

Doc up & running after cell therapy

Dying Hip Joint Repaired With Cultured Cells

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A 25-year-old Ratnagiri doctor could be the first in India to be treated for avascular necrosis using cell therapy.

Avascular necrosis is a disease in which the tissues of the hip joint die because of lack of blood supply. The top of femoral head (the ball portion of the ball and socket joint) collapses as a result and begins to flatten. The most common treatment of this disease is complete hip replacement.

But 25-year-old Suhas Khanvilkar decided to take a chance — with a new therapy. Instead of surgery, he only needed an implant of bone cells cultured from his own bone marrow.

"Ten months ago, I suddenly started experiencing pain in both my hips while walking. I neglected it for a long time, but there came a time, when a cracking sound came from my hip joint whenever I sat down or stood up. CT and MRI scans showed that the head of my thigh bone had become uneven. The left side was still better. But the right hip was so painful the joint even fractured," said Suhas. Dr Gaurish Palekar, Suhas' doctor, says the therapy, which was performed eight months ago, was possibly the first in India.

Satyen Sanghavi, chief scientific officer of 'Regrow', a Lonavla-based cell therapy services company, said it was a five-week-long procedure. "First 10 ml of Suhas's bone marrow was taken from his posterior bone. This was sent to our lab in Korea where it was cultured into bone cells. Around 10,000 stromal cells were separated from the bone marrow, which were then cultured into 50 million osteoblasts (bone cells)."

In November, the bone was

Chronology Of An Implant

Avascular Necrosis (AVN) occurs in the hip joint, when the top of the femoral head (the ball portion) collapses and begins to flatten due to the stoppage of blood supply

Osteoblast Culture

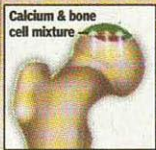
- 10 ml of bone marrow is taken from the pelvic bone
- In the lab, around 10,000 stromal cells are separated from the marrow
- These are cultured into osteoblasts (bone cells)
- In a span of five weeks, these are expanded into 50 million cells

Ball (femoral head)

Thigh bone (femur)

Smooth weight bearing surfaces

Calcium & bone cell mixture



- 1** Due to lack of blood supply, the bone tissues die
- 2** The bone starts collapsing and flattens inwards
- 3** The bone is pushed back in its normal position and is filled with a calcium and bone cells mixture

Causes

- Prolonged use of alcohol/steroids
- Working in extreme atmospheric conditions

- Injury, fracture or dislocation of the hip joint
- Most known cases of AVN are idiopathic (where cause is unknown)

pushed back into its original place, and the inside was filled with calcium cement, and a mixture of cultured bone cells and fibrin gel. "The calcium cement turns into bone within a year. The gel is used to keep the cultured bone cells in place," said Dr Palekar, who runs a clinic in Girgaon.

Although Suhas walked with the help of crutches for three months after the surgery, today, he walks, runs and climbs stairs just as earlier.

"Drug treatment of avascular necrosis helps preserve the diseased bone till nature can take over and restore the bone. Stem cells, however, will hasten this procedure. Still, it is too early to say if it will be successful," said Dr S Agarwala orthopedic surgeon with Hinduja Hospital. Dr Vijay Shetty, orthopedic surgeon with Hiranandani Hospital says, "We need to look at long-term results before we can start doing it on every patient."