

Autologous bone marrow-derived mesenchymal stem cells versus autologous chondrocyte implantation: an observational cohort study. Nejadnik H1, Hui JH, Feng Choong EP, Tai BC, Lee EH. *Am J Sports Med.* 2010 Jun;38(6):1110-6.

Abstract

BACKGROUND:

First-generation autologous chondrocyte implantation has limitations, and introducing new effective cell sources can improve cartilage repair.

PURPOSE:

This study was conducted to compare the clinical outcomes of patients treated with first-generation autologous chondrocyte implantation to patients treated with autologous bone marrow-derived mesenchymal stem cells (BMSCs).

STUDY DESIGN:

Cohort study; Level of evidence, 3.

METHODS:

Seventy-two matched (lesion site and age) patients underwent cartilage repair using chondrocytes (n = 36) or BMSCs (n = 36). Clinical outcomes were measured before operation and 3, 6, 9, 12, 18, and 24 months after operation using the International Cartilage Repair Society (ICRS) Cartilage Injury Evaluation Package, which included questions from the Short-Form Health Survey, International Knee Documentation Committee (IKDC) subjective knee evaluation form, Lysholm knee scale, and Tegner activity level scale.

RESULTS:

There was significant improvement in the patients' quality of life (physical and mental components of the Short Form-36 questionnaire included in the ICRS package) after cartilage repair in both groups (autologous chondrocyte implantation and BMSCs). However, there was no difference between the BMSC and the autologous chondrocyte implantation group in terms of clinical outcomes except for Physical Role Functioning, with a greater improvement over time in the BMSC group ($P = .044$ for interaction effect). The IKDC subjective knee evaluation ($P = .861$), Lysholm ($P = .627$), and Tegner ($P = .200$) scores did not show any significant difference between groups over time. However, in general, men showed significantly better improvements than women. Patients younger than 45 years of age scored significantly better than patients older than 45 years in the autologous chondrocyte implantation group, but age did not make a difference in outcomes in the BMSC group.

CONCLUSION:

Using BMSCs in cartilage repair is as effective as chondrocytes for articular cartilage repair. In addition, it required 1 less knee surgery, reduced costs, and minimized donor-site morbidity.

PMID: 20392971 [PubMed - indexed for MEDLINE]