

Excision Of Mucocele By Using Diode Laser: A Case Report

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ABSTRACT : Background: Mucocele is the second most common benign soft tissue tumour occurring in the oral cavity. Clinically, a mucocele is characterized by an increase in volume, with a bubble-like shape that contains saliva, and is similarly colored to that of the normal mucosa or it may present blue coloration, depending on whether it is deep or superficial, respectively. A mucous cyst is common and harmless. However, if left untreated, it can organize and form a permanent bump on the inner surface of the lip. Literature contains a number of studies that confirm a traumatic etiology. This case report represents the treatment of a 22 year old male patient with a relapsing mucocele on the right side of the lower lip by diode laser as an alternative to conventional surgical technique due to its various advantages and also good patient acceptance.

Key Words: *Mucocele, Diode Laser, Mucous extravasation cyst, Lower lip, Excision, Retention cyst.*

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 subepithelial tissue.¹ Clinically, a mucocele is characterized by an increase in volume, with a bubble-like shape that contains saliva, and is similarly colored to that of the normal mucosa or it may present blue coloration, depending on whether it is deep or superficial, respectively.² By definition, they are not true cysts. The incidence is high, in the order of 2.5 lesions per 1000 individuals. Indeed, mucoceles are the most common minor salivary gland disorder, and represent the second most frequent benign soft tissue tumor of the oral cavity, following irritative fibromas.³

The principle etiology of a mucocele is mechanical trauma, causing the rupture of a salivary duct and consequent mucus extravasation within the surrounding tissue.⁴ A second mechanism for mucus accumulation is obstruction or narrowing of the salivary duct walls, causing ductal expansion.⁴ Mucoceles can be single or multiple often rupturing and leaving slightly painful erosions that usually heal within few days.⁵ The tentative diagnosis of a mucocele is made from the clinical history, clinical presentation and palpation, and the definitive diagnosis is made by histopathology.⁶

Treatment options for mucoceles include surgical excision, marsupialisation, micromarsupialization, cryosurgery, laser vaporization, and laser excision.⁷ Besides the conventional treatment options 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.⁸ In the present report mucocele was treated with diode laser and results are presented.

Case Report

A 22 year old male patient reported to the department of Periodontology, Sri Sankara Dental College, Varkala with a chief complaint of recurrent painless swelling over the lower lip since four months. Patient had given a history of swelling over lower lip since 4 months. Patient not given a history of lip biting. But given a history of trauma to the area due to accidentally biting the area before 2 weeks. The swelling ruptured and there was bleeding. Again the swelling reappeared 1 week before with induration. Patient hadn’t taken any treatment. No relevant medical history reported.

Intraoral examination showed a 0.5× 0.5 cm sized solitary and roughly round swelling present over the right lower labial mucosa in the region of 41 and 42. The color was the same as the adjacent mucosa (Figure 2). The surface appeared normal with no ulceration. The swelling was firm on palpation, nontender and sessile.

Literature reviewed the clinical differential diagnosis, listing mucocele, fibroma, lipoma, sialolith, phlebolith and salivary gland neoplasm as possibilities. Fibromas vary in consistency from soft to very firm. They are the most common intraoral soft-tissue lesion, and are seen most frequently on the lips (no distinction between upper and lower lips). Lipomas, neoplasms consisting of mature adipose tissue, are uncommon in the oral cavity, but can occur on the lips. Palpation can be helpful for a correct differential diagnosis. Lipomas and tumors of minor salivary glands present no fluctuation while cysts, mucocles, abscess, and hemangiomas show fluctuation.⁹

The differential diagnosis of swelling of the lips in children should also include vascular malformations such as hemangiomas and varices. Usually blue in colour, these blanch under digital pressure, which distinguishes them from other pigmented lesions such as nevi, mucocles, hematomas and melanomas. The appearance of mucocles is pathognomonic and the following data are crucial: lesion location, history of trauma, rapid appearance, variations in size, bluish colour and the consistency.⁹

Based on history and clinical examination a provisional diagnosis of mucocele was made. Surgical removal of the lesion with a diode laser was planned and the specimen was sent for histopathological examination.

