Case Report

Oral angiomyolipoma: report of a rare case and review of the literature

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Abstract

Angiomyolipoma (AML) is a benign tumor that usually affects the kidney. Extrarenal AML is uncommon. Intraoral AML is extremely rare and only 13 cases have been reported in the English-language literature. Although oral AML shares the terminology with renal AML, it presents as solitary mass not associated with tuberous sclerosis complex and is negative for human melanoma marker HMB-45. This article reports a rare case of intraoral AML presenting on the hard palate of a 52-year-old male patient. The surgical excision of this lesion was considered curative and no recurrence has been documented. The literature concerning intraoral AML is also reviewed.

(CU Dent J. 2017;40:63-70)

Key words: *angiomyolipoma; extrarenal angiomyolipoma; intraoral; oral; palate*

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Introduction

Angiomyolipoma (AML) is a benign tumor histologically composed of three tissue components that vary greatly in their distribution: (1) convoluted thick-walled blood vessels with little or no abnormal elastic fibers and frequent hyalinization of the media, (2) irregularly arranged sheets and interlacing bundles of smooth muscle often with a prominent perivascular arrangement, and (3) mature adipose tissue with some variations in cellular size and nuclear appearance (Weiss and Goldblum, 2008). AML occurs most commonly in the kidney and it can occur sporadically or in association with tuberous sclerosis complex (TSC) that is an autosomal dominant disorder or sporadic gene mutation characterized by widespread hamartomas in several organs including the brain, heart, skin, eyes, kidney, lung, and liver. (Curatolo et al., 2008; Weiss and Goldblum, 2008; Flum et al., 2016). Extrarenal AML is uncommon. In the oral region, AML is extremely rare, and only 13 cases have been reported in the English-language literature (Table 1). This report presents an additional rare case of oral AML located on the palate and reviews the literature focusing on the clinical oral manifestations of these tumors.

Case Report

A 52-year-old healthy Thai man presented with a 1-week history of a mildly painful soft tissue swelling on his left hard palate. The patient had first noticed the lesion approximately 3 months earlier as an asymptomatic swelling that disappeared. A week before he sought treatment, the lesion reappeared and was tenderness. Oral examination revealed a slightly raised, small bluish mass on the left hard palate adjacent to the maxillary premolar edentulous region (Figure 1A). The lesion measured approximately 0.8 × 0.8 cm. The lesion was slightly movable and had a soft to firm consistency. The lesion showed no fluctuation or blanching upon palpation. There was a retained dental root of the upper left first molar not associated to the lesion. An intraoral periapical radiograph revealed no obvious pathology in the area related to the lesion (Figure 1B). However, slightly concave alveolar bone loss with a subtle decreased bone density was observed in the edentulous area of the upper left second premolar.

Figure legends:

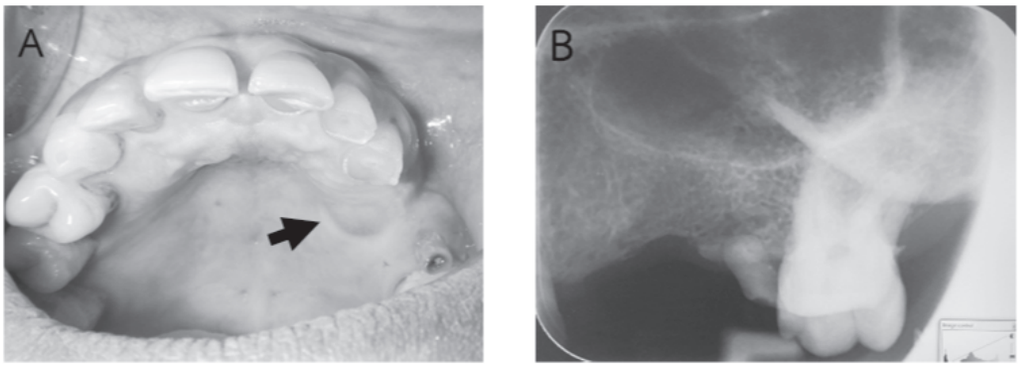

Figure 1: Clinical presentation at the first visit:
A. A slightly raised, small bluish swelling presented on the left hard palate adjacent to the edentulous premolars region. (black arrow) B. Periapical radiograph showing no obvious pathology in the area related to the lesion, however, slightly concave alveolar bone loss with a subtle decreased bone density presented in the upper left second premolar bony area.

