

## Arteriovenous Malformation, Face and Oral Cavity: A Case Report

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**Abstract:** Arteriovenous malformations (AVMs) are developmental vascular anomalies that occur when the embryonic vascular network fails to differentiate. It is composed of abnormal communications between arteries and veins without a normal intervening capillary bed. Lymphatic, capillary, venous and AV malformations make up a majority of vascular malformations. Diagnosis of these lesions is essential and management of maxillofacial AVMs remains challenging. In this article, we report a case of 21-year-old female patient with arteriovenous malformation involving the right side of the face and oral cavity.

**Key words:** Arteriovenous malformations, hemangioma, vascular lesion.

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### I. Introduction

In early 1980s, vascular lesions were referred to as haemangiomas. Mullikin and Glowacki in 1982 reclassified vascular lesions into haemangiomas and vascular malformation based on endothelial characteristics.<sup>[1]</sup> In 1996 International Society for the Study of Vascular Anomalies modified the classification as vascular tumors or vascular Malformations.<sup>[2]</sup> Vascular malformations are further classified according to blood flow into low-flow lesions and high-flow lesions [arteriovenous malformations (AVMs) and arteriovenous fistulae].<sup>[1]</sup>

The most commonly used synonyms for this entity are hemangioma, angioma, arterio-venous shunt, arterio-venous fistula, arterio-venous aneurysm, vascular malformation and arterio-venous malformation.<sup>[3]</sup>

### II. Case Report

A 21-year-old female patient reported with the chief complain of gradually increasing swelling in the right cheek, angle of mouth and right half of both upper and lower lip since birth. History revealed that at the age of 3 years patient had undergone ligature for the same by some physician, later on which the lesion started extending medially.

On examination, facial asymmetry was observed causing a swelling on the right side of the face. A solitary, well defined painless swelling is present on the right side involving the mid and lower one-third of the face. The swelling was 10 x 8 cm in its greatest dimension and it is roughly oval in shape. The swelling is extending superior-inferiorly 1 cm above the ala tragus line upto 2cm above the inferior border of the mandible while antero-posteriorly it extended from right side midline of upper and lower midline of the lip to 2 cm short of angle of mandible. The borders are well demarcated from the adjacent skin. The swelling colour is blue-purple red. Visible pulsations are absent. A visible nodule is also seen on the superior aspect of the swelling approx 1 cm in size, bluish black in colour. There are no secondary changes seen and surrounding mucosa appears normal [Figure 1].

On intra-oral examination, the single diffuse swelling is present on the right side it is extending from upper and lower lip going intra orally to last molar teeth of the right side. It is 5x6 cm in its size and is irregular in shape. The surface texture appears to be rough with a bluish black purple reddish in colour. The edges of the swelling are well defined and pulsations are absent. The surrounding mucosa appears to be normal. Grade I mobility is present in 41 and 46 tooth region [figure 2].

On inspection, overlying skin is reddish black with numerous pin-point projections were seen. On palpation the temperature was not raised, non-tender and soft in consistency; compressible, fluctuant swelling was seen. No secondary changes were observed.

Based on the history and clinical findings, a provisional diagnosis is AV malformation was made and in differential diagnosis is hematoma, chelitisglandularis and Sturge Weber syndrome are considered.

The CT scan revealed large isodense swelling seen involving the right cheek, mandible and both the lips. Few pleobith are seen within the lesion at a, numinal vascularity are seen, non-invasive, non-hypertrophised vessels are seen [Figure3].

MD CT Scan of face with CT angiography revealed- large soft tissue attenuation mass in right portion of face involving buccal space and extending down in region of cheek and chin involving right orbicularis oris, right depressor angulioris and right buccinators muscles and showing nodular small calcification. No evidence of destruction and no evidence of erosion in maxilla and mandible. Branches of right facial artery are seen supplying the mass[Figure4].

MRI revealed large T2 hyperintense lesion in the right buccal space extending inferiorly into the submandiular space and anteriorly upto right half of the superior and inferior labium.

