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Original ARTICLE

Assessment of efficacy of Diclofenac Sodium and Mefenamic acid in patients undergoing mandibular third molar surgery: A clinical study

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ABSTRACT
Background: Management of pain following tooth extraction is a major concern. Pain is an adjuvant sequel to a surgical procedure which is commonly associated with inflammation. The present study compared diclofenac sodium and mefenamic acid in mandibular third molar surgery. **Materials & Methods:** The present study was conducted on 60 patients with impacted mandibular third molar requiring surgical extraction. Patients were divided into 2 groups, group I patients were prescribed 50 mg diclofenac sodium and group II patients were prescribed 500 mg mefenamic acid. All were advised to take these medications 3 times a day for 3 days. In both groups, pain in terms of VAS and mouth opening in mm was measured. **Results:** Group I received diclofenac sodium and group II received mefenamic acid. There were 25 males and 35 females I group I and 32 males and 28 females in group II. VAS pre- operatively in group I was 5.2 and in group II was 5.4 and after 3 days it was 2.1 in group I and 3.8 in group II. The difference was significant (P< 0.05). The mean mouth opening was 35.2 mm pre- operatively in group I and after 3 days was 45.1 mm. In group II was 35.8 mm pre- operatively and 41.3 mm after 3 days. The difference was significant (P< 0.05). **Conclusion:** Authors found that diclofenac sodium found to be effective than mefenamic acid in mandibular third molar surgery.
Key words: Diclofenac, Mefenamic acid, Third molar

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INTRODUCTION

An impacted wisdom tooth causes infection in the gum surrounding the tooth leading to pain and swelling. Surgical removal of wisdom teeth under local anaesthesia is widely carried out in dental practices but the procedure is invariably associated with postoperative pain, swelling and trismus, as a direct and immediate consequence of the surgical procedure.[1] Management of pain following tooth extraction is a major concern. Pain is an adjuvant sequel to a surgical procedure which is commonly associated with inflammation. Hence controlling postoperative pain and swelling is important so as to help the patient recover smoothly to normal functioning.[2]

However, it is also associated with variable post-operative consequences like pain, swelling and trismus.[3] It is now universal knowledge that steroids reduce post-operative complications. In spite of their obvious numerous benefits, their use is mostly limited by most surgeons due to their association with a host of potential side-effects, most of which are relative to mineralocorticoid activity and and/or chronic dosing regimens. Hypothalmic–pituitary-adrenal (HPA) axis suppression, which is a significant phenomenon only with chronic dosing, should not, however, be a contraindication to the use of steroids in third molar surgery.[4]

Corticosteroids are some of the most common pharmaceutical agents employed to manage these sequelae. Of these, methylprednisolone is a highly selective, intermediate acting, synthetic glucocorticosteroid, more potent than hydrocortisone and dexamethasone. Surprisingly, few studies have evaluated the use of oral methylprednisolone alone or in combination with popular non-steroidal anti-inflammatory drugs (NSAIDs), in spite of obvious benefits.[5] The present study compared diclofenac sodium and mefenamic acid in mandibular third molar surgery.

MATERIALS & METHODS

The present study was conducted in the department of Oral surgery. It comprised of 60 patients with impacted mandibular third molar requiring surgical extraction. All were informed regarding the study and informed consent was obtained prior to the surgery. Ethical clearance was obtained from institutional ethical committee.

General information such as name, age, gender etc. was recorded. Patients were divided into 2 groups, group I patients were prescribed 50 mg diclofenac sodium and group II patients were prescribed 500 mg mefenamic acid. All were advised to take these medications 3 times a day for 3 days. In both groups, pain in terms of VAS and moth opening in mm was measured. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Gender	Group I (Diclofenac Sodium)	Group II (Mefenamic acid)
Males	25	32
Females	35	28

Table I shows that group I received diclofenac sodium and group II received mefenamic acid. There were 25 males and 35 females I group I and 32 males and 28 females in group II.

Table II Comparison of VAS in both groups

Gender	Group I	Group II	P value
Pre- operatively	5.2	5.4	0.91
3rd day	2.1	3.8	0.05

Table II shows that mean VAS pre- operatively in group I was 5.2 and in group II was 5.4 and after 3 days it was 2.1 in group I and 3.8 in group II. The difference was significant (P< 0.05).

