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Early Recurrence of Lower Lip Mucocele After Surgical Excision in an Adolescent: Clinical Pitfalls and Preventive Consideration

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ABSTRACT

Mucocele is a common benign lesion of the oral mucosa in pediatric populations, typically managed through surgical excision. However, early recurrence remains a clinical challenge, particularly among adolescents. This case report describes the clinical presentation, surgical management, and follow-up of a 15-year-old boy with recurrent lower lip mucocele based on history taking, clinical and photographic examinations, and a literature review. A 15-year-old boy presented with swelling on the right lower lip following accidental trauma. Clinical examination suggested a mucocele, and surgical excision was performed. Initial healing was uneventful; however, recurrence occurred within two weeks at the same site. A second surgical intervention resulted in complete resolution without further recurrence. Early recurrence may be associated with factors such as incomplete removal of adjacent minor salivary gland tissue, persistent local trauma, and patient-related behavioral habits. Adolescents may have an increased risk due to parafunctional habits and variations in tissue response. This case highlights that early recurrence of mucocele can occur despite apparently successful initial treatment. Meticulous surgical technique, including complete removal of the involved glandular tissue, combined with patient education and close postoperative monitoring, is essential to minimize recurrence.

INTRODUCTION

Mucocele is a mucus-containing lesion that commonly affects the minor salivary glands and results from mucus retention or extravasation into the surrounding connective tissue of the lamina propria. The term mucocele is derived from the words *muco*, meaning mucus, and *coele*, meaning cavity (Cunha et al., 2003; Hakiki & Dewi, 2023; Okumura et al., 2007). These lesions may vary considerably in size, ranging from a few millimeters to several centimeters in diameter (Valdec & Stadlinger, 2023). Mucoceles are most frequently observed in children and young adults, although they may also occur in older individuals (Narendran et al., 2025).

Several studies have reported that approximately one-half to two-thirds of mucoceles occur in individuals younger than 17 years of age (Francischetto et al., 2022; Miranda et al., 2022; Poulopoulos et al., 2017). This lesion is considered reactive in nature and develops as a result of saliva leakage from a damaged minor salivary gland or duct into the adjacent connective tissue. The accumulation of extravasated mucus within the fibrous connective tissue leads to the formation of a cyst-like cavity. Unlike true cysts, mucoceles lack an epithelial lining and are instead surrounded by granulation tissue. Because the pooled saliva is located beneath the epithelial layer, mucoceles typically present as smooth-surfaced submucosal swellings

(Narendran et al., 2025).

Clinically, mucoceles are classified into two main types: extravasation mucoceles and retention mucoceles, based on their underlying pathogenesis (Dean et al., 2016). Retention mucoceles develop as a result of partial or complete obstruction of the salivary gland ducts, leading to reduced or absent salivary flow. In contrast, extravasation mucoceles arise from disruption of the salivary gland duct, allowing saliva to escape into the surrounding soft tissues. Local trauma, habitual lip biting, or a combination of both are considered primary etiological factors for extravasation mucoceles of the lower labial mucosa. In pediatric patients, extravasation mucoceles are reported more frequently than retention-type lesions. However, no distinct clinical features reliably differentiate retention mucoceles from extravasation mucoceles (Ayoub & Ghosein, 2025; Saskianti et al., 2021).

Mucoceles most commonly occur on the lower lip, followed by the floor of the mouth and buccal mucosa as the next most frequent sites. In some cases, particularly lesions of short duration, spontaneous rupture and healing may occur. However, mucoceles that persist for several weeks or months without resolution generally require surgical intervention (Scribante et al., 2023). Surgical excision of the lesion, including removal of adjacent minor salivary gland tissue, is recommended to reduce the risk of recurrence (Dean et al., 2016).

Conventional surgical excision using a scalpel remains the standard treatment modality for mucoceles. Nevertheless, various alternative treatment approaches have been described, including electrosurgery, cryosurgery, micro-marsupialization, marsupialization, intralesional corticosteroid injection, and laser-assisted techniques such as diode laser therapy. To effectively minimize recurrence, it is essential that the excision encompasses the associated minor salivary gland tissue responsible for mucus extravasation (Ayoub & Ghosein, 2025; Saskianti et al., 2021). Reported recurrence rates of mucoceles vary widely, ranging from approximately 10% to 20%, with some studies documenting rates as high as 40%. A systematic review and meta-analysis conducted by Hashemi et al. (2023) demonstrated no statistically significant differences in recurrence rates among surgical excision, carbon dioxide laser therapy, and marsupialization techniques, suggesting comparable effectiveness among these treatment modalities.

