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Micro Marsupialization Versus Modified Micro Marsupialization in The Management of Mucocoele of Lower Lip

Ashok[1*], Aftab Ahmed Kumbhar[2], Tarique Hussain Shaikh[3], Lubna M. Arif[4], Saadia Siddique[5] and Farzana Lakho[6]

[1]Department of Oral and Maxillofacial Surgery, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan
[2]Department of Oral and Maxillofacial Surgery, Bhitai Dental and Medical College, Mirpurkhas, Pakistan
[3]Department of Oral and Maxillofacial Surgery, Isra University, Hyderabad, Pakistan
[4]Department of Oral and Maxillofacial Surgery, Bahria University of Health Sciences, Karachi, Pakistan
[5]Department of Oral and Maxillofacial Surgery, Jinnah Medical and Dental College, Karachi, Pakistan
[6]District Headquarters Hospital, Sanghar, Pakistan

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Corresponding Author:
Ashok
Department of Oral and Maxillofacial Surgery, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan
ashokmaghani010@gmail.com

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ABSTRACT

The most prevalent kind of soft-tissue cyst of the small salivary glands in the lower lip is called a mucocele. It usually manifests as a fluctuating, bluish, not tendering sub-mucosal swelling with a usual overlying mucosa. The lower lip is where mucoceles are most frequently found, despite the fact that small salivary glands are present in most areas of the oral cavity with the exception of the gingiva, Anterior hardpalate and tip of the tongue. This is most likely because this area experiences more mechanical trauma than other locations. **Objective:** To compare the outcomes of surgical technique between micro- marsupialization and modified micro marsupialization in treatment of mucocele of lower lip. **Methods:** Experimental study was conducted at Department of OMFS, LUMHS, Jamshoro, by convenience sampling technique in time frame of Six months. Patients were called into two groups at random. Patients in group A were managed by micro-marsupialization and in group B by modified micro-marsupialization. All the patients were followed till one week to assess wound healing time and pain. The analysis of data was conducted using SPSS version 26.0. **Results:** In comparison of group A and B, wound healing time was noted as 9.7 ± 3.1 and 10.9 ± 4.01 days (P=0.180), duration of surgery 30.2 ± 3.7 and 29.9 ± 3.6 minutes (P=0.727) and postoperative pain at 7th day was noted 2.7 ± 1.8 and 2.17 ± 1.7(P=0.257), respectively. **Conclusion:** It was concluded that insignificant difference was noted between micro-marsupialization and modified micro-marsupialization in outcomes of surgical technique in treatment of mucocele of lower lip.

INTRODUCTION

Usually resulting from mechanical trauma to the small salivary glands, mucocoeles are common lesions of the oral mucosa that accumulate mucus [1]. These often affect both adults and children, and they can develop at any location where the oral mucosa contains small salivary glands. The most frequently impacted area by mucoceles is the lower lip [2, 3]. Although they often don't create major issues, mucocoeles can cause troubles with eating or drinking, masticating, and talking. In accordance with the positioning and extent of the mucocele, discomfort may arise [4]. Extravasation mucoceles make up more than 80% of all mucoceles and are more common in people under 30 years old. With varying degrees of success, a number of treatment options, including excision, excision combined with surgical removal of a minor salivary gland, micro- marsupialization, cryosurgery and steroid injection have been suggested for the management of mucocele [5-7]. The best course of treatment is surgical removal of the mucocele and the related salivary gland. Recurrence, however, may result from the partial excision or severance

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of nearby small salivary glands. One potential therapeutic option for mucoceles is micro-marsupialization [8, 9]. Micro-marsupialization is effortless to carry out, reasonably a traumatic, and patient-accepted [10]. With varying degrees of efficacy, managing mucoceles in pediatric patients with micromarsupialization of lesions smaller than 1 cm in diameter has been documented. The act of introducing sutures is thought to preserve an epithelial tract that separates the glandular tissue under the surface and stops fluid concentration [11, 12]. This approach has also been documented to cause recurrence. It is proposed that the number of epithelized drainage channels increases with an increase of sutures, and that the precise number of sutures may vary depending on the size of the lesion [13-15]. This study is designed to compare the outcomes of surgical technique between micro-marsupialization versus modified micro-marsupialization in treatment of mucocele of lower lip. This study tested the hypothesis that modified micro-marsupialization is better technique than micro-marsupialization in treatment of mucocele of lower lip. Thus, in order to gather local data, this study aims to determine whether there is a statistically significant difference between the two approaches' outcomes. Based on this, additional approaches might be developed to enhance the outcomes for these patients by making the superior approach their first option for treatment.

