

## Evaluation of efficacy of antibiotic therapy post extraction

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### Abstract

**Background:** It is always a question whether to prescribe antibiotics post extraction in clinicians mind whereas an antibiotic in the market acts on various methods.

**Aim:** The main aim of this clinical study was to evaluate the efficacy of antibiotic therapy on post extraction healing of socket and infection after routine dental extraction.

**Material and Methods:** 100 patients presenting to department of oral and maxillofacial surgery, Sibar institute of dental sciences, Guntur with no systemic illness were divided into two groups in which antibiotics were prescribed and not prescribed respectively. All the extraction cases were performed by a single oral and maxillofacial surgeon to remove the bias in the study. In group I all the patient were prescribed Cap. Amoxicillin 500mg TID for three days. Post extraction healing of the socket and infection was evaluated with an intermediate follow up till one month.

**Results:** 50 patients in group I were prescribed antibiotics and 50 patients in group II were not prescribed antibiotics post extraction. All the patients of group II had uneventful healing of extraction socket and none of the patient encountered infection. There was delay in healing in 2 male patients in group II due to history of smoking.

**Conclusion:** Our study concluded that no post-operative antibiotics are required after routine dental extractions in normal healthy patients. So, we advise clinicians for appropriate use of antibiotics whenever necessary after routine dental extractions.

**Keywords:** Antibiotics, Dental Extractions, Post Extraction, Complications.

### Introduction

It is at utmost important thing to understand the requirement of antibiotics whether to prescribe or not and if yes then which one to prescribe. In normal routine extractions when patient is systemically well, non-usage of antibiotics after dental extraction have been described in published literature. Antibiotics are chemical substances available from a mould or bacterium that can kill microorganisms and cure bacterial infection.<sup>(1)</sup> Antibiotics are used since years and are a historical evidence of medicine regularly used by clinicians. Antibiotics are also used prophylactically which refers to their administration via various routes pre operatively to prevent an infection which can occur post-operatively. In routine dental procedures performed under local anesthesia on normal healthy patients, prophylactic antibiotics are usually not required. In some dental procedures where chances of encountering blood are present clinicians prefer to provide prophylactic antibiotics. Antibiotics after routine dental extraction are prescribed to patients to prevent post-operative infections and to promote post-operative healing of the socket. Although extraction sockets are considered contaminated wounds still the organisms present in our oral cavity are a part of normal oral flora and therefore they are an unusual source of post extraction infection.<sup>(2)</sup> It is advisable to prescribe antibiotics in case of dental infection. Even prophylactic antibiotics are used in infected cases prior to dental extraction. If antibiotics are not prescribed prophylactically in infected cases, routine dental extraction may aggravate the infectious stage.

### Aims and Objectives

The aim of this randomized clinical trial was to evaluate the efficacy of antibiotic post extraction with objectives of assessing the post-operative healing and presence or absence of post-operative infection.

### Material and Method

100 patients presenting to the outpatient department of oral and maxillofacial surgery, Sibar institute of dental sciences, Guntur from March 2017 to April 2017 were enrolled in the study with an inclusion criteria of patients requiring routine dental extractions. Patients with any systemic illness and patients who are allergic to antibiotics were excluded from the study. A proper complete clinical case history were obtained from the subjects. All the necessary investigatory hematological investigations like complete blood picture including vitals and radiological procedures like intra oral periapical radiographs were taken. Patients were in between age group of 25-55 years of age. Patient with extraction of one multi rooted tooth were included. All the cases were extraction of posterior molar teeth. Patients were informed about clinical trial and informed consent was taken prior performing the procedures. All the patients were operated under local anesthesia for extraction of tooth. All the 100 patients were randomly divided into two equal groups. Group I i.e. case group consists of 50 subjects in which antibiotics were prescribed post extraction. All the extraction cases were performed by a single oral and maxillofacial surgeon to remove the bias in the study. All the 50 patients of group I were prescribed with Cap.

Amoxicillin 500mg TID for three days. Group II i.e. control group consists of 50 subjects who were not advised antibiotics post extraction. All the 100 patients were properly explained all the post-operative instructions to be followed after routine dental extractions. A proper follow up of both the groups was performed after 3 days, 7 days/1 week and 30 days/1 month post extraction. The two parameters were post-operative healing of the socket and post-operative infection. An eventful healing was graded 1 and uneventful healing was graded 2. Post-operative infection if present was graded 1 and if absent was graded 2 in follow up. Descriptive statistical analysis was used for comparison and statistical analysis was done after data collection using statistical package for the social sciences version 21.

### Results

A total of 100 patients were enrolled in the study. 50 patients in group I and 50 patient in group II were followed up. There was 100% response rate from the subjects. Subject age ranges from 28 yrs. to 66 yrs. Majority of the subjects were in the age of 40-50 yrs. There were 54 females and 46 males. All the patients had single tooth extraction with 63 cases of mandibular teeth and 37 cases of maxillary teeth. In 63 mandibular teeth, 44 were mandibular posteriors and 19 were mandibular anteriors. In 37 maxillary teeth, 26 were maxillary posteriors and 11 were maxillary anteriors. Most common etiological factors were dental caries and periodontally compromised tooth. In total, 4 cases were having habit of smoking and 7 cases of alcohol consumption, 2 cases of smoking and 3 cases of alcohol consumption in group II. The data analysis showed no post-operative infection and uneventful healing of extraction sockets in both the groups. Only 2 cases in group II were smokers and showed delayed healing. There was no statistically significant difference in groups of any of the variables compared ( $p > 0.05$ ).

