



DOI: <http://dx.doi.org/10.21270/archi.v7i0.3910>

IMPROVEMENT OF PERI-IMPLANT BONE HEALING IN OSTEOPOROTIC RATS BY SURFACE COATING WITH PLASMA ELECTROLYTIC OXIDATION

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Tema: Clínica Odontológica

This study evaluated a new method of surface coating by plasma electrolytic oxidation (PEO) on dental implants installed on osteoporotic rats. 32 female Wistar rats were divided into four groups: OVX/PEO, OVX/AC, SHAM/PEO and SHAM/AC. The animal underwent to ovariectomy surgery (OVX; n=16) or fake surgery (SHAM; n=16) and after 90 days it was installed the AC (double acid-etching) implant in the left tibia and PEO implant in the right tibia of each animal. The animals were euthanized at six weeks after implants placement and the half of samples were destined to the histologic and immunohistochemistry analysis. The rest of samples were destined to the microtomographic and reverse torque analysis ($P < 0.05$). The histologic analysis showed a greater new bone formation to the PEO group compared to AC group. Regarding immunohistochemistry analysis, PEO groups showed greater bone bioactivity with higher labeling for proteins related with bone formation, such as, osteoprotegerin (OPG) and osteocalcin (OC) compared with AC groups ($p < 0.05$ - Tukey test). Reverse torque analysis (N.cm) showed higher values to PEO group ($p < 0.05$ - Tukey test). Regarding microtomographic analysis, OVX/AC group showed lower bone volume percent (BV.TV) ($p < 0.05$ - Tukey test). These results are encouraging for the surface coating by PEO, which presented great features for cellular viability and bone architecture on peri-implant healing of osteoporotic rats.

Descritores: Dental Implants; Osteoporosis; Ovariectomy.