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A RANDOMISED DOUBLE BLINDED STUDY TO EVALUATE THE EFFECTIVENESS OF ANTIBIOTICS AFTER THIRD MOLAR SURGERY

Dental Science

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ABSTRACT

From the literature review in the recent years, it is well noted that surgeons tend to avoid using prophylactic antibiotics following the surgical removal of the non infected third molars, and have started focusing on more important local factors that may play an important role in avoiding postoperative complications.1 A randomized double blind placebo controlled trial is carried out for sequential observation , data generation and analysis to determine the effect of antibiotics , upon the pain , swelling and trismus following the surgical removal of impacted mandibular third molars and compared and evaluated the response and consequences exhibited by same type of samples with no antibiotics after the removal of impacted mandibular third molars in the sample of 50 patients in each group. We can conclude that prescribing antibiotics after removal of impacted mandibular third molar produces less postoperative swelling and less amount of trismus than with the non antibiotic group but the difference was not statistically significant so there is no justification for using antibiotics routinely for third molar surgery and therefore it should not be recommended but universally non administration of antibiotics cannot be practiced in vulnerable individuals

KEYWORDS

polymicrobial flora, inflammation, antimicrobial therapy, trismus, alveolar osteitis.

INTRODUCTION

Surgical extraction of the impacted third molars is the procedure carried out most commonly in oral surgery around the world. Owing to the nature and environment of the surgery, inflammation and infection associated with bacterial contamination are the most common consequences after third molar surgery. Post operative infection is a severe complication occurring in approximately 2% to 12% of the patients.[2]

The clinical course of an infection is determined by the balance between the natural resistance of the host, the maintenance of therapeutic levels of an appropriate antimicrobial agent, the microorganism, its virulence, and sensitivity to antimicrobial agents.[3] The healing process after the extraction of an impacted third molar depends on different variables such as surgeon's experience, patient's age, presence of periodontal pathology, and necessity for bone removal and tooth sectioning of the third molar if deeply impacted.[4]

The incidence of infection after surgical intervention for wisdom teeth varies depending on the method used for its evaluation. The oral cavity is colonized by more than 400 species of aerobic and anaerobic bacteria. The complexity of oral and dental flora has prevented the clear elucidation of specific etiologic agents but most are caused by mixed gram positive aerobic and anaerobic polymicrobial flora. The concept of administration of antibiotics, generally as a short course, to reduce the incidence of the infection significantly, minimizing adverse events and direct indirect costs.[5]

In considering the question "should antibiotics be used for third molar surgery?" one can give at least four possible reasons. Use antibiotics when-

1) An infection is present that must be treated.
2) The patient or patient's family demands antibiotics.
3) The standard of care in the oral surgery community is to use antibiotics.
4) The risk of postoperative infection is high.[6]

The use of antibiotics has been the subject of scrutiny in the last decade.

The use of antibiotic therapy without appropriate indications can result in adverse outcomes. The potential risks of prescribing antibiotics such as the development of hypersensitivity and allergic reactions, adverse side effects and the emergence of resistant microorganisms in the community might exceed the risk of infection. These potential risks and the cost of the drugs must be considered against the low risk of infection following the surgical extraction of asymptomatic impacted lower third molar teeth.[7]

A randomized double blind placebo controlled trial is carried out for sequential observation , data generation and analysis to determine the effect of antibiotics , upon the pain , swelling and trismus following the surgical removal of impacted mandibular third molars.

MATERIAL AND METHOD

This prospective study was carried out in the Out Patient Department (OPD) of Oral & Maxillofacial Surgery, Sardar Patel Post Graduate Institute of Dental & Medical Sciences & O.P Chaudhary Hospital & Research Centre, Lucknow after the approval from ethical committee. Patients were randomly selected according to the inclusion criteria and divided into 2 groups (control and experimental) irrespective of race, sex, cast and socio-economic status. This double blind study includes 100 patients of impacted, selected standard type of mandibular third molar.

