World Academy of Science, Engineering and Technology
International Journal of Medical and Health Sciences
Vol:19, No:01, 2025

Clinicoradiographic Evaluation of Polymer of Injectable Platelet-Rich Fibrin (i-PRF) and Hydroxyapatite as Bone Graft Substitute in Maxillomandibular Bony Defects: A Double-Blinded Randomized Control Trial

Authors : Naqoosh Haidry

Abstract : Objective & Goal: Enucleation of the maxillomandibular cysts will lead to the creation of post-surgical bone defects which may take more than a year for complete bone healing. The use of bone grafts is common to aid bone regeneration in large defects. The study aimed to evaluate the healing and bone formation capabilities of polymer of injectable platelet fibrin (i-PRF) and hydroxyapatite (HA) as bone graft substitute in maxilla-mandibular postsurgical defects compared to hydroxyapatite alone. The primary objective was to find out the clinical and radiological assessment of healing postoperatively and compare the outcome of both groups. Material and Methods: After surgical enucleation of 19 maxillomandibular cysts/tumors, either HA or HA+ i-PRF graft was adapted to the defect. Clinical outcome variables such as pain (VAS score), edema, and mucosal color were evaluated on postoperative days 01, 03, and 07 while radiological outcome variables such as volume of defect (cc), density of new bone (HU) on computed tomography were evaluated at 2nd and 4th month. The results obtained were tabulated and compared with the inferential analysis. Results: Clinical parameters seem to be better in the HA + i-PRF group, but the result was non-significant. Radiologically, the mean healing ratios were significantly greater in the HA + i-PRF group (63.5 ± 2.34 at 2nd month, 90.3 ± 7.32 at 4th month) compared to the HA group (57.2 ± 5.21at 2nd month, 80.8 ± 5.33 at 4th month). When comparing the mean density of new bone, there was a statistically significant difference with a mean difference of 95.2 HU more in the HA + i-PRF (623 HU ± 42.9) compared to the HA group (528 HU ± 96.5) in 2nd month. Conclusion: The polymer of i-PRF and HA prepared as the sticky bone yields faster and better bone healing in post-enucleation maxillomandibular bony defects as compared to hydroxyapatite alone based on radiological findings till four months.

Keywords : bone defect, density of new bone, hydroxyapatite, injectable platelet rich fibrin, maxillomandibular cysts, surgical defect
Conference Title : ICD 2025 : International Conference on Dentistry
Conference Location : Maldives, Maldives
Conference Dates : January 21-22, 2025