### Discussion

As the definition of extraction elicits that tooth extraction should be a painless procedure without harming the adjacent tissues so that healing will be uneventful and the further prosthesis will be better.<sup>(3)</sup> Different studies and ample of literature is available regarding extractions, its etiology, techniques, pharmacology, healing and complications. There were two parameters which were examined in the study in two different groups. In group I where post extraction antibiotics were given, none of the case in 50 cases had any post-operative complications and all the cases had uneventful healing. In group II, same data was obtained as group I from the patients in follow ups. None of the patient had post-operative pain or infection or any other complications. Healing of the socket was uneventful except two cases who had delayed healing due to smoking comparative over 48 cases of group II who had normal healing. A similar study in other parts of the

world has also been performed to evaluate the efficacy of antibiotics post operatively. A double blind randomized controlled trial was performed in 150 cases and patients were divided into two equal groups. Group 1 was given metronidazole which is an anaerobic antibiotic for 5 days post-operatively and group 2 was a placebo group where they gave identical looking placebo drugs rather than antibiotics. Their study resulted in 86% healing and 14% complications. In placebo group they found 5 subjects of actually inflamed socket as a most common complication. They concluded that prescription of antibiotics after routine intra alveolar dental extraction in healthy patients may not play any significant role in wound healing complications.<sup>(4)</sup> A review in Nigerian population was done regarding indication for extraction of 3<sup>rd</sup> molar in 1763 cases. They found 89% uneventful healing socket and 11% complications which was almost equally distributed among dental caries and periodontitis.<sup>(5)</sup> Some studies have found dry socket as most common complication post extraction.<sup>(6)</sup> A study on clinical evaluation of post extraction site wound healing also concluded the same with 11% of alveoli healing complications in 282 subjects with 318 extraction sites.<sup>(7)</sup> Similar studies like Nigerian population is also done in Chinese population but to evaluate the healing of post extraction sockets and found 87.5% uneventful healed sockets and 12.5% complicated sockets in the groups. They used the clean and sterile gloves as their differentiation criteria for extraction.<sup>(8)</sup> In study on Iraqi population concluded with 89.3% healing and 10.7% complicated sockets.<sup>(9)</sup> A controlled trial done by Murli et al to understand the need of antibiotics during routine dental extractions concluded a contrast results in which he reported pain and possible healing complications of about 24% in the antibiotic group and only 6% in the placebo group. The author has not mentioned the reasons of complication.<sup>(10)</sup> A randomized controlled clinical study was done in 262 patients unequally divided into two groups as group 1 with case and group 2 with control group. They find only 3% minor complications and delayed healing in the group where antibiotics were not given.<sup>(11)</sup> A study on 520 patients after consecutive dental extraction surgeries reported pain as the most common complication.<sup>(12)</sup> Our study was almost similar to the studies published in the literature but small sample size, duration of performed procedure and trauma caused due to the extraction are not considered which are the limitations of the study.

### Conclusion

As per the planned study we found an uneventful healing no post-operative complication in the group II. According to published literature and results of our study we suggest that there is no need of antibiotics post routine dental extraction in normal healthy patients.

**References**

1. The Oxford English Dictionary. 2nd ed. 1989. OED Online. Oxford University Press. 30 April 2007. <http://dictionary.oed.com>.
2. Laskin DM. Should prophylactic antibiotics be used for patients having removal of erupted teeth? *Oral Maxillofac Surg Clin North Am* 2011;23:537–9.
3. Howe GL. The extraction of teeth. 2nd ed. Bristol, UK: John Wright and Sons;1970:1–4.
4. Gbotolorun OM, et al. Are systemic antibiotics necessary in the prevention of wound healing complications after intra-alveolar dental extraction? *Int J Oral Maxillofac Surg*.2016;45:1658-1664.
5. Adeyemo WL, James O, Ogunlewe MO,Ladeinde AL, Taiwo AO, Olojede ACO. Indications for extraction of third molars: a review of 1763 cases. *Niger Postgrad Med J* 2008;15:42–6.
6. Peterson LJ. Contemporary oral and maxillofacial surgery. 4th ed. Philadelphia: Mosby Inc.;2003:113–83.
7. Adeyemo WL, Ladeinde AL, Ogunlewe MO. Clinical evaluation of post extraction site wound healing. *J Contemp Dent Pract* 2006;7:40–9.
8. Cheung LK, Chowe LK, Tsang MH, Tung LK. An evaluation of complications following dental extractions using either sterile or clean gloves. *Int J Oral Maxillofac Surg* 2001;30:550–4.
9. Jabbar JK. Post-operative complications associated with non-surgical tooth extraction. *Mustansiria Dent J* 2008; 5:104–12.
10. Murali R, Satish K, Vinay KN. Controlled trial to understand the need for antibiotics during routine dental extractions. e- *J Dent* 2011;1:87–90.
11. Akinbami BO, Osagbemi BB. Is routine antibiotic prescription following exodontias necessary? A randomized controlled clinical study. *J Dent Oral Hyg* 2015;7:1–8.
12. Bortoluzzi MC, Manfro AR, Nodari RJ, Presta AA. Predictive variables for postoperative pain after 520 consecutive dental extraction surgeries. *Gen Dent* 2012; 60:58–63.