Oral Mucocele and its Surgical Approach as Treatment: Case Series

Tania Saskianti, Angela Faustina Ka...

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I Komang Evan Wijaksana
Department of Periodontics, Faculty of Dental Medicine, Universitas Airlangga
i.komang.evan.w@fkg.unair.ac.id

Reviewer A:

in general, the study was well conducted by the authors; However, there are some concerns to revise that are described below.

1. For case reports, abstracts need not be structured.
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4. The discussion section appears well organized with the relevant paper that support the conclusions, even if the authors should better discuss the specify unique founding from the case series on the first paragraph.

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Reviewer B:

Oral mucocele are common soft lesion happened in children. But these four cases can explain the high prevalence.

1. This four cases happened in adjacent time, there should be some reason explaining this phenomena

2. Please describe other tools or method to do excision, explain the advantage and disadvantage of each tools, and what reason for choosing the conventional method.

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~~Common benign lesion in children’s oral cavity is mucocele on the lower lips. It originates from the accumulation of mucous due to local trauma and lip biting habit. Lip biting is often motivated by a psychological condition of anxiety. Mucoceles are painless but can be bothersome for patients to eat and speak. Mucoceles can affect the general population, but most commonly young patients. The etiologies of oral mucoceles may vary and surgical treatment was best chosen due to its convenience, children-friendly method and high successful rate. In addition, awareness education for children and their parents is necessary to eliminate the lip biting habit. If the habit is persistent due to children’s anxiety, it is notably essential to inquire more about the etiologies and consult the professional psychologists.~~
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Keywords: children ; ~~mucocele~~ mucocele ; surgical

Introduction

Oral mucocele is a common lesion of the oral mucosa resulted from an alteration of minor salivary glands. Mucocele involves mucin accumulation causing limited swelling. It affects patients aged from 11 to 17 years and can appear at any site of the oral mucosa containing minor salivary glands.[1] The swelling is usually caused by local trauma and obstruction of salivary gland ducts. According to the causes, there are two types of mucocele exist – retention and extravasation. Retention mucocele appears due to a decrease or absence of glandular secretion produced by blockage of the salivary gland ducts. Extravasation mucocele results from a broken salivary gland ducts and the consequent spillage into the soft tissues around this gland.[2] Local trauma and/or biting habit are the main etiological factors for the extravasation mucocele in the lower labial mucosa.[3]

In children, extravasation mucoceles are commonly found than the retention type.[4] There is no clinical difference between retention and extravasation mucoceles. Mucoceles present a bluish, soft and transparent cystic swelling which frequently resolves spontaneously. The blue color is caused by vascular congestion, and tissular cyanosis of the tissue above assessment, but the anamnesis should also be carried out correctly. Final diagnosis is obtained from histopathological examination.[5] Dentist should be looking for previous trauma and the following data are crucial: lesion location, history of trauma, rapid appearance, variations in size, bluish color and the consistency. Mucoceles are mobile lesions with soft and elastic consistency depending on how much tissue is present over the lesion. Early examination is crucial to prevent exacerbation and confirm the diagnosis.[2]

~~In this paper, unusual findings of four cases of mucoceles had encountered in the past brief periods, for approximately two months. This later brings up various presumption of its etiologies. One of them is psychological factor. Jani, et al.[6] mentioned the psychological probability is correlated to lip biting habit. Chances are anxiety of starting new academic year may play role in this etiology. Anxiety in children can be discovered from several distinguish behaviour. Lower lip biting is one often found in this state. Therefore, mucoceles are commonly found on their lower lips. Mucoceles are painless but can be bothersome for patients to eat and speak.~~

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Mucoceles are usually asymptomatic, but sometimes can cause discomfort by interfering speech, chewing, or swallowing. Conventional treatment is commonly complete excision of the surrounding mucosa and glandular tissue down to the muscle layer. A simple incision of the mucocele would drain out the

lesion but it would reappear as soon as the wound heals. There is no need for treatment if superficial extravasation mucoceles resolve spontaneously. Small mucoceles can be removed completely with the marginal glandular tissue before suture. In the case of larger mucoceles, marsupialization would avoid damage to vital structures.[2] This case series were published under parent's consent without any identity exposed. This case series aims to describe a series of cases that occur from different clinical manifestations, how to diagnose mucoceles, and determine the most appropriate therapy that will obtain good clinical results.