Despite its high prevalence and generally favorable prognosis, early recurrence of mucocele following surgical excision remains underrecognized in clinical practice, particularly among adolescent patients. This case report aims to highlight the clinical pitfalls associated with early recurrence and to emphasize preventive considerations relevant to pediatric dental practitioners.

METHOD

This case report was prepared in accordance with the Case Report (CARE) guidelines to ensure comprehensive and transparent reporting of clinical findings.

Data were obtained from a pediatric patient who presented to Dadi Keluarga Hospital, Ciamis, Indonesia, with a chief complaint of recurrent lower lip swelling. Clinical data were collected through history taking, including the chief complaint, onset and progression of the lesion, history of trauma or habitual lip biting, previous treatment, and relevant medical and dental history.

Clinical examinations included extraoral and intraoral assessments to evaluate the lesion characteristics and location, supported by clinical photographic documentation during

the management stages, including the initial presentation, surgical procedure, postoperative follow-up, recurrence, and subsequent surgical intervention.

The diagnosis of mucocele was established based on clinical findings and patient history. Histopathological examination was not performed, which was acknowledged as a limitation of this report. Surgical excision was performed as the definitive treatment under local anesthesia with appropriate aseptic procedures, followed by scheduled postoperative follow-up to evaluate healing and monitor for recurrence.

Clinical data, including patient history, examination findings, treatment procedures, and follow-up outcomes, were analyzed descriptively and discussed in relation to current literature regarding the management of mucocele, with particular emphasis on early recurrence in adolescent patients.

Written informed consent was obtained from the patient's father before the surgical procedure and before the use of clinical data and photographic documentation for publication purposes, in accordance with ethical standards for reporting patient-related information.

RESULTS AND DISCUSSION

Case Presentation

A 15-year-old boy presented to Dadi Keluarga Hospital, Ciamis, Indonesia, accompanied by his father, with a chief complaint of swelling in the right lower lip. The lesion had been present since early July 2025 and initially developed following an accidental lip bite. It was initially small and asymptomatic but gradually increased in size and became painful, particularly due to repeated manipulation and habitual biting. The lesion also caused discomfort during speech and aesthetic concern.

The patient reported no prior treatment for the lesion. His medical history was unremarkable, with no history of systemic disease, long-term medication use, fever, or malaise. There was no relavant family history. The patient had not previously received dental treatment, although he reposted occasional untreated toothache. He had no relevant family history or systemic medical conditions. Dental history was unremarkable, as the patient had never undergone dental treatment, although he reported a history of toothache that had not been treated.

On July 22, 2025, the patient was referred from a primary healthcare facility, where he had been prescribed analgesics and vitamin supplements without definitive treatment. Extraoral examination revealed no abnormalities. Intraoral examination showed a well-defined, oval-shaped, translucent swelling measuring approximately 1.5 cm in the right lower labial mucosa **(Fig. 1)**. Based on the clinical findings and history of trauma, a provisional diagnosis of mucocele was established. Surgical excision was planned as the definitive treatment. Differential diagnoses such as fibroma, lipoma, and minor salivary gland neoplasm were considered but deemed less likely based on clinical appearance and history.



Figure 1. Intraoral examination on the initial visit. Oval-shaped vesicle with a diameter of 1.5 cm in the right lower lip mucosa, with reddish margin and transparent-like center.

Surgical excision was performed on August 1, 2025, under aseptic condition **(Figure. 2A-D)**. Written informed consent were obtained from the patient's father prior to the procedure. The operative field was disinfected with povidone-iodine, and local anesthesia was administered using a dental syringe (Citoject). After achieving adequate anesthetic, a horizontal incision was made using a No. 15 scalpel blade to expose the lesion. Blunt dissection was performed using an artery forceps, and the lesion contents were carefully removed. The procedure was continued until complete excision of the lesion was achieved. However, removal of adjacent minor salivary gland tissue could not be definitively confirmed. The surgical site was then closed using 4-0 sutures.

