

# Comparison of Therapeutic Effects of Dexamethasone Intramuscular Administered Pre-operatively vs. Post Operatively after the Surgical Extraction of Impacted Mandibular Third Molars

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## ABSTRACT

**Background:** The present study was undertaken for comparing the Therapeutic Effects of Dexamethasone Intramuscular Administered Pre-operatively vs. Post Operatively after the Surgical Extraction of Impacted Mandibular Third Molars.

**Materials & Methods:** A total of 100 participants were enrolled. Complete demographic and clinical details of all the patients were obtained. Clinical examination was carried out of all the subjects. Only those patients were enrolled which were scheduled to undergo impacted third molar extraction. All the subjects were randomly divided into two study groups as follows: Group I: Administration of Pre-operatively Intramuscular Dexamethasone, and Group II: Administration of Post-operatively Intramuscular Dexamethasone. All the surgical procedures were carried under the hands of skilled and experienced oral surgeons. Routine post-operative home care instruction was given to all the patients along with antibiotic coverage. Patients were recalled on the 7<sup>th</sup> day and sutures were removed. Clinical examination was done.

**Results:** Mean mouth opening was significantly lower among patients of group II at postoperative 1<sup>st</sup> day and at postoperative 3<sup>rd</sup> day. However; at postoperative 7<sup>th</sup> day, no significant difference was observed in terms of mouth opening

in between both the study groups. Mean swelling was significantly higher among patients of group II at postoperative 1<sup>st</sup> day and at postoperative 3<sup>rd</sup> day. However, at postoperative 7<sup>th</sup> day, no significant difference was observed in terms of swelling in between both the study groups.

**Conclusion:** Better post-operative therapeutic effects are achieved by pre-operative administration of intramuscular injection of dexamethasone as compared to post-surgical administration in impacted third molar surgeries.

**Keywords:** Dexamethasone, Impacted, Molar.


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## INTRODUCTION

In early 1954, Mead has defined an impacted tooth as a tooth that is prevented from erupting into position because of malposition, lack of space, or other impediments. Later Peterson characterized impacted teeth as those teeth that fails to erupt into the dental arch within the expected time. Archer (1975) defines impacted tooth as one which is completely or partially unerupted and is positioned against another tooth or bone or soft tissue so that its further eruption is unlikely. In 2004 Farman wrote that impacted teeth are those teeth that prevented from eruption due to a physical barrier within the path of eruption.<sup>1-3</sup>

The prevalence of third molar impaction ranges from 16.7% to 68.6%. Most studies have reported no sexual predilection in third

molar impaction. Some studies, however, have reported a higher frequency in females than males. A few studies from the Gulf region have reported the prevalence of impacted third molars to be 32–40.5%. Patil S et al, in their study have reported the prevalence of tooth impaction in North Indian population is within the range of 5.6-18.8%. Also, Nanda et al and Sandhu et al noted 40% and 68.5% of impacted third molar respectively in North India.<sup>4-9</sup>

The extraction of impacted mandibular third molars is a common procedure in oral and maxillofacial surgery. Extraction of impacted mandibular third molars is often intended to prevent future complications.<sup>8</sup>

The postoperative experience of pain depends on the degree of surgical trauma suffered, requirement for bone tissue removal, and the extension of the periosteum. The role of corticosteroids in preventing postoperative pain is controversial. Corticosteroids are employed particularly after surgery to limit the accumulation of inflammatory mediators and reduce fluid transudation and edema. Dexamethasone has a wide variety of uses in the medical field.<sup>7-11</sup> Hence, the present study was undertaken for comparing the therapeutic effects of 8 mg dexamethasone intramuscular administered pre-operatively vs. post operatively after the surgical extraction of impacted mandibular third molars.

