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## Mucocele in paediatric patients: A case series with review

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### Abstract

Mucocele is the most common lesion of the oral mucosa, which results from the accumulation of mucous secretion due to trauma and lip biting habits or alteration of minor salivary glands. It is the most common minor salivary gland lesion in children and young adults. Diagnosis is mostly based on clinical findings and history. Various treatment options include marsupialization, surgical excision, dissection, laser ablation, cryosurgery, electrocautery, intra-lesional steroid injections and irradiation. Here we are reporting two cases of mucocele with comprehensive review on its etiopathogenesis and treatment options.

**Keywords:** extravasation, minor salivary glands, self-inflicted habits

### Introduction

Mucocele is a 17<sup>th</sup> common benign lesion of the oral cavity which is derived from a Latin word which etymologically means cavity filled with mucous (muco means mucous and coele means cavity) [1]. Apart from oral cavity these lesions can also appear appendix, gallbladder, paranasal sinuses and lacrimal sac. Mucocele in the oral cavity results from the rupture of salivary gland duct and spillage of mucin into surrounding soft tissue due to local trauma to the duct. It is a dome shaped mucosal swelling commonly seen in children and young adults. The most common site of occurrence in oral cavity is lower lip, accounting for 60% of the cases. Apart from lower lip, it can be seen in the area where there is a opening of the accessory salivary duct like buccal mucosa, anterior ventral tongue, floor of the mouth, soft palate, retromolar area and rarely on upper lip [2].

Mucoceles are usually asymptomatic but sometimes can cause discomfort by interfering with speech, chewing, or swallowing. Mucocele can arise within a few days after minor trauma and can persist unchanged for months unless treated. The diameter may range from a few millimeters to a few centimeters. If left without intervention, an episodic decrease and increase in size may be observed, based on rupture and subsequent mucin production [3]. It is important to highlight that some habits such as incorrect use of pacifiers or constant biting at the same place might lead to these mucous extravasations or retentions. Treatment options include marsupialization, surgical excision, dissection, laser ablation, cryosurgery, electrocautery, intra-lesional steroid injections and irradiation.

Hence the aim of this article is to describe a case series of mucocele on lower lip which was treated using electrocautery in Paediatric patients and also to provide a review on the various treatment options for the mucocele.

### CASE 1

A 9 year old girl reported with the chief complaint of painless swelling on the inner aspect of the lower lip since 2 weeks. Swelling was small initially but then its size increased gradually. There was no significant medical history. On intraoral examination a round, solitary, fluctuant swelling was seen on the inner aspect of the lower lip at the left lateral incisor region. Swelling was 5-6 mm below the vermilion border of the lower lip on the left side of the midline measuring approximately 1-2 mm in diameter. The swelling was slightly bluish in color when compared to that of the adjacent mucosa as seen in Figure 1. No other oral anomalies were detected. Patient had a positive history of lip biting habit. There was no difficulty in speaking or chewing reported. The blood investigations were done which included Hb, TLC, DLC and viral markers.

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After all reports came normal the patient was recalled for the surgery. The local anesthesia was administered around the lesion and the mucocele was excised using 5 mm tip of a portable, high temperature electrocautery working on a power supply of 230V, 0.9A and 1.5-1.7MHz frequency (Figure 2 & 3).



**Fig 1:** Mucocele on Left side of the lower lip.

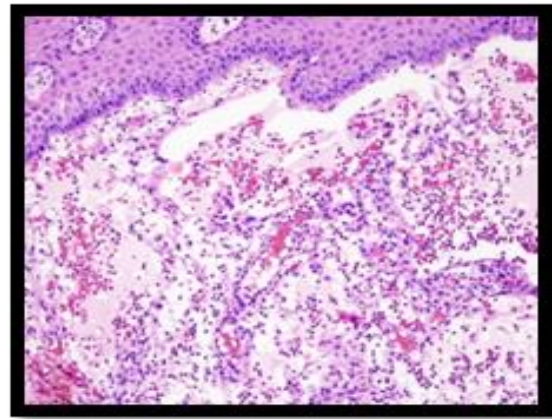


**Fig 2:** Local anesthesia was administered around the lesion.



**Fig 3:** Mucocele was excised using electrocautery.

The lesion was sent to the oral pathology laboratory for tissue sectioning and diagnosis which confirmed the diagnosis as mucocele. On the histopathology slide, charring of the tissue border secondary to the use of the high-heat electrocautery unit can be seen (Figure 4). Histopathological report confirmed the diagnosis as mucocele. The patient was recalled after one week for follow-up. The healing was unremarkable and after one month complete healing of the area was seen (Figure 5).



**Fig 4:** Histopathological picture after staining



**Fig 5:** Complete healing of the area was seen after 1 month.

#### Case 2

A 10 year old male patient reported with the chief complaint of swelling in the lower lip. The history of present illness revealed a recurrent episodic increase & decrease in size of swelling on the right side of the lower lip since 3 months. It was painless and no history of fever or malaise was reported. On intra oral examination an oral shaped swelling was seen which was soft, fluctuant and afebrile on palpation (Figure 6). The provisional diagnosis was formulated as a Mucocele on the basis of the history of the Lip biting habit and Clinical features of the lesion. The lab investigations like HB, TLC and DLC were conducted and the values were found to be normal. The mucocele was excised using same Electrocautery. The lesion was sent for histopathological evaluation and the pathological report confirmed the diagnosis as mucocele. Patient was recalled after one week and after a month for follow up to check any recurrence (Figure 7).



