

Role of Postoperative Antibiotics in Exodontias Following Simple Extraction-A Clinical Study

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ABSTRACT

Background: The aim of our study is to assess the need for postoperative antibiotics following simple exodontia and determine its role in minimizing patient discomfort and postoperative complications. **Methods:** All the patients undergoing simple extractions were grouped into two categories: Group 1, patients receiving antibiotics, and Group 2, patients receiving no antibiotics. Patients were recalled on the sixth day to assess postoperative complications. On recall, patients were evaluated for signs of persistent inflammation and signs of dry socket. Presence of persistent inflammation and/or suppuration on the 6th day was considered as wound infection. **Results:** A total of 200 patients were included in this study. Out of the total sample, 185 (92.5%) presented with no postoperative complications and 15 (7.5%) had postoperative complications, out of which 12 (6%) patients presented with dry socket (alveolar osteitis), 5 (5%) in the antibiotic group and 7 (7%) in the non-antibiotic group. Only 3 patient (1.5%) was reported with infection of the extraction socket 1 in antibiotic group and 2 in the non-antibiotic group. **Conclusion:** Antibiotics are not required after simple extractions in patients who are not medically comprised nor do they have any role in preventing postoperative complications.

Keywords: Extraction, Exodontias, Postoperative Antibiotics.

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INTRODUCTION

The oral cavity has one of the most diverse spectrums of bacterial flora in the body.^[1,2] When left unchecked, it can contribute to local and systemic ill-health.^[3] The potential for development of devastating infections has made antibiotics one of the most commonly prescribed drugs in dentistry. Their use is justified in certain cases such as severe pericoronitis, cellulitis, facial space infections, and osteomyelitis,^[4] whereas other routine dental situations, such as periapical abscess, mild pericoronitis, dry socket, and restorative dentistry,^[4] do not usually justify the use of antibiotics. A new class of antibiotics has not been discovered since the 1980s. Indiscriminate use of the current generation of antibiotics has led to the propagation of various resistant organisms.^[5] It is therefore imperative that the use of antibiotics be strictly preserved for use only where specifically indicated. Dental prescriptions may account for as much as 7–9% of

total antibacterial prescriptions in primary care in some settings.^[6] This places a heavy burden of responsibility on dental surgeons to use antibiotics very selectively where indicated and not simply as a routine prophylaxis.

Prescription of antibiotics after simple tooth extraction has remained a controversial topic amongst dental academia. Antibiotics are thought to increase postoperative comfort following exodontia by preventing wound infection and therefore pain. Although bacteremia certainly occurs during simple exodontia,^[7] it also occurs during many other routine dental procedures in which there is no justification for antibiotic therapy. This is because the body's host response is more than sufficient to counter this level of bacteremia. The current trend in dentistry in the developed world is shifting to the notion that antibiotics are not justified following simple exodontia.^[8] However, surprisingly, little work has been done on this topic in the developing world where standards of oral care are far below those of the developed world. The value of antibiotic therapy in this part of the world has been questionable as the general consensus amongst dental surgeons is that antibiotics are essential to minimize postoperative complications. This trend is exacerbated by patients demand for and often self-prescription of antibiotics

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even in circumstances where antibiotic therapy is clearly not indicated.

The aim of our study is to assess the need for postoperative antibiotics following simple exodontia and determining its role in minimizing patient discomfort and postoperative complications.

MATERIALS & METHODS

The randomized control trial was done in postgraduate department of oral & maxillofacial surgery government Dental college and Hospital srinagar. Inclusion Criteria. Inclusion criteria are as follows: (1) both male and female patients; (2) patients aged between 10 and 80 years; (3) patients with a good systemic health; (4) patients undergoing simple extractions; (5) patients undergoing extractions of permanent mandibular and/or maxillary teeth; (6) patients undergoing single extractions; (7) extractions requiring minimal instrumentation. Exclusion Criteria. Exclusion criteria are as follows: (1) patients undergoing surgical extractions; (2) patients with deciduous teeth; (3) patients with impacted mandibular third molars; (4) patients with a debilitating systemic disease; (5) patients undergoing extractions of endodontically treated teeth; (6) patients currently taking antibiotics at the time of extraction or have had antibiotics less than 3 days prior to extraction; (7) patients with habits which are known to be detrimental to oral health such as smoking, pan, chalia, and/or tobacco chewing; (8) patients presenting with an acute abscess; (9) pregnant patients.

