

# Successful Diagnosis and Surgical Management of Mucocele in Pediatric Patients

Nita Naomi, Udijanto Tedjosongko\*, Tania Saskianti,  
Alit Rahma Estu, Shinta Purnamasari

Department of Pediatric Dentistry, Faculty of Dental Medicine  
Universitas Airlangga, Surabaya, 60132, Indonesia

\*Corresponding author details: Udijanto Tedjosongko; [udijanto@fkg.unair.ac.id](mailto:udijanto@fkg.unair.ac.id)

## ABSTRACT

**Introduction:** Oral mucocele is a benign lesion affecting the minor salivary glands and ducts. There are two types of mucous cyst, extravasation cyst and retention cyst. Extravasation mucoceles are more commonly seen in children and adolescence, caused by local trauma to the duct, most likely occur on lower lip. Treatment options include surgical excision, laser therapy, cryosurgery, or electrocautery. This case report describes an oral mucocele on children diagnosed and treated successfully. **Case Reports:** An 11-years old girl with chief complaint of painless swelling on lower lip in the past 6 months prior and gradually got bigger. Based on the clinical features, history of lip and nail-biting, calculus present at upper and lower teeth, and histopathological lab results established the diagnosis of mucocele. **Discussion:** Mucocele is commonly seen in the area which minor salivary glands are found. Lip and nail-biting causing destruction of the excretory duct which causes mucus to escape into adjacent tissues, followed by formation of granuloma and a pseudo-capsule. The excision of the mucocele using electrocauter eliminates the tissue scarring, the wound is nearly painless and more precision application. Education and motivation are required to prevent the patient from continuing this habit. **Conclusion:** One of the typical salivary gland lesions in the oral cavity is mucocele. Use of electrocauter is known to be beneficial for wound healing. Improving the lip and nail-biting habit will also reduce the recurrence of mucoceles.

**Keywords:** mucocele; extravasation cyst; children; electrocauter; biting habit

## INTRODUCTION

Oral mucocele is a benign lesion involving salivary glands and ducts, represent 2% to 8% of all mucoceles [1,2]. There are two types of mucous cyst, extravasation cyst and retention cyst. Based on the histopathological features, extravasation cyst is shaped by a mucous pool surrounded by granulation tissue and more common (92% of cases), whilst retention cyst has an epithelial lining (8% of cases) [2]. The incidence of oral mucoceles is 0.4–0.9% regardless of age with no gender predilection [3].

Extravasation mucoceles are more commonly seen in children and adolescence [4,5]. In extravasation mucocele, it is caused by rupture of salivary gland duct and spillage of mucin into surrounding soft tissue due to local trauma to the duct, most likely occur on lower lip (about 60% to 81% of cases) [1,6]. Apart from lower lip, it can be seen on buccal mucosa, anterior ventral tongue, floor of the mouth, soft palate, and retromolar area, which is the exit area of accessory salivary duct [2,6,7,8].

Clinical features of both extravasation and retention mucoceles are similar, characterized by bluish and transparent nodular lesion surrounded with rounded edges filled with accumulation of mucous material. The consistency is typically soft and fluctuating in response to palpation and exhibits a slow growth. The diameter can vary from a few millimeters to few centimeters. Blue color is due to vascular congestion, cyanosis of the tissue above, and accumulation of fluid below.

However, coloration may vary depending on the size of the lesion, proximity to the surface, and elasticity of overlying tissue [2,9,10].

Though mucoceles are usually asymptomatic and not associated with severe complications, they can cause discomfort by interfering with speech, chewing, or swallowing, especially for children [2,6]. Some oral mucoceles develop and disappear spontaneously after a short time, while others become chronic for months and require surgical removal [6,9]. Without intervention, an episodic decrease and increase in size may be observed, based on rupture and subsequent mucin production. Some habits such as incorrect use of pacifiers or constant biting at the same place might lead to this formation of mucoceles [6]. Treatment options include marsupialization, micro marsupialization, surgical excision, combination of filling the lesion lumen with a hydrocolloid impression material (dental alginate) followed by surgical excision, dissection, laser ablation, laser vaporization, laser excision, cryosurgery, electrocautery, intra-lesion steroid injections and irradiation [6,9,11]. This case reports describe an oral mucocele on children diagnosed and treated successfully.