### **Treatment**

Sclerotherapy was performed under septic precaution, right cheek swelling was punctured using 24G scalp veins needles. After confirming good back flow of blood, 18ccof 66%STD mixed with non-ionic contrast & 3 units of bleomycin was injected into the lesion under roadmap guidance. The result confirm the right hemifacial venous malformation. An intralesionalsclerosant injection, causes marked tissue irritation than necrosis which lead to localized inflammatory reaction and destruction of the endothelium of the vessel wall, followed by formation of an intravascular coagulum leading to obliterative thrombosis of the blood vessel. Subsequently, fibrosis of the vascular endothelial spaces takes place, eventually leading to disappearance of the treated vessels with consequent regression of the lesion and tissue contraction.

### **III. Discussion**

Arteriovenous malformations (AVMs) occur as a series of errors in vascular morphogenesis present at birth<sup>[4]</sup> Vascular malformations are often seen in the skin, most commonly occur in the head and neck in the skull and the maxillo-facial region.<sup>[6]</sup>

AV malformation are classified as: Congenital and acquired.

Exact etiology and pathogenesis of AVM is not known. They tend to grow proportionally with the child and often increase in size with puberty, hormonal changes, or infection.<sup>[7]</sup>

Vascular lesions of the jaws have an overall 2:1 female: male occurrence, most commonly seen in the second decade.<sup>[5]</sup>

The most common clinical features are a pulsatile mass with a thrill, bruit, and rarely seen are local hyperthermia, ulceration or bleeding, functional impairment due to arterial steal and ischaemia. In the oral cavity most common site of involvement is in anterior two-thirds of tongue and less frequently involved sites are palate, gingiva and buccal mucosa.<sup>[8]</sup>

Various syndromes are frequently associated with arteriovenous malformations include Bonnet-Dechaume-Blanc syndrome, Parkes-Weber syndrome, Capillary malformation-AVM syndrome, and Cobb syndrome.<sup>[9]</sup>

Various imaging modalities like plain film radiography, ultrasound, computed tomography, angiography, magnetic resonance imaging and angiography are essential for diagnosis and planning in the treatment of vascular malformations.<sup>[10]</sup>

Vascular malformations of the jaws shows the “great radiologic imitators” they can resemble from a cyst to a malignancy. In the mandible they produce ill defined, radiolucent image, with the honeycomb appearance or a punched out area.<sup>[5]</sup>

Both benign and malignant tumors, should be considered in the differential diagnosis. Of the benign lesions, most frequent squamous cysts. Less frequently non epithelial cysts, fibrous dysplasia, fibroma, myxoma, neurofibroma, eosinophilic granuloma and aneurysmal bone cysts.<sup>[5]</sup>

Since it usually appears as a multilocular radiolucency, other radiographic aids such as CT, MRI, and digital subtraction angiography (DSA) are thought to gain a precise diagnosis of AVM. MRI imaging modality help in the confirmation and differentiation between vascular malformations and their subtypes and guiding for treatment planning and objective imaging follow-up posttherapy.<sup>[11]</sup>

Most conventional modern approach of treatment is preoperative embolization and complete surgical resection. Sclerotherapy is the most effective treatment function by destroying vascular endothelial cells within the lesion. The aim of sclerotherapy is to maximize both the agent concentration and duration within the endothelial vessel lumen. The low flow rate of VMs makes sclerotherapy an effective treatment, allowing

effective concentrations of sclerosing agents (sodium tetradecylsulphate, sodium morrhuate, boiling water, nitrogen mustard, etc.) to remain nearly constant when delivered directly to a VM.<sup>[11]</sup>

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### Legends for figures

Figure 1 Facial Profile.

Figure 2 Intraoral pictures of patient.

Figure 3 The CT scan revealed large isodense swelling involving the right cheek, mandible and lips also seen pleobith, numinal vascularity, non-invasive, non-hypertrophised vessels.

Figure 4 CT angiography - large soft tissue attenuation mass in right side of face involving buccal space, cheek and right orbicularis oris, right depressor angulioris and right buccinators muscles showing nodular small calcification. No evidence of destruction, erosion. Branches of right facial artery are seen supplying the mass.

**Figure 1**





**Figure 2**



Figure 3



Figure 4

