MEDICAL CHANNEL

Original Article

DEXAMETHASONE IN CONTROL OF POST-OPERATIVE SEQUALAE AFTER EXTRACTION OF MANDIBULAR IMPACTED THIRD MOLARS

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ABSTRACT

Objectives: The objective of this study was to determine the effect of dexamethasone in control of post-operative sequalae in surgical extraction of mandibular third molar surgery.

Methods: This study was a prospective double blind randomized control trail conducted in Department of Oral & Maxillofacial surgery, Liaquat University of Medical & Health sciences Hyderabad / Jamshoro from January 2011 to September 2012.All selected patients were divided into two groups by using random number table. Patients in Group-A were given dexamethasone 8 mg intramuscularly before surgery and 4 mg 24 hours after surgery and Co-Amoxiclave tablet 625mg BD and Ibuprofen 400 mg TDS and patients in group-B considered as control group were given Co-Amoxiclave 625 mg BD and Ibuprofen 400 mg TDS post operatively only for three days. The facial swelling and mouth opening were checked before surgery, and after 24 hours (1st day), after 48 hours (2nd day) and after 7 days. All the gathered information was noted and entered in a structured proforma

Results: The mean age of patients was 28.3 years in group A ,and in group B was 27.1 years. The most common impaction was mesioangular account for 45% of cases,followed by vertical, distoangular and horizantal impaction.The mean preoperative swelling was 210 in control group and 212 in steroid group. On 2nd day after surgery, post extraction swelling raised in both group and on 7thdays after surgery swelling reduced to 215 in control and 213 in steroid group. Statistically significant.

Conclusions: The use of dexamethasone appears to be a safe and effective method to reduce postoperative clinical symptoms in third molar surgery.

Key words : mandibular third molar impaction, steroids, Dexamethasone

INTRODUCTION:

The mandibular third molar is last tooth to erupt and usually becoming impacted. Its removal is one of the most common surgical procedures in dentistry .[1] Impacted mandibular third molars are often associated with pericoronitis, periodontitis, cystic lesions, neoplasm, pathologic root resorption and can cause unfavorable effects on neighboring tooth.[2] Facial swelling, pain, and trismusarethe expected consequence of third molar extraction. Impaction surgery is objectionable and uncomfortable for the patients and should be minimized as much as possible. Swelling is the most frequent complication and it usually occurs postoperatively due to tissue injuries.[3,4] Being aextremely vascularized area of head and neck section, predominantly constituted by loose connective tissue, a chain of functional and structural alterations is expected in thirrd molar surgery, that leads to the discharge of exudate and consequent swelling, trismus and pain.[5-7] To

control postoperative inflammation and symptoms associated, it is necessary to give an enough anti-inflammatory therapy.[5, 7- 9] Reducing post-operative discomfot,anxiety and pain is of chief concern, for patients and oral surgeons as well. Aexperienced surgeon, a small operation, and the application of cold dressings have a positiveoutcome on postoperative edema.[10] The use of steroid therapy to control inflammation in surgical procedures has been an area of disagreement since its beginningin 1948. The effective ness of gluco-corticosteriods as an anti-inflammatory agent was first reported by Philip Showalter Hench and Edward Calvin Kendall in1949, who used cortisone to treat rheumatoid arthritis.[10, 11] Steroids lessen inflammation and effects of dexamethasone have been observed in many studies[1,3,11]. Dexamethasone is a long acting glucocorticod, which is used for many inflammatory and auto immune diseases[12]. The use of corticosteroids (betamethasone, dexamethasone) is another protective strategy for restraining postoperative swelling following oral surgical procedures. Being the highest anti-inflammatory activity the dexamethasone is more effective.[4] Clinical trials have also supported the hypothesis that corticosteroids are useful in minimizing and preventing post operative swelling.[1,3,11] Many authors demonstrated a better effect in the control of the swelling and trismus when using steroids anti-inflammatory drugs versus non steroidal anti-inflammatory drugs (NSAID) hence the purpose of this study is to determine the role of dexamethasone in surgical extraction of mandibular third molar removal and toassess its anti-inflammatory effects.