Surgical Management

Local infiltrative anesthesia was applied (12 mg of 2% lidocaine with epinephrine 1:100,000). The anesthetic was not infiltrated directly into the lesion to avoid compromising the biopsy. The lip was then everted with digital pressure to increase the lesion's prominence. Removal of the lesion was performed using a diode laser at continuous mode in a contact technique with a power setting of 1W, wavelength 810nm. First a circular incision was made around the lesion to obtain a proper biopsy sample (Figure:3). Dissection was performed, separating the lesion and associated minor salivary gland (Figure: 4). Once the lesion was excised the operative field was wiped with a sterile gauze soaked in 1% normal saline. Laser bandage was applied with 0.5 W power (Figure:6). Postoperative care included 0.2% chlorhexidine solution 3 times per day for one week and the patient was advised not to bite his lower lip to avoid recurrence of the lesion. The patient was also advised

to avoid smoking, alcohol and spicy foods. The excised tissue was sent for biopsy (Figure:5). The patient was followed until complete healing was achieved, which occurred in 30 days (Figure:7). The patient was then reviewed every three months for a period of one year and no recurrence was observed (Figure:8).

Histopathological examination showed multiple cystic spaces lined by granulation tissue. The lumen contained inflammatory exudate and mucin. Dense infiltrate of inflammatory cells were seen. A final diagnosis was confirmed as [retention cyst] (mucosa). (Figure 9, 10)

Discussion

The incidence of mucocles in the general population is 0.4% to 0.8% with scant differences between males and females. As regards mucocele location in the oral cavity, most investigators consider the lower lip to be the most frequently affected location (40% to 80% of all cases), followed by the cheek mucosa and floor of the mouth.² Histologically two types of mucocles are distinguished: retention mucocele and extravasation, greater majority were extravasation cyst. This case was retention mucocele. Patient not given a history of lip biting. There was no traumatic etiology. Retention mucocele are formed by dilatation of the duct secondary to its obstruction or due to a sialolith or dense mucosa.

The primary objective in the treatment of mucocele is the complete resection of the lesion in order to prevent its recurrence. We have to ensure that both the affected and neighbouring glands are removed along with the pathological tissue to avoid relapse. Several techniques have been proposed for the treatment of a mucocele, such as cryosurgery, micromarsupialization, marsupialisation, surgical excision and laser ablation.

The conventional method in the treatment is by surgical approach. But in conventional method there is more chance for rupturing the mucocele and leakage of its contents can cause soft tissue collapse with loss of anatomical references needed for resection. This will make the procedure more complicated and in addition special care is mandatory to avoid damage to other glands or ducts while suturing because this can even lead to its recurrence. Several cases of lower lip paresthesia after scalpel removal of a large mucocele is due to damage to terminal branch of mental nerve as

