

Arteriovenous Malformation of Mandible: A Periodontist Diagnosis

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Abstract

Background: This report describes the case where a successful diagnosis of arteriovenous malformation was made who reported with periodontal complaints. *Case Description:* A thorough periodontal assessment was done along with necessary radiographic and histologic investigations to make an accurate diagnosis and subsequent surgical management was carried out. *Literature Review:* Arterio venous malformation is a developmental anomaly and the occurrence in mandible is rare. So, any undetected malformation during regular dental procedure like extraction or periodontal surgery can lead to hemorrhagic complications. *Clinical Significance:* Within the limits of this study, the result demonstrates that a thorough assessment of periodontal clinical signs can help in the diagnosis and management of a rare and potentially life threatening condition like arteriovenous malformation of mandible.

Keywords: Periodontal Pocket; Bleeding on Probing; Arteriovenous Malformation.

Introduction

Arteriovenous malformations (AVM) are errors of vascular morphogenesis and development that are present at the time of birth. They remain as such for many years but become evident during trauma or dental treatments like tooth extractions or periodontal surgeries. The orofacial region is rich in vasculature and presence of AVM in this makes it very difficult to manage.

Any dental surgical procedures carried out in patients with an underlying AVM in the mandibular or maxillary region can lead to hemorrhagic complications, which may be fatal sometimes. So, it is essential that a proper diagnosis be done to find or rule out AVM before attempting any surgical procedure in the maxilla or mandible.

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Case Report

Patient Information & Diagnosis

A 54 old female reported to the Department Of Periodontics, SCB Govt. Dental College (Cuttack, India) for the treatment of infrequent bleeding around the gingiva in relation to the lingual aspect of left mandibular first molar. Intraoral examination revealed generalized gingival recession and poor oral hygiene. The patient was an occasional tobacco chewer. The gingiva on the lingual aspect of the left mandibular first molar was slightly enlarged and soft in consistency. On probing with UNC 15 probe, a probing depth of 6 mm was found (Figure 1A). Probing induced profuse bleeding that was controlled by the application of pressure pack. On further questioning patient reported that there had been past episodes of occasional bleeding from that particular site while brushing or removing lodged food particles using a toothpick and even episodes of spontaneous bleeding. The quantity of bleeding was mild to moderate and on one occasion the bleeding was excessive for which she had visited different hospitals and dental clinics. On examining her previous dental records it was found that she had undergone various phases of scaling. Routine blood investigation

findings were normal. Radiographic evaluation from previous OPG report showed generalized bone loss (Figure 1B). But surprisingly no body had probed the affected site and no periodontal surgery was carried out.

So by observing the severity of bleeding on probing at the affected site routine blood investigations were advised (to confirm with previous blood report findings). The following day patient came with all the blood investigations, which were within the normal limits. But on intraoral examination the swelling at the interdental papilla on the lingual aspect of the left mandibular first molar had increased to an appreciable size with visible pulsations. The patient was then advised for IOPA of the affected region & CT scan of the mandible to confirm the diagnosis. IOPA revealed a horizontal bone loss at the interdental area of 36 & 37 (Figure 1C). The CT scan of the area confirmed an osteolytic lesion with buccal plate expansion & lingual plate thinning (Figure 1D). There was appreciable quantity of bleeding along with the marked visible pulsations of the interdental papillae on the lingual aspect of the affected tooth, lead to the doubt that it might be a vascular lesion. Based on the clinical and radiographical signs, an initial provisional diagnosis of arteriovenous malformation of the mandible was made.

Treatment

Surgical resection was carried out at the affected site of left mandibular posterior region and tissue samples were sent for histopathology study (Figure 2A, 2B, 2C). The results of the histopathology study (Figure 3A, 3B) confirmed the diagnosis of Arteriovenous Malformations of mandible.



