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The clinical use of human culture-expanded autologous bone marrow mesenchymal stem cells transplanted on platelet-rich fibrin glue in the treatment of articular cartilage defects: A pilot study and preliminary results

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Objective: To test the hypothesis that platelet-rich fibrin glue (PR-FG) can be used clinically as a scaffold to deliver autologous culture-expanded bone marrow mesenchymal stem cells (BMMSCs) for cartilage repair and to report clinical results 1 y after implantation of MSCs PR-FG.

Patients and Methods: Autologous BM-MSCs were culture expanded, placed on PR-FG intraoperatively, and then transplanted into 5 full-thickness cartilage defects of femoral condyles of 5 patients and covered with an autologous periosteal flap. Patients were evaluated clinically at 6 and 12 mo by the Lysholm and Revised Hospital for Special Surgery Knee (RHSSK) scores and radiographically by x-rays and magnetic resonance imaging (MRI) at the same time points. Repair tissue in 2 patients was rated arthroscopically after 12 mo using the International Cartilage Repair Society (ICRS) Arthroscopic Score.

Study Design: Case series; level of evidence 4.

Results: All patients' symptoms improved over the follow-up period of 12 mo. Average Lysholm and RHSSK scores for all patients showed statistically significant improvement at 6 and 12 mo postoperatively ($P < 0.05$). There was no statistically significant difference between the 6 and 12 mo postoperative clinical scores ($P = 0.18$). ICRS arthroscopic scores were 8/12 and 11/12 (nearly normal) for the 2 patients who consented to arthroscopy. MRI of 3 patients at 12 mo postoperatively revealed complete defect fill and complete surface congruity with native cartilage, whereas that of 2 patients showed incomplete congruity.

Biography

Dina Sabry has completed his M.D at the age of 33 years from Cairo University. I have published more than 25 papers in reputed journals.