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Original Article**Pain experience after oral mucosal biopsy: A quasi-experimental study**Nader Navabi DDS¹, Arman Salehi DDS², Mohammadreza Zarei DDS³,
Roya Borna DDS⁴**Abstract**

BACKGROUND AND AIM: The biopsy of an oral mucosal lesion is a minor operation. Pain might be an unpredictable consequence of the oral mucosal biopsy. The aim of this study was to examine the incidence and severity of post-operative pain following the biopsy of oral mucosal lesions in patients attending in an oral medicine department of Kerman Dental School.

METHODS: Visual analogue scale (VAS) was used to assess post-operative pain in 60 patients. Seven days after the biopsy of oral mucosa, patients were asked about overall pain experiences and analgesic usage over 3 days following the biopsy.

RESULTS: Forty percent of patients reported moderate pain in the day of the biopsy and 58% of patients experienced no pain in the third day after the biopsy. Thirty percent of patients used analgesic in the day of the biopsy and there was not any relationship between the average level of patient's pain and the location of the lesion removal, type of biopsy, type of coverage, maximum diameter and type of the lesions ($P > 0.05$).

CONCLUSIONS: Pain after biopsy from oral mucosal lesion is mild to moderate.

KEY WORDS: Biopsy, Pain, Oral Mucosa

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Biopsy is the oldest and the most exact method used for definite diagnosis of different lesions in dentistry.¹ Correct treatment of the patient with an oral lesion begins with an exact diagnosis and the gold standard is histopathologic evaluation of tissue specimen of the lesion.²⁻⁵ In some oral mucosal lesions, delay in removal can cause disease progression and poor prognosis.⁶ Biopsy is prescribed for majority of oral mucosal lesions (including mucocutaneous lesions, precancerous and suspicious lesions to malignancy).⁷ Two common types of taking biopsy include incisional and excisional biopsy.⁸ Other techniques such as fine needle aspiration, exfoliative cytology, cytobrush techniques and toluidine blue staining are complementary methods and performing

each method alone is not enough for a definitive diagnosis.⁹⁻¹⁶

Correct specimen should include a tissue that shows the most evident and intensive changes and it is also sufficient for pathologic evaluation. Access to such specimen will be gained by careful attention to some points such as the specimen dimension, the correct site of specimen removal, management of the unpredictable consequences such as excessive bleeding, fixation of specimen, specimen carriage and enough attention to healing of the biopsied region.^{3,4,7,17} Biopsy sometimes is accompanied with complications such as lip and tongue paresthesia, swelling and hematoma in tissues and trauma to salivary gland duct. Dentist's and patient's concern for such complications has caused the biopsy to be less common in dentistry.¹⁸⁻²¹

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Camacho-Alonso and Lopez-Jornet evaluated the level of pain after a biopsy from an oral mucosa using visual analogue scales (VAS) in 84 patients. They recorded maximum pain after biopsy of the oral mucosa during the first 48 hours, after which it gradually reduced.²²

Kearns et al. evaluated the level of pain after a biopsy from an oral mucosa in 85 patients during 7 days after procedure. In the results of this research, 39% of patients did not complain about any pain on the first day, although it increased toward the seventh day (79%).²³ Lodi et al. evaluated their experience on the day of the biopsy and 7 days after that in 286 patients. 78% of patients had used analgesics in post-operative days.²⁴

An awareness of pain score related to operative procedures helps clinicians prepare their patients for decreasing these complications. On the other hand, some of the experts in this field do not believe in the prescription of analgesics for these patients.² Although many investigators have studied pain experience after different dental treatments complications such as teeth extraction or root canal therapy, investigations concerning the pain after biopsy from mucosa have not been remarkable. The present study was carried out to evaluate the score and intensity of pain following biopsy from oral mucosa.

Methods

This quasi-experimental study took place in Department of Oral Medicine in Kerman Dental School. Consecutive patients undergoing biopsy of oral mucosal lesions were recruited into the study. These patients were above 12 years old. The subjects were excluded from the study in case of any systemic disease such as gastro-intestinal diseases, having any psychic or neurological pain or taking medicine such as analgesics or anti-inflammatory drugs in the last three days. Patients with painful oral lesion before biopsy were excluded too. Research objectives were explained for patients and a

written consent was obtained from the volunteers prior to the commencement of the study.