1. To evaluate the efficacy of the antimicrobial agents – amoxicillin and metronidazole, in the healthy individual sample having good autoimmune status after the removal of impacted mandibular third molars in a prospective, randomized, study over two years.
2. To evaluate and observe the response and consequences exhibited by same type of samples with use of no antibiotics after the removal of impacted mandibular third molars in a prospective, randomized, study over two years.
3. Comparative evaluation of both the sample groups (control and

experimental), by obtaining observation data on the basis of laid down parameters.

OBJECTIVES

1. Observing and finding the efficacy and usefulness of antimicrobial agents in a controlled sample group, as compare to that of experimental group.
2. Observing and finding adverse effect and consequential complications in both the sample groups – pre-op, intra-op, post-op and follow up periods and generating the observation data which would be analysed statistically.

The study would be subjected, with double blind technique so as to avoid any bias and variations.

Group I **(Control Group)** patients were prescribed antibiotic treatment with capsule Amoxicillin 500 mg and tablet Metronidazole 400 mg TID , anti inflammatory and analgesic drugs (Tab. Ibuprofen 400 mg + Paracetamol 325 mg TID) and Multivitamin (Cap. Becosule OD) drug as an oral medication for 5 days post operatively.

Group II **(Experimental group)** patients were prescribed anti inflammatory and analgesic drugs (Tab. Ibuprofen 400 mg + Paracetamol 325 mg TID) and Multivitamin (Cap. Becosule OD) drug as an oral medication for 5 days post operatively.

Inclusion criteria

Age ranging from 20 to 40 years, Impacted mandibular 3rd molar according to Pell and Gregory classification (Mesioangular, Position A or Position B), Patients with unilateral or bilateral impacted mandibular third molar, Medically fit patients (ASAI and ASAII)

Exclusion criteria

Pregnant women or lactating mother, Medically compromised patient, Patient allergic to Metronidazole, Amoxycillin, Patients not willing to participate in the above study, Patient with pre-existing abscess or cellulitis, Patients with acute pericoronitis, Patient who had already taken antibiotic therapy prior to surgery, Smokers and Alcoholics, Mentally challenged patients

All patients underwent clinical and radiographic examination, routine blood investigations, symmetrical diagrams, tracings and actual clinical photographs throughout the study project till follow ups, were taken. A standardized approach to the surgical removal of the impacted mandibular third molars was followed. Before the operative procedure all patients were given a prior oral prophylaxis with 0.25% chlorhexidine for 1min.Part preparation was done extra orally and intra orally with betadine. All patients were anaesthetized by giving inferior alveolar, lingual and long buccal nerve blocks using 2% lignocaine + adrenaline 1:80,000 (5ml). After anaesthesia Ward's incision was made to prepare a trapezoidal flap.

The mucoperiosteal flap was reflected under atraumatic condition and investing bone on the buccal and distal aspect causing obstruction in eruptive process was removed (buccal and distal bone guttering was done) with a bur on straight hand piece under copious saline drip, to avoid injury or overheating of bone. After ensuring the undercuts,the tooth was gently elevated and removed from the socket completing the extraction. Unwanted tissue, lacerated debris was thoroughly irrigated and bony sharp margins and spicules were trimmed out and made smooth (Bone filing was done). Currettage of the socket was performed and the extraction socket was allowed to bleed freshly, and it was isolated from rest of oral cavity area, by putting cotton swabs around, so that no contamination from oral or otherwise occurs, then immediately with appropriate gauze swab (soaked and squeezed) with antiseptic agent was put on the extraction socket and patient was asked to bite on it for atleast 10 minutes while the preparation for further step of suturing was done. Intra operatively, only a physiologic, saline, solution containing no antibacterial agents was used for rinsing the operative site. Mucoperiosteal flap was repositioned and sutured with 3-0 mersilk in simple interrupted method. Post operatively all the patients were advised ice pack application on and off for 30 minutes on operated site and Warm saline gargles 6-7 times a day after 24 hours.

In group I

This group patients underwent the standard operative procedure described above, All the patients were prescribed antibiotic treatment with capsule Amoxicillin 500 mg and tablet Metronidazole 400mg TID,anti inflammatory and analgesic drugs(Tab.Ibuprofen 400mg+ Paracetamol 325 mg TID) and Multivitamin (Cap. Becosule OD) drug as an oral medication for 5 days post operatively.