**Fig 6:** Mucocele on right side of lower lip



**Fig 7:** Healing after a week and after one month.

### Discussion

Oral mucoceles are benign soft tissue masses which are clinically characterized by single or multiple, oval or spherical, smooth, bluish or translucent, fluctuant nodule. It is the most common minor salivary gland lesion affecting the general population as it is usually asymptomatic. Minor salivary glands are found in most parts of the oral cavity except the gingiva. Hence the prevalence of occurrence of mucocele is commonly seen in the area. They are classified as extravasation or retention type. The extravasation type is a pseudocyst without defined walls and is caused due to mechanical trauma to the excretory duct of the gland leading to rupture with consequent extravasation of mucin into the connective tissue stroma and is not lined by epithelial lining. It is frequently seen on lower labial mucosa, buccal mucosa and retromolar area. The mucus extravasation triggers a secondary inflammatory reaction due to which patients report the periodic discharge of viscous fluid from the lesion. The retention type is less common than extravasation and usually affects older individuals. It is seen frequently on upper lip, hard palate, floor of mouth and maxillary sinus. In mucous retention phenomena, mucus may be retained in the duct or acini as a result of duct obstruction by sialolith or strictures [4]. The mucocele can be treated by a number of approaches that includes excision by a scalpel, micromarsupialization, medication like gammalinolenic acid (GLA) and steroids, cryosurgery, laser ablation (CO<sub>2</sub>, Er, Cr: YSGG), electrosurgery.

The scalpel is one of the most-often used methods of excising a mucocele. It does not require extensive equipment, has negligible cost and can be performed by most trained dentists. It does require great precision and detailed knowledge of the mucocele and the surrounding anatomy. It also requires great control of the instrument, with accurate tactile awareness. The drawbacks of this technique are delayed postoperative healing, greater bleeding and postoperative discomfort especially when treating young children [5].

Micromarsupialization is a treatment technique that involves placing a 4.0 silk suture through the widest diameter of the lesion without including the underlying tissue. It is indicated for lesions less than 1 cm in size. The suture is then tied off and is left in place for 7 days. As a result reepithelization of the duct occurs, creating a new epithelial-lined duct. This allows the saliva to be released from the duct. The recurrence rate with this approach has been reported to be about 14% in pediatric patients. This technique may be very challenging to perform on a pediatric patient in the outpatient setting [6].

GLA is a precursor of prostaglandin E which works by reducing inflammation through competitive inhibition of prostaglandins and leukotrienes. This is a possible mechanism

for the anti-inflammatory, antiatherogenic, antithrombotic and antiproliferative effects of GLA. Mucoceles are lined by inflammatory tissue which is secondary to the inflammation caused by the saliva in the tissues. It is useful for multiple mucoceles if a nonsurgical approach is considered, but there are possible side effects and interactions with other medications and allergies to consider [7]. Steroids play an important role in treatment of Mucocele, a single intralesional steroid injection, preceded by aspiration of the cyst fluid can be done. It causes the pseudocyst wall to collapse and triggers a severe inflammatory reaction of the wall that results in marked fibrosis [8].

Cryosurgery is a method of lesion destruction by rapid freezing. The lesion is frozen, and the resulting necrotic tissue is allowed to slough spontaneously. The 2 ways of performing this type of procedure are via open and closed cryosurgical systems. Open systems involve the direct placement of a freezing agent (ie, liquid nitrogen) onto the lesion via a cotton swab. The advantages of this technique are that there is no intraoperative or postoperative bleeding, with minimal surgical defects and minimal scarring. Therefore it is considered in areas of aesthetic concern, such as the vermilion border. In addition, no local anesthesia is required in most cases, so it is considered for use with the pediatric population [9]. The closed cryosurgical system technique requires sophisticated equipment. It can be a challenge to obtain/store liquid nitrogen and/or closed system equipment if one is not in a hospital environment. Finally, for the inexperienced clinician it can be difficult to gauge depth of freezing and therefore damage to deeper structures may result [10].

The laser is a very precise ablation instrument that offers many advantages when compared to the other methods. The laser causes minimal damage to the adjacent tissues, especially the underlying muscle layers. Postoperative bleeding is minimal due to the ability of the laser to coagulate. Due to minimal trauma to the adjacent tissues, postoperative healing is favorable, with very little scar formation. No sutures are required after the excision, as the denatured proteins serve as a natural wound dressing [11]. CO<sub>2</sub> laser vaporization to treat the mucocele of the lower lip is effective and has few complications. Because the operative time is shorter than with the excisional method, it is especially good for children and for less cooperative patients with this lesion [12].

Advantages of electrocautery observed in these cases are minimal bleeding, the electrode cuts on its side as well as on its tip, cuts are made with ease when the device is set correctly, hemostasis is immediate and consistent, the wound is nearly painless and the tip is self-disinfecting.

Disadvantages of electrocautery include need of anesthetic agent for cutting, unavoidable burning flesh odor, low tactile sense. In both the case there was no recurrence seen after recall period of 3 months.

### Conclusion

Mucocele are mostly benign and self-limiting nature, primarily diagnosed based on clinical findings followed by definitive diagnosis based on the histopathological investigation. Most of the reported literature showed lesion arose followed by trauma and habitual lip biting. Management of Mucocele becomes challenging because of high possibility of recurrence, however if no spontaneous regression occurs, there is a higher clinical success rate with a better prognosis.

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