

A COMPARATIVE STUDY OF PRIMARY AND SECONDARY CLOSURE OF SURGICAL WOUNDS AFTER REMOVAL OF IMPACTED MANDIBULAR MOLAR

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ABSTRACT

BACKGROUND

Study was performed to compare primary and secondary closure of surgical wound after surgical removal of third molar. Conflicting opinion has been expressed in the literature.

MATERIALS AND METHODS

This study was performed at ANMMCH, Gaya, between September 2016 to December 2018. Visual analog scales were used to assess pain and swelling.

RESULTS

Our study showed that there was less pain but not significant in patients where sockets were opened but there was marked difference in swelling. Maximum swelling was observed on the third day.

CONCLUSION

There was no significant difference in pain between primary and secondary healing, but oedema was less at secondary healing site.

KEYWORDS

Impacted Third Molar, Primary Closure, Secondary Closure.

HOW TO CITE THIS ARTICLE: Dubey KG, Jain S, Dubey R. A comparative study of primary and secondary closure of surgical wounds after removal of impacted mandibular molar. J. Evid. Based Med. Healthc. 2019; 6(6), 371-374. DOI: 10.18410/jebmh/2019/77

BACKGROUND

Surgical removal of impacted third molar is one of the most commonly performed procedures which are carried out in oral and maxillofacial surgery. Rehrman proposed a flap repositioning technique to secure healing by first intention after extraction of third molar.¹ Conflicting opinions have been expressed in the literature concerning these two types of healing. A primary closure is preferred by Archer,² Guralnick,³ Kruger,⁴ Thoma,⁵ Howe⁶ and other authors. Other author such as Hunter, Bourgoyne, Blair recommend secondary intention.⁷ Both techniques involve silk suture, but one created a 6 to 7 mm round window in the flap just distal to the second molar. The initial inflammatory response involves the recruitment of cells that fight the potential contamination of the wound and activate cytokine excretion.⁸ The study was conducted to compare the effects of both of the procedures in healing and postoperative complications.

Financial or Other, Competing Interest: None.
Submission 21-01-2019, Peer Review 01-02-2019,
Acceptance 02-02-2019, Published 09-02-2019.

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DOI: 10.18410/jebmh/2019/77



Aim of the Study

To compare primary and secondary closure of surgical wounds after surgical removal of impacted mandibular third molar.

Objectives of the Study

- 1) Evaluation of incidence of various complications, including alveolitis, infection, in any of the two techniques.
- 2) Comparative study of pain and swelling in two techniques.

MATERIALS AND METHODS

Exclusion Criteria

- 1) Subjects who gave history of allergy to the drugs or anaesthesia in the surgical protocol.
- 2) Patient who had inflammation in the oral cavity.
- 3) Patient who smoke
- 4) Systemic disease which were relevant to the study (e.g.: uncontrolled Diabetes, receiving steroid or immunosuppressive drugs etc.,

Inclusion Criteria

- 1) Only bilateral impacted patients were considered.
- 2) Difficulty Index given by Pederson was calculated. Position A or B and class 1 or 2 were selected. Difference in angulations were accepted. Difference of

2 or less than 2 in the difficulty index numbering were included in the study.

- 3) The surgical time was noted. If the difference was within 15 minutes then they were included in the study. The mean difference of surgical time between left and right tooth in our study was 5.34 minutes.

Very Difficult	7 to 10
Moderately Difficult	5 and 6
Minimally Difficult	3 to 4

Table 1. Difficulty Index

Preoperative Examination of the Patient

30 patients (18 male, 12 female) in the age group of 18 to 40 years were chosen based on the above-mentioned criteria. The selection of primary healing site was done randomly as left side impactions takes more time for right handed surgeons. Informed consent was taken. All the Patients included in this study were provided a written bilingual proforma (in English and Hindi) and were asked to fill up the form accordingly. Radiographic and laboratory investigations were performed. Data compilation and statistical analysis were done with the help of statistical department. 30 patients with bilateral mandibular 3rd molar impaction were included in the study. Inferior alveolar nerve block was given by administration of 2% lignocaine solution plus adrenaline, 1:2,00000. Both the impacted teeth were extracted in the same sitting. A full thickness trapezoidal flap was taken. Osteotomy was performed with bur and the teeth were elevated. A wedge of soft tissue was removed from the side which was left open. Then the suturing was done on both side with socket left open on one side for secondary healing. The patients were prescribed antibiotic (amoxycillin+ clavulanic) acid 625 mg BD for 5 days. For analgesia combination of aceclofenac 100 mg and paracetamol (500 mg) were prescribed twice a day for three days and then SOS. Ranitidine 150 mg twice a day for 5

days. As mentioned earlier patients taking steroid were not included in the study nor any patients were given steroid for the control of oedema. The records were noted for 5 days and the sutures were removed on the 7th day. Post-surgical assessment was done on the basis of visual analog scale (VAS)⁹

0	No Pain	The Patient felt well
1	Slight Pain	If the patient was distracted, he or she didn't feel pain
2	Mild Pain	Patient felt pain even after concentrating on some work.
3	Severe Pain	Patient was very disturbed but was able to continue with his normal activity.
4	Very Severe Pain	The patient was forced to abandon all his normal work
5	Extremely Severe Pain	The patient was forced to abandon every activity and felt like lying

Table 2. VAS Criteria to Evaluate Pain

0	No Swelling	Patient wasn't able to detect slightest swelling
1	Slight Swelling	Slight swelling but not very noticeable
2	Mild Swelling	The swelling was noticeable but didn't interfere with its mastication
3	Severe Swelling	Swelling was evident and interfered with mastication
4	Very Severe Swelling	Swelling was marked, mastication was hindered and presence of trismus

