

# 1st time in city, stem cell hope for injured spine

**Malathy Iyer | TNN**

Mumbai: Gas station worker Ravindra Ahire was completely paralysed and had lost sensation in his lower limbs after his bike skidded on Malegaon's dusty streets. He found hope in Mumbai's Sion Hospital a fortnight later.

The 24-year-old became the city's first patient with spinal cord injuries to receive stem cell therapy, touted as a panacea for many ills. While hospitals in Chennai, New Delhi and Bangalore have been using stem cells to treat the spine, what sets the Mumbai story apart is the fact that the surgery was conducted in a public hospital and virtually free of cost (public giants All India Institute for Medical Sciences, New Delhi, and PGI, Chandigarh, have tried out stem cell therapy for the heart).

On April 17, Ravindra's fractured spine was fixed and a dose of stem cells collected from his bone marrow was injected into his ruptured spinal cord, says Dr Alok Sharma, head of Sion Hospital's neurosurgery department who performed the operation. "It's a matter of pride for us that stem cell treatment, available only at a few centres across the world and that too at an exorbitant cost, has been successfully performed at a municipal teaching hospital, that too almost free," says Sharma, who's a senior medical teacher at Sion, one of Mumbai's premier teaching hospitals and research centres and reputed for its trauma-care work.

Propped up in his corner bed during a physiotherapy session, Ravindra is all smiles. "I can feel when people touch my legs and I have got back my bowel sensations which I did not have before the operation. I have some movement in my hips also," he told TOI in Marathi. Occupational and physical therapists working with him feel Ravindra's improvement has been quicker in comparison to other patients with similar injuries. Ravindra's mother Meerabai is just happy that his pain has subsided for the first time since his accident on April 8.

The mood in Sion Hospital's neurosurgery department is predictably upbeat. "This is the culmination of 10 years of our research on spinal cord regeneration," says Dr Sharma.

## **REPAIR & REPLENISHMENT**

Stem cells have the remarkable potential to develop into many different cell types in the body. Serving as a sort of repair system for the body, they can theoretically divide without limit to replenish other cells as long as the person or animal is still alive, defines the US-based National Institutes of Health

## **INDIA'S SCORE**

## **SO FAR**

>> **March 2007:** India's biggest experiment involving premier institutes such as AIIMS, AFMC, Army hospital, New Delhi, PGI Chandigarh, Sanjay Gandhi Institute at Lucknow, to study effect of stem cells on regenerating dead cardiac muscles after an heart attack begins

>> **Feb 07:** Chennai's Lifeline Hospital uses stem cell therapy to help a man with injured spinal cord walk again

>> **Nov 05:** Fertility specialist Dr Geeta Shroff claims to have transplanted embryonic stem cells into close to 100 patients suffering from degenerative brain disorders and paralysis. ICMR says it is shocked

>> **Feb 05:** All the 35 cardiac patients at AIIMS who were given stem cell treatment over two years report better heart pumping function

### WHAT ARE THE SOURCES?

>> They can be derived from embryos. Embryonic stem cells (ESCs) are derived from 4- to 5-day old embryos in fertility clinics

>> Adult stem cells are undifferentiated cells that are found in small numbers in most adult tissues. They are also found in children and can be extracted from umbilical cord blood

>> While adult stem cells pose no health hazard, embryonic stem cells are still a grey area, with concern about side-effects such as cancer. The Sion Hospital therapy is based on adult stem cells **'Stem cell therapy has great potential'**

Mumbai: Malegaon resident Ravindra Ahire, whose lower limbs were paralysed following a bike mishap, has become the first patient in the city to be administered stem cell therapy.

Stem cells are the body's master cells which have the ability to regrow time and again. They can transform into mature cells of, say, liver, heart or brain. They serve as the body's repair system and are found in abundance in the bone marrow, embryos and umbilical cord. Over the last decade, researchers have been working on various projects to harness the power of stem cells to cure diabetes, heart failure, liver problems. There is still a long way to go, but it is seen as the thing of the future.

