

Olfactory cells transplanted to treat spinal cord injury

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Three years after they treated patients with spinal cord injury in a randomized clinical trial with transplanted cells from the patients' olfactory mucosa (nasal cavities) to build a 'bridge' to span the gap between the damaged ends of the spinal cord, researchers found that some recipients had experienced a range of modest improvements and determined that the use of olfactory mucosa lamina propria (OLP) transplants was 'promising and safe.'

'This study demonstrated that transplantation of OLP affected motor [functional recovery](#) as well as improvement in ASIA sensory scores, bladder compliance, sensation and partial control, and daily life activities,' wrote the researchers.

Autologous olfactory ensheathing cells (OECs), said the researchers, are known to show high levels of nerve growth factor and neurotrophic receptor expression.

The researchers randomized 12 patients with complete [spinal cord](#) injury (SCI) to receive OLP transplants and followed them for three years after transplantation, noting that similar studies had not been designed to include long-term patient follow-up.

'The post-operative images in our study demonstrated that the transplants in the OLP group bridged the proximal and distal stumps (of the severed spinal cord), which may have provided assistance in establishing the integrity of the local neuronal signal circuit and conducting neural signals

for early motor or sensory recovery,' said Dr. Hua-Zi Xu, Department of Spinal Surgery, the Second Affiliated Hospital of Wenzhou Medical University, Peoples Republic of China. 'Most of the patients exhibited improvements within the first 12 to 24 months after surgery and their functional recovery slowly increased, but plateaued at 24 months after surgery.'

Overall, wrote the researchers, there appeared to be a 'greater improvement in sensory function rather than motor function in the ASIA score assessment.' They noted normalized bladder function in one patient and the return of bladder sensation in two of eight patients at 24 months. Eight of the 12 patients were without bladder sensation at the pre-operative evaluation.

'Optimal outcomes may be related to age, severity and level of injury, the quality and quantity of transplants, surgical technique, and post-operative rehabilitation,' concluded the researchers. 'We believe that to derive clinical benefits from OEC transplants a combination with other pharmacological agents is most likely to achieve significant axon regeneration and re-establish functionally useful connections across the injured spinal cord.'

Their study will be published in a future issue of *Cell Transplantation* .

'The primary benefits of using OECs is that they are easy to isolate and avoid ethical issues. They have similar properties as Schwann cells and can survive in the peripheral nervous system,' says Dr. Shinn-Zong Lin, vice superintendent for the Center of Neuropsychiatry, professor of neurosurgery at China Medical University Hospital, and Co-editor-in-Chief for *Cell Transplantation*. 'A benefit of this study is that it was a randomized, controlled, double blind prospective study, unlike similar studies preceding it. Though the present study demonstrated that OLP transplantation can lead to motor and sensory improvement, more work

is needed to optimize this observed functional recovery.'

More information: [ingentaconnect.com/content/cog... t-CT-1402_Wang_et_al](https://ingentaconnect.com/content/cog...t-CT-1402_Wang_et_al)

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