

Treatment of a full-thickness articular cartilage defect in the femoral condyle of an athlete with autologous bone-marrow stromal cells. Kuroda R1, Ishida K, Matsumoto T, Akisue T, Fujioka H, Mizuno K, Ohgushi H, Wakitani S, Kurosaka M., *Osteoarthritis Cartilage*. 2007 Feb;15(2):226-31.

Abstract

OBJECTIVES:

Human bone-marrow stromal cells are believed to be multipotent even in adults. This study assessed the effectiveness of autologous bone-marrow stromal cells, which were embedded within a collagen scaffold, to repair a full-thickness articular cartilage defect in the medial femoral condyle of an athlete.

PATIENT AND METHODS:

A 31-year-old male judo player suffering from pain in the right knee was reviewed. A 20 x 30-mm full-thickness cartilage defect (International Cartilage Repair Society classification (ICRS) grade IV) was revealed in the weight-bearing area of the medial femoral condyle. With the informed consent of the patient, the defect was treated with autologous bone-marrow stromal cells. Bone marrow was aspirated from the iliac crest of the patient 4 weeks before surgery. After removing the erythrocytes, the remaining cells were expanded in culture. Adherent cells were collected and embedded within a collagen gel, which was transferred to the articular cartilage defect in the medial femoral condyle. The implant was covered with an autologous periosteal flap.

RESULTS:

Seven months after surgery, arthroscopy revealed the defect to be covered with smooth tissues. Histologically, the defect was filled with a hyaline-like type of cartilage tissue which stained positively with Safranin-O. One year after surgery, the clinical symptoms had improved significantly. The patient had reattained his previous activity level and experienced neither pain nor other complications.

CONCLUSIONS:

Our findings indicate that the transplantation of autologous bone-marrow stromal cells can promote the repair of large focal articular cartilage defects in young, active patients.

PMID: 17002893 [PubMed - indexed for MEDLINE]