

The effect of fibrin sealant on spinal fusions using allograft in dogs.

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Abstract:

STUDY DESIGN: This study investigated the use of Tisseel (immuno [Canada], Toronto, Ontario) as an adjunct to allograft spinal fusion. Thirteen mongrel dogs were fused bilaterally with morcellized graft from a separate dog.

OBJECTIVES: To evaluate whether fibrin sealant had an effect on bone volume of fusion mass in allograft fusions of the spine.

SUMMARY OF BACKGROUND DATA: Fibrin sealant has been promoted for use in many orthopedic applications. There is controversy about its effectiveness in augmenting bone graft healing. However, some surgeons make routine use of the sealant in augmentation of bone grafting procedures.

METHODS: To test the usefulness of this material in augmenting allograft fusions, the authors carried out bilateral posterolateral fusions in 13 mongrel dogs. At surgery, 15 cm³ of allograft was placed into a posterolateral position at the L5-L6 region on both sides of the spine. Fibrin sealant (Tisseel) was allocated randomly to one side only. Fusion mass was tested 6 months after the initial operation by computed tomographic scan imaging and mechanical testing.

RESULTS: A significantly smaller bone volume mass, as illustrated by computed tomographic measurement, was seen on the Tisseel side ($P = 0.03$). Biomechanical testing indicated that there

was a trend for the Tisseel side to be stiffer than the untreated side, particularly at lower weights, but statistical significance was not achieved. Computed tomographic volumetric analysis showed that Tisseel-treated allograft led to a significantly smaller fusion volume.

CONCLUSIONS: This study refutes the belief that Tisseel is a good material for accomplishing or augmenting intervertebral arthrodesis. Fibrin sealant significantly retards allograft fusion mass formation in dogs.