

A Study of Management of Non-Union Bones by Autologous Bone Marrow Injection

Dr. Pradeepa G

Senior Resident, Department of Orthopaedics, SS Institute of Medical Sciences and Research Centre (SSIMSRC), Davangere, Karnataka, India

Dr. Venkataramana Rao M

Professor and Unit Head, Department of Orthopaedics, SS Institute of Medical Sciences and Research Centre (SSIMSRC), Davangere, Karnataka, India

Abstract

Non-union is a challenging complication of fracture healing and may result from inadequate osteogenic potential, poor vascularity and deficient biological factors. Autologous bone marrow injection provides mesenchymal stem cells and other osteogenic progenitors that may enhance the biological environment at the non-union site and promote fracture healing. This study evaluated the clinical and radiological outcomes of autologous bone marrow injection in patients with long-bone non-union. A total of 50 patients with established non-union were included, comprising 33 males and 17 females. The non-unions involved the femur in 15 patients, tibia in 21, humerus in 6, radius in 5 and ulna in 3. Autologous bone marrow was harvested and injected at the fracture site under regional anaesthesia with the patient in the supine position. Patients were evaluated clinically and radiologically preoperatively and during follow-up at 6 weeks, 12 weeks, 6 months and 9 months. The mean treatment and follow-up period was 9 months, and outcomes were assessed using the ASAMI scoring system. Radiological union was achieved in 82% of patients. According to ASAMI criteria, 31 patients (62%) had excellent outcomes, 5 (10%) had good outcomes, 5 (10%) had fair outcomes and 9 (18%) had poor outcomes. Autologous bone marrow injection is a minimally invasive biological treatment option for selected long-bone non-unions and can achieve satisfactory union and functional outcomes without the morbidity associated with open bone grafting.

Keywords

Non-union, Autologous bone marrow injection, Mesenchymal stem cells, Fracture healing, ASAMI score, Long-bone non-union.