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Professional paper

SURGICAL MANAGEMENT OF ORAL MUCOCELE – A CASE REPORT

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Abstract

Mucoceles of the oral cavity are known as minor salivary gland disorders or mucin-filled cysts, commonly found on the lower lip. These lesions are presented as painless bluish swellings, with various size and are frequently managed by surgical excision. Mucoceles can appear anywhere in the oral mucosa such as lip, cheeks and the floor of the mouth, but mainly appear in the lower lip and develop as solitary lesions. Trauma or chronic irritation to the lip is often the main factor in their development. Causes of these cystic lesions are rupture of the salivary gland duct, presented as extravasation type mucocele and blockage of the salivary gland duct, presented as retention type of mucocele. Even though mucoceles are asymptomatic, they can cause discomfort and aesthetic concerns for the patient. Surgical management is regarded as the most effective method for mucoceles. The aim of surgery is to remove the cyst as well as the affected salivary gland and to prevent future occurrences. Diagnosis is mainly clinical due to its characteristic presentation. This paper reviews the clinical presentation, etiology, diagnosis and surgical treatment for oral mucoceles of the lower lip. It highlights the importance of precise surgical technique to reduce the possibility of recurrence.

Keywords: oral mucocele, cyst, lips, surgical management.

Introduction

In the field of oral surgery, surgical procedures are crucial treatment for a variety of oral cavity pathologies, such as cysts, tumors, infections, trauma, and developmental abnormalities. In order to restore function, lessen symptoms, and enhance general oral health, it include the careful removal, repair, or alteration of oral tissues. Depending on the complexity of the procedure, either local or general anesthetic is usually used.

Professional approach and sterile techniques are the main criteria to minimize complications such as infection, excessive bleeding and damage to nearby tissues. Postoperative care and follow-up present an important moment on managing surgical situations, to prevent complications or recurrence and to enable a proper healing. Advances in surgical instruments and techniques have ensured safer surgical procedures, to faster recovery times and patient health.

Oral mucoceles are identified like the most common benign lesions affecting the minor salivary glands and are frequently found in clinical dental practice. These lesions are created as a result of mechanical trauma or blockage of salivary gland ducts, leading to the accumulation of mucus. While mucoceles can develop anywhere in the oral cavity where minor salivary glands are present, they are most frequent on the lower lip, making it the most common location for their occurrence. Clinically, mucoceles are classified into two main types: extravasation cysts, which result from the rupture of a salivary gland duct and leakage of mucin into surrounding soft tissues; and retention cysts, which form from the ductal obstruction without rupture, leading to mucus collection in the glandular ducts [1,2].

Clinically, these lesions are presented as painless bluish swellings, with various size. The extravasation type is more common and is often caused by trauma, such as lip biting, that causes the saliva coming out from a ruptured duct. Meanwhile, the retention type is rare and can appear in hard palate, floor of the mouth, upper lip, and maxillary sinus region. This form is typically caused by ductal blockage from salivary stones, fibrotic strictures, or external irritants such as mouthwashes or toothpastes containing hydrogen peroxide or other harsh ingredients [3,4].
Some mucoceles can withdraw on their own, but if they are persistent or symptomatic, then treatment is required. Surgical excision, with removal of the mucocele and nearby salivary glands, has long been considered the standard treatment. If it is performed properly there won't be recurrence.
Conventional surgical excision remains the most widely accepted treatment for mucoceles, especially when we want to lower the risk of recurrence. This procedure consists on complete removal of the lesion with the adjacent minor salivary glands that are often involved in the formation of the cyst. When complete excision is accomplished, then the rate of recurrence gets low, making it a preferred choice in clinical practice for definitive treatment. [5]
In recent years, less invasive therapeutic alternatives have been implemented, especially in pediatric patients, where minimizing surgical trauma and anxiety is a priority. Techniques such as micro-marsupialization, laser therapy, and cryosurgery have shown promising results. These less invasive approaches offer several practical advantages, including reduced intraoperative bleeding, shorter procedural time, lower postoperative discomfort, and faster healing of the wound. For children and patients who are nervous about traditional surgery, these methods offer a shorter and more comfortable alternative. Except these advantages, the later researches indicate that the recurrence rates of mucoceles treated with these minimally invasive techniques are comparable to those observed with traditional surgical excision [6,7]. Therefore, the choice of treatment must be chosen by both, clinical indications and patient considerations. In order to minimize adverse events, the oral surgeon should be careful when planning and performing the surgical intervention [8].
This article describes a case of a mucocele on the lower lip, treated with conventional surgical excision using a scalpel. It shows the importance of using a careful and suitable technique to fully remove the lesion and reduce the chance of it coming back. The case supports the value and success of traditional surgery for treating oral mucoceles.