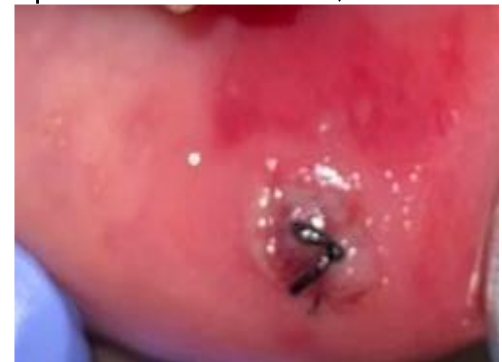
Case report

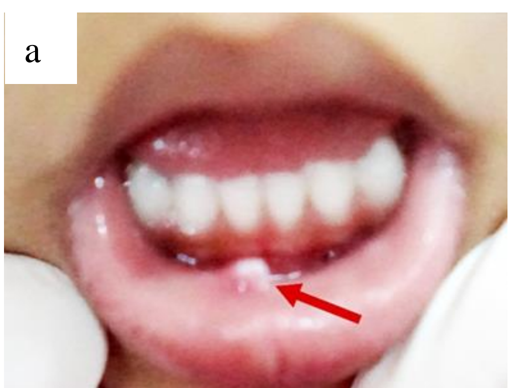
Case 1

A four years old female child came to Pediatric Dentistry Clinic Universitas Airlangga Dental Hospital with chief complaint a swelling on her lower lip. This was the first time this bump existed and it had been there for approximately a month. Her mother explained that the child had lip biting habit since one year ago.

The swelling was diagnosed as mucocele, extravasation type after anamnesis and clinical examination. The bump is localized, compressible, bluish-colored, soft fluid-filled nodule in circular shape with approximately 3.5mm diameter in size (Figure 1a). Considering the size and the functional disturbances occurred due to the swelling, it was decided to remove it with surgical excision of the lesion.

Complete excision was done under local anesthesia and using scalpel No. 15. The surgical site was first swabbed with povidone iodine 10%, the excision made was semilunar shape and after the mucocele was removed, a suture was placed with 4-0 silk suture. The resected lesion later was sent for histological analysis. At the end, post-operative instructions were given and analgesic was prescribed. The parents and the patient were also instructed to eliminate the lip biting habit. Histological findings confirmed the diagnosis as mucocele (Figure 1c). After a week, the lesion was healed properly and there was no remnant trace either any complaints.





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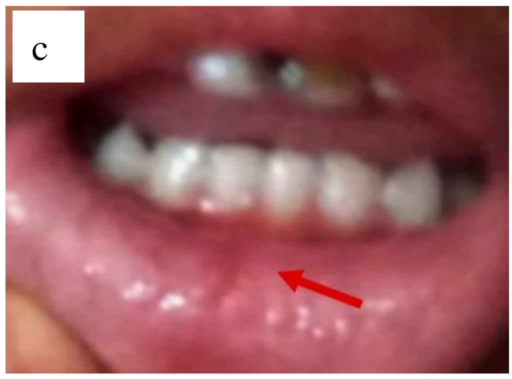


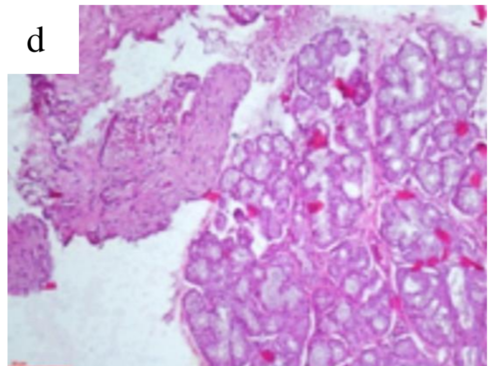
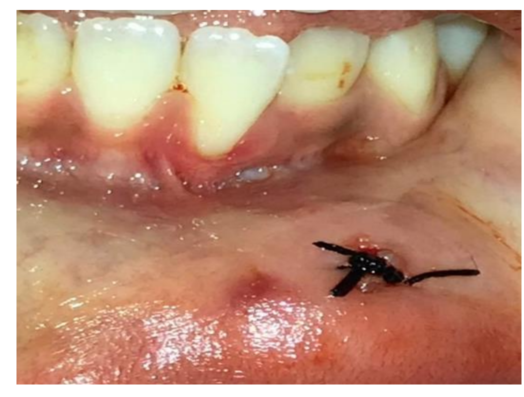


