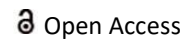




RESEARCH ARTICLE



Antibiotics Used After Impaction Removal in A Private Dental College

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ABSTRACT

To evaluate antibiotic usage after the surgical removal of impacted teeth in saveetha dental college. In this study around 785 patient's data was collected from patient's dental records who reported with impaction, between june 2019 to march 2020, Saveetha Dental College and Hospital, Chennai. The values obtained were tabulated and documented. The data were then entered into SPSS software for statistical analysis. The association between study variables was calculated using the chi-square test. Among the selected data, amoxicillin(and amoxicillin with metronidazole were mostly prescribed after impaction removal in saveetha dental college. The incidence of amoxicillin among the total population was found to be 57.4%. Whereas, Amoxicillin with metronidazole was 17.3% and amoxicillin with clavulanic acid was 14.1%. Percentage of males and females among the population were 57.4% and 42.5% respectively. Percentage of impaction removal in third molars , 38 (45.7%) and 48 (38.6%) were reported to have maximum percentage for surgical removal procedure for impaction. Correlations between the antibiotics and gender were determined, which showed p value to be .001(p<0.005) which showed a positive correlation between the two parameters. This study concluded that antibiotics such amoxicillin, metronidazole, clavulanic acid, etc are most commonly prescribed antibiotics for removal of the impacted teeth. The antibiotics show no harm to the oral tissue.

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INTRODUCTION

The debate about the utilization of antibiotic prophylaxis began within the early 1950s. Altmeier et al. emphasized the need of determining the precise indications for prophylactic antibiotic therapy on the idea of existing knowledge [1]. additionally to the pathology sometimes caused by these teeth, other

criteria can also justify their removal – including orthodontic and prosthodontic or restorative considerations, and preventive or prophylactic removal [2]-[3]. While practically the recommendation to completely remove impacted third molars which may cause important pathology or clinical manifestations, the convenience of prophylactically removing molars once they are still

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asymptomatic has been the topic of debate for years [4], [5].

The choice whether to get rid of those teeth or not should be supported by the evaluation of these molars which will be expected to develop pathology over time. Current clinical evidence relates the position of the third molars within the maxillae to the sort of clinical manifestations which will result from their impaction [6],[7]. Identification of the third molars posing a greater risk of inducing pathology would facilitate the adoption of priority preventive measures. Before extraction of an asymptomatic third molar, three levels of decision taking are often identified. Firstly, the first care dentist (PCD) should diagnose impaction and structure the choice to refer the patient to an oral surgeon. Secondly, the oral surgeon must evaluate the indication of prophylactic removal on an individualized basis. Finally, consideration is additionally required of the opinion of the patient on the influence of surgery in terms of private oral and general health [8]-[9].

Another aspect that needs consideration is that the incontrovertible fact that general dentists and oral surgeons show great variations within the criteria justifying third molar removal [10]-[11]. the utilization of prophylactic antibiotics which reduce the postoperative complications in third molar surgery remains controversial. Some authors favour routine prophylaxis [12]-[13], others suggest it'd be useful only in difficult cases et al. report no benefit [14],[15]. If prophylactic antibiotics are considered, it's important to notice that they only provide adequate protection if effective levels are present at the time of bacterial contamination [16]. The incidence of postoperative infection in oral surgery ranges from 1% to but 6%, and most infections are minor [17]. This low complication rate doesn't support the routine use of antibiotic prophylaxis, if the essential principles of prophylaxis are followed because the potential for adverse reactions to antibiotic therapy outweigh the possible benefits of a decrease within the infection rate.

Studies comparing infection rates after use or no use of antibiotics didn't show a decrease in infection rates in groups using antibiotics [16]-[18]. Several reports consider the utilization of antibiotics in third molar surgery. Most researchers used amoxicillin, metronidazole, clindamycin, cephradine, tinidazole/ pivampicillin, clavulanic acid and doxycycline[19],[20]. They found infection rates of 1-27%[21],[22]. The general incidence of infection from third molar extraction is within the range 3-5%[13],[23],[13]. In immunocompromised patients or in patients suffering from diabetes or cardiovascular diseases (such as subacute bacterial endocarditis), antibiotic prophylaxis may be a well established routine therapy before surgery [24].

