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LIQUID NITROGEN, APPLIED BY COTTON SWAB, AS AN ALTERNATIVE METHOD FOR TREATMENT OF ORAL MUCOCELE.

Medicine

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ABSTRACT

BACKGROUND: Oral mucoceles are simple lesions seen very often in dental clinic. Usually they are treated by surgical, conventional intervention. This study provides additional data with the use of swab-cotton cryosurgery for the management of oral mucocele.

PATIENTS AND METHOD: Twenty-three patients, 12 females and 11 males, aged 5 to 76 years (mean 28.9 years), with oral mucocele were enrolled in this study, which consisted of the a direct application of a swab cotton, soaked in liquid nitrogen (–196°C) on the lesion. No topical or needle anesthesia was required. There were three cycles on each lesion on each session.

RESULT: Among 23 mucoceles treated, 19 were successful resolved with one application of nitrogen, without any recurrences; the other four could only be resolved by conventional surgery because unsuccessful result either by recurrence (1case) or no resolution at all. Among the unsuccessful cases, two were too large and deep mucoceles and the other two were under orthodontic treatment, producing a repetitive trauma in the region. Edema was the main post-operative complication, ranging from one to three days, accompanied by little or no pain.

CONCLUSION: The technique applied in this study adds credibility as an alternative, non-invasive procedure for the treatment for oral mucocele.

KEYWORDS

Oral mucoceles, clinical presentation, treatment, cryosurgery, liquid nitrogen

INTRODUCTION

Mucoceles are relatively common lesions of the oral mucosa resulting from extravasations or retention of salivary mucous [1,2]. The minor glands, especially in the submucosa of the lower lip, are most often involved. These lesions are believed to result from trauma on the salivary duct, for example, by biting the lip. Clinically, it appears as soft, painless, translucent-bluish swelling on the oral mucosa. The lower lip mucosa is the most involved site, but mucoceles may develop on the soft-palate and buccal mucosae as well as on tongue's ventral surface and on the floor of mouth. In this latter site, it has been called as "ranula." There is no gender predilection and lesions affect a wide age range, being more common in children and young adults [1-4].

Treatment for mucocele has been predominantly performed by conventional technique, i. e., with the aid of scalpel. Formally, the surgical procedure is conducted by the excision of the lesion including the overlying mucosa and glandular tissue [4,5]. However, despite its success in most of the cases and low recurrence rate, it is difficult to perform the surgical excision in children and, sometimes, even in adults. Additionally, it causes discomfort and may even leave sequels. Carbon dioxide laser is an alternative, producing effective results, but it requires specialized equipment and, also, causes a similar degree of discomfort as mentioned for the conventional approach [6].

Cryosurgery is another method for treatment of mucocele [7,8]. Its acquisition is by far more affordable than laser. The cryotherapy technique is consisted of two methods: one with use of probes known as closed system, and the other an open system with use of a liquid nitrogen (at –196°C) delivered with spray or with a cotton swab [7].

The use of cryosurgery, which involves the application of liquid nitrogen at –196°C on the lesion site, has been little used in the treatment of mucoceles, although its use in oral vascular lesions, such as capillary hemangioma, and some flattened lesions, such as melanin pigmentation and oral leukoplakia, is well known [9-11]. The effectiveness of this treatment in oral mucocele has been reported only in two studies [12,13], with post-operative free of pain, infections, scarring and no recurrence. Case reports in the literature are also rare regarding the use of cryosurgery for treatment of oral mucoceles.

This study aimed at assessing the efficacy of using cryosurgery in a number of patients with mucoceles.

PATIENTS AND METHODS

This study was approved by the Committee on Ethics of the University of Sao Paulo, Sao Paulo, Brazil.

Cryosurgery was performed in 23 patients, 12 females and 11 males, aged 5 to 76 years (mean 28.9 years), who were diagnosed as having mucocele on the lower lip (18 cases), tongue (4 cases) and floor of the mouth (one case). The duration of the lesions ranged from 1 week to 11 months (mean 3.5 months). The cause associated with the appearance of lesion was related to trauma by 13 patients (nine of them reported biting the region, and four as a resulted of orthodontic treatment) white 10 patients had reported no association with any factor (idiopathic etiology). The technique used consisted of a direct application of a swab cotton, soaked in liquid nitrogen (–196°C) on the lesion without any previous anesthesia (Figs. 1a and b). The swab needs to be of a diameter slightly larger than that of the lesion (Fig. 1c). Once the lesion's surface had been covered by a thin layer of ice (this procedure takes around 15 seconds; Figs. 1d and e), then it was let to defrost normally. There were three cycles for each lesion. Each subsequent cycle was done soon the lesion had reached its normal color. The revaluation took place 15 days after the first application, and, then, two months later to assess recurrences (Fig.1c and f).

