



Bleeding After Tooth Extraction: “Journey from Dental Chair to Catheterization Lab”—A Case Report

Bishav Moahn¹ · Rajesh Chand Arya^{2,5} · Sameer Kaura³ · Aditya Aggarwal⁴ · Eeshan Ralhan⁴

Received: 26 August 2025 / Accepted: 10 January 2026
© The Association of Oral and Maxillofacial Surgeons of India 2026

Abstract

Background and purpose: Extraction of tooth is a well-defined procedure. We present a case of uncontrolled massive bleeding after the extraction of tooth no. 38 where we used gelatine particles under vision with DSA and fluoroscopy in cath lab.

Method: When all routine measures failed to control bleeding, patient was taken to cardiac catheterization laboratory and vascular angiogram followed by digital subtraction angiogram (DSA) were done, which revealed malformation of inferior alveolar artery.

Result: The feeding vessels to this were reached from femoral artery and embolization done successfully with gelatine particles.

Conclusion: To the best of authors knowledge, this is the first case report where bleeding from inferior alveolar artery malformation is successfully controlled with vascular embolization of gelatine particles under DSA and angiogram in cath lab.

Keywords Vascular catheterization · Dental extraction · Endovascular embolization · AV malformation · DSA · Inferior mandibular artery

Introduction

Arterio-venous malformations in the jaw are extremely rare, fewer than 200 cases reported in the literature [1]. Only six cases of extraosseous submandibular AVMs have been reported, out of which, three cases of AVMs are involving the mandible [2]. Risk of prolonged bleeding in cases of third molar removal surgery is 0.2% to 1.4% [3]. During dental extractions, there may be bleeding from abnormal vessels, which can result in life threatening emergency as the area is highly vascular and there is always a risk of airway being compromised due to blood aspiration or hematoma formation [4]. We present a case of malformation of inferior alveolar artery which resulted in massive bleeding after tooth extraction. The diagnosis of the malformation could be made with DSA imaging and successfully managed with transcatheter embolization of malformed vessels by gelatin particles. This is probably the first case reported where the bleeding from inferior alveolar artery malformation was managed successfully with transcatheter embolization.

✉ Rajesh Chand Arya
drrajesharya@yahoo.com

Bishav Moahn
bishav_68@yahoo.co.in

Sameer Kaura
kaurasameer@gmail.com

Aditya Aggarwal
aditya.aggarwal3003@gmail.com

Eeshan Ralhan
ralhaneeshan@gmail.com

- ¹ Department of Cardiology, Dayanand Medical College & Hospital, Ludhiana, Punjab, India
- ² Hero DMC Heat Institute, Ludhiana, Punjab, India
- ³ Dr. Sameer's Dental & Maxillofacial Clinic, Udham Singh Nagar, Ludhiana, Punjab, India
- ⁴ Dayanand Medical College & Hospital, Ludhiana, Punjab, India
- ⁵ Department of Cardiac Anaesthesia, Hero DMC Hear Institute, Civil Lines, Ludhiana 141001, Punjab, India

Case Report

A 20 yrs. old male, with a known case of chronic liver disease, presented with history of jaundice and esophageal varices. He was referred to department of dental sciences for management of bleeding gums and tooth mobility. On examination, the patient had grade 2 mobility of tooth no. 38. His pre-op basic investigations were normal including bleeding profile (PT 12.7 and INR 1.3). Patient was planned for extraction of the concerned tooth. Medical clearance was taken related to the general condition and risk associated. Under local anaesthesia, the tooth was elevated and extracted with the help of lower mandibular molar forceps. The extraction was without any osteotomy or fracture of tooth. Immediately after extraction, a torrential bleed was noticed. Pressure packs and other local measures were tried but bleeding continued. As this was bright red color bleed, probably arterial blood, we involved other departments to manage this blood loss.

Patient became hemodynamically unstable with a heart rate of 106/min and BP of 94/60 mmHg. The Hb had dropped from 11.0 gm/dl pre-op to 6.5gm/dl. As the bleeding was unexpectedly high and not controlled with routine protocol, it required some active intervention to stop the bleeding. One unit of blood was transfused before shifting patient to cath lab and second unit was going during the procedure. One unit was transfused after the cath lab. procedure was completed.

