

Case Report

A case of venous malformation of maxillary alveolar ridge managed with polydocanol injections and Er:Yag laser: a case report

Andrews N. Kumar^{1*}, Chandan Mishra², Sandeep Mehta¹, Emaan Preet¹, Gaurav Dua¹

¹OMFS, Leh, Ladakh, Jammu and Kashmir, India

²OC MDC, Gwalior, Madhya Pradesh, India

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*Correspondence:

Dr. Andrews N. Kumar,

E-mail: navin.andrews@gmail.com

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ABSTRACT

We present a case involving a venous malformation on the left maxillary alveolar ridge in an adult, which was successfully managed using a combination approach of Polidocanol injection and soft tissue Er:Yag laser. Vascular malformations (VM) encompass a group of anomalies affecting capillary, venous, lymphatic, and arterial systems, characterized by structural irregularities in blood vessels without endothelial proliferation. These anomalies are typically present at birth, can manifest in childhood or adolescence, and persist throughout life. In this specific case, a 65-year-old female patient presented with a bluish-black growth on her left maxillary alveolar ridge, later diagnosed as a VM. The treatment regimen involved Polidocanol injections, Quilting sutures, and ultimately excision with a 980-nm soft tissue Er:Yag laser. This combined approach, employing sclerotherapy, Quilt suturing, and Er:Yag laser with appropriate precautions, proved effective in managing the VM of the maxillary ridge, underscoring the significance of utilizing pharmacologic and surgical techniques for optimal management of vascular lesions.

Keywords: Vascular malformation, Pyogenic granuloma, Venous malformation, Er: Laser, Sclerotherapy

INTRODUCTION

Vascular malformations (VM) refer to a diverse group of conditions characterized by anomalies in the capillary, venous, lymphatic, and arterial systems. These anomalies result in structural irregularities within blood vessels, these malformations tend to become apparent in childhood or adolescence and persist into adulthood.¹ They are differentiated based on the specific vessels involved (capillary, venous, arterial) and their hemodynamic traits, which can vary between patterns of low flow and high flow.²

The primary step in the management of patients with vascular malformations is the assessment of blood flow rate, whether it is slow or fast within the lesion. Complete surgical excision is challenging in most cases, given the

potential for substantial intraoperative bleeding and a tendency for condition to recur. For slow-flowing lesions that lack direct or indirect involvement with bone structures, the option of resection can be explored subsequent to multiple sessions of sclerotherapy.³

CASE REPORT

A 65-year-old female reported to OPD with a chief complaint of a small, bluish-black swelling over the left maxillary alveolar ridge since the last two months. There was no history of trauma, pain, ulceration, difficulty in speech and swallowing. Her past medical and dental history was non-contributory. Her personal history revealed, average oral hygiene and multiple dental extractions over the years. Extraoral examination revealed nothing significant, with no extraoral nodal

involvement. On intraoral examination, the patient was found to be an average OHI index and missing 11,13,14,15,17,21,23,24,25,26,27,36,37,45 & 47.



Figure 1: Lesion on maxillary alveolar ridge.

The examination of the maxillary alveolus showed a well demarcated bluish-black, soft swelling of approximately 0.8×1 cm in dimension in the left canine region (Figure 1). The surface of the swelling was regular and smooth with a non-pedunculated base. The borders of the swelling were well-defined. There was neither any sign of superficial ulceration nor any discharge. An IOPA radiograph was carried out to rule out any retained root stumps in the alveolus. Maxillary sinusitis was also ruled out by ENT specialist. On palpation, the swelling was non-tender, smooth to touch, compressible, soft and showed blanching on the application of mild pressure and no pulsation and bruit was felt. With these clinical and radiological findings, a provisional diagnosis of vascular malformation and pyogenic granuloma was given.

