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A systematic review and meta-analysis of clinical trials of mesenchymal stem cell therapy for cartilage repair

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Osteoarthritis (OA) is a major global burden creating significant morbidity worldwide. Current curative therapies are expensive, challenging to access and have significant risks, making them infeasible and difficult in many cases. Mesenchymal stem cells (MSCs) can be applied to joints and may regenerate the cartilage damaged in OA, this therapy may be advantageous to existing treatments. We systematically reviewed clinical trials of MSCs for cartilage repair and provide an overview of the literature in this area here. MEDLINE, Embase, CENTRAL, clinicaltrials.gov and OpenGrey were searched for controlled trials and case series with >5 patients involving MSC therapy for cartilage repair. The controlled trials were meta-analyzed and the primary outcome measure was improvement in pain over the control group. A narrative synthesis was composed for the case series. A significant reduction in pain was found with the use of MSCs over controls: Standardized mean difference=-1.27 (95% confidence intervals -1.95 to -0.58). However, the data was extremely heterogeneous with $I^2=95\%$, this may be attributed to differing therapies, clinical indication for treatment and joints treated amongst others. Case series showed improvements in treated patients with a variety of differing treatments and by many outcomes. There were no severe adverse outcomes found across all studies that could be attributed to MSCs, implying their safety. We conclude that MSCs have significant potential for the treatment of OA; however, larger, more consistent trials are needed for conclusive analysis.

Biography

Aditya Borakati is currently a Medical student at the Hull York Medical School. He has a first class intercalated Degree in Regenerative Medicine from King's College London with research into novel maxillofacial prostheses. He has a strong interest in surgery and research and is on the Steering Committee for the National STARSurg Collaborative.

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