As it was an oral bleed, there was an additional risk of losing airway as well. Multi-disciplinary approach was used

involving maxilla-facial surgeon, cardiologist, cardiac anesthesiologists and critical care team. Vascular embolization (pulmonary, uterine, cerebral and other peripheral vessels) is a regular procedure in our institute. After discussion with the team, the patient was shifted to the cardiac cath lab. After angiogram and DSA scans, the team decided to go ahead with embolization procedure as the active bleeding required a quick and definitive procedure to stop bleeding.

As patient was agitated and hemodynamically unstable and the DSA procedure wanted completely immobilized patient, we planned to give general anaesthesia with endotracheal intubation with help of cardiac anesthesiologist. This helped to secure the airway also during the procedure. The interventionists performed an angiogram through right femoral artery under fluoroscopy. Selective cannulation of left external carotid artery was done, and facial vessels were mapped. On angiogram, a vascular malformation of inferior alveolar artery, present within the mandible, with multiple feeder vessels was seen which was supplying the base of tooth 38 (Video 1). A final diagnosis of bleeding of this inferior alveolar artery malformation after the extraction of tooth 38 was made, and it was planned to control the bleeding with vascular embolization using gelatin particles. Multiple DSA loops were imaged, and the bleeding segment was identified (Figure 1, Video 2). With the help of crushed gelatin foam (Gelfoam, Upjohn, Kalamazoo, MI) was used as an embolization agent. The feeding vessels of the malformed inferior alveolar artery were embolized in multiple attempts (Video 3). Finally, the bleeding was under control and the third molar area was sutured as routine after tooth extraction (Figure 2, Video 4). Blood and colloids were transfused, and he was ventilated for the next 12 h. His postoperative period was uneventful, and he was discharged from hospital after 5 days in healthy condition.



Fig. 1 Pre-procedure DSA of inferior mandibular artery showing abnormal blush due to malformation (white circle)

Discussion

The inferior alveolar artery is the main arterial supply to the mandibular teeth, which is a branch of the maxillary artery. After originating from the maxillary artery, the inferior alveolar artery enters the mandibular foramen and travels through the mandibular canal inside the mandible. The vessel gives incisive branches to supply the lower teeth. The inferior alveolar artery then exits the canal via the mental foramen to give rise to the mental branch, which goes on to supply the chin [5]. As the branches supply to the root of the teeth, the extraction of tooth might result in bleeding which is usually temporary and stops with application of pressure dressing and approximation suturing of the gum tissue, after the tooth extraction. Review of the literature shows that there are published reports of ligation of vessel

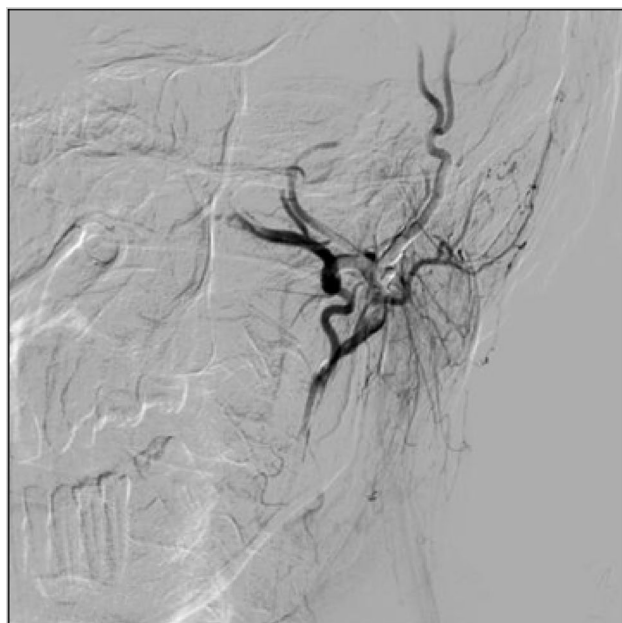


Fig. 2 Post-procedure DSA of inferior mandibular artery showing successful occlusion of feeder vessels to the vascular malformation, thus disappearance of blushing effect

or compression of the wound, but we could not find any reported case of the endovascular embolization of inferior alveolar artery malformation [6].

