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Case Report

Recurrent Lower-Lip Mucocele: A Case Report

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Abstract

Background: Mucocele is a common benign lesion of the oral mucosa resulting from extravasation or retention of saliva, most frequently involving the minor salivary glands of the lower lip. Although conventional surgical excision with a scalpel is widely used, recurrence may occur, particularly when the associated minor salivary glands are not completely removed.

Case: A 14-year-old girl presented with a recurrent swelling of the lower lip. The lesion had previously been surgically excised twice using a conventional scalpel technique; however, recurrence occurred following both procedures just in 18 days. Clinical examination revealed a localized, painless, fluctuant swelling involving the lower labial mucosa. Considering the recurrent nature of the lesion and the history of previous surgical interventions, diode laser excision was planned. The lesion was excised using a diode laser, with care taken to remove the lesion together with the associated minor salivary gland tissue. Intra-operative as well as post-operative LASER photobiomodulation was also done. The postoperative period was uneventful, with satisfactory soft-tissue healing. At one-year follow-up, the patient remained asymptomatic with no evidence of recurrence.

Conclusion: This case highlights the successful management of a repeatedly recurrent lower-lip mucocele using diode laser excision. Laser-assisted excision may provide a useful alternative to conventional scalpel surgery in selected recurrent mucoceles, with advantages including good surgical visibility, effective haemostasis, reduced intraoperative bleeding, and satisfactory postoperative healing. Long-term follow-up is important to assess recurrence.

Keywords: Mucocele; Lower Lip; Recurrent Mucocele; Diode Laser; Laser Excision; Oral Surgery; Minor Salivary Glands; Laser Photobiomodulation

Introduction

Mucocele is a benign, mucus-containing lesion of the oral cavity that commonly develops following trauma or obstruction of a minor salivary gland duct [1]. The lower lip is the most frequently affected intraoral site, and mucoceles are particularly common among children and young adults [2].

Two major mechanisms have been described: mucus extravasation, in which trauma to a salivary duct results in leakage of mucus into the surrounding connective tissue, and mucus retention, in which ductal obstruction results in dilatation of the salivary duct.

Clinically, mucoceles usually present as painless, fluctuant or soft swellings that may have a bluish or translucent appearance. They may periodically rupture and subsequently recur.

Several treatment modalities have been described, including conventional surgical excision, marsupialization, cryotherapy, electrocautery, and laser-assisted excision. Conventional surgical excision remains a commonly employed treatment; however, recurrence may occur when the causative minor salivary gland tissue is inadequately removed.

Diode lasers have increasingly been used in oral soft-tissue procedures because of their ability to provide simultaneous tissue cutting and coagulation. Previous literature has reported the use of diode lasers, including a 940-nm wavelength, for excision of oral mucoceles, with proposed advantages such as improved haemostasis, reduced postoperative oedema, and favourable healing.

Biostimulatory laser therapy as a method supporting healing after mucocele removal

Low-level laser therapy (LLLT) is increasingly used to support wound healing after oral surgical procedures, including mucocele removal. Although the lesion itself requires surgical treatment (scalpel or high-energy laser), postoperative biostimulation can significantly accelerate healing and reduce complications.

Mechanism of LLLT action

Laser biostimulation uses low-energy monochromatic light that doesn't cause thermal or tissue-destructive effects. Key in the LLLT mechanism is stimulation of cytochrome C oxidase in mitochondria, leading to increased ATP production and cellular metabolic activity. This results in accelerated fibroblast proliferation, angiogenesis, and modulation of inflammatory and pain processes. Additionally, LLLT reduces oxidative stress and improves microcirculation [7].

The present case describes a 14-year-old girl with a recurrent lower-lip mucocele that had previously undergone two conventional scalpel excisions, followed by successful diode laser excision and an uneventful one-year follow-up without recurrence.

Case Report

A 14-year-old girl reported to the Department of Oral and Maxillofacial Surgery with a history of a recurrent swelling involving the lower lip.

According to the patient's history, the lesion had previously been diagnosed as a mucocele and had undergone two separate surgical excisions using the conventional scalpel technique. Despite these interventions, the swelling subsequently recurred.

At presentation, the patient reported a recurrent swelling at the same site. There was no significant associated pain or functional limitation.

Clinical examination

Extraoral examination did not reveal any significant abnormality.

Intraoral examination revealed a localized, soft and fluctuant swelling involving the lower labial mucosa (Figure 1). The lesion was non-tender and clinically consistent with a mucocele.

Figure 1: Pre-Operative.

Considering the patient's young age, previous surgical history, and repeated recurrence following conventional excision, laser-assisted excision was planned.

The treatment options, expected benefits, possible complications, and possibility of recurrence were explained to the patient's parent/guardian. Appropriate informed consent was obtained prior to the procedure.

Surgical technique

After appropriate preparation and local anaesthesia, the lesion was identified clinically.

Laser parameters used in this case:

- **Laser:** Diode laser
- **Wavelength:** 980 nm
- **Anaesthesia:** 2% Lignocaine with adrenaline

Figure 2: Intra-operative.

