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Phleboliths as Diagnostic Clues: Unravelling a Venous Malformation of the Masticator Space

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Abstract: ***Venous malformations of the oral and maxillofacial region are uncommon and may remain clinically undetected for several years due to their slow-growing and relatively asymptomatic nature. A comprehensive clinical examination supported by appropriate imaging modalities, including Colour Doppler ultrasonography, MRI and CBCT, plays a crucial role in accurate diagnosis. Early recognition is particularly important for dental practitioners to avoid inadvertent haemorrhage during routine dental procedures and to ensure appropriate patient management. MRI demonstrated a lobulated T2/STIR hyperintense lesion in the left masticator space with multiple hypointense phleboliths and avid heterogeneous post-contrast enhancement. CBCT revealed multiple radiopaque foci in the left mandibular ramus region, suggestive of phleboliths. The overall clinical and radiological findings were suggestive of a slow-flow venous malformation.***

Keywords: Venous Malformation, Oral and Maxillofacial Region, Phleboliths, Magnetic Resonance Imaging, Cone Beam Computed Tomography

1. Introduction

Arteriovenous malformations (AVM) are fast-flow and slow congenital vascular malformations. It includes vascular anomalies of only vein, only lymph vessels or both arteries or veins. Vascular malformations generally present since birth and increases as age increases, it affects only 1 to 4% of individuals. But when it comes to oral and maxillofacial region it is very rare, only 1.5% of all vascular anomalies. I involves both maxilla and mandible but most commonly it involves mandible. AV malformations occurs due to change in pressure and flow, dilation of vascular channels, shunting and collateral proliferation .it is painless slow growing lesion which results in facial asymmetry. If the lesion remains in dormant stage that can be misdiagnosed because of which patient might land up in danger zone. According to recent ISSVA (2018) classification, it has divided into vascular tumour, vascular malformations and PUVA (Potentially Unique Vascular Anomaly)

2. Case Report

A 11 year old female patient reported to the Department of Oral Medicine and Radiology with the chief complaint of swelling in the left side of face since 5 to 6 yrs. After recording History of Presenting Illness. Patient had noticed the swelling on the left side face since 6 yrs, initially the swelling was small in size, peanut shaped and it has gradually increased to present size. No history of pus discharge, bleeding, trauma, no history of pain, fever, secondary changes, paraesthesia, no history of recurrence, no history of similar swelling elsewhere in the body, no history of decrease size of swelling. Pt is under medication for the swelling and patient had visited to private clinic for the same and underwent investigations.

On general physical examinations, patient was conscious, co-operative and well oriented in the dental chair, moderately built and moderately nourished. On extra oral examination (inspection) diffuse swelling of size 4x4 cm extending Anterio- posteriorly from 2 cm posterior to ala of nose to 3cm anterior external ear lobe. Superioinferiorly extending 2 cm below left lateral canthus of eye to inferior border of mandible. Skin over the swelling is stretched and shiny. On palpation, Swelling was soft to firm in consistency, non-tender on palpation, no local rise in temperature, non-pulsatile, non- reducible, non- compressible, non- fluctuant. On Intra oral examination occlusal pit irt 46 and proximal caries irt 55

For confirmatory diagnosis, the patient was subjected to Ultrasound Color Doppler followed Magnetic Resonance imaging (MRI) and Cone Beam Computed Tomographic scan of the maxilla and mandible to evaluate the bony abnormalities. Ultrasonography revealed well defined heterogeneously hypoechoic lesion measuring approximately 2.4x 4.3 x 4.6 cm involving left cheek in subcutaneous plane anterior to left parotid gland. The lesion shows internal vascularity on color doppler showing venous waveform. Multiple coarse calcific foci area also noted with lesion suggestive of slow venous malformation. MRI reveals lobulated T2 / STIR hyperintense and T1 intermediate signal intensity lesion is noted in left masticator space epic entered in left muscle measuring 36 x 30x 57 mm with multiple T2 hypointense phleboliths and vascular space within. On post contrast study shows avid heterogenous enhancement. No obvious feeding artery/ draining vein detected. PA skull revels multiple radiopacities noted in left ramus region of mandible likely soft tissue haemangioma. CBCT coronal, axial, sagittal section shows multiple radiopacities of size 7.5mm x 7.6mm, 8.5mm x 5.6 mm noted in left ramus of mandible region suggestive of phlebolith.

