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Effect of platelet-rich fibrin on alveolar osteitis incidence following surgical removal of impacted mandibular third molars: A comparative study

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Abstract

Background: Postoperative morbidity after extraction of the impacted mandibular third molar is inevitable. Alveolar osteitis is a painful non-healed socket commonly associated with the surgical removal of impacted lower wisdom tooth. Many scientific researches attempted to prevent the occurrence of alveolar osteitis following the surgical operation by introducing or applying new materials inside the extraction socket. Platelet rich fibrin is a biological complex fibrin matrix where autologous platelets and leucocytes are present, used to enhance tissue healing process and reduce the early adverse effects of the inflammation.

Aims: To evaluate the effect of platelet rich fibrin on the incidence of alveolar osteitis and the tissue inflammatory reaction including pain, swelling, and trismus following the surgical removal of impacted mandibular third molar.

Materials and methods: A total number of 50 impacted mandibular third molars were surgically removed from 45 patients who met the inclusion criteria of this clinical prospective study (21 males and 24 females) with age ranged from 16-41 years. The impacted teeth were divided into two group. In control group (25 cases), standard surgery was performed; while in the study group (25 cases), platelet rich fibrin was placed inside a fresh extraction socket. The patients' age, gender, side of impaction, oral hygiene condition, impacted tooth classification, time of the surgical procedure, and surgical difficulty (Pederson index) were recorded. Trismus and swelling were assessed at baseline and at the 3rd and 8th day after surgery. Pain was scored by the patient daily over 7 days using numeric rating scale. Alveolar osteitis occurrence was evaluated at 2nd and 7th day. Swelling was assessed using swelling measurement device. Statistical analysis was completed using contingency coefficient, independent t-test, paired t-test, and Levene's test.

Results: The study showed that age, gender, side of impaction, oral hygiene condition, surgical difficulty, and the time of procedure in both control and study groups were nearly equally distributed with non-significant difference, indicating that the study sample were comparable. At the 1st follow up checking: Trismus (P-value = 0.834) and Swelling (P-value = 0.592) were non-significant between the two groups. Alveolar osteitis had overall incidence of 4% occurred only in the control group but not to a significant level. Postoperative pain from the 1st to 7th day had no significance difference in both groups. At the 2nd follow up appointment there was no significant difference regarding trismus, swelling, and incidence of alveolar osteitis. Evaluation the surgical site revealed a better reduction in the blood clot disintegration in the study group compared to the control group.

Conclusion: Local application of platelet rich fibrin can reduce the incidence of alveolar osteitis but not to a significant level. Blood clot disintegration can be reduced in the surgical site after placement of the PRF into the socket. Platelet rich fibrin had no effect concerning postoperative pain, swelling, and trismus.