

# The Effects of Extracorporeal Shockwaves on Acute High-Energy Long Bone Fractures of the Lower Extremity

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High-energy long bone fractures of the lower extremity are at risk of poor fracture healing and high rate of non-union. Extracorporeal shockwaves have proven to be effective to heal non-union of long bone fractures. However, the effect of shockwaves on acute fractures is unknown. The purpose of this study was to investigate the effects of shockwaves on acute high-energy fractures of the lower extremity. Materials and Methods: Between January and October 2004, 56 patients with 59 acute high-energy fractures were enrolled in this study. Patients were randomly divided into two groups: 28 patients with 28 fractures in the study group and 28 patients with 31 fractures in the control group. Both groups showed similar age, gender, type of fracture and follow-up time. Patients in the study group received open reduction and internal fixation and shockwave treatment immediately after surgery on odd-numbered days of the week, whereas patients in the control group received open reduction and internal fixation without shockwave treatment on even-numbered days of the week. The evaluation parameters included clinical assessments of pain score and weight bearing status of the affected leg and serial radiographs at 3, 6 and 12 months. The primary end-point is the rate of non-union at 12 months, and the secondary end point is the rate of fracture healing at 3, 6 and 12 months.

Results: At 12 months, the rate of non-union was 11% for the study group versus 20% for the control group ( $P < 0.001$ ). A significantly better rate of fracture healing was noted in the study group over the control group at 3, 6 and 12 months ( $P < 0.001$ ). Conclusion: Extracorporeal shockwave is effective in promoting fracture healing and decreasing the rate of non-union in acute high-energy fractures of the lower extremity.

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