Figure 1 – Mucocele Excision using Scalpel. a) Intraoral view of mucocele on lower lip before surgery. b) sutures placed c) a week post-excision mucocele. d) Hematoxylin Eosine section under 20x magnification showing granulation tissue encapsulated by dense fibrous connective tissue

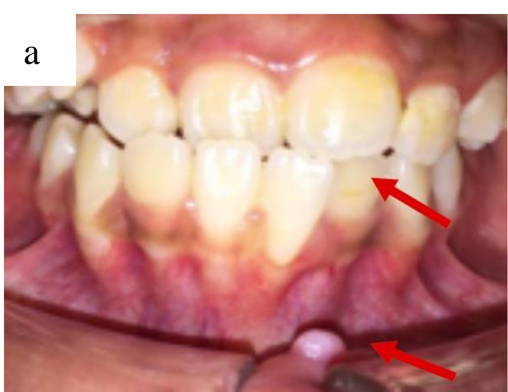
Case 2

A 14-year-old female child came with her parents to the Pediatric Dentistry Clinic Universitas Airlangga Dental Hospital with the chief complaint of swelling in left lower lip region. Swelling initially emerged and then grew again gradually. A round, solitary, fluctuant swelling was seen on the inner aspect of the lower lip in 31, 32 regions, diameter ± 3mm. The swelling was slightly bluish in color when compared to the adjacent mucosa. The child had also reported trauma due to biting on the lower lip 5 months ago. Swelling was painless and no past medical history, such as fever or malaise, was present. On intra-oral examination, erupting 11, 21 seen in which 21 was in cross bite relation (Figure 2a).



This case was diagnosed as an extravasation-typed mucocele based on history of trauma and clinical features. Cross-bite malocclusion caused trauma from biting the lip was predicted to be the main etiology. Conventional surgical treatment was planned and explained to the parents. Once the parent's concern was obtained, treatment was performed.

An incision was first placed for splitting the overlying mucosa then resecting the mucocele from the base. Specimen was sent for histopathological examination to confirm the diagnosis (Figure 2c). The suture then was placed and removed after 7 days The patient was planned to perform orthodontic treatment to correct malocclusion afterwards.



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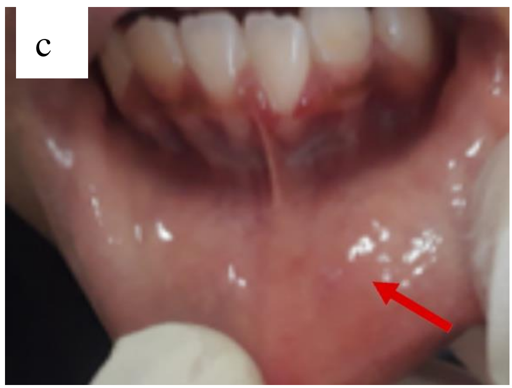


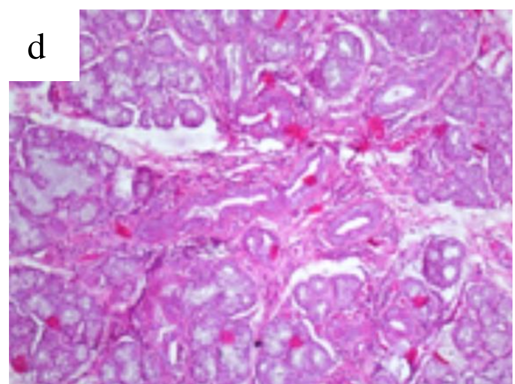
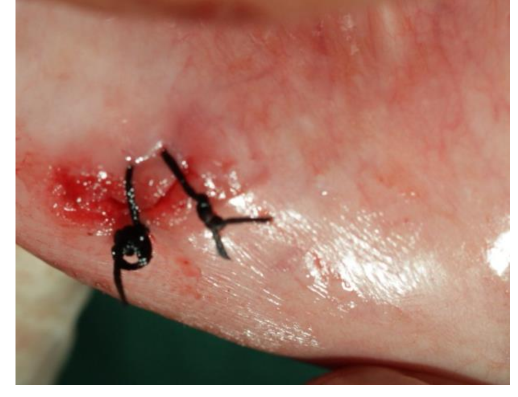


