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Treatment of AVN using the chamber induction technique and biotechnologies: Indications and clinical results

Massimiliano Colombo
University of Milan, Italy

Objective: To determinate the efficacy of core decompression technique with the use of recombinant morphogenetic proteins, autologous mesenchymal stem cells (MSCs) and xenograft bone substitute into the necrotic lesion of the femoral head on clinical symptoms and on the progression of osteonecrosis of the femoral head.

Methods: We studied 38 patients and 40 hips with early stages of osteonecrosis of the femoral head.

Results: Core decompression technique with the use of recombinant morphogenetic proteins, autologous MSCs and xenograft bone substitute afforded a significant reduction in pain and in joint symptoms and reduced the incidence of fractural stages. At 34 months, 33 patients reach the clinical and radiographic healing.

Conclusion: This long term follow-up study confirmed that core decompression technique with the use of recombinant morphogenetic proteins, autologous MSCs and xenograft bone substitute might be an effective treatment for patients with early stages of osteonecrosis of the femoral head.

Biography

Massimiliano Colombo has completed Medicine and Surgery at University of Milan and specialization in School in Orthopaedics and Traumatology at University of Milan. He is at present working as orthopaedic surgeon and researcher at unit of Orthopaedic Reparative Surgery and Risk Management, G. Pini Orthopaedic Institute, piazza Cardinal Ferrari 1, University of Milan. He has good knowledge of the problems of bone tissue as regards its regeneration and healing processes. He performed numerous national and international publications on the topic of bone necrosis, delayed consolidation of the fractures, non union, bone defects with particular interest in the field of biotechnology, such as growth factors, bone substitutes and mesenchymal stem cells. He produced: 3 medical scientific monographs; 43 orthopaedic scientific publications in Italian and foreign journals, including many with relevant impact-factor and multiple citations; 17 scientific posters presented at conferences. He performed an economy drug study on the use of growth factors in traumatology entitled "Comparative analysis of costs and cost/effectiveness ratio of the treatment of persistent post-traumatic non-unions of the tibia with autologous transplant of the Iliac Crest or Osigraft® (Eptotermin alfa, rhBMP-7, rhOP-1)". He is performing a study about the effectiveness of a new system for the insertion of distal screws in the implant of long femoral nails. He recently completed a comparative study on the efficacy of growth factors (rh-BMP-7) with respect to autologous bone graft from the iliac crest in the treatment of 150 nonunions and loss of substance of the long bones.

maz.colombo@hotmail.it

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