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Biomechanical Parameters of Implants Placed with Osseodensification Versus Implants Placed with Under-drilling Osteotomy Techniques in Posterior Maxilla: A Comparative Clinical Study

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Abstract

BACKGROUND: To facilitate better implant survival rates in areas with clinically low bone density, osteotomy techniques that provide higher implant stability and improve bone quality are often recommended. The most widely used are under-drilling (UD) and osseodensification (OD). In the UD technique, the diameter of the final osteotomy drill is narrower than the diameter of the placed implant, whereas in the OD technique, special drills that rotate counter-clockwise to condense and densify the bone are used.

AIM: The aim of this study was to evaluate the effect of two different implant osteotomy methods – UD versus osseodensification (OD) in terms of implant stability during the period of osseointegration in the posterior maxillary region.

MATERIAL AND METHODS: This prospective randomized clinical study included 22 patients who received a total of 37 implants in the posterior maxillary region. They were divided into two groups: In 11 patients, 18 implants were placed using the under-drilling method (UD), while the other 11 patients received 19 implants using the osseodensification method (OD). Within the OD group, 10 implants were placed in areas with the initial height that was insufficient to accommodate implants with a minimal length of 8 mm. In these areas, crestal sinus elevation without bone graft use was performed simultaneously with implant placement, according to the osseodensification

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