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Parkinson's miracle cure turns into a catastrophe

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Sarah Boseley, health editor
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Hopes of an early cure for Parkinson's disease by the implantation of foetal cells into the brain have been dashed by the devastating results of the first full trial of the technique, which found that a number of the patients were left with tragic side effects which cannot be undone.

The results of the trial will dismay Parkinson's sufferers around the world who had hoped the controversial treatment, which has been available in experimental form since the 1980s, might eventually spell an end to the crippling disease.

The American scientists who conducted the research found the therapy did not benefit patients over the age of 60 at all. Some of the younger patients did improve, but for 15% of those who received the implants, the outcome was worse than the disease.

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After a year of apparently doing well, these patients began to writhe, jerk their heads uncontrollably and throw their arms about involuntarily as the foetal brain cells that were intended to produce dopamine, the chemical that is depleted in Parkinson's sufferers, went into overdrive. The cells appear to have grown too well and are producing excessive amounts of the chemical. The scientists have no way bringing the dopamine levels back down.

Paul Greene, a neurologist from the Columbia University College of Physicians and Surgeons in New York, who was one of the researchers, said the results were "absolutely devastating" for the five patients who cannot control their movements.

"They chew constantly, their fingers go up and down, their wrists flex and distend," he told the New York Times. "It was tragic, catastrophic. And we can't selectively turn it off."

One man now has to be fed through a tube because he can no longer eat while another periodically becomes unintelligible during the day when the side effects, which in his case come

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Dr Greene says the technique must go back to the laboratory. "No more foetal transplants," he said. "We are absolutely and adamantly convinced that this should be considered for research only. And whether it should be research in people is an open question."

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The shocking results of the study are a setback for the scientists who hope that research into stem cells - the basic cells formed by the splitting of a fertilised human egg - may lead to cures for degenerative brain diseases.

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While scientists cultivating stem cells will have a much clearer idea of the quality and quantity of the material they have than those using foetal tissue, the theory behind the implantation technique - to "seed" the brain and encourage regeneration - is the same.

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The foetal tissue technique has not been used in the UK since an outcry over the use of aborted fetuses put a stop to such research in the 1980s. Brain cells that produce dopamine are extracted from the foetus and cultured. The tissue strands that result are implanted into the areas of the brain that are supposed to produce the chemical.

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The US trial was the first to be properly controlled. Forty patients, aged from 34 to 75, were randomly assigned to receive either the foetal cells or nothing. To ensure that the results were due to the treatment and not a placebo effect, all the patients underwent surgery - four holes were drilled in the brain, whether foetal cells were put in or not.

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The outcome, reported in the prestigious New England Journal of Medicine, will force a rethink over the treatment.

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Gerald Fischbach who was director of the National Institute of Neurological Disorders and Stroke which funded the study, said that this was the first time a technique which some neurosurgeons promoted as miraculous had been thoroughly evaluated.

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"Ad hoc reports of spectacular results can always occur," he said. "But if you do these studies systematically, this is the result you get."

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The surgery in the study was carried out at the University of Colorado School of Medicine in Denver, while the evaluation was done in New York.

Robert Meadowcroft, director of policy and research at the Parkinson's Disease Society in the UK, said the results were disappointing but did not, in his view, spell the end of any attempt to "seed" the brain with either foetal cells or, in the future, stem cells.

"We need to learn how to switch these cells off once they have done their work," he said.

Within a couple of years, there may be trials of techniques to implant stem cells into the brains of people suffering from

degenerative diseases in this country, following the decision by parliament to allow stem cell research.

Martin Edwards, chief executive of Reneuron, a UK company working on developing stem cell lines for medical treatment, said he believed the problem with using foetal cells was that nobody could be sure how much dopamine-producing tissue was being implanted.

But he said he was convinced that scientists would eventually succeed in helping patients with these distressing brain diseases. "There are some upsides. The cells have survived and a proportion of patients benefited. I interpret this with cautious optimism."

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