3. Discussion

The original ISSVA classification closely followed scientific convention in prioritizing etiology as a categorical principle. The primary separation of vascular anomalies into tumors and malformations reflected what was believed at that time [1.] AVMs are fast-flowing abnormalities resulting from the redirection of blood between the arterial and venous systems, mainly due to abnormal capillary beds AVMs are fast-flow vascular malformations, consisting of anomalous capillary beds between the arterial and venous system, thus causing shunting of blood.[2] High-flow lesions show typical signal flow voids both in T1-weighted and T2-weighted sequences

with the appearance of serpentine images. In the present case, MRI was able to identify the kind of flow, i.e., high flow as well as the origin of the vessels, i.e., internal maxillary artery[3]. Both the genders are equally affected and always present at birth (though some may not be apparent until a later stage) never involute. Trauma, puberty & pregnancy may make the VMs to be active. VMs involving the soft tissue are usually soft, compressible and enlarge in size when venous pressure is increased. Phleboliths may be present in the lesion.[4] AVMs are the most aggressive form of vascular malformation which can lead to significant deformity and functional impairment The enlargement occurs due to the change in the pressure and flow within the malformation, ectasia, and collateral proliferation rather than cellular proliferation.[5] Thus, a large number of tumours, both benign and malignant, should be considered in the differential diagnosis. Of the benign lesions, squamous cysts are the most frequent. Less common lesions include nonepithelial cysts (also known a haemorrhagic or traumatic bone cysts), fibrous dysplasia, fibroma, myxoma, neurofibroma, eosinophilic granuloma and aneurysmal bone cysts. [6] However, it was suggests that nearly 40% of children require further intervention because of bleeding, ulceration, visual axis obstruction, airway obstruction, high-output cardiac failure, or risk for permanent disfigurement. Surgical management involves excision, laser treatment or both. Intralesional steroid treatment is also an option for focal hemangiomas of the parotid, nasal tip, subglottis, and eyelid. Repeat therapy is often required, but systemic side effects are limited.[7]

4. Conclusion

Although vascular malformations are not so common, identification, diagnosis and reporting of such lesions. But this might cause dental complications like haemorrhage due to extraction, followed by major surgery's. Oral physician should able to diagnose these conditions as early as possible to avoid complications which might compromises patients health.

