

(32) Shock wave therapy versus intramedullary screw fixation for nonunion of the proximal fifth metatarsal metaphyseal diaphyseal (Jones) fracture

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Introduction: The current "gold standard" for treatment of chronic fracture nonunion of the fifth metatarsal metaphyseal diaphyseal region is intramedullary screw fixation (ISF). Complications with this procedure, however, are not uncommon. Shock wave therapy (SWT) can be an effective treatment for fracture nonunions. The purpose of this study was to evaluate the safety and efficacy of SWT as a treatment for fracture nonunions of the fifth metatarsal metaphyseal diaphyseal region.

Methods: Twenty-three patients with a fracture nonunion of the fifth metatarsal metaphyseal diaphyseal region received high-energy SWT (SWT Group; 2000 to 4000 shocks; energy flux density per pulse, 0.35mJ/mm²). Twenty patients with a fracture nonunion of the fifth metatarsal metaphyseal diaphyseal region were treated with ISF. Evaluation was by determination of the number of fractures healed at 3 and 6 months post-treatment and by incidence of complications.

Results: 20/23 nonunions in the SWT group and 18/20 nonunions in the ISF group were healed 3 months post-treatment. 21/23 nonunions in the SWT group and 18/20 nonunions in the ISF group were healed 6 months post-treatment. There was one complication in the SWT group (one case of post-treatment petechiae) and 11 complications in the ISF group (1 refracture, 1 cellulitis, and 9 cases of symptomatic hardware).

Discussion: The present study evaluated the effects of SWT on a series of patients with a nonunion of a proximal fifth metatarsal metaphyseal diaphyseal fracture who had not responded to nonoperative management. The outcome for the entire population was evaluated and compared to a group of similar patients treated with ISF. Unlike prior studies, and one of the strengths of this trial, the patient groups were homogenous.

Eighty-seven percent (20/23) of the SWT fractures and 90% (18/20) of the ISF fractures were healed 3 months post-treatment; 91% (21/23) of the SWT fractures and 90% (18/20) of the ISF fractures were healed 6 months post-treatment. SWT was well tolerated and yielded only one complication. ISF yielded 11 complications including 9 cases of symptomatic hardware that required a second surgical procedure and one refracture that required additional immobilization.

Conclusion: Both ISF and SWT are effective treatments for fracture nonunions of the fifth metatarsal metaphyseal diaphyseal region. ISF is

associated with complications that frequently result in additional surgery.

Device and producing company: OssaTron® device (High Medical Technologies, Lengwil, Switzerland); Orthowave 280® device (MTS, Konstanz, Germany)