



A CLINICAL STUDY ON THERAPEUTIC EFFECT OF PREOPERATIVE ORAL PREDNISOLONE ON CLINICAL POSTOPERATIVE SYMPTOMS AFTER SURGICAL EXTRACTIONS OF MANDIBULAR THIRD MOLARS

Dr Mohammed Israr Ul Khaliq

(Oral & Maxillofacial Surgery) Dental Surgeon , Govt. District Hospital Rajouri, J&K , India.

Dr Syed Wakeel

MDS (Oral & Maxillofacial Surgery)

ABSTRACT

Aim: The purpose of this study was to evaluate the preoperative therapeutic effect of oral 20 mg prednisolone on post operative complications like edema, limited mouth opening and pain following third molar surgery . **Material & methods:** Hundred patients with bilateral mandibular third molar impacted teeth were included in this study. One side of the patient last mandibular molar either right or left was allocated randomly as control and the other side as study group. Study group received 20mg prednisolone one hour before surgical extraction. Facial edema and maximal inter incisal distance were measured preoperatively , at 3rd and 5th postoperative days. Pain was measured from the patients' response to a visual analogue scale. **Results:** The steroid group showed significant reduction in edema and pain compared with the control group at all intervals. 20mg prednisolone resulted in significantly less limited mouth opening than controls on day 3 postoperatively but there was no significant difference among the groups afterwards. **Conclusion:** Steroid is effective in reducing edema, limited mouth opening and pain after extraction of impacted mandibular molar teeth.

KEYWORDS : corticosteroids; third molar; postoperative sequels.

Introduction

The surgical extraction of impacted mandibular third molars is one of the most commonly performed procedures in oral surgery. Patients experience a range of uncomfortable symptoms after extraction associated with various postoperative sequelae including pain, trismus, facial oedema, and functional discomfort of the oral cavity and because of muscular oedema and spasm[1-4]. These post surgical complications are due to postoperative inflammatory response and the use of corticosteroids has gained wide acceptance. Corticosteroid such as prednisolone may inhibit the initial step in the synthesis of prostaglandins, leukotrienes and thromboxane related substances by inhibiting the conversion of phospholipids into arachidonic acid with a reduction of fluid transudation and therefore edema[5]. Over several decades many studies have reported the effectiveness of corticosteroids given before or just after removal of third molars in improving recovery[4,6,10]. A single preoperative or postoperative intra-muscular dose gives good plasma concentrations of the drug with prolonged anti-inflammatory action[11]. Since prednisolone has been shown to reduce post operative edema, it was decided to investigate the specific effects of prednisolone on swelling, limited mouth opening and pain following extraction of impacted wisdom tooth.

Material And Methods

Hundred patients were enrolled in this study, who presented themselves for extraction of bilateral impacted wisdom teeth. All patients were aged 20 to 30 and had no specific medical history or clinically significant findings, such as mandibular third molar infections. The mandibular third molars were all in a full or partial bony impacted state of more than half a crown. Patients with contraindication to steroids like Peptic ulcer, diabetics, bacterial infections, history of thromboembolic events, glaucoma, psychosis, patients taking other medications chronically and pregnant ladies were excluded from the study. The study group received steroids 20mg prednisolone orally one hour before surgery, while the control received no such medication. Extractions of the two impacted teeth (one side study group and other side control) were carried out at 45 days interval. All patients were operated under local anesthesia by the author. All patients were given Amoxycillin with clavulinc acid 625mg 12 hourly orally for 5 days, and ibuprofen 400mg orally for analgesia. Facial edema was evaluated by measuring the distance from the corner of the mouth to the ear lobe and the distance from the outer canthus of the eye to the angle of the mandible. The preoperative sum of the two values in millimeters was taken as the baseline for that side. A single examiner recorded edema, mouth opening and pain before and after each surgical extraction of wisdom tooth. Clinical measurements were performed on 3rd and 6th days after the surgery. Limited mouth opening was recorded as the

difference in inter incisal distance at maximum mouth opening before and after the operation. Severity of pain perception was assessed via a simplified visual analogue scale (VAS), 100 mm in length, where '0' was marked as 'no pain' and '100' as the most severe pain imaginable[7].

Results

Among the 100 patients of bilaterally mandibular impacted wisdom teeth there were 74 males and 26 females . The age range was 20-30 and the mean age was 23 years.

Table 1: Age and Gender distribution

Age (yrs)	Mean age(yrs)	Male	Females
20-30	23	74	26

Total of 200 surgical extractions were performed, 100 in control group and 100 in steroid group. At follow-up no patients developed wound infection or serious post-operative complications and any drug side effect.

Table II: Mean measurements of mouth opening ,edema and pain among the groups.

Variables	Control group	Steroids group
Mouth opening (mm)		
Day 3	3.7	4.1
Day 5	4.2	4.8
Edema (mm)		
Day 3	1.1	.8
Day 5	1.8	0.2
Pain(VAS)		
Day 3	7.7	2.5
Day 5	5.8	0.8

VAS= Visual analogue scale

There was a significant reduction in edema both on 3rd and 5th post-operative days in study group as compared to controls. Limited mouth opening differed significantly between the study group and the control on 3rd post operative day but not on 5th day .There was also significant reduction in pain post-operatively in study group as compared to control group (Table II).

Discussion

Surgical removal of third molar teeth under local anesthesia is one of the most common carried out oral surgical procedure, usually associated with postoperative pain, swelling and trismus as direct and immediate consequences.

In this study we evaluated the efficacy of a single dose of prednisolone in the control of facial swelling, pain and trismus associated with the surgical removal of impacted third molars. This randomized, single-dose clinical study revealed that postoperative administration of 20 mg prednisolone is effective in modulating the intensity of both clinical parameters, pain and swelling, elicited by the surgical removal of impacted third molars pain and swelling. Perioperative use of corticosteroids is a pharmacological approach often used to limit postoperative edema, limited mouth opening, and pain after extraction of impacted wisdom tooth due to their suppressive action on transudation[11-12]. Numerous papers have supported their systemic use in third molar surgery[8,11,15]. Few studies have objectively evaluated the effect of prednisolone as an intramuscular injection in wisdom tooth surgery, although this route is the one most likely to be used when a steroid injection is prescribed in outpatients. Intramuscular dosing studies have suggested that this route can be effective if a single dose is given either preoperatively or postoperatively[2,5-6]. The effect may be dose-dependent. Some authors suggested using prednisolone 10mg for the best results[15].

In this study oral prednisolone resulted in significant reduction in swelling post-operatively. This was as highly significant on the 3rd postoperative day, while maximum facial edema is expected after six days[15]. Nevertheless, there are potential complications associated with perioperative corticosteroid use,[16] and standardized dosage and administration methods for steroids during third molar surgery have yet to be established. The result of this study is in agreement with those of previous studies[17-18].

Acute postoperative pain following wisdom tooth extraction is predominantly a consequence of inflammation caused by tissue injury [19]. Prednisolone in particular appears to decrease pain after surgery[20]. This study shows a significant decrease in patients' pain perception when comparing control to study group. Considerable research has addressed the use of steroids in patients undergoing extraction of the third molars[9-10].

Conclusion

In absence of contraindications for corticosteroid administration, the use of single-dose prednisolone appears to be a safe and effective method to reduce postoperative clinical symptoms in third molar surgery. So 20mg prednisolone given orally one hour before extraction of impacted wisdom tooth is an effective way of minimizing postoperative edema, limited mouth opening and pain.

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