Original Article

Comparison Of Surgical Excision Of Lower Lip Mucocele Vs Intralesional Dexamethasone Injection

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Abstract

Objective: Mucocele is a benign, mucus-containing cystic lesion of minor salivary glands. The objective of this study was to compare the outcomes of surgical excision versus corticosteroid treatment for lower lip mucocele.

Methods: One hundred thirty patients with lower lip mucocele of variable size (5 mm to 18 mm)were included. Group A patients underwent surgical excision, whereas Group B patients received corticosteroid treatment. Patients were allocated using blocked randomisation. Outcomes in both groups were assessed using the chi-square test.

Results: mean age in group A was 32±7.68 years, whereas that in group B was 31.49±8.92 years. Postoperative pain was notably reduced in group B (corticosteroid) on the 3rd postoperative day, and mucocele swelling was significantly lower on the 3rd and 7th day in group B; however, no notable difference was observed in wound dehiscence in both groups on the 3rd and 7th postoperative days.

Conclusion: The results of this study showed that corticosteroid therapy was more notably effective than surgical excision for the management of oral mucocele in terms of postoperative pain and mucocele swelling.

Keywords: Mucocele, Surgical excision, Comparison, Postoperative pain, Swelling, Wound dehiscence.

Introduction

A mucocele is a frequently occurring and harmless cystic growth that occurs in the mouth. It is characterised by the buildup of mucus fluid caused by the blockage or bursting of small salivary glands.[1] This lesion commonly appears as a painless, see-through, and bluish enlargement, often found on the lower lip, floor inside the mouth, and underside of the tongue. Mucoceles occur when saliva leaks into the nearby soft tissues, creating a pseudocyst that is enclosed by connective tissue.[2, 3]

A mucocele is a cyst in the oral cavity filled with mucus.[4] The swelling appears as a fluctuating, bluish, painless submucosal growth with a normal mucosal layer on the surface.[5] Mucocele is the predominant abnormality of the oral mucosa, arising from the accumulation of mucous discharge caused by physical injury and habits, such as biting the lips, or changes in minor salivary glands.[6] Two distinct types of mucocele can develop in the oral cavity: extravasation and retention. Extravasation mucocele occurs when there is damage to the duct of a salivary gland, causing leaked saliva to spread into the surrounding soft tissue. Physical trauma results in the extrusion of salivary glands into the adjacent submucosal tissue. Retention mucocele occurs as a result of reduced or absent secretion from the salivary gland channels due to obstruction,[7, 8,] or mucosal inflammation. The lesion does not show a preference for either sex and is more commonly found in children, teenagers, and young adults. The lower lip is the most common site affected; however, it can develop in any location where small salivary glands are present, such as the buccal mucosa, soft palate, and retro-molar region.[9] Mucocele can develop rapidly within a few days following minor trauma, although the size may stabilise. Unless addressed, they can persist without alteration for several months.[7, 9]

The diameter may vary from a few millimetres to a few centimetres. If left untreated, there may be periodic fluctuations in size due to ruptures and subsequent mucin generation.[10] Multiple therapeutic options are available, including laser surgery, laser ablation, sclerotherapy, cryosurgery, and intralesional injection of sclerosing agents or corticosteroids. Despite its widespread use, surgery has significant drawbacks, including lip deformities and the potential for injury to nearby ducts, leading to the development of satellite lesions.[11]

Oral health practitioners face a crucial dilemma when choosing between surgical excision and dexamethasone injection. This decision necessitates a thorough awareness of the advantages and disadvantages associated with each approach. This review provides a comprehensive analysis of the comparative characteristics of different modalities, presenting valuable insights into their strengths and limitations. This exploration consolidates existing knowledge to establish a basis for making well-informed decisions in the therapeutic setting. Ultimately, this will lead to improved patient satisfaction and treatment outcomes for mucoceles.

Materials And Methods

This quantitative study with an experimental design was conducted from April 2023 to October 2023 at the Rawalpindi District Headquarters Hospital (Rawalpindi Teaching Hospital) after ethical clearance was obtained from the hospital board. We randomly allocated 130 patients presenting with lower lip mucocele, aged 18 to 45 years, and of either sex, into two groups using blocked randomisation to ensure a balanced allocation of participants across treatment groups. The participants were divided into blocks of equal size and randomly

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assigned within each block to maintain the desired allocation ratio. Group A patients had surgical excision, while group B patients had corticosteroid therapy. The outcomes of our study were post-operative pain, swelling at the site of mucocele, and wound dehiscence. Pain was assessed using the VAS scale, 0 to 10. If the swelling was 4 to 7 mm postoperatively, it was labeled as Yes; otherwise, NO. Regarding wound dehiscence, in group A, patients were assessed for wound healing, whereas in group B, it was defined as rupture of the mucocele with wound formation during or after dexamethasone injection. On the 3rd and 7th post-treatment days, unhealed wounds were categorised as wound dehiscence.

