

Role of Antibiotics in Surgical Removal of Asymptomatic Mandibular Third Molar Impaction

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ABSTRACT

OBJECTIVE: To document the benefits of antibiotic therapy in reducing post-operative complications after removal of asymptomatic mandibular impacted third molar teeth.

METHODS: This prospective study was conducted at Oral and Maxillofacial Surgery Department Sandiman (provincial) civil hospital Quetta from April 2013 to September 2013. It involved 100 patients with asymptomatic impacted mandibular 3rd molars which were divided randomly in to two groups. Group A received two gram Amoxicillin with clavulanic acid orally in divided dose for 5 days. Group B no such therapy added as control. Post-operative complications like Pain, infection, swelling, limited mouth opening and alveolar osteitis was evaluated by Chi square test.

RESULTS: The results of current study suggest that vertical impaction is common type of impaction, with no gender variation in prevalence of impaction noted. Post-operative complications in both groups did not show statistically significant difference.

CONCLUSIONS: The study showed that antibiotic didn't have a significant role in reducing post-operative complications after removal of asymptomatic impacted 3rd molar.

KEY WORDS: Impacted 3rd molar, post-operative complications, antibiotic.

INTRODUCTION

Impacted third molars removal is one of the common surgical procedures performed by the oral surgeons. There are arguments among the oral surgeons regarding its removal, whether the tooth should be removed or not. Many investigators observed that multiple problems would develop if impacted teeth were not treated once diagnosed, these include repeated incidence of pericoronitis, difficulty to clean the distal surface of 2nd molar and food impaction that leads to proximal carries in 2nd and 3rd molar, root resorption and root surface caries especially in mesio-angular impaction, in addition serious pathologic changes like cyst and tumor also can develop^{1,2}. On the other hand its removal can lead minor complication like post operative pain, swelling, limited mouth opening, bleeding and major complication like injuries to adjacent structures like tooth or inferior alveolar nerve, lingual nerve and fracture of mandible^{1,2,3}. These complications are frequently seen in patients with impacted 3rd molar with neglected oral hygiene^{3,4}. Extraction by using standard surgical procedure also has significant effect on control of post surgical sequels. There is often debate about the routine use of antibiotics as prophylaxis to decrease post-operative complications after 3rd molar removal. Because oral surgery is performed in an environment potentially contaminated

with a large quantity of bacteria, and the main postoperative complications are caused by these microorganisms, prescribing antibiotics is considered to be reasonable for the prevention and reduction of the frequency of postoperative complications. However, owing to the low incidence of these complications, no consensus is observed in the use of antibiotics in third molar surgery. Numerous authors believe that prophylactic antibiotics are helpful in avoiding post-surgical complication, while other studies were not able to validate the usefulness of an antibiotics^{5,6}. Penicillin is drug of choice to control odontogenic infection but its prophylactic use is still being questioned⁵. The objective of this study was to compare the postoperative morbidity of asymptomatic impacted 3rd molar removal in patients with or without the use of antibiotic.

PATIENTS AND METHODS

This prospective study was conducted at Oral & Maxillofacial Surgery Department Sandiman (provincial) civil hospital Quetta from April 2013 to September 2013. A total number of 100 asymptomatic impacted mandibular 3rd molars were selected for surgical removal. Informed consent was taken from all patients regarding treatment and participation in study. They were randomly divided in to two groups A and B (n= 50 in each) by using random number table. Group A was

given Amoxicillin with Clavulanic acid 1 gram twice daily for 5 days, starting one day before surgery. Group B (control) was given no prophylaxis. Each group was given Diclofenac potassium and Chlorhexidine- gluconate, as a mouth wash, two times daily for 5 days starting from the day of surgery. Patients with compromise health due to systemic diseases and symptomatic patients(pain, swelling, limited mouth opening) were excluded. Ethical approval was obtained from hospital ethical review committee.

All patients were operated under local anesthesia, by using 2% Lidocaine with adrenaline 1:1000000, in the same operation theater by two oral surgeons with equal experience. Before operation all patient were given Chlorhexidine mouth wash for two minutes. After extraction wound was closed primarily by single 3/0 silk suture and gauze pack was placed for 30 min. Post extraction instruction were given.

Clinical examination was done on follow ups visits on 2nd, 5th and 7th day and the post-operative symptoms were scored accordingly. On seventh follow up day suture were removed. The detail were recorded like swelling, infection, alveolar osteitis, by two status presence or absence, mouth opening was measured in millimeters by using standard metal ruler, and pain was evaluated by using visual analog scale VSA by 0-10. All data were entered in SPSS version 17, chi square test were used for analyzed Swelling, infection, alveolar osteitis with p values ≥ 0.05 significant.

