Abstract

Introduction: There is controversy in medical literature regarding the use of electromagnetic fields to promote bone healing. Methods: After designing and building devices capable of generating an electromagnetic field for this study, their safety was confirmed and the electromagnetic therapy was randomly allocated and compared to placebo in patients with fracture of the femoral diaphysis. Treatment began six weeks after the fracture and it was administered once a day, during 1 h, for eight consecutive weeks. Twenty devices were built, 10 of which were placebo-devices. Between June 2008 and October 2009, 64 patients were randomized in two different hospitals and were followed for 24 weeks. The mean age was 30 years (18-59) and 81% were males. Results: Healing observed at week 12 was 75% vs. 58% (p = 0.1); at week 18, it was 94% vs. 80% (p = 0.15); and at week 24, it was 94% vs. 87% (p = 0.43) for the device group and the placebo group, respectively. Discussion: This study suggests that an electromagnetic field stimulus can promote earlier bone healing compared to placebo in femoral diaphyseal fractures. Faster bone healing translates into sooner weight bearing, which – in turn – permits quicker return to normal daily activities.

Keywords

Keywords, Femur fracture, non-union, electromagnetic stimuli, bone healing.