This radiographic finding correlated with the observed clinical buccal bone defect. His medical history was unremarkable.

The provisional diagnosis was either reactive fibrous hyperplasia or benign salivary gland neoplasm. The retained dental root was removed and the patient was appointed to come back to re-evaluate the lesion in two weeks. When seen two weeks later, the lesion had increased in size from 0.8 cm to 1.0 cm in diameter and was more nodular (Figure 2A). At this visit, the lesion was totally excised under local anesthesia with a clinical impression of pleomorphic adenoma. Beneath the palatal mucosa, a well-circumscribed, solid tumor with a smooth surface was observed (Figure 2B black arrows), which was easily removed. The underlying palatal bone showed a non-significant concave defect (Figure 2B blue arrow). Healing of the biopsy site was uneventful. Follow-up at 6 months showed no signs of recurrence.

On gross examination before fixation, the tumor was well-circumscribed, rubbery, and had a smooth surface with a maximum dimension of 0.8 cm (Figure 3A). The tumor was partially bisected, revealing a tan-yellow solid cut surface with focal hemorrhage at the periphery (Figure 3B). The specimen was processed for routine microscopic examination after fixation.

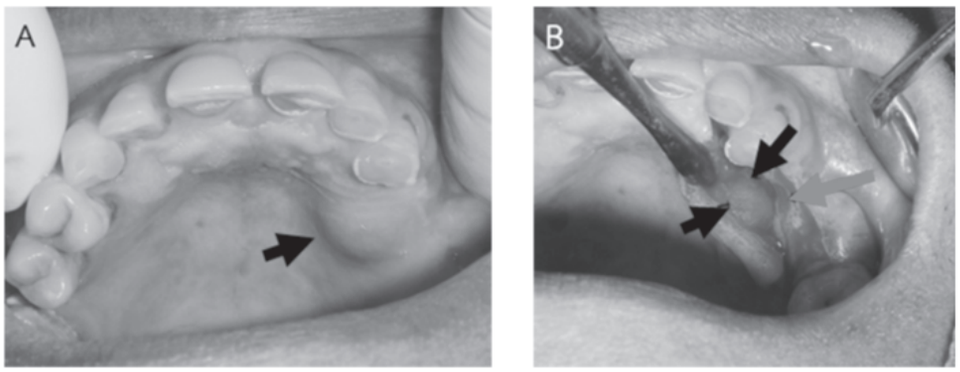

Figure 2: Clinical presentation at the second visit and intraoperation:
A. Intraoral photograph two weeks after the first visit showing an obvious swelling nodule at the left hard palate adjacent to the edentulous premolars region. (black arrow) B. Intraoperation showed a circumscribed, solid tumor with smooth surface (black arrow) beneath the palatal flap and a concave defect of the underlying palatal bone (blue arrow).

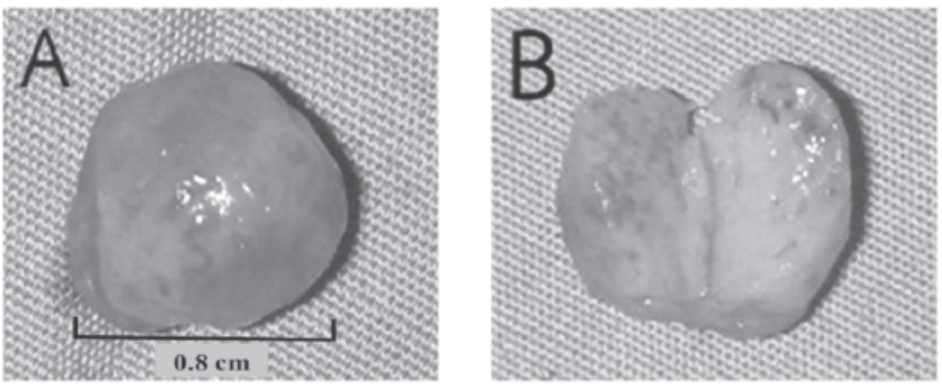

Figure 3: The lesion showed a circumscribed nodule with smooth surface (A) and a tan-yellow solid cut surface with focal hemorrhage at the periphery (B).