OBJECTIVE:

The objective of this study was to determine the effect of dexamethasone in control of post-operativesequalae in surgical extraction of mandibular third molar surgery.

MATERIAL AND METHOD

This study was a prospective double blind randomized control trail conducted in Department of Oral & Maxillofacial surgery, Liaquat University of Medical & Health sciences Hyderabad / Jamshoro from January 2011 to September 2012. The Inclusion Criteria were the Age between 20-40years of either gender with bony impacted mandibular 3rd molars.The Exclusion Criteria were patients with limited mouth opening less than 15mm, and clinically significant medical history ,drugs allergy, chronic use of medications that obscure assessment of the inflammatory response (antihistamines, NSAID, steroids and antidepressants), pregnant or lactating woman. Patients meeting the inclusion criteria were included in the study. The purpose, procedure, risk/benefits of the study was explained to the patients and informed consent was taken regarding their willingness and participation in the study. Study was approved by hospital Ethical review committee.All selected patients were divided into two groups by using random number table. Patients in Group-A were given dexamethasone 8 mg intramuscularly before surgery and 4 mg 24 hours after surgery and Co-Amoxiclave tablet 625mg BD and Ibuprofen 400 mg TDS and patients in group-B considered as control group were given Co-Amoxiclave 625 mg BD and Ibuprofen 400 mg TDS post operatively only for three days. The facial swelling was checked before surgery, and after 24 hours (1st day), after 48 hours (2nd day) and after 7 days and inter-incisor distance was measured by verniercalliper on every follow up. The facial swelling was determined by measuring the distance in millimeters with flexible tape from the corner of the mouth to the tragus of ear and from the lateral canthus of the eye to the angle of the mandible. The sums of measurement were recorded as the facial size preoperatively and post operatively. All the gathered information was noted and entered in a structured proforma

Data were analyzed by SPSS version 17. Mean and standard deviation was calculated for age and gender. Impacted mandibular 3rd molars were classified according to their angulation, and percentage was calculated. Meanand SD of facial swelling and mouth opening was calculated before extraction, on 2nd post-operative day and on 7th post-operative day in both groups.t test were useto see significance

RESULTS

In group a thirty patients consist of 19 male and 11 female. The mean age was 28.3 years with age ranges from 15-46years. In group B 16 male and 14 female with mean age was 27.1 years. Impacted teeth were classified according to angulation, most common impaction was mesioangular account for 45%of cases,followed by vertical, disto-angular and horizontal impaction.Table I

The mean preoperative swelling was 210 in control group and 212

TABLE. I.

DISTRIBUTION OF TWO GROUPS ACCORDING TO ANGULATION 0F IMPACTION

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Angulation	Mesio angular	Vertical	Disto angular	Horizontal	Total
Group A	13	10	4	3	30
Group B	14	9	5	2	30
Total	27 45%	19 31%	9 15%	5 8%	60

TABLE II.

Comparison of Post Operative Swelling in Both Groups

Swelling	Control group	SD	Dexamethasone	SD
Before surgery	210	12	212	11
2nd day after surgery	222	15	218	1 4
7th days after surgery	215	13	213	13

TABLE III.

Comparsion of Post-Operative Mouth Opening

Mouth opening	Control group	SD	Dexamethasone	SD
Before surgery	42.2	3	43	4
2nd day after surgery	20	5	31	6
7th days after surgery	33.6	6	40.6	7

in steroid group.On 2nd day after surgery, post extraction swelling raised in both group with mean swelling 222 in control group and 218 in steroid group, on 7thdays after surgery swelling reduced to 215 in control and 213 in steroid group. Statistically significant Table II .

