

Fibrin glue does not improve the fixation of press-fitted cell-free collagen gel plugs in an ex vivo cartilage repair model.

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Abstract:

Purpose: Adequate graft fixation over a certain time period is necessary for successful cartilage repair and permanent integration of the graft into the surrounding tissue. The aim of the present study was to test the primary stability of a new cell-free collagen gel plug (CaReS^{1S}) with two different graft fixation techniques over a simulated early postoperative period. **Methods:** Isolated chondral lesions (11 mm diameter by 6 mm deep) down to the subchondral bone plate were created on the medial femoral condyle in 40 porcine knee specimens. The collagen scaffolds were fixed in 20 knees each by press-fit only or by press-fit + fibrin glue. Each knee was then put through 2,000 cycles in an ex vivo continuous passive motion model. Before and after the 2,000 motions, standardized digital pictures of the grafts were taken. The area of worn surface as a percentage of the total collagen plug surface was evaluated using image analysis software. **Results:** No total delamination of the scaffolds to leave an empty defect site was recorded in any of the knees. The two fixation techniques showed no significant difference in worn surface area after 2,000 cycles ($P = n. s.$). **Conclusions:** This study reveals that both the press-fit only and the press-fit + fibrin glue technique provide similar, adequate, stability of a type I collagen plug in the described porcine model. In the clinical setting, this fact may be particularly important for implantation of arthroscopic grafts. © 2011 Springer-Verlag.