

Dimensional profile of oral mucosa around combined tooth-implant-supported bridgework in macaque mandible

Type:

Article

Abstract:

Purpose: A stable oral mucosa is crucial for long-term survival and biofunctionality of implants. Most of this evidence is derived from clinical and animal studies based solely on implant-supported prosthesis. Much less is known about the dimensions and relationships of this soft tissue complex investing tooth-implant-supported bridgework (TISB). The aim here was to obtain experimental evidence on the dimensional characteristics of oral mucosa around TISB with two different abutment designs. **Methods:** Sixteen 3-unit TISB were constructed bilaterally in the mandible of eight adult *Macaca fascicularis*. An implant system with a standard progressive thread design was the bone-anchoring implant in the second mandibular molar region while the second mandibular premolar served as the natural tooth abutment. Eight implants were connected with the tapered abutment, the remaining with butt-joint abutment, in a split-mouth design. These were allowed to functional load for 6 months before sacrifice for histomorphometry. Six soft tissue indices were scored: coronal gingival mucosa-to-implant top distance (DIM); sulcus depth (SD); junctional epithelium (JE); connective tissue contact (CTC); implant top to first bone-to-implant contact distance (DIB); and biologic width (BW SD+JE+CTC); corresponding parameters in the natural tooth abutment were also measured. **Results:** Mucosal dimensions in tapered implants (*BW 3.33 +/- 0.43; SD 1.03 +/- 0.24; JE 1.08 +/- 0.13; CTC 1.22 +/- 0.23mm) were comparable with those of natural tooth abutments (BW 3.04 +/- 0.18; SD 0.93 +/- 0.1; JE 0.78 +/- 0.1; Attachment 1.33 +/- 0.09mm), but differed from butt-joint implants (*BW 4.88 +/- 1.24; SD 1.47 +/- 0.38; JE 1.49 +/- 0.4; CTC 1.92 +/- 0.93 mm) (*P<0.05). **Conclusions:** Results suggested that soft tissue dimensions around TISB are influenced by the implant-abutment interface and abutment material used. Mucosa investing tapered abutment tends to recapitulate soft tissue physiologic dimensions of natural tooth.

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