New study finds shock-wave therapy for unhealed fractured bones

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When fractured bones fail to heal, a serious complication referred to as "nonunion" can develop. This occurs when the process of bone healing is interrupted or stalled. According to a new study published in the November 2009 issue of The *Journal of Bone and Joint Surgery* (JBJS), certain cases involving nonunions respond very well to shock-wave therapy. Researchers say this non-invasive treatment is equally effective as surgery when it comes to healing the bone.

"We found that extracorporeal (external to body) shock-wave therapy was just as effective as surgery in helping to heal and repair nonunions," said lead author of the study Angelo Cacchio, MD, a physiatrist who conducted the study with colleagues from the Division of Orthopaedic Surgery and the Department of Physical Medicine and Rehabilitation at San Salvatore Hospital in L'Aquila, Italy.

Study authors say sparse surrounding vascular tissue and limited blood supply can lead to a nonunion and can subsequently delay or prevent healing. This complication -- a nonunion -- often is very difficult to treat.

Dr. Cacchio and his colleagues analyzed data from 126 patients who had nonunions of the femur (thigh bone), tibia (shinbone), ulna (forearm) or radius (forearm). Patients were randomly assigned to one of three groups and all patient outcomes were evaluated from 2001 to 2004. The patients in the three groups had similar demographic characteristics and similarly timed and developed nonunions. The first two groups of patients

received surgery to help repair their fracture. The third received four shock-wave therapy sessions at weekly intervals, with 4000 impulses per session.

The study found that shock-wave therapy:

- Stimulated healing of the bone within six months; and
- Provided a comparable outcome to surgery even two years following the treatment.

"When we examined patients and compared their outcomes at three and six months, initially those who received the shock-wave therapy actually felt better than those who had surgery," explains Dr. Cacchio. "When we examined patients at 12 and 24 months there were no significant differences in terms of healing. Scans of the bones proved non-invasive shock-wave therapy worked just as effectively as surgery."

Results of the study showed that nonunions had completely healed for approximately 70% of all patients within six months.

Shock-wave therapy helps reduce pain and appears to induce a regeneration of bone by activating and stimulating certain growth factors. The study found that this appears to prompt a metabolic reaction similar to what occurs during the natural bone-healing process.

"These findings are important because we have found that this non-invasive therapy is a safe and simple alternative to surgery," notes Dr. Cacchio. "This means orthopaedic surgeons and their patients now have more options to help repair a fracture that does not respond to initial treatment."

Source: American Academy of Orthopaedic Surgeons (news : web)