

# COMPARISON OF EXTRAMUCOSAL ENUCLEATION AND SUBMUCOSAL EXCISION TECHNIQUE FOR THE TREATMENT OF ORAL MUCCOCELE AT BIRAT MEDICAL COLLEGE & TEACHING HOSPITAL, MORANG, NEPAL

Shah RK<sup>1\*</sup>, Sharma VA<sup>2</sup>, Atreya A<sup>3</sup>, Gyawali S<sup>4</sup>

## Affiliation

1. Lecturer, Department of Otolaryngology, Birat Medical College Teaching Hospital, Biratnagar, Nepal
2. Consultant, Otolaryngology, Belhoul Speciality Hospital, Al Khaleej Road, Deira Dubai, United Arab Emirates
3. Assistant Professor, Department of Forensic Medicine, Nepal Medical College Teaching Hospital, Kathmandu, Nepal
4. Resident, Department of General Practice and Emergency Medicine, B. P. Koirala Institute of Health Sciences, Dharan, Nepal.

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### \* Corresponding Author

Dr. Rajeev Kumar Shah  
Lecturer

Department of Otolaryngology  
Birat Medical College & Teaching Hospital, Morang, Nepal  
Email: shahrajeev2001@gmail.com

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## ABSTRACT

### Introduction

Mucocele is a painless swelling in the oral cavity usually confined to the lower lip. Of the various treatment techniques surgery remains the best modality.

### Objectives

The present study is aimed to observe the prevalence of mucocele in Eastern Region of Nepal and to compare the results of extramucosal enucleation and submucosal excision as the treatment of mucocele.

### Methodology

This prospective study was conducted on patients diagnosed with mucocele in Birat Medical College Teaching Hospital; a tertiary centre in Eastern Nepal during the period between June 2014 to April 2017. Out of total 37 cases two groups were divided based upon size of mucocele. Patients underwent extramucosal enucleation in cases where the size of mucocele was less than 1 cm and submucosal excision was done in patients whose size of the mucocele exceeded 1 cm. The data was entered and analyzed using Statistical Package for the Social Sciences (SPSS) vs 21. Different parameters like wound infection, scar formation, recurrence, healing time, follow up were compared for both the methods.

### Result

The mean age of the patient in extramucosal enucleation was  $9.90 \pm 2.807$  while in submucosal excision was  $11.22 \pm 3.068$  years. The most common location for mucocele in both the groups was the lower lip; who underwent either extramucosal enucleation (90%) or submucosal excision (70.4%). Recurrence was not observed in submucosal excision whereas one patient with extramucosal enucleation had recurrence.

### Conclusion

Submucosal excision is more efficacious for the treatment of Mucocele in comparison to extramucosal enucleation as it usually healed within a week with fewer incidences of wound infection and without any recurrence.

## KEY WORDS

Extramucosal enucleation, lip, mucocele, submucosal excision

## INTRODUCTION

Mucocele is a common benign, cystic lesion of the oral mucosa due to mucous accumulation of the minor salivary glands. It is generally asymptomatic, single, painless, smooth, soft, spherical translucent and fluctuant nodule.<sup>1</sup> It is most frequently seen in young and adolescent age groups and rarely among children under one year of age.<sup>2-4</sup> Although minor salivary glands are found in most parts of the oral cavity except the gingiva, mucocele occur most commonly in the lower lip, probably due to the higher incidence of mechanical trauma in this region.<sup>5</sup>

Mucoceles are of two types based upon their microscopic characteristics: Extravasation and Retention type. Retention mucocele have epithelial tissue where as extravasation mucocele is covered by granulation tissue.<sup>6</sup> Extravasation mucocele is because of trauma to the salivary gland duct with consequent spillage of the secretion into the soft tissues around the gland whereas retention type is due to a decrease or absence of glandular secretion produced by blockage of the salivary gland ducts.

Mucoceles of the minor salivary glands are always superficial and rarely larger than 1.5 cm. However, ranulas are larger and arise from deeper areas such as the floor of the mouth. Ranula causes discomfort, interference with speech, mastication, and swallowing.<sup>7</sup>

Clinically, mucocele is a dome shaped cystic swelling, sometimes associated with a bluish hue. This bluish discoloration is due to vascular congestion, which is due to cyanosis of tissue above and collection of fluid below.