In group II

This group patients underwent the standard operative procedure described above,

All the patients were prescribed anti inflammatory and analgesic drugs (Tab. Ibuprofen 400mg + Paracetamol 325mg TID) and Multivitamin (Cap. Becosule OD) drug as an oral medication for 5 days post operatively.

The sutures were removed after 7 days. The patients were followed to observe the response and the surgical site was thoroughly irrigated and cleaned with oral antiseptic solution, till the removal of the sutures.

Medical/psychosocial support was provided, if needed, to all the patients during the surgery and in the whole course of the assessment. All the patients were evaluated for the following parameters at following days post operatively.

Post-operative pain

scored by means of visual analogic scale (VAS) from zero (no pain) to five (extremely severe pain). Pain was scored on 1st,3rd,7th,15th,30th day postoperatively.[8] (Figure 1)

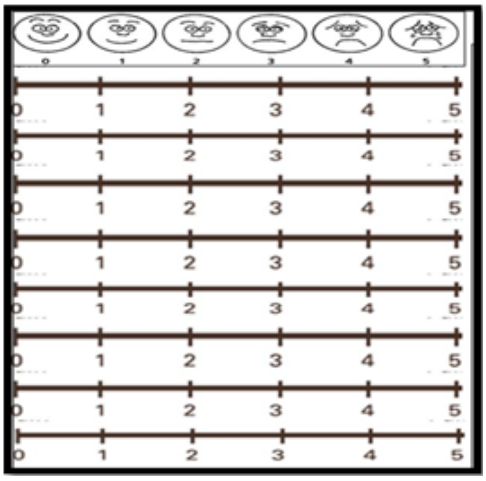


Figure 1: Visual Analogue Scale

0	No pain	The patient feels well.
1	Slight pain	If the patient is distracted he or she feels no pain.
2	Mild pain	The patient feels the pain even if concentrating on some activity.
3	Severe pain	The patient is very disturbed but nevertheless can continue with normal activity.
4	Very severe pain	The patient is forced to abandon normal activity
5	Extremely severe pain	The patient must abandon every type of activity and feels the need to lie down

Swelling

Assessment of swelling was done on the basis of the measurement taken between the landmarks on face. In order to objectively evaluate the postoperative swelling, three points Tragus (trag), Subnasale (Sn) and Pogonion (Pog) were measured pre-operatively and distance (Trag-Sn) (Trag-Pog) were measured with thread at all post-operative follow up days and the respective readings were made.[9] (Figure 2,3,4)

Trismus

In order to assess postoperative trismus mouth opening was measured preoperatively and postoperatively, from the incisal edge of the upper incisor to the incisor edge of the lower incisor by means of a Vernier Calliper.

Dry socket (Alveolar osteitis):

If present it was given (+) score and if absent (–) score.

Wound dehiscence:

If present it was given (+) score and if absent (–) score.

Purulent discharge:
If present it was given (+) score and if absent (–) score.

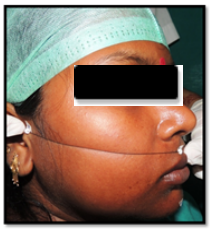


Figure2:Measurement Trag-Sn

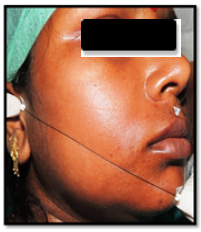


Figure 3 : Measurement Trag-Pog

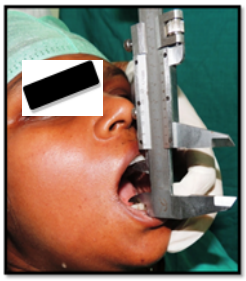
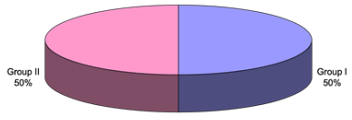


Figure 4 : Inter-incisal Opening

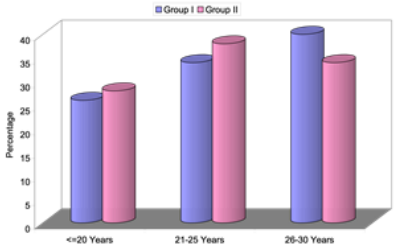
RESULTS

For this purpose, a total of 100 patients undergoing surgical removal of mandibular third molars were enrolled in the study and were placed in one of the two groups as follows:



