

An experimental study on the application of extracorporeal shock waves in the Treatment of Nonunions of Long Bone

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Introduction

Currently, the treatment of delayed bone healing is aimed at restarting the regenerating system by creating new bone injury through survey, various types of grafts, and fixation. In these series, high success rates between 86% and 93% have been reported. However, donor site morbidity ranges from 6% to 20%. Then alternatives of treatment with high energy extracorporeal shock wave therapy have been sought that would allow induction of fracture healing non-surgically.

MATERIALS AND METHODS

From July 3, 2001 to March 21, 2003, 14 women and 18 men (mean age, 41.6 ± 5.6 years; range, 20– 67years) with nonunion of the long bones entered the prospective study. Inclusion criteria is a nonunion diagnosed when a minimum of 6 months had elapsed since the last operation, and no radiologic bridging of the four cortices of bone was observed on the anteroposterior and lateral radiographs. Without anesthesia, two session of high-energy shock wave treatment then was applied using a Orthospec machine. No pre-therapy image or anesthesia is need in this method. All patients subsequently were evaluated 4 weeks after shock wave application at the first time and every 3 monthly later or until adequate bony healing was determined.

RESULTS

All patients were followed up for 6 months at least and complied with the follow-up protocol. At the average 5.4 ± 1.2 months, 25 of 32 (76 %) patients with radiographic union. VAS scale and functional scale are much improved.

Discussion

High-energy extracorporeal shock waves results in an increase in vascularization, increased soft callus, and faster enchondral ossification. Using a Orthospec machine, no pre-therapy image or anesthesia is need. We can got high successful union (76%) after average of 5.4 ± 1.2 months.

Conclusions

By this study, we think application of high-energy extracorporeal shock waves in the treatment of nonunion is an effective and safe method.

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A study by Dr. Hsu Wen Wei, Chang Guan memorial hospital.