METHODS

Experimental study was conducted at Department of OMFS, LUMHS, Jamshoro, Pakistan by non-probability convenience sampling method in time frame of six months i.e. from 1stJune, 2021 To 30th November 2021 after approval by the Institutional Research Ethics Committee of LUMHS (NO. LUMHS/REC/-95). Informed consent was taken after explaining the procedure. Two groups of patients were randomly assigned. Patients in group A were managed by micro-marsupialization and in group B by modified micro-marsupialization. All the patients were followed till one week to assess wound healing time and pain. Patients between age of 18 to 50 years, either gender and Patients presented with mucocele of lower lip were included and patients found with the lesions found on palate, buccal mucosa, tongue, floor of the mouth, Immunocompromised patients were expelled from the study. By using Open-Epi sample size calculator taken mean healing time of micro marsupialization and modified micro marsupialization technique as (7.47±0.64 versus 9.87±1.88 days) [7], Confidence level (C.I)=95%, Power of test (1-β)=80% then the estimated sample size came out to be n=60.To fulfill the statistical assumption of both groups took n=30 in each group. 5% povidone iodine and 2% xylocaine jelly topical anesthetic were applied to the surgical site and left on for five minutes. Group A received a 4-0 silk suture into the internal lesion at its widest diameter. On the seventh day in both groups, the suture was taken out. Group B underwent the largest number of 4-0 silk sutures (3–5 in our study) while keeping the gap between entry and exit as short as possible. In order to prevent necrosis and suture loss, caution was exercised during tying the knot in both groups to prevent strangulation of the mucosa. Following surgery, all groups were advised to apply 2% xylocaine jelly topical anesthetic preparation three times a day for five days at the surgical site. All the procedure was done by researcher himself under the supervision of consultant. SPSS version 26.0 was employed to analyze the data. Independent t-test was applied to compare the wound healing time and duration of surgery and comparison of postoperative pain on 7th day between the groups. At the $p < 0.05$ threshold, statistical significance was established.

RESULTS

Table 1 indicated demographics information of patients. Where most of the patients belongs to age group >30, 42 (70%) followed by 18-30, 18 (30%) respectively. And gender distribution displays male were in preponderance 36 (60%) than female 24 (40%) mean ± SD of Group A presented 37.7 ± 8.4 and Group B 33.8 ± 10.1 respectively. Mean ± SD postoperative 1st day was 8.2 ± 1.1, postoperative 3rd day 6.2 ± 1.4 in group A while in group B postoperative 1st day mean ± SD was 7.8 ± 1.2 and postoperative 3rd day indicates 5.7 ± 1.7 (pain was assessed by visual analogue scale).

Table 1: Demographic Information of Patients and Postoperative Pain at Follow Ups

Age (Years)	Group A N (%) / Mean ± SD	Group B N (%) / Mean ± SD
18-30	7 (23.33)	11 (36.67)
>30	23 (76.67)	19 (63.33)
Mean	37.7 ± 8.4	33.8 ± 10.1
Gender		
Male	19 (63.33)	17 (56.67)
Female	11 (36.67)	13 (43.33)
Pain Score at 1st Day	8.2 ± 1.1	7.8 ± 1.2
Pain Score at 3rd Day	6.2 ± 1.4	5.7 ± 1.7

Table 2 showed stratification of age groups and gender association age group of 18-30 years in group A indicated mean ± SD of 3.71 ± 1.79 whereas, age group >30 showed 2.39 ± 1.82 (p=0.129) and in group B 18-30 years showed mean ± SD of 2.27 ± 1.90 while in > 30 years it showed 2.11 ± 1.66 (p=0.602). Gender stratification showed insignificant values in male (p=0.682) while in female (0.194). Independent t-test was applied on variables of table 2. No any significant association was observed in age or gender.

Table 2: Stratification of Age Group and Gender

Age	Groups	Postoperative Pain (7th Day) Mean ± SD	p-Value
18 -30	Group A	3.71 ± 1.79	11 (36.67)
	Group B	2.27 ± 1.90	19 (63.33)

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>30	Group A	2.39 ± 1.82	0.602
	Group B	2.11 ± 1.66	
Gender	**Groups**	**Postoperative Pain (7th Day) Mean ± SD**	**p-Value**
Male	Group A	2.42 ± 1.67	0.682
	Group B	2.18 ± 1.87	
Female	Group A	3.18 ± 2.18	0.194
	Group B	2.15 ± 1.57	

Table 3 showed comparative statistics of wound healing time, duration of surgery and postoperative pain at 7th day. Mean ± SD of wound healing time between groups was noted as (9.7 ± 3.17 versus 10.9 ± 4.01) with a non-significant P-value (P=0.180). Mean ± SD of duration of surgery was noted between groups as (30.23 ± 3.71 versus 29.90 ± 3.64) having a non-significant P-value (P=0.727). Mean ± SD of postoperative pain score at 7th day was noted as (2.70 ± 1.87 versus 2.17 ± 1.72) having a non-significant P-value (P=0.257) as indicated in table 3.

