

## Comparison of two Suture Techniques on Postoperative Healing of third Molar: An Original Study.

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### Abstract

**Introduction:** Minimizing post-operative complications following lower third molar surgery is a key component of patient care. Modification of the wound closure technique is one of these simple measures which have a crucial effect on the post-operative course, in patients undergoing lower third molar surgery. This study aims to determine which of the two secondary closure techniques assessed is superior in improving wound healing, and reducing post-operative complications, following lower third molar surgery.

**Material & Methods:** A prospective, randomized clinical study was conducted to compare partial closure using one suture to the suture-less technique. Surgical sites were divided into two groups, Group A: one suture, and Group B: suture-less. Each patient received both treatments at the same time. During the first post-operative week, all patients were asked to daily assess pain, trismus & facial swelling using subjective self-assessment scales.

**Results:** Our study showed that the age interval ranged from 20-40 years with an average age of 26.2 years. The results demonstrated that post-operative pain and wound healing are influenced by the type of the closure technique used by the surgeon.

**Conclusion:** It can be concluded that that the placement of one suture, distal to the lower second molar, after raising a small buccal envelope flap for lower third molar surgery, is superior to the suture-less technique, in decreasing postoperative pain and enhancing wound healing.

**Keywords:** Suturing, Swelling, Pain, complications, Trismus.

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## Introduction

In oral and maxillofacial surgery, lower third molar surgery is still one of the most common types of surgery. [1,2] It comes with its own risks and problems after the surgery that can slow down recovery and lower a patient's quality of life. It has been said that the way the wound is closed after lower third molar surgery is an operative factor that affects early complications. [3,4] Pain, swelling, and trismus are all immediate tissue reactions after surgery on the third molar. These reactions have been linked to the length of the surgery, the difficulty of the surgery, and operative trauma. Complications can happen, which are unwanted reactions that may or may not be caused by the surgery. Some examples of complications are bleeding or hemorrhage. [5], post-op infections like dry socket, [6] nerve damage, slow healing, and the formation of a periodontal pocket in the far end of the second molar next to the tooth that was removed. [7,8] When impacted lower third molars need to be taken out, the wound can be closed in two different ways. Some of them use different suture techniques to compare these factors. [5,9,10], flaps of different kinds 3,8, and even when tube drains are used. [11,12] This study aims to find out which of the two secondary closure techniques used after surgery on the lower third molar is better at helping the wound heal and reducing complications.

## Materials & Methods

A prospective, randomized, cross-over clinical trial was conducted where we compared partial closure using one suture to the suture-less technique. Surgical sites were divided into two groups, Group A: one suture, and Group B: suture-less. Each patient received both treatments at the same time. During the first post-operative week, all patients were asked to daily assess pain, trismus & facial swelling using subjective self-assessment scales. All patients attended follow-up

appointment at one week, to objectively assess facial swelling and wound healing, and at one month, to assess wound healing. Based on the previous study the following criteria were considered [15]

### Inclusion Criteria:

- Patients with an indication for extraction of both lower third molars with a symmetrical grade of impaction assessed using the Pell and Gregory classification
- Healthy patients (ASA I) or patients with systemic mild disease with no functional limitations (ASA II) and with no objective contraindication for surgical procedure
- Age range: 18-45 years
- Patient willing to participate in the study that completes follow-up visits and signed informed consent for treatment.

### Exclusion Criteria:

- Patients with systemic diseases ASA III, ASA IV and ASA V
- Patients using antibiotic premedication or using medication that would affect wound healing.
- Acute pericoronaritis or severe periodontal disease
- Patients allergic to the drugs or local anesthesia used in the study.
- Patients undergoing more than one extraction during the same surgical procedure.

### Surgical Protocol:

Surgical extraction was done under local anesthesia, using a 4 percent lidocaine (1:100.000 epinephrine) anesthetic solution (Artinibsa®, Inibsa, Barcelona, Spain). A crestal incision with a relieving incision at mesial part of the adjacent second molar that crossed the mucogingival line, with a length equal or greater than 10 mm, was performed. The mucoperiosteal flap was raised and osteotomy was performed using low-speed

hand pieces (maximum 40.000 rpm) and a number 8 tungsten carbide bur. Curettage and irrigation of the surgical bed was performed using sterile distilled water. Sutures were done with 3-0 silk with a C16 needle.

The suture technique in test group was consisted in one suture knot tied at the corner of the triangular flap and hermetic

suture at the distal aspect of the adjacent second molar. On the contrary, a hermetic suture of distal and relieving incisions of the triangular flap was made in control group. Finally, patient was instructed to bite on sterile gauze for 30 minutes. All patients were given written information regarding to postoperative instructions and medication.