Biopsy was done under sterilized and standard conditions by scalpel (No.15, model Wuxi X.D Medical Device Co., China). The tissue specimen had the maximum extent of 3 centimeters and the depth of all specimens was ultimately to the submucosal area and did not include periosteum and muscles. Biopsy was done by an experienced oral medicine specialist. The coverage of sites of biopsy was in primary form using silk suturing thread 3 zero (maximum 2 suture) or Coe-pack dressing according to clinical diagnosis.^{22,23} The patients could use analgesic for post-operative pain if needed (ibuprofen 400 mg tablet QID).

Each patient was given a form to complete for each of the 3 post-operative days. Patients were instructed to note 3 items for each day: the overall level of pain, the worst pain experienced and whether analgesics had been taken. The overall and worst pain levels were recorded using visual analogue scales (VAS), each consisting of a 100 mm calibrated line on white paper, marked 0 to 10 at 10 mm intervals. Patients were informed that a score of 0 indicated 'no pain at all' while a score of 10 indicated 'the pain could not be worse'. Patients were instructed to record the pain experience of the previous day each morning by marking a point on the VAS for overall pain and by answering 'yes' or 'no' to the question on the analgesic use. Pain scores were also categorized as 'none', 'mild', 'moderate', or 'severe'.

An information collection form was filled for all patients including the date of biopsy, clinical diagnosis, patient's age and sex, exact location of the lesion removal, type of biopsy and type of coverage and whether specimen has been removed from keratinized or non-keratinized mucosa. Collected data was analyzed by SPSS software (version 17; SPSS Inc., Chicago, IL., USA). Chi-square test was used to compare nominal data and Student's t-test to compare quantitative data. Significance

level in all tests was assumed to be 0.05.

Results

Sixty patients took part in the present study. Of them, 25 (41.7%) were male and 35 (58.3%) were female. We divided our patients into three age groups (< 40, 40-60 and > 60 years old; Table 1). The mean (\pm SD) age of subjects was 45.8 ± 12.8 years.

The most frequent biopsy region was in buccal mucosa (47%) and after it, the lip, gingival and palate were placed next, respectively (25%, 16% and 10%). The least biopsy had been done on patients' tongue (3%). Thirty percent of biopsies were done in keratinized mucosa and 70% in non-keratinized mucosa. 43.3% of biopsies were done by incisional and 56.6 by excisional techniques.

Healing of specimen removal region was done in primary form in 93.3% of cases. The most frequent size of lesion was those greater than 2 centimeters (56.6%) and also the least

was the lesions smaller than 1 centimeter (15.0%). From the clinical diagnosis viewpoint, the most frequent lesions were exophytic lesions (51.6%) and the least ones were pigmented lesions (1.6%) (Table 1).

The intensity of pain was evaluated using a VAS and was compared in terms of age groups, sex, site of lesion, type of mucosa, type of biopsy, type of coverage, the largest diameter and type of lesion. When the median pain scores were analyzed among these variables, there was no significant difference ($P > 0.05$; Table 1). The average pain scores were not affected by these demographic and clinical parameters.

Figure 1 shows severity of pain experienced by patients at the day of biopsy and the first to the third days after biopsy based on their description. As shown, the highest frequency of pain severity was related to moderate pain with the highest percentage at the day of biopsy (40%). On the first day after the biopsy, 22 patients (36.6%)

Table 1. Comparison of pain scores among the different characteristics groups of participants