Graph I Comparison of VAS in both groups

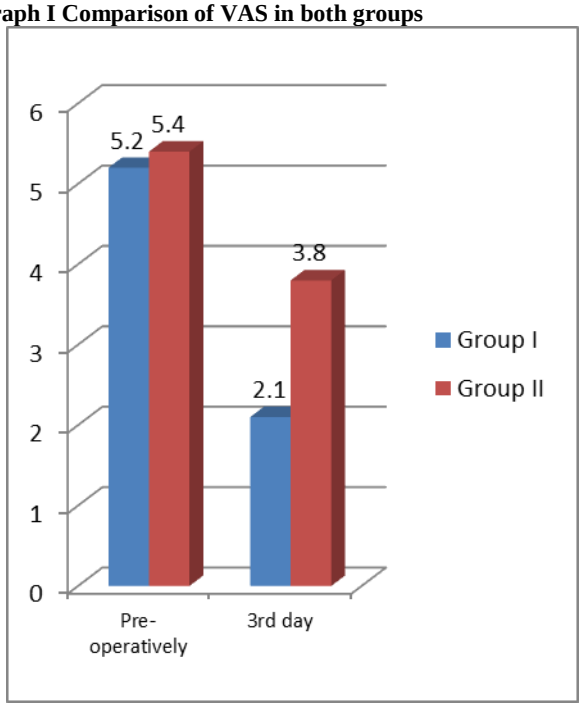
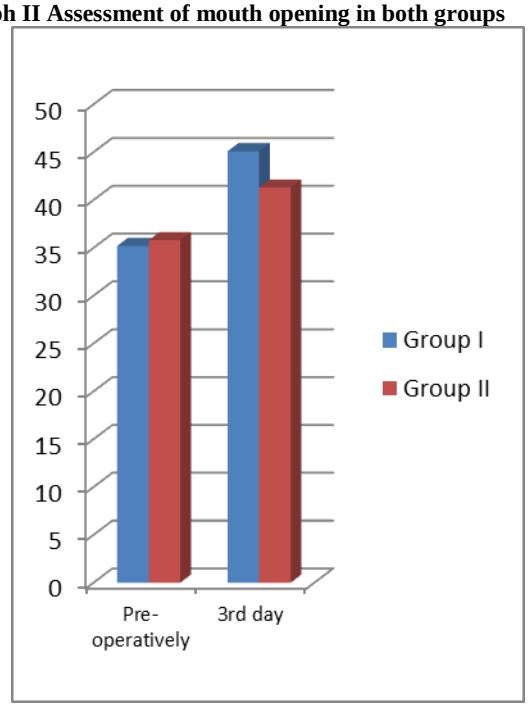


Table III Assessment of mouth opening in both groups

Mouth Opening (mm)	Group I	Group II	P value
Pre- operatively	35.2	35.8	0.91
3rd day	45.1	41.3	0.01

Table III shows that mean mouth opening was 35.2 mm pre-operatively in group I and after 3 days was 45.1 mm. In group II was 35.8 mm pre- operatively and 41.3 mm after 3 days. The difference was significant (P< 0.05).

Graph II Assessment of mouth opening in both groups



DISCUSSION

Impacted third molar surgery is one of the most frequently performed interventions in the field of oral and maxillofacial surgery and postoperative pain management is a vital issue.[6] Particularly, demonstration of the negative effects of insufficient administration of analgesia in cases of acute pain on cardiovascular, pulmonary and emotional systems aroused interest and highlighted the clinical importance of this subject.[7] During surgery, tissue damage, inflammation and other noxious stimuli trigger a range of changes in the peripheral nervous system. It has been well documented that non-steroidal anti-inflammatory drugs (NSAIDs) are effective in relieving postoperative pain. The NSAIDs affect the site of injury by acting peripherally and preoperative administration of NSAIDs reduces this tissue damage.[8] The NSAIDs inhibit the production of arachidonic acid metabolites such as prostaglandins and thromboxanes, which mediate the inflammatory process. These metabolites are produced locally at the site of cell injury and as such do not migrate to distant sites. In addition, NSAIDs alter peripheral nociceptors by reducing the local concentration of these allogenic chemicals, which are activated by peripheral tissue injury. Preoperative analgesia that can prevent postoperative pain is of great interest.[9] The present study compared diclofenac sodium and mefenamic acid in mandibular third molar surgery.

In present study, group I received diclofenac sodium and group II received mefenamic acid. There were 25 males and 35 females I group I and 32 males and 28 females in group II. The mean VAS pre- operatively in group I was 5.2 and in group II was 5.4 and after 3 days it was 2.1 in group I and 3.8 in group II.

Fisher et al[10] conducted a study in which sixty patients with impacted third molar who underwent surgical removal were

randomly allocated into three groups: group P (n = 20), group D (n = 20) and group L (n = 20). Group P received preoperatively 1 g paracetamol i.v., group D 75 mg diclofenac sodium i.m. and group L 8 mg lornoxicam i.v. Postoperative pain intensity, additional consumption of analgesics postoperatively and postoperative complications were compared among groups. Results: The groups were comparable for pain scores ($p < 0.05$). Maximum pain scores were recorded in postoperative 4th h in all groups (group L 22, 14–44 mm; group P 24, 13–43 mm; group D 14, 10–24 mm, $p = 0.117$). Patients experienced high satisfaction scores which were comparable among groups (group L 85, 75–100 mm; group P 87, 70–95 mm; group D 84, 77–98 mm, $p = 0.457$).

We found that mean mouth opening was 35.2 mm pre- operatively in group I and after 3 days was 45.1 mm. In group II was 35.8 mm pre- operatively and 41.3 mm after 3 days. Markovic et al[11] reported diflunisal as an agent having a long duration of analgesic action compared with acetaminophen; their patients rated their pain relief 12 h after medication. Local signs of inflammation, including pain, are usually examined after the removal of impacted third molars. This procedure has been widely used as a model for evaluation of analgesic efficacy of various drugs. Postoperative pain after the surgical removal of third molar teeth is a highly sensitive model to evaluate analgesic efficacy of NSAIDs, since the pain is confined to the surgical area with apparent inflammation. The analgesic effects of NSAIDs such as naproxen, meloxicam, rofecoxib, acetaminophen, diflunisal, ibuprofen, ketorolac have been reported using this pain model.[12]

CONCLUSION

From the above results, the authors concluded that diclofenac sodium found to be effective than mefenamic acid in mandibular third molar surgery.

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