

R-14. Histomorphology of Guided bone Regeneration on Dental implant Dehiscence defects in Beagle Dogs

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Background

Dehiscence bone defects, frequently observed on dental implants placed in periodontitis-affected alveolar bone or extraction sockets were treated with -tricalcium phosphate and chitosan membrane for guided bone regeneration, and the new bone formation on the treated sites were studied.

Materials and Methods

Beagle dogs 15 to 18 month-old weighing approximately 15kg were used for the experiment. First to fourth mandibular premolars were extracted, and the post extraction alveolar bone surface was planed. After 8 weeks of healing, 3 by 4 mm dehiscence defects were created using straight fissure burs. Total of 16 oxidized titanium surface implants were placed on the bone defects of the subjects, two on each side. Control sites were treated with implants only. Experimental Group 1 sites were treated with implants and chitosan membrane. Experimental Group 2 sites were treated with implants, -tricalcium phosphate and chitosan membrane. Experimental Group 3 sites were treated with implants, -tricalcium phosphate, autogenous bone and chitosan membrane. The animals were sacrificed 12 weeks after implant placement, and the specimens from the treated sites were evaluated histologically.

Results

No signs of acute inflammation were observed on the unexposed implant surface. Sites treated with chitosan membrane-only showed limited bone formation similar to control sites. Greater amount of bone formation was observed on sites treated with

-TCP + membrane or autogenous bone + -TCP + membrane. Sites with early wound exposure showed signs of acute inflammation and extensive bone loss with little to no new bone formation. Remnants of Chitosan membrane and -TCP encapsulated with connective tissue were observed during 12 weeks.

Conclusion

These results suggest that rigidity of chitosan membrane must be improved for space maintenance underneath the membrane in the treatment of dehiscence defects.

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