

Case Report

Hybrid approach for excision of mucocele in a 14-year-old child: a case report

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Received: 13 February 2025

Revised: 01 April 2025

Accepted: 03 May 2025

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ABSTRACT

Mucocele, a frequent lesion of oral mucosa, is caused by mucus accumulation in the minor salivary glands and includes buildup of mucus with minimal swelling. Extravasation and retention are the two histology variations. The development of small salivary glands determines how they look. Since clinical examination is used to make the diagnosis, medical history is crucial. Clinically, they have a smooth surface, appear bluish-red, and can occasionally be translucent. CO₂ laser micro masculinization surgery is commonly used as a therapy. The 14-yr/o girl in this case study has been complaining of swelling in the bottom front part of her lip for a year. The patient did not report any trauma preceding the swelling. The lesion was painless and the patient was concerned about the swelling. In the present case scenario, a hybrid technique of laser and surgical excision using Bard Parker number 15 was used.

Keywords: Mucocele, Laser, Oral surgery, Pediatric case, Hybrid approach, mucocele, Minimally invasive

INTRODUCTION

There are 2 types of mucocele, a frequent lesion in oral cavity. There are 2 types of mucocele, a frequent lesion in oral cavity. A mucocele is a type of mucous cyst that typically forms in oral cavity, especially in lower lip, however, it can also happen in the tongue, palate, and buccal mucosa. When a salivary gland duct bursts or becomes blocked, mucus builds up in surrounding tissue, forming mucoceles. Clinically, mucoceles are usually soft, painless, and appear as fluid-filled, dome-shaped lesions. The size can vary, and the cyst may fluctuate in size over time due to the mucus secretion and absorption process.

Although mucoceles are generally benign and self-limiting, some may require surgical intervention for removal, particularly if they are persistent or cause discomfort. The most common cause of mucocele formation is trauma, such as biting the lip or other injuries that damage the ducts. Although they can happen

at any age, mucoceles are more found in children and young people. There are different types of mucoceles, with the most common being mucus retention cysts and mucous extravasation cysts. Diagnosis is usually clinical, but in some cases, imaging or biopsy may be necessary to rule out other conditions. Management of mucocele is likely to be influenced by advances in diagnostic techniques, minimally invasive treatments, and an increased understanding of the molecular and histopathological features of the condition. With evolving technologies, more precise diagnostic tools, such as high-resolution imaging and molecular biomarkers, may be employed to differentiate mucoceles from other oral lesions. This would aid in reducing diagnostic ambiguity and ensuring timely interventions.

Minimally invasive treatments are becoming more common, with techniques such as laser therapy, sclerotherapy, and microsurgical excision being explored for their effectiveness in reducing recurrence rates and minimizing tissue damage. Research into the molecular

basis of mucocoele formation could also lead to targeted therapies aimed at preventing duct rupture or promoting glandular healing. Despite being benign, recurrent or large mucocoeles may require surgical excision, and understanding genetic or environmental factors that contribute to their formation could open avenues for preventive treatments.¹

CASE REPORT

The main complaint of a 14-year-old girl who came to our OPD was swelling in the lower left front area of her lip. The swelling appeared to be bluish-red. The swelling was non-fluctuant and the patient did not report any pain in the following region. The swelling was provisionally diagnosed as 'Mucocoele'. After routine blood examination of CBC, HBsAg, PT/INR, HIV, LASER excision was planned on the subsequent day.

Management

The method was described to the patient, and local anesthesia was used to provide the treatment. Local anaesthesia was administered around the region of the swelling and there was a gap of 3 minutes for the local anaesthesia to properly work. The swelling was isolated with the help of BP blade no-15 followed by the use of LASER. A semi-lunar-shaped incision was given big enough to cover the entire swelling. The entire mass was excised with the hybrid usage of LASER as well as bp blade no 15. The arrest of the bleeding could be done with the help of LASER. The entire excised mass was then carefully placed into a formalin specimen container and sent for histopathological examination. The surgical site was sutured with the help of a round body needle and a 3.0 Mer silk suture. The suture technique used in the procedure was interrupted technique. The patient was advised for antibiotics and analgesics and the dosage was decided after body weight estimation. The suture was removed after 1 week of the procedure.

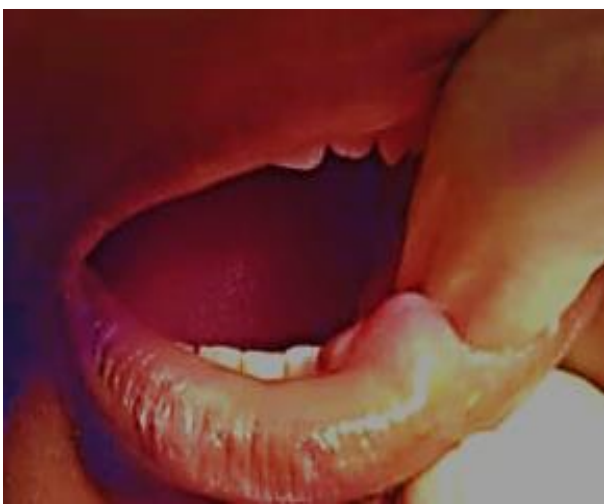


Figure 1: Pre-operative photograph of the lesion.



