Case Report

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Management of Mucocele by Laser- A Case Report

Abstract:
Mucoceles are benign cystic lesions developing from minor salivary glands and commonly encountered in dental practice. Removal of mucoceles can be accomplished using various surgical methods, including scalpel excision, electrocautery, cryotherapy, and laser surgery. Diode lasers have been found to be a safe and effective treatment modality for mucocele removal due to their precise and minimally invasive nature. This article aims to discuss the use of diode lasers for excision of mucocele.

Key-words: Mucocele, Cystic lesion, Excision, Soft tissue diode laser, SiroLaser Blue.

Introduction:

Mucocele, also called as "mucus filled cavities", is a type of cystic lesion that develops from the minor salivary glands. Mucus extravasation and mucus retention are the two most frequently occurring primary mechanical obstructive diseases of salivary glands [1]. Formation of mucus extravasation cyst is mainly due to mechanical trauma caused by rupture of ductal system of salivary gland and mucin spills into adjacent soft tissues [2] while mucus retention cyst is formed by obstruction of salivary ductal walls causing dilatation of ducts without spillage of mucin [3].

The incidence of mucocele formation is high, in the order of 2.5 lesions per 1000 individuals and hence 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 [4,5].

Mucoceles typically appear as painless, bluish round or dome-shaped swellings that can range in size from a few millimeters to several centimeters in diameter. They are most commonly found on the lower lip, floor of the mouth, or inside the cheek, although they can occur anywhere in the oral cavity.

While mucoceles are typically harmless, they can cause discomfort or irritation, especially if they are large or in a location that interferes while eating or speaking [6]. They can also become infected, which can cause pain, redness, and swelling.

Treatment for mucoceles usually involves its surgical removal that can be done using a scalpel, electrocautery, cryotherapy, or laser surgery [7]. The choice of treatment depends on the size and location of the mucocele, as well as the preferences of the patient and the surgeon.

This article discusses the excision of mucocele using diode laser, including their advantages and limitations.

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Case presentation:

A 27-year-old male patient reported to the Department of Periodontology, Sardar Patel Post Graduate Institute of Dental and Medical Sciences, Lucknow with the chief complaint of swelling in the inner aspect of left lower lip since past 1.5 months. On examination, a painless swelling of 1cm in dimension which was round, palpable, fluctuant, painless and bluish in colour was seenin the lower lip. The patient was systemically healthy. Diagnosis of mucocele was made. Treatment plan decided was phase-I therapy followed by Phase-II therapy which includes excision of mucocele by laser.

Patient was educated and motivated about the surgical procedure. The patient provided written consent for the procedure. Thorough scaling and root planing was performed using ultrasonic scaler. The patient was given oral hygiene instructions and also instructed to brush with a soft toothbrush. The routine blood test showed that all blood parameters were within normal physiological limits.

Figure-1: Pre-operative frontal view

Figure- 2: Dentsply SiroLaser Blue

Surgical Procedure:

One week after phase I therapy, mucocele excision was performed using the Dentsply Siro Laser Blue (Figure-1,2). Local anaesthesia was administered using 2% lignocaine with 1:80000 adrenaline. Initial incision was made on the prominence of the lesionatcontinuous mode440nmwave length and power setting of 1.5 W in contact technique (Figure-3). All the contents of the mucocele were pressed out at the periphery with the help of gauze piece (Figure- 4,5) and the peduncle (base) of the mucocele was removed with the help of laser (Figure- 6,7). Betadine irrigation and non-resorbable 5-0 silk interrupted sutures were placed to close the wound along the edges of the lesion (Figure-8).The contents of mucocele were then sent for histo-pathological examination to the Department of Oral Pathology in Sardar Patel Post Graduate Institute of Dental Sciences, Lucknow

The patient was instructed to rinse twice daily with 0.2% chlorhexidine mouthwash for 2 weeks postoperative month. Antibiotics and antiinflammatory were prescribed for five days after surgery. The patient was recalled after one week postoperatively to remove the sutures (Figure-9). The patient was recalled for regular check-ups every month.