In Group A, the preparation of the surgical site involved the application of local anaesthesia using an insulin syringe and a scalpel blade no. 15. This was accomplished by performing an elliptical incision, followed by the removal of the abnormal tissue from its base. The surgical site was deliberately left unsealed without sutures, and topical anaesthesia was applied. Patients were subjected to follow-up examinations on the third and seventh days to evaluate wound healing progression.

Group B received an injection of 1 mL of dexamethasone at a concentration of 8 mg/mL. The injection was provided using an insulin needle and was immediately inserted into the base of the lesion. This was done to prevent any leaking and to minimise discomfort and pain. Significantly, there was a lack of local anaesthesia administration. A maximum of three consecutive injections with a one-week delay between each dose were administered to the patients based on the clinical assessment of regression of mucocele size after the application of the first dose of dexamethasone, and subsequent injections were delivered based on the patients' response, which was assessed through follow-up examinations conducted on the third and seventh days; however, most of the patients did not receive the second and third doses of dexamethasone injection as the swelling subsided after the initial dose of dexamethasone. The dimensions of the lesion were determined using a dental calliper.

The sample size was calculated using OpenEpi, with reference to the previous frequency of mild postoperative pain, 56.7% vs. 27.6%[12], power of test 80%, and confidence interval 95%.

For data analysis, SPSS software (version 20; IBM) will be employed. Chi-Square test was used for assessing the difference between groups with a P value < 0.05 as notably significant.

Results

This study was conducted on 130 patients presenting with oral mucocele. In group A, the mean age recorded was 32±7.68 years, while 31.49±8.92 years in group B. Gender wise distribution revealed that in group A, male patients were 40 (61.5%), while female patients were 25 (38.5%), and in group B, male patients were 37 (56.9%), while female patients were 28 (43.1%). On 3rd postoperative day twenty six (40%) patients in group A reported no pain, thirty five (53.8%) reported mild pain and 4 (6.2%) patients reported moderate pain, while in group B 40 (61.5%) patients reported no pain, eighteen (27.7%) patients reported mild and 7 (10.8%) patients reported moderate pain (P = 0.01).

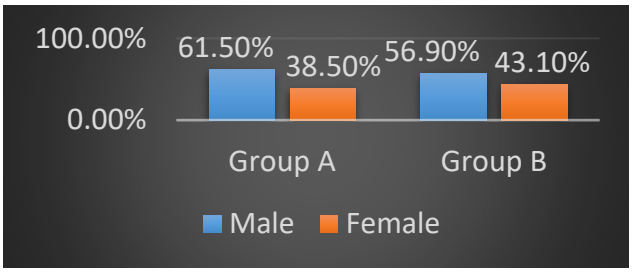

Figure 1: Gender distribution

Table 1: Comparison of postoperative pain between the two groups

Postoperative pain		Groups				P value
		Group A (Surgical excision)		Group B (Corticosteroid)		
		N	%	N	%	
Post-op pain at day 3	No pain	26	40.0%	40	61.5%	0.01
	Mild	35	53.8%	18	27.7%	
	Moderate	4	6.2%	7	10.8%	
	Severe	0	0.0%	0	0.0%	
Post-op pain at day 7	No pain	53	81.5%	59	90.8%	0.19
	Mild	10	15.4%	6	9.2%	
	Moderate	2	3.1%	0	0.0%	
	Severe	0	0.0%	0	0.0%	

Table 2: Comparison of swelling at the site of mucocele between both groups

Swelling		Groups				P value
		Group A (Surgical excision)		Group B (Corticosteroid)		
		N	%	N	%	
Swelling at day 3	Yes	36	55.4%	11	16.9%	0.0001
	No	29	44.6%	54	83.1%	
Swelling at day 7	Yes	7	10.8%	1	1.5%	0.02
	No	58	89.2%	64	98.5%	

Table 3: Comparison of wound dehiscence between both groups

Wound dehiscence		Groups				P value
		Group A (Surgical excision)		Group B (Corticosteroid)		
		N	%	N	%	
Wound dehiscence at day 3	Yes	2	3.1%	1	1.5%	0.55
	No	63	96.9%	64	98.5%	
Wound dehiscence at day 7	Yes	1	1.5%	0	0.0%	0.31
	No	64	98.5%	65	100.0%	