Variation		Median (range) Pain	Frequency (%)	P-value
Age groups*	< 40 years	1.25 (0-5)	19 (32.7)	0.9461
	40-60 years	1.25 (0-9)	28 (48.2)	
	> 60 years	1.5 (0.75-4.75)	11 (18.9)	
Gender**	Male	1.25 (0-4.75)	25 (41.6)	0.1502
	Female	1.75 (0-9)	35 (58.3)	
	Lip	1.25 (0-5.5)	15 (25.5)	
	Tongue	2 (0-4)	2 (3.33)	
Location	Buccal mucosa	2.25 (0-9)	25 (41.4)	0.2889
	Palate	1 (0-7.5-1.75)	6 (10.0)	
	Gingiva	1.375 (0-4.75)	10 (16.6)	
	Others	0.5 (0-1)	2 (3.33)	
Mucosa	Keratinized	1 (0-4.75)	18 (30.0)	0.2532
	Non-Keratinized	1.625 (0-9)	42 (70.0)	
Type of Biopsy	Incisional	1.75 (0-6.5)	26 (43.3)	0.5488
	Excisional	1.25 (0-9)	34 (56.6)	
Type of Coverage	Suture	1.25 (0-6.5)	47 (78.3)	0.4130
	Co-Pack	1 (0.25-9)	9 (15.0)	
	Without	2 (1.75-4.75)	4 (6.67)	
Maximum size***	< 1 cm	1.75 (0-6.5)	8 (15.0)	0.0871
	1-2 cm	1.25 (0-3.25)	15 (28.3)	
	> 2 cm	1.875 (0-9)	30 (56.6)	
	Ulcer	2 (0-5.5)	16 (26.6)	
Type of lesion	White lesion	1.125 (0-6.5)	10 (16.6)	0.2078
	Exophytic lesion	1.5 (0-9)	31 (51.6)	
	Pigmented Lesion	1 (1-1)	1 (1.67)	
	Others	0.375 (0-0.75)	2 (3.33)	

* n = 58, ** n = 60, *** n = 53

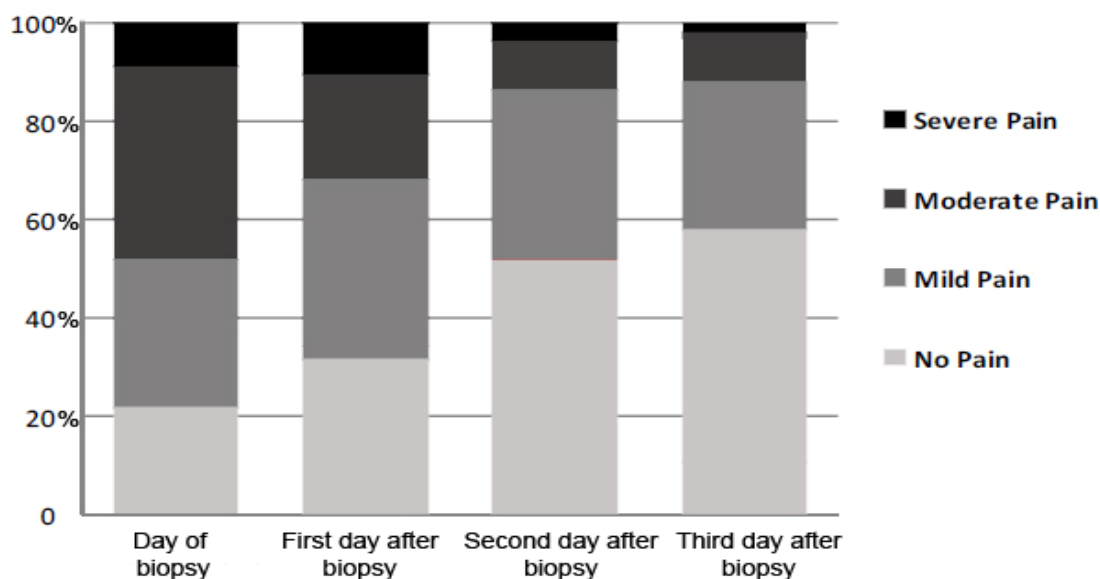


Figure 1. Frequency of different level of pain in the day of biopsy and three days after it

recorded mild pain. On the second day, 31 patients (57.6%) recorded overall pain levels corresponding to "none". This rose to 35 patients (58.3%) on the third day after the procedure. It seems that from patients' point of view, the pain after biopsy from oral mucosa was mild to moderate that often existed on the day of biopsy and on the first day after this procedure.

Maximum dose of analgesics used was related to the day of specimen removal (30%); it gradually decreased from the first to the third day after biopsy (18% on the day after biopsy and 10% on the second day). On the third day after biopsy, only 8.3% of patients used analgesics.

