



TITLE: Outcomes of the Treatment of Fracture Non-union Using Combined Magnetic Field Bone Growth Stimulation: Experiences From a UK Trauma Unit

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ABSTRACT

Introduction: Fracture non-union is a distressing diagnosis for both patients and clinicians. Several methods have been tried to help promote bone healing. Some of the non-operative strategies include the use of pulsed ultrasound and electrical or magnetic bone stimulators. This study aimed at assessing the outcomes of patients treated with combined magnetic field (CMF) bone stimulators.

Methods: All patients with confirmed fracture non-union treated using a CMF bone growth stimulator between May 2019 and December 2021 were included in the study. These were followed up at regular three-month intervals and monitored for signs of clinical and radiological union. The minimum patient follow-up was six months. Our primary outcome measure was union rates following CMF treatment. The secondary outcome measures were time to union and fracture type/configuration in relation to non-union.

Results: A total of 29 patients were included. Of the patients, 52% were female. The average age of the patients was 53.42 years (SD: 17.66 years). Four were excluded because their follow-up period was less than six months. Patients were started on CMF bone growth stimulant treatment between four and 27 months from the initial fracture (mean: 11.56 months). The majority of the patients had tibial shaft (21%), distal femur (17%), ankle (10%) and distal humerus (10%) fractures. The overall success rate was 84% (n=21), with a mean time to union of 6.62 months.

Conclusion: Bone growth stimulators using combined magnetic fields are a viable treatment option for established fracture non-union. They can result in improved outcomes and can avoid risks and costs associated with surgical options to treat non-union. However, more studies need to be conducted to establish the efficacy of these methods conclusively.



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BIOGRAPHY (upto 200 words)

Vusumuzi Sibanda is a Trauma and Orthopaedic registrar at the William Harvey Hospital in the East Kent Hospitals University NHS Foundation Trust. He is a keen researcher and is interested in trauma and spine surgery as a subspecialty.

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