Micromarsupialization, electrocautery, laser, gamma linolenic acid, cryosurgery, infiltration of silver nitrate, infiltration of nickel gluconate, mercurius heel and simple surgical excision are some of the techniques used for the treatment of mucoceles.<sup>1,4,6,8-16</sup> In cases where the lesion is not problematic and the patients refuses to get operated, close monitoring and watchful waiting can be done.<sup>17</sup> However, surgical excision is portrayed by most of the surgeons. The present study is conducted to evaluate the spectrum of oral mucocele in a tertiary centre of eastern region of Nepal and to compare two surgical methods of mucocele treatment: submucosal excision and extramucosal enucleation.

## METHODOLOGY

This prospective study was conducted during June 2014 to April 2017 on patients diagnosed with mucocele in the department of ENT, Birat Medical College Teaching Hospital, Tankisinuwari, Morang. After the proper clinical diagnosis of mucocele the subjects were divided into 2 groups who were planned for submucosal excision or extramucosal enucleation as a mode of surgical treatment. Informed written consent was taken from the patient who wished to participate in the study. The younger patients under the age of 20 years were taken into consideration in the present study because mucocele is more common in young and

adolescent population. Extramucosal enucleation was done in patients where the size of mucocele was less than 1 cm and submucosal excision was done in mucocele with a size exceeding 1 cm. In extramucosal excision the mucocele was excised and flushed with its attachment to the lip after applying gentle traction on the mucocele using Babcock's forceps. Excision was done with no. 11 scalpel apply in the raw bleeding base was cauterized gently with bipolar cautery. No further cautery was required for the base after laser excision.

In submucosal enucleation approach infiltration was done with insulin syringe to create hydro-dissection between lip mucosa and the mucocele. Incision was made on the lip mucosa and mucosal flaps were fashioned to expose the underlying grey mucocele. The mucocele was carefully dissected free with iris scissors and excised. The mucosal flaps were then sutured with 4-0 Vicryl.

The demographic parameters and other associated medical history were entered into the proforma which included location of the lesion, associated symptoms and other relevant information. Different parameters like wound infection, scar formation, recurrence, healing time, follow up were compared for both the methods. The data was entered and analyzed using Statistical Package for the Social Sciences (SPSS) vs 21 and presented in appropriate tables. The variables like wound infection, scar formation, recurrence, healing time, follow up were compared for both the methods. The study was approved by institutional ethics committee of Birat Medical College Teaching Hospital.

## RESULTS

During the study period there were 37 patients admitted in the hospital with a history of mucocele of which 20 were females and 17 males. The mean age of the study participants was  $10.86 \pm 3.020$  of them female was  $10.75 \pm 3.110$  and male was  $11 \pm 3.00$ . The size of the mucocele was between 1cm and 1.5 cm in 51.4% cases and was confined to lower lip in 75.7% cases [Table 1]. Submucosal excision was chosen as a mode of treatment in 27% of cases whereas in 73% cases mucocele was removed by extramucosal enucleation. Recurrence and scar formation was rare which was seen in only 2.7% of cases [Table 2]. Recurrence was noted after extramucosal enucleation of mucocele during followup at the end of 4 weeks post-surgery. In this particular case repeat surgery was done after 8 weeks.

When the two methods were compared as shown in [Table 3] it was observed that 70% of females underwent extramucosal enucleation whereas not much difference was observed based upon gender in submucosal excision. Percentage of females undergoing submucosal excision and extramucosal enucleation was 48.1% and 70% respectively. The mean age of the patients in Extramucosal enucleation was  $9.90 \pm 2.807$  while in submucosal excision was  $11.22 \pm 3.068$  years. Recurrence and mucocele formation after treatment of mucocele was rare. In our study there was

a single case where scar had formed after submucosal excision and a case of extramucosal enucleation where recurrence had occurred. It was observed that patient follow up at the end of first week was remarkably similar for both the methods; 77.8% for submucosal excision and 80% for extramucosal enucleation. In the contrary, 70.4% and 70% cases of submucosal excision and extramucosal enucleation respectively didn't show up for follow-up after 4 weeks. Wound infection as a complication was rarer for submucosal excision (3.7%) however it was frequently seen in extramucosal enucleation (40%). There was a contrast when healing time was considered for both the methods. Patients who underwent submucosal excision had a quick healing of the wound within a week (74.1%) whereas it took more than a week in 80% of patients who underwent extramucosal enucleation. Statistically, no significant observation was made when Pearson chi square test was applied to compare both the methods.

