



ISSN : 2350-0743

www.ijramr.com



International Journal of Recent Advances in Multidisciplinary Research

Vol. 07, Issue 08, pp. 6110-6114, August, 2020

## RESEARCH ARTICLE

### EFFICACY OF USE OF WITH OR WITHOUT ANTIBIOTIC THERAPY (REGIME) IN EXTRACTION OF ASYMPTOMATIC TOOTH POSTOPERATIVELY: RETROSPECTIVE STUDY

<sup>1,\*</sup>Dr. Mayur J. Gawande, <sup>2</sup>Dr. Akshay Daga, <sup>3</sup>Dr. Aishwarya Kadu and Dr. Manasvi Lajewar,

<sup>1</sup>Department of Oral And Maxillofacial Surgery, Swargiya Dadasaheb Kalmegh Smruti Dental, College and Hospital, Nagpur, M.H, India

<sup>2</sup>Department of Oral and Maxillofacial Surgery, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Nagpur, M.H, India

Swargiya Dadasaheb Kalmegh Smruti Dental college and Hospital, Nagpur, M.H, India  
Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Nagpur, 441110, India

#### ARTICLE INFO

##### Article History:

Received 30<sup>th</sup> May, 2020

Received in revised form

7<sup>th</sup> June, 2020

Accepted 07<sup>th</sup> July, 2020

Published online 26<sup>th</sup> August, 2020

##### Keywords:

Asymptomatic Tooth Extraction,  
Postoperative Antibiotic and NSAIDs  
Regime, Indiscriminate use of Antibiotics.

#### ABSTRACT

**Aim:** This study was done to evaluate the efficacy of the post-operative antibiotic therapy in reducing post-operative indiscriminate use of antibiotics and to evaluate whether it is important to give antibiotics regime in asymptomatic tooth extraction. **Methods and Materials:** The sample of 60 patients were selected in the Department of Oral and Maxillofacial surgery at Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital. Group A being the study group were NSAIDs given and antibiotics regime was excluded and Group B being the control group were antibiotics regime was given. The patients were followed up for 2<sup>nd</sup>, 4<sup>th</sup>, 7<sup>th</sup>, 10<sup>th</sup>, 14<sup>th</sup> day of extraction post-operatively. The assessment of pain, healing and swelling of extraction wound were evaluated. **Statistical Analysis:** The results were evaluated by comparing the data between two groups. It was statistically evaluated using EPI Info software version 6 using Unpaired 't' test and Chi square test. **Results:** Pain was statistically significant in group A than group B with P value <0.001 on 2<sup>nd</sup>, 4<sup>th</sup> and 10<sup>th</sup> day. On 14<sup>th</sup> day there was no significant difference. Swelling was assessed intraoral as well as extra orally showing statistically significant in group B with Pvalue <0.005. Healing was assessed using Laundry, Turnbull and Howley index shows statistically significant in group A than group B with Pvalue <0.005. **Conclusion:** We conclude that antibiotic regime is not necessarily required in post extraction of asymptomatic tooth.

#### INTRODUCTION

A diverse quality and quantity of bacterial flora is seen in the oral cavity of a human being (Samamayake, 2006; Parahityawa, 2010). More than 700 different species have been isolated from the human oral cavity. The majority of them are present in dental plaque. The oral microbial flora plays an important role in Odontogenic Infections<sup>3</sup>. Based on our current knowledge, supragingival plaque is dominated by gram positive bacteria including Streptococcus Sanguinis, Streptococcus Mutans, Streptococcus Mitis, Streptococcus Salivaris, Streptococcus Lactobacilli and Subgingival plaque is dominated by Gram negative anaerobic bacteria such as Aggregatibacter (Actinobacillus) Actinomyces comitans. Odontogenic Infections are common in dental practice. In order to treat such cases, proper antibiotic prophylaxis along with NSAIDs is given. Antibiotics are substances produced by microorganisms which suppress the growth of or destroy other microorganisms.

Broad spectrum antibiotics are the one which suppress gram positive and gram negative bacteria and other microorganisms too. A study in Spain found that 10% of all antibiotic prescriptions were used for treating odontogenic infection. About 67.8% of all prescriptions and 59.4% of the global cost were of amoxicillin and the combination amoxicillin-clavulanic acid. The association amoxicillin-clavulanic acid was most commonly given for treatment of odontogenic infections which account 38.7% of all prescriptions and 45.7% of the net cost. Other prescriptions such as Spiramycin and the association Spiramycin and metronidazole was 13.34% of all the prescriptions and 10.2% of the global expenditure. Clindamycin account 4% of all the prescriptions and 4.2% of the global costs. As a result about 95% of the antibiotics prescribed in the public health care system were by dentists and 75% of the total antibiotic cost<sup>4</sup>. Isla *et al* proposed in their study that the dose to be given for clindamycin should be 300 mg/ 6 hourly and for amoxicillin-clindamycin acid should be 500 mg/ 8 hourly or 2000 mg/ 12 hours. The association spiramycin and metronidazole failed to treat the infection properly.

