

Histologic and histomorphometric evaluation of peri-implant bone subjected to immediate loading: an experimental study with *Macaca fascicularis*.

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Abstract

PURPOSE: Immediately loaded splinted implants can become osseointegrated when they are placed in the anterior part of the mandible. The concept of immediate loading has not been well examined in the posterior mandible. The aim of this study was to evaluate the hard tissue reactions around immediately loaded implants placed in the posterior mandible in the monkey model.

MATERIALS AND METHODS: Six adult *M. fascicularis* monkeys were used in this study. Thirty-six Ankylos implants (Degussa Dental, Hanau-Wolfgang, Germany) were placed after extraction of the second premolar, first, and second molar teeth and complete healing of the sockets. Control (C) group implants were placed and, after osseointegration, were loaded for 1 month using temporary acrylic resin prostheses and later for 2 months using splinted metal crowns. In the contralateral region of the mandible, test (T) group implants were placed and loaded immediately with the same sequence as carried out for the C implants. After sacrifice of the animals, specimens were examined histologically and evaluated histomorphometrically.

RESULTS: All implants were osseointegrated. Compact, cortical bone in contact with the implant surface without any gaps or connective tissue formation was demonstrated.

DISCUSSION: Histomorphometric findings of the bone-implant-contacts showed no significant differences between the T and C group implants. Peri-implant mineralized bone areas presented statistically significant differences and showed a higher density of bone between the threads of immediately loaded implants ($P < .05$).

CONCLUSIONS: Immediately loaded splinted implants in the posterior mandible can become osseointegrated with a hard tissue peri-implant response similar to that of delayed loaded implants. Moreover, immediate loading seems to increase the ossification of the alveolar bone around endosseous implants.

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