



ANTIBIOTIC PROPHYLAXIS IN THIRD MOLAR SURGERY

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ABSTRACT

Evaluate: The aim of this study is to evaluate the influence of antibiotic prophylaxis on third molar removal in young patients.

Material and Methods: 100 patients (50 males and 50 females, age range 18-40 years) requiring lower 3rd molar extractions were selected and divided randomly in two groups; A (test group) and B (control group). Group A received 2g amoxicillin tablet an hour prior to surgery and Group B received no antibiotic therapy.

Results: In group A there was a significant reduction of postoperative pain experienced in post-operative 7 days as compared to group B. Swelling was present in all patients of group B and in only 2 patients of group A. Sequelae of wound infection reported in 4 patients of group B and 1 patient in group A. Fever was present in 2 patients of group B and 1 patient in group A.

Conclusions: A statistically significant difference was found between patients receiving preoperative amoxicillin with respect to postoperative pain, fever, and wound infection.

Keywords: Antibiotics, Prophylaxis, Mandibular third molar, Amoxicillin, Trans-alveolar Extraction.



INTRODUCTION

In immunocompromised patients or in patients affected by diabetes or cardiovascular disease, antibiotic prophylaxis is a well-established routine therapy before surgery¹. It has been reported in the literature that in medically healthy patients, there is no indication for antibiotic prophylaxis¹; however, some recent studies reported some positive effects regarding reduction of pain and wound infection after preoperative and postoperative antibiotic therapy².

The healing process after the extraction of an impacted third molar depends on different variables such as surgeon experience, patient age, presence of periodontal pathology, and necessity for bone removal and tooth sectioning of the third molar if deeply impacted³⁻⁷. To evaluate this claim of authors, we decided to test the principles of antibiotic prophylaxis in the removal of third molar in young patients who all had mesioangular impaction to obtain better standardization of the surgical protocol.

MATERIALS AND METHODS

The study included collecting data from 100 (50 males and 50 females, mean age 26) patients coming to the department of Oral and Maxillofacial Surgery during

the period from March 1, 2018 to February 25, 2019 for extraction of their lower third molar. The ethical approval was obtained from the local ethical committee at Jaipur Dental College, Jaipur, Rajasthan. Variables linked to angle of mandible, root shape; were standardized as mesioangular impaction with no dilacerations. To keep the study unbiased in regards of surgical expertise; only one surgeon performed all the cases.

Inclusion Criteria were:

- (1) Patients in the range of 18-40 years of age.
- (2) Patients with partially bony mesioangular impacted mandibular third molar without pericoronitis, periapical and periodontal diseases.

Exclusion Criteria were:

- (1) Immunocompromised patients.
- (2) Patients having local pathology such as a cyst or tumor associated with impacted tooth,
- (3) Patients with irradiated maxillofacial region,
- (4) Mentally challenged patients.
- (5) Patients in whom the surgical phase extended for more than 1 h.

Methodology

Patients were randomized into two groups; A (test group) and B (control



group). Group A received 2g amoxicillin tablet an hour prior to surgery

All the procedures were performed under local anesthesia by the same technique. Complete aseptic precautions were used. Constant copious irrigation with saline was used during ostectomy and odontomy using micromotor with straight handpiece. Sectioning of the tooth was done whenever indicated. Primary closure was accomplished with 3-0 Silk sutures.

All the patients were given the following set of instructions:

- (1) Apply ice pack for the first 48 h after surgery—10 min per every 2 h in the first 24 h, and then twice a day for the next 24 h
- (2) Take cold soft, liquid/semi solid diet,
- (3) Take the prescribed analgesics
- (4) Patients were asked to report on 2nd, 3rd, 5th and 7th post-operative days to check the following parameters and for the wound infection analysis was done after 1st, 2nd and 3rd week.

Evaluation of Pain was by Visual Analogue Scale [8]

Score 0—No pain.

Score 1—Slight pain; If patient is distracted he/she does not feel pain.

Score 2—Mild pain; The patient feels pain even if concentrating on some activity.

Score 3—Severe pain; The patient is very disturbed but nevertheless can continue with the normal activities.

Score 4—Very severe pain; The patient is forced to abandon normal activities.

Score 5—Extremely severe pain.

Analgesic Consumption

Analgesics prescribed for the patients who reported with severe pain after postoperative week.

Variables Score

No - 0

Yes - 1

Wound Infection

Patients were evaluated for wound infection at each visit, halitosis, pain, clinical signs of clot less socket with necrotic bone were used as diagnostic criteria.

Variables Score

None - 0

Yes - 1

Evaluation of Facial Measurement

The patients who reported swelling were rated on a scale [8] from 1 to 3 as:

1-swelling visible but not sufficient to alter the patient's face,

2-swelling sufficient to alter the patient's face but not enough to limit mouth opening, and



3-swelling associated with trismus that limited mouth opening

Temperature (> 38 ° C)

Patient's axillary temperature was recorded pre-operatively and on every visit.

