



# ARTERIO VENOUS MALFORMATION OF MANDIBLE IN A 16 YEAR OLD MALE A CASE REPORT

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DOI Number: 10.48047/NQ.2022.20.20.NQ109317

NeuroQuantology2022;20(20):3201-3205

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## Introduction:

An arteriovenous malformation (AVM) may be defined as a condition in which arteries communicate with veins through channels other than the normal capillary network. This includes angiomatous malformations, arteriovenous aneurysms, arteriovenous shunts, hemangiomas (cavernous, capillary, sclerosing, and cirroid), and arteriovenous fistulas. Large arteriovenous malformations (AVMs) of the jaws are rare and potentially life-threatening vascular lesions (Shultz et al., 1988). The most common clinical presentation is expansion of the buccal cortex, gingival bleeding from around the necks of mobile teeth or severe haemorrhage after dental extraction, gingival biopsy, or eruption of a tooth. AVMs can be subdivided based on the rate of blood flow: "slow flow" (capillary, venous, lymphatic or mixed) and "fast flow" (arterial, arteriovenous, fistulae or shunt) subtypes.

Approximately 51% occur in the head and neck, with a male female ratio of 1 to 1.5. About 50% of all bone involvement occur in the skull and the maxillo-facial area Lesions of the mandible are rare and potentially life-threatening entities that can present as innocuous episodes of gingival bleeding, slow-

growing expansile masses, or severe haemorrhage. Treatment may be surgical or non-surgical. The latter includes intravascular embolization with coil and/or sclerosing solutions. Surgical resection is reserved for lesions that are extensive and/or refractory to endovascular therapy. Hereby we report a

case of AV Malformation of mandible in a 16 year old boy reported to our Department.

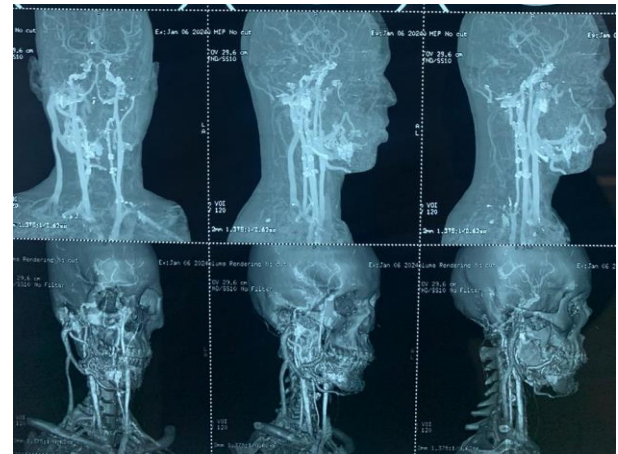
## Case report:

In January 2022 a 16-year-old boy reported to the Dept. of General Medicine of B.S.Kushwah Institute of Medical Sciences with chief complaint of bleeding from gums. History of gum bleeding was of two months duration prior to admission in interval of 10-15 days of 2 episode and bleeding was controlled with local packing and intermaxillary pressure. Due to repeated episodes of pulsatile gum bleeding hemoglobin concentration on admission was 4.1 g/dl felled to 3.9g/dl. Complete blood profile was done which revealed to be with in normal range. Pt was referred to Dept of oral and maxillofacial surgery, Rama Dental College hospital and research center, Kanpur for the same.

Physical examination revealed a pale boy with mild prominence of right mandibular angle.



on palpation, a thrill was easily palpable, and a bruit was heard on auscultation of the right mandibular angle region. Intraoral examination revealed erythematous and swollen gingiva with tortuous vessels in right mandibular buccal vestibule adjacent to molar teeth. Grade III mobility i.r.t 47 46 Grade II i.r.t 45 44 43 Grade I i.r.t 42 41 Radiographic examination demonstrated a wide multilocular radiolucent area in the right mandible, extending from the angle of mandible crossing midline extending up to left side premolar. Diagnosis was subsequently confirmed by CT angiography .



