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Reimplantation of Dental Implants following Ligature-Induced Peri-Implantitis: A Pilot Study in Dogs”*

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ABSTRACT.



Forty-five days from ligature placement, the implants were mechanically removed using counter rotation with a ratchet and were reimplanted (without any decontamination) in adjacent pristine zones (right implant). In sites where implants were removed, new, wider-diameter implants were placed in the peri-implantitis sockets (left implant).



Histologic section of a new implant placed in a peri-implantitis site. Note the high bone-to-implant contact area.

Objectives

This preliminary investigation aimed to evaluate the potential of contaminated implants to reosseointegrate into pristine sites and, in addition, to assess the potential of osseointegration of new implants in peri-implantitis sockets in a canine model.

Methods

All mandibular premolars were bilaterally extracted from two mongrel dogs. Following 12 weeks of healing, two dental implants were inserted on each hemiarch. Forty-five days following implant placement, a silk ligature secured with cyanoacrylate was placed around the implants' cervical region in order to induce peri-implantitis. After another 45 days from ligature placement, the implants were mechanically removed using counter rotation with a ratchet and were reimplanted without any decontamination (neither rinsing nor chemical or mechanical cleaning) in adjacent pristine zones. In sites where implants were removed, new, wider-diameter implants were placed in the infected sockets. Forty-five days following reimplantation surgery, the dogs were sacrificed; nondecalcified specimens were processed and toluidine blue stained for morphologic and morphometric (bone-to-implant contact [BIC]) assessment under an optical microscope.

Results

In dog 1 all the implants (both in the pristine and in the infected sites) survived and osseointegrated while in dog 2, six out of eight implants failed to osseointegrate and exfoliated. Overall, the mean BIC of all implants was 51.08% (SD 20.54). The mean BIC for the infected implants placed into pristine sites was 51.48% \pm 26.29% (SD) and the mean BIC for the new implants in peri-implantitis socket was 50.58% \pm 14.27% (SD).

Conclusion

Within the limitations of this preliminary investigation, especially the small number of animals, osseointegration seems to be achievable both in infected sites and around contaminated implant surfaces.

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