AIIMS doctors, for instance, recorded a better heart pumping mechanism among patients who had received a dose of stem cells during their bypass surgeries vis-a-vis those patients who had not. Adult autologous stem cells (derived from the person's bone marrow) are now considered safe for patients. This has also been borne out in Ravindra's case so far.

About Ravindra, Dr Alok Sharma, who conducted the operation, says, "It's too early to be unduly optimistic about the outcome since it takes up to three months for results to show up."

Dubbing the Sion therapy the beginning of regenerative medicine (involving the use of tissues such as stem cells to replace damaged tissues), he adds, "With our present knowledge and expertise, stem cells cannot be considered a cure for paralysis as yet. However, it does hold great promise for the future."

The achievement is all the more creditworthy because spinal cord injuries have a shocking effect on a patient's life. Immobility, loss of sensation and loss of control over bladder and bowel movement are its worst manifestations. Patients and their relatives hence lap up any treatment or promise of one. Indian patients are known to have travelled to Spain, Portugal and Russia for stem cell therapy, paying over US\$ 25,000.

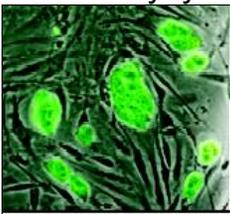
Ketna Mehta, management consultant who founded the Nina Trust and edits the magazine, 'One Voice: The Voice of Paraplegics', is, however, not entirely convinced with the hype and hope surrounding stem cell therapy. A paraplegic herself, she feels, "Hope for people with spinal cord injury works wonders for their rehabilitation, but false hope diverts them from their goal of 'making the most of what we have'.

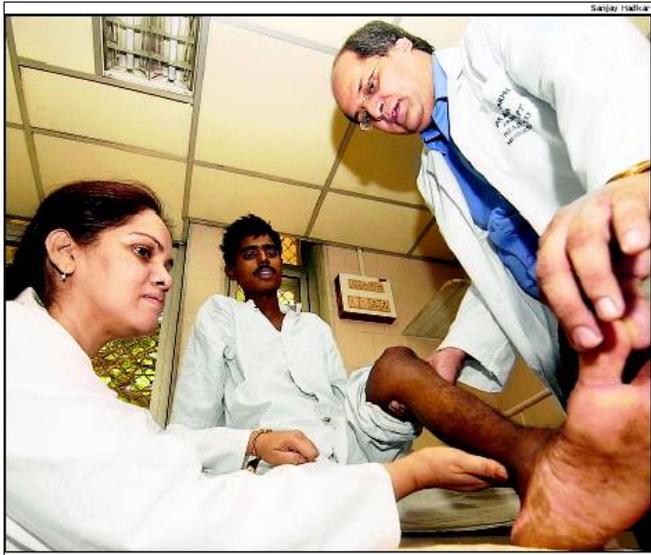
However, Dr Purna Badhe, a neuropathologist with the neurosurgery department of Sion Hospital who has been trained in stem cell therapy at the US-based National Institutes of Health disputes this view. "It was earlier believed that the central nervous system is incapable of regeneration, but this has changed with the availability of stem cells. We can regrow neurons and offer hope to those suffering from paralysis."

Dr Badhe does temper her optimism though. "It is likely that stem cells may only help patients with fresh injuries," she says. It is possible that older the injury, the chances of recovery are lower.

Incidentally, Sion Hospital has also given stem cell therapy to a second patient, Anil Kumar, a farmer from Uttar Pradesh. He fell off a tree six months back and though his fractured spine was fixed, he has been immobile waist downwards. On April 21, a dose of stem cells was introduced into the cerebrospinal liquid around his spinal cord. In the last one week, there has been change in his condition so far. "We have to wait and watch over another three to six months," says Dr Sharma.

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**MASTER PLAN:** Dr Alok Sharma and Dr Purna Badhe examine R Ahire at Sion Hospital on Saturday