

Management of Mucocele by using Diode Laser: A Case Report

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ABSTRACT

Background: Mucoceles are common benign lesions of the oral cavity that develop because of salivary gland mucous extravasation or retention and usually related to trauma in the area of the lower lips. Mucoceles are painless and tend to relapse. The purpose of this report is to describe a clinical case of a 24-year-old female with a approx. 0.5 x 0.5 mm mucocele on the lower lip treated with a diode laser. Some important concepts are discussed in this report to help the diagnosis and treatment of this pathology with comfort and ease.

Keywords: Diode laser, Extravasation cyst, Mucocele.

INTRODUCTION

Mucocele (from the Latin terms **muco, or mucus, and coele, or cavity**) the as mucus-filled cavities that can appear in the oral cavity, appendix, gallbladder, paranasal sinuses or lacrimal sac.^{1,2} Mucoceles are one of the most common benign soft-tissue masses that occur in the oral cavity as a result of alteration in the minor salivary gland.³ It is a well-defined tissue swelling composed of pooled mucus that escaped into the connective tissue from a severed excretory duct.⁴ Two types of mucocele can appear in the oral cavity, namely, extravasation and retention type. Extravasation mucocele results from trauma to salivary glands duct and the consequent spillage into the soft tissues around this gland. Retention mucocele appears due to a decrease or absence of glandular secretion produced by blockage of the salivary gland ducts. The incidence rate is high and it is the second most commonly occurring lesion after irritational fibroma in the oral cavity,^{1,5,6} prevalent in the second decade of life with no sex predilection. Frequently involving lower lip; followed by tongue, buccal mucosa, palate, and

retromolar area. Clinically mucocele is few millimetres to centimetres, single or multiple, painless, fluctuant, and imparts transparent to a bluish hue. There is no sex predilection for mucocele and equal susceptibility of its occurrence is present in all age groups.⁷ Since mucocele has high recurrence rate, various treatment approaches have been made like surgical, cryosurgical, intralesional corticosteroids, marsupialization, micro marsupialization, and lasers.⁸ There are numerous treatment options available but the laser treatment shows more benefits and fewer relapses as compare to other treatment modalities. Different types of lasers are available with different wavelength and absorption coefficient, diode lasers especially 810 nm, is absorbed by melanin and haemoglobin. Due to this property diode laser has the ability to precisely cut, coagulate, ablate, or vaporize the target soft tissue.⁹ Diode lasers are easy to move and handle since they do not have water or airlines. Lasers causes less trauma, improved healing, and faster recovery time when compared with conventional

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methods. In this case report, a diode laser has been used for excision of mucocele on the lower lip.

CASE REPORTS

A systemically healthy 24-year female visited outpatient in Department of Periodontology, Inderprastha dental college and hospital, Ghaziabad (U.P) with a chief complaint of painless swelling in lower left the labial mucosal region since one year [Figure 1].



Fig 1: Intraoral view showing mucocele on the lower lip.

On clinical examination; the lesion was soft, fluctuant, palpable, painless and non-tender with no increase in temperature. It was circular in shape approximately 0.5 x 0.5 mm in size giving a light bluish hue with no involvement of lymph nodes, suggestive of a mucocele. The case was diagnosed as a mucocele on the basis of the history of trauma and clinical features. The treatment plan was explained to the patient and a signed written informed consent was obtained. The routine blood investigations values were in the normal range.

The surgical site was flooded with povidone-iodine - saline solution. Following minimal infiltration of 1:2,00,000 Xylocaine, the lesion was excised using a soft diode laser in wavelength of 810 nm at 1.5 W in continuous mode. The incision was placed on the uppermost side of the lesion and complete excision was performed (Figures-3 & 4). The specimen was placed in 10% formalin and sent for histopathological examination (Figure 4). Postoperative instructions were given and analgesics were prescribed. Healing was uneventful by secondary intention with no adverse effects

(bleeding, oedema, and paresthesia), very less scarring or no scarring and reported no recurrence even after 6 months follow up (Figure 6).