**\*Corresponding author: Dr. Mayur J. Gawande,**  
Department of Oral and Maxillofacial Surgery, Swargiya Dadasaheb Kalmegh Smruti Dental, College and Hospital, Nagpur, M.H, India.

They suggested the antibiotic of choice for the odontogenic infections should be amoxicillin-clavulanic acid, clindamycin and moxifloxacin. The odontogenic infections results in the severe pain in the localised area with rise in temperature. NonSteroidal Anti-Inflammatory Drugs (NSAIDs) are the drug of choice for the pain control. Mode of action of NSAIDs is that arachidonic acid is liberated during inflammation. It is converted to Prostaglandins (PG). They produce Hyperalgesia by sensitizing the nerve endings to pain produced by bradykinin and Histamine. The NSAIDs inhibits the PG synthesis by inhibiting the reaction catalyser cyclo oxygenase (COX). Asymptomatic tooth are those where there is absence of signs and symptoms of disease affecting the tooth or nearby structures. Indications for extraction of Asymptomatic tooth are the tooth extracted when there is a lack of space, to prevent damage to the adjacent tooth, to facilitate orthodontic treatment, in case of crowding of dental arches for gaining space, serial extractions, third molar extractions and oral surgical procedure like Autotransplantation, transposition and intentional reimplantation and prior to orthognathic surgery<sup>6</sup>. The main objective of our study is to evaluate the efficacy of postoperative antibiotic therapy in reducing postoperative morbidity as well as necessity of prescribing the antibiotics regime after the extraction of asymptomatic tooth.

## METHODS

This retrospective study carried out in Department of Oral and Maxillofacial Surgery at Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Nagpur. 60 patients were randomly selected and divided into two groups. Out of 60 patients, 37 were females and 23 were male patients. Group A being the study group were NSAIDs given and antibiotics regime was excluded and Group B being the control group were NSAIDs given as well as antibiotics regime was given. The informed consent were taken. Inclusion criteria were, age ranging 16-35 years of age, patients willing for participation in the study, absence of any local inflammation or infection in tooth region, patients undergoing orthodontic extractions. Exclusion criteria were medically compromised patients or having any systemic diseases, patients already on antibiotic coverage for any systemic diseases, patients not willing for participation and follow ups, presence of carious tooth, or any pathological lesions.

The patients were asked to rinse their mouth with 0.12% chlorhexidine mouthwash for 1 min. The standardized technique was used for extraction under all aseptic precautions using 2% lignocaine hydrochloride + 1:800000 Adrenaline concentration. Post extraction instructions and medications were given to the patients to be followed strictly. Patients in Group A (Study group) were prescribed Diclofenac Sodium (50mg) + Paracetamol (325mg) and Ranitidine (150mg) whereas Group B (Control group) were prescribed Amoxicillin (500mg) + Diclofenac Sodium (50mg) + Paracetamol (325mg) and Ranitidine (150mg). The patients were recalled on 2<sup>nd</sup>, 4<sup>th</sup>, 7<sup>th</sup>, 10<sup>th</sup>, 14<sup>th</sup> Day of Extraction postoperatively for the evaluation of pain, swelling and healing. Evaluation of pain was done using Visual Analog Scale (VAS). Evaluation of swelling clinically done introrally and extra-orally as present or absent. Evaluation of healing was done by using Laundry, Turnbull and Howley Index (Landry *et al.*, 1988; Masse, 1993).

## RESULTS

Our study was conducted in the Department of Oral and Maxillofacial Surgery at Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Nagpur. Group A being the study group were NSAIDs given and antibiotics regime was excluded and Group B being the control group were antibiotics regime was given. Evaluation was done on 2nd, 4th, 7th, 10th and 14th day post-operatively. Pain was evaluated using 10 point scale Visual Analog Scale (VAS). Swelling was assessed intraoral as well as extra-orally as present or absent on follow up. Healing was assessed using Laundry, Turnbull and Howley Index shown in Table (2). Results of all parameters are shown in tables and graphs. The pain was assessed by using 10 point Visual Analogue Scale. On 2nd day post-operatively result shows there was statistically significant difference in group A with Pvalue < 0.001 than group B. On 4th day post-operatively, result shows there was statistically significant difference with Pvalue < 0.001 in group A than group B. On 10th day postoperatively result shows there was statistically significant difference with Pvalue < 0.067 in group A than group B. On the 14th day post-operatively there was no statistically significant difference between group A and group B. Swelling was assessed intraoral as well as extra-orally as present or absent using Chi square test. Result shows absence of swelling within the group A and B is 93.3% and there was significant presence of swelling within group A and B is 6.7%. The difference of absence and presence of swelling is statistically significant with Pvalue < 0.038.

