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Tetracycline, tetracycline + gelatin sponge and placebo on postoperative pain after mandibular molar extraction

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Abstract---Background: Surgical removal of lower third molars is a common oral surgical procedure which causes more severe pain in comparison to the other types of oral surgery. The present study was conducted to compare tetracycline, tetracycline + gelatin sponge and placebo on postoperative pain after mandibular molar extraction. Materials & Methods: 90 patients undergoing mandibular third molar extraction of both genders were randomly divided into three groups of 30 each. Group I patients were treated with intrasocket tetracycline alone, group II patients were treated with intrasocket tetracycline + gelatin sponge and group III patients were treated without any intrasocket medicaments. The postoperative pain scores were evaluated at 24 hours, 48 hours, and 7 days postoperatively. Results: There were 16 males and 14 females in group I, 12 males and 18 females in group II and 10 males and 20 females in group III. The mean VAS at 24 hours in group I was 32.4, at 48 hours was 33.1 and at 7 days was 25.2, in group II was 28.5, 28.2 and 25.0 and in group III was 38.5, 39.1 and 35.7 at 24 hours, 48 hours and 7 days respectively. The difference was significant ($P < 0.05$). Conclusion: Tetracycline and gelatin sponge intrasocket placement can be considered a good adjuvant in reducing pain after routine dental extraction.

Keywords---Tetracycline, intrasocket, gelatin sponge.

Introduction

Surgical removal of lower third molars is a common oral surgical procedure which causes more severe pain in comparison to the other types of oral surgery and can consequently interfere with the patient's everyday life.¹ Dry socket is more frequently seen in mandibular molars compared to any other teeth. Alveolar osteitis more commonly known as "dry socket" is a frequent complication which occurs after extraction.² This condition remains a common postoperative problem as it results in severe postoperative pain. Repeated hospital visits can also be problematic to patients with this condition.³ AO is known to occur between 1 and 3 days after tooth extraction and literature believes that almost 95%–100% of all the cases have reported within a week. Pathogenesis of dry socket is not very well understood in the literature.⁴

Birn's published literature suggested that the etiology of this condition being an increase in the local fibrinolysis which further leads to disintegration of the blood clot in the socket. The pain experienced with it is debilitating and affects daily function.⁵ The anti-inflammatory property of tetracyclines can be useful in the reduction of postoperative sequelae following extraction.⁶ The present study was conducted to compare tetracycline, tetracycline + gelatin sponge and placebo on postoperative pain after mandibular molar extraction.

Materials and Methods

The present study comprised of 90 patients undergoing mandibular third molar extraction of both genders. The consent was obtained from all enrolled patients. Data such as name, age, gender etc. was recorded. They were randomly divided into three groups of 30 each. Group I patients were treated with intrasocket tetracycline alone, group II patients were treated with intrasocket tetracycline + gelatin sponge and group III patients were treated without any intrasocket medicaments. The postoperative pain scores were evaluated at 24 hours, 48 hours, and 7 days postoperatively. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I
Distribution of patients

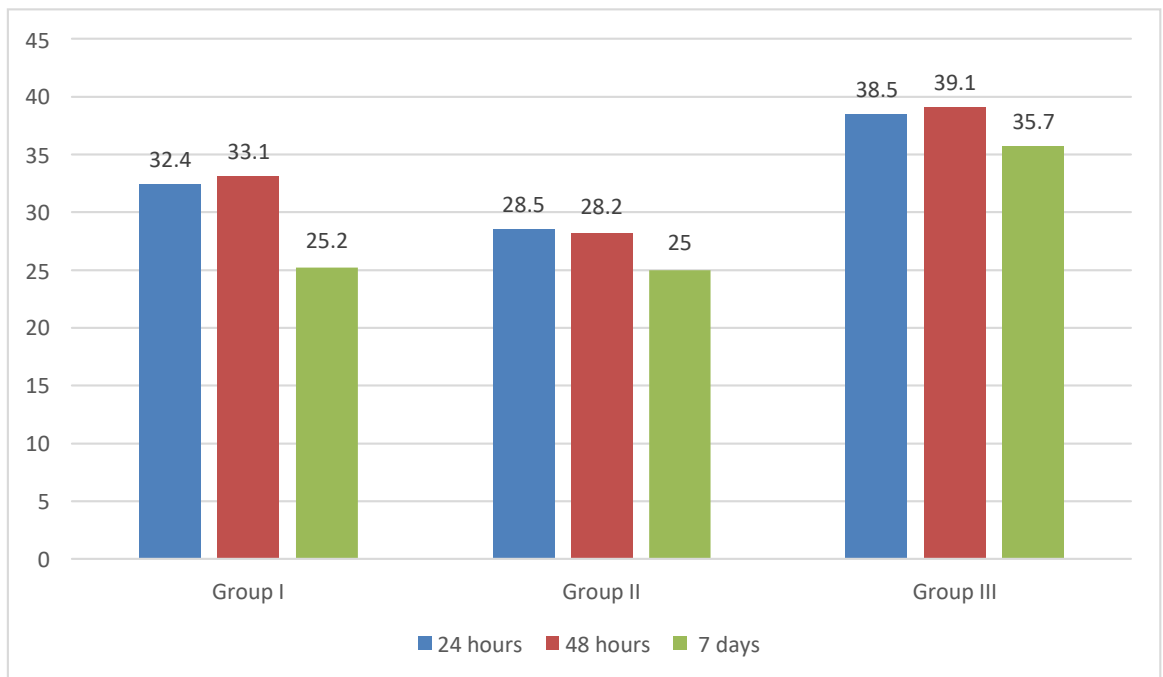
Groups	Group I	Group II	Group III
Method	intrasocket tetracycline alone	intrasocket tetracycline + gelatin sponge	control
M:F	16:14	12:18	10:20