All patients who fulfilled the inclusion criteria, after approval by the Institutional Ethical Review Committee were included in this study. All extractions were performed in the oral surgery department at government Dental college & Hospital srinagar by senior dental surgeons (residents) using the following surgical protocol: regular surgical gloves and masks were worn for every extraction; polythene sheets were used to cover each surgical unit and sodium hypochlorite (5%) was used as a potent disinfectant to clean each unit between patients; no more than 2 cartridges of 1.8 mL 2% lidocaine containing 1:100,000 epinephrine were administered using 25/27 gauge needle prior to extraction; inferior alveolar nerve block was used for mandibular molars and premolars and local infiltration was used for mandibular anterior teeth and all maxillary teeth.

Extractions were performed with minimal instrumentation using a mucoperiosteal elevator, straight elevator (when required), and forceps. Hemostasis was achieved using a cotton pressure pack. Postoperative instructions were given to every patient, in which the patients were asked to apply pressure on the cotton pack for at least half an hour, were asked to refrain from spitting, rinsing, and

sucking, and were also advised to take a soft diet and avoid hot food for at least 24 hours following the extraction. Patients were recalled after five days to assess postoperative complications including inflammation, wound infection, and dry socket. Evaluation of pain was done using a numeric scale in association with illustrations using charts. These charts were given to patients for self-assessment after every 1-, 6-, 12-, 24-, 48-, and 72-hour intervals in which they were asked to rate the degree of pain. On recall, patients were evaluated for signs of persistent inflammation (i.e., level of pain, swelling, and redness) and signs of dry socket (i.e., presence of denuded bone at the base of the socket accompanied with severe pain). Presence of persistent inflammation and/or suppuration on the 6th day was considered as wound infection.

All the patients undergoing simple extractions were grouped into two major categories:

Group 1: patients receiving antibiotics. Group 2: patients receiving no antibiotics.

Group 1: Patients Receiving Antibiotics. All patients in this group were prescribed amoxicillin with clavulanic acid 625 mg 12 hourly for 5 days along with flurbiprofen 100 mg 8 hourly for 3 days starting 30 minutes after the extraction.

Group 2: Patients Not Receiving Antibiotics. All patients in this group were not prescribed antibiotic and were given flurbiprofen 100 mg 8 hourly for 3 days starting 30 minutes after the extraction.

Randomization was achieved using the closed envelope technique. In this randomization technique, dental surgeons were given randomly generated prescription regimen within sealed opaque envelopes. After establishing consent, the envelope was opened and the patient was then offered the allocated prescription regimen.

Data Analysis. Data was analyzed using SPSS version 21. Chi square test was used to test the value.

Null Hypothesis. Antibiotics do not significantly reduce postoperative complications in young healthy patients following simple tooth extraction.

RESULTS

Out of the initial sample of 200 (100 in each group). Antibiotic group comprised 100 patients (56 males and 44 females) and non antibiotic group included 100 patients (52 males and 48 females).

Table 1: Gender distribution.

Group	Male	Female
1	56	44
2	52	48

Out of the total sample, 94 were maxillary teeth and 106 mandibular teeth. The mean age of the patients was 38 years.

Out of the total sample, 185 (92.5%) presented with no postoperative complications and 15 (7.5%) had postoperative complications, out of which 12 (6%) patients presented with dry socket (alveolar osteitis), 5 in the antibiotic group and 7 in the nonantibiotic group. Only 2 patient was reported with infection of the extraction socket in nonantibiotic group, whereas 1 case of infection was found in the antibiotic group. Out of the 12 cases of dry socket, interestingly, 8 (66%) cases belonged to females, whereas only 4 (33%) was found in males. Although there was no relationship between antibiotic use and dry socket [Table 2], the overall female predisposition was found statistically significant

Table 2: Distribution of dry socket amongst males and females in both groups.

S No	Symtom	Group 1	Group 2
1	Dry socket	5	7
2	Post extraction infection	1	2

Out of the total sample, 07 (3.5%) patients showed at least one adverse effect to the drugs prescribed. Diarrhea was reported by 4 (2%) patients, abdominal discomfort by 2 (1%) patients, and vomiting by 1 (0.5%) patients. The vast majority of patients, 6 (85.7%), who presented with an adverse effect belonged to the antibiotic group. Only 1 patient from the nonantibiotic group reported an adverse effect. See [Table 3]. The relationship between adverse effects and antibiotics was proved to be statistically significant.

