

Bone marrow aspirate and bone allograft to treat acetabular bone defects in revision total hip arthroplasty: preliminary report. Vulcano E1, Murena L, Falvo DA, Baj A, Toniolo A, Cherubino P. *Eur Rev Med Pharmacol Sci.* 2013 Aug;17(16):2240-9.

Abstract

OBJECTIVES:

The safety and effectiveness of autologous mesenchymal cells for treating bone defects in humans is still uncertain. The present study presents a new technique consisting of allogeneic bone grafting enriched with bone marrow concentrate to treat acetabular bone defects resulting from aseptic loosening of the acetabular cup after total hip replacement.

PATIENTS AND METHODS:

Five adult patients were included in the study. Prior to surgery, patients were tested for antibodies to common pathogens. Treatment consisted of bone allogeneic scaffold seeded with bone marrow mesenchymal cells harvested from the iliac crest and concentrated using an FDA-cleared device. Clinical and radiographic follow-up was performed at 1, 3, 6, and 12 months after surgery. To assess viability, morphology, and the immunophenotype, bone marrow nucleated cells were cultured in vitro, then tested for sterility and evaluated for the possible replication of adventitious viruses.

RESULTS:

In 4 of 5 patients, both clinical and radiographic healing of the bone defect together with bone graft integration was observed at the mean time of 3.5 months. Mean follow-up was 2 years. One patient failed to respond. No post-operative complications were observed. Bone marrow nucleated cells were enriched 3.8-fold by a single concentration step. Enriched cells were free of microbial contamination. The immunophenotype of adherent cells was compatible with that of mesenchymal stem cells. No viral reactivation was observed.

CONCLUSIONS:

Allogeneic bone scaffold enriched with concentrated autologous bone marrow cells obtained from the iliac crest, may represent a good alternative to treat acetabular bone defects observed in revision hip arthroplasty.