## DISCUSSION

The ideal tooth extraction is the painless removal of the whole tooth, or root, with minimal trauma to the investing tissues, so that the wound heals uneventfully and with minimum postoperative complications. The hindrance in the ideal tooth extractions have been associated with tooth angulation, position and the age of the patient. There are chances of developing postoperative complications with respect to the age of the patient about 10% chances in age group of 20-30 years and more than 30% chances in age group of more than 40 years<sup>9</sup>. Although, postoperative pain, trismus and swelling expected during the healing phase after surgical and nonsurgical extraction of tooth thus not to be considered as complications. Surgical or Non-surgical Asymptomatic tooth extraction is considered to be clean contaminated procedures and risk of postoperative infections are relatively less than 5% (Piecuch, 1995). The ideal agent to be used post tooth extraction should fulfill following criteria: alleviate pain, reduce postoperative swelling and trismus, postoperative infectious complication and promote healing. Till date various drugs have been introduced to fulfil this criteria. The use of antibiotic and NSAIDs are commonly prescribed in dentistry. Nowadays, there are indiscriminate use of antibiotic and NSAIDs. The study in Spain discuss the indication for use of antibiotic prophylaxis in dental surgeries include periapical surgery, bone surgery, dental implant surgery, bone graft, excision of benign and malignant tumours, disimpaction (Gutierrez, 2006). The drawback to the consistent use of antibiotic therapy is represented as undesirable side effects of their use. There are 2 aspects of antibiotic use. Firstly, there are side effects such as gastric haematological, neurological, dermatological and other disorders. Secondly, development of bacterial resistance.

Table 1. Laundry, Turnbull and Howley Healing Index

LAUNDRY, TURNBULL AND HOWLEY INDEX
Healing Index 1: Very Poor
•Tissue colour: $\geq 50\%$ of gingiva red
•Response to palpation: bleeding
•Granulation tissue: present
•Incision margin: not epithelialized, with loss of epithelium beyond incision margin
•Suppuration present
Healing Index 2: Poor
•Tissue colour: $\geq 50\%$ of gingiva red
•Response to palpation: bleeding
•Granulation tissue: present
•Incision margin: not epithelialized, with connective tissue exposed
Healing Index 3: Good
•Tissue colour: $\geq 25\%$ and $< 50\%$ of gingiva red
•Response to palpation: no bleeding
•Granulation tissue: none
•Incision margin: no connective tissue exposed
Healing Index 4: Very Good
•Tissue colour: $< 25\%$ of gingiva red
•Response to palpation: no bleeding
•Granulation tissue: none
•Incision margin: no connective tissue exposed

Table 2: Comparison of pain Visual Analogue scale on 2<sup>nd</sup>, 4<sup>th</sup>, 10<sup>th</sup> And 14<sup>th</sup> DOE between Group A & Group B by unpaired t test

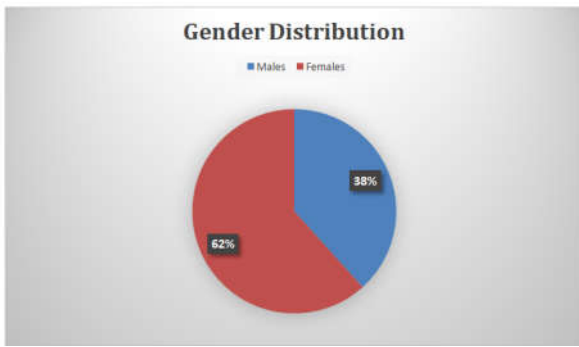
Group Statistics							
PAIN	group	N	Mean	Std. Deviation	Std. Error Mean	T value	P Value
2nd DOE	A	30	2.37	1.245	0.227	-5.22	<0.001
	B	30	4.30	1.601	0.292		
4th DOE	A	30	0.73	0.785	0.143	-3.915	<0.001
	B	30	1.93	1.484	0.271		
10th DOE	A	30	0.17	0.379	0.069	-1.869	0.067
	B	30	0.50	0.900	0.164		
14th DOE	A	30	0.00	0.000	0.000		
	B	30	0.17	0.379	0.069		