Case presentation

A teenage patient visited our clinic with a complaint that had developed an asymptomatic swelling on the inner surface of his lower lip. The patient is a 17-year-old boy, who had noticed the swelling three to four weeks before his visit to our oral surgery clinic. In the beginning the lesion was small, but by time increased in size, making him worry and seek medical help. His general health status was assessed using the American Society of Anesthesiologists (ASA) physical status classification system. He was classified as ASA I, including a normal, healthy patient, with consideration for ASA II due to a history of smoking—an important clinical parameter [9].
The patient reported a habit of biting his lip, which he thinks caused the swelling. Intraoral examination showed a round, solitary, and fluctuant lesion located on the inner side of the lower lip, near the right canine region (Figure 1). The swelling was located approximately 4–5 mm below the vermilion border and measured around 7 mm in diameter. Its color was similar to that of the surrounding mucosa, showing no discoloration (Figure 2). On palpation, the lesion was soft and flocculent in consistency, with no signs of discharge. No additional oral abnormalities were identified. Given the clinical presentation, the patient's history of chronic lip biting, and the findings on inspection and palpation, he was diagnosed with mucocele.

Fig.1 Mucocele at lower lip, right canine region

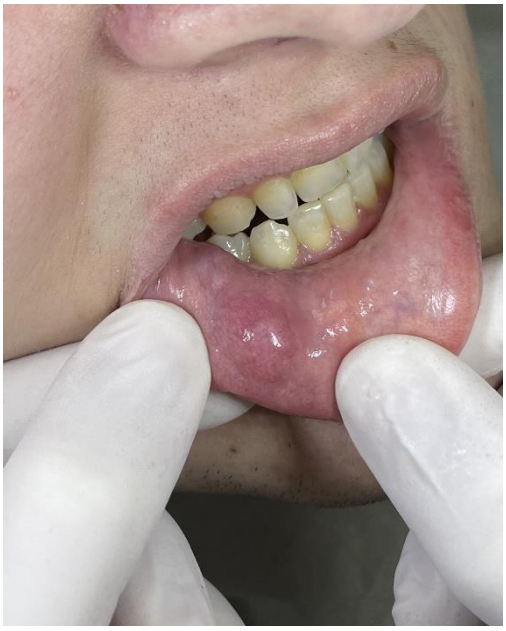

Fig.2 Color of mucocele similar to adjacent mucosa

The patient was recommended to apply surgical treatment to remove the mucocele. Before the the procedure, aseptic protocols were followed to prepare and disinfect the surgical area, making sure a sterile environment and minimize the risk of infection. Under local anesthesia, the mucocele was carefully treated. A precise linear incision was made directly over the lesion using a scalpel, taking great care to avoid rupturing the cyst during the process (Figures 3 and Figure 4). This careful approach was very important to save the integrity of the lesion and to make more easy the complete removal. This step is very important in preventing recurrence and causing the wound a faster healing.

Fig.3 Incision performed by scalpel

Fig.4 Linear incision above the lesion-mucocele

The mucocele was carefully dissected away from the surrounding soft tissues, to avoid any damage and make sure the complete removal of the lesion. During this procedure, attention was given to the integrity of the adjacent structures, while excising the mucocele with the nearby minor salivary glands. (Figures 5, figure 6 and figure 7). After the lesion was fully removed, hemostasis was achieved by applying pressure to the surgical area to effectively control any bleeding. When the bleeding was managed, the surgical wound was closed using non-absorbable sutures, carefully placed to approximate the tissue edges and make possible a proper healing (Figure 8). This technique helped to secure the surgical operation area and minimize the risk of postoperative complications.