In medically healthy patients, however, there's no indication for antibiotic prophylaxis, yet many oral surgeons prescribe post surgical antibiotics for time-consuming surgeries or just in case of in depth bone surgery [25],[26]. Antibiotic therapy following oral surgery procedures is thus a really common protocol [26]-[27]. Some authors are of the opinion that the incidence of postoperative infections in third molar surgery, between 1 to five , is just too low to justify routine antibiotic therapy. The indiscriminate use of such therapy may result in adverse outcomes like development of resistant microbial organisms and allergies [24],[22]. Previously we have focused our research on various invitro and invivo studies. [28-47] We have currently shifted our focus to this retrospective analysis.

MATERIALS AND METHODS

This study was approved by the research ethics committee of saveetha dental college. The dental records of 785 patients who reported to the clinic for impaction removal were investigated by collecting the data and entered in the excel sheet. The male and female distribution among the study population was evaluated. The collection of data was divided on 4 parameters , the age of the patient, the gender of the patient , teeth no. And antibiotics prescribed. After grouping the parameters , data copied to the software and statistical analysis was carried out. Statistical analysis was done using IBM SPSS software. The significance level was at 0.001. Descriptive analysis and chi-square tests were done. Graphs were tabulated.

RESULTS AND DISCUSSION

The incidence of amoxicillin among the total population was 57.4%. Whereas, Amoxicillin with metronidazole was 17.3% and amoxicillin with clavulanic acid was 14.1% (Figure 1). Percentage of males and females among the population were 57.4% and 42.5% respectively (Figure 2). Percentage of impaction removal in third molars , 38 (45.7%) and 48 (38.6%) were reported to have maximum percentage for surgical removal procedure for impaction (Figure 3). Correlations between the antibiotics and gender were determined, which showed p value to be .001(p<0.005) which showed a positive correlation between the two parameters (Figure 3).

Antibiotic selection in developing countries is probably going to be done on an empirical basis, because facilities for culture and sensitivity testing might not be available. Since the most isolates from dental infections are often complex mixtures of facultative and anaerobic bacteria (Lewis, 1990 and Lewis, 1995), choice of a wide-spectrum antibiotic could also be rational. Indeed, we found that amoxicillin was the foremost commonly prescribed

antibiotic, and it seemed to be considered because the drug of choice. Amoxicillin is additionally the well-liked antibiotic by dental practitioners in England and Australia (Palmer, 2000). it's an efficient broad-spectrum agent with low allergenicity, and oral administration affords an efficient concentration in gingival crevicular fluid (Tenenbaum, 1997) Metronidazole has been reported because the second most ordinarily prescribed agent by dentists elsewhere (Palmer, 2000 and Roy, 2000). it's considered the primary choice treatment for anaerobic infections, as frequently encountered in pericoronitis and gingivitis.

Postoperative infection of bone and soft tissue may be a common complication which will be reduced with good surgical techniques. Some bacterial contamination of a surgical site is inevitable, either from the patient's bacterial flora or from the environment. the utilization of antibiotic prophylaxis in third molar surgery is widespread, but controversial. Currently, surgical antibiotic prophylaxis accounts for over 30% of antibiotic prescriptions in dental hospitals [1]. Arteagoitia et al. [48] concluded that postoperative treatment with amoxicillin / clavulanic acid could reduce inflammatory complications after third molar surgery, but shouldn't be prescribed altogether cases. Amoxicillin is an accepted choice for antibiotic prophylaxis in oral surgery. The infection rate was 2% which seriously challenges the advantage of antibiotic prophylaxis in third molar surgery in patients who haven't any immune compromise.

Antibiotics are justified therapeutically to treat active infection. Antibiotics are justified prophylactically in certain cases of medical compromise, including cardiac and immunosuppressive disorders[49][50]. The rationale for prophylactic antibiotics to guard patients with orthopedic prostheses is unproven. Antibiotics aren't justified without medical indications, no matter the patient's desires. Results of the many studies on actual antibiotic usage by oral surgeons indicate that quite half the respondents use prophylactic antibiotics for mandibular partial bony and full bony impactions. Because a majority of those surgeons didn't start the antibiotics until after the surgery, this doesn't indicate a legitimate community standard. Starting antibiotics after the surgery violates basic principles of prophylaxis. Antibiotics aren't justified for wound prophylaxis for maxillary third molar extractions no matter the extent of impaction due to the general infection rate. Systemic antibiotics are of no benefit when erupted mandibular third molars are extracted [12][16].

Numerous studies suggest that increasing age, female gender, oral contraceptives, smoking,

surgical trauma and pericoronitis are risk factors for alveolar osteitis, although a major number of studies refute these associations . Sekhar et al.[15] and Bergdahl & Hedstrom [51] in their prospective studies compared the systemic perioperative use of metronidazole with placebo and located the incidence of alveolar osteitis and early postoperative infection to be an equivalent in both groups. Swelling is an expected sequela of third molar surgery. It reaches a maximum 2–3 days postoperatively and normally subsides by the fourth day. It should completely resolve by the seventh postoperative day [52]. The study has minor limitations because the follow up wasn't fully recorded for all the patients , few didn't show up for review after the surgery . Thus the study showed the usage of antibiotics was statistically significant and also post operative infections weren't seen in patients.

