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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/18752

DOI URL: <http://dx.doi.org/10.21474/IJAR01/18752>



RESEARCH ARTICLE

THE SUCCESS OF ND-YAG LASER IN THE TREATMENT OF VENOUS MALFORMATIONS OF THE ORAL MUCOSA ABOUT TWO CASES

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Manuscript Info

Manuscript History

Received: 20 March 2024

Final Accepted: 27 April 2024

Published: May 2024

Key words:-

Nd-Yag Laser, Superficial Venous Malformations the Oral Mucosa, Treatment

Abstract

Venous malformations are the result of errors in endothelial cell morphogenesis, causing disorganized angiogenesis and intimal smooth muscle proliferation. (1) This results in the formation of dilated networks of venous lakes that are hemodynamically non-functional. (1,2) Depending on location, they may go unnoticed for years prior to presentation, and range from asymptomatic superficial varicosities to large deforming craniofacial lesions. The management of venous malformation will depend on the localization and expansion of the malformation, and there are multiple therapeutic approaches: sclerotherapy, surgery, and medical management. Lasers, another modality for treating VMs. we report two cases of success with the Nd Yag laser in the treatment of superficial venous malformations the oral mucosa.

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Introduction:-

Venous malformations are the result of errors in endothelial cell morphogenesis, causing disorganized angiogenesis and intimal smooth muscle proliferation. (1) This results in the formation of dilated networks of venous lakes that are hemodynamically nonfunctional. (1,2) Depending on location, they may go unnoticed for years prior to presentation, and range from asymptomatic superficial varicosities to large deforming craniofacial lesions. The management of venous malformation will depend on the localization and expansion of the malformation, and there are multiple therapeutic approaches: sclerotherapy, surgery, and medical management. Laser, another modality for treating superficial VMs.

Cas Report:

40 -year-old male patient with a blue swelling on the underside of the tongue since childhood, which was painful and bled on contact during eating. Dermatological examination the swelling was blue in color, soft in consistency, non-pulsating, ultrasound with Doppler revealed a local venous malformation. The patient was treated with two sessions of Nd-YAG laser (figure A) and topical treatment scar repair cream with good improvement and the complete resolution of the lesions. (figure B)

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Fig. A : VM on tongue (a) before laser : bluish swelling of the tongue, (b)immediately after laser bleaching of lesions

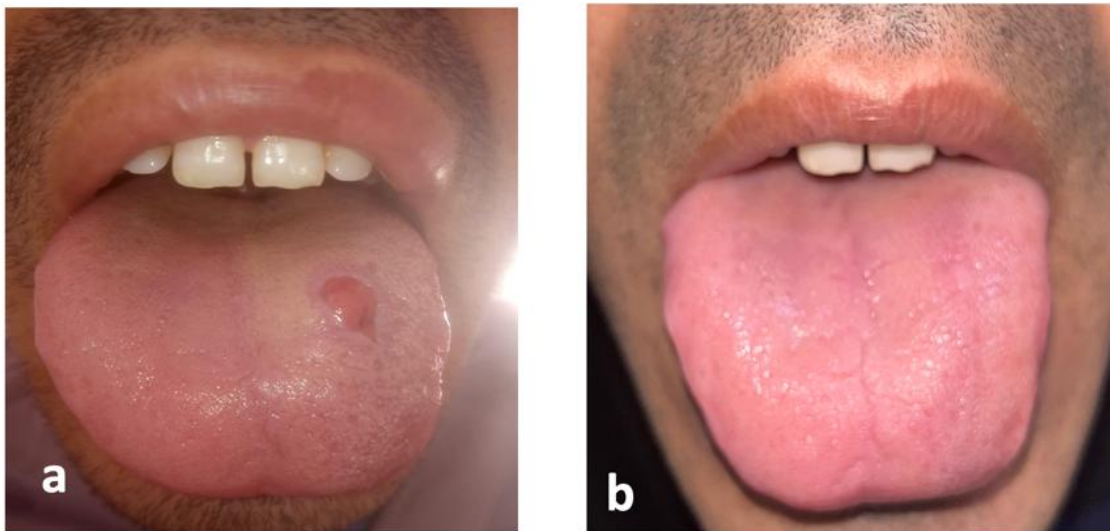


Figure B : progress 1 month after laser (a) , progress 2 months after laser total disappearance of MV (b)

A 6-year-old child was presented to the pediatric dermatology department by his parents because of a bluish lesion on the oral mucosa, present since birth, which increased in volume with crying and sometimes became painful,

Dermatological examination revealed a bluish swelling on the mucosal of the lower lip, soft in consistency and non-pulsatile on palpation, ultrasound with Doppler revealed a local venous malformation. The patient was treated with two sessions of Nd-YAG laser and topical treatment scar repair cream with good improvement and the complete resolution of the lesions. (figure C)

Discussion:-

Venous malformations (VMs) are slow-flow congenital vascular lesions that are the consequence of a localized defect in the embryological growth of the venous branch of the circulation. The presenting clinical feature of VMs of the head and neck is a soft, compressible, non-pulsatile bluish mass. They expand slowly throughout life and with increased venous pressure. They never proliferate and never involute. VMs swell and enlarge in a depending position. The swelling is tender and over time distortion of the facial features becomes apparent. (1-2)

Symptoms depend on the location and size of the lesion and may be associated with discomfort, functional impairment, hemorrhage, direct and indirect mass impact, and severe cosmetic problems. The management of venous malformations depends on the location and extent of the malformation and there are several therapeutic approaches: sclerotherapy, surgery, and medical management.

Lasers, another treatment modality for VMs, were first used in 1963 to treat skin lesions. In 1973, they were discovered to be an effective treatment modality for angiomas, a type of vascular malformation.⁶ Since then, the theory of selective photo thermolysis has been developed, which postulates that lasers are effective because their specific wavelengths are absorbed by, and cause thermal damage to, specific tissues. (3) The two modalities have shown to be successful in 72% of patients. (3)

In a similar way, Nd: YAG laser therapy has been identified as an important modality for the reduction of VMs in the respiratory tract and oral cavity. (4,5) In this setting, the non-contact Nd: YAG therapy is applied superficially to treat mucosal VMs to a depth of 8 mm. For treatment of the mucosa and tongue, the mean fluence was approximately 10% higher (103.1 J/cm²) (6). A modified form of Nd: YAG laser therapy, known as Gentle Nd: YAG therapy (Gentle YAG), allows the 1064 nm laser to be used for cutaneous VMs. The laser Nd: YAG, energy from laser is absorbed by deoxy and oxyhemoglobin, resulting in selective photocoagulation within veins and arteries and subsequent ablation of VMs. (4) In addition, the laser can also cause collagen denaturation and subsequent fibrosis of the VM. However, Gentle YAG is different from standard Nd: YAG in that it employs dynamic cooling immediately after the laser penetrates the epidermis. This cooling protects the overlying and surrounding skin from thermal damage. With penetration up to 8mm, selective photocoagulation of venous structures and the ability to mitigate thermal damage. the laser Nd Yag may be useful as an adjunct or alternative to sclerotherapy or surgery, however, the efficacy and safety of this tool has not been systematically evaluated.



Figure C : MV on the oral mucosa before laser (a) after laser ND Yag (b)

Conclusion:-

Laser remains a therapeutic option for curative venous malformations. Neodymium: yttrium aluminum garnet (Nd: YAG) laser therapy for venous malformations (VMs) of the head and neck is a rather new therapeutical option in addition to sclerotherapy and surgery. Our observations show that laser is recommended for mucosal venous malformations that do not extend deep into the body.

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