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Interpositional bone grafting using xenogenous bone blocks as inlays in the posterior mandible: A digital quantitative radiographic study

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Purpose: To radiographically assess the bone healing of bovine xenogenous bone blocks when used as inlays in the posterior mandible through measuring pixel grey values of bone graft regions and comparing them with preoperative normal bone values.

Materials and Methods: 9 Inlay bone graft procedures were performed on 9 patients in the posterior mandible using bovine xenogenous bone blocks as inlays and PiezoSurgery for osteotomy. Digital periapicals were performed in periods of (preoperatively, postoperatively, after 3 months and after 6 months) and the resulted radiographs were imported to Medical Digora software to measure pixel grey values in bone graft and normal bone:bone graft interface regions, also measuring pixel grey values in normal bone preoperatively as a reference for assessment. t-student's test was used at the level of significance P < 0. 05 and Pearson's correlation coefficient was calculated for statistical analysis.

Results: Pixel grey values in normal bone:bone graft interface regions increase after 3 months and decrease after 6 months of surgery (P-Value <0. 05) and pixel grey values in bone graft regions decrease after 3 months and increase after 6 months of surgery (P-Value <0. 05). Pixel grey values in these two regions still far from preoperative normal bone pixel grey values when compared after 6 months. There is a strong correlation between pixel grey values in these two regions, approx. 97% after 3 months and 88% after 6 months.

Conclusions: within the limitations of this study and based on the radiographic assessment, bovine xenogenous bone blocks used as inlays in the posterior mandible need more than 6 months to heal completely as normal bone and there is a strong correlation in pixel grey values between the bone graft and normal bone:bone graft interface regions.

Keywords: Inlay Bone Grafting, Bovine Xenogenous Bone Blocks, Digital Radiography, Pixel Grey Value and Piezosurgery.

Biography

Maher garduated from Damascus University - School of Dentistry (DDS) and specialized in Oral Medicine and Implantology (MSc) from the same university. Also, he is doing the Diploma Membership from the Royal College of Surgeons MFDSRCS(UK). Dr. Maher did a clinical master research in advanced implantology focusing on Interpositional bone grafting by using Piezoelectric Surgery. In Addition, he participated in several dental implant courses comprising all topics of Oral Implantology and organized by worldwide prominent dental implant systems. He was a clinical instructor in Oral Medicine and Radiology clinics in Damascus University - School of Dentistry and worked in many clinics in Syria and Jordan and currently he manages and works in the dental clinic in MedGate Center in Dubai.

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