Table 3. VAS Criteria for the Evaluation of Swelling

RESULTS

Secondary Closure	N	Mean	Std. Deviation	Wilcoxon Signed Ranked Test	P
Just after Surgery	30	1.43	0.626	-	-
Day-1	30	2.20	0.551	3.625	<0.001
Day-2	30	1.23	0.679	1.328	0.184
Day-3	30	0.87	0.434	3.252	0.001
Day-4	30	0.63	0.615	3.577	<0.001
Day-5	30	0.27	0.944	4.007	<0.001

Table 4. Comparison of Pain Score on Different Days and with Pain Score Just After Surgery

Primary Closure	N	Mean	Std. Deviation	Wilcoxon Signed Rank Test Z	P
Just after Surgery	30	1.43	0.676	-	-
Day 1	30	2.17	0.531	3.74	<0.001
Day 2	30	1.57	0.568	0.894	0.371
Day 3	30	1.03	0.615	2.387	0.017
Day 4	30	0.80	0.761	3.046	0.002
Day 5	30	0.40	0.621	4.041	<0.001

Table 5. Comparison of Pain Score on Different Days and Just After Surgery

Secondary Closure	N	Mean	Std., Deviation	Wilcoxon Signed Ranks Test Z	P
Just after surgery	30	0.63	0.615	-	-
Day-1	30	1.30	0.466	3.386	0.001
Day-2	30	1.67	0.711	3.942	<0.001
Day-3	30	1.57	0.679	3.837	<0.001
Day-4	30	0.90	0.759	1.427	0.154
Day-5		0.27	0.521	2.082	0.037

Table 6. Comparison of Oedema Score on Different Days and Just After Surgery

Primary Group	N	Mean	Std. Deviation	Wilcoxon Signed Ranks Test Z	P
Just after surgery	30	.87	0.973	-	-
Day-1	30	2.10	0.607	4.396	<0.001
Day-2	30	2.33	0.606	4.408	<0.001
Day-3	30	2.33	0.844	3.606	<0.001
Day-4	30	1.57	0.679	2.162	0.031
Day-5	30	.63	0.556	0.675	0.499

Table 7. Comparison of Oedema Score on Different Days and Just After Surgery

	N	Mean	Std. Deviation	Wilcoxon Signed Ranks test Z	P
Just after Surgery					
Secondary	30	1.43	0.626	0	1
Primary	30	1.43	0.679		
Day-1					
Secondary	30	2.20	0.551	0.577	0.564
Primary	30	2.27	0.531		
Day-2					
Secondary	30	1.23	0.679	2.887	0.004
Primary	30	1.57	0.568		
Day-3					
Secondary	30	.87	0.434	1.291	0.197
Primary	30	1.03	0.615		
Day-4					
Secondary	30	0.63	0.615	1.091	0.275
Primary	30	0.80	0.761		
Day-5					
Secondary	30	.27	0.944	1.228	0.219
Primary	30	.40	0.621		

Table 8. Comparison of Pain Score on Different Days between Secondary and Primary Closure

	N	Mean	Std. Deviation	Wilcoxon Signed Ranks Test Z	P
Just after Surgery					
Secondary	30	0.63	0.615	1.734	1
Primary	30	0.87	0.973		
Day-1					
Secondary	30	1.30	0.466	3.846	0.564
Primary	30	2.10	0.607		
Day-2					
Secondary	30	1.67	0.711	3.780	0.004
Primary	30	2.33	0.606		
Day-3					
Secondary	30	1.57	0.679	3.413	0.197
Primary	30	2.33	0.844		
Day-4					
Secondary	30	0.90	0.759	3.024	0.275
Primary	30	1.57	0.679		

Day-5					
Secondary	30	0.27	0.521	2.368	0.018
Primary	30	0.63	0.556		
Table 9. Comparison of Oedema Score on Different Days Between Secondary and Primary Closure					

Our study showed that there was less pain in patients where sockets were open but that was not significant on the second day. Patient experienced maximum pain on the first day. There was considerable reduction in pain on the second and third day. As far as swelling is concerned there was considerable difference between the two groups. Patient with sockets opened had less swelling (P value <0.001.) Patient had maximum swelling on the third day. One patient had maximum pain on the fifth day as she suffered from dry socket. The percentage of the dry socket was found to be 3.3% at the secondary healing site. It was 0% at primary healing site.

DISCUSSION

The rationale behind the socket being kept open was to allow for the drainage of the exudates which would have been formed secondary to surgical extraction of mandibular third molar. This in turn, would lead to less oedema and pain, to certain extent. A primary closure is preferred by Archer² Guralnick³ Kruger⁴ Howe⁵. Hunter, Blair, Ivy, Padgett and Mead recommended wound healing by secondary intention.⁷ Rakprasitkul¹⁰ et al suggested the use of small tube drain following surgical removal of third molar. Danda et al¹¹ conducted the study on Indian population where he found significant reduced swelling and pain in secondary healing group. Wound dehiscence was common, in 12 patients on primary healing site. Pasqualini et al¹² reported dehiscence in 33% patients. Milani Contar et al.¹³ found that risk of complication in third molar surgery will increase in proportion to the surgical difficulty. Danda et al¹¹ who reported more number of dry socket at secondary healing site whereas Dobois et al⁷ found incidence of infection on primary healing site. The finding that there was no significant difference in pain score between primary and Secondary closure group and oedema was significantly less in the site which had secondary closure is also supported by Rakprasitkul.¹⁰

CONCLUSION

The findings indicate that there was no significant difference in pain score between primary and secondary closure group. Oedema was significantly less in the site which had secondary closure. Rakprasitkul¹¹ had mentioned similar findings in his study. Only one patient suffered from infection at secondary closure site which was not significant. However further studies with larger samples are needed for further evaluation.

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