Fig. 1A: Assessment of periodontal status with probing depth measurement



Fig. 1B: OPG showing bone loss at the affected site



Fig. 1C: IOPA X-ray showing furcation involvement and bone loss

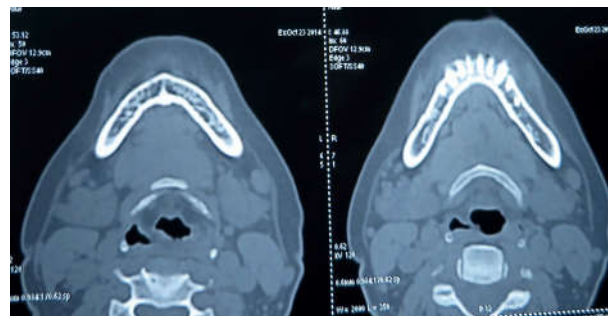


Fig. 1D: CT scan of mandible

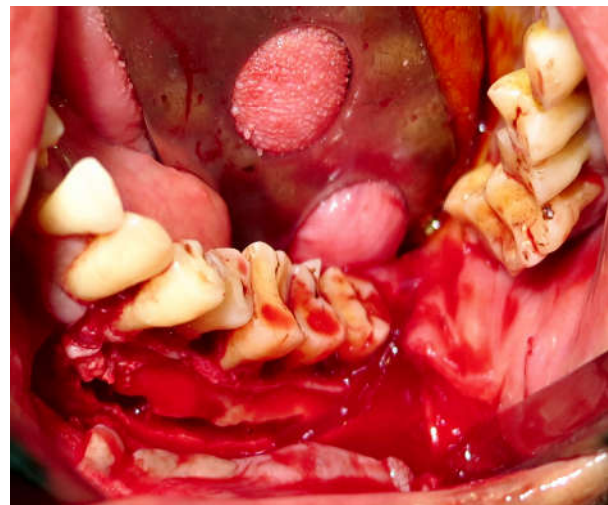


Fig. 2A: Surgical resection of the affected area

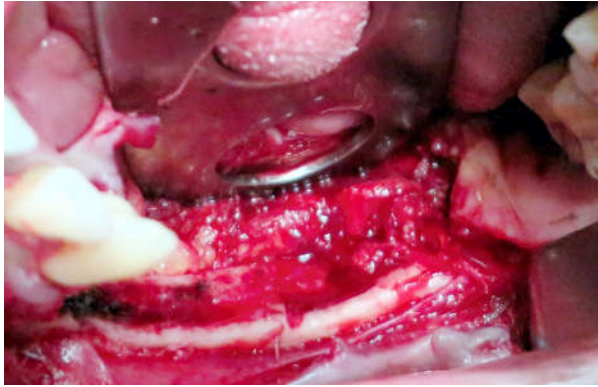


Fig. 2B: After resection of the affected area



Fig. 2C: Resected segment of the mandible

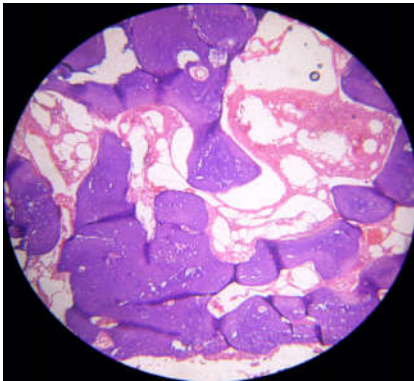


Fig. 3A: Scattered bony trabeculae with interspersed fibrofatty marrow (x 10X, H & E)

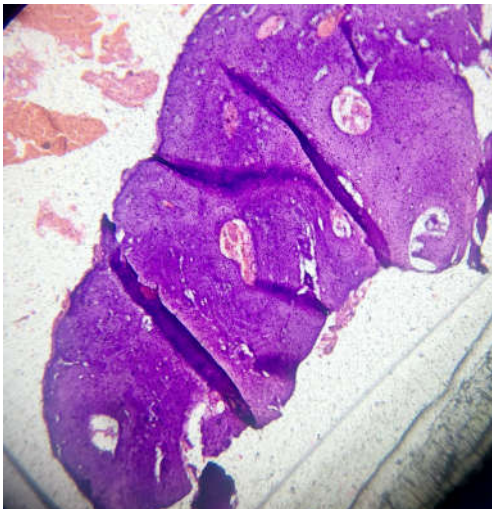


Fig. 3B: Dilated blood vessels with RBCs(x 40X, H & E)

Discussion

Arteriovenous malformation of mandible is a very rare clinical presentation but can prove to be life threatening if not diagnosed timely before carrying out procedures like periodontal surgery and other dental surgical procedures. These malformations can be present as infrequent episodes of gingival bleeding, slow growing tissue mass or hemorrhage. In such a case a simple clinical method like dental extraction, biopsy or periodontal flap surgery can induce massive bleeding which in some cases may pose a serious risk to the life of the patient [1,3].