CONCLUSION

In this study, it is concluded that the antibiotics such as amoxicillin , metronidazole , clavulanic acid are the most commonly prescribed antibiotics after the surgical removal of impacted teeth. The antibiotics showed no harm to the oral tissues. However , the dental profession as a whole needs to acquire a deeper understanding of the global effects of superfluous antibiotic prescription. Antibiotics when judiciously used are precise life-saving drugs. Prescribers must have a thorough understanding of the clinical indicators for antibiotic prescription, both therapeutic and prophylactic. They also need an understanding about the risk of adverse reactions and the development of resistant and multiresistant strains.

AUTHOR CONTRIBUTION

Meera has contributed to data collection, study design, data analysis, results, tables and manuscript preparation.

Dr. Balakrishna R N has contributed to the manuscript preparation, proof heading of the manuscript and reviewing the manuscript.

Dr. Deepak has contributed to reviewing the manuscript.

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CONFLICT OF INTEREST

There is no conflict of interest.

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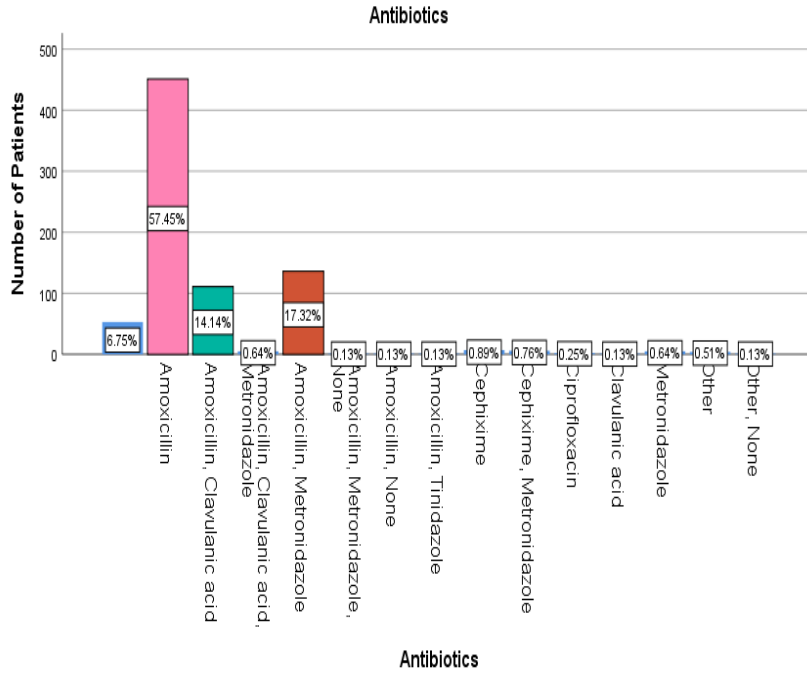


Figure 1 : This graph shows distribution of the antibiotics of the patients with impaction that were included in the study. X axis shows the antibiotics prescribed, Y axis shows the number of patients. From the graph it's evident that amoxicillin(Pink) was more prescribed (57.4%) than other antibiotics.

