was dismissed fourteen days after surgery and no recurrence of disease was observed after follow-up of six months.

Discussion

Peripheral ameloblastoma (PA) is one relatively uncommon odontogenic neoplasm, accounting for 2% to 10% of all ameloblastomas [1, 2]. It was first described by Kuru in 1911 [6]. PA usually is defined as an exophytic neoplasm, which is restricted to the soft tissue overlying the tooth-bearing areas [2, 5], but PAs of the extragingival sites also have been reported in the literature. 13 cases of PA are by far merely described in the extragingival sites. 10 cases were described in the buccal mucosa [7-12], 1 case was in the subzygomatic area [13], 1 cases was at the base of the tongue [14] and 1 cases was in the floor of the mouth [7]. We now present the 14th case of extragingival PA, which is the first case in the parapharyngeal space. Rigorously, PA in extragingival sites

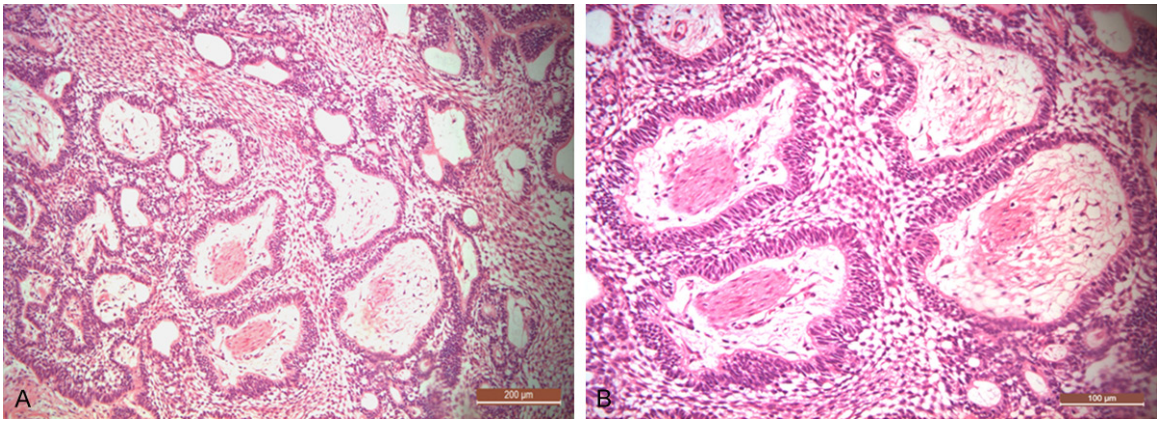

Figure 4. Histological sections of the extragingival PA displayed a lesion constituted by numerous irregular islands of epithelium. Peripheral cells were columnar/cuboidal, palisaded and polarized, and stellate reticulum-like cells presented in the center of the islands. (hematoxylin and eosin [H&E] stain; magnification, ×100 and ×200, respectively).

