

Is there any need of antibiotics after orthodontic teeth extraction - A split mouth randomised clinical trial

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Abstract

Background: Extraction of tooth is probably the most frequently and one the most common procedure performed in oral surgery procedure. Subsequently much debate has been emerged about this subject during recent decade concerning about the necessity of antibiotic in teeth extraction particularly in asymptomatic patients. Hence, we conducted a study to evaluate that is it necessary to prescribe antibiotics in orthodontic 1st premolar tooth extraction.

Method: In this split mouth randomised clinical trial study was carried out in 100 patients needing bilateral extraction of maxillary 1st premolar. There was no any sign of pain, inflammation or any kind of swelling at the time of teeth removal. A couple of group were founded. In the first group, antibiotic therapy with amoxicillin + potassium clavulanate a (625mg) thrice a daily together with diclofenac potassium 50mg twice a daily for 3 days administrated 30 minutes after the extraction and second group all patients were not prescribed antibiotics only diclofenac potassium 50mg twice daily administrated 30 minutes after the extraction were prescribed. The surgical technique was the same in all cases, and the follow-up period were 1st post operative day (T1), 3rd Post operative day (T2) and 7th post operative days(T3). Parameters that were evaluated such as pain, local infection and dry socket was evaluated.

Results: The distribution of VAS score was compared postoperatively. Higher number of subjects reporting VAS score "0" (No pain). Only Few Patients reported pain score in rest of group such as 1-3 (Mild Pain), 4-6 (Moderate Pain) and 7-10 (Severe Pain) groups. No considerable results were seen among both the groups (1&2) in VAS score ($p>0.05$). There was only 1(1%) patients was dry socket on T2 (3rd Post op) in both of the group with no significant finding. ($p>0.05$)

Conclusion:

Antibiotics are not necessary in simple exodontia in patients who are not medically sufferer. Antibiotics have no any role in avoiding postoperative infection. Dentist should be much more responsible and very selective while prescribing antibiotics

Keywords: Antibiotics, Extraction, Pain.

INTRODUCTION

Typically the oral cavity is probably the most various types of bacterial flora habitat in the body.^{1,2} When it is not examined regularly, it can lead to many local and systemic health problem.³ The capability to diminishing infection, it has made probably the most frequently recommended drugs in dentistry. Their use is validated in certain situations including serious pericoronitis, cellulitis, facial space infections, and osteomyelitis. Some other normal dental circumstances for example periapical abscess, alveolar osteitis, mild pericoronitis, and in conservative dentistry do not longer required for antibiotics therapy.⁴

Prescription of antibiotics after simple exodontia has still a arguable subject matter in between dental academia. Antibiotics are usually understood that it will boost up postoperative comfort following exodontia by protecting against wound contamination and pain. Despite the fact bacteraemia definitely occurs during basic exodontias, it additionally occurs during many other regular dental procedures in which there may be no reason for antibiotic therapy. This is due to the fact that body's host response is extra than enough to counter this degree of bacteraemia.

The goal of this study is to determine the requirement for postoperative antibiotics following simple exodontia and

determining its role in minimizing patient discomfort and postoperative complications.

Aim

The patients will be assessed for- Pain(Visual analogue scale Score) Signs of infection ((local swelling, hyperemia, purulent drainage) Incidence of dry socket.

MATERIALS & METHODS

A split mouth randomized clinical trial was conducted at the Department of Oral and Maxillofacial Surgery. In which 100 patients with similar kind of orthodontic extraction of 1st premolar was done in this study. A mouth wash of 0.2% chlorhexidine for 1 minute was applied before tooth removal in all patients. Lignocaine HCL with epinephrine (1:80,000) had been utilized for local anesthesia. In order to control the bias, all the procedures were done by single surgeon which usually included the removal of a individual tooth through the intra-alveolar method of extraction, a time boundation of 30 min was given for each & every patient; any other method apart from the typically intra-alveolar method of extraction or longer duration of procedure than recommended duration of the procedure had been excluded. All the clinical parameters were assesed on postoperatively 1st day (T1), 3rd day (T2), and 7th day(T3) day.

Inclusion criteria will be 100 American Society of Anesthesiologists (ASA) grade I and Grade II patients of age 12-25 years undergoing simple extraction. Those individuals who did not like to take an interest in this study or not willing for follow up visits, individuals hypersensitive to substances utilized in this study, medically compromised patients and smoker were excluded.

The subjects will be grouped into two major categories:

Group 1: patients took antibiotics.

Group 2: patients did not took antibiotics.

Group 1: Patients took antibiotics. All patients in this specific category had been recommended amoxicillin with potassium clavulanate 625mg thrice daily for 3 days together with

diclofenac potassium 50 mg twice daily 3 days starting 30 minutes after the tooth removal.