Table 3: Drug adverse effects in both groups.

S No	Symtom	Group 1	Group 2
1	Diarrhea	4 (2%)	0
2	Abdominal discomfort	2 (1%)	0
3	Vomiting	1 (0.5%)	1

Out of the total sample, 162 patients correctly filled out the pain chart. The overall trend showed the decrease in preoperative pain after the first hour followed by a slight increase after 6 hours and then a gradual decline over the next 5 days. This trend was equally represented in both groups although to varying degrees.

DISCUSSION

The results unequivocally point towards the use of antibiotics following extractions as meaningless. This was proved by the fact that there was only a solitary case of infection amongst the entire sample. These findings are in agreement with numerous other studies such as those done by van Eeden and Bütow and Agrawal et al.^[9,10] Conversely, these findings were in contrast to a study done by Arteagoitia et al.^[11] who reported a significant rise in the rate of infection related complications in individuals who were not prescribed antibiotics (up to 12.9%). However, it should be mentioned that the

aforementioned study was done exclusively on impacted molars and therefore may have limited bearing on the present study. That is not to say that there were no postoperative complications in the present study. A number of patients presented with dry socket and postoperative pain even upon evaluation on the 6th day [Table 1]. Predictably, the number of diagnosed dry socket cases was almost evenly distributed in both groups. This is not surprising as dry socket is a phenomenon which relates to lack of clot retention/formation within the socket and is not considered an infectious process. These findings correlate with other studies conducted by Arteagoitia et al.^[11] and López-Cedrún et al.^[12] which noted no difference in prevalence of dry socket when postoperative antibiotics were given. However, it should be noted that in a study conducted by van Eeden and Bütow,^[9] there were no cases of dry socket in individuals who were given antibiotics, whereas 15.8% of those who were not given antibiotics presented with dry socket.

Interestingly, the vast majority of dry socket cases were reported in females. Conversely, males showed a comparatively negligible incidence of dry socket. This statistically significant female predisposition is surprising and difficult to explain. Dry socket is caused by many factors such as traumatic extractions and dislodgment or inability of a clot to form.^[13] These factors tend to be evenly distributed in both genders, especially considering that none of the females had a personal or family history of bleeding disorder nor were they taking any substances (such as oral contraceptives or anticoagulants) which could affect the clotting process. Therefore, lacking any systemic cause, this female predisposition seems to be linked with local causes of clot dislodgement and hence can perhaps be attributed to postoperative complication not being followed attentively by females. In another study, two-thirds of the cases of dry socket belonged to males,^[9] further mystifying the cause of a significant female predisposition in the present study.

Although all drugs are known to have adverse effects, unsurprisingly, patients belonging to antibiotics group reported more adverse effects when compared with their counterparts in the nonantibiotic group. These effects were predominantly related to gastrointestinal tract and included diarrhea, abdominal pain, and vomiting. Although these cases presented in only a small minority of patients who consumed antibiotics, they still bring into question the use of antibiotics unnecessarily without producing any tangible benefits. In fact this increases the physical as well as financial burden on the patient. This is especially a problem in developing countries where it is difficult for patients to afford an antibiotic regimen in addition to treatment. Dentists have an ethical responsibility to play their role in preventing the propagation of such microbes by

limiting the use of antibiotics and being selective in their prescription.

The antibiotic group showed a better pain profile than the nonantibiotic group, showing a steeper decline in pain despite having a higher mean preoperative pain. This finding is in contrast with studies conducted by van Eeden and Bütow and Agrawal et al.^[9,10] who reported no significant relationship between the use of antibiotics and postoperative pain. However, it should be noted that despite being statistically significant in the present study, this effect was clinically trifling and therefore does not justify the use of antibiotics. The vast majority of dental practitioners in this region routinely prescribe antibiotics as a preventive measure to avoid postoperative complications, namely, pain and infection. This practice must be stopped as the evidence overwhelmingly proves that this is unacceptable and a disservice to not only the patient but also the community at large. The use of a stronger analgesic is a much better option after simple extractions to reduce pain in lieu of antibiotics.^[14]

CONCLUSION

Antibiotics are not required after simple extractions in patients who are not medically comprised nor do they have any role in preventing postoperative complications. Dental practitioners must show greater responsibility and selectivity when prescribing antibiotics.

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