



Effect of surgical drain on the control of swelling in impacted lower third molar surgery

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ABSTRACT

Introduction: Postoperative complications such as swelling, pain, and trismus after surgery of the impacted lower third molars are the main concerns of surgeons. Many authors claim that the use of a drain could help control these unpleasant events. The purpose of this study was to evaluate the effect of the use of a surgical drain to control the swelling in impacted lower third molar surgery.

Materials and Methods: We had 100 patients of both genders with bilateral impacted lower third molars in comparable positions and with the same degree of surgical difficulty in this study. Both impacted molars were removed in the same session using a surgical drain on one side and without it in the other side. The postoperative swelling was evaluated at 48 hours and 7 days.

Results: In the group in which the drain was used, the control of the swelling variable was statistically significant at 48 hours ($P = .001$) in comparison with the group in which the drain was not used. However, it was not statistically significant at 7 days ($P=1.00$).

Conclusion: The use of the drain helps to control swelling in the acute phase of postoperation.

Key words: Surgical drain, Mandibular third molar surgery, Impacted tooth, Postoperative complication.

Introduction

Third molar surgery is one of the most frequent procedures in oral and maxillofacial surgery. This surgery often causes some postoperative discomfort such as swelling, pain and trismus. Many studies have concentrated on these problems and patients' perception about it in recent years [1,2]. It has been shown that this complication has detrimental effects on patients' quality of life [3]. The result of some studies have shown that the type of wound closure is related to the severity of postoperative problems [4,5]. The efficacy of a drain in association with the suture procedure in reducing postoperative problems has also been shown [6] although there is some controversy about it in the literature [7]. In all previous studies for evaluating the role of a drain, surgery on test and control

patients has been done in separate sessions. The purpose of the present study is to evaluate the variable of swelling, as a representative of the postoperative triad, (Pain, Swelling, Trismus), after the surgical removal of third molars with and without the use of a surgical drain in the same patient and also in the same session.

Materials and Methods

We selected 100 patients for removal of bilaterally impacted third molars. The criteria for selection were:

- 1) age between 17 and 31 years.
- 2) cooperation with the study and postoperative follow up.

3) The patients were to be healthy without significant medical disease or history of bleeding problems.

4) Pregnant woman were not included in the study.

5) All impacted mandibular third molars had to be in a comparable position bilaterally and to have equivalent degree of surgical difficulty comparing one side with the other with the same surgical technique.

6) Patients with signs of pericoronitis were excluded from the study.

7) All teeth were fully covered by the mucosa and partially or completely covered by bone.

8) None of the patients were given any medication that could interfere with the healing process. All of the patients were preoperatively explained the purpose of this study and some difficulties that may be encountered due to surgery of both teeth in the same operation time. Following initial interview, consent was obtained. The surgery was performed by one experienced surgeon using the same technique for all. This research was a split mouth study. The choice of which side was to be the experimental (drain) and control (no drain) group was made randomly. The participants were divided into 2 groups: control side (n = 100) and experimental side (n = 100). In the control group, the surgical removal of the impacted third molar was accomplished using a 4-0 silk suture only. In the experimental group, after the suture procedure a small surgical drain was applied via a stab incision in the buccal fold between the first and second molar. All patients were given an inferior alveolar nerve block and a long buccal nerve block using 3.2 ml of 2% lidocaine hydrochloride with vasoconstrictor (1:100,000 epinephrine) with more given during the procedure if needed. A mucoperiosteal flap was raised after incision along the cervical margins of the first and second molar and distally to the retromolar pad. The length of incision line depended upon the depth of the impacted tooth. The flap was reflected and the overlying bone covering the crown of the impacted tooth was removed with a bur. Tooth section also depended upon the position of the impacted tooth. Following removal of the impacted tooth, the bony socket was irrigated with copious amount of sterile saline solution. On the side where no drain was used, the flap was approximated without tension. Interrupted sutures accomplished this. For this purpose 4-0 silk was used. On the experimental side, after the suture procedure, a small rubber drain (3 cm×1.5cm) was applied as mentioned earlier. In the preoperative period, all patients had clinical and radiologic evaluations. In the postoperative period, a nonsteroidal anti-inflammatory drug (Acetaminophen; 1 g every 4 hours for 2 days)

and Penicillin V 500 mg was administrated for 3 days. All patients were also given a sheet with postoperative instructions. The patients were examined by the same person immediately preoperatively, and on the second and seventh postoperative days. The facial swelling was determined by measuring the distance from the attachment of the earlobe to the corner of the mouth and the distance from the lateral canthus of the eye to the angle of the mandible with a flexible ruler [6]. The arithmetic mean of the 2 measures determined the facial measure [8]. The evaluation of the postoperative facial swelling was carried out at 48 hours, and 7 days. The drain was removed at 48 hours after insertion.

