

## Research

## Comparison of Two Treatment Modalities: Operculectomy vs. Third Molar Removal for Management of Pericoronitis

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### ABSTRACT

**Aim:** The aim of the study was to compare pain, wound healing and efficacy of operculectomy technique over third molar removal in management of pericoronitis.**Materials and methods:** The study was conducted on 150 patients who reported to dental op for management of pain in mandibular third molar region and were further diagnosed with pericoronitis. The study subject was divided into two groups comprising of 75 patients each. Patients in group I underwent operculectomy and for patients in group II, third molar removal was carried out. All the patients were assessed for pain using visual analogue scale (VAS) and wound healing on the 5th postoperative day.**Results:** Out of 75 patients in group I, 72 patients had no pain or any discomfort on the 5th post-operative day while 3 patients of this group reported back with pain who were immediately subjected for removal of mandibular third molar. Out of 75 participants of group II, 32 patients had pain and discomfort. Delayed healing was observed in 8 patients of group II and 1 patient of group I respectively with a statistical significance of  $P < 0.05$  for group I.**Conclusion:** Operculectomy was found to be a promising and efficacious treatment modality for management of patients with pericoronitis when compared with removal of mandibular third molar.**Keywords:** Pericoronitis, Operculectomy, Third molar removal.

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## INTRODUCTION

Pericoronitis, as a diagnosis is a boon for the oral and maxillofacial surgeons in day to day life. The key factor for the involvement of mandibular third molars in pericoronitis is the limited availability of space between the erupting tooth and the overlying gingival flap. Such common occurrence of pericoronitis is mostly associated with a partially erupted tooth. The decision for management of these third molar remains controversial on whether to extract the tooth or to create a path of eruption for the underlying tooth. Removal of mandibular third molars is a challenging task due to its close approximation with the vital structures leading to possible complications of pain, swelling and trismus post operatively. While operculectomy is a minor surgical procedure where a flap of tissue over the partially erupted tooth is removed without involvement of vital structures and thereby creating a clear path of eruption, and an environment that prevents accumulation of plaque and subsequent inflammation.

The purpose of this study was to compare the effectiveness of operculectomy over removal of third molar for the management of pericoronitis.

## MATERIALS AND METHODS

The study was carried out on 150 healthy adults aged between 19 and 35 years, who reported to dental OP for management of pain in third molar region and were further diagnosed with pericoronitis. All patients included in the study fulfilled the eligibility criteria for surgery under local anesthesia as per the American Society of Anaesthesiology (ASA) Class I. The protocol of this study was reviewed and approved by the Institutional Review Board. Written informed consent for the study was obtained from all patients. All procedures were carried out by the same surgeon.

### *Inclusion criteria*

Pericoronitis associated with partially erupted vertical and slightly distoangulated tooth, depth- position A, Pell and Gregory class I ramus relationship.

### *Exclusion criteria*

Patients with underlying systemic conditions, metabolic disease, third molar with dental caries, mesioangular or

horizontal placed tooth, depth- position B and C, Pell and Gregory class II, III ramus relationship and pregnant patients.

**Randomization**

Patients were randomly assigned to one of the two groups.

1. Group-I-Patients diagnosed with pericoronitis in relation to mandibular third molar and were subjected to conventional operculectomy technique.
2. Group-II-Patients diagnosed with pericoronitis in relation to mandibular third molar and were subjected for removal of third molar.

**Group I (Conventional operculectomy technique)**

Local anesthesia comprising of 2% lidocaine with 1:80,000 adrenaline was administered as 2 mL inferior alveolar, 1 mL lingual, and 1 mL long buccal nerve blocks. A triangular incision was made posterior to the distal of third molar area using No.15 blade and a wedge shaped tissue was excised which was followed by curettage of the surgical site and irrigation with Povidone iodine solution. Post-operative instructions were given and analgesics were prescribed to all the patients (Figures 1 and 2).



Figure 1: Before operculectomy.



Figure 2: After Operculectomy.