RESULTS

Among 23 mucoceles treated, 19 were successful resolved with one application of nitrogen, without any recurrences; the other four could only be resolved by conventional surgery because unsuccessful result either by recurrence (1case) or no resolution at all. Among the unsuccessful cases, two were too large and deep mucoceles and the other two were under orthodontic treatment, producing a repetitive trauma in the region. Edema was the main post-operative complication, ranging from one to three days, accompanied by little or no pain. Patients were follow-up for up to eight months, and no recurrences were seen besides those observed in the early follow-up stage. Table 1 shows the profile of the lesions according to gender, location, etiology, size, and treatment resolution.

DISCUSSION

Diagnosing and treating oral mucoceles have not been an issue of any controversy. The mainstream therapy is the conventional surgical approach and it has been to treat effectively almost all cases. Apart from the discomfort of the immediate post-operative, some patients may complain of some degree of paresthesia. Usually, this sequel goes away spontaneously in few weeks.

The liquid nitrogen applied with cotton swab has been used (with some degree of success) in leukoplakia on the gingival mucosa and in some pigmented lesions such as macula melanotic and physiologic pigmentation [10,11]. However, this technique (cotton-swab) has not been often applied in oral mucocele, with just few reports appearing the literature [12,13], despite labial mucocele being much frequent than, say, gingival leukoplakia. In larger mucocele, those arising on the floor of the mouth, also known as ranula, has been efficiently handled by cryotherapy using cryoprobe. This technique requires the use of local anesthesia previous to the surgical intervention.

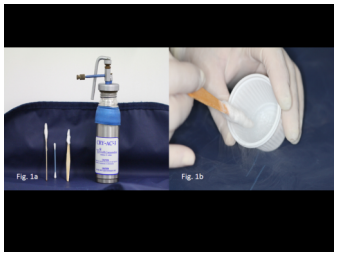
The outcome of the present study has corroborated with findings reported by Toida et al.[12] and Twetman et al [13]. The present study shows that cryosurgery, using the cotton-swab technique, is a rapid method, proving to be an effective alternative treatment for mucoceles of oral mucosa. To our understanding, this method is highly recommended as the first-choice treatment for mucocele affecting children since the procedure is almost painless, requires no anesthesia and is easy to perform.

Of course, in the event of an unsuccessful outcome, the conventional surgical procedure, which is performed with the aid of scalpel, will be required.

CONCLUSION

It is always worth trying a less invasive procedure as a first option tretamnet in lesion that will require, otherwise, any type of surgical interventions rather than pharmacological approach. Hence, liquid nitrogen allied with the aid of simple cotton swab may take precedence over a more invasive procedure as a first option in the management of oral mucoceles.

LEGEND TO FIGURES



Figures 1a and b. A cylinder containing nitrogen at –196°C along with the cotton swabs for applying on the mucoceles **(1a)**; the nitrogen is poured into a plastic cup for a better handling during the freezing procedure **(1b)**.

Figure 1C. The clinical case of mucocele affecting the lower lip of an adult male. Note the patient had many of his minor salivary glands swollen (notably on the right side of the lip).

Figures 1d and e. The application of a nitrogen-soaked swab-cotton onto the lesion surface **(1d)**; and letting the lesion warm to itself **(1e).**

Figure 1c and 1f. The comparison before application **(1c)** and after **(1f)**. A very successful case.

Table 1. Localization, Etiology, Size And Resolution Of The Cryosurgery Treated Lesion (n = 23 Patients).

	Female	Male
Oral sites		
Lower lip mucosa	11	7
Floor of the mouth	0	1
Tongue's ventral surface	1	3
ETIOLOGY		
Bite	3	6
Orthodontic braces	4	0
Idiopathic	7	3
SIZE (mm)		
From 1 to 5	8	3
From 5 to 10	4	3
More than 10	1	3
RESOLUTION		
Cryotherapy	9	10
Conventional surgery	3	1

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