## MATERIALS & METHODS

The present study was undertaken for comparing the therapeutic effects of dexamethasone intramuscular administered pre-operatively vs. post operatively after the surgical extraction of

impacted mandibular third molars. A total of 100 participants were enrolled. Complete demographic and clinical details of all the patients were obtained. Clinical examination was carried out of all the subjects. Only those patients were enrolled which were scheduled to undergo impacted third molar extraction. All the subjects were randomly divided into two study groups as follows:

**Group I:** Administration of Pre-operatively Intramuscular Dexamethasone.

**Group II:** Administration of Post-operatively Intramuscular Dexamethasone.

All the surgical procedures were carried under the hands of skilled and experienced oral surgeons. Routine post-operative home care instruction was given to all the patients along with antibiotic coverage. Patients were recalled on the 7<sup>th</sup> day and sutures were removed. Clinical examination was done. Data was analysed by using SPSS software.

**Table 1: Descriptive results of age (years)**

Age (years)	Group I	Group II
Mean	26.3	25.2
SD	3.2	3.8
t-statistics		-118
p- value		0.336

**Table 2: Descriptive statistics for swelling (cm)**

Swelling	Group I	Group II	p- value
Pre-operative swelling (cm)	12.8	12.7	0.35
Post-operative 1 <sup>st</sup> day swelling (cm)	12.1	14.1	0.01*
Post-operative 3 <sup>rd</sup> day swelling (cm)	13.2	14.9	0.02*
Post-operative 7 <sup>th</sup> day swelling (cm)	12.2	12.5	0.74

\*: Significant

**Table 3: Descriptive statistics for mouth opening (cm)**

Mouth opening	Group I	Group II	p- value
Pre-operative swelling (mm)	48.2	49.5	0.36
Post-operative 1 <sup>st</sup> day swelling (mm)	35.6	31.5	0.001*
Post-operative 3 <sup>rd</sup> day swelling (mm)	41.2	35.2	0.001*
Post-operative 7 <sup>th</sup> day swelling (mm)	48.6	47.6	0.11

\*: Significant

## RESULTS

Mean age of the patients of group A and group B was 26.3 years and 25.2 years respectively. 56 percent of the patients of the group I and 52 percent of the patients of group II were males while the remaining were females. Mesio-angular impacted teeth were seen in 50 percent of the patients of group I and 60 percent of the

patients of group II. Vertical impacted teeth were seen in 20 percent of the patients of group I and 26 percent of the patients of group II. Among the patients of group I, mean mouth opening during preoperative period, postoperative 1<sup>st</sup> day, postoperative 3<sup>rd</sup> day and postoperative 7 was 48.2 mm, 35.6 mm, 41.2 mm and

48.6 mm respectively. Among the patients of group II, mean mouth opening during preoperative period, postoperative 1<sup>st</sup> day, postoperative 3<sup>rd</sup> day and postoperative 7<sup>th</sup> day was 49.1 mm, 30.8 mm, 34.7 mm and 48.8 mm respectively.

Mean mouth opening was significantly lower among patients of group II at postoperative 1<sup>st</sup> day and at postoperative 3<sup>rd</sup> day. However, at postoperative 7<sup>th</sup> day, no significant difference was observed in terms of mouth opening in between both the study groups.

Among the patients of group I, mean swelling during preoperative period, postoperative 1<sup>st</sup> day, postoperative 3<sup>rd</sup> day and postoperative 7 was 12.8 cm, 12.1 cm, 13.2 cm and 12.2 cm respectively. Among the patients of group II, mean swelling during preoperative period, postoperative 1<sup>st</sup> day, postoperative 3<sup>rd</sup> day and postoperative 7<sup>th</sup> day was 12.7 cm, 14.1 cm, 14.9 cm and 12.5 cm respectively.

Mean swelling was significantly higher among patients of group II at postoperative 1<sup>st</sup> day and at postoperative 3<sup>rd</sup> day. However, at postoperative 7<sup>th</sup> day, no significant difference was observed in terms of swelling in between both the study groups.