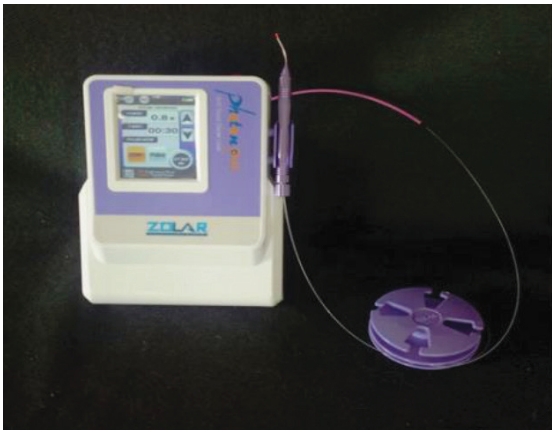


Figure1 Diode Laser



Figure 2 Initial view



Figure 3 Circular incision around the lesion



Figure 4 Laser excision

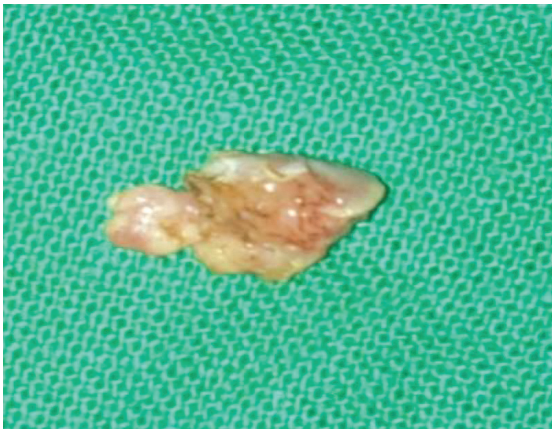


Figure 5 Excised tissue for Biopsy



Figure 6 Immediate Post Operative View

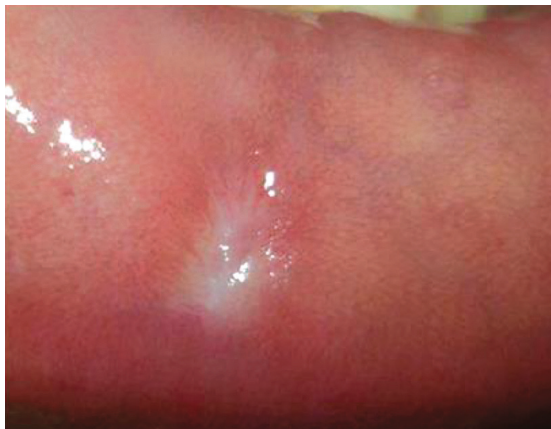


Figure 7 One Month Post Operative view

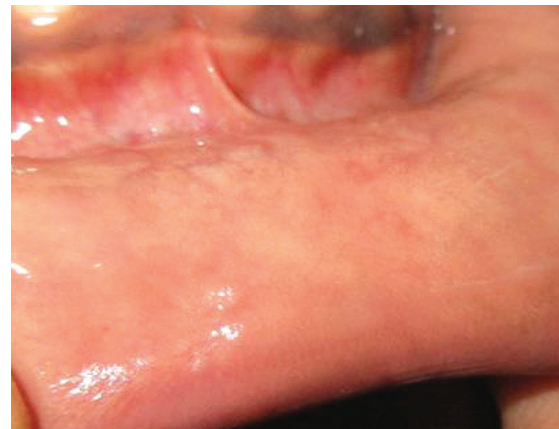


Figure 8 One Year Post Operative

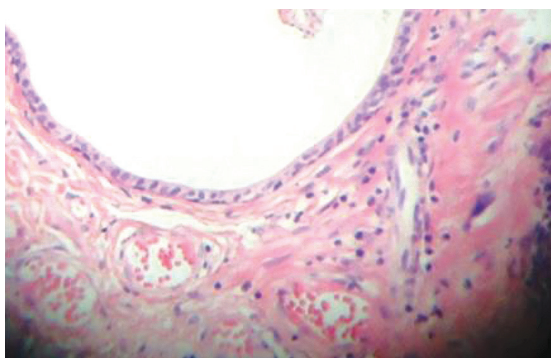


Figure 9 Histopathological slide (10X)

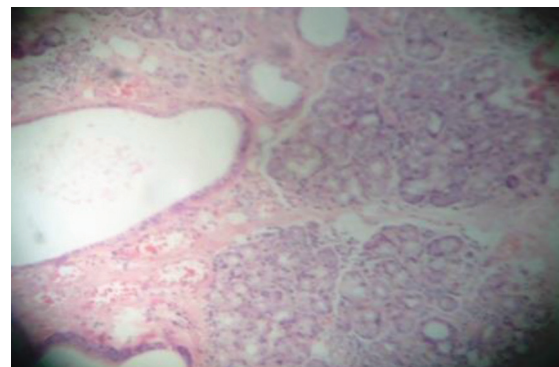


Figure 10 Histopathological slide Stained with H&E 4X Magnification

a consequence of this complicated procedure is noted in literature.¹⁰

Marsupialization had resulted in considerably higher recurrence rates. Micromarsupialization had been suggested to have lower recurrence rates, although it was restricted to lesions with clinical characteristics that strongly suggested a diagnosis of mucocele, since histopathological examination was not possible.¹³

Cryosurgery yielded satisfactory results with no recurrence. Reported postoperative symptoms,

however, included marked edema and irritation, as well as a prolonged healing time.¹²

Vaporization with argon and Nd:YAG lasers has been described as a new technique for the treatment of mucocles. Both lasers procedures presented satisfactory results with low recurrence rates and were well tolerated by the patients, whose discomfort was the main complaint reported.¹⁴

The diode laser has become an important tool in the dental armamentarium due to its exceptional ease of use and affordability.¹⁵ The diode laser (wavelength 800- 810 nm), similarly to argon and Nd:YAG lasers, is intensely absorbed by hemoglobin, elevating the temperature and promoting coagulation and carbonization of soft tissues, such as the oral mucosa. The small size of the diode laser system, can be of great benefit as it will take up very little office space and assures great portability.¹¹

The advantages in the removal of mucocele by diode laser are bloodless operating field, minimal discomfort, minimal scarring and much less or no postsurgical pain. The lesion is removed en mass so that it can be send for histopathological examination. Correct power setting should be carried out to avoid excessive thermal damage to soft tissues and to prevent unfavourable postoperative symptoms.

Conclusion

Diode lasers can be used for a variety of dental procedures which are predominantly soft tissue procedures and include soft tissue surgery. In comparison with conventional scalpel it has got various advantages like blood less operating field, ease of

soft tissue ablation, instant sterilization, hemostasis, reduced bacteremia, little wound contraction, minimal swelling and scarring, reduced mechanical trauma, less discomfort and post operative pain with good patient acceptance.

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