Discussion

In the present study, the recording of pain with VAS during three days after oral mucosal biopsy did not exceed 2.25 in any cases. Because of the subjective nature of pain and since it is accompanied by other sensations, there is not definitive evaluation system for it and also numerous factors such as variety of patients' personalities and cultural and social factors affect patients' response to pain. This makes it difficult to evaluate the pain after medical or dental procedure. However, the dose of analgesics

needed to reduce more than half of the pain, expressing the severity of pain by patient qualitatively and VAS are commonly used in studies that investigate such pains; the present study applied the all three methods.^{2,22,23} Kearns et al. believed that it is not suitable to measure pain after it occurs because of the fact that patients should remember it.²³

In the present study, there was no significant relationship between average pain score after biopsy and site of the lesion. In Camacho-Alonso and Lopez-Jornet study, although the highest level of pain score was reported from floor of the mouth biopsy specimens, no significant differences were found.²² It should be mentioned that in our study, none of mucosal specimens was from the floor of the mouth. In Kearns et al. study, maximum dose of analgesics consumption was in specimens form gingiva. However, none of the three patients whose site of specimen removal was floor of the mouth used drug for pain relief in Kearns et al. study.²³

Comparison of these two different criteria for evaluating the degree of pain (analgesics use versus VAS) showed a contradiction between this study and Camacho-Alonso and Lopez-Jornet study.²² In the present study, there was no significant relationship between

the level of patients' pain and type of biopsy (incisional versus excisional) that is similar to Camacho-Alonso and Lopez-Jornet study. Moreover, the present study which investigated the relation of variables such as kind of coverage, site of biopsy, maximum diameter of the lesions, type of the lesions and type of mucosal region of specimen removal, indicated no significant relationship with severity level of patients' pain. In similar studies, however, the mentioned variables were not studied.^{2,22,23}

In Camacho-Alonso and Lopez-Jornet study, average pain level in females was significantly higher than that of men, but no significant relationship was found between patients' age and pain level. In the present study, conditions similar to Camacho-Alonso study were found concerning age, but they were different regarding sex.²²

Maximum frequency of pain level described by patients in the present study has been related to the day of specimen removal; it was similar to Camacho-Alonso and Lopez-Jornet²² and Kearns et al.²³ studies and it seems that this pain like other kinds of post-operative pain (such as extraction) had a tendency to begin after elimination of local anesthesia and reached maximum level during the day of biopsy.

The results of the present study were similar to Camacho-Alonso and Lopez-Jornet study²² regarding average pain level with utilization of VAS and were similar to Kearns et al. study²³ regarding maximum frequency of pain intensity (moderate pain).

In results of the present study, dose of analgesics was reduced in patients at the day after biopsy and a significant relationship was observed between intensity of pain and analgesics use. However, the relationship between pain and analgesics use had not been evaluated in similar studies.

In Kearns et al. study, 70% of patients used analgesics at least once on biopsy day or afterwards.²³ In Camacho-Alonso and Lopez-

Jornet study, an average of 60% of patients used these drugs for two days.²² In Lodi et al. study, 18% of patients did so.²⁴ However, in the present study, 30% of patients took analgesic on the day of biopsy and on the first day after biopsy it was 78%.

One of the limitations of this study and other similar studies was the multi-factorial nature of pain. It means that several factors including cultural background, personality and level of anxiety, memory and previous experiences can all have an influence on pain.

It is observed that dose of analgesic in patients with oral mucosal lesion biopsy in different studies had different levels and this issue could be the result of the difference in drug using habits in different societies and the fact that many patients start using prophylactic analgesics drug without dentists' prescription and continue it even in the lack of pain experience. It should be mentioned that misuse of non-steroidal anti-inflammatory drugs which are often used for relieving such pains can lead to various side effects such a digestive disorders (gastritis and peptic ulcer) and bleeding disorder.

Conclusion

The results of the present study showed that pain after biopsy from oral mucosal lesion is mild to moderate. In a few percentages of patients, there is a need of analgesic prescription after the procedure but clinical-trial study is recommended for more definitive prescription of analgesics by the dentist. Regarding the existing data, clinicians who are doing this can advise their patients to use analgesics in the case of pain after biopsy.

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Conflict of Interest

Authors have no conflict of interest.

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