



## A Comparison of Placement of Different Drug Regimen in Socket after lower third Molar Surgery: A Prospective Study

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### Abstract

**Background:** Prevention of alveolar osteitis can be either pharmacological or non pharmacological. The aim of this study was to compare the effects of different regimens for the prevention of alveolar osteitis following mandibular third molar extractions.

**Material & Methods:** This study was carried out on a total of 90 patients who have 17-30 years of age. To be eligible, patients had to be in good general health and have at least one mandibular third molar to be extracted. The patients of group I (N=45) was placed powder of 500 mg of amoxicillin capsule in socket after lower third molar extraction immediately. The second group (mixture of powder of 500 mg of amoxicillin+ 500mg metronidazole, n = 45) was treated similarly to group 1.

**Results:** Our study showed that the mean age was 23.70 yrs in group I & 24.5 yrs in group II. Male to female ratio and smoking habits was almost same in both groups. The pain, swelling was higher in group I as compare to group II, which was statistical significant ( $P=0.0374^*$  &  $p=0.0496^*$  respectively). Overall incidence of dry socket was 20%. There was a significant reduction in the incidence of AO in the second group ( $p = 0.0386^*$ ).

**Conclusion:** The results of this study suggest that placement of mixture of antibiotics in socket immediately after lower third molar extraction decreases the alveolar osteitis rate.

**Keywords:** Dry socket, extraction, impacted third molar, antibiotics.

### Introduction

Dry socket can be defined as the inflammation of the extraction socket occurring 1-4 days post operatively, characterized by intense throbbing pain, accumulation of disintegrated clot and food debris in the socket and malodor.<sup>1,2</sup> 95-100% patients report within 7 days of surgery with pain.<sup>3</sup> The incidence of AO has been reported as 3-4% following routine dental extractions and 1-45% after the removal of mandibular third molars. The

peak ages of occurrence are from 20 to 40 years, with an increased incidence among female patients. Aetiology of AO is not fully elucidated, but it is multifactorial and its pathogenesis is still unclear. Some of the etiological factors are: compact structure of the bone, amount of vasoconstrictor substance in the local anaesthetic agents, presence of systemic problems, oral contraceptive use, smoking, age, gender, and surgical trauma (impaction level of the tooth and

experience of surgeon). Fibrinolysis with subsequent loss of blood clotting is believed to be the general cause of AO<sup>4-7</sup>.

Prevention of alveolar osteitis can be either pharmacological or non pharmacological. Non pharmacological measures include taking a good history, identification and if possible, elimination of risk factors.

Systemic antibacterials are reported to have some benefit in the prevention of alveolar osteitis. Studies showing favorable results with Penicillin, Clindamycin, Erythromycin and Metronidazole use are available.<sup>8</sup> Some researchers however, have found no significant difference in the incidence of dry socket with the use of systemic antibiotics.<sup>9</sup>

The aim of this study was to compare the effects of different regimens for the prevention of alveolar osteitis following mandibular third molar extractions.

## Material & Methods

This study was carried out on a total of 90 patients who have 17-30 years of age. To be eligible, patients had to be in good general health and have at least one mandibular third molar to be extracted. Patients who had pericoronitis or were taking antibiotics for other infections were excluded. Women who were pregnant, breast-feeding, or using oral contraceptives were also excluded from the study. Only one tooth was removed in one session for this study. We obtained informed consent from all participants.

The patients of group I (N=45) was placed powder of 500 mg of amoxicillin capsule in socket after lower third molar extraction immediately. The second group (mixture of powder of 500 mg of amoxicillin+ 500mg metronidazole, n = 45) was treated similarly to group 1.

A postoperative examination was performed on the third days to evaluate the presence of pain, swelling and incidence of dry socket. Pearson chi-square test was used for statistical analysis and  $p < 0.05$  was considered to be significant.

## Results

Our study showed that the mean age was 23.70 yrs in group I & 24.5 yrs in group II. Male to female ratio and smoking habits was almost same in both groups (table 1). The pain, swelling was higher in group I as compare to group II, which was statistical significant ( $P=0.0374^*$  &  $p=0.0496^*$  respectively). Overall incidence of dry socket was 20%. There was a significant reduction in the incidence of AO in the second group ( $p = 0.0386^*$ ) (table 2).

**Table 1:** Comparison of demographic parameters in between group

Parameters	Group I (Amoxicillin group) (N=45)	Group II ( Mixture of drug regimen) (N=45)
Mean age (yrs)	23.70 yrs	24.5 yrs
Sex		
Male	13	11
Female	32	34
Smoking		
Yes	10	8
No	35	37

**Table 2** Comparison of postoperative C 222 complications in between group

Parameters	Group I (Amoxicillin group) (N=45)	Group II (Mixture of drug regimen) (N=45)	P-value
Pain after 3 <sup>rd</sup> day	18 (40%)	6 (13.33%)	0.0374*
Swelling after 3 <sup>rd</sup> day	15 (33.33%)	5 (11.11%)	0.0496*
Incidence of dry socket	14 (31.11%)	4 (8.88%)	0.0386*

## Discussion

Dry socket is one of the most frequent post-extraction complications, and many different ways have been tried to manage this problem. Dealing with this complication can cause considerable loss of time from work for patients and disruption of normal schedules for dentists<sup>4</sup>.

Smoking is known to be a predisposition to dry socket.<sup>10</sup> Pathogenesis of the process is not quite yet understood which were consisted with our results.

Prophylactic antibacterials, either given systemically or used locally, are considered to reduce the incidence of AO. Systemic antibacterials reported to be effective in the prevention of AO include, penicillin, clindamycin, erythromycin, amoxicillin and metronidazole<sup>6,11</sup>.

In this study we found a significant reduction in the incidence of alveolar osteitis when antimicrobial solution was used with a metronidazole antibiotic as locally.

Pharmacological preventive measures of antiseptic agents and clot promoting agents have been tested continuously for efficacy. The absence of predisposing factors can render these agents completely useless. The adaptation of clean surgical techniques is critical in minimizing the incidence of dry socket. Although various researches have been carried out for many years, there is still quite a long way to overcome this painful condition.

### Conclusion

The results of this study suggest that placement of mixture of antibiotics in socket immediately after lower third molar extraction decreases the alveolar osteitis rate. Further studies with well-controlled results are necessary to draw firm conclusions, which can lead the most beneficial method for the prevention of alveolar osteitis.

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