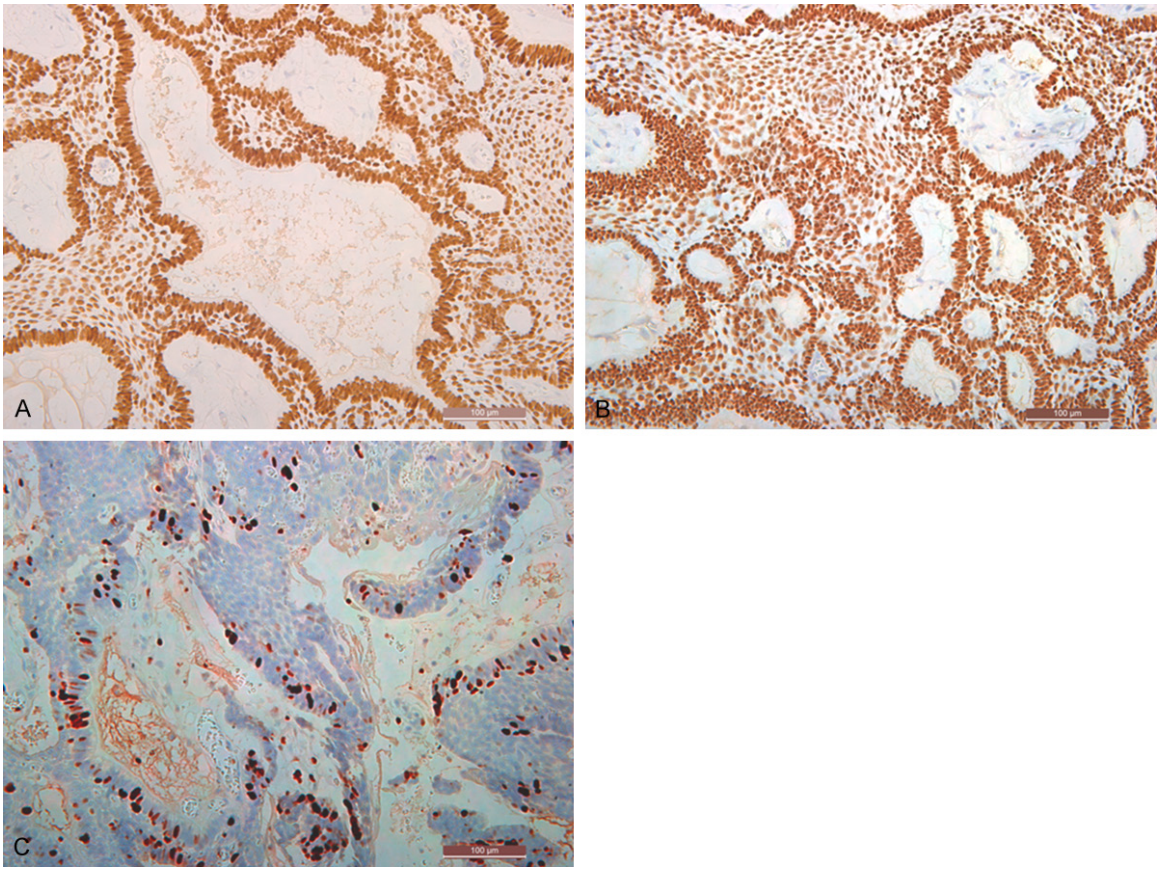

Figure 5. Immunohistochemiical staining of a specimen (A: P40. B: P63. C: Ki-67) (magnification, ×200).

should be excluded from the definition of PA, because it was considered as a kind of basal cell adenomas with a histopathological resemblance to an ameloblastoma or the rare ameloblastoid variant of the squamous cell carcinoma [2]. Therefore, the specialized term of extraginigval PA was used for the PA occurred in the extragingival area.

A summary of the clinical features of the thirteen previously reports with extragingival PA and our case were presented in **Table 1**. The

Table 1. Reported cases of PA of the extragingival space

	Year	Age/sex	Location	Ulcerated	Treatment	Size (cm)	Follow-up	IHC stain
Braunstein et al	1949	63/M	Buccal mucosa	-	Blunt dissection (total removal)	2.0*2.5*1.5	4 months FOD	Unknown
Klinar et al	1969	68/M	Buccal mucosa	+	Excision with wide margin	5.0*4.0*2.5	5 months FOD	Unknown
Ramnarayan et al	1985	65/M	Floor of the mouth	-	Excision	2.0*1.0*1.0	6 months FOD	Unknown
Woo et al	1987	52/F	Buccal mucosa	+	Total removal	3.0*2.5*1.5	9 months FOD	Unknown
Shibata et al	1990	49/M	Buccal mucosa	-	Excision	3.5*2.5*1.0	12 months FOD	Unknown
Rajesh BC et al	1996	38/M	Tongue	-	Excision	6.0*4.0*3.0	Unstated	Unknown
Yamada et al	2005	75/F	Buccal mucosa	Unstated	Excision	3.5*2.1*1.5	Unstated	Unknown
Curtis et al	2005	64/F	Cheek	Unstated	Excision	Unstated	36 months FOD	Unknown
Yamanishi et al	2006	80/M	Buccal mucosa	-	Total removal	2.0*2.0*2.5	8 months FOD	Unknown
Isomura et al	2008	88/M	Buccal mucosa	-	Excision	2.5*2.5*1.5	5 months FOD	Unknown
Clauser LC et al	2008	74/M	Subzygomatic area	+	Excision	3.0*2.0	3 months FOD	Unknown
Yuwanati MB et al	2013	34/M	Cheek mucosa	Unstated	Excision with reconstructive surgery	Unstated	No follow-up	Unknown
Goda et al	2014	69/M	Buccal mucosa	+	Blunt dissection (total removal)	Unstated	30 months FOD	Cytokeratin-19 (+) Ki-67 (+) s-100 (-)
Present case	2016	52/M	Parapharyngeal space	+	Excision with wide margin	5.0*5.0*4.0	6 months FOD	P40 (+) P63 (+) Ki-67 (basilar part)