## DISCUSSION

In the present study, mean age of the patients of group A and group B was 26.3 years and 25.2 years respectively. Among the patients of group I, mean mouth opening during preoperative period, postoperative 1<sup>st</sup> day, postoperative 3<sup>rd</sup> day and postoperative 7 was 48.2 mm, 35.6 mm, 41.2mm and 48.6mm respectively.

Among the patients of group II, mean mouth opening during preoperative period, postoperative 1<sup>st</sup> day, postoperative 3<sup>rd</sup> day and postoperative 7<sup>th</sup> day was 49.1 mm, 30.8 mm, 34.7 mm and 48.8 mm respectively. Mean mouth opening was significantly lower among patients of group II at postoperative 1<sup>st</sup> day and at postoperative 3<sup>rd</sup> day. However, at postoperative 7<sup>th</sup> day, no significant difference was observed in terms of mouth opening in between both the study groups.

Moore PA et al compared the analgesic efficacy and the reduction in trismus of preoperative rofecoxib, intraoperative dexamethasone, and both rofecoxib and dexamethasone following third molar extraction surgery. They concluded that the use of intraoperative dexamethasone is an effective therapeutic strategy for limiting trismus following surgical removal of impacted third molars. The combination of preoperative rofecoxib 50 mg and intraoperative dexamethasone 10 mg was most effective in minimizing pain and trismus following third molar surgery.<sup>11</sup> Tiwana PS et al compared recovery for clinical and health-related quality of life (HRQOL) outcomes after third molar surgery in patients predicted to be at risk for delayed recovery, treated with or without intravenous (IV) corticosteroids at surgery. In the corticosteroid group, 6 patients (10%) had 1 postsurgery visit with treatment. In the control group without corticosteroids, 17 patients (28%) had at least 1 postsurgery visit with treatment ( $P = .01$ ). Compared with the control group, nausea tended to bother patients less on postsurgery day 1 ( $P = .07$ ); sleep was improved on postsurgery days 1 through 4 ( $P < .05$ ). Though not statistically significant, corticosteroids reduced the patients' reported recovery by at least 1 day for pain, lifestyle, and oral function. Administration of IV corticosteroids before third molar surgery without antibiotics does not hamper clinical recovery even when

healthy adult patients are predicted to have delayed recovery.<sup>12</sup> In the present study, among the patients of group I, mean swelling during preoperative period, postoperative 1<sup>st</sup> day, postoperative 3<sup>rd</sup> day and postoperative 7 was 12.8 cm, 12.1 cm, 13.2 cm and 12.2 cm respectively. Among the patients of group II, mean swelling during preoperative period, postoperative 1<sup>st</sup> day, postoperative 3<sup>rd</sup> day and postoperative 7<sup>th</sup> day was 12.7 cm, 14.1 cm, 14.9 cm and 12.5 cm respectively. Mean swelling was significantly higher among patients of group II at postoperative 1<sup>st</sup> day and at postoperative 3<sup>rd</sup> day. However, at postoperative 7<sup>th</sup> day, no significant difference was observed in terms of swelling in between both the study groups.

Graziani F et al studied the effect of endo-alveolar and sub-mucosal administration of dexamethasone sodium phosphate to prevent inflammatory sequelae after surgical removal of lower third molars. A multivariate analysis revealed that treatment and osteotomy time were both significantly positively associated with the degree of postoperative trismus and edema. Other baseline classification variables (e.g., molar classification) were also predictive of the degree of change in all clinical parameters. Test sites treated (any steroid application) showed greater reductions in all clinical parameters recorded compared to control. No statistically significant differences were observed between the three test groups.<sup>13</sup>

## CONCLUSION

Present study concludes that better post-operative therapeutic effects are achieved by pre-operative administration of intramuscular injection of dexamethasone as compared to post-surgical administration in impacted third molar surgeries. Further studies are recommended.

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