**Table 1: Pain intensity after 2 days and after one week post surgery.**

Pain	A	B	P
2 days	4.51±2.11	4.55±1.99	0.258
1 week	2.11±1.77	3.62±2.01	0.03

**Table 2: Trismus after 2 days and after one week post surgery.**

Trismus	A	B
2 days	48	52
1 week	8	10

**Table 3: Facial swelling after 2 days and after one week post surgery.**

Facial swelling	A	B	P
48 hrs	2.61±1.201	2.31±1.30	0.124
7 days	0.83±0.785	0.711±0.871	0.310

**Table 4: Soft tissue healing after surgery in the test and control groups.**

Soft tissue healing	A	B
Excellent	44	26
Very Good	10	10
Good	6	2
Poor	10	32

## Results

Our study showed that the age interval ranged from 20-40 years with an average age of 26.2 years. No statistically significant differences were found to be related to pain ( $p < 0.06$ ) after 2 days but after a week the pain was statistical significant ( $P < 0.05$ ), although pain scores were greater in the complete closure than in the partial closure. There were no significant differences for trismus between none of them by measuring the mouth opening ( $p < 0.71$ ) after 2 days and after a week after surgery.

There were no differences in facial

swelling between the sutured and non-sutured after 2 days and after a week ( $p > 0.05$ ). The soft tissue healing was excellent in test group as compared to control group after one month period.

## Discussion

As with any other surgery, lower third molar surgery comes with its own risks and complications that can slow the patient's recovery and hurt their quality of life. [13,14] During the first few days after lower third molar surgery, the pain, limited ability to open the mouth, and visible swelling have a big effect on the oral health-related quality of life. [15]

The way a wound heals after surgery on the lower third molar is very important for the clinician. Delayed healing and wound dehiscence make it harder to keep clean and may require intensive follow-up care, which could make the time it takes to recover from surgery longer. From the patient's point of view, delayed healing could mean more pain and discomfort for a longer time. This is because the exposed distal root surface of the adjacent second molar will be more sensitive. [16]

"Pain is completely personal, and its links to disease are indirect. The only way to accurately measure pain is to believe the person who is feeling it." "Pain is what the person feels." [17]

In this study, there are no statistically significant differences between the two types of sutures when it comes to trismus, pain, and swelling. But these factors are less important in the partial closure technique.

In a similar study to ours, Osunde et al. [18] looked at the role of the suture technique in relation to postoperative complications. They found that there were no significant differences between a complete closure and a one-knot in the corner of the flap, but that the group with partial closure had a lower number of postoperative variables (pain, swelling and trismus). In the same way, Maria et al. [19] found a lower level of postoperative variables in the group with a secondary closure. They also found that the group with a complete closure had more swelling and a hematoma.

Other authors [4,9] have looked at how the wound closes up after the sutures are removed, and their results were a little bit different. Waite and Cherala [9] looked at what happened when they didn't sew a small "V"-shaped flap on 1280 extracted molars from 366 patients. They found that there were no problems after the surgery. On the other hand, Osunde et al. [20] did a study to compare the effects of suturing

with not suturing. They found that the group without sutures had less pain on the first and second days, but on the seventh day, the results were the same as the suture group. They didn't find any differences between the groups in terms of swelling and trismus after surgery. In contrast to the last study, Hashemi et al. [4] found that the group that didn't get sutures had less pain and swelling. The benefits of a technique that doesn't use sutures are a lower cost, less time spent in surgery, less manipulation of soft tissue, and, as a result, less pain after surgery. [9,20] Different authors [3,20] say that making a way for inflammatory fluid to drain helps to reduce symptoms and complications after surgery.

When a wound is completely closed, it can act like a one-way valve that lets food debris go in but not out. This makes the area more likely to get an infection, swell up, and hurt. [6,7,9] The main problem with not using stitches is that the wound may take longer to heal. Also, there is a high chance that a periodontal pocket will form around the second molar [20] that is next to it. A recent meta-analysis [21], on the other hand, says that there are no significant differences between the results of complete and partial wound closure. It also says that the available studies are different and don't provide a lot of scientific evidence. [22]

### Conclusion

The results demonstrated that postoperative pain and wound healing are influenced by the type of the closure technique used by the surgeon. We concluded that that the placement of one suture, distal to the lower second molar, after raising a small buccal envelope flap for lower third molar surgery, is superior to the suture-less technique, in decreasing postoperative pain and enhancing wound healing.

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