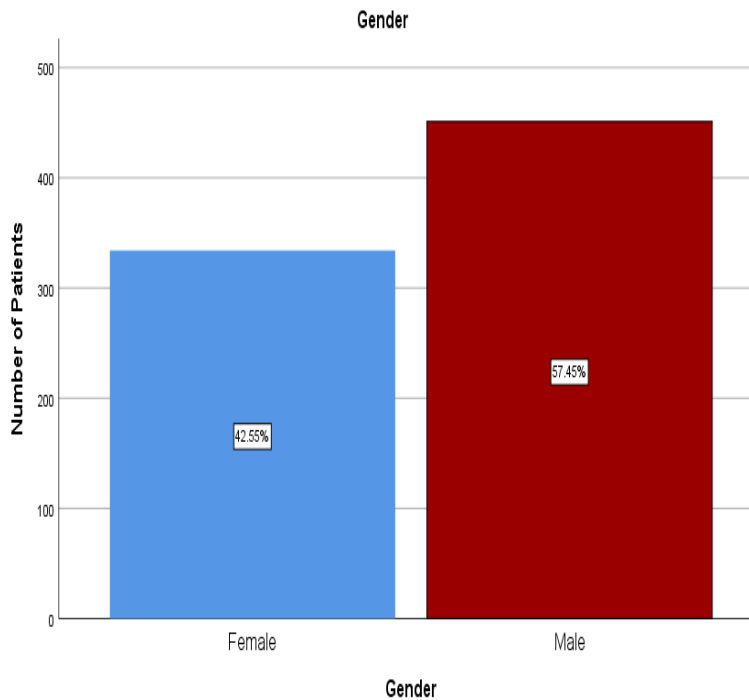


Figure 2 : This graph shows distribution of the gender of the patients with impaction that were included in the study. X axis shows the gender of the patient, Y axis shows the number of patients. From the graph it's evident that males(Red) were most affected (57.4%) than females(Blue)(42.5%).

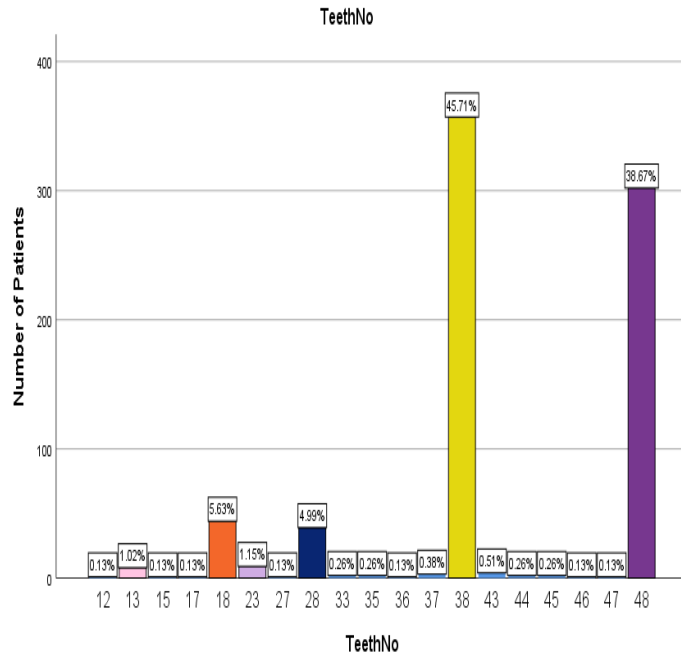


Figure 3: This graph shows distribution of the teeth no. of the patients with impaction that were included in the study. X axis shows the teeth no., Y axis shows the number of patients. From the graph it's evident that tooth no. 38 (Yellow) (45.7%) and tooth no. 48 (Purple) (38.6%) was more affected than other teeth nos.

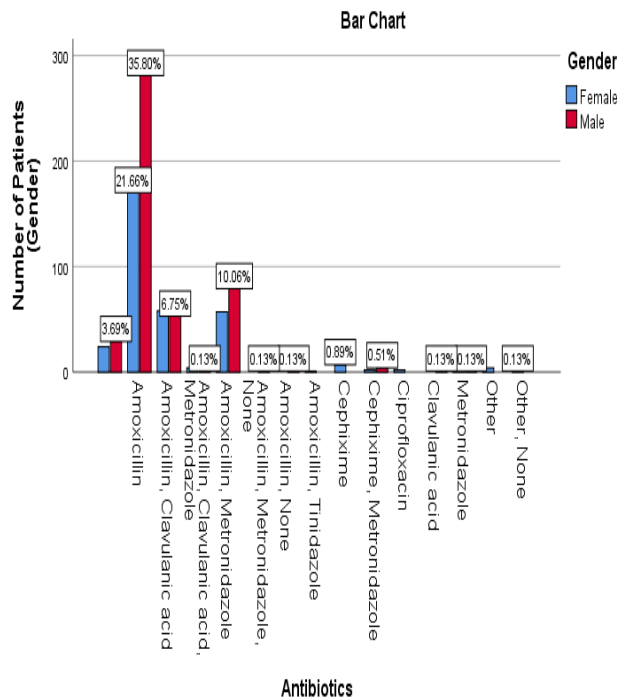


Figure 4: This graph shows association between the antibiotics prescribed and gender of the patient who reported with impaction. X-axis represents the antibiotics prescribed and y-axis represents the gender of the patients. Chi-square test was done and association was found to be statistically significant. Pearson's Chi Square value: .218, p value: .001(p<0.005) statistically significant. Hence from the figure we infer that males(35.8%)(Red) are most commonly prescribed with amoxicillin after impaction removal than females.