The patient was sent for Doppler flowmetry and it was confirmed that lesion is a low-flow Vascular Malformation with multiple small collaterals. Based on the clinico-radiological examination, age and remoteness of the center a combination approach for treating the lesion was formalized. The management was carried out in three phases:

Sclerotherapy with injection polydocanol: A total of 05 injections of polydocanol were administered under strict observation and anaphylaxis management protocol, for a duration of 05 days. A fine 26 gauge needle was used to inject the sclerosant tangentially intralesionally after lingual nerve block.

Quilting sutures: After the third dose of Inj Polydocanol, Quilting sutures were placed along the periphery of the lesion using a 4-0 Vicryl suture. This was done to reduce vascularity and diminish the collateral formation in the lesion.

Surgical excision with Er:YAG LASER: After the last dose of Inj Polydocanol and Quilting suture, the patient was taken up for surgery under GA for excision of the AVM left maxillary alveolar ridge within 24 hours. In operation theatre lesion was infiltrated first with 2% Lignocaine Hydrochloride with 1:80,000 adrenaline. After waiting for 5 minutes, excision of the lesion was done using soft tissue Er:YAG LASER. Hemostasis achieved and the wound was left to heal by secondary intention, then patient was extubated. Postoperatively Tab Augmentin 625 mg (TDS/5 days), Tab PCM 500mg (TDS/3days) Choline salicylate gel, and chlorhexidine mouthwash were also prescribed to the patient before discharge after 24 hrs observation.



Figure 2: Low flow vascular lesion.



Figure 3: Surgical excision of lesion.

On complete excision the lesion, tissue sent for histopathological examination which revealed polypoidal tissue lined by stratified squamous epithelium with focal areas of ulceration (Figure 2). Sub epithelium was composed of lobules of small capillaries with plump endothelial cells having round to oval nuclei along with large central feeder vessels. No atypia was seen. The surrounding fibrous tissue was infiltrated by mixed inflammatory infiltrates comprising lymphocytes, polymorphs, and plasma cells. This histopathological picture gave us the definitive diagnosis suggestive of

Venous malformation (VM). The patient was evaluated after one week. The healing was found to be satisfactory (Figure 3).

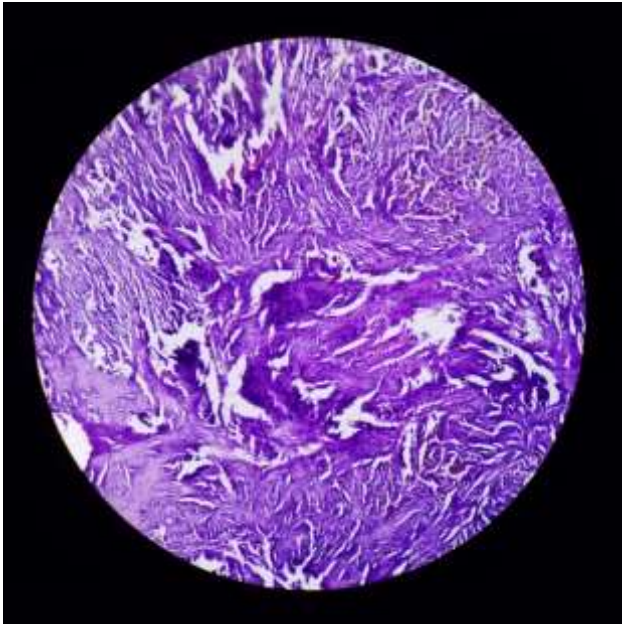


Figure 4: Histopathological confirmation of vascular malformation.

DISCUSSION

The pathophysiology of Vascular Malformations is still imprecise and their occurrence is rare. They are present from birth, although they may not be apparent and can remain quiescent throughout adulthood. Vascular malformations in the oral cavity are quite common and can cause potentially serious clinical problems, such as recurrent haemorrhage, ulceration, pain, and difficulty with speaking, mastication or swallowing.³ The most common sites in the oral cavity are anterior two-thirds of the tongue, palate, and gingiva and buccal mucosa.¹ In our case, the lesion was present in the left residual alveolar ridge.