Postoperative instructions were provided, and the patient was prescribed amoxicillin 500 mg three times daily and paracetamol 500 mg three times daily as preventive and symptomatic measure. A follow-up visit was scheduled eight days after surgery.

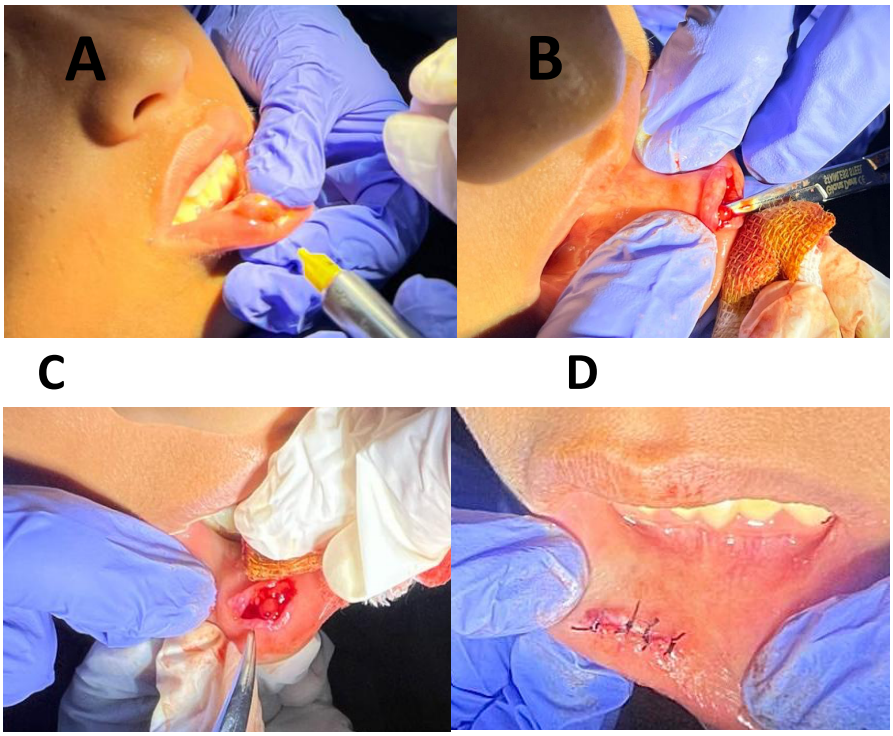


Figure. 2. Surgical procedures. (A) Local anesthesia administration. (B) Initial horizontal incision with No. 15 scalpel blade. (C) Widening of the capsule with artery forceps followed by removing the contents. (D) Interrupted suture to close the surgical site.

At the follow-up visit, the patient reported no complaints. Healing was satisfactory, and oral functions, including eating and speaking, had returned to normal. The sutures had detached spontaneously, and the patient reported cessation of lip-biting habits **(Fig. 3)**.



Figure. 3. Postoperative follow-up. At the follow-up visit, surgical site showed healing and patient reported no complaints.

However, approximately two weeks after the first visit, the patient reported recurrence of swelling at the same site. The lesion initially small but gradually increased in size. It was associated with mild discomfort and occasional pain, as well as aesthetic concern and slight difficulty during speech **(Fig. 4)**. A second surgical intervention was subsequently performed by another clincician. At the most recent follow-up, no further recurrence was reported **(Fig. 5)**. Histopathological examination was not performed, and the diagnosis was based on clinical findings, which represents a limitation of this case.



Figure. 4. Recurrence. Recurrent mucocele after first surgical excision. The recurrence occurred on the same site.



Figure. 5. Second surgical intervention. Postoperative follow-up after the second surgical intervention before suture removal.

Oral mucocele is a common benign lesion of the minor salivary glands, frequently observed in children and adolescents, with the lower lip being the most commonly affected site (Ayoub & Ghosein, 2025). This distribution has been consistently reported in large clinical series, including a Brazilian multicenter study involving 1,901 cases, where the majority of lesions occurred in individuals younger than 20 years and predominantly involved the lower labial mucosa (Miranda et al., 2022). These findings are supported by smaller observational studies reporting a similar age predilection and predominance of extravasation-type mucoceles in younger populations (Sathiyamoorthy et al., 2020).