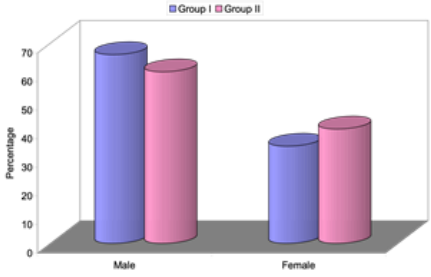
Graph 1: Group wise distribution of cases

Out of the 100 patients enrolled in the study, 50 (50%) were given antibiotics and comprised the Group I of the study while remaining 50 (50%) did not received any antibiotics and hence comprised the Group II of the study.



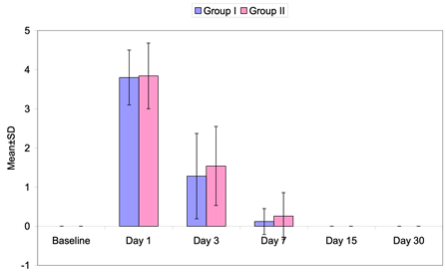
Graph 2: Age wise comparison of patients in two groups

Age of patients ranged from 18 to 30 years. Maximum number of patients in Group I were aged between 21-25 years while maximum number of patients in Group II were aged between 26-30 years. Mean age of patients in Group I was 24.12±4.03 years while mean age of patients in Group II was 23.62±3.71 years. Statistically, there was no significant difference between two groups with respect to age (p=0.822).



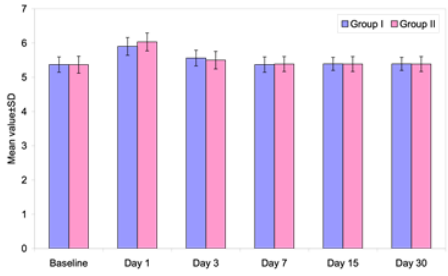
Graph 3: Gender wise comparison of patients in two groups

In both the groups, males outnumbered the females. Statistically, there was no significant difference in gender wise distribution of patients in two groups (p=0.534)



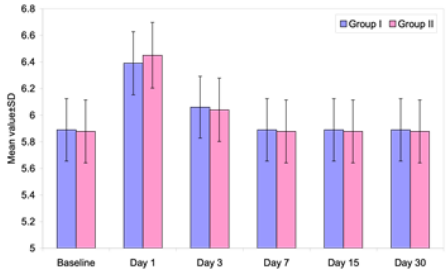
Graph 4: Comparison of pain at different follow up intervals in two groups

None of the patients complained of pain on day 15 and day 30 postoperative intervals in either of two groups Mean pain scores were maximum at day 1 in both the groups. It was observed that mean pain was higher in Group II as compared to Group I at day 1, 3 and 7 intervals but the difference was not significantly higher at any time interval (p>0.05).



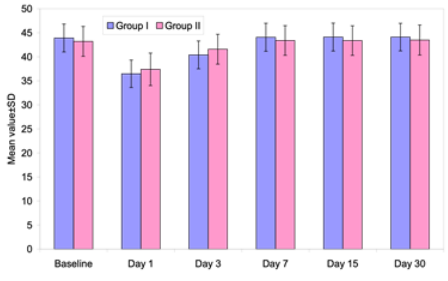
Graph 5: Comparison of SN-Tragus measurements at different follow up intervals in two groups

Mean SN-Tragus measurements were higher in Group I as compared to Group II at baseline, day 7, day 15 and day 30 intervals while at day 1 and day 3, mean values were higher in Group II as compared to Group I but the difference was not significant statistically (p>0.05) at any of the time intervals.



Graph 6: Comparison of SN-Pog measurements at different follow up intervals in two groups

In both the groups mean values were maximum at day 1 and minimum at baseline. Mean values resumed baseline position at day 7, day 15 and day 30 post-operative intervals. Statistically, there was no significant difference between two groups (p>0.05).

