

# Paralysed man walks again after breakthrough treatment (Update)

October 20 2014, by James Pheby

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A paralysed man can walk again after receiving revolutionary treatment which one of the British scientists responsible hailed as a breakthrough "more impressive than a man walking on the Moon"—although others urged caution.

Darek Fidyka was paralysed from the chest down, but can now walk using a frame after nerve cells from his nose were transplanted into his severed spinal column in Poland, according to research published Tuesday in the journal *Cell Transplantation*.

"When there's nothing, you can't feel almost half of your body. You're helpless, lost," the patient, who is now recovering at the Akron Neuro-Rehabilitation Centre in Wroclaw, told the BBC's Panorama programme, who filmed his remarkable recovery.

"When it (the feeling) begins to come back, you feel you've started your life all over again, as if you are reborn," said the 40-year-old Polish man, whose injuries were caused by a knife attack in 2010.

"It's an incredible feeling, difficult to describe," he added.

Olfactory ensheathing cells (OECs), which form part of the sense of smell, were used in the treatment as they are pathway cells that enable nearby nerve fibres to be regenerated.

Pawel Tabakow, consultant neurosurgeon at Wroclaw University, led a

team of surgeons in removing one of the patient's olfactory bulbs before transplanting cultured cells into the spinal cord in the treatment's two crucial operations.

Contacted by AFP, he said the patient was "exhausted" by the documentary filming schedule, which lasted a year.

## **'Be very prudent'**

The scientists involved think that the cells, implanted above and below the injury, enabled damaged fibres to reconnect, although other researchers have reacted more sceptically.

"What we've done is establish a principle—nerve fibres can grow back and restore function, provided we give them a bridge," said Geoff Raisman, chair of neural regeneration at University College London's Institute of Neurology, who led the British research team working on the joint project.

"To me, this is more impressive than a man walking on the Moon. I believe this is the moment when paralysis can be reversed."

But other scientists were far more cautious, saying it was important to await the results of clinical testing with more cases.

"We have to be very prudent," said Alain Privat from France's health and medical research institute Inserm.

Simone Di Giovanni, head of restorative neuroscience at Imperial College London, added that there was "no evidence that the transplant is responsible for the reported neurological improvement".

This assertion was disputed by Wagih El-Masri, a professor of spinal

surgery at Keele University in Britain, who was an independent assessor on the Polish case.

"It is clear that on the balance of probability, the changes are due to the treatment," he said, adding that there was only a one percent chance that the recovery would have occurred due to other factors.

"As a clinician with 40 years' experience, I would strongly support that this line of research is pursued without raising the hopes too much of patients," he said.

## **'Significant progress'**

For two years after his injury, Fidyka showed no sign of recovery despite intensive five-hour physiotherapy sessions.

The first signs of improvement came three months after the surgery, when his left thigh began putting on muscle.

Three months later, Fidyka was able to take his first steps with the aid of parallel bars and leg braces. He can now walk outside using a frame and has also recovered some feeling in his bladder and bowel.

The research was funded by the UK Stem Cell Foundation and the Nicholls Spinal Injury Foundation (NSIF), set up by chef David Nicholls after his son Daniel was paralysed in a 2003 swimming accident.

"When Dan had his accident I made him a promise that, one day, he would walk again," Nicholls told the BBC.

"The results with Darek show we are making significant progress towards that goal."

NSIF has given £1 million (\$1.6 million, 1.26 million euros) to researchers in London and £240,000 to the team in Poland. Both camps say they will not seek to profit from the research.

They hope to raise enough money to hold clinical trials on 10 patients in Britain and Poland.

**More information:** Tabakow, P.; Raisman, G.; Fortuna, W.; Czyz, M.; Huber, J.; Li, D.; Szewczyk, P.; Okurowski, S.; Miedzybrodzki, R.; Czapiga, B.; Salomon, B.; Halon, A.; Li, Y.; Lipiec, J.; Kulczyk, A.; Jarmundowicz, W. Functional regeneration of supraspinal connections in a patient with transected spinal cord following transplantation of bulbar olfactory ensheathing cells with peripheral nerve bridging. *Cell Transplant*. Appeared or available on-line: October 21, 2014.  
[www.ingentaconnect.com/content ... T-1239 Tabakow et al](http://www.ingentaconnect.com/content... T-1239 Tabakow et al)

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