Although surgical excision is considered the standard treatment and is generally associated with favorable outcomes, recurrence remains a clinical relevant concern. Reported recurrence rate vary widely, ranging from approximately 2.6% to 18 %, with some studies indication even higher rates in younger populations (Ayoub & Ghosein, 2025; Choi et al., 2019; Hashemi et al., 2023). Notably, adolescents appear to exhibit a higher risk of recurrence compared to younger children and older adults, which has been attributed to both behavioral and biological factors (Hashemi et al., 2023). A retrospective analysis of 164 patients reported a recurrence rate of 16 % among younger patients (< 30 years), further demonstrating that recurrence is a documented and not rare outcome in clinical practice, particularly among adolescent and young adult patients (Choi et al., 2019).

In the present case, recurrence occurred within two weeks following initial surgical excision, representing an early recurrence. Such rapid reappearance is unlikely to reflect a new lesion and instead suggests persistence of underlying etiological factors. One plausible explanation is incomplete removal of the involved minor salivary glands duing the initial procedure. Residual glandular tissue may continue to extravasate mucus, leading to re-accumulation and lesion development. This is consistent with previous studies identifying incomplete excision as a key contributor to recurrence (Besbes et al., 2020; Choi et al., 2019; Salon, 1985).

Another important contributing factor in this case is repeated local trauma (Sathiyamoorthy et al., 2020). The patient reported habitual lip biting prior to treatment, which is a weel-recognized etiological factor in mucocele formation. Persistent mechanical irritation may disrupt salivary gland ducts and perpetuate mucus extravasation even after surgical intervention (Sathiyamoorthy et al., 2020). Althoug the patient reported cessation of the habit postoperatively, subclinical or intermittent trauma may still have occurred, particularly in adolescent patients who often exhibit parafunctional behaviors (Almutairi et al., 2021; Atsü et al., 2019).

Age-related factors may further explain the observed recurrence. Adolescent are known to have higher rates of parafunctional habits (Mehdipour et al., 2023) and may demonstrate variable compliance with postoperative instruction (Mesfin & Abaynew, 2025). In addition, tissue healing responses and behavioral patterns in this age group may contribure to a higher

likelihood of recurrence, as demonstated in previous age-stratified analyses (Himelfarb et al., 2024; Miranda et al., 2022; Won & Kang, 2018).

Several clinical pitfalls can be identified from this case. First, failure to ensure complete removal of adjacent minor salivary glands may leave residual tissue capable of continued mucus extravasation (Shirbhate et al., 2023). Second, underestimation of behavioral risk factors, such as lip biting, may compromise treatment outcomes (Himelfarb et al., 2024). Third, early postoperative healing should not be interpreted as definitive treatment success, as recurrence may occur after an initial period of apparent resolution (Farina et al., 2013).

From a clinical perspective, preventive considerations are essential to minimize recurrence (Himelfarb et al., 2024; Won & Kang, 2018). Surgical management should include adequate depth of excision with removal of adjacent glandular tissue whenever possible (Won & Kang, 2018). Furthermore, patient education plays a critical role, particularly in adolescents, to eliminate parafunctional habits that may perpetuate local trauma (Mehdipour et al., 2023). Close postoperative follow up, especially within the first few weeks, is crucial for early detection and timely management of recurrence (Himelfarb et al., 2024).

Clinical Implication

Early recurrence after surgical excision of mucocele highlights the importance of comprehensive treatment, not just lesion removal. Surgeons should ensure adequate resection depth, including removal of adjacent salivary gland tissue, to minimize the risk of residual mucus leakage. Behavioral factors must also be carefully considered, especially in adolescent patients who may have habits such as lip biting. Clear postoperative instructions and comprehensive patient education are crucial to reducing repeated local trauma that could lead to recurrence. Furthermore, early postoperative healing should not be considered a final success of treatment. Close follow-up in the first few weeks after surgery is essential, as early recurrence can occur even with initially satisfactory results. Early detection of recurrence facilitates timely intervention and improves overall prognosis.

CONCLUSION

Early recurrence of lower lip mucocele in adolescents may occur despite apparently successful initial treatment. This case suggests that recurrence is often multifactorial, involving incomplete removal of minor salivary gland tissue and persistent local trauma. Meticulous surgical technique, targeted patient education to eliminate parafunctional habits, and close postoperative follow-up are essential to minimize the risk of recurrence. Recognition of these contributing factors is critical for improving clinical outcomes in pediatric patients.

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