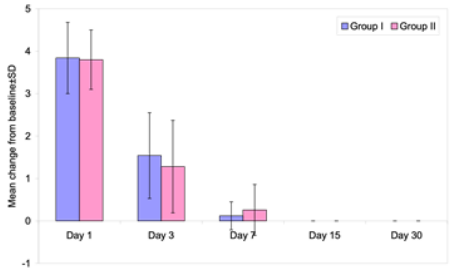


Graph 7: Comparison of Mouth Opening measurements at different follow up intervals in two groups

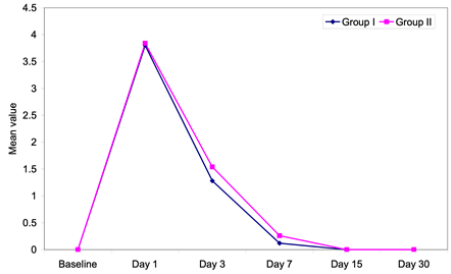
In both the groups minimum mouth opening was observed on day 1 post-operative interval. Mouth opening resumed its baseline values at day 7 interval itself. Mean mouth opening was higher in Group I as compared to Group II at baseline, day 7, day 15 and day 30 intervals while mean value was higher in Group II as compared to Group I at day 1 and day 3 postoperative intervals. However, at none of the intervals, the mean difference between two groups was significant statistically ($p>0.05$).

No other complication like dry socket, wound dehiscence and purulent discharge was observed in either of two groups at any time interval.

WITHIN GROUP COMPARISONS

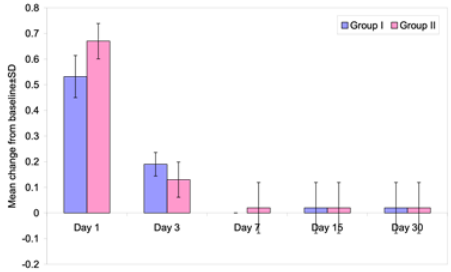


Graph 8(a):Within group change in pain scores at different time intervals

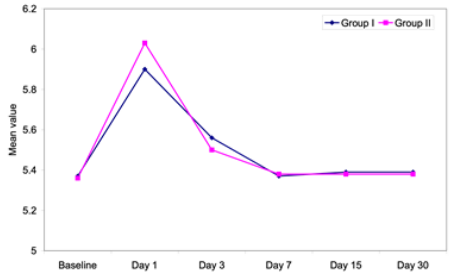


Graph 8(b):Within group change in pain scores at different time intervals

In both the groups, change from baseline was maximum at day 1 postoperative interval. By day 15, in both the groups, no patient complained of pain. The change from baseline was significant statistically in both the groups at day 1, day 3 and day 7 intervals.

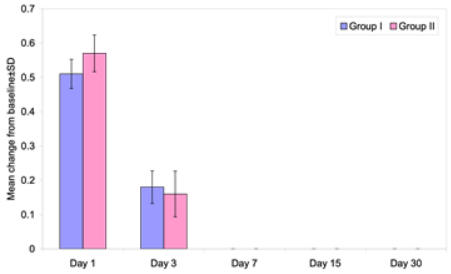


Graph 9(a):Within group change in SN-Trag Measurements at different time intervals

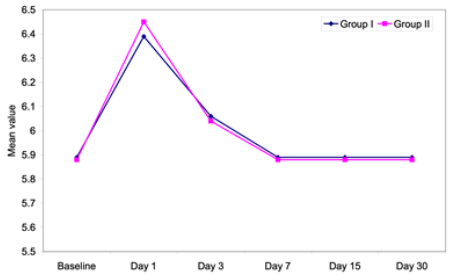


Graph 9(b):Within group change in SN-Trag Measurements at different time intervals

In both the groups, change from baseline was maximum at day 1 postoperative interval. The change from baseline was significant statistically at day 1 and day 3 intervals. By day 7, in both the groups, the change from baseline was nominal and did not account for statistically significant difference.

