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CASE REPORT

ORAL MUCOCELE TREATED USING DIODE LASER: A CASE REPORT

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Running title: Oral Mucocele

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ABSTRACT:

The mucocele is a salivary gland pathology that results from rupture of salivary gland duct and spillage of mucin into the surrounding tissues. The term mucous extravacation is also used to describe this lesion. The rupture of the gland or duct may be due to local trauma. The most common site of mucocele is lower lip. The treatment of mucocele includes cryosurgery , intra-lesional corticosteroid injection, micro-marsupialization, marsupialization of the mucocele, conventional surgical removal of the lesion , and laser ablation. The advantages of laser ablation over other methods include less treatment time, avoidance of suturing, minimal complications and relapse. Here we report a case of mucocele on lower lip treated using diode laser.

Key words: Mucocele, Diode laser, Nodule

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INTRODUCTION:

The term “Mucocele” (from Latin terms mucus, or mucus, and coele, or cavity) is used to define the accumulation of mucus secreted from salivary glands and their ducts in the oral cavity’s sub-epithelial tissue [1]. Clinically a mucocele is characterized by increase in volume, with a dome shaped swelling, bluish in color or sometimes of the same color as the surrounding mucosa. Conventional treatment of the mucocele is excision with the associated overlying mucosa and the glandular tissue down to the muscle layer. If the mucocele is merely incised, the contents will drain, but the lesion will reform as soon as the incision heals. Another treatment option available is excision

using lasers. With the advent of high-intensity lasers, this type of lesion may be treated efficiently due to its prompt hemostasis and no need to suture, which reduces surgical time and reduces wound infection [1]. Here we report a case of mucocele treated using diode laser.

CASE REPORT:

A 21 year old female patient reported to the department of oral medicine and radiology with a chief complaint of swelling seen on the lower labial mucosa (figure 1). The swelling was asymptomatic and was not associated with any symptoms. The patient was more concerned about the esthetics. She noticed the swelling before 4 months, which gradually increased in size. General and extra-oral examinations were non-contributory. On intraoral examination a sessile dome shaped nodular swelling measuring approximately 5mm × 5mm was noticed on the lower labial mucosa 2mm below the vermillion border of the lower lip. Color of the swelling was same as that of the adjacent mucosa, with no erythema, pus discharge and ulceration. The incisal edge of the right central and lateral incisors was impinging on the nodule. On palpation the swelling was fluctuant and soft in consistency.

Based on the history and clinical appearance the differential diagnosis includes giant cell fibroma, mucocele and papilloma. The lesion was advised for excisional biopsy. The excision was done using 810nm diode laser in a continuous wave mode at a power setting of 4.5W under local anesthesia in minor operation theatre. The patient was advised to wear a safety goggles throughout the surgical procedure to avoid ocular damage. The excision site was bleeding free (figure 2 A and 2B) and the procedure was less time consuming with avoidance of suturing. Patient compliance was excellent. Histopathological features include mucin pooled areas with numerous mucinophages surrounded by a fibrous connective tissue wall infiltrated by chronic inflammatory infiltrate predominantly lymphocytes and plasma cells. Overlying epithelium was parakeratinized stratified squamous in nature. Mucous and muscle tissues were also evident. The impression was given as fibrosed mucocele. Patient was recalled on seventh and twenty eighth post-operative days and was examined for healing and pain. Seventh post-operative day the Visual analogue scale (VAS) pain score was 1 and showed good healing with no connective tissue exposed and no bleeding on palpation (figure 3A). On the twenty eighth day of recall the VAS pain score was 0 and healing was excellent with the mucosa appearing similar in color to that of normal surrounding mucosa, with no granulation tissue and no connective tissue exposed (figure 3B).

Figure 1: Nodular swelling seen on the lower labial mucosa

Figures 2A and 2B: Bleeding free excision site during the procedure

Figures 3A and 3B: Seventh post-operative day and 28th post-operative day

DISCUSSION:

The incidence of mucocele in the general population is 0.4-0.8%, with scant differences between males and females [2]. Two types of mucocele can appear - extravasation and retention. Extravasation mucocele results from a broken 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 [3]. When this mucocele is located in floor of the mouth it appears as the underbelly of a frog, so it is called as ranula. These lesions are devoid of epithelial lining and are also termed as: Superficial mucocele, Classical mucocele. Superficial mucoceles are located under the mucous membrane and classical mucoceles are seen in the upper submucosa [4]. The literature describes different treatment options for mucocele, including cryosurgery, intralesional corticosteroid injection, micro-marsupialization, marsupialization of the mucocele, conventional surgical removal of the lesion, and laser ablation [2]. In comparison with conventional scalpel, laser has many benefits, such as ease of soft tissue ablation, hemostasis, instant sterilization, reduced bacteremia, little wound contraction, reduced edema, minimal scar, reduced mechanical trauma, less operative and post-operative pain, increased patient acceptance, no or few sutures, no need for topical anesthesia [5]. Lasers possess all these excellent properties which help in considering it as a better option in treatment of mucocele.

The word laser is an acronym for light amplification by stimulated emission of radiation [6]. The application of lasers in dentistry includes incisional and excisional biopsy, management of tongue lesions, white lesions, vesiculobullous lesions, malignant lesions, treatment of salivary gland pathologies mainly mucocele and ranula, herpetic lesions, aphthous ulcers, frenectomy,gingivoplasty, crown lenghthening, pre prosthetic surgery, implant exposure, hypersensitivity, bony surgeries [7]. Diode laser is an excellent soft tissue surgical laser indicated for cutting and coagulating gingiva and mucosa and for soft tissue curettage or sulcular debridement. Care must be taken when using the continuous emission mode because of the rapid thermal increase in the target tissue. The chief advantage of the diode lasers is the use of a smaller size instrument. The units are portable and compact and are easily moved with minimum setup time and are the lowest priced lasers currently available [6]. The diode lasers have been effective in treatment of mucocele since minimum use of anesthesia, 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 treatment of mucocele [8]. Appropriate protective eyewear for the patient and the entire surgical team must be worn when the laser is operating so that any reflected energy does no damage.

The surgical environment must have a warning sign and limited access. High volume suction must be used to evacuate the plume formed by tissue ablation. The laser itself must be in good working order so that the manufacturer's safeguards prevent accidental laser exposure. Masks and gloves must be worn by the operator [6].

In our case the diode laser provided with an excellent patient compliance, less operating time, less bleeding, no suture, less post operative pain, excellent healing and no scar formation.

CONCLUSION:

Mucocele is a salivary gland pathology which requires proper care and management as the recurrence rate is high. The properties of diode lasers make it more effective in the treatment of mucocele. Instructions given by the manufacturer should be strictly followed to avoid complications during and after surgical procedures.

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