Group 2: Patients did not took antibiotics. All patients in this specific category had been recommended only diclofenac 50mg twice daily for 3 days starting 30 minutes after the tooth removal.

Statistical analysis :

A null hypothesis was put forward i.e. $\mu_1 \neq \mu_2$. An alternate hypothesis also was advocated, which stated that a relevant difference would exist between groups for pain and side effects.

Data was entered into Microsoft Excel spreadsheet and was checked for any discrepancies. Summarized data was presented using Tables. The data was analyzed by SPSS (21.0 version) Shapiro Wilk test was used to check which all variables were following normal distribution. The data was normally distributed. Chi square test was used for categorical data. Level of statistical significance was set at p-value less than 0.05.

Result:

In the present study patients age is ranged from 12-25 years with mean age of 17 ± 3.38 years. Among, all patients female were predominance and it was 80(80%) female patients and 20 (20%) male patients. The distribution of VAS score was compared postoperatively 1st (T1), 3rd(T2), and 7th day(T3). Higher number of subjects reporting VAS score 0. Mean value of 93% of group 1 patients reported no pain and also group 2, 93 % patients

VAS Score	T1(1 st post op day)		T2(3 rd post op day)		T3(7 th post op day)	
	Group 1 (No. of subjects)	Group 2 (No. of subjects)	Group 1 (No. of subjects)	Group 2 (No. of subjects)	Group 1 (No. of subjects)	Group 2 (No. of subjects)
Vas	90(90)	88(88)	92(92)	95(95)	97(97)	96(96)

score	%)	%)	%)	%)	%)	%)
“0”No Pain						
Vas score “1-3” mild pain	5(5%)	7(7%)	6(6%)	3(3%)	1(1%)	1(1%)
Vas score “4-6”Moderate Pain	3(3%)	2(2%)	1(1%)	1(1%)	1(1%)	1(1%)
Vas score “7-10” Svere Pain	2(2%)	3(3%)	1(1%)	1(1%)	1(1%)	2(2%)

Table 1: Distribution of patients on Vas Score.

reported no pain (VAS Score 0) on consecutive days at T1,T2and T3days. Only Few Patients reported pain score in rest of group such as 1-3, 4-6 and 7-10 group. Mean value 4% of group 1 and 3.6% of group 2 reported mild pain (Vas Score 1-3). Mean Value 1.6% of total population of group 1 and 1.3 % Group 2 patients reported moderate pain(Vas score 4-6). Mean Value 1.33% of patients in group1 and 2% group 2 patients reported severe pain score(Vas Scale 7-10). No Significant outcomes had been seen between these two category (1&2) in VAS score on consecutive days at T1,T2 and T3 days. ($p>0.05$) (Table 1) There was no considerable difference was found in between these two category in connection with the generalised presence of local infection (local swelling, hyperaemia, purulent drainage) symptoms after surgery ($p>0.05$). There was only 1(1%) patients was dry socket on T2 (3rd Post op) in both of the group with no significant finding. ($p>0.05$)

Discussion:

We believed that peri-operative antibiotics might now no longer have a statistically impact on postoperative inflammatory condition after bilateral orthodontic 1st premolar extraction. These findings are similar with several different research study such as Van Eeden et al.⁶ and Agrawal et al.⁷ On the other hand, these outcomes had been distinctive in study done by Arteagoitia et al.⁸ who found there was enhance chances of infection associated with complication in people who have been now no longer prescribed antibiotics (as much as 12.9%). Nevertheless, it is important to specified that this study had been done on impacted molars and consequently might have very limited impact on this current study. It is necessary to mentioned that our study was also few complication. 1(1%) patients in each group was presented with dry socket upon 3rd post operative days and higher number of subjects reporting VAS score “0” ie; mild pain. Mean value of 93% of group 1 patients reported no pain and also group 2, 93 % patients reported no pain (VAS Score 0) on consecutive days at T1,T2and T3days .Only Few Patients reported pain score in rest of group such as 1-3, 4-6 and 7-10 group. Finding of dry socket (1%) was almost similar in both groups. These finding corresponds with other outcomes studied by Arteagoitia et al⁸ and and lopez –cedrun et al,⁹ which noticed that no any incidence of dry socket was found in group in which antibiotics were prescribed. Nevertheless it should be noted that by Van Eeden and B’utow that they found there was no any case of dry socket in those patient in which antibiotics were prescribed, but there was few case of dry socket (15.8%) in those patients who were not prescribed antibiotics.⁶ One more study hold up our view was conducted by Curran et al.¹⁰ Within their study they compare two group those had antibiotic dose and those who didn’t took antibiotic therapy and they observed no variation regarding postoperative infections. A couple of study was carried out by by MacGregor¹¹ and Sands et al¹² who didn’t advised the use of antibiotic for intralveolar extraction but they advised antibiotic for transalveolar extraction.