## CASE REPORTS

An 11-years old girl accompanied with her mother came to Dental Hospital Universitas Airlangga Department of Pediatric Dentistry with chief complaint of painless swelling on lower lip.

Swelling has started 6 months prior and initially was small then gradually got bigger. No history of fever or trauma was present. Patient had oral habit of lip and nail biting. Clinical examination of intra oral condition shown round, white reddish swelling with clear border on lower left labial mucosal, approximately 6 mm in diameter (Figure 1).



**FIGURE 1:** A nodular lesion on lower lip mucosal.

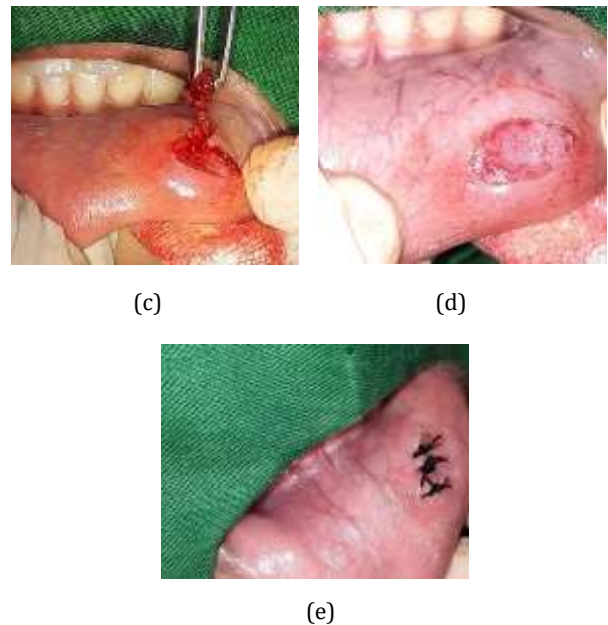
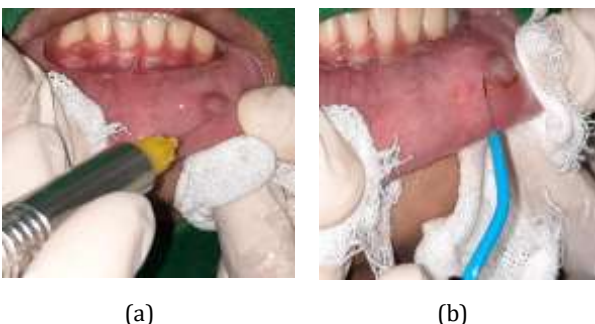
Clinical diagnosis was mucocele. Differential diagnosis was lymphangioma, lipoma, and soft irritation fibroma. Patient also have calculus on upper and lower teeth and cleaned at first visit (Figure 2a and 2b).



**FIGURE 2:** (a) Frontal intra oral condition, (b) Lower intra oral condition.

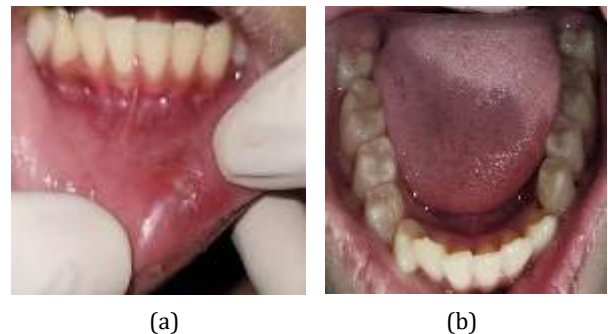
Treatment plan was total surgical removal of the lesion using electrocauter. After obtaining informed and written consent from the patient’s parents, at the second visit, patient came for operation.

The procedure began with aseptic using Povidone Iodine, then using benzocaine as topical anesthesia and 2% lidocaine + epinephrine 1:100,000 for local anesthesia applied surrounding the lesion. The lesion was seized with anatomical tweezers then removed with electrocauter (The Electron™ from Bonart™). Excision of lesion following clear margin of the lesion and surrounding minor salivary glands. The surgical wound then sutured to facilitate better wound healing with silk 5.0 suture. The lesion was fixated using formalin and sent to pathology laboratory for diagnosis confirmation (Figure 3a to 3e).



