The effect of Tisseel® on bone healing of ash in rat

치아 회분말 및 연석고 매식시 티셀이 골결손부 치유에 미치는 영향

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Abstract

Purpose: The present study examined the early bone healing pattern of grafted bone and the degree of new bone formation to determine the effect of the Tissel® after grafting grafting with a particulate dentin and plaster of Paris mixture in rat.

Material and Method: Eight-mm-diameter calvarial critical-size defects were created in rats. A critical-size defect is defined as the smallest intraosseous wound in a particular bone and species of animal that will not heal during the lifetime of the animal.

Forty-eight rats were randomly assigned to four groups, and each group was further divided into two subgroups: 2-, 4-, and 8 weeks after implantation. The defect was filled in different manners: Group 1, non-graft group; Group 2, tooth ash-plaster graft group; Group 3, Tisseel® and tooth ash-plaster graft group; and Group 4, Tisseel® graft group. Histologic sections were obtained for histomorphometric analysis of the defects at 2-, 4-, and 8 weeks after surgery.

Result: When the comparison was done according to each week in 2-week group, new bone formation was significantly different($p=0.005$) in overall. It was significantlydifferent between groups 1 and 2 ($p=0.009$) and Group 1 and Group 3 ($p=0.006$). In the case of 4-week group, it was significantly different ($p=0.000$) in overall all. A significant difference was seen betweengroups 1 and 2 ($p=0.004$), groups 1 and 3 ($p=0.004$), groups 1 and 4 ($p=0.004$), groups 2 and 4 ($p=0.004$), and groups 3 and 4 ($p=0.010$). Also in the case of 8-week group, new bone formation was also significantly different ($p=0.001$) in overall. A significant difference seen

between groups 1 and 2 (p=0.004), groups 1 and 3 (p=0.006), groups 1 and 4 (p=0.006), and groups 2 and 4 (p=0.016).

Conclusion: To restore a bony defect severe than the critical defect, a graft is needed to induce new bone formation. An effective bone formation can be expected using ash, Tisseel®, and ash- Tisseel® combined. Ash is especially effect, followed by ash- Tisseel® combination and Tisseel®, Thus, Tisseel® can substitute for ash and would yield a better result when used combined with ash.

References

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