



Implant stability in the posterior maxilla: a controlled clinical trial

ABSTRACT

Implant stability plays a fundamental role in the clinical success. Primary stability comes from the mechanical engagement of the fixture with cortical bone and is determined by the quantity and quality of the available bone at implant placement, the surgical procedure and the dimension and design of the fixture. Secondary stability comes from regeneration and remodelling of the bone and tissue around the implant after its insertion and is related to primary stability. The purpose of this controlled clinical trial was to investigate the evolution from primary to secondary stability of dental implants, placed in the human posterior maxilla, in three different groups: patients with native bone, patients with partially regenerated bone, and patients with nearly totally regenerated bone. In all procedures, the grafting heterologous materials used were particulate prehydrated bone (OsteoBiol® mp3®, TecnoSS®, Giaveno, Italy) and collagen membranes (OsteoBiol® Evolution, TecnoSS®). 133 (Anyridge®, Megagen) implants were installed in 59 patients in the posterior areas of the maxilla. The primary implant stability was measured at placement, by means of insertion torque (IT) and implant stability quotient (ISQ). The evolution from primary to secondary implant stability was studied, by means of ISQ, at different times (15, 30, 45, and 60 days). 52 implants had satisfactory high primary stability (IT \geq 45 N/cm; ISQ \geq 60). Significant differences were found for IT and ISQ between the groups (A, B, and C) but no differences between Groups B and C were found. However, no drops were reported in the median ISQ values during the healing period.

CONCLUSIONS

Further, long-term controlled studies are needed to confirm the outcomes emerging from the present work as it presents limitations, such as the limited number of patients treated and fixtures inserted; in particular, only a few implants were inserted in Group C (nearly totally regenerated bone), and this is a major limitation of the present work, since Group C was probably the most interesting to investigate, and it would have been appropriate to have inside it a higher number of fixtures. Anyway, the evaluation of the primary and secondary implant stability may contribute to higher implant survival/success rates in critical areas, such as the regenerated posterior maxilla.

DEHISCENCES AND FENESTRATIONS

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