**FIGURE 3:** (a) Local anesthesia injection surrounding the lesion, (b) Excision of the lesion using electrocauter, (c) Removal of lesion and surrounding minor salivary glands, (d) Immediate post-operative excision wound, (e) Sutured of the surgical area to facilitate wound healing.

Patient was given mefenamic acid 500 mg 2 times a day and alloclair gel to applied on the wound site. Patient also instructed to remain at rest, soft diet for about 3 days and to avoid biting the lips due to the local anesthesia to avoid trauma. Follow up one week later shown post-operative wound results was good. There were no swelling, no bleeding, and no pain. After irrigation of healed wound site with PZ and povidone iodine, remaining suture was taken (Figure 4a).



**FIGURE 4:** (a) Wound site on one week follow up post-excision, (b) Treatment of dental caries with restorative material.

Patient then underwent treatment for dental caries on lower right and left first molar and topical application with fluoride to enhance oral hygiene (Figure 4b). Result from histopathological lab shown mucous extravasation surrounded with granulation tissue, ruptured squamous epithelium, and seromucous gland, confirming diagnosis of mucocele.

**DISCUSSION**

Mucoceles are common oral pathological conditions [1,2]. Prevalence of occurrence of mucocele is commonly seen in the area which minor salivary glands are found, and most likely occur on lower lip (about 60%-81% of cases) [1,2,6].

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 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 [1,2,6,10].

The clinical features of this case showed an asymptomatic nodular lesion on lower lip, which is the most common affected area in 60% to 81% cases and frequently occur in children and adolescences [1]. From this patient age, clinical features, location of lesion, history of lip and nail-biting habit, and later established by histopathological lab results, we conclude that this was a mucocele of extravasation type. Patient had habit of lip and nail-biting causing destruction of the excretory duct which causes mucus to escape into adjacent tissues. Enter the next phase, formation of granuloma occurred due to foreign body reaction. Lastly, the formation of a pseudo-capsule (non-epithelial lining) around the mucosa [1,10]. Trauma to the oral cavity or lip biting habits are the most common cause for mucoceles in the lower lip [2]. However, obstruction to the ducts of minor salivary glands due to calculus or any injury may also be a cause of the mucous cyst [14].

Many suggested treatments i.e., surgical excision, marsupialization, laser therapy, electrocautery, or cryosurgery [2,11,12]. Gold standard treatment protocol is excision of the lesion along with the minor accessory salivary glands [12]. The traditional excision technique is considered a simple surgical procedure [13], however, new technologies had been developed over the year to aimed at minimizing tissue and psychological trauma to the patient especially children [9].

In this case, treatment was total surgical excision of the lesion and removal of the minor accessory glands, as it proven to have good prognosis and to avoid recurrences [6,10,11,12]. Using electrocauter (The Electron™ from Bonart™) as to eliminates the tissue scarring, hemostasis is immediate and consistent, the wound is nearly painless and more precision application. Follow up one week later showed good healing of wound with little to none scarring.

To reduce the possibility of recurrence, we also address the lip and nail-biting habit. From the anamnesis, the patient said for the past few weeks had been rough because of the exam period of the school, so it might cause anxiety and escalate the intensity of nail and lip biting habit that already persisted at the first place. Education and motivation are required to prevent the patient from continuing this habit. Nail biting can be reduced by trimming the nails short or applying bitter nail polish. Lip biting also can be treated with the use of appliance such as lip bumper, oral screen, bonding of brackets to palatal surface of upper anteriors, clear aligner/retainer [15].

## CONCLUSION

One of the typical salivary gland lesions in the oral cavity is mucocele. Frequently occurred in lower lip, there are two groups: extravasation and retention type. Mostly happens in children and adolescence, although the main causes are trauma to oral cavity and lip biting habits, obstruction to the ducts of minor salivary glands due to calculus or injuries is also a possibility. Various treatments are applicable, such as surgical excision, marsupialization, laser therapy, electrocautery, or cryosurgery. Use of electrocauter is known to reduces the tissue scarring, more precision, and painless wound. Improving the lip and nail-biting habit will also reduce the recurrence of mucoceles.

