PR-II-14. Effects of nonporous PTFE membrane on Bone Regeneration in Rat Calvarial Defects

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Background

Guided bone regeneration has been suggested as an effective mode of therapy to facilitate bone healing. GBR commonly utilizes non-resorbable or bioresorbable membranes to provide an environment is permissive for bone toexpress its native osteogenic potential. Barrier membranes have been used for more than a decade to enhance bone regeneration in osseous defects of different locations and origins. For barrier membranes used regeneration, there are non-absorbable membranes such as the Millipore filter, polytetrafluoroethylene, absorbable membranes such as collagen, polylactic acid, polyplactin 910, glycolide and lactic copolymer.

Materials and methods

The nonporous PTFE membrane, Tef-Guard® was used in this study. This material is composed of high-density, nonporous PTFE and helps assure that the blood clot alone and/or graft material placed in the socket are protected during the initial healing phase after extraction. The purpose of this study was to see the effect of nonporous PTFE membrane on bone regeneration. 10 male Sprague-Dawley rats were used for 2 groups. One was the experimental group that used the nonporous PTFE membrane and the other was the control group with no materials used. They were sacrificed at 2,8 weeks. They were analyzed histologically, and histometrically.

Results

The results in this study show that an osteoconductive material enhances bone

formation in a cranial defect which does not heal spontaneously. More bone was filled in 8 weeks. It showed better quality bone formation in a defect protected by a nonporous PTFE barrier when compared with the control group. Vital, thick connected trabeculae of immature bone was seen in the histological analysis.

Conclusion

Thus it can be concluded that the use of barrier membrane is effective on the bone regeneration and can be used in various surgical procedures.