

PR-I-5. Periodontal regenerative capacity of moldable synthetic peptide domain gel in beagles

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Background

For the regeneration of periodontium many clinical methods and materials are introduced, and the results of the use of these modalities have some advantages and limitations. The objective of this experimental study is evaluation of periodontal regenerative potency of synthetic peptide gel which containing collagen binding domain of osteopontin in the degree III periodontal defect of beagle dogs.

Materials and methods

Experimental periodontitis lesion was made in the mandibular third and fourth premolar of beagles. The type of lesion was degree III furcation defect. Surgical procedure was performed as followings. Defect creation surgery was done 8 weeks before regenerative surgery. The removal of alveolar bone at buccal side was performed 6 X 6 mm² at the third premolar and 8 X 8 mm² at the fourth premolar. The removal of interradicular bone and root cementum was prepared from the buccal bone defect to the lingual side to make "key hole" type furcation defect. Following the defect creation, silicone impression material (ExamixFine, injection type, GC, Tokyo, Japan) was filled to the furcation defect and sutured. 3 weeks after defect creation surgery, impression materials were removed and scaling and root planing was performed in the experimental teeth. 5 weeks after removal of impression material regenerative surgery was performed. Full thickness mucoperiosteal flaps were

elevated at the same way with defect creation surgery. Scaling and root planing was performed and granulation tissue was removed thoroughly. In the one side of the mandible, test gel was applied ,and in the another side control gel was applied. Periosteal releasing incision was done to ensure passive closure of the defect. 8 weeks after regenerative surgery, all animals were sacrificed.

Coronal sections were sliced, ground to 30 μ m. Histomorphometric measurement was performed to calculate the linear percentage of the new cementum formation and the volume percentage of new bone formation.

Results

The linear percent of new cementum formation was 41.63% at control group and 67.14% at test group, and there was statistically significant difference. The volume percent of new bone formation was 52.10% at control group and 58.85% at test group.

Conclusion

As the results of present experiment, synthetic peptide gel containing collagen binding domain of osteopontin might increase new bone and cementum formation in the degree III furcation defect of canine mandible.