Fig 2. Initial incision.



Figure 3: The incised tissue is retracted.



Figure 4: Histologic specimen.



Figure 5: Site of histologic specimen post LASER treatment.



Figure 8: 2 weeks post operative photograph.



Figure 6: After 1 week of follow-up.



Figure 9: 4 weeks post operative photograph.



Figure 7: Interrupted suture using 3.0 Mer silk suture.

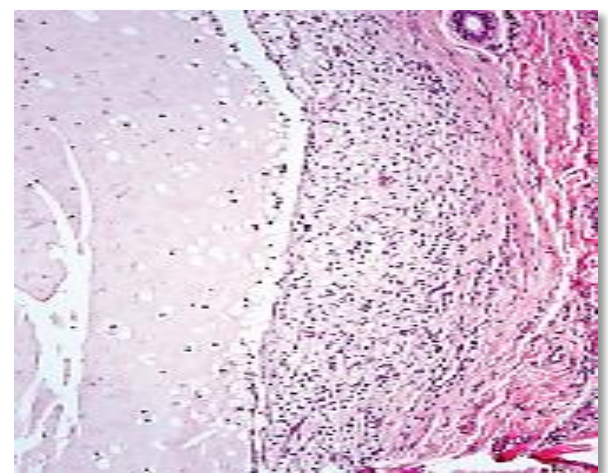


Figure 10: Histologic slide of mucous extravasation cyst, as seen in low-field focus.

Histological interpretation

The sample sent for biopsy on examination resulted in mucocele as a “mucous extravasation cyst”.

DISCUSSION

In the oral cavity, mucocele is second most common lesion after irritational fibroma. The age range in which this lesion most frequently occurs is 10 to 29 yrs/o.² The gender distribution is equal.² The dome-shaped mucosal swellings that are indicative of mucin buildup are how it manifests. Mucocele lesions are translucent, blue, and range in size from 1-2 mm to several cm. Lower lip, buccal mucosa, as well as floor of the mouth are the most frequently affected areas for mucocele.³ Mucoceles can produce external swelling and disrupt the masticatory and swallowing processes, which frequently results in discomfort, depending on their size and location. Histopathologic examination often reveals the formation of a clear cyst-like area surrounded by granulation tissue, with mucinophages found in the wall of granulation tissue that has collapsed.⁴ Always remove the mucocele and surrounding salivary gland tissue together with the feeder glands or ducts to reduce the likelihood of recurrence.

For the management of mucocele, there are numerous treatment options, involving micro marsupialization, scalpel incision, marsupialization, total surgical excision, intralesional corticosteroid injections, laser ablation, electrocautery procedures, sclerosing agent, cryosurgery.² Soft tissue laser surgery's primary benefits include decreased swelling and bleeding. The patient had extremely little time to cure the wound and very little post-operative pain in this instance. In this instance, stitches were necessary because of the extent of the lesion and the use of a knife to remove the surrounding tissues.

There are semiconductor diode lasers of different wavelengths ranging from 810–830 to 940 and 980 nm. Excellent hemostasis was established during the procedure using 940 nm because of its affinity for pigments like haemoglobin. The laser works by absorbing energy, which causes cellular explosions and tissue removal. Heat released from the absorption leads to vaporization of located structures, helping in the desired treatment. Heat is also absorbed by the surrounding tissues when the laser is used for an extended length of time. Same target tissue is surrounded by concentric serial circles during this process.

The laser's thermal effects are what cause the target tissue's surrounding regions to sustain irreparable or reversible damage. We call this zone of coagulation necrosis. Hemostasis during laser surgery is provided via a plug with a tiny diameter. The bleeding at the location was lessened in the coagulation-affected area. Current case exhibited great recovery of the wound with little scarring which improved overall patient acceptance

towards our method of treatment. We used a hybrid approach because the lesion had to be separated from the skin, which needed something firmer. We used surgical scissors to detach it and then burnt it with a LASER to reduce the healing time. We used both methods to benefit from both the surgical and laser approaches

CONCLUSION

With the advent of LASER, we as clinicians have come far in treating every spectrum of lesions. The scarring and bleeding are minimal in a highly vascular lesion such as labial mucosa. The patient acceptance has been excellent since they can get back to the normal life in 2 weeks or less.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Shikha S, Kumar A, Singh A, Sagarika, Priya P. approach for excision of mucocele in a 14-year-old child: a case report. *Int J Contemp Pediatr* 2025;12:997-1001.