## REFERENCES

- [1] Magalhães LS, Calazans MNB, Cota ALS, Nemezio MA, Brêda Junior MA. Diagnosis and treatment of mucocele in a pediatric patient: case report. *RGO, Rev Gaúch Odontol.* 2020;68: e20200030. <http://dx.doi.org/10.1590/1981-863720200003020180117>
- [2] Nandini Katta, Sudheesh KM, Shruthi Arekal. Two different methods of oral mucocele management in pediatric patients: a case report. *J Dent Indones.* 2018;25(2):121-4.
- [3] Laller S, Saini RS, Malik M, Jain R. An Appraisal of Oral Mucous Extravasation cyst case with Mini Review. *J Adv Med Dent Sci Res.* 2014; 2:166-70.
- [4] Bodner L, Manor E, Joshua BZ, Shaco-Levy R. Oral Mucoceles in Children – Analysis of 56 New Cases. *Pediatr Dermatol.* 2015; 32:647-50.
- [5] Hong, C.; Dean, D.R.; Hull, K.; Hu, S.J.; Sim, Y.F.; Nadeau, C.; Gonçalves, S.; Lodi, G.; Hodgson, T.A. World Workshop on Oral Medicine VII: Relative frequency of oral mucosal lesions in children, a scoping review. *Oral. Dis.* 2019, 25 (Suppl. 1), 193-203.
- [6] Dr. Yatendra Gautam, Dr. Manvi Srivastava. Mucocele in paediatric patients: A case series with review. *Int J Appl Dent Sci* 2018;4(2):100-103.
- [7] Graillon, N.; Mage, C.; Le Roux, M.K.; Scemama, U.; Chossegras, C.; Foletti, J.M. Mucoceles of the anterior ventral surface of the tongue and the glands of Blandin-Nuhn: 5 cases. *J. Stomatol. Oral. Maxillofac. Surg.* 2019, 120, 509-512.
- [8] More, C.B.; Bhavsar, K.; Varma, S.; Tailor, M. Oral mucocele: A clinical and histopathological study. *J. Oral. Maxillofac. Pathol.* 2014, 18 (Suppl. 1), S72-S77.
- [9] Botticelli, G.; Severino, M.; Ferrazzano, G.F.; Vittorini Velasquez, P.; Franceschini, C.; Di Paolo, C.; Gatto, R.; Falisi, G. Excision of Lower Lip Mucocele Using Injection of Hydrocolloid Dental Impression Material in a Pediatric Patient: A Case Report. *Appl. Sci.* 2021, 11, 5819. <https://doi.org/10.3390/app11135819>
- [10] Chaitanya, P., Praveen, D., & Reddy, M. (2017). Mucocele on Lower Lip: A Case Series. *Indian dermatology online journal*, 8(3), 205-207. [https://doi.org/10.4103/idoj.IDOJ\\_151\\_16](https://doi.org/10.4103/idoj.IDOJ_151_16)
- [11] Sukhtankar LV, Mahajan B, Agarwal P. Treatment of lower lip Mucocele with Diode Laser – A Novel Approach. *Ann Dent Res.* 2013;2(Suppl 1):102-8
- [12] Sadiq, Muhammad Shahruxh Khan & Maqsood, Afsheen & Akhter, Fatema & Alam, Mohammad & Shakoor, Maria & Minallah, Sheheryar & Vohra, Fahim & Alswairki, Haytham & Abutayyem, Huda & Mussallam, Samir & Ahmed, Naseer. (2022). The Effectiveness of Lasers in Treatment
- [13] Paglia, L.; Gallusi, S.; de Giorgio, S.; Cianetti, S.; Lupatelli, E.; Lombardo, G.; Montedori, A.; Eusebi, P.; Gatto, R.; Caruso, S. Reliability and validity of the Italian versions of the Children's Fear Survey Schedule—Dental Subscale and the Modified Child Dental Anxiety Scale. *Eur. J. Paediatr. Dent.* 2017, 18, 305-312.

- [14] Conceição JG, Gurgel CA, Ramos EA, De Aquino Xavier FC, Schlaepfer-Sales CB, Cangussu MC, Cury PR, Ramalho LM, Dos Santos JN. Oral mucoceles: a clinical, histopathological and immunohistochemical study. *Acta Histochem.* 2014; 116:40-7.
- [15] Gopalakrishnan, S., Chacko, T., & Jacob, J. (2021). Management of Lip Biting Using Clear Aligner/Clear Retainer. *Journal of Indian Orthodontic Society*, 55(1), 94-95.  
<https://doi.org/10.1177/0301574220964897>