FOD: Free of disease. IHC stain: Immunohistochemiical stain.

age of PA usually ranges from 51 to 60.4 years [2, 8, 15], but the mean age of extragingival PA is approximately 67 years. Therefore, the age range of patients with extragingival PA exceed to that of patients with PA. Meanwhile, with regard to the gender of the patients, the male/female ratio in PA is reported to amount to 1.9:1 [2, 8, 15]. However, extragingival PA occurred in eleven men and three women and is more inclined to the elder males. The most frequent site of extragingival PA is the buccal mucosa. All patients with extragingival PA underwent surgery for the treatment. Among them, only two patients received an excision with a wide margin and four patients were removed totally. No patient was reported for recurrence of the disease, although the follow-up periods were relatively short in the majority of the cases. To date, there is just one report of extragingival PA with histological low-grade malignant feature [10], but the rigorous follow-up after surgical treatment is considered to be highly meaningful.

Clinical diagnosis was extremely difficult in the present case. Generally speaking, PA has a benign characteristic in imaging findings, however there was a suspicion of malignancy of this case in MRI and CT images, because the margin was not clear and density was not uniform. Additionally, an incisional biopsy consequence is trended to basaloid squamous cell carcinoma (BSCC). Extragingival PA and BSCC usually manifest extremely similar growth patterns and have resembling histological features. Thus it is believed that extragingival PA and BSCC maybe represent the same neoplasm [2, 10]. Furthermore, BSCC generally present in the upper aerodigestive tract and the common appeared sites of BSCC are in the larynx, hypopharynx and base of the tongue [16]. So it is hardly differentiated in the clinical symptoms, image, even to histological features. We cannot completely exclude the possibility of BSCC.

The differential diagnosis is very significant, because it is obvious different in the preoperative preparation, degree of operative difficulty and therapeutic plan between the extragingival PA and BSCC. Therefore, an explicit histopathological examination is necessary to differentiate PA from BSCC in the oral cavity and all cases should be examined by immunohistochemistry. Previous cases were reported that some immunohistochemical markers are used to remarkable distinguish PA from BSCC, such as cytokeratin and Ber-EP4 [17-21]. As reported, the expression of cytokeratin 19 is positive in PA [18, 19, 21] and is negative to BSCC [18, 20, 21]. In addition, positive immunohistochemical staining of Ber-EP4 provides strong evidence to identify PA from BSCC [17-19]. In a word, a definite diagnosis among extragingival PA and BSCC is of significance. Apart from BSCC, differential diagnosis for extragingival PA should consider a variety of mucosal and submucosal lesions of the oral cavity, such as peripheral ossifying fibroma, peripheral giant cell granuloma, odontogenic gingival epithelial hamartoma, other peripheral hyperplastic swellings superficial to the alveolar ridge and so on [22].

In conclusion, extragingival PA of parapharyngeal space is extremely rare. Considering the reports of the extragingival PA, a majority of tumors have a relatively benign clinical characteristic and the treatment method usually is resection of the primary focal, but long-term follow-up is very necessary to ensure no recurrence. Histopathologic examination and immunohistochemistry of the specimen are significant to define the nature of the neoplasm. We need more studies to deeply understand the clinical and histopathologic features of extragingival PA.

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Disclosure of conflict of interest

None.

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