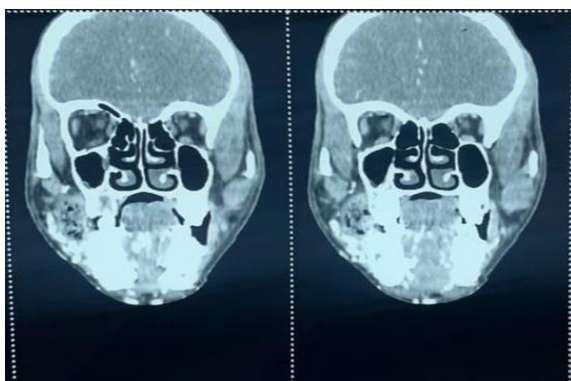
**CT Angiography**



**Intra oral picture of AVM**



**OPG Showing multiloculated osteolytic lesion**



**Computed tomography Scan**

CT angiography revealed a large expansile osteolytic lesion with few internal septation noted within involving right body and ramus of mandible with cortical breach at few level the arterial supplies from lingual and facial branches of right external carotid artery and venous drainage is into internal jugular vein through retromandibular and facial vein , tortuous dilated arteriovenous channel also noted on right side of cheek and lower lip right side lip and right side of floor of mouth. Patient developed an episode of massive bleeding spontaneously from right buccal mucosa aspect i.r.t 47 which was laminar in nature. Failed attempts for hemostasis with local packing and intermaxillary pressure led to an emergency ECA ligation under general anesthesia. Patient was intubated nasally, painted, and draped as per surgical protocol. Patients neck was extended and turned to opposite side. A transverse neck incision was made on right side of the neck after 2% ADR infiltration. Incision of skin was placed at level of angle of mandible behind anterior border of sternocleidomastoid muscle downward parallel to the anterior border of muscle to the upper level of thyroid cartilage. After penetrating through the skin and platysma muscle, the superficial sheath of the sternocleidomastoid muscle incised bluntly. The anterior border of the muscle is exposed and the muscle is retracted, thus the deep layer of the sternocleidomastoid sheath becomes visible and through it the internal jugular vein and at this point adequate care

was taken to not to injure the hypoglossal nerve.

Just in front of this vein the fascia is cut to expose the ECA which is usually located medially and ICA laterally. The external carotid artery is identified by its first anterior branch and then isolated, hooked and trans ligation of the right ECA was done with 1-0 silk ligature a few millimetres above the origin of the superior thyroid artery. Wound was closed in 2 layers (platysma & skin). Pt was monitored post operatively there was no sign of bleed, the thrill was not palpable. Post operative complete blood count was done & hemoglobin was found to be 7.0 g/dl. Followed which on 2<sup>nd</sup> post operative day patient again had a massive pulsative bleed from lingual cortex i.r.t 47 region which was controlled by extraction of the tooth and packing socket with impression compound and intermaxillary pressure, followed by fabrication of acrylic splint of the mandible.

Patient was planned and prepared for resection of mandible under general anesthesia followed by reconstruction with reconstruction plate. Prior to surgery two unit packed red blood cells was infused to raise the hemoglobin levels to 10.8 g/dl. Patient was taken up for the surgery under high-risk consent. After nasal intubation followed by painting and draped as per surgical protocol. 2% ADR infiltration was done and a submandibular incision was given on left side and dissection was carried through skin platysma carotid sheath was identified and left external carotid artery was ligated. Mandible was exposed on right side, the soft tissue extension of lesion was identified and dissected which was extending to left molar region and resection of mandible was done by giving osteotomy cut on 36 region (left first molar) and right-side osteotomy cut was given below right condylar region. Reconstruction plate of 2.5 mm was contoured and cut according to the defect and fixed using 2.5 × 8 mm screws. Tongue fall was prevented by suturing genioglossus to the reconstruction plate with 3-0 proline, followed by reconstruction of floor of the mouth. Two layered closure was done with 3-0 vicryl & 3-0 proline after drain placement. A total of 7

units of packed red blood cells was transfused to raise his hemoglobin levels to 8.7 g/dl during his hospital stay. Pt was discharged and followed up.



Resected Mandible

### Discussion

This case demonstrates the typical clinical and radiographic findings found with an AVM. The presenting signs of severe gingival bleeding, pain and mobility of teeth, bruit and thrill, dilation of the veins in the buccal vestibule and face, and facial asymmetry are consistent with the previously reported cases. The radiographic findings were impressive and underlined the importance of taking radiographs prior to treatment of unexplained lesions. Had the patient's complaints of pain coupled with the clinical findings of mobile teeth resulted in extraction of the molar tooth, exsanguination could have resulted. The use of angiography is indispensable in confirming the diagnosis, delineating the extent of the lesions, and demonstrating any other asymptomatic AVM's (that is, Wyburn-Mason syndrome). region. AVMs usually present with non-specific symptoms including bruit, dental loosening, swelling of soft tissues, change in skin and mucosal colour and dysesthesia of the lower lip or chin. Although CT, MRI and MRA may localize the arterio-venous shunt lesion, super selective arteriography remains an essential tool for diagnosis and planning of treatment. Management of AVMs is usually complex and requires a multidisciplinary team for successful outcome. In addition, in our experience, emergency ligation of the external carotid artery is insufficient to stop the haemorrhage because of a large and

already developed network of anastomotic blood vessels. Block resection of the affected area has been suggested, and temporary reconstruction with alloplastic bone plate or with the patient's own free, previously curetted mandibular segment has been reported. More definite bony reconstruction is recommended in this case as soon as possible with a free fibular graft or iliac crest to avoid facial deformities and allow dental implantation.

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