On the 7th postoperative day, in group A, 53 (81.5%) patients reported no pain, 10 (15.4%) reported mild pain, and 2 (3.1%) reported moderate pain, whereas in group B, 59 (90.8%) reported no pain and 6 (9.2%) reported mild pain (P = 0.19). Regarding the size of swelling at the site of mucocele on the 3rd postoperative day, in group A, 36 (55.4%) reported swelling, while 11 (16.9%) in group B (P = 0.0001). On the 7th postoperative day, in group A, 7 (10.8%) reported swelling, and only 1 patient in group B reported swelling (P = 0.02).

In group A on the 3rd postoperative day, two (3.1%) patients had wound dehiscence, while only one patient had wound dehiscence in group B (P = 0.55). On the 7th postoperative day, one patient had wound dehiscence, while no patients in group B had wound dehiscence (P = 0.31).

Discussion

Surgical excision and intralesional dexamethasone injection are both effective methods for treating lower lip mucoceles. Surgical excision is a standard treatment option, especially for larger or recurrent lesions; however, the risks of recurrence and potential harm to adjacent tissues, such as salivary glands, are significant concerns. Surgery may be unsuitable for specific patient populations, including individuals with anxiety or young children, because of the requirement for sedation or general anaesthesia. Consequently, less invasive approaches, such as intralesional corticosteroid therapy, are increasingly being investigated. This study compared the effectiveness and patient outcomes of the two treatment modalities. The findings indicated that patients undergoing surgical excision experienced moderate pain in most instances, with a notable percentage also reporting post-operative discomfort that lasted until the third day post-surgery. Conversely, patients administered dexamethasone injections reported reduced pain levels, with most experiencing mild discomfort and none reporting severe pain. On the seventh day, both groups exhibited a notable reduction in pain, with no significant differences observed between the two treatment groups. The results align with those of Ahmed et al., who indicated that corticosteroid injections serve as a less painful alternative to surgery and are effective in reducing mucocele size.[12] Patients receiving corticosteroid injections demonstrated a more rapid and pronounced decrease in lesion size, contributing to a reduction in swelling. On day three, 89.7% of patients in the corticosteroid group exhibited no swelling, whereas only 48.3% of patients in the surgical group demonstrated a comparable reduction in swelling. The difference became increasingly evident by day seven, further substantiating the effectiveness of corticosteroid injections in delivering rapid relief. These findings are consistent with research conducted by Yermalkar et al., who demonstrated that corticosteroid injections led to complete resolution of mucoceles within two weeks, with no recurrence observed during the follow-up period.[13] The comparison of recurrence rates between surgical excision and intralesional dexamethasone treatment has garnered significant attention in the literature. The study found no recurrence in patients administered corticosteroid injections during a six-month follow-up period. The findings align with those of Ahmed et al., who indicated that corticosteroid injections result in lower recurrence rates compared to surgical excision, especially for smaller lesions.[12] The reduced recurrence rate in the corticosteroid group may be linked to the non-invasive characteristics of the treatment, which lessen the likelihood of tissue damage and additional trauma to the salivary glands. Intralesional corticosteroid injections offer a significant advantage in the management of mucocele lesions, providing effective treatment with minimal patient discomfort and eliminating the necessity for surgical intervention. This is especially advantageous in paediatric populations, where non-invasive treatments are typically favoured. Corticosteroid injections are economically viable and can be administered multiple times, presenting a compelling alternative to surgical interventions. Research conducted by Scribante et al., highlights the significance of non-surgical treatments, especially for paediatric and anxious patients, owing to the diminished requirement for anaesthesia and the less invasive characteristics of the procedure.[14] This study demonstrates the notable advantages of intralesional dexamethasone injections as a non-invasive and effective alternative to surgical excision for treating lower lip mucoceles. This treatment modality provides outcomes similar to those of traditional methods regarding pain reduction, swelling resolution, and recurrence rates, while also enhancing patient comfort, particularly for individuals who may not be ideal candidates for surgery. Further research involving larger sample sizes and extended follow-up periods is necessary to validate the long-term efficacy and safety of corticosteroid injections for the management of mucoceles.

Conclusions

In conclusion, we stated that corticosteroid therapy was more effective than surgical excision for the management of oral mucocele in terms of postoperative pain and swelling. Therefore, we recommend corticosteroids as the first-line medical therapy for oral mucocele before any surgical approach.

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