Figure 3: Incision placed on most elevated portion of mucocele

Figure 4: Mucin released from mucocele

Figure 5: Contents of mucocele

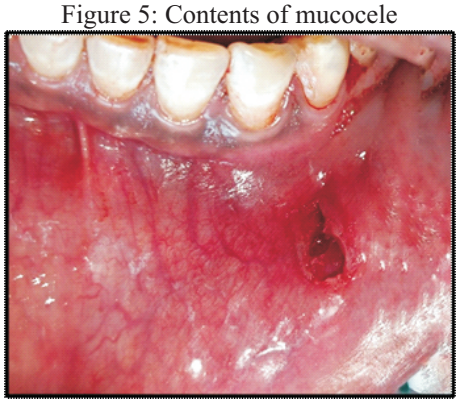

Figure 6: Excision of mucocele

Figure 7: Excised tissue

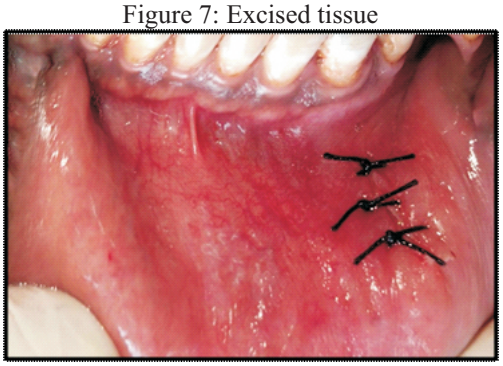

Figure 8: Sutures given

Figure 9: Post operative view

Histopathology H & E section revealed a connective tissue stroma and on higher magnification a collagenous stroma showed straited ducts and mucous acini. The mucous acini showed pooling of mucous in few areas. The section also showed numerous lymphocytes, few plasma cells, immense endothelial lined blood vessels and few extravasated RBC's (Figure-10).

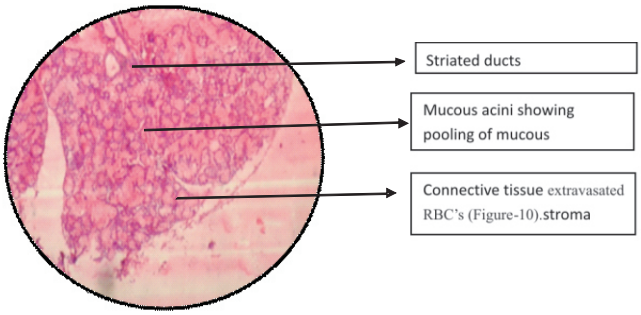

Figure 10: Histopathological section

Discussion:

Mucoceles are mucus containing cystic lesions of the minor salivary glands and are the 15th common oral mucosal lesion having a prevalence rate of 2.4 cases per 1000 people. 70% of the mucoceles occur in young individuals (less than 20 years) while superficial mucoceles usually occur in individuals older than 30 years. Lower lip is the most common site of occurrence, followed by tongue, floor of mouth (ranula), and the buccal mucosa [8].

Treatment of mucocele involves scalpel incision, complete surgical excision, marsupialization, micromarsupialization, intralesional injections of corticosteroids, cryosurgery, laser ablation, sclerosing agent, and electrocautery methods [1].

Laser is a very precise ablation instrument that offers certain advantages when compared to the scalpel as it causes minimal

damage to the adjacent tissues, especially the underlying muscle layers. Postoperative bleeding was minimal due to coagulation property of laser. Due to minimal trauma to the adjacent tissues, postoperative healing was faster, with very little scar formation [9]. Other advantages of diode laser include the precision of tissue ablation, less duration, increased surgeon's visibility and healing without scarring.

In a study done by Samal S et al. [10], diode laser used for excision of mucocele showed minimal patient discomfort, postoperative pain, and edema with no bleeding and recurrence even after long follow-up and concluded that diode laser can be one of the successful treatment modalities in uncooperative patients.

In a systematic review by Sadiq M.S.K et al [11], concluded that dental lasers of numerous types, wavelengths, and laser related parameters showed effectiveness in the treatment of mucoceles in pediatric patients.

Care should be taken while using laser as there can be damage to adjacent tissues due to over application and inadequate working power that can cause overheating and necrosis of tissue. Chances of reoccurrence of mucocele is high due to its incomplete removal.

Conclusion:

Oral mucocele has a higher frequency of recurrence on the ventral mucosa of tongue (50.0%) than on the labial/buccal mucosa (8.8%) and its recurrence was significantly more common in the younger patients (aged < 30 years, 16.0%) than in the older patients (aged > 30 years, 4.4%). In a study by Choi YJ et al [12] in 2019 the authors concluded that there was no significant difference in recurrence rates between surgical procedures using scalpels and those using lasers.

The use of diode lasers is an effective alternative to traditional surgical methods, resulting in faster recovery of patients, reduced discomfort, and improved cosmetic results. While there are limitations to consider, the increasing popularity of diode laser mucocele removal highlights its potential as a valuable treatment modality.

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