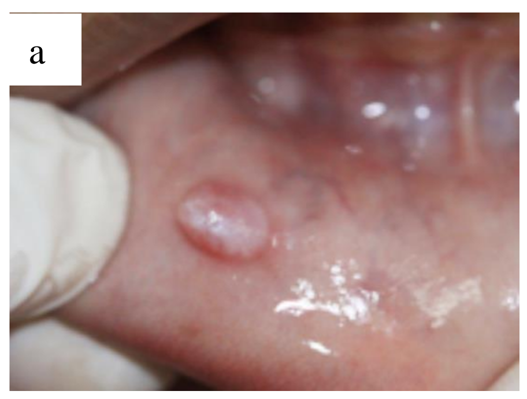
Figure 2 – Pre and seven days' post mucocele surgical excision on lower lip. a) Mucocele on the lower lip and 11, 12 in cross-bite relation, 21 edge to edge relation. b) sutures placed c) post-operative condition. c) Histological findings confirmed mucocele as the area of spilled mucin surrounded by connective tissue.



Case 3

A 11-year-old male child came with his parent to the Pediatric Dentistry Clinic Universitas Airlangga Dental Hospital with the chief complaint of swelling in right lower lip region. Swelling presented in the inner aspect of the lower lip between 83, 84 regions (Figure 3a) for the past 6 months. It was initially small and progressed larger to the present stage. The child had lip biting habit. On intra oral examination, the lesion was soft, fluctuant and palpable with no increase in temperature, oval in shape. It was also painless. The upper right canines was partial erupted with detailed cusp.

The case was diagnosed as an extravasation mucocele, the histological findings also confirmed the diagnosis (Figure 3c). Parents were given detailed treatment planning and once the parent's concern was obtained, treatment was performed. The incision was placed using Scalpel No. 15. At the end two sutures were placed and removed after 7 days (Figure 3b). The patients were instructed to eliminate lip biting habits.



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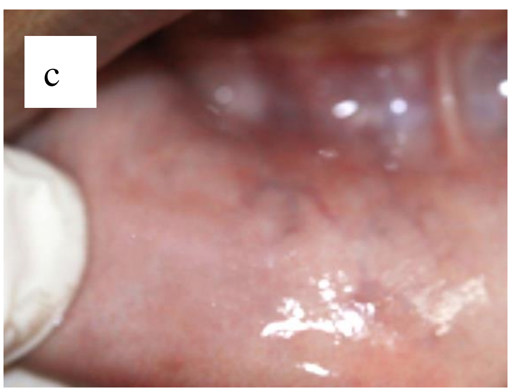


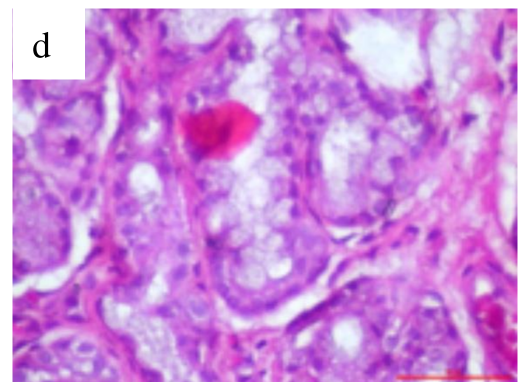


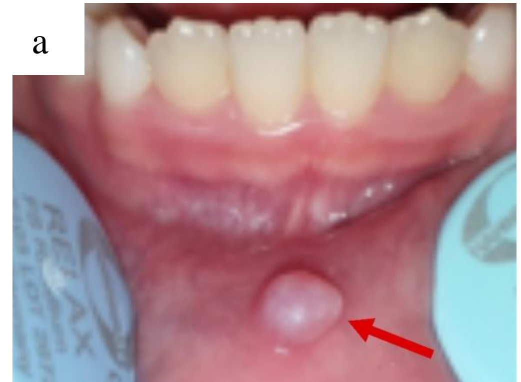
Figure 3 – Mucocele Excision using scalpel on lower lip. a) Intraoral view of mucocele on lower lip before surgery. b) sutures placed. c) Post-excision mucocele. d) Resected mucocele tissue under the Hematoxyline-eosine coloring.

Case 4

A nine years old female patient reported to the Pediatric Dentistry Clinic Universitas Airlangga Dental Hospital, with a chief complaint swelling in left lower lip region. The presenting illness showed that swelling present in the inner aspect of the lower lip in 31, 32 regions for past 3 months. Swelling was small, painless, the patient may have a habit of biting the left lower lip and no past medical history like fever or malaise was present.