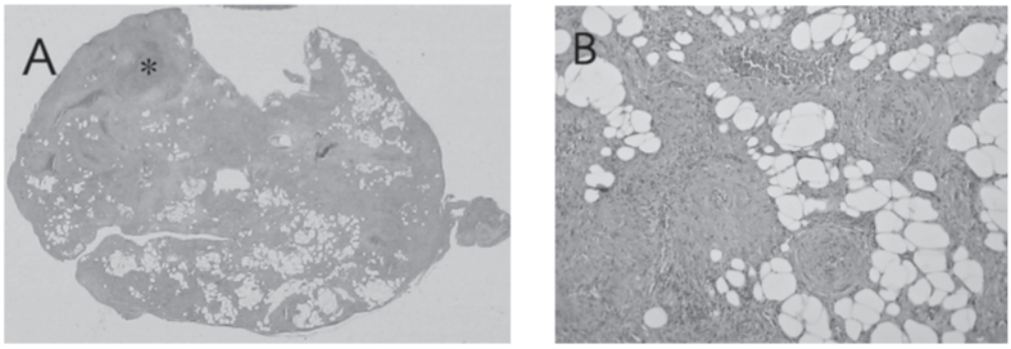

Figure 4: Photomicrographs:
A. Low-power photomicrograph showing a circumscribed nodule with thin fibrous capsule and predominantly fatty area. One thick-walled blood vessel at the periphery had thrombosis in the lumen (asterisk) (hematoxylin-eosin, original magnification 1X). B. High-power photomicrograph showing an intimate mixture of thick-walled blood vessels, smooth muscle, and mature adipose tissue (hematoxylin-eosin, original magnification 100X).

Microscopic examination revealed a well-circumscribed nodule with a thin capsule and predominantly fatty area (Figure 4A). A thick-walled blood vessel at the periphery had thrombosis in the lumen (Figure 4A asterisk). Higher magnification showed an intimate mixture of thick-walled blood vessels, smooth muscle, and mature adipose tissue (Figure 4B). The smooth muscle cells appeared to arise from the outer walls of the blood vessels. The final diagnosis, based on the histopathologic findings, was AML. Based on the final diagnosis, the patient was referred to his physician to rule out TSC association. He showed no signs, symptoms, or family history suggestive of TSC.

Discussion

AML is considered part of a family of tumors arising from perivascular epithelioid cells (PEC) that co-express melanocytic and smooth muscle markers (Weiss and Goldblum, 2008). The term perivascular epithelioid cell tumor (PEComa) consists of a group of mesenchymal tumors that includes AML, lymphangiomyomatosis (LAM), and clear cell "sugar" tumor of the lung (CCST). PEC generally stains for myocytic markers, such as smooth muscle actin, as well as melanocytic markers including human melanoma black (HMB)-45 and Melan-A. The proliferation of HMB-45-positive smooth muscle cells, distributed around vascular spaces, should be seen in order to render a definitive diagnosis of AML. The kidney (perinephric fat) is the most frequent site involved in AML. Approximately one-third of renal AML presents with manifestations of TSC (Weiss and Goldblum, 2008). The liver is the second most frequent site of AML after kidney. Approximately 10% of the hepatic AML patients had evidence of tuberous sclerosis and all had renal AML (Tsui et al., 1999). Both renal AML and hepatic AML contain significant HMB-45-positive smooth muscle cells (Makhlouf et al., 2002; Tsui et al., 1999). AML in tissues other than the kidney and liver is extremely rare.

Table 1: Oral angiomyolipomas reported in the English-language literature.