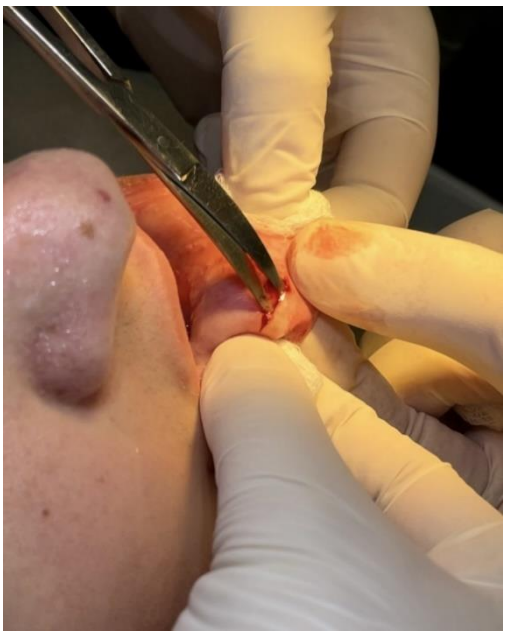

Fig.5 Tissue debridement with surgical scissors

Fig.6 Tissue debridement with surgical scissors

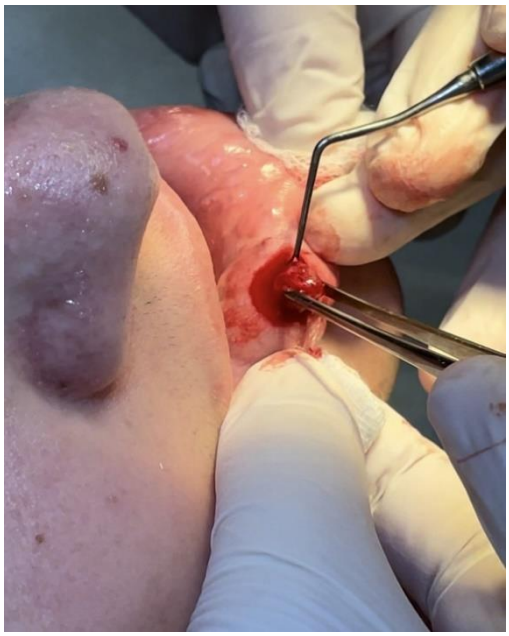

Fig.7 Dissection of mucocele

Fig.8 Placement of non-absorbable sutures

After the surgery, to the patient were given post-operative care instructions and prescribed medications to get a better healing and prevent infection. Follow-up appointments were scheduled to monitor progress. The patient was advised to use antiseptic mouth rinses for one week to keep good oral hygiene and reduce the risk of infection. Additionally, nonsteroidal anti-inflammatory drugs (NSAIDs) were prescribed for three to four days to manage pain and inflammation. To minimize irritation to the surgical site, the patient was recommended to follow a soft diet during the first week after the procedure and quit smoking.
At the one-week follow-up visit, the surgical area was examined and looked well without any signs of complications. Furthermore, at a three-month follow-up, the patient reported no recurrence of the lesion, indicating successful treatment.

Discussion

A mucocele is a common benign lesion that develops from the salivary glands, as a result of mechanical trauma or obstruction of salivary duct. Although mucoceles can occur at any age, they are most frequently found in children and young adults, with the highest incidence reported between the ages of 10 and 30. The most commonly affected area is the mucosa of the lower lip, accounting for approximately 67.4% of reported cases. Other less common locations include the floor of the mouth (commonly referred to as a ranula), the ventral surface of the tongue, and the buccal mucosa [10,11].
Numerous case studies on oral mucoceles have shown that nearly all mucoceles located on the lips are histologically classified as extravasation cysts. This finding supports the hypothesis that lip mucoceles are commonly initiated by traumatic injury, such as accidental biting or continuous irritation from adjacent teeth, which leads to rupture of the salivary duct and leakage of mucin into surrounding tissues [12]. Considering the histopathologic aspect extravasation mucoceles are presented as pseudocysts, because they don’t have epithelial lining. They are characterized by mucin pools in connective tissue and a surrounding granulation tissue wall, with lot of foamy macrophages and inflammatory cells like neutrophils. While retention type mucocele have an epithelial lining (ductal epithelium) and are presented as true cysts [13]. In a retrospective study conducted by Chi et al. [14], which involved 1,824 patients diagnosed with mucoceles, it was revealed that the lower lip was the most frequently involved site (81.9%), followed by the floor of the mouth (5.8%) and the ventral side of the tongue (5.0%). The reason

for mucoceles to occur on the lower lip is unclear, but several studies have reported possible reasons, which are associated with habits such as lip biting, differences in the mobility of the upper and lower lips, or differences in salivary gland density [15]. In differential diagnosis of oral mucocele we can consider lipomas. Lipomas are a frequent kind of benign soft tissue tumor composed of mature adipose tissue that may be seen in the head and neck area. Only 1–4% of lipomas occur within the mouth, according to the studies. Some frequent sites are the tongue, buccal mucosa, and the mouth's floor. A Yellowish mass with no symptoms is the normal clinical appearance. [16]. Histopathologically, the tumor has the characteristics of adipose tissue encapsulated in a capsule of well-differentiated connective tissue. Lipoma cells have a quicker metabolism than regular fat cells, although seeming identical [17].

Surgical excision is widely accepted as the most effective treatment approach for mucoceles, especially those that are persistent, symptomatic, or increasing in size. When performed properly, surgical removal can ensure complete excision of the lesion and significantly reduce the risk of recurrence. The conventional technique for mucocele removal involves linear or elliptical incision, favorable because it limits the loss of surrounding mucosal tissue, reduces the possibility of forming large fibrous cicatrix and minimizes the risk of cystic content spillage that could cause a recurrence [18]. To reduce the chance of recurrence, lesion should be removed down to the muscle layer, all the surrounding glandular acini must be removed, and while placing the suture should be avoided damage to the adjacent gland and duct [19,20]. There's why the attention to surgical detail plays a key role in the successful long-term management of these lesions

Conclusion

Mucoceles are found beneath the mucosal surface and usually look like clear, small bubbles. They include the most common lesions seen in children and young adults These lesions can rupture from everyday activities like eating, often causing them to shrink or disappear temporarily—but they tend to recover. To prevent recurrence, the preferred treatment is surgical removal of the cyst along with nearby minor salivary glands. Other options, such as cryotherapy and steroid injections, have been used, but surgery generally provides the best and most lasting results.

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