**Group II (Third molar removal)**

Local anesthesia comprising of 2% lidocaine with 1:80,000 adrenaline was administered as 2 mL inferior alveolar, 1 mL lingual, and 1 mL long buccal nerve blocks. A crevicular incision was made and mucoperiosteal flap was reflected for adequate exposure of the surgical site. The tooth was located using elevators and delivered with forceps. The surgical site was then irrigated using betadine solution and saline, the mucoperiosteal flap was freshened and sutured with 3-0 braided silk. Post-operative instructions were given to all the patients and were prescribed with analgesics (Figures 3 and 4).



Figure 3: Pericoronitis.

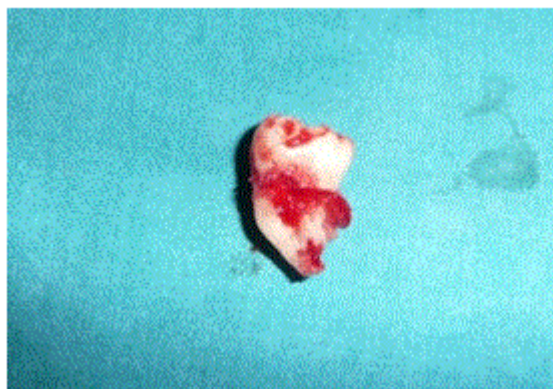


Figure 4: Tooth removal.

**Assessment**

All the patients were evaluated by the same independent observer postoperatively on the 5th post-operative day to check the parameters of the study by comparing patient compliance on pain and wound healing between the two study groups.

**Subjective evaluation of pain:** Pain was evaluated using a 10 cm visual analogue scale (VAS) that had scorings from 0-10 where the score 0 represents no pain, 5 represents moderate pain, and 10 as the worst possible pain.

**Evaluation of wound healing:** The surgical sites were examined for delayed healing and signs of any infection.

**Statistical analysis**

The clinical data was analysed statistically with chi-square test using SPSS software. Statistically significant results were obtained for pain and wound healing on 5th postoperative day for group I with P<0.05 respectively.

**RESULTS**

A total of 150 patients having inflammation of pericoronal flap were included in the present study, 57 patients among them were men and 18 were women in group I. In group II 60 were men and 15 were women respectively. The results on

comparing the parameters of pain and wound healing between the two study groups on the 5th postoperative day is represented in **Figure 5, Tables 1 and 2**. The collected data was analysed by mean, standard deviation and comparison was done using chi square test.

**Pain**

Out of 150 participants in our study, 3 patients reported with pain in group I with a mean difference of 3.01 and a standard deviation of 1.33 and 32 patients in group II with a mean difference of 4.35 and a standard deviation of 1.54 which shows a clinical and statistical significance of P=0.04 on 5th postoperative day in group I.

**Table 1:** Significance of pain.

Pain	No of Patients	Mean	Standard Deviation	P Value
GROUP I	3 (75)	3.01	1.33	0.04
GROUP II	32 (75)	4.35	1.54	1.87

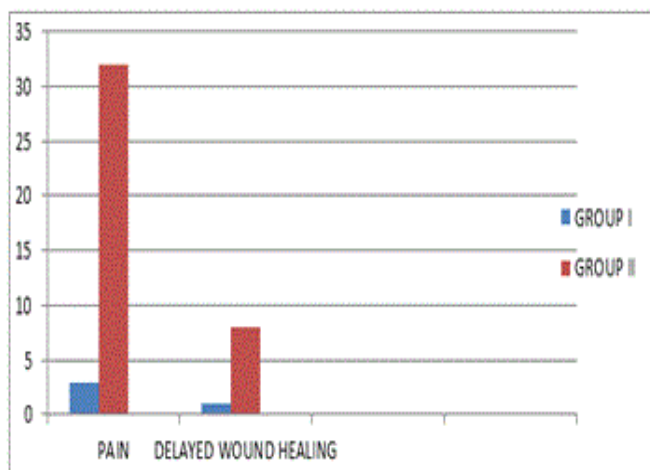
**Wound healing**

Out of 150 participants, 1 patient of group I had delayed wound healing with a mean difference of 2.97 and a standard deviation of 1.13 and 8 patients in group II had delayed

wound healing with a mean difference of 3.12 and a standard deviation of 1.28 which shows a clinical and statistical significance of P=0.02 as observed on the 5th postoperative day in group I (**Table 2, Figure 5**).