Fig 2: Laser unit.



Fig 3: Application of laser: parameters, 810 nm and 1.5 W; continuous mode.

The surgical site was irrigated with povidone iodine - saline solution. Following minimal infiltration of 1:2,00,000 Xylocaine, the lesion was excised using soft diode laser in wavelength of 810 nm at 1.5 W in continuous mode. The incision was placed on the uppermost site of the lesion and complete excision was performed (Figures-3 & 4). The specimen was placed in 10% formalin and sent for histopathological examination (Figure 4). Postoperative instructions were given and analgesics were prescribed. Healing was uneventful by secondary intention with no adverse effects (bleeding, edema, and paresthesia), very less scarring

or no scarring and reported no recurrence even after 6 months follow up (Figure 6).



Fig 4: Intraoperative photograph showing Surgical Excision of Mucocoele by Laser.



Fig 5: Excised tissue (Mucocoele).

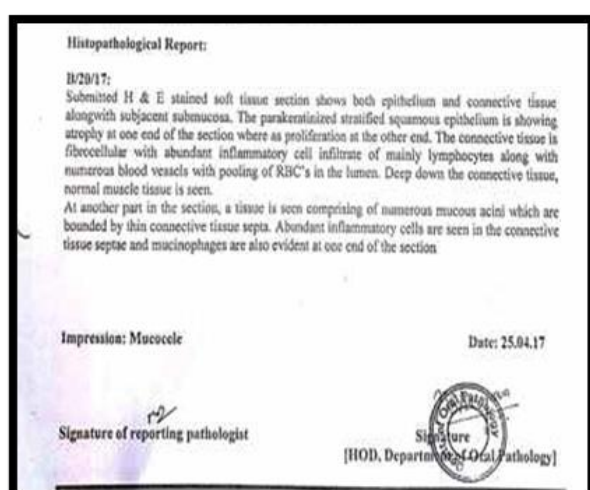


Fig 6: Histopathological Report.



Fig 7: 6 - months post-operative.

DISCUSSION

Mucocoele is the 17th most common salivary gland lesion seen in the oral cavity.¹⁰ On thorough clinical and radiographical examination and considering various possible diagnosis like mucus retention cyst, lipoma, mucoepidermoid carcinoma (low grade), and sialolith; the lesion was diagnosed as a mucocoele. It can be treated by using various modalities which include surgical with variable recurrence rate if not removed along with the feeder gland.¹¹ In the present cases, diode laser was used for excision of mucocoele, which showed minimal patient discomfort, postoperative pain, and oedema with no bleeding. No recurrence was observed up to the 6 months follow-up. In an animal study, Jin et al. reported that the diode laser is considered a useful cutting device for oral mucosa.¹² When compared to other lasers like argon, neodymium: yttrium-aluminium-garnet (Nd:YAG) and carbon dioxide lasers, the diode laser shares similar feature that is intensely absorbed in haemoglobin, results in elevating the temperature and thus promoting coagulation and carbonization of soft tissues, such as the oral mucosa. It results in minimal discomfort and scarring. According to Gontijo et al., the diode laser is more appropriate for soft tissue surgery (wavelength 810 nm) when compared to the other lasers.¹³

CONCLUSION

Mucocoele is the most common benign self-limiting condition. It is commonly seen in young males. Trauma is the most common cause, and the majority of these lesions are seen in lower lips. Majority of these cases can be diagnosed clinically; however, sometimes, a biopsy is required to rule out any other types of neoplasm. There are various treatment options available but the laser treatment shows

more benefits and less relapses. The diode lasers have been effective in the treatment of mucocele in the case reports since minimum use of anaesthesia, less bleeding, no scarring, no postoperative discomfort, more patient acceptance, and most importantly it is precise and provides a sterilized field. Thus, diode lasers can be considered in the treatment of mucocele.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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