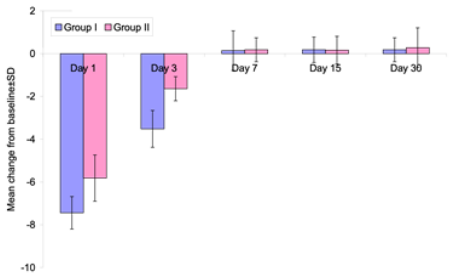


Graph 10(a):Within group change in SN-Pog Measurements at different time intervals

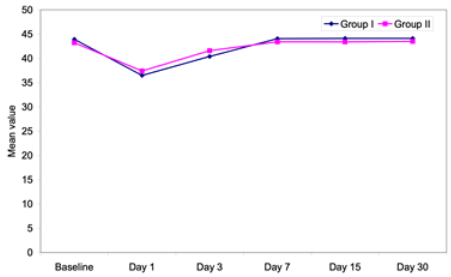


Graph 10(b): Within group change in SN-Pog Measurements at different time intervals

In both the groups, change from baseline was observed at day 1 and 3 post-operative intervals with maximum value at day 1 postoperative interval. The change from baseline was significant statistically at day 1 and day 3 intervals. By day 7, in both the groups, the change from baseline was zero in all the cases.



Graph 11(a):Within group change in Mouth Opening Measurements at different time intervals



Graph 11(b):Within group change in Mouth Opening Measurements at different time intervals

Mouth opening showed a restriction on day 1 and day 3 post-operative intervals, however, by day 7 post-operative interval, both the groups resumed near baseline mean values. At day 7, 15 and 30 post-operative intervals, no change in mouth opening as compared to baseline was observed in both the groups. The change from baseline was significant statistically at day 1, and day 3 interval in both the groups.

DISCUSSION

Surgery of the impacted mandibular third molar is one of the most commonly performed procedures in oral and maxillofacial surgical

practice. This can lead to a variety of immediate and postoperative discomfort [10]. Review of literature shows that in addition to other factors the frequency of postoperative outcomes and inflammatory response are related to the administration of antibiotics.

The appearance of postoperative sequelae, although affected favourably or unfavourably by surgical technique, mucoperiosteal flap reflection etc. ultimately related to the manifestations of inflammation in response to tissue injury orchestrated by mediators of acute inflammatory response.[11,12] Removal of impacted lower molars invariably causes some degree of pain, swelling and trismus[13]. Swelling and trismus have shown to be reduced with the use of systemic antibiotics, although the risk benefit ratio does not justify their use for the reduction of swelling and trismus on a routine basis.[6,14]

G.S.N.Kaziro suggested that Metronidazole reduced the incidence of pain, oedema and enhanced the healing process after surgery than the placebo.[15]

In both the groups, males outnumbered the females. In Group I there are 33(66%) male and 17 (34%) female. In Group II there are 30(60%) male and 20 (40%) female statistically, there was no significant difference in gender wise distribution of patients in two groups (p=0.534).

Postoperatively the parameters of pain, facial swelling and trismus, dry socket, purulent discharge and wound dehiscence were noted and tabulated and statistically analysed. However, pain, swelling, and trismus are considered to be normal inflammatory sequelae to surgical trauma and patients should be instructed of the outcome.[7] Pain was measured using visual analogic scale (VAS), which has long been described as a reliable and sensitive method for assessment of pain. Pain was scored on 1st, 3rd, 7th, 15th, 30th day postoperatively.[8]

Assessment of swelling was done on the basis of measurement taken between the landmarks on face in order to objectively evaluate the post-operative swelling. Three points tragus to subnasale (Trag-Sn) and tragus to pogonion (Trag-Pog) were measured with measuring tape at all post-operative follow up days and the respective reading were made .[9] To assess the mouth opening the inter-incisal distance were measured.

Post operative pain

The results shows that at day 1 post- operative interval the mean pain score in group II was 3.84±0.84. While in group I it was 3.80±0.70 .Severity of pain was relatively higher on VAS in group II as compared to group I.

At this time the effect of local anesthesia has completely worn off and patient took their first dose of analgesic. At day 3, the mean pain score in group II was 1.54±1.01 and in group I 1.28±1.09. On day 7th patients of group I had mean score of 0.12±0.33. While in patients of group II had mean score of 0.26±0.60. None of the patients complained of pain on day 15 and day 30 postoperative intervals in either of two groups.

