

A-1. Effect of recombinant human bone morphogenetic protein 2/absorbable collagen sponge(rhBMP-2/ACS)on Healing in 3-wall Intrabony Defects in Dogs

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Background: Recombinant human bone morphogenetic protein-2 (rhBMP-2) in an absorbable collagen sponge (ACS) carrier is being evaluated as candidate therapy for periodontal regeneration. The objective of this study was to evaluate regeneration of alveolar bone and cementum, and associated root resorption and ankylosis following surgical implantation of rhBMP-2/ACS in a canine clinical model.

Methods: Bilateral three-wall intrabony periodontal defects were surgically induced in the premolar teeth region in the maxilla and mandible in 8 young adult Korean mongrel dogs. The defects in each animal received rhBMP-2/ACS (rhBMP-2 at 0.2 mg/mL, total implant volume/defect ~ 0.1 mL), or buffer/ACS, or served as sham-operated controls. Surgeries were sequenced for each animal to provide post-mortem observations following 8- and 24-week healing intervals. Treatment outcomes were evaluated using clinical, radiographic, and histometric parameters.

Results: Surgical implantation of rhBMP-2/ACS resulted in accelerated, enhanced bone formation in the 3-wall intrabony periodontal defects but no apparent enhancement of cementum regeneration. rhBMP-2/ACS did not appear associated with aberrant healing events such as root resorption and ankylosis under these simulated clinical conditions.

Conclusions: Surgical implantation of rhBMP-2/ACS may be used safely to support regeneration of alveolar bone in intrabony periodontal defects without aberrant events such as root resorption or ankylosis complicating the regenerative procedure. rhBMP-2/ACS does not appear to have a significant effect on cementum regeneration and formation of a functional periodontal ligament in this model.