

Pulsing Electromagnetic Field Treatment in Ununited Fractures and Failed Arthrodeses

C. Andrew L. Bassett, MD, ScD; Sharon N. Mitchell, RN; Sawnie R. Gaston, MD

Author Affiliations

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Abstract

Pulsing electromagnetic fields (PEMFs) induce weak electric currents in bone by external coils on casts or skin. This surgically noninvasive, outpatient method, approved by the Food and Drug Administration in November 1979, produced confirmed end results in 1,007 ununited fractures and 71 failed arthrodeses, worldwide. Overall success at Columbia-Presbyterian Medical Center was 81%; internationally, 79%; and in other patients in the United States, 76%. Treatment with PEMFs was effective in 75% of 332 patients (a subset) with an average 4.7-year disability duration, an average of 3.4 previous operative failures to produce union, and a 35% rate of infection. Eighty-four percent of carpal naviculars and 82% of femoral neck-trochanteric nonunions were united. After attempted arthrodeses could not salvage a failed total-knee prosthesis, PEMFs promoted healing in 85% of patients. When coils were unsuccessful alone, combining them with surgical repair was effective.

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