

## Autologous bone marrow derived mesenchymal stem cells as a novel therapy for articular cartilage defects in osteoarthritis knee



**Aditya Aggarwal**

*Post Graduate Institute of Medical Education & Research, India*

### Abstract

Osteoarthritis of the knee is a leading cause of morbidity. No effective therapy is available today that alters the pathobiology course of osteoarthritis. Aim was to study the safety and efficacy of mesenchymal stem cells (MSCs) in knee osteoarthritis. 12 patients with Ahlbacks' grade one or two bilateral osteoarthritis knees were enrolled. 8 to 10 ml of bone marrow was aspirated under strict aseptic precautions from iliac spine. After stem cell culture and expansion for four to six weeks, cells which were found adherent to the culturing flask were removed with 0.05% trypsin-EDTA solution and characterized using antibodies. Cells positive for CD 90 and CD 105 and negative for CD 45 and CD 34 were the mesenchymal stem cells. These were then sub-cultured. MSC suspension in 10xPBS was injected directly into 24 knees by lateral approach. Clinical outcome was evaluated by modified VAS, WOMAC and KOOS scores. Quantitative articular cartilage thickness analysis was done by MRI performed pre-procedure and post-procedure at final follow up. MRI measurement was evaluated by modified WOMMS score. Statistically significant improvement in VAS, total WOMAC and total KOOS score was observed from pre injection to follow ups at six weeks, six months and final follow up of 26.7 months (mean). Modified WOMMS score showed a statistically significant decrease of 1.49%. Intra-articular injection of autologous bone marrow derived culture-expanded MSCs can be considered a potential treatment of early osteoarthritis knee which relieves pain, stiffness, improves physical functions, and improves the articular cartilage integrity.

### Biography

Aditya Aggarwal currently is a Professor and Head unit II Department of Orthopaedic Surgery, Post graduate in Institute of medical education and research Chandigarh India. He has vast experience of more than 30 years in his field as researcher, teacher and surgeon. He has published more than 80 publications in journals of repute with more than 700 citations and H index of 15. He is the recipient of SN Baksi Award, AADO Fellowship, Johnson & Johnson Fellowship, and International Fellowship by ISSLS Canada, AADO Scholarship, Trauma Quiz 2002, 3rd Annual Research day award 2014 & 7th Annual Research day award 2019. He has served as a distinguished guest Faculty in numerous cadaveric Hip and Knee workshops and has trained young orthopaedic surgeons in the basic skills and nuances of arthroplasty and revision surgeries.



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