

## R-15. The effects of chitosan nonwoven membrane on periodontal healing of 1-Wall intrabony defects in beagle dogs

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### 연구 배경

The ultimate goal of periodontal therapy is to regenerate the functional periodontium lost due to periodontal disease. Although many procedures for regeneration, including guided tissue regeneration, bone grafts, and the use of growth factors, have been developed, all have their limitation. Chitosan, a derivative of chitin made by deacetylation of its side chains, is a biodegradable natural polymer that has been shown to improve wound healing and enhance bone formation. In addition to its biological properties, structural characteristics of chitosan make it possible to be used as a bone substitute as well as a scaffold for cell attachment.

In this study, we evaluated the periodontal tissue regenerative effects of a chitosan nonwoven membrane applied to surgically created preclinical 1-wall intrabony defects in beagle dogs.

### 연구방법 및 재료

The 1-wall intrabony defects with 4mm in depth by 4mm in width were surgically created bilaterally in the mandibular second and fourth premolars of six beagle dogs. The surgical control group received a flap operation only, while the resorbable membrane (RM) group and the chitosan nonwoven membrane (CNWM) group were treated with resorbable membrane and chitosan nonwoven membrane, respectively. The animals were sacrificed 8 weeks after surgery and comparative histometric analysis was done.

### 연구결과

The amount of junctional epithelium migration and the amount of connective tissue adhesion did not show any statistically significant differences among the treatments. The amount of suprabony cementum

regeneration was 0.310.05mm, 0.240.09mm, and 0.580.10mm in the surgical control, RM, and CNWM group, respectively with significant difference between the surgical control and CNWM group ( $P < 0.05$ ). The amount of intrabony cementum regeneration was 1,080.24mm, 1,480.52mm, and 1,680.15mm in the surgical control, RM, and CNWM group, respectively. Significant difference was observed between the surgical control and CNWM group ( $P < 0.05$ ). The amount of alveolar bone regeneration was 1,170.31mm, 1,540.71mm, and 1,810.16mm in the surgical control, RM, CNWM group, respectively. Significant difference was observed between the surgical control and CNWM group ( $P < 0.05$ ).

## 결론

The results demonstrate the beneficial effects of the chitosan nonwoven membrane on 1-wall intrabony defects of beagle dogs. The chitosan nonwoven membrane has the potential to support the cementum and bone regeneration, possibly by providing the condition needed for guided tissue regeneration in the 1-wall intrabony periodontal defects of beagle dogs.

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