**Table 2:** Significance of wound healing.

Wound Healing	No Of Patients	Mean	Standard Deviation	P Value
GROUP I	1 (75)	2.97	1.13	0.02
GROUP II	8 (75)	3.12	1.28	0.29



**Figure 5:** Pain and delayed wound healing for each group.

**DISCUSSION**

The purpose of this study was to investigate the efficacy and patient compliance on management of pericoronitis in relation to mandibular third molar by comparing two treatment modalities:operculectomy and removal of third molar.

The incidence of pericoronitis in mandibular third molar was associated with partially erupted vertical and slightly distoangular tooth in 80% of patients in a study reported by Blakey et al. [1] which had a positive correlation with our study. All the participants in our study presented with pain in mandibular third molar region and such occurrence of pain was due to the presence of viable microorganisms within the pericoronal flap. The microorganisms commonly observed were aerobic streptococci which predominates the other species. Sometimes non-specific or even mixed organisms like anaerobic streptococci, bacteroides and fuso-bacteria were also seen and only few were strict anaerobes.

Treatment of choice for management of pericoronitis remains controversial and challenging for oral and maxillofacial surgeons. In our study, participants included in the operculectomy group had better patient compliance than patients of the other group who underwent removal of third molar. A similar association was found with authors:

Shivaprasad et al. [2], Blakey et al. [1], Gill et al. [3], Indrasari [4]. Beech et al. [5] reported with high success rates by removing the corresponding maxillary third molar in appropriate cases thereby preventing complications associated with removal of mandibular third molar.

Indrasari et al. [4] suggested an advanced and alternate technique to conventional operculectomy where he used electrosurgery for the management of pericoronitis. This procedure was performed by passing high frequency electric current through the tissues to create a desired clinical effect. Though the method was found to be advantageous by providing a blood free surgical site intra-operatively and faster wound healing post-operatively, this procedure was considered to be cost effective and not indicated for patients with pacemakers. National institute of health of America stated that it is better to extract third molar as early as possible during the developmental phase of tooth to prevent bone loss. If considered to retain the tooth, operculectomy would be the best treatment option for management of pericoronitis. Our study had a similar correlation with the study by authors: Shivaprasad et al. [2], Dhonge et al. [6], Moloney et al. [7],

Pepper et al. [8], Renton et al. [9] who emphasized that it was not necessary to remove mandibular third molar. National Health Service (NHS) and National Institute for Clinical Excellence (NICE) had recommended a protocol that states, when third molars that are free from disease and is asymptomatic should not be considered for removal [10].

In our study, 3 patients who underwent operculectomy reported back with pain on 5th postoperative day were immediately subjected to removal of third molar and only 1 patient reported with delayed wound healing. Such post-operative tissue healing in group I was due to decreased tissue collateral damage, minimal trauma and control of the depth of tissue damage intraoperatively and presence of more granulation tissues progressing to better healing post-operatively 10 whereas in group II, 32 patients reported with severe pain and 8 patients had delayed wound healing on 5th postoperative day.

Moloney et al. [7] reported that his participants presented with pericoronitis had two episodes of infection that had completely resolved with time but he emphasized that if the tooth was not removed there would be a risk of development of serious infection leading to life threatening conditions. On considering impact of pain with pericoronitis Magrew et al. [11], concluded that oral health related quality of life was improved after removal of third molar. On contrary, in our study patients who underwent operculectomy had better quality of life postoperatively when compared with patients who underwent removal of third molar.

Operculectomy (group I) as choice of treatment had favourable and positive outcome as there was faster wound healing and minimal discomfort experienced by our patients, however surgical removal (group II) can be considered as a treatment option as it eliminates the cause associated with pain in mandibular third molar but, the complication rates were found to be high and the method of operation seems iatrogenic.

## CONCLUSION

The results of our study conclude that, operculectomy is a promising alternate technique for the management of pericoronitis in terms of patient compliance with minimal or no complications when compared to removal of third molar for the same reason.

## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

## ETHICAL APPROVAL

This article does not contain any studies with animals performed by any of the authors.

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and also with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

## INFORMED CONSENT

Informed consent was obtained from individual participants included in the study.

## ORCID ID

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