

## **Efficacy Of Bone Graft Material For Spinal Fusion In A Rabbit Model**

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Purpose: The purpose of this study is to compare and analyze the union rate and characteristics of the transplant site macroscopically, radiologically, and histologically.

Material and Methods: A study was conducted on male New Zealand white aged between 10 and 15 months, weighing 3 to 3.5 kg. In the group using only autogenous bone, 1cc was transplanted to 15 rabbits in Group 1. In the DBM group, 0.5cc of autogenous bone and 0.5cc of DBM were mixed, and 15 rabbits became Group 2. In the BCP group, 0.5cc of autogenous bone and 0.5cc of BCP were mixed, and 15 rabbits became Group 3. In the group using BMP and BCP, 0.5cc of autogenous bone, 0.5cc of BCP, and 1cc of BMP were mixed and transplanted, and 15 rabbits became Group 4. Simple anterior and posterior radiographic images were taken at 3, 6, 9, and 12 weeks. The manual stress test is performed when pressure is applied to the L5-6 transverse protrusion with the observer's two thumbs or when traction is performed with a metal wire, if it shake less than 1mm, it was evaluated as union. The tissue sections; hematoxylin-eosin (H-E) staining was performed to confirm the union.

Results: The union rate of Group 1 was 40%, showing a statistically significant difference from Group 4, and the union rate of Group 2 was 26.7%, that showed a statistically significant difference from Group 3 and Group 4. The union rate of Group 3 was confirmed to be 73.3%, and the union rate of Group 4 was 93.3%, that showed statistically significant difference Group 1, Group 2.

Conclusion: BMP material using BCP as a carrier in spinal fusion can increase the union rate and reduce side effects caused by autogenous bone collection; therefore, it can sufficiently play a role as a bone substitute in clinical practice.