Table I shows that there were 16 males and 14 females in group I, 12 males and 18 females in group II and 10 males and 20 females in group III.

Table II
Assessment of pain score

Groups	24 hours	48 hours	7 days	P value
Group I	32.4	33.1	25.2	0.05
Group II	28.5	28.2	25.0	0.04
Group III	38.5	39.1	35.7	0.17

Table II, graph I shows that mean VAS at 24 hours in group I was 32.4, at 48 hours was 33.1 and at 7 days was 25.2, in group II was 28.5, 28.2 and 25.0 and in group III was 38.5, 39.1 and 35.7 at 24 hours, 48 hours and 7 days respectively. The difference was significant ($P < 0.05$).



Graph I Assessment of pain score

Discussion

Postoperative pain control has been the subject of continuous research in the field of oral and maxillofacial surgery, since the pain can interfere with patient's quality of life.⁷ Several authors have studied ways to control it: such as the use of long-acting local anesthetics to decrease analgesic intake, the preoperative prescription of steroidal anti-inflammatory for less edema and pain and the postoperative use of soft tissues laser for better healing and decreased postoperative pain and inflammation.^{8,9} The present study was conducted to compare tetracycline, tetracycline + gelatin sponge and placebo on postoperative pain after mandibular molar extraction.

We found that there were 16 males and 14 females in group I, 12 males and 18 females in group II and 10 males and 20 females in group III. Patil V et al¹⁰ divided patients into three groups of 30 patients each requiring mandibular molar extractions which were randomly selected with intrasocket placement of tetracycline, tetracycline plus gelatin sponge, and placebo control after extraction. A small piece of collagen membrane was used on the superior surface of the socket after the placement of the medicament in Group A and Group B. The postoperative pain scores were evaluated at 24 h, 48 h, and 7 days postoperatively. Ninety patients requiring mandibular molar teeth extraction were enrolled as the study participants. Forty-two patients (55.26%) were male and 34 (44.73%) were female. Tetracycline alone and tetracycline + gelatin sponge group shows no statistical significant difference in reducing postoperative pain after 7 days, but the pain score values were less in Tetracycline + gelatin sponge group. The comparison between tetracycline alone and control group showed no significant difference observed between the groups at 24 h but showed statistically significant difference between the groups after 48 h and 7 days, whereas comparison between tetracycline + gelatin sponge and control group showed statistically significant difference between the groups after 24 h, 48 h, and 7 days ($P = 0.009, 0.001, \text{ and } 0.017$, respectively).

We observed that mean VAS at 24 hours in group I was 32.4, at 48 hours was 33.1 and at 7 days was 25.2, in group II was 28.5, 28.2 and 25.0 and in group III was 38.5, 39.1 and 35.7 at 24 hours, 48 hours and 7 days respectively. A study conducted by Hussain and Alnahr¹¹ on postoperative pain after intraalveolar extraction concluded that mild pain was experienced by 38.6% cases, whereas 12.8%, 22% experienced shooting pain, constant pain at evening of extraction with 15.2% cases still suffering mild pain after 7 days too. Julius et al suggested that piece of Gelfoam impregnated with 0.5 ml of Terra-Cortril which combined with oxytetracycline and hydrocortisone can be used as intrasocket medicament to reduce the incidence of localized osteitis.

Swanson et al¹² evaluated the effectiveness of topical tetracycline used as a suspension in a square of gelatin sponge and placed in the sockets of extracted mandibular third molars for the prevention of dry socket. An assessment of the relationship between the amount of bone relief (trauma) incidental to the surgery and the occurrence of dry socket also was made. Dry socket occurred in 20.4% of the placebo-treated sockets, whereas the incidence in the tetracycline-treated sockets was 3.9%. No correlation was observed between the amount of bone relief attendant to the surgery and the incidence of dry socket. It is concluded that tetracycline is an effective prophylaxis for fibrinolytic alveolitis.

Conclusion

Authors found that tetracycline and gelatin sponge intrasocket placement can be considered a good adjuvant in reducing pain after routine dental extraction.

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