The lesion was carefully outlined and excised using the diode laser (Figure 2). Particular attention was given to complete removal of the lesion and the associated minor salivary gland tissue to reduce the possibility of further recurrence. Intra-operative LASER Photobiomodulation was also done.

The laser provided simultaneous cutting and coagulation, resulting in a relatively bloodless operative field. No significant intraoperative bleeding was encountered (Figure 3). Following completion of the procedure, the surgical site was inspected for adequate hemostasis. After complete excision of lesion LASER Photobiomodulation was done (Figure 4).

Figure 3: Post-operative.

Figure 4: LASER photobiomodulation.

The excised tissue was submitted for histopathological examination (Figure 5).

Figure 5: Excised Tissue.

Histopathological examination

The excised specimen was submitted for histopathological evaluation.

Microscopic examination demonstrated a cavity containing mucinous material surrounded by granulation tissue and inflammatory cells, without a true epithelial lining, consistent with a mucus extravasation phenomenon (mucocele).

The final diagnosis was confirmed as mucocele (Figure 6).

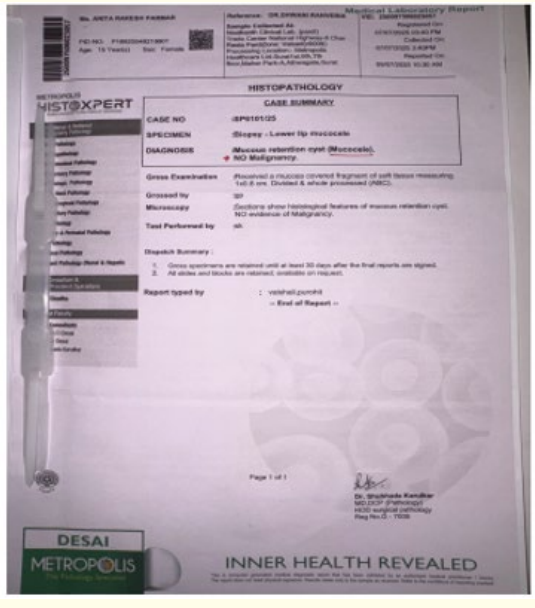

Figure 6: Histopathological Report.

Postoperative course

The postoperative period was uneventful.

The patient was advised regarding oral hygiene and care of the surgical site. Appropriate postoperative medication was prescribed according to the clinical requirement.

At postoperative review, the surgical site demonstrated satisfactory healing without significant bleeding, infection, or other complications.

The patient was subsequently followed periodically (Figure 7-10).

Figure 7: Post-op Day 7.

Figure 8: Day 14 follow op.

Figure 9: 2nd Month follow up.

Figure 10: 4th Month follow up.

One-year follow-Up (Figure 11)

The patient was reviewed at regular intervals following the procedure.

Figure 11: 1 year follow up.

At one year after diode laser excision, the patient remained asymptomatic. Clinical examination demonstrated satisfactory healing of the lower labial mucosa with no evidence of recurrence.

The patient and her parent/guardian reported satisfaction with the treatment outcome.

Discussion

Mucoceles are among the commonly encountered benign lesions of the oral mucosa. They are frequently associated with minor salivary glands and have a particular predilection for the lower lip [3].

The present case is clinically noteworthy because the lesion had recurred after two previous conventional scalpel excisions. Recurrent mucoceles may present a therapeutic challenge, particularly when the underlying minor salivary gland tissue responsible for mucus leakage remains.

Complete removal of the lesion along with the associated minor salivary gland tissue is considered important in reducing recurrence.

Conventional scalpel excision provides a well-established method of treatment [4]. However, soft-tissue lasers have become increasingly useful in oral surgery. Diode lasers can simultaneously cut and coagulate soft tissues, potentially providing improved haemostasis and surgical visibility.

Ramkumar., *et al*. reported the successful use of a 980-nm diode laser for excision of a lower-lip mucocele, describing potential advantages related to reduced intraoperative bleeding and oedema and favourable healing [1].

In the present case, diode laser excision was conventional surgical procedures. The lesion was successfully removed, and the patient demonstrated satisfactory healing without recurrence during a one-year follow-up period.

The absence of recurrence in this case may be related to adequate removal of the lesion and associated minor salivary gland tissue; however, a single case cannot establish superiority of laser treatment over conventional surgery.

The successful outcome nevertheless suggests that diode laser excision can be considered as one of the treatment options for appropriately selected recurrent mucoceles, particularly when soft-tissue management and intraoperative hemostasis are important considerations [5].

Conclusion

This case describes the successful management of a recurrent lower-lip mucocele in a 14-year-old girl following two previous conventional scalpel excisions.

Diode laser excision Along with Photobiomodulation is satisfactory in postoperative healing and, importantly, no clinical recurrence during one year of follow-up (Figure 7).

Although further comparative studies with larger patient populations and longer follow-up are required, diode laser excision may be a useful treatment option for selected recurrent mucoceles.

Patient Consent

Written informed consent for treatment and for publication of the case details and clinical photographs was obtained from the patient's parent/legal guardian.

Conflict of Interest

The authors declare that there is no conflict of interest related to this case report.

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