Table 3. Comparison of Healing index on 2<sup>nd</sup>, 4<sup>th</sup> & 10<sup>th</sup> DOE between Group A & Group B by unpaired t test

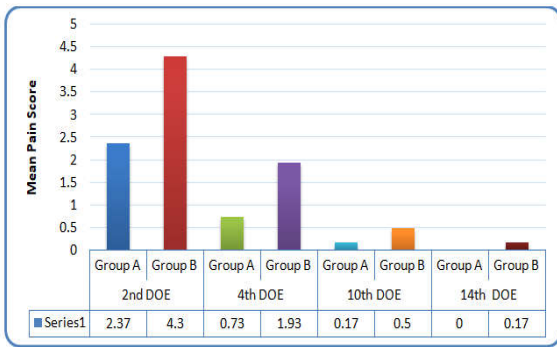
Group Statistics							
Healing	group	N	Mean	Std. Deviation	Std. Error Mean	T value	P Value
2nd DOE	A	30	2.30	0.596	0.109	2.426	0.018
	B	30	1.87	0.776	0.142		
7th DOE	A	30	3.53	0.629	0.115	2.121	0.038
	B	30	3.13	0.819	0.150		
10th DOE	A	30	3.87	0.346	0.063	1.952	0.056
	B	30	3.63	0.556	0.102		

Table 4: Comparison of Swelling between Group A & Group B by Chi square test

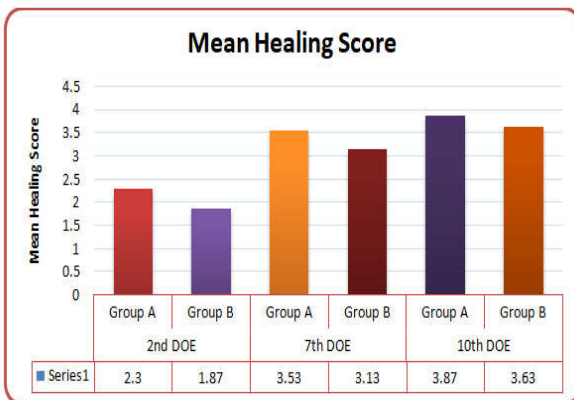
Swelling * group Cross tabulation						
			group		Total	
			A	B		
Swelling	A	Count	30	26	56	
		% within group	100.0	86.7	93.3	
P	Count	Count	0	4	4	
		% within group	0.0%	13.3	6.7%	
Total	Count	Count	30	30	60	
		% within group	100.0	100.0	100.0	
			%	%	%	



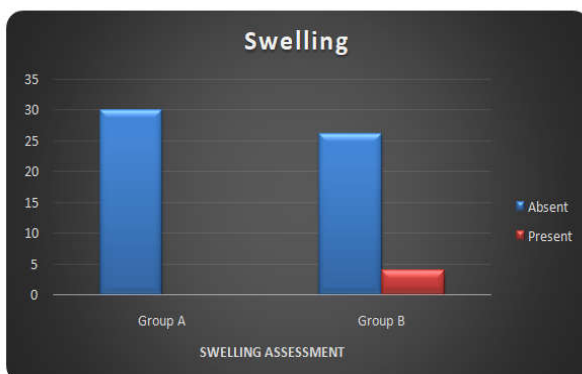
Graph 1. Showing Gender Distribution



Graph 2. Showing Mean Pain Score within the Group



Graph 3. Showing Mean Healing Score within the Group



Graph 4: Swelling compared between Group A and Group B

Thus, the rational use of antibiotic is utmost importance in dental and oral clinical practice (Poveda-Roda, 2007). In our study we aim to evaluate the efficacy of use of postoperative antibiotic regime in asymptomatic tooth extraction.