**Table 1: Spectrum of mucocele in the Study**

Variables	Frequency (n=37)
<b>Gender</b>	Male 17 (45.9%)
	Female 20 (54.1%)
<b>Size</b>	0.5-1 10 (27.0%)
	1-1.5 19 (51.4%)
	1.5-2 06 (16.2%)
	>2 02 (05.4%)
<b>Location</b>	Buccal mucosa 07 (18.9%)
	Lower lip 28 (75.7%)
	Soft palate 02 (05.4%)
<b>Surgery</b>	Submucosal excision 10 (27.0%)
	Extramucosal enucleation 27 (73.0%)

**Table 2: Treatment, follow up and complications**

Variables	Frequency (n=37)
Healing time	>7days 15 (40.5%)
	<7days 22 (59.5%)
Follow up in 1 week	Yes 29 (78.4%)
	No 08 (21.6%)
Follow up in 4 weeks	Yes 11 (29.7%)
	No 26 (70.3%)
Infection	Yes 05 (13.5%)
	No 32 (86.5%)
Recurrence	No 36 (97.3%)
	Yes 01 (02.7%)
Scar	Not seen 36 (97.3%)
	Seen 01 (02.7%)

**Table 3: Comparison of two methods**

Variables	Submucosal Excision	Extramucosal Enucleation
<b>Sex</b>	Male 14 (51.9%)	3 (30%)
	Female 13 (48.1%)	7 (70%)
	Buccal mucosa 6 (22.2%)	10 (10%)
<b>Location</b>	Lower lip 19 (70.4%)	90 (90%)
	Soft palate 2 (7.4%)	00
<b>Scar</b>	Present 1 (3.7%)	00
	Absent 26 (96.3 %)	10 (100%)
<b>Recurrence</b>	Yes 00	1 (10%)
	No 27 (100%)	9 (90%)
<b>F/U in 1 week</b>	Yes 21 (77.8%)	8 (80%)
	No 6 (22.2%)	2 (20%)
<b>F/U in 4 week</b>	Yes 8 (29.6%)	3 (30%)
	No 19 (70.4%)	7 (70%)
<b>Wound infection</b>	Present 1 (3.7%)	4 (40%)
	Absent 26 (96.3%)	6 (60%)
<b>Healing time</b>	<7 days 20 (74.1%)	2 (20%)
	>7 days 7 (25.9%)	8 (80%)

## DISCUSSION

Mucocele is a painless swelling confined mostly to the lower lip. Even though mucocele may not cause physical discomfort patients may feel embarrassed with decreased social acceptance and self-esteem.<sup>18</sup>

The prevalence of mucocele varies from 1.4 to 2.9 per 1000 as per previous conducted studies.<sup>1,17,19-20</sup> The incidence of mucocele is affected by geography, sociocultural practice and tradition. The authors believe that people with low socioeconomic class tend to neglect oral hygiene increasing the likelihood of oral lesions.

Mucocele is a painless oral lesion more prevalent in young and adolescent age group,<sup>1-3,6,21</sup> therefore the present study included patients who were below 20 years of age. In the present study number of females exceeded males, however, previous published literatures do not show gender predilection.<sup>1,6,21</sup> Of the various methods of treatment of Mucocele, surgical approach is rendered best for treatment. The size of the lesion is taken into consideration to determine the treatment option.<sup>1-2,17,21,22</sup> Studies have shown that small Mucocele after excision have higher chance of recurrence,<sup>1,2,21</sup> however, in this study there was a single case of recurrence in the patient who had undergone extramucosal enucleation. The recurrence was treated with revision surgery.

There was one patient who developed wound infection. He was found to have poor oral hygiene with the food particles lodge in inside the wound. the infected wound was cleaned with saline water and treated antibiotic after resuturing. The wound developed scar later on.

## CONCLUSIONS

The findings of our study concludes that submucosal excision is more effective for the treatment of mucocele in comparison to extramucosal enucleation as it usually healed within a week with fewer incidences of wound infection and without any recurrence. This study is a preliminary investigation done in a single tertiary hospital in Eastern region of Nepal. Similar studies comparing two different surgical methods of oral mucocele treatment lacks in this region. This study highlights the need for further similar studies to compare the different treatment modalities to come to a conclusion with best treatment option among the various treatment methods.

## RECOMMENDATION

This study, about oral mucocele is one of its kind conducted in Eastern Nepal. Similar study has to be conducted through out Nepal to know the exact prevalence of oral mucocele and to know about the best surgical technique for treatment of oral mucocele.

## LIMITATIONS OF THE STUDY

The number of cases in the present study may seem low but the actual prevalence of oral mucocele may be higher than what is found in the study. This might be attributed due to the fact that there are other tertiary hospitals and dental clinics in the Eastern region of Nepal. Due to lack of similar studies in Nepal, no conclusion can be drawn regarding the prevalence of Mucocele. Further studies are needed from different regions of the country in this regard.

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## CONFLICT OF INTEREST

None

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