

# Comparison of Two Suturing Techniques in Removal of Mandibular 3<sup>rd</sup> Molar Surgery

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## ABSTRACT

**Objective:** This study was planned to evaluate the techniques of primary wound closure as well as secondary wound closure after removal of mandibular 3<sup>rd</sup> molar and the difference of both techniques was assessed in term of swelling, pain, and trismus.

**Methodology:** This randomized clinical trial was conducted in the surgery department a tertiary care hospital of Sargodha, Pakistan. Sample size was 60 patients. Both genders were included and the patients' age was between 19 to 30years, who presented with the complaint of pain and later on, referred for surgical removal of 3<sup>rd</sup> molar of mandible were the subject of interest of current study. Using lottery method, patients were divided into two groups. Primary closure technique was used on patients of group 1 and secondary closure technique was used for patients of group 2. The collected data was entered in SPSS version 25.0 and analyzed. Independent sample t test was used to explore the difference between two groups.

**Results:** Facial swelling and trismus was found significantly different in both groups on 3<sup>rd</sup> and 7<sup>th</sup> day after surgery ( $p=.001$ ,  $P=.001$ ).

**Conclusion:** In Conclusion, secondary wound closure technique is better in terms of pain, facial swelling and trismus than primary wound closure technique in surgical removal of impacted 3<sup>rd</sup> molar of mandible.

**Keywords:** Trismus, Facial Swelling, Primary wound closure, Secondary wound closure

## INTRODUCTION

Surgical removal of mandibular third molar is the most frequently practiced dental surgery around the globe. Like other surgical procedures, it is also associated with postoperative outcomes such as trismus pain and swelling<sup>1</sup> which are due to the tissue inflammation visible at different levels which sometimes increases the recovery period as well as the cost of treatment.<sup>2</sup>

It is important to close the wound by keeping the sharp estimation of wound edges which is routinely done by the surgeons. Significant postoperative complications could be faced due to such healing process because of the impotency of exudation of inflammatory tissues to leak out.

Moreover, the probability of transfer of primary wound closure to secondary closure which undergoes dehiscence.<sup>3</sup> Another way to deal with this condition is secondary wound closure, in which oral cavity is linked with the socket by developing a pseudo-socket by preparing a wedge of mucosa (5 to 6 milimetre) to 2<sup>nd</sup> molar subsequent to flap closure.<sup>4</sup> Making pseudo-socket helps in closure of wound by allowing the inflammatory exudate draining from the site of surgery, thus keeping an opening for self-irrigation.<sup>5</sup> Other ways secondary healing includes, gauze dressings, alternate designs of flap and drain insertion.<sup>6,7</sup> This study was planned to evaluate the techniques of primary wound closure as well as secondary wound closure after removal of mandibular 3<sup>rd</sup> molar and the difference of both techniques was assessed in term of swelling, pain, and trismus.

## MATERIAL AND METHODS

This randomized clinical trial was conducted in the surgery department a tertiary care hospital of Sargodha, Pakistan. Sample size was 60 patients. Both genders were included and the patients' age was between 19 to 30years, who presented with the complaint of pain and later on, referred for surgical removal of 3<sup>rd</sup> molar of mandible were the subject of interest of current study. Using lottery method, patients were divided into two groups. Primary closure technique was used on patients of group 1 and secondary closure technique was used for patients of group 2. Consent form was get signed by every patient before surgery. Patients with any comorbidities were excluded from the study as well as those who

were using any antibiotics which will later effect the wound healing process were also not included. Pregnant patients, and smokers were not taken.

For the assessment of 3<sup>rd</sup> molar angulation to the long axis of second molar, radiographic presentation was assessed using OPG radiograph. Local anesthesia was used for surgical extraction. Anesthesia of 3ml (2% lidocaine HCl with 1.80000 adrenaline) was given to the patients a long buccal nerve block and an inferior alveolar nerve block. Ward's incision was used to perform all extraction surgeries. From the anterior boarder's elevated point of mandibular ramus, incision was initiated to the distobuccal cusp's distal surface of mandibular 2<sup>nd</sup> molar which continued laterally to the buccal side's sulcus of second molar of mandible. For flap relieving process, the incision was made vertically. Using periosteal elevator, the mucoperiosteum flap was raised and by guttering method, the removal of alveolar bone was performed under irrigation using a round burr. As per requirement, fissure bur was used for tooth sectioning and Coupland elevator was used for extraction of tooth portion. Primary closure or secondary closure was done after achievement of hemostasis.