We also assess postoperative morbidity following antibiotic therapy and to assess the importance of use of antibiotic regime in Asymptomatic tooth extraction. We assessed postoperative pain, swelling and healing following extraction of asymptomatic tooth. Pain was evaluated using 10 point Visual Analog Scale (VAS). It states that the pain was reduced in study group where antibiotics were given as compared to control group on 2<sup>nd</sup>, 4<sup>th</sup> and 10<sup>th</sup> day while on 14<sup>th</sup> day there was no significant difference in both the groups. These findings were supported by various other studies such as those done by van Eeden and Butow (van Eeden, 2006) and M. Agrawal *et al.* (2012) There was a contrast in this finding to a study done by Arteagoitia *et al.* (2005) who reported a significant rise in the rate of infection related complication in individuals who were not prescribed antibiotics upto 12.9%. There was significant difference in swelling assessed intraorally in group B than group A suggestive of there is a marked presence of swelling in control group where antibiotics were given. There was a contrast in study done by Monaco *et al.* (2009) reported the postoperative swelling was present in extraction performed with antibiotic and without antibiotic and found that the difference between swelling in control and study group was not statistically significant. The healing was assessed using Landry, Turnbull and Howley Index (Landry, 1988; Masse, 1993). In our study, we found that soft tissue healing was significantly improved in Group A than Group B on 2<sup>nd</sup>, 7<sup>th</sup> and 10<sup>th</sup> day of extraction with P value 0.018, 0.038 and 0.056. Thus we conclude that there is statistically significant difference between the results of all the parameters assessed between Group A (where antibiotic were excluded) and Group B (where antibiotic were given). This suggestive of the prescription of postoperative antibiotic regime following extraction of asymptomatic is not necessary. Postoperative pain, swelling and trismus can be prevented through proper and careful tissue manipulation, the administration of analgesic and anti-inflammatory medication along with thorough counselling of patient for following postoperative instructions and maintenance of oral hygiene.

**CONCLUSION**

Our study suggest that there was no clinical apparent presence of infection, no disturbance in wound healing or presence of any other complications noted in those patients where antibiotic regime were excluded. Thus there is no need to prescribe antibiotic regime postoperatively in asymptomatic tooth extraction. All dental professionals must be aware of proper use of antibiotic regime and they should assess clinically and then prescribe use of antibiotic whenever extremely required. Proper knowledge of side effects of antibiotics is must to know for all general practitioners. This study can be further examined with larger sample size and longer duration of follow up. However in our study the duration of time was adequate enough to evaluate the efficacy of antibiotic in postoperative asymptomatic tooth extraction.

**REFERENCES**

Agrawal, M. Q. B. Rahman, and M. Akhter, 2012. "Extraction of Asymptomatic tooth with and without antibiotic therapy," Bangabandhu Sheikh Mujib Medical University Journal, 5 (1): 24-28.

Arteagoitia, I, Diez, A, Barbier, Santamania, G & Santamania, J , 'Efficacy of amoxicillin/clavulanic acid in preventing infectious and inflammatory complications following

- impacted mandibular third molar extraction', *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 2005; 100 : E11-8.
- Gutierrez, JL, Bagan, JV & Baccones, A. 2006. 'Consensus document on the use of antibiotic prophylaxis in dental surgery and procedures', *Med Oral Pathol Oral. Cir Buccal*, 11: E188.
- Isla A, Caunt A, Rodriguez Gascon A, Pedraz JL. 2005. Farmacocinetica/framacodinamica de la formulacion de amoxicillin/ acido clavulanico 1000/62,5 mg en odontoestomatologia. *Enferm Infecc Microbial Clin.*, 23:387.
- Landry RG, Turnbull RS, Howley T. Effectiveness of benzydamyneHCl in the treatment of periodontal post-surgical patients. *Research in Clinic Forums*. 1988; 10: 105-118.
- Machua M, Espejo, Gutierrez L, Herrera J. 2000. Analisis de la prescripcion antibiotic en una farmacia communitarian. *Pharm Care Esp.*, 18:300-7.
- Masse JF, Landry RG, *et al.* Effectiveness of soft laser treatment in periodontal surgery. *International Dental Journal*. 1993; 43: 121-127.
- Monaco, G, Tavernese, L, Agostini, R and Marchetti, C , 'Evaluation of antibiotic prophylaxis in reducing postoperative infection after mandibular third molar extraction in young patients', *J Oral Maxillofac Surg*, 2009; 67 : 1467-1472.
- Parahityawa, N.B. 2010. "Exploring the oral bacteria flora: current status and future directions," *Oral Diseases*, 16(2): 136-145,
- Piecuch JF, Arzadon J & Lieblich SE , ' Prophylactic antibiotics for third molar surgery: A supportive opinion', *J Oral Maxillofac Surg*, 1995; 53:53-60.
- Poveda-Roda R, Bagan JV, Sanchis-Biesla JM, Carbonell-Pastor E. Antibiotic use in dental practice. A review. *Med Oral Pathol Oral Cir Bucal* 2007;12: E186-92.
- Roges AH. 2008. 'Molecular oral microbiology'. Caister Academic press.
- Samamayake, L. 2006. *Essential Microbiology for Dentistry*, Elsevier Health Sciences, Oxford, UK, 3rd edition.
- van Eeden S. P. and K. Butow, 2006. "Post operative sequelae of lower third molar removal: a literature review and pilot study on the effect of Covomycin D", *SADJ*, 61(4) : 154-159.

\*\*\*\*\*