Angiographic embolization ensures shorter operative time and less blood loss. Different materials have been used for vascular embolization. The first agent used for embolotherapy was autologous blood clot and later fascial strips from dura and tensor fascia lata. Modern embolic agents are either temporary (gelfoam, collagen or thrombin) or permanent which include liquid agents (polyvinyl alcohol), coils (pushable or injectable), absolute alcohol (Ethanol), gel (Calcium gel), synthetic glue (N-butyl-2 cyanoacrylate, cast (Onyx cast) and detachable plugs and balloons. We used gelatin particles as agent for embolization of the malformation. Gelatin foam: a biologic substance made from purified skin gelatin, was first used in 1964 for intravascular embolization. It is available in sterile sheets and as a powder comprised of 40 to 60 μm particles (Fig. 2). Gelatin foam particles aggregate or swell on hydration into larger particles and occlude the vessel. Advantages of Gelfoam include low cost, versatility of use, and extensive clinical experience [7]. The procedure itself is less traumatic and non-invasive compared to other surgical approaches because the approach to the malformation is very difficult as the vessels pass inside the alveolar bony mandible. This difficult access to the bleeding malformation made the role of plastic or vascular surgeon challenging as it required more invasive procedure to reach the bleeding malformation. Furthermore,

after embolization, the treatment effect can be checked immediately through angiography [8].

When the ligation of the injured vessels is performed immediately, it is the best treatment option for bleeding in the floor of mouth, instead of a surgical procedure. However, if the bleeding continues, there is a fundamental limitation in the surgical exploration of the bleeding focus, given the progressive obliteration of the airway patency.

Limitations

One of the limitations of our case is that the diagnosis of AV malformation is based on radiological imaging as there was no way to have the sample for pathology diagnosis. Also, this case report is based on the single case report and there is no other report in literature to support the embolization procedure in such a case. Also, we do not have the x-rays and other reports available with us as patient came from other city and did follow with his local doctor.

Conclusion

Our case report highlights the importance of endovascular embolization as a treatment option for bleeding inferior alveolar artery malformation after tooth extraction. The procedure presented is a safe, reliable, minimally invasive and lifesaving and may be applied in emergency situations as an alternative to surgical intervention, which carries a higher risk to control bleeding inferior alveolar artery after tooth extraction.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s12663-026-02941-w>.

Author Contributions Bishav Moahn: Interventional cardiologist performed the procedure, Rajesh Chand Arya: Concept and design of the report, Sameer Kaura: Conceptualize the procedure, Aditya Aggarwal: Preparation of the manuscript, Eeshan Ralhan: Preparation of the manuscript.

Funding Nil.

Declarations

Conflict of Interest Nil.

Ethical Approval Written informed consent were taken from the patient as per the institute policy.

References

1. Fan X, Qiu W, Zhang Z, Mao Q (2002) Comparative study of clinical manifestation, plain-film radiography, and computed tomographic scan in arteriovenous malformations of the jaws. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 94:503–509
2. Nabeel AK, Jacob JE, Bose T et al (2018) Great radiologic imitators: arteriovenous malformation of Mandible – a case series. *Contemp Clin Dent* 9(3):502–508
3. Iwabuchi H, Imai Y, Asanami S, Shirakawa M, Yamane GY, Ogiuchi H et al (2014) Evaluation of postextraction bleeding incidence to compare patients receiving and not receiving warfarin therapy: a cross-sectional, multicentre, observational study. *BMJ Open* 4(12)
4. Darriba MA, Mendonça-Caridad JJ (1997) Profuse bleeding and life-threatening airway obstruction after placement of mandibular dental implants. *J Oral Maxillofac Surg* 55:1328–1330
5. Bavitz JB, Harn SD, Homze EJ (1994) Arterial supply to the floor of the mouth and lingual gingiva. *Oral Surg Oral Med Oral Pathol* 77:232–235
6. Loukas M, Kinsella CR Jr, Kapos T et al (2008) Anatomical variation in arterial supply of the mandible with special regard to implant placement. *Int J Oral Maxillofac Surg* 37:367–371
7. Aida S, Tozer KR, Chen J (2008) An overview of embolic agents. *Semin Intervent Radiol* 25(3):204–215. <https://doi.org/10.1055/s-0028-1085930>
8. Bynoe RP, Kerwin AJ, Parker HH 3rd et al (2003) Maxillofacial injuries and life-threatening haemorrhage: treatment with transcatheter arterial embolization. *J Trauma* 55:74–79

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.