Before surgical procedure, mouth opening as well as facial swelling were assessed to set a baseline. Follow up of patients was recorded at postoperative day 3<sup>rd</sup> and 7<sup>th</sup> to assess level of pain, trismus, and facial swelling. Visual analog scale (VAS) was used to assess pain which was rated on a scale from 0(no pain) to 10(severe pain). Vernier calipers was used to measure maximum interincisal distance to assess trismus. To evaluate facial swelling, measurement from the mouth edges to the earlobe attachment subsequent to the cheek bulge, and the distance from the eye's outer canthus to the mandibular angle and distance from the earlobe attachment to soft tissue pogonium was taken and average of the these measurement was calculated and percentage of swelling was calculated subtraction the postoperative and preoperative values and multiplying it by 100. The collected data was entered in SPSS version 25.0 and analyzed. Independent sample t test was used to explore the difference between two groups.

## RESULTS

In terms of pain, the results of independent sample t test revealed insignificant difference between both groups ( $P=.08$ ). The mean

score of pain was 3.7 in group 1 whereas mean score of pain was 2.9 in group 2 on 3<sup>rd</sup> day after surgery. The mean score of pain was 3.4 in group 1 whereas mean score of pain was 2.7 in group 2 on 7<sup>th</sup> day after surgery.

Table 1: Comparison of Pain level on 3<sup>rd</sup> and 7<sup>th</sup> day after surgery

Groups	Mean (3 <sup>rd</sup> day)	Mean (7 <sup>th</sup> day)	Sig
Primary Closure	3.7	3.4	.08
Secondary Closure	2.9	2.7	

Facial swelling was found significantly different in both groups on 3<sup>rd</sup> and 7<sup>th</sup> day after surgery (p=.001, P=.001). The mean score of facial swelling in group 1 was 10.96 and that of group 2 was 4.78 on 3<sup>rd</sup> day after surgery. The mean score of facial swelling in group 1 was 2.96 and that of group 2 was 1.31 on 7<sup>th</sup> day after surgery.

Table 2: Comparison of Facial swelling measurement on 3<sup>rd</sup> and 7<sup>th</sup> day after surgery

Groups	Mean (3 <sup>rd</sup> day)	Mean (7 <sup>th</sup> day)
Primary Closure Group	10.96	2.96
Secondary Closure Group	4.78	1.31
Sig.	.001	.001

Trismus was found significantly different in both groups on 3<sup>rd</sup> and 7<sup>th</sup> day after surgery (p=.001, P=.001). The mean score of trismus in group 1 was 9mm and that of group 2 was 13 on 3<sup>rd</sup> day after surgery. The mean score of trismus in group 1 was 18 and that of group 2 was 25 on 7<sup>th</sup> day after surgery.

Table 3: Comparison of trismus measurement on 3<sup>rd</sup> and 7<sup>th</sup> day after surgery

Groups	Mean (3 <sup>rd</sup> day)	Mean (7 <sup>th</sup> day)
Primary Closure Group	9	18
Secondary Closure Group	13	25
Sig.	.001	.001

## DISCUSSION

The major health concerns of the patient after impacted tooth surgery are pain, trismus and facial swelling.<sup>1</sup> The aim of current study was to investigate the impact of two different suturing methods to explore the impact on occurrence of postoperative complications. Impacted tooth surgery demands higher level of surgical skills, decision making skills, anatomical knowledge, importance of using antibiotics, etc.<sup>3</sup> Therefore, clinicians are always in a race to explore the ways which lower the postoperative complications specifically after third molar surgery. The technique of closing the wound has its own effect on wound healing.<sup>7</sup> It was evident in literature, that postoperative complications are more presented in primary wound closure technique as compared to secondary wound closure<sup>1</sup> which is in line with the findings of current study. Selection of suture material may have a great

influence on wound healing but there is no evidence available for that till now. In current study, vicryl suture material was used.<sup>1</sup>

A similar study conducted to explore the same difference in which primary closure was found as better for impacted third molar surgeries.<sup>8</sup> In another study, secondary wound closure technique was preferred.<sup>6</sup> These findings are in line with the findings of current study. In current study and even in the literature, pain do not show such good results as perception of pain is different in every individual and it also affected by age and gender as well as culture and tendency to respond to the pain.<sup>9</sup> A study supported the subjectiveness of pain.<sup>10</sup> Less facial swelling was reported in another study in group of secondary wound closure as compared to the primary technique<sup>11</sup> which is also supported by the findings of current study.

In Conclusion, secondary wound closure technique is better in terms of pain, facial swelling and trismus than primary wound closure technique in surgical removal of impacted 3<sup>rd</sup> molar of mandible.

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