Clinical examination revealed a well-defined, raised solitary, pale pink, oval, translucent nodular growth with smooth surface, diameter was approximately 1 cm in size (Figure 4a). It was compressible, non-tender to touch and had a s sessile base. Based on the history and clinical examination a provisional diagnosis of mucocele was established.

Surgical removal of the lesion was planned and performed by placing an incision vertically under anasthesia, therefore splitting the overlying mucosa and then resecting the mucocele from the base was done. The following histopathological examination was taken place to support the diagnosis. The wound was suture and removed after 7 days (Figure 4b).



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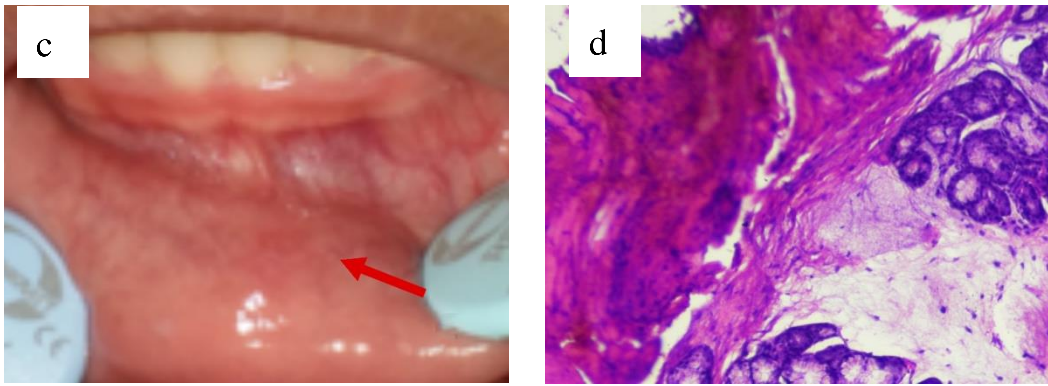

Figure 4 – Mucocele Excision using scalpel on lower lip. a) Intraoral view of mucocele on lower lip before surgery. b) Sutures placed. c) Seven days post-excision. d) Histological appearance of resected mucocele tissue.

Discussion

In these cases, the occurrences are encountered on the similar range period of new academic year for schools. Lip biting habit thus may occur due to a demanding environment the children had to face when they were expected to understand their responsibility, control their childish behavior and follow some new rules. These may cause the children to feel frustrated and depressed leading to the lip biting habits.[6]

Oral mucocele is one of the most common benign lesion. Although oral mucocele is benign, if it is left untreated, it can organize and form a permanent bump on the oral surface. Thus it will affect overall oral functions, such as mastication, speech and aesthetics. The incidence of this lesion in the general population is 0.4-0.8%, with exiguous or almost no differences between males and females.[2,7] In pathology found in children, there were 735 cases of oral mucoceles taken place over 30 years' period. Meanwhile Wu et al stated that about 11.6-21.8% of all pediatric oral biopsies showed mucoceles occurences.[8] Daniels and Mohamed stated that teenagers and children were most commonly affected with mucoceles.[9] Additionally, Yamasoba *et al.* and Oliveira *et al.* in More, *et al.* study mentioned that 65% of their patients with oral mucoceles were under 20 years of age.[10] In the cases discussed above, the three cases took place in females and the others in males with no distinct incidence, all taken place in children below 18 years old, making it is well suited to those studies.

Oral mucocele was commonly found on lower lip. In Japan, 77.9% of mucocele cases took place on the lower lip, in Brazil, 83.3% [8] Less common sites for the occurrence are buccal mucosa, anterior lateral tongue, floor of mouth. In these case series, the sites of the lesion were also predominantly located on one similar locations, at which on one side of the lower lips. This is closely related to its most common etiology, trauma. There is greater possibility of certain teeth or dental braces wearings exerting trauma on the lower lip.[11]

Continuous physical traumas can cause a leakage of salivary secretion into surrounding submucosal tissue, typically in the lower lip, thus making extravasation-typed mucocele.[5] On the third case, the existence of oral mucocele was also presumably aggravated by the upper right canines that partially erupted, making continuous traumas on that area. This intensified the emanation progress of the oral mucocele.

According to Soo-Hyung, 25.7% common contributory factor for an oral mucocele to occur is due to lip biting.[12] All of the remaining cases above were caused by lip biting habit that presumed relating to psychological stress. Jani, et al. mentioned in their study the feasible correlation of psychological stress and lip biting habit.[7] Chances are stress of those children starting new academic year might probably be the main cause of this deleterious habit.