Variables Score

No - 0

Yes (>38° C) – 1

RESULTS

In this study, Sever Pain was present in 8 extractions in the group B and in 1 extraction in the group A. In the group B pain persisted for the first 3 to 5 days in 6 patients and entire post extraction week in 2 patients and in all other patients' pain was present for 1 or 2 days. In the group A only 1 patient reported of pain in first 3 days. Regarding pain, the difference between the A and B groups was statistically significant (Figure 1).

In terms of the use of analgesics, the mean consumption of analgesics in the postoperative week for each patient in group B was 9 whereas; in the group A it was 3; the mean postoperative consumption of analgesics was higher in the group B when compared with the group A, and this difference was statistically significant (Figure 2).

Wound infection was reported in 4 patients of group B and 1 patient in group A. In group B, 1 case with wound infection became evident 1 week after the extraction, 1 case 15 days after extraction, and 2 more cases 3 weeks after extraction. In the group A only 1 patient had wound infection who reported 3 weeks after the extraction (Figure 3).

Postoperative swelling was present in 48 of 50 extractions performed with antibiotic prophylaxis (group A) and in all 50 extractions of group B. Swelling was present in the first 3 days after extraction, increasing especially on the 2nd and 3rd day. In the group B, the swelling was scored as 3 in 2 case, as 2 in 31 cases, and as 1 in 17 cases. In the group A it was scored as 2 in 30 cases and as 1 in 18 cases, and it was absent in 2 cases.

We decided to compare the total number of cases with a score of 2 and a score of 3 in both the groups. In this manner we found that swelling was present in 33 cases in the group B and 30 cases (all with a score of 2) in the group A; this difference was not statistically significant.

Fever was present in 2 patients in the group B and in 1 patient in the group A. This difference was not statistically significant; thus, we have not produced a



graphical representation for fever as well for swelling.

DISCUSSION

Prophylactic antibiotics have been used to decrease the risk of surgical wound infection, but its role in preventing infection in all situations is situation is controversial. In his landmark animal study that defined the scientific basis of prophylaxis, Burke [9] has clearly stated that the use of post-operative antibiotics alone actually actually violates the basic tents of prophylaxis because there is no antibiotics either in the systemic circulation or at the site of surgery when the microorganisms invade the wound.

The meta-analysis of randomized controlled clinical trials performed by Ren and Malmstrom [10] on the effectiveness of antibiotic prophylaxis in third molar surgery reported an effect of antibiotic therapy in reducing alveolar osteitis and wound infection after third molar extraction. The study of Lacasa et al [2] reported the same effect on wound infection and in pain after postoperative antibiotic therapy. In our present study, antibiotic prophylaxis was effective in preventing postoperative pain and wound infection after extraction of third molars. Moreover, the analgesic consumption was

minimal in the test group, and these results are in accord with those of Lacasa et al [2]. Regarding the type of chemical principle tested, amoxicillin was one of the most tested antibiotics in previous studies, and it could be less efficacious if compared with other more recently introduced antibiotics, but it has fewer collateral effects. Amoxicillin, as reported in British National Formulary 53 2007, is a first-choice antibiotic for a short-term treatment of infections in the mouth [11]. A single high dose of antibiotic taken 1 hour before the contaminated surgery, which we consider the removal of impacted teeth to, conforms with the cited indications and reduces the chance for any possible abuse that is responsible for antibiotic resistance. The purpose of this study was to evaluate, this type of antibiotic prophylaxis could result in a better course and better wound healing. We believe that patients undergoing contaminated surgery could take amoxicillin only as prophylaxis and could be given more effective antibiotics in the postoperative period if serious complications occur. We applied for amoxicillin to verify which protocol is more effective.

Another interesting fact we encounter was that female patients had less pain than



male patients, but this difference was not statistically significant, probably because the number of patients was low. This could be related to the deleterious habits which are probably found lesser in females than males. But it cannot be validated unless a proper data has been procured.

CONCLUSION

Lower third molar removal is a common surgical procedure performed in dentistry that often results in pain, swelling, trismus, bleeding, nerve dysfunction, and postoperative infection. In addition, antibiotic therapy after impacted lower third molar removal is common and, until recently, universally accepted. The current study suggests the benefits of routine prophylactic antibiotic therapy which does not appear to overcome the risk of undesirable outcomes after third molar removal. In our opinion and the findings of this study are important because for this specific target group of patients (between aged 18-40 years), the antibiotic prophylaxis resulted in relative decrease of postoperative pain and consistent reduction of analgesic consumption and is therefore recommended to reduce the psychological impact of this type of surgery.

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