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Figure 1: Frontal view



Figure 2: Lateral view

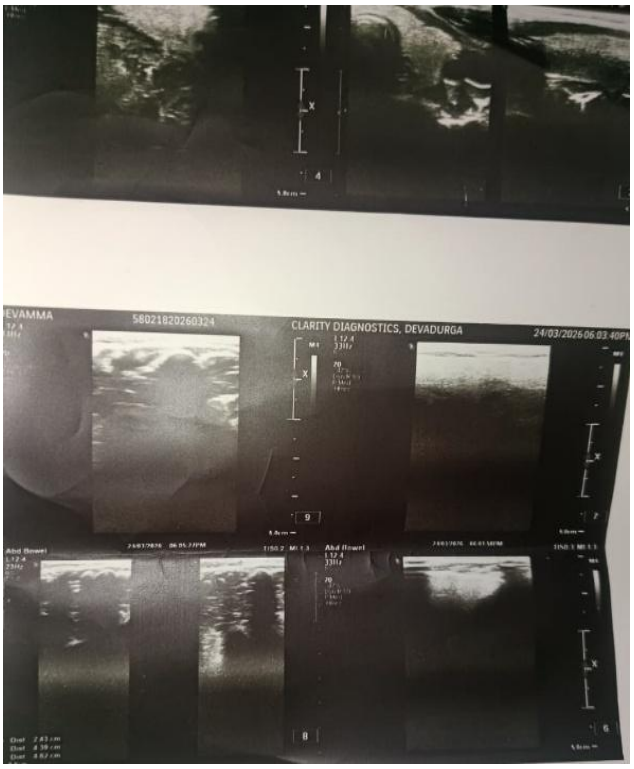


Figure 3: Ultrasonogrphy

CBCT Sections



Figure 4: 3D Reconstruction view



Figure 5: Lateral view

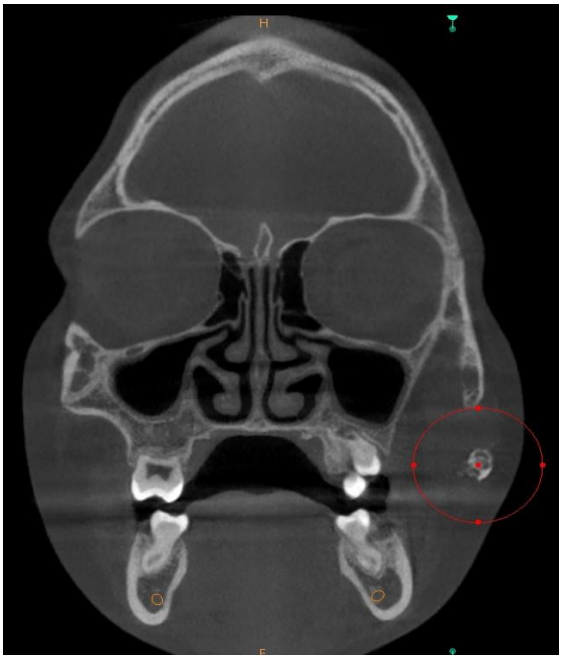


Figure 6: Coronal View

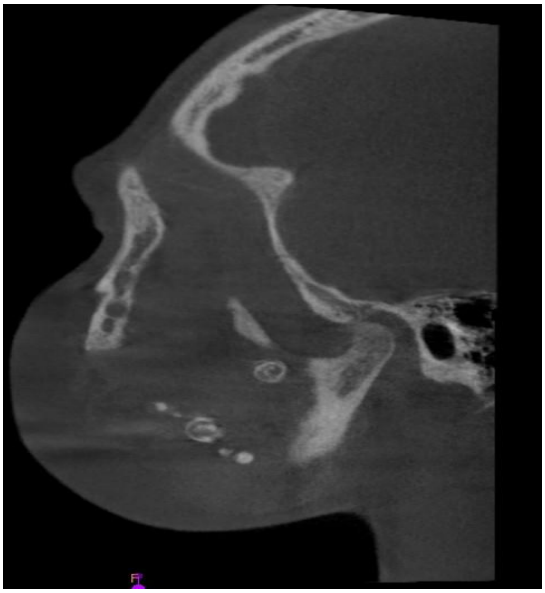


Figure 7: Sagittal view

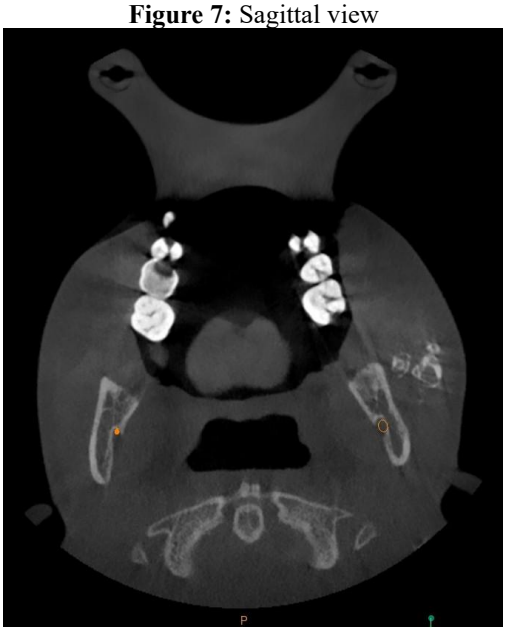


Figure 8: Axial view

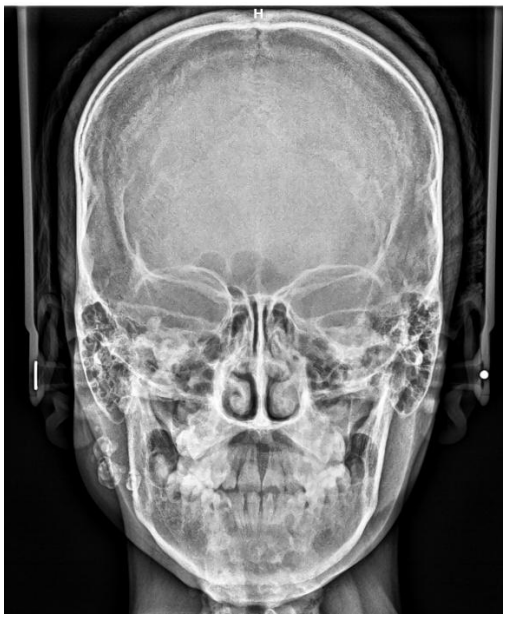


Figure 9: PA Skull View

MRI Sections

