The effect of fibrin adhesive (Tisseel) on interbody allograft fusion: an experimental study with cats.

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Abstract:

Fibrin glue has been promoted for use in many neuro- and orthopaedic surgical procedures. At present, some surgeons make routine use of the adhesive in augmentation of bone grafting operations. However, there is controversy about its effectiveness in augmenting bone graft healing. This study investigated the use of two-component fibrin sealant (Tisseel, Immuno AG, Vienna, Austria) as an adjunct to graft material in fusion surgery. Twenty-four cats were fused with corticocancellous bone graft, which was taken from a separate cat, across the disc space in the anterior cervical region. In the present experiment, the authors carried out cervical interbody fusions in 24 cats, divided into two groups, to test the usefulness of fibrin glue in fixation of allograft fusions. At surgery, a piece of corticocancellous allograft was placed into the intervertebral disc space at the C5-C6 region, either untreated or locally treated with fibrin adhesive (Tisseel). Fusion mass formation was examined 6 months after the experimental fusion procedure by radiography and computed tomography (CT) scanning and the new bone formed was evaluated histologically. The authors observed that the allograft fusion mass area is more voluminous in the untreated animals in Group I than in the ones augmented with Tisseel, as illustrated by CT measurement (section area and bone density) ($p = 0.038$). Accordingly, histopathological studies demonstrated a reduced vascularization of the graft as well as diminished new bone formation in the animals treated with Tisseel in Group II. The present investigation demonstrates that local fibrin sealing significantly retards the osteogenic fusion in a model of corticocancellous bone grafting in cats. In view of our results it seems that fibrin sealant is not suitable for fixation of bone fragments in anterior cervical

fusion.