

980 NM DIODE LASER IN ORAL SURGERY: LASER REMOVAL OF HAEMANGIOMA

Ahmed H. Ayoub, Shady A. M. Negm

ABSTRACT

Haemangioma is the most common benign tumor of vascular origin of the head and neck region. This paper reports the management of a 39 year old female patient with capillary haemangioma on the ventral surface of the tongue and the floor of the mouth using 980 nm diode laser.

Keywords: Haemangioma; Benign Tumor or Tumor like growth; Laser; Diode Lasers; Laser vs. Surgery

Introduction

Vascular anomalies comprise a widely heterogeneous group of tumours and malformations. Haemangioma are the most common benign vasoformative tumours of adults.^{1,2} They usually are manifested within the life, exhibit a rapid proliferative phase, and slowly involute to near complete resolution. There are many ways to classify haemangiomas.³ Haemangiomas are broadly classified into capillary, cavernous, and miscellaneous forms like verrucous, venous, arteriovenous haemangiomas, and so forth.^{3,4} Capillary haemangiomas further include juvenile, pyogenic granuloma, and epithelioid haemangioma. The term haemangioma has been commonly misused to describe a large number of vasoformative tumours. However, the International Society for the Study of Vascular Anomalies (ISSVA) has recently provided guidelines to differentiate these two conditions, according to the novel classification first published by Mulliken et al. in 1982.^{3,5} The possible sites of occurrence in oral cavity are lips, tongue, buccal mucosa, and palate. Despite its benign origin and behaviour, it is always of clinical importance to the dental profession and requires appropriate management.^{3,6} This paper reports the management of a 39 year old female patient with capillary haemangioma on the ventral surface of the tongue and the floor of the mouth using 980 nm diode laser.

Case Report

A 39 years old female with a red coloured mass in the lower surface of tongue in the floor of the mouth was referred our out patient clinic. Patient complains of pain in the oral cavity. Patient had A body temperature 38°C and respiratory rate of 22 Cycles/min with a recorded blood pressure of 140/90 mmHg and a pulse rate of 80 beats /min. Extra oral examination was normal and on intra oral examination a soft tissue mass of red colour was present on the ventral aspect of the

tongue involving the floor of the mouth (Figure 1,2). The mass was 2.2 inch X 1.9 inch size having irregular surface with red-dish colour and tender on palpation with fluctuation. The lesion was present for the last eight years. Based on the clinical findings and history a provisional diagnosis of hemangioma was made. The removal of the hemangioma was done with 980 nm diode laser. The patient was content with the laser surgery due to the painless procedure either intra-operatively or post-operatively. The healing period of 10 - 15 days was found to be uneventful.

Discussion

Lasers emit a precise beam of concentrated light energy.⁷ This light is unique in that it is comprised of a single wavelength, expressed in nanometers. The wavelength generated is based on the active medium present in the laser device and can be a solid (diode) or gas (CO₂ or Argon). The diode laser is considered a solid, with a semiconductor chip embedded with crystals, making the device smaller and lighter. The active medium determines the wavelength, varying by the makeup of the crystals. The diode wavelengths are in the near infrared spectrum, typically from 800 nm to 980 nm. The wavelength determines the absorption characteristic in biologic tissues. Absorption of laser light by biologic tissue determines efficiency of surgical removal. The various components of the biologic tissue determine whether laser light will be absorbed. Diode lasers are well-absorbed by hemoglobin and pigmented tissue and, to a lesser degree. Different wavelengths are absorbed by soft tissue at varying rates, depending on the type of soft tissue. Keratinized tissues, containing less blood, require the use of lasers with higher wavelengths or the use of more power in general. The practitioner must match the wavelength to the specific tissue, because specific wavelengths provide great precision, minimizing potential risk of lateral tissue damage.⁸

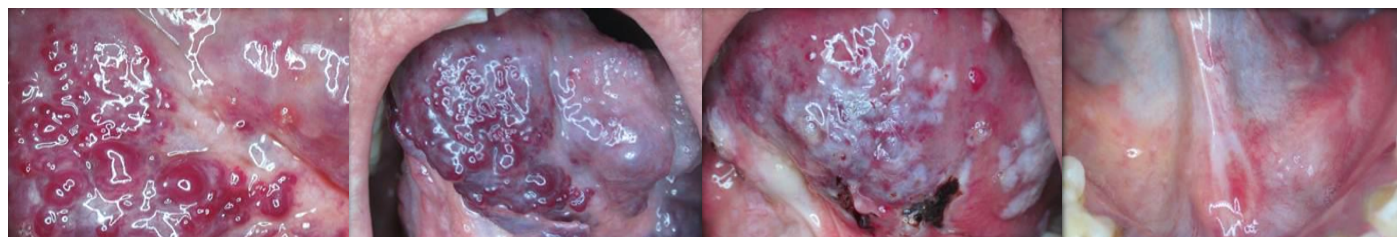


Figure 1. Showing the Haemangioma mass in the floor of the mouth. Figure 2. Showing the Haemangioma mass in the ventral surface of the tongue, Figure 3. Showing the effect of the diode laser during the procedure "Coagulated blood", Figure 4. Showing the ventral surface of the tongue and the floor of the mouth after removal of a lesion.

Several researchers refer to the clinical uses for lasers with the aim of bringing the laser to the dental practitioner to improve dental care.^{7,8} Currently, soft tissue applications have constituted the primary area for the clinical use of lasers in dentistry. Surgical removal of vascular tumor such as haemangioma is one of a common procedure in the field of oral and maxillofacial surgery.⁹

The safety and efficacy of laser systems and especially the diode laser is already evaluated for the treatment of oral surgery for example upper and lower frenulectomy, fibroma and excision of epulis fissuratum and gingivae hyperplasia. The advantages of lasers include a relatively bloodless surgical and post-surgical course, minimal swelling and scarring, coagulation and cutting minimal or no suturing, reduction in surgical time when infiltrated anesthesia is used and in a majority of cases much less or no post-surgical pain.⁹ On the other hand, main disadvantage of the laser surgery of such a case is the time required in comparison to blade incision which always requires anesthesia.⁹

In the present case, the use of diode laser was preferred in order to avoid any painful needle injection even if the clinician needs more time to complete the surgery procedure. The whole procedure was performed without pain and no sutures were necessary. However, homeostasis was optimum immediately after the removal of the haemangioma.

Conclusion

Haemangioma is of benign origin and behaviour, but haemangioma in the oral cavity is of clinical importance. It often mimics other lesion clinically and requires appropriate clinical diagnosis and proper management.

Authors Affiliations

1. Ahmed H. Ayoub, President of Egyptian Society of Oral Implantology, Seville University, Spain, 2. Shady A. M. Negm BDS, Lecturer, School of Dentistry, Pharos University in Alexandria, Egypt, Diploma of Clinical Implant from Seville University, Spain, Professional Diploma of Infection Control from Oxford College, UK.

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How to cite this article

Ayoub AH, Negm MSA. 980 nm Diode Laser in Oral Surgery: Laser Removal of Haemangioma. *Int. J. Dent.Clinics*. 2012;4(4):48-49.

Address for Correspondence

Dr. Shady A. M. Negm BDS,
Dip. Clinical Implant, Seville University, Spain,
Professional Dip. Infection Control, Oxford College, UK,
Lecturer, Pharos University,
Implantologist, Smile Dental Center
Infection Control Consultant, Royal Dental Center,
Alexandria, Egypt.
Email: smngm@msn.com

Source of Support: Egyptian Society of Oral Implantology

Conflict of Interest: None Declared