

Influence of Abutment Design on Clinical Status of Peri-Implant Tissues

Type: Article

Abstract:

Objective: To compare the clinical soft tissue responses around implant tooth-supported 3-unit bridges using tapered abutments with those using butt-joint abutments. **Methods:** In a split-mouth design study, 8 mm Ankylos (Dentsply Friadent, Germany) implants were placed in the second mandibular molar region of 8 adult *Macaca fascicularis* monkeys about 1 month after extraction of all mandibular molars. After 3 months of submerged healing, 3-unit metal bridges were constructed. Clinical data was collected by the author who was blind to the abutment selections. Implants were clinically evaluated using Waite plaque index, sulcus bleeding index, probing pocket depth (PPD), probing attachment loss (PAL), and width of keratinized mucosa at baseline (BL) and 3-month and 6-month intervals. Stability of the implant was assessed using Periotest device at BL and after 6 months. **Results:** At BL, all the clinical variables did not differ statistically between the tapered and the butt-joint groups except for PPD ($P < 0.05$), where the mean PPD was greater in the butt-joint group (2.75 ± 1.02 mm) as compared with the tapered group (1.97 ± 0.65 mm). At the 3-month assessment, there was no difference in all clinical variables. After 6-month loading, no significant difference between these 2 groups was detected in all these variables, with the exception of PAL ($P = 0.05$) where mean PAL was greater for implants with the butt-joint abutments (0.91 ± 0.86 mm) in comparison with the tapered abutments (0.50 ± 0.88 mm), and mean Periotest values (PTVs) that indicate the tapered-abutment implants ($PTV = -4.5 \pm 1.60$) were more stable than butt-joint-abutment implants ($PTV = -1.5 \pm 3.59$) with $P < 0.05$. **Conclusions:** The differences in these mucogingival responses between these 2 groups at BL (during seating of abutments, especially of butt-joint abutments) and after 6-month loading indicated enhanced peri-implant soft tissue stability around the tapered abutments of this system. There was also enhanced-PTV in the test group for clinical mobility assessment after 6-month loading. (Implant Dent 2009; 18:438-446)

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