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ABSORBABLE GLASS FIBERS MAY REPLACE METAL PINS IN SETTING BONE FRACTURES

DAYTON, Ohio -- The days of using metal pins to help set severely fractured bones may soon be over, due to research into using glass fibers that not only help bones heal but are slowly absorbed by the body and may actually speed the healing process.

“When you use metal pins to help set a fracture, the patient then has to have a second surgery to remove the pins,” says Binod Kumar, research engineer at the University of Dayton Research Institute and a member of the glass fiber research team. “Glass fibers — flexible and about the width of a hair — incorporated with a polymer matrix can be shaped according to the injury and implanted in the body instead of metal. The body then absorbs the glass material as the bone heals.”

The glass fibers, which contain calcium and phosphorus, are a material closely related to the natural component of bone. When the implants begin to dissolve, the healing bone may even benefit from the extra calcium, according to Kumar.

It’s taken the researchers 10 years to come up with a composite strong enough to support even large broken bones and yet lasts long enough in the body to allow the bone to heal. The resulting formula has proved non-toxic in initial laboratory studies, and plans call for it to be tested in animals.

“We will be looking at how tissue responds to this material and how the bone heals,” says Kumar. The researchers will examine the animal fractures one month, six months, one year and two years after the glass fiber material is implanted to observe how the bones are healing and the rate at which the implants are absorbed. They will also measure the “biological activity” to see if the bones are borrowing calcium from the implant.

Kumar estimates the product is five years away from the medical market.

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