Author/ year	Age	Sex	Location	Duration	Clinical findings					Clinical diagnosis	Tx	F/U, recur	TSC	SMA/ HMB-45
					Size (cm)	Morphology	Color	Consistency	Surface					
Gutmann *et al.* 1975	39	M	Hard palate	2 years	1.0 × 1.0	Dome-shaped swelling	Yellowish pink	Spongy	Normal mucosa	Palatal cyst	Excision	7 years, No	No	NA/NA
Yamamoto *et al.* 1995	62	F	Hard palate	NA	1.0 × 1.0	Small mass	NA	Elastic soft	Normal mucosa	Benign tumor	Excision	>1 years, No	No	+/NA
	69	F	Lower lip	10 years	1.0 × 0.7	Small mass	NA	Elastic soft	NA	NA	Excision	>1 years, No	No	+/NA
Piattelli *et al.* 2001	43	M	Hard palate	10 months	NA	Mass	NA	Firm	Normal mucosa	NA	Excision	7 years, No	No	+/-
Redman *et al.* 2001	71	M	Lower lip	4 years	2.0 × 1.0 × 1.0	Mass	Slightly bluish	Firm, slightly compressible	Normal mucosa	Neoplasm, reactive lesions	Excision	18 months, No	No	+/-
Farah & Zaini 2006	54	F	Hard palate	20 years	1.0 × 1.0 increase to 2.0 × 2.0 in 12 months	Mass	Red/purple	Soft	Normal mucosa changed to ulcer in 12 months	Hemangioma, angiogranuloma	Excision	NA, No	No	+/NA
Alvarez Alvarez *et al.* 2007	52	M	Hard palate	NA	0.6 × 0.6	Polypoid tumor	Reddish	NA	NA	Hemangiomatous lesion	Excision	NA, No	No	+/-
da Silva *et al.* 2007	43	F	Upper lip	6 years	1.0 × 2.0	Nodule	NA	Firm	Normal mucosa	NA	Excision	2 years, No	No	+/-
Koizumi *et al.* 2008	23	M	Dorsum of tongue	2 years	0.6 × 0.8	Small mass	Normal colored mucosa	Firm	Normal mucosa	Fibroma	Excision	4 years, No	No	NA/NA
Tosios *et al.* 2010	78	M	Upper lip	1 year	0.7 × 0.5 × 0.5	Round submucosal mass	NA	Fluctuant	Normal mucosa	Mucoccle	Excision	6 months, No	No	+/NA
Kim 2011	56	M	Lower lip	NA	1.3 × 1.0 × 0.8 (Specimen)	Protruding lesion	Bluish	Firm	Normal mucosa	Mucoccle	Excision	NA, NA	No	+/-
Yura *et al.* 2011	61	F	Lateral of tongue	5 years	2.0 × 2.0	Dome-shaped mass	Dark violet	Soft	NA	Hemangioma	Excision	18 months, No	No	NA/NA
Morisaki *et al.* 2016	72	M	Base of tongue	NA	2.0 × 2.0	Smooth submucosal tumor	Normal colored mucosa	NA	Normal mucosa	NA	Excision	3 months, No	No	+/-
Kongsong & Kintarak (current case)	52	M	Hard palate	3 months	0.8 × 0.8 increase to 1.0 × 1.0 in 2 weeks	Nodule	Bluish	Soft to firm	Normal mucosa	Pleomorphic adenoma	Excision	6 months, No	No	NA/NA

M, male; F, female, Tx, treatment; F/U, follow-up; NA, not available; TSC, tuberous sclerosis complex; SMA, smooth muscle actin; HMB-45, human melanoma black-45.