Establishment of diagnosis may be obtained with ultrasound (USG), and computed tomography (CT) but magnetic resonance imaging (MRI) is the examination of choice. MRI accurately defines the extent and depth of vascular anomalies of head and neck region. It also provides information about the invasiveness of the lesion which is important in surgical planning. Colour Doppler USG will often reveal areas of high flow which cannot be appreciated on clinical examination but full characterisation of the angio-architecture of high flow lesions however can reliably be made with selective and superselective catheter, digital subtraction angiography (DSA).⁵

Management of vascular lesions includes surgery, systemic corticosteroids, interferon- α , laser, embolization, sclerotherapy, cryotherapy, and radiation.^{6,7}

The treatment employed in our case was the combination of sclerotherapy, Quilting sutures, and surgical excision using soft tissue Er:YAG laser. Sclerotherapy with Injection Polydocanol is simple to use, inexpensive, readily available and hospitalization is not required in most of the cases and causes no blood loss. Some drawbacks include anaphylaxis, postoperative pain and burning sensation, tissue necrosis and sloughing.⁸

Soft tissue Er:YAG lasers present a significant advantage in management of vascular malformations since it causes negligible hemorrhage, disinfection of surgical wound and less post-operative complications which are advantageous to patients.⁹ The combination of laser with sclerotherapy minimizes pain during the surgery as well as postoperatively and normally negates the need for sutures thereby enhancing patient comfort and improving the surgical outcome.¹⁰

CONCLUSION

The management of vascular lesions can be challenging. The treatment approach should be planned according to the definitive diagnosis, location of lesion and prognosis/type of vascular malformation. The successful diagnosis and management of this lesion are very important as it poses additional challenges in a remote location. A novel technique of combining sclerotherapy, quilting sutures, and surgical excision using soft tissue Er:Yag laser would improve clinical outcomes not only from the surgical point of view but also from the patient comfort aspect. As seen in our case report.

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REFERENCES

1. Manjunath SM, Shetty S, Moon NJ, Sharma B, Metta KK, Gupta N, et al. Arteriovenous malformation of the oral cavity. *Case Rep Dent.* 2014;2014:353580.
2. Monteiro LS, Azevedo A, Cadilhe S, Sousa D, Faria C, Martins M. Laser treatment of vascular anomalies of oral cavity. *Rev Port Stomatol Med Dent Maxillofac Surg.* 2013;54:171-5.
3. Langdon JD, Patel MF, Ord RA, Brennan PA. *Operative oral and maxillofacial surgery* (second edition) 2010: 422-426.
4. Shetty DC, Urs AB, Rai HC, Ahuja N, Manchanda A. Case series on vascular malformation and their review with regard to terminology and categorization. *Contemp Clin Dent.* 2010;1:259-62.
5. Duncan C, Fourie PA. Vascular malformations. Part 2. Current classification of vascular malformations. *S Afr J Radiol.* 2004;8:23-30.
6. Neville BW, Damm DD, Allen CM, Bouquot JE. *Oral Maxillofac Path.* 2nd edition. Philadelphia: WB Saunders. 2002: 447-449.

7. Shafer's textbook of oral pathology, 7th ed. Elsevier; 2012: 144-148.
8. Parvathidevi MK, Koppal S, Rukmangada T, Byatnal AR. Management of haemangioma with sclerosing agent: A case report. *BMJ Case Rep* 2013;2013.
9. Genovese WJ, Santos MT, Faloppa F, Merli LA. The use of surgical diode laser in oral hemangioma: A Case Report. *Photomed Laser Surg.* 2010;28:147-51.
10. Gokhale ST, Naik NS, Singla D, Singh A, Bhattacharya D. The Combined use of Diode

LASER & Conscious Sedation in the Excision of Pyogenic Granuloma in A Nine-Year-Old Patient. *J Clin Diagn Res.* 2015;9(12):ZD01-02.

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