

Diode Laser a Clinical Tool to Manage Oral Mucocele in Pediatric Patient – A Case Report

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Abstract

Mucocele is the one of the most common benign lesions found in the oral cavity. Mucocele is self-limiting mucus containing cyst of salivary glands which generally occur due to the rupture or obliteration of duct of salivary gland. Trauma and lip/cheek biting are the common cause for the mucocele. It is most commonly occur at lower lip, buccal mucosa, tongue, and palate. Oral mucocele can be treated by either surgically or non-surgically. The treatment modalities opted for the management of mucocele depends on the site of the lesion, size of the lesion, depth of the lesion, and age of the patient. There are various treatment modalities for the management of the mucocele such as surgical removal, laser ablation, marsupialization, electrocautery, laser surgery, and intralesional corticosteroid therapy. In this article, management of the mucocele in lower lip was performed by the diode laser.

Keywords: Mucocele, Diode laser, Marsupialization, Electrocautery, Intralesional therapy.

INTRODUCTION

Mucocele is the one of the most common benign lesions found in the oral cavity. Mucocele occurs most commonly in the second decade of the life. It has no gender predilection. Mucocele is derived from Latin word “muco” (mucus) and “coele” (cavity). Mucocele is a self-limiting mucus containing cyst of salivary glands. It is most commonly occur at lower lip, buccal mucosa, tongue, and palate. Lip/cheek biting and trauma are the common cause for the mucocele.^[1-3]

Mucocele can be divided into two types, first extravasation and second retention type. Trauma is the main cause for the development of the extravasation mucocele. It occurs in three phases. Spillage of mucin from salivary duct into the surrounding tissue found in the first phase, granulomas formation occurs in second phase and pseudo capsule formation found in the last phase. Retention type of mucocele occurs due to the obstruction of the salivary duct.^[4] There are various treatment modalities for the management of the mucocele such as surgical removal, laser ablation, marsupialization, electrocautery, laser surgery, and intralesional corticosteroid therapy.^[5] In this article, management of the mucocele in lower lip was performed by the diode laser.

CASE REPORT

A 12-year-old girl reported to the Department of Pediatric and Preventive Dentistry in RUHS College of Dental Sciences, Jaipur. She complained about recurrent mucocele which was surgically removed in the past 6 months. The patient described discomfort and swelling in the left part of the lower lip. No significant medical or family history was recorded. The lesion was increasing in size and symptoms appeared when biting her lip. History and clinical examination revealed a recurrent mucocele which was soft, painless, fluid filled, well circumscribed, semi-translucent, and measuring 1 cm * 1 cm in diameter in the lower lip (Figure 1). The treatment plan consisted on mucocele removal with laser application. Informed consent was obtained from the patient's parent. Diode laser was used under local anesthesia (lignocaine 2% with adrenaline 1/100,000). This laser device emits photons at a wavelength of 980 nm and operates in a continuous emission mode (Figure 2). The delivery system is a quartz fiber optic. For this specific case, the laser was set according to the following parameters:

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Figure 1: Pre-treatment photographs



Figure 2: Armamentarium used in procedure

- (i) Peak power: 2W
- (ii) Emission mode: continuous wave
- (iii) Average power: 2W
- (iv) Length of treatment: 300 s
- (v) Tip-to-tissue distance: In contact
- (vi) Total energy delivered: 600 joules.

All the practitioners and the patient wore laser eye protector glasses. The tip was directed to the surface of the lip at the base of the lesion at an angle of 10–15°. Movements were performed around the base, while the mucocoele was grabbed by tweezers (Figure 3). The site was slowly and continuously mopped by sterile wet gauze to avoid tissues overheating. Care was taken also to always control the tip. If on inspection, any damage or collection of debris was observed during treatment, the tip was cleaned with sterile gauze. The mucocoele was totally removed in 5 min. No bleeding was observed in the operative site and no sutures were necessary. The patient was prescribed analgesics. The patient was told not to bite her lips. The specimen was subjected to histopathological examination and showed cystic cavity lined by thick fibrous capsule. Cystic lumen contains mucin, foamy macrophages, and chronic inflammatory cells. Areas of coagulation necrosis surrounding the intended biopsy material were also evident. Adjacent mucous salivary gland was also seen. The child was followed after 2 weeks: A fibrin network formed over the surface (Figure 4). The wound healed without complications: No post-operative discomfort or pain and no infection were noted. No recurrence was observed. The surface of the lip healed perfectly after 6 months of follow-up.

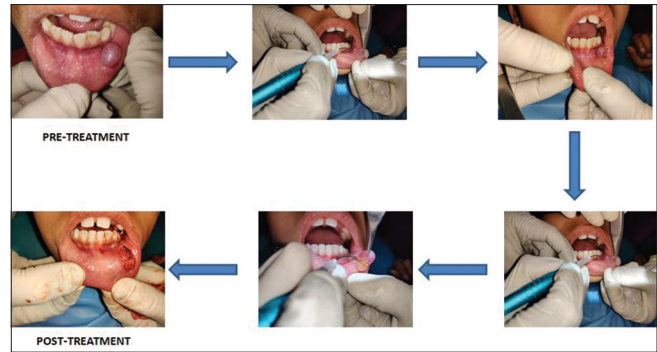


Figure 3: Mucocoele removal procedure with laser application



Figure 4: Two weeks follow-up

DISCUSSION

Lower lip is the most common site for the occurrence of mucocoele. Various surgical and non-surgical methods are available to treat the mucocoele which includes surgical removal, micro-marsupialization, cryosurgery, laser surgery, and intralesional steroidal injection. In non-surgical method, intralesional injection of the corticosteroids is used to treat mucocoele. Injection of intralesional steroid to the base of the lesion resulted in a gradual regression in size and completes healing with no recurrence. Intralesional injection of sclerotic agent like absolute ethanol (0.1–0.5 ml) also is used to treat mucocoele in non-surgical category.^[6,7]

Conventional surgical removal of the lesion with involved affected gland is the oldest method to treat mucocoele. Sagari *et al.* found that conventional surgical removal of the mucocoele in the pediatric patient is the definitive treatment modality. Micro-marsupialization is the modified surgical method which consists of draining the accumulated saliva and creating a new path. Sagari *et al.*^[4] and Giraddi and Saifi^[8] found micro-marsupialization more efficient over conventional surgical removal in mentally retarded and pediatric patient.

Cryosurgery is also a one of the option for treating oral mucocoele. Cryospray (open system) and cryoprobe (close system) are the method for complete remission of the

lesion without any evidence of recurrence.^[9,10] In this case report, a mucocoele was successfully treated by the diode laser in a pediatric patient. Diode laser provides better post-operative comfort and esthetics. Ahad Ahmad *et al.*^[11] performed laser therapy and found better healing process with no evidence of recurrence without any alteration in the microstructure. Minimal anesthesia, less procedural timing, good surgical site visualization, hemostasis, and reduce scarring and contraction are some benefits of the laser surgery. No sutures or surgical packs were required, as the laser has been found to enhance wound healing by the formation of a denatured protein coagulum termed as “eschar” or “biological bandage.” This layer of protein coagulum protects the wound from bacteria and friction from masticatory forces.^[12]

CONCLUSION

Oral mucocoele can be treated by either surgically or non-surgically. Treatment modalities opted for the management of mucocoele depends on the site of the lesion, size of the lesion, depth of the lesion, and age of the patient. The superficial lesion in the children can be easily treated by the diode laser. Painless and bloodless surgery is the advantage of diode laser over the other treatment modalities.

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