An extremely important point in the argue about prophylactic antibiotics in extraction of teeth that it should be administred pre-operatively or post-opertively. Typically antibiotics are

recommended post-operatively as an oral medication, and thus there is high chance of increase serum level after few hours of extraction of teeth. Nevertheless there is some proof that preoperative medication of antibiotics has an essential influence on reduction of postoperative infections.¹³

One more important point about possible adverse effect after antibiotics administration. Some of the risk are associated with indiscriminate antibiotics therapy such as toxicity regarding substance itself, allergic reaction and also growth of resistant organisms. There is propensity to unnecessary advise for antibiotics and medications generally.¹⁴ The determination of medical practioner to wise advise for antibiotics will prevent all these circumstances.

In our study we could not observe any kind of considerable diffrence among these two groups regarding assessing of different variable such as pain, local infection and dry socket. The group were uniform pertaining age, clinical and radiographic presentation preoperatively. On such basis we are unable to recommend routine postoperative antibiotics administration.

Conclusion:

Antibiotics are not generally require after basic exodontia in individuals who are not medically compromised nor they have any role to reduce pain and prevent local infection and dry socket. Dental practioner should show their greater responsibility to prevent development resistant microorganisms. They should very selective to prescribe antibiotics and if necessary then very selective to the narrow spectrum antibiotics. It must be emphasize that our findings applied to situation where precise aspectic condition was maintained in a highly equipped modern operating room and simply in those cases where signs of acute preoperative inflammation was not present.

References

1. L. Samarnayake, *Essential Microbiology for Dentistry*, Elsevier Health Science.2006;3.
2. N. B. Parahitiyawa, C. Scully,W. K. Leung,W. C. Yam, L. J. Jin, L. P. Samaranyake, "Exploring the ral bacterial flora: current status and future directions," *Oral Diseases*.2010;16(2): 136–45.

3. G. J. Seymour, P. J. Ford, M. P. Cullinan, S. Leishman, and K. Yamazaki, "Relationship between periodontal infections and systemic disease," *Clinical Microbiology and Infection*.2007;13(4): 3–10.
4. J. R. Hupp, E. Elis, and M. R. Tucker, *Contemporary Oral and Maxillofacial Surgery*, Mosby, St. Louis,Mo, USA, 5th edition, 2008.
5. P. B. Lockhart, M.T.Brennan,H.C. Sasser, P. C. Fox, B. J. Paster, and F. K. Bahrani-Mougeot, "Bacteremia associated with toothbrushing and dental extraction," *Circulation*.2008;117(24) 3118–25.
6. S. P. van Eeden and K. B`utow, "Post-operative sequelae of lower third molar removal: a literature review and pilot study on the effect of Covomycin D," *SADJ* 2006;61(4):154–9.
7. M. Agrawal, Q. B. Rahman, and M. Akhter, "Extraction of asymptomatic tooth with and without antibiotic therapy," *Bangabandhu SheikhMujibMedical University Journal*.2012;5(1): 24–8.
8. I. Arteagoitia, A. Diez, L. Barbier, G. Santamar´ia, and J. Santamar´ia, "Efficacy of amoxicillin/clavulanic acid in preventing infectious and inflammatory complications following impacted mandibular third molar extraction," *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology*.2005;100(1):11-8.
9. J. L. L´opez-Cedr´un, J. I.Pijoan, S. Fern´andez, J. Santamaria, and G. Hernandez, "Efficacy of amoxicillin treatment in preventing postoperative complications in patients undergoing thirdmolar surgery: a prospective, randomized, double-blind controlled study," *Journal of Oral and Maxillofacial Surgery*.2011;69(6):5–14.
10. Curran JB, Kenneth S, Young AR: An assessment of the use of prophylactic antibiotics in third molar surgery. *Int J Oral Surg*.1974;3:1.

11. MacGregor AJ: Reduction in morbidity in the surgery of the third molar removal. Dent Update.1990; 17:411.
12. Sands T, Pynn BR, Nenniger S: Third molar surgery: Current concepts and controversies in Oral Health.1993; 83:19.
- 13 Polk HC Jr, Lopez-Mayor JF: Postoperative wound infection: A prospective study of determinant factors and prevention. Surgery .1969;66:97.
14. McHenry MC, Weinstein AJ: Antimicrobial drugs and infections in ambulatory patients: Some problems and perspectives. Med Clin North Am 1983;67:3.

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CONSORT 2010 Flow Diagram