In these cases, the occurrences are encountered on the similar range period of new academic year for schools. Lip biting habit thus may occur due to a demanding environment the children had to face when they were expected to understand their responsibility, control their childish behavior and follow some new rules. These may cause the children to feel frustrated and depressed leading to the lip biting habits.[6]

Oral mucoceles are described as fluid filled vesicle or blister in superficial mucosa or as a fluctuant nodule deep within the connective tissue.[7,13] These

bluish, soft, transparent vesicles can rupture spontaneously and will be leaving ulceration on surface that heals within few days. Their deep blue color results from tissular cyanosis and vascular congestion of the tissue above and accumulation of mucin beneath. The color may vary depending on the dimension of the lesion, vicinity of the mucosal surface and the resiliency of the overlying tissue.[2]

Beside its distinguishable appearance, histopathological examinations were also taken for determining the oral mucocele diagnosis by all odds. Histologically, two patterns are seen, they were called retention and extravasation type. An intact epithelium-lined duct, which is dilated to form a cyst, filled with mucin and inflammatory debris (retention cyst type) or extravasated mucin within the stroma, often associated with granulation tissue, a brisk inflammatory response, and foamy histiocytes, without epithelium (extravasation type).[14]

In all of the cases, there are obstructive changes in the minor salivary glands and epithelioid macrophages can be seen among the mucin. There was inflammatory reaction such as macrophages that contain phagocytized mucus were found in all three cases supporting their both subjective and objective examinations. Thus hereby we concluded they are all extravasated type.[10]

~~By far there are several methods for treating oral mucoceles. They are conventional approach by using scalpel or electrosurgery, nonsurgical by using injection corticosteroids, cryosurgery and electrocautery.~~[15]

~~Corticosteroid injection is a single intralesional steroid injection, preceded by aspiration of the cyst. It causes pseudocyst wall collapsed and triggers a severe inflammatory reaction of the wall that is resulting marked fibrosis.~~[15]

~~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 advantage of this technique includes no intraoperative or postoperative bleeding, with minimal surgical defects and scarring. The disadvantage of this technique is requiring trained skills, because it is difficult to gauge depth of freezing. If it is too deep, it can cause damage to deeper structures.~~[15]

~~Electrocautery techniques for mucocele removal have minimal bleeding advantage. The electrode cuts both on its side and tip. The hemostasis is immediate and consistent, the wound is nearly painless and the tip is self-disinfecting. Disadvantages of electrocautery are anesthetic agent for cutting requirement, unavoidable burning flesh odor and low tactile sense.~~[15]

~~According to Baurmash. conventional method by surgical approach is the most common choice. There are three possible surgical approaches for the management of oral mucoceles conventionally: 1. Simple excision of the lesion; 2. Marsupialization; 3. Complete excision of the lesion along with the associated salivary gland.~~[16]

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In this case series, we opted for conventional surgery complete excision by using scalpel. This method was preferred due to its low recurrence of relapse despite its necessity to be careful in its procedure.[17] Conventional surgical excision ensured that both affected and adjacent glands are eliminated along with the pathologic tissue before the wound started to heal in order to minimize the risk of recurrence. Besides, this treatment is manageable for children, inexpensive and enable to be performed under local anaesthesia.[18] The comparative study conducted by Bahadure et al., on the success of conventional surgical management of oral mucocele in a group of subjects in the transitional period from mixed dentition period to permanent dentition proved that conventional surgical management of the mucoceles in the paediatric patient is the definitive treatment modality, from this consideration we prefer use the conventional surgical technique than the others.

After the complete excisions, suturing should also be carefully placed to promote healing and prevent the rupture of the adjacent glands or ducts. Post-operative instruction to eliminate the lip biting habit should be given afterwards. In addition, awareness education for children and parents is necessary to eliminate the lip biting habit. If the habit is persistent due to children’s anxiety, it is notably essential to inquire more about the etiologies and consult the professional psychologists.

After a week post-operation, patients felt more comfortable since there is no interfering bump. They stated that their mastication and speech function are improved. The intensity and frequency of biting the lower lip is also gradually decreasing.

Conclusion

Oral mucocele is relatively common benign lesion in children. Traumatism is one of the frequent causes of its occurrence. Various clinical parameters must be taken into consideration in opting the right treatment to prevent the recurrence. Awareness education for children and parents is also essential to eliminate the deleterious lip biting habit. Professional psychologists' help can be opted for further approach.

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