

Extracorporeal Shock Wave Therapy for Delayed Healing Fractures and Non-Unions

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Device and producing company:

Reflectron, HMT

Introduction:

The incidence of non-unions varies tremendously by fracture site but 1-3% of all bone fractures develop into a non-union. Surgical treatment is considered the “gold standard” for the treatment of non-unions however, surgical treatment leads to serious complications, is traumatic for the patient and is very costly. Clinical studies of SWT for treating chronic non-unions have confirmed a success rate of 75% to 91%.

Methods:

Since 2002, we have used an electro-hydraulic device (Reflectron - HMT) in a prospective clinical study to investigate the effectiveness of ESW in the treatment of nonunions. Eight patients (one femur, one fibula, one radius, one ulna, one scaphoid and three metatarsals) underwent a single ESW application with local or regional anaesthesia. For all treatments the SW focus was positioned on the gap and between 3,000 and 4,000 pulses were applied (500 pulses per treatment location) with an energy flux density of 0.15mJ/mm². Following ESWT the patients were immobilized with a plaster cast or plastic splint.

Results:

The results were assessed clinically, and fracture healing was evidenced with plain radiographs and tomography. The bony remodelling of the non-union was achieved in 7 patients with no complications.

Discussion:

The success rate seems comparable to that achieved by routine surgical treatment but without serious complications. ESWT is an alternative method of treatment for nonunions.

Conclusion:

ESWT must be considered an alternative which presents advantages over surgery. ESWT is not invasive, does not present significant complications, is much less costly and avoids the significant potential risks of traditional surgical procedures.