Mean pain scores were maximum at day 1 in both the groups. It was observed that mean pain was higher in Group II as compared to Group I at day 1 and day 3 postoperative intervals but the difference was not significantly higher at any time interval (p>0.05). Pain is related to the healing process, and the healing process after the extraction of impacted third molar depends upon different variables such as surgeons experience, patient age, presence of periodontal pathology, and necessity for bone removal and tooth sectioning of the third molar if deeply impacted.[4]

Nordenram et al. in his study reported significantly less pain on the 7th day postoperatively in patients treated with antibiotics.[16] **Macgregor and Addy** in their study showed no significant differences for pain from the fourth postoperative day between the penicillin group and the control group.[17] As with **Monaco et al**.[4], no statistically significant differences were found regarding pain between the groups that used antibiotics (amoxicillin or clindamycin) and the group that received no antibiotic. Moreover,the peak of pain was concentrated between 3 and 6 hours after surgery . **Adde et al.** found in all the groups (Amoxicillin, clindamycin and no medication) , the VAS values were higher than the initial values, reaching the highest values between 3 and 6 hours after surgery, which coincides with the peak of the inflammatory process .[18]

Graph 5 shows comparison of postoperative swelling of two groups between tragus-subnasale. In group I patient, on day 1, the mean swelling score was 5.90±0.26 .While in group II the mean swelling score was 6.03±0.26 On day 3rd, In group I the mean swelling score was 5.56±0.23. While in group II the mean swelling was score was 5.50±0.26 In group I on 7th day mean swelling was5.37±0.22 while in group II the mean swelling score was 5.38±0.22 between tragus-subnasale. Mean SN-Tragus measurements were higher in Group I as compared to Group II at baseline, day 3, day 15 and day 30 intervals while at day 1 and day 7, mean values were higher in Group II as compared to Group I but the difference was not significant statistically (p>0.05) at any of the time intervals. According to **Adde et al**, no statistically significant differences (P _ .05) were found regarding edema among groups A, B, and C, (Amoxicillin, clindamycin and no medication) and slight and average edema predominated. The significant reduction of edema started after 48 hours. [18]

Graph 6 shows the postoperative comparison of two groups for swelling between tragus-pog. In group I patient on day 1, the mean swelling score was 6.39±0.24 while in group II the mean swelling score was6.45±0.25. On day 3rd, In group I the mean swelling score was 6.06±0.23 while in group II the mean swelling score was 6.04±0.24. On 7th day mean swelling score of group I was 5.89±0.23 and of group II was 5.88±0.24. In both the groups mean values were maximum at day 1 and minimum at baseline. Mean values resumed baseline position at day 15 and day 30 post-operative intervals. Statistically, there was no significant difference between two groups (p>0.05). Mean swelling was significantly higher in group II as compared to group I at 1st post-operative day which is expected as the effects of collection of inflammatory exudates however from 3 day onwards, no significant difference was observed between two groups.From 7th day onwards none of the patient had swelling in either of two group. Presence of swelling or its absence contributes significantly to the overall feeling of well being by the patient. These results show that there is a significant difference in pain and swelling between the two groups and hence the feeling of comfort by the patient.

According to **A.Siddiqi**, **J.A.Morkel**, **S.Zafar** swelling is an expected sequela of third molar surgery. It reaches a maximum 2–3 days postoperatively and normally subsides by the fourth day. It should completely resolve by the seventh postoperative day. The swelling score in the two treatment group i.e.the antibiotic and placebo is not significantly different.[19]

Graph 7 shows postoperative comparison of two groups for mouth opening. In group I patients on day 1, the mean mouth opening was 36.48±2.86. While in group II the mean mouth opening score was 37.40±3.38. On day 3rd, In group I the mean mouth opening score was 40.40±2.89 while in group II the mean mouth opening score was 41.58±3.10. In group I on 7th day mean mouth opening score was 43.92±2.91 while in group II the mean opening score was 43.22±3.11.

