

Repair of articular cartilage defects in the patello-femoral joint with autologous bone marrow mesenchymal cell transplantation: three case reports involving nine defects in five knees. Wakitani S1, Nawata M, Tensho K, Okabe T, Machida H, Ohgushi H. *J Tissue Eng Regen Med.* 2007 Jan-Feb;1(1):74-9.

Abstract

To investigate the effectiveness of autologous culture-expanded bone marrow mesenchymal cell transplantation for repairing articular cartilage defects, we transplanted autologous culture-expanded bone marrow mesenchymal cells into nine full-thickness articular cartilage defects of the patello-femoral joints (including two kissing lesions) in the knees of three patients, a 31 year-old female, a 44 year-old male and a 45 year-old male. Three weeks before transplantation, bone marrow blood was aspirated from the iliac crest. Adherent cells were cultured with media containing autologous serum. Single-passaged cells were collected, embedded in a collagen solution (5×10^6 cells/ml), placed on a collagen sheet, gelated, transplanted into the defect and covered with autologous periosteum or synovium. Six months after transplantation, the patients' clinical symptoms had improved and the improvements have been maintained over the follow-up periods (17-27 months). Histology of the first patient 12 months after the transplantation revealed that the defect had been repaired with the fibrocartilaginous tissue. Magnetic resonance imaging of the second patient 1 year after transplantation revealed complete coverage of the defect, but we were unable to determine whether or not the material that covered the defects was hyaline cartilage. Autologous bone marrow mesenchymal cells transplantation may be an effective approach to promote the repair of articular cartilage defects.

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