

USE OF HUMAN MESENCHYMAL STEM CELLS DURING HIP REPLACEMENT AND HIP REVISION SURGERY

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Abstract

Long-term stability of total hip arthroplasty (THA) depends on the integration between osseous tissue and the biomaterial implant. Integrity of the osseous tissue requires the contribution of mesenchymal stem cells and their continuous differentiation into an osteoblastic phenotype.

Some studies, like Wang ML et al., show that chronic exposure to titanium and zirconium oxide wear debris may contribute to decreased bone formation at the bone/implant interface by reducing the population of viable human mesenchymal stem cells (hMSCs) and compromising their differentiation into functional osteoblasts.

On the basis of our good experience in the use of Exeter technique in revision surgery of THA, two years ago we started to utilize bone grafts mixed with growth factors in order to improve grafts incorporation and implant fixation. At the moment we are studying the use of hMSCs during hip revision surgery, employing polyethylene cup to reduce the possible titanium and zirconium oxide debris. hMSCs are obtained with MarrowsStim Concentration Kit (Biomet Biologics Europe) by 60 ml of patient's bone marrow.

Clinical outcomes and quality of life are evaluated on the basis of Harris Hip Score, Womac score and SF-36 score, while bone graft incorporation features are assessed with post operative computed tomography (CT) examination and further CT controls at two, four and eight months after surgery.

Footnotes

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