Mean mouth opening was higher in Group I as compared to Group II at baseline, day 7, day 15 and day 30 intervals while mean value was higher in Group II as compared to Group I at day 1 and day 3 postoperative intervals. However, at none of the intervals, the mean difference between two groups was significant statistically (p>0.05). Better mouth opening also result in better ability of patient to keep the surgical site clean preventing post-operative infection. According to **Wyke** (1981) trismus is a manifestation of disturbed neuromuscular control of temporomandibular joint during surgery which takes time to be re-established.[20]

No other complications like dry socket, wound dehiscence and purulent discharge was observed in either of two groups at any time interval. Regarding complications and infections, no infections were verified by **Adde et al.**, in the analysis of all three groups (Amoxicillin, clindamycin and no medication) upto the 7th postoperative day.[18] Postoperative infection of bone and soft tissue is a common complication that can be reduced with good surgical techniques. Some bacterial contamination of a surgical site is inevitable, either from the patient's bacterial flora or from the environment. The use of antibiotic prophylaxis in third molar surgery is widespread, but controversial.

The blind use of antimicrobials can result in adverse outcomes, and there is a trend to overprescribe antimicrobials in general. The risks of indiscriminate prescribing include the development of resistant organisms, secondary infection, toxicity, and development of allergic

Reactions. Prophylactic antimicrobials given beyond the immediate perioperative period do not seem to provide additional protection.[21]

Rood and Murgatroyd found a significant reduction in the incidence of dry sockets in patients given metronidazole, 0.6% compared with 3% in patients not given metronidazole.[22] **Kaczmarzyk et al.** in his study demonstrated no statistically significant differences in postoperative complication rates associated with third molar removal employing prophylaxis with 600 mg clindamycin 1 h preoperatively followed by 300 mg every 8 h postoperatively for 5 days and placebo. The results do not support the use of antibiotic prophylaxis with clindamycin for the prevention of inflammatory complications in patients undergoing lower third molar surgical extraction requiring bone removal.[23]

From the present study, we evaluate the postoperative parameters like pain, swelling, trismus and complications like dry socket, wound dehiscence and purulent dischrge after mandibular third molar surgery. Values reached to maximum on postoperative day 1 and returns to the baseline from postoperative day 7 onwards in both the groups. However the difference is more in group B in which no antibiotics were given but they are not statistically significant from group A. In our study the sample size was small, so further research should be conducted to evaluate the efficacy of antibiotics following third molar surgery with a larger sample size.

CONCLUSION

On the basis of observations made in present study, the following conclusive findings have been made: Mean age of patients in antibiotic group was24.12±4.03 years as compared to23.62±3.71 years in without antibiotic group, thus showing no significant difference between the two groups. A total of 63 (63%) patients in both the groups were males. No significant difference between the two groups was observed with respect to pre-operative pain, tragus to subnasale and tragus to Pog measurements and mouth opening. Postoperatively, mean pain score in without antibiotic group was higher but was not statistically significant as compared to that in antibiotic group for day 1and day 3 .Complete resolution of pain was observed in both the groups by day 7 itself. Mean post-operative swelling (Tragus to Sunasale) was higher in without antibiotic group as compared to antibiotic group at day 1 and day 3 postoperatively but it was not statistically significant. Mean post-operative swelling (Tragus to Pogonion) was higher in without antibiotic group as compared to antibiotic group at day 1 postoperative interval only but it was not statistically significant. Mean mouth opening was higher in antibiotic group at day 1 and day 3 intervals, however, no significant difference in mean mouth opening of two groups was observed after day 3.

Complications in terms of dry socket, wound dehiscence and purulent discharge were not present in both the groups. At the end of our study; we could not find any significant difference between the two groups regarding the evaluated parameters. The groups were uniform with regard to age and the preoperative clinical and radiological findings. On the basis of the result, we can conclude that prescribing antibiotics after removal of impacted mandibular third molar produces less postoperative swelling and less amount of trismus than with the non antibiotic group but the difference was not statistically significant so there is no justification for using antibiotics routinely for third molar surgery and therefore it should not be recommended. However it should be kept in mind that in both the groups patients were otherwise healthy individuals, with satisfactory oral hygiene. Any vulnerable individuals were excluded from the study. Hence universally non administration of antibiotics cannot be practiced in vulnerable individuals.

However further studies should be conducted to assess long term postoperative complication and efficacy of antibiotics following the impacted mandibular third molar surgery.

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