Table 3: Comparative Statistic of Wound Healing, Duration of Surgery and Postoperative Pain

Groups	Mean ± SD	p-Value
Wound Healing Time (Days)		
Group A	9.70 ± 3.17	0.180
Group B	10.97 ± 4.01	
Duration of Surgery (Minutes)		
Group A	30.23 ± 3.71	0.727
Group B	29.90 ± 3.64	
Postoperative Pain at 7th Day		
Group A	2.70 ± 1.87	0.257
Group B	2.17 ± 1.72	

DISCUSSION

While mucous retention cysts are caused by blockage of the duct of a minor or auxiliary salivary gland, mucous extravasation cysts are typically thought to have a traumatic origin, such as lip biting. Over 80% of all mucoceles are extravasation mucoceles, which are more prevalent in people under 30. Retention mucoceles, on the contrary, are not as common and more common in elderly people [16]. Evolution of mucoceles was rapid or slow and painless, with periods of remission and exacerbation. If the lesion was localized superficially, it presents a bluish coloring due to the superficial capillary network that appears through it. When located more deeply in tissues, its color is similar to that of the mucosa. Prognosis of the lesion was favorable and was conventionally treated by excision of the gland along with the associated overlying mucosa and glandular tissue down to the muscle layer [17]. The surgical procedure has a high rate of morbidity with risk of injury to the submandibular duct and lingual nerve. Mucocele is a common oral mucosal lesion that occurs more frequently in children and adolescents, which originates from the minor salivary glands [18]. These lesions resulting from either trauma or change in the drainage system of the salivary glands resulting in mucous accumulation. The primary risk factors include oral trauma, which includes lip and cheek biting, piercings, and unintentional salivary gland rupture. The duct's dilatation is a result of an etiologic component other than its obstruction, which can be a sialolith or dense mucosa [19, 20]. These lesions are benign, generally painless, depending on the location, can cause discomfort and create trouble, especially in pediatric population. Lesions are most commonly affected with equal gender predilection and with a clinical history of a painless swelling. However, lesions are often recurrent in nature that may present for months or even years before the patient seek treatment. According to the microscopic features, oral mucoceles can be classified as "mucus retention", which occurs due to ductal obstruction with subsequent retention of saliva within the ducts, whereas "extravasation" occurs due to trauma to the salivary duct and pooling of mucus into the connective tissue [19]. The findings of our study are comparable with multiple studies conducted worldwide. Few of which were discussed here. In this study, mean age in group A (micro-marsupialization) was 37.7 ± 8.4 and group B (modified micro marsupialization) was 35.5 ± 10.1 years. In another study, the mean age of the patients in group 1 (micro marsupialization) was 19.6 ± 9.6 years while in group 2 (surgical excision) it was 21.9 ± 11 years [4]. A study reported the mean healing time and duration of surgery in micro-marsupialization and modified micro-marsupialization technique as (7.47 ± 0.64 versus 9.87 ± 1.88) days and (4.10 ± 0.39 versus 5.33 ± 0.72) minutes respectively while no pain was noted in both group at 7th day of treatment [7]. In this study, in group wise distribution of gender, 19 (63.3%) males and 11 (36.7%) females were included in group A while 17 (56.7%) males and 13 (43.3%) females were included in group B. In present study, in group A and B, wound healing time 9.7 ± 3.1 and 10.9 ± 4.01 days, duration of surgery 30.2 ± 3.7 and 29.9 ± 3.6 minutes and postoperative pain score at 1st day 8.2 ± 1.1 and 7.8 ± 1.2, at 3rd day 6.2 ± 1.4 and 7th day 2.7 ± 1.87 and 2.17 ± 1.72, respectively. The oral trauma was the main predisposing factors such as lip biting, cheek biting, piercings, and accidental rupture of salivary gland. The dilation of the duct was secondary to its obstruction caused by dense mucosa or a sialolith was another etiologic factor [21].

CONCLUSIONS

One of the more established techniques, marsupialization, was typically used on significant mucoceles to prevent harm to nearby anatomy structures that have differing rates of recurrence. In addition, it causes a great deal of discomfort and necessitates cleanliness to avoid infections in the area. It seemed that modified micromarsupialization is a safe method for treating

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mucoceles. However, it requires more time during surgery and causes more discomfort afterward than micromarsupialization. It was concluded that insignificant difference was noted between micro-marsupialization and modified micro-marsupialization in outcomes of surgical technique in treatment of mucocele of lower lip.

Authors Contribution

Conceptualization: A
Methodology: A, LMA
Formal analysis: SS
Writing, review and editing: AAK, THS, FL

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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