

Stem Cells Might Treat Tough Fractures



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TUESDAY, June 17 (HealthDay News) -- Adult stem cell transplants can help improve healing of fractures, a finding that may lead to new treatments for the 10 percent to 20 percent of people whose broken bones fail to mend, say researchers at the University of North Carolina at Chapel Hill.

Adult stems cells are specialized cells that can regenerate damaged tissue, but many patients lack sufficient numbers of these cells, which means they can't heal properly, the researchers explained.

The UNC team used adult stem cells to heal fractures of the tibia (the long bone of the leg) in mice. The bone marrow-derived stem cells were engineered to express insulin-like growth factor 1 (IGF-1), which help bones grow in strength and size. The transplanted stem cells migrated to the site of the fracture and improved healing by increasing the bone and cartilage that bridged the break.

The bone at the fracture site of the mice that received stem cell transplants was three time stronger than healed fractures in untreated mice, the team reported.

The study was to have been presented Monday at the annual meeting of the Endocrine Society, in San Francisco.

"This finding is critical to patients who lack the proper healing process and to individuals prone to broken bones, such as those with osteoporosis and the rare genetic condition known as brittle bone disease," senior author Dr. Anna Spagnoli, associate professor of pediatrics and biomedical engineering in the UNC School of Medicine, said in a prepared statement.

During normal fracture healing, stem cells travel to the site of the break and form the cartilage and bone required to mend broken bones. But each year in the United States, doctors treat about 600,000 patients wherein this process doesn't occur as it should, and the bones don't heal. This can lead to long periods of immobilization, pain, bone deformities and even death.

Current therapies include multiple surgeries with bone autografts and artificial prosthetic materials. But these often fail to help patients.

"Man-made materials do not address the normal bone's function, and recurrent fractures, wear and toxicity are a real problem," Spagnoli said. "There is clearly a need to develop alternative therapies to enhance fracture healing in patients with bone union failure."

[More information](#)

The American Academy of Orthopaedic Surgeons has more about fractures.

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