Results

One hundred patients participated in this evaluation, of whom 50 (50%) were male and 50 (50%) were female. Ages varied from 17 to 31 years (mean, 22.6±4.19 years). According to One-Sample Kolmogorov-Smirnov Test, distribution of our findings were normal (Table 1). Then we used paired t-test for our analysis. At 48 hours, the facial swelling was greater in the procedure in which the drain was not used (P=.001). At 7 days there was no statistically significant difference between the control and experimental groups (P=1.00) (Table 2). In relation to time of operation, there was no statistically significant difference between the control and experimental groups (P=.88) (Table 3).

Discussion

The surgical removal of third molars is one of the most common procedures in oral and maxillofacial surgery. This surgery can lead to postoperative problems that influence patients' quality of life [3]. The type of wound closure and the role of a drain in reducing these unwanted sequela has been focused on in the last two decades. Duboise et al's study showed that primary wound closure gave rise to more postoperative problems than secondary closure [5]. Although in another study, Brabander et al showed no significant difference between drain secondary closure and no drain secondary closure. In that study test and control patients were not the same [7]. Rukprusticul et al's study showed that postoperative problems, especially facial swelling was less in the drain group as compared to the no drain group. In that study a second surgery was performed two month later [6]. In the most recent study the efficacy of a drain in swelling control has been shown. In this study also the two groups of surgical procedures (drain and no drain) were done in separate

Evaluation of the effect of a drain on swelling after third molar surgery was the main object of this study in a different situation [5,6,7,8]. In this study, we tried to concentrate only on swelling and evaluated it in very controlled and similar situations. In this study, we wouldn't be able to evaluate trismus and pain as two other main complications due to of the study method. We hypothesized that, a drain has role in swelling reduction but we wanted to see it with our own eyes at the same time. At 48 hours after surgery (the time that we expected the greatest amount of swelling) we had less swelling on the test sides than experimental sides and at 7 days after surgery, swelling had subsided in both sides and there was not any significant difference between the two sides. This confirms that our surgeries were as atraumatic as possible. Our study showed that drain has a reducing effect on postoperative swelling

in third molar surgeries and it also showed that this reducing effect is not as great as previous studies have shown [6,8].

In this study we had enough numbers of patients that we think that the significance of the difference with this number of patients shows the efficacy of this method. We think that the use of this simple and safe tool could be applicable for third molar surgeries especially those that involve more traumatic events such as wide dissections, removal of greater amounts of bone and higher amount of difficulty of tooth removal. Currently routine use of this tool in third molar surgery procedures has not been recommended. We recommend other studies be done with this method in these different types of traumatic situations.

Table 1. One-Sample Kolmogorov-Smirnov Test.

	Mean	Std. Deviation	Kolmogorov-Smirnov Z	P value
Control-Facial measure 2 days later	10.41	51.0	0.38	0.99
Test-Facial measure 2 days later	10.15	0.55	0.50	0.96
Control-Facial measure 7 days later	9.70	0.47	0.43	0.99
Test-Facial measure 7 days later	9.70	0.46	0.60	0.85
Control-Time of operation	19.55	5.62	0.53	0.94
Test-Time of operation	19.40	5.02	0.43	0.99

Significant at level of $P < 0.01$.

Table 2. Differences in facial swelling for each treatment method.

Time of examination	Drain Group		No Drain Group		P-value
	Mean	SD	Mean	SD	
2nd postoperative day	10.15	.55	10.40	.51	.001
7th postoperative day	9.69	.46	9.69	.47	1.00

Significant at level of $P < 0.01$.

Table 3. Duration of surgery (min) for each treatment method.

Operation Times (min)	Drain Group	No Drain Group	P-value
Range	10-28	9.5-30	0.88
Mean	19.4	19.55	
SD	5.02	5.61	

Significant at level of $P < 0.01$.

Conclusion

The use of the drain helps to control swelling in the acute phase of post-operation.

Conflict of Interest

The authors declare no conflict of interest.

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