RESULTS

There were 58 male and 42 female patients with mean age 21 \pm 5 in group A and 22 \pm 4 in group B with male female ratio 1.3:1(Table I). Sixty (60%) patients had vertically impacted 3rd molar, with thirty five (35%) having mesioangular, fourteen (14%) having horizontal impacted molars and one (1%) had patient distoangular impaction (Table II).

Data for the mouth openings in patent of each group before the removal of mentioned teeth and various post-operative follow-up's are shown in Table III. Before surgery the average mouth opening was 44mm, on second post-operative day 34mm in group A and 30 in group B, reaches to normal mouth opening is both groups on day seventh.

Post-operative pain was evaluated for seven days after surgery by using visual analog scale (VAS), where the end points were marked no pain^{2,3}. Extraction was considered as painful and scored as 4 or more. This score was variable during the week after extraction. Pain and other complications are shown in Table IV. There was no significant difference among the groups.

TABLE I: GENDER DISTRIBUTION

Groups	Male	Female	Mean age (SD)
Prophylactic antibiotic Group A (n=50)	30	20	21 \pm 5 years
Control group (n=50)	28	22	22 \pm 4 years

TABLE II: DISTRIBUTION OF THE TYPE OF ANGULATION OF THE IMPACTED MANDIBULAR THIRD MOLAR

Class	Number	Percentage
Vertical	60	60%
Mesio-angular	35	35%
Horizontal	14	14%
Disto-angular	1	1%

TABLE IV: POST OPERATIVE COMPLICATIONS IN EACH GROUP

Complications	Group A	Group B	P value
Pain (VAS 4 or more)	3	4	0.87 (in significant)
Swelling	3	5	0.98 (in significant)
Alveolarosteitis	1	2	0.87 (in significant)
Wound infection	0	1	0.64 (in significant)

TABLE III: MAXIMUM INTER- INCISAL DISTANCE (mm)

Group	Before surgery	2 nd Post-operative day	5 th Post-operative day	7 th Post-operative day	P -0.754 Non-significant
Prophylactic antibiotic group a	44 \pm 4	34 \pm 7	43 \pm 4	45 \pm 3	
Control group b	44 \pm 5	30 \pm 9	40 \pm 5	41 \pm 6	

DISCUSSION

Third molar impaction is a common problem in many adults' individuals. The vertical (60%) impaction compare to Mesio-angular impaction (35%) was the common types of impaction in this current study. We found identical study results to another study conducted among Jordanians, where it was vertical impactions have been reported the most common (61.4%)⁷ Similarly, another study in Barcelona also reported vertical impactions as the common type followed by mesioangular impaction.⁸ Our findings do not coincides with study made Channar KA etal in Sindh Pakistan. This difference could be because of geographic difference in the area of Pakistan⁹, Our results also differed from the studies conducted by Bui in USA¹⁰ and Jaffar in Malaysia¹¹, where they also found mesio-angular impactions are common type of impaction.

Oral cavity contain micro flora, and complete sterility is not possible, complicated tooth extraction especially 3rd molar is considered as contaminated, Antibiotics are often used to prevent post-operative morbidity⁴. Objective of this study was to understand the role of antibiotic in wisdom teeth surgery. In some studies the incidence of postoperative infection after 3rd molar surgery is (< 2%) very low to justify routine antibiotic⁵. The blend use of antibiotic can result in resistance to antibiotics along with its adverse outcomes, it is estimated that about 7% of patients using antibiotic have some kind of adverse reaction^{1, 5}. The estimated rate of infection after removal of impacted 3rd molar is less than 2% so the efficacy is questionable^{6, 12}.

There is evidence that preoperative antibiotic reduces the chances of postoperative infection.^{13, 14} In our study, the antibiotic was prescribed pre operatively for group A, and no antibiotic for group B, and there was neither clinical nor statistical difference between the two groups.

There is increased concern about the misuse of antibiotic during the removal of impacted 3rd molars¹⁵. We found no significant difference between the two groups regarding the variables evaluated and our result showed that routine use of antibiotics is unwarranted for removal of impacted 3rd molars in healthy patients.

There are certain limitations in our study like limited sample size, depth of impaction not categorized and time duration for extraction. All these factors may affect the results of study.

CONCLUSIONS

Within the limitation of this study, the use of the mentioned Antibiotics regimen for the removal of asymp-

tomatic impacted 3rd molar, had no measurable impact on reducing the post-operative complications in otherwise healthy patients.

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This article may be cited as: Channar KA, Tareen MK, Hamad J, Warraich RA. Role of Antibiotics in Surgical Removal of Asymptomatic Mandibular Third Molar Impaction. J Liaquat Uni Med Health Sci. 2014;13(03):112-5.