Intraoral AML is extremely rare. Only thirteen cases of oral AML have been previously reported in the English-language literature, in addition to our case (Table 1). The histological diagnosis is based on the triad of convoluted thick-walled blood vessels, smooth muscle, and mature adipose tissue. As summarized in Table 1, the patient age ranged from 23 to 78 years with an average age of 55.3 years. Nine of the fourteen patients (64%) were men. The male to female ratio was 1.8:1. The lesions were located on three oral sites: hard palate (6 cases or 43%), lips (5 cases or 36%: four on the lower lip) and tongue (3 cases or 21%: dorsum, lateral border and base of tongue each). The sizes of the lesions, reported in 13 cases, ranged from 0.6 cm to 2.0 cm at the greatest dimension. The duration of the lesions was reported in ten cases, ranging from three months to twenty years. Pain was reported in two cases as mild pain (the present case) and painful (da Silva et al., 2007). Another patient complained of abnormal sensation in the oral cavity (Yamamoto et al., 1995). None of the reported cases was associated with TSC. Immunohistochemical evaluation of melanoma marker HMB-45 reported in 6 cases (46%), were negative in all cases. All lesions were well-circumscribed or well-demarcated and either complete, incomplete or no capsule. There are no reports of lesion recurrence.

Six cases of AML arising at the palate (Gutmann et al., 1975; Yamamoto et al., 1995; Piattelli et al., 2001; Farah & Zaii, 2006; Alvarez Alvarez et al., 2007; present case) were located on the hard palate adjacent to the maxillary premolars region. These lesions presented clinically as slow growing masses that were reported to be asymptomatic (50% of cases) or with abnormal sensations to mild pain. Two of the six cases had a history of increased lesion size after two and twelve weeks. The clinical diagnoses included hemangiomatous lesion (Alvarez Alvarez et al., 2007), hemangioma/angiogranuloma (Farah and Zaini, 2006), benign tumor (Yamamoto et al., 1995), and pleomorphic adenoma (present case).

A few cases of intraoral angiomyolipomatous lesion designated "angiomyolipomatous hamartoma" have been reported (Ide et al., 1998; Tosios et al., 2010 case 2). These lesions were composed of a mixture of adipose tissue, blood vessels, and smooth muscle similar to oral AML, however, they demonstrated a poorly circumscribed, ill-defined margin and the angiolipomatous areas consisted predominantly of capillary-sized vessels. These cases were not included in this review. In addition, two reported cases of oral AML (Bauer et al., 2011; López-López et al., 2004) were also excluded. The lesion arising in the tongue of a 63-year-old man (Bauer et al., 2011) was more likely an angiolipoma because the photomicrograph showed mature fat tissue and small, thin-walled vessels. Two lesions taken from the inner lower lip and buccal mucosa of a 55-year-old woman with underlying tuberous sclerosis (TS) (López-López et al., 2004) was concluded by the published authors to be a pattern of multiple fibromata associated with the underlying TS and with an unusual fat, vessel, and muscle content.

Intraoral AMLs, despite the histological similarities, differ in several ways from renal AMLs in that there is no association between oral AML and TSC (Table 1) and they lack epithelioid cells and are negative for melanoma marker: HMB-45. In addition, the tumor size of oral AMLs is usually small, not larger than 2.0 cm, whereas renal AMLs are frequently large, average 9 cm (Weiss and Goldblum 2008). Therefore, it has been suggested that HMB-45 negative and TSC non-related oral AML (Tosios et al., 2010) and skin AML (Beer, 2005) may be considered an angioleiomyoma with fat. As described in the review by Farah and Zaini in 2005, adipose tissue has been identified in angioleiomyoma, with only 3% of angioleiomyomas containing fat, and with adipose tissue representing less than 1% of the tumor mass. In the present case, the large proportion of adipose tissue in the tumor mass was sufficient for a diagnosis

of angiomyolipoma. However, to distinguish AMLs arising in the skin, nasal cavity, oral and pharyngeal mucosa that are distinct from the renal and hepatic AML as they are HMB-45 negative and TSC non-related, the term mucocutaneous AML (MCAML) was proposed to express these characteristic tumors (Watanabe and SuZzuki 1999).

Conclusion

In conclusion, we describe a rare case of oral AML presenting as a nodular soft tissue mass on the hard palate adjacent to the left maxillary premolar edentulous area. Simple surgical excision is currently curative. Recurrence of the oral AML has not been documented.

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