

Title:	Comparative assessment of the interfacial soft and hard tissues investing implants and natural teeth in the macaque mandible
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Author:	Siar CH, Toh CG, Romanos GE, Ng KH
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Abstract:	<p>Objectives The aim of this study was to conduct a comparative qualitative and quantitative assessment of the interfacial soft and hard tissues investing implants and natural teeth.</p> <p>Materials and methods The test sample consisted of six adult healthy male <i>Macaca fascicularis</i> with three-unit splinted crowns, each crown supported by an Ankylos screw-shaped titanium implant. These implants were placed in the mandibular premolar-second molar region, one side by an immediateloading (IL) and the other by delayed-loading (DL) protocol. The animals were sacrificed after 3 months of functional loading. Another two monkeys with natural dentition served as controls. Nondecalfified sections were prepared for assessment of optical intensities (OI) under a confocal laser scanning microscope.</p>

Results In both the test (IL and DL) and control, the soft tissue complexes demonstrated a highly fluorescent keratinized layer and diminished cytoplasmic and enhanced membranous fluorescence in the remaining epithelium. Peri-implant mucosa was further characterized by an intense fluorescence at the junctional epithelium-implant interface and in the stromal mononuclear infiltrate. Connective tissue contact and periodontal ligament were weakly fluorescent. In hard tissues, a high fluorescence was observed in peri-implant woven bone and along the implant-bone interface. Mean OI was significantly higher in peri-implant woven bone than around teeth ($P < 0.05$). In the remaining soft and hard tissue complexes, no significant differences in mean OI between the test and control were observed ($P > 0.05$).

Conclusions Present findings suggest that peri-implant woven bone is highly mineralized, while the peri-implant and gingival mucosa share structural similarities.

Clinical relevance Optical intensities of interfacial tissues investing implants and teeth are related to their biological properties.

Keyword:

dental implant; interfacial tissues; natural teeth; optical intensity; laser-scanning microscopy; transmission electron-microscopy; immediately loaded implants; titanium implants; mucosal attachment; biological basis; dental implant; animal-models; bone tissue; dogs

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