Limited mouth opening is a common sequel in surgical extraction of mandibular 3rd molar. Preoperatively inter incisor mouth opening was measured in both groups and on every follow up visit mean decrease in mouth opening was subjectively measured. Table III

DISCUSSION

Mandibular third molar impaction is a common problem affecting many adults.Mesioangular impaction (45%) followed by vertical (31%) was the common type in the current study. Our findings confirmed with the previous reports from Pakistan[13], USA,[14] Nigeria,[15] China,[16] Thailand[17], Spain[18] and Malaysia,[19] where the common type was mesioangular impactions. However, a study among Jordanians found that vertical impactions were the most common (61.4%) and mesioangular were only 18%. [20] Similarly, another study in Barcelona had also reported that vertical impactions were the common type followed by mesioangular.[21] It seems that mesio-angular impactions are indubitably the commonest type and this may be due to path of eruption and lack of space in mandible at later age.

Most frequent procedures in Oral and Maxillofacial Surgery is the surgical removal of impacted third molars whichcan lead to instant post-operative pain, swellingand limited mouth opening[22]. Decrease in mouth opening is aoutcome of the postoperative swelling, and causing compression on nerves and leads to mild to severe pain.[5, 22, 23]Dexamethasone was chosen for the study because it has shown to be a drug of safe management, if time and dosages are strictly followed. The employed analgesic was Ibuprofen , also a proven drug of safe management. Trismus, measured in this study as a decrease in maximal inter-incisal opening, is a significant postoperative sequalae caused by the edema and swelling associated with the surgical trauma.[1] Limitation of maximal mouth opening after surgery is also due, at least in part, associated with pain. Ibuprofen alone, which was found to provide a minor reduction of post-operative trismus, may be acting primarily by reducing patient discomfort upon opening, thereby permitting greater extension of the muscles of mastication. Although the therapeutic advantage of corticosteroid use is primarily in decreasing postoperative swelling, they have been shown to provide some pain relief.[24]

Conversely, the NSAIDs have been reported to provide some anti-inflammatory effects when evaluated using the third molar research model.[25] It is therefore not entirely unexpected that the combination of steroidal and nonsteroidaltherapies were most effective in relieving post-operative pain and trismus. The information thatthe combination appears to provide some additional analgesic and anti-inflammatory benefit may also be due to their separate mechanisms along the prostaglandin cascade and therefore jointly act to limit the production of peripheral prostanoids. The time course for trismus and concurrent limitationsin oral function described in the current study are in agreement with findings of a recent large multicenter trial that indicated symptoms reach a maximum at day 1 or day 2 postoperatively and generally resolve by day 7.[12,26] They determined predictor factors for less favorable and more prolonged post-operative outcomes to comprise older age, female gender, both lower thirdmolars requiring bone removal, and longer procedures.[27] Our findings that trismus and postoperativepain are minimized with the use of Ibuprofen and dexamethasone might be most beneficial whenprolonged recovery is expected.

Neupert et al[28] reported that mouth opening as measured by the interincisal opening pre and post-operatively was improved with 4 mg of intravenous (IV) dexamethasone in the first few days after surgery, but no difference was noted between the corticosteroid and placebo groups for pain or swelling. Twenty-four hours after surgery the restriction of mouth opening was lessened by 20% using 4 mg of dexamethasone, and 48 hours after surgery it increased to 31, showing clinical and statistic differential. Beirne and Hollander[7] reported that 125 mg of IV methyl-prednisolone after third molar surgery reduced pain levels during the first post-operative day. Swelling was less with the glucocorticoid administration through postsurgery day three but did not seem to be correlated with pain levels.[29] Trismus was minimally less with the corticosteroid medication, but not related to pain levels. Dionne et al.[30] used 4 mg of dexamethasone given 12 hours before and just after third molar surgery in thirty three (33) patients, twenty eight (28) received a placebo control. As markers of the extent of inflammation, samples of prostaglandin E2 (PGE2) and thromboxane B2 (TxB2) were collected over time at the mandibular surgical sites. Dexamethasone significantly decreased the levels of PGE2 and TxB2, but had a minimal effect on reported pain on the day of surgery.

CONCLUSION

The use of dexamethasone appears to be a safe and effective method to reduce postoperative clinical symptoms in third molar surgery.

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