Speaking his mind: Implant allows man to communicate with the world

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J. R. was trapped in a silent prