



Treatment of Lymphangioma with CO₂ Laser in the Mandibular Alveolar Mucosa

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ABSTRACT

Objective: In this case report, treatment of lymphangioma (a red-purple vesicular appearance, nonulcerated lesion, located on the gingiva of the mandibular alveolar bone) with CO₂ laser on a 63-year-old female patient and 2 years clinical outcome is presented.

Background: Lymphangiomas are hemorrhagic, rare, benign hamartomatous tumors of lymphatic system have a marked predilection for the head, neck and oral cavity. Lymphangiomas are congenital lesions and are often present at or around the time of birth (60%). Among the dental laser systems, CO₂ laser is the most suitable instrument for the treatment of soft tissue pathologies because of its affinity for water-based tissues. The absorbed energy causes vaporization of the intra- and extracellular fluid and destruction of the cell membranes. A major advantage of the 10.600 nm wavelength CO₂ laser is its ability to seal blood vessels during surgery and to make the excision of vascular lesions with its hemostatic effect.

Methods: CO₂ laser application (focused CO₂ laser beam, 10.600 nm) was performed in a separate operation room at 3 watt (W), continuous wave (CW) with 90 degree angle tip under local anesthesia. The mouth was protected from reflection of the laser by wet gauzes. The wound formed by laser was left open to secondary epithelization. Excessive bleeding was not observed during the procedure. The wound formed by laser was left open to secondary epithelization. Neither sutures nor dressings were used after surgery. Only paracetamol and chlorhexidine digluconate mouthwash were prescribed during the postoperative period. There was no postsurgical complaints from the patient.

Results: CO₂ laser worked well while making the excision with its hemostatic effect. No recurrence was seen in the two years follow-up period.

Conclusion: CO₂ laser therapy can be used as a primary alternative method in the treatment of lymphangiomas. It can be safely used and recurrence may be less than conventional excision with scalpel. However, long-term clinical follow-up is necessary for the recurrence of the lesion.

Clinical significance: CO₂ laser treatment can be used safely in the treatment of lymphangiomas.

Keywords: Lymphangioma, CO₂, Laser.

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INTRODUCTION

Lymphangiomas are rare, benign hamartomatous tumors of lymphatic vessels, have a marked predilection for the head, neck and oral cavity.¹ Lymphangiomas, are congenital lesions and often present at or around the time of birth (60%). Ninety-five percent of the lesions arise before the age of 10 in the oral cavity.² In the neck and head area, the most common location is the submandibular region, followed by the parotid gland.³ When lymphangioma occurs in the mouth, the anterior two-thirds of the tongue is the most commonly affected region. In the oral cavity, lymphangioma also may occur in the palate, gingiva, buccal mucosal regions, lips and alveolar ridge of the mandible.^{1,4} Occurrence of lymphangioma in an adult is infrequent.⁵ Lymphangiomas were divided into three groups: simplex (capillary), cavernous and cystic.⁶ Various modalities have been reported for the treatment of lymphangiomas such as surgical excision, radiation therapy, cryotherapy, electrocautery, sclerotherapy, steroid administration, embolization, ligation and laser surgery.⁷ Among the dental laser systems, CO₂ laser is the most suitable instrument for the treatment of soft tissue pathologies because of its affinity for water-based tissues. The absorbed energy causes vaporization of the intra- and extracellular fluid and destruction of the cell membranes. A major advantage of the 10.600 nm wavelength CO₂ laser is its ability to seal blood vessels during surgery and to make the excision of vascular lesions with its hemostatic effect.⁸ Another benefits of CO₂ laser are, reducing the risk of metastasis; decreasing

postoperative pain and discomfort due to the formation of thermal neuromas at the nerve endings; immediate sterilization of wound surface due to the high temperature generated during the irradiation; and minimal or no wound contraction and scarring due to the presence of small amount of myofibroblasts; no need of sutures or wound dressings, and others.^{9,10}

In this case report, treatment of a lymphangioma with CO₂ laser in 63-year-old female patient is presented.

CASE REPORT

A 63-year-old female patient is referred to the department of oral and maxillofacial surgery for the excision of the hemorrhagic lesion. The past medical history was unremarkable. Intraoral examination revealed a red-purple vesicular nonulcerated lesion, about 1.5 cm long, located on the gingiva of the mandibular alveolar bone (Fig. 1). Treatment methods were evaluated and CO₂ laser therapy was chosen for this case. The excision of the hemorrhagic lesion was performed under local anesthesia, using 2% lidocaine with 1:100,000 epinephrine. CO₂ laser application was performed in a separate operation room at 3 watt (W), continuous wave (CW) with 90 degree angle tip (Fig. 2). The mouth was protected from reflection of the laser by wet gauzes. The wound formed by laser was left open to secondary epithelization. Excessive bleeding was not observed during the procedure. Neither sutures nor dressings were used after surgery. No medication, only paracetamol and mouthwash (chlorhexidine digluconate, Klorheks, Drog-san, Turkiye) were prescribed on the postoperative period. The specimen was sent to pathology department for histopathologic examination. Histopathologic evaluation revealed lymph vessels and the specimen was diagnosed as cavernous type lymphangioma (Fig. 3). Follow-up was performed on the 7th (Fig. 4) and 14th days. Complete



Fig. 2: Intraoral view of the operation area after the application of CO₂ laser

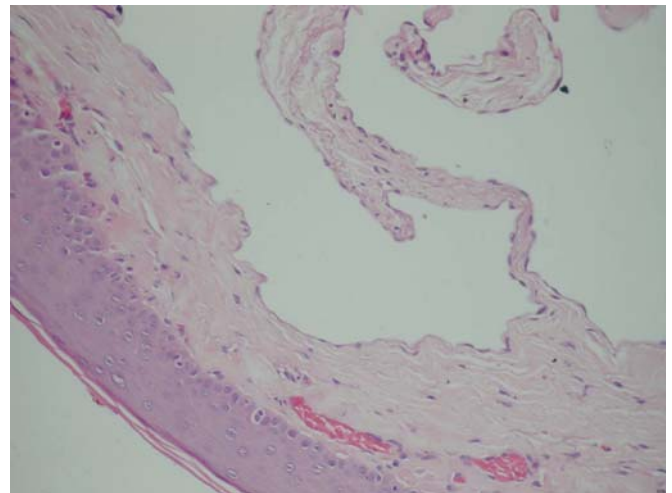


Fig. 3: Histopathologic photograph showing lymphatic vessels of the specimen (H and E x100)



Fig. 1: Preoperative intraoral view of the lymphangioma



Fig. 4: Intraoral view of the operation area after 1 week



Fig. 5: Follow-up of the patient after 2 years showing no recurrence of the lesion

healing of the wound was observed at the end of the second week uneventfully. No recurrence was seen in the 2-years follow-up period (Fig. 5).

DISCUSSION

Lymphangioma is a congenital abnormality of the lymphatic system which manifests at birth or before 2 years of age. Occurrence of lymphangioma in an adult is infrequent.⁵ In the present case report, 63-year-old female is presented. Usually this type of lesions presents superficially with a pebby vesicle like feature with so-called 'frog-egg' or 'tapioca-pudding' appearance. It may be present as a submucosal mass in the deeper layers of mucosa.¹¹ Differential diagnosis must be done with similar lesions like teratoma, lingual thyroid, thyroglossal duct cyst, heterotopic gastric mucosal cyst and granular cell tumor.⁸ Clinically, the color of the lesion can be easily differentiated from the bluish appearance of hemangioma. But the exact diagnosis should be based on histopathologic analysis. Surgery has been the main therapy for most hemangiomas. Surgery with scalpel, sclerotherapy and laser surgery are the various methods for the treatment of lymphangiomas. Treatment with surgical excision with scalpel has some disadvantages like postoperative pain, edema, bleeding, nerve injuries, prolonged lymphatic drainage from the wound, recurrent lesions, wound infections, unacceptable scar formation. It may not be possible also totally remove the lesion with classic surgery because of its infiltration to adjacent vital structures.² Although it is noted that hemangiomas respond well to injected sclerosing agents, lymphangiomas are relatively unresponsive.¹¹ The reasons for this lack of response are not understood, but it is possible that differences in the endothelial lining or the components of

the vascular wall may be contributory.⁴ CO₂ laser offers many benefits. Seal of blood vessels provide a clean surgical field allowing good visualization of the area and significantly reduce transoperative blood losses. Seal of lymphatic vessels results on less edema. Post- and transoperative bleeding was not observed in either of the two cases reported. Another important aspect is the reduction of the surgical time and the stress to both patient and surgeon in the postoperative period.^{9,10} Cauterization of the nerve endings is important as it causes formation of thermal neuromas causing less pain after surgery and avoiding the use of painkillers. The patients received only paracetamol (twice a day) during 3 days and 0.12% chlorhexidine mouthwash were prescribed on the postoperative period. Due to the high temperatures caused by the laser beam on the tissue, it shows the capability of sterilizing the site, reducing the risk of postsurgical infection and avoiding the use of antibiotic therapy. We prescribed no antibiotic to any of the patients and none showed signs of local infection on follow-up time.^{9,10}

In the literature, the recurrence of lymphangioma in the oral cavity was reported because of its infiltrative nature (41%).¹² But in the present case, the patient has been followed-up for 2-years and no recurrence was observed in the follow-up period.

CONCLUSION

CO₂ laser therapy can be used as a primary alternative method in the treatment of lymphangiomas. It can be safely used and recurrence may be less than conventional excision with scalpel. CO₂ laser is a fairly new application in routine surgical conditions with graduated pleasant consequences. However, long-term clinical follow-up is necessary for the recurrence of the lesion.

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