AVMs develop due to defects in the process of embryogenesis and thus are invariably present since birth. These defects keep growing as the individual grows in age and has the potential to manifest at any time [4-5]. Depending on the rate of blood flow AVMs can be classified in to "slow flow" (capillary & venous based) or "fast flow" (arteriovenous) [6]. Usually the diagnosis is by imaging around the affected tooth and checking the presence of a lytic lesion [7]. Traditional treatment involves surgical resection at the affected site. This case report describes a unique case where a 54-year-old woman reports with a complaint of food lodgment and infrequent bleeding from the gingiva in the posterior region of the mandible. The pulsations of the gingiva at the affected site were clearly visible and have been documented as a video proof. Prior studies on AVM by Jhonsen LM et al have reported that vascular malformations near the alveolar bone are often present clinically as mobility of tooth and pericoronal bleeding [8]. As per Anderson JH et al gingival bleeding at the affected site is one of the most common clinical manifestations documented in the cases of maxillofacial AVMs [9]. This particular case report chronicles the diagnosis of the AVM of the mandible only after thorough periodontal examination like probing depth measurement. The possible cause for the visible pulsations in the next day of the examination may be induced by the probing pressure exerted on the base of the infra bony pocket.

Maurizi M et al in their review found that AVMs are most commonly located in the horizontal portions of the lower jaw compared to very few cases where it has been documented in condylar process or in the temporomandibular joint [10]. In case of AVM an OPG/CT may disclose multifocal radiolucent areas that resembles a soap bubble or honeycomb appearance with associated characteristics like - cortical expansion, bone loss around the tooth (mobility may or may not be present), dental dislocation and root resorption of the tooth [10].

Sofferman R.A et al in their study of bilateral AVM of mandible observed that a very less common radiographic appearance of bony spicules extending at right angles in to the lesion like sunray appearance, is diagnostic of AVM [11].

The traditional treatment of AVM has been endovascular embolization followed by the surgical removal of the lesion at the affected site [12], but lately various other treatment alternatives have been adopted like sclerotherapy, radiotherapy, super selective intra arterial embolization (SIAE) or surgical resection [13-15]. There has been discussions in prior literatures regarding the correct approach to treat AVM of mandible. D. Liu et al in their study concluded that intra osseous glue sclerotherapy is a less invasive and conservative compared to surgical alternatives [17]. The goal of pre surgical embolization is to reduce the size of the ANM lesion so that during surgery the extent of mandibular resection is limited. F. Angerio et al in his study found that pre surgery embolization did not result in any appreciable reduction in the size of the AVM lesion or the extent of surgical resection [18]. Segmental mandibular resection has been proposed as the treatment modality for the extensive lesions followed by osseous reconstruction [19]. W. Chen et al in their case studies have stated that surgical resection was an important treatment modality for the management of AVM where as radiotherapy or sclerotherapy may not be so effective. Piercel MP et al have stated in their study that partial or complete surgical resection of the affected site is a radical but effective mode to treat AVM of mandible [20]. Thus there are adequate evidences in the previous literatures that state that, though aggressive but surgical resection is an effective management for the management of AVM.

Conclusion

AVM of mandible is of very rare occurrence and any dental surgical procedure carried out without diagnosing it can lead to serious operative or post operative complications, the most common complication being extensive hemorrhage that might prove fatal. In this case the patient reported with a general complaint of bleeding gums and periodontal problems. But a thorough periodontal investigation revealed the underlying arteriovenous malformation, which was further confirmed by histopathology. Thus a proper periodontal investigation saved the patient from any potential life threatening complications. This is of greater significance in developing countries like India where the awareness and knowledge regarding

periodontal health is still not widespread. Hence a good diagnosis by a periodontist, taking in to consideration not only the periodontal symptoms but also the possible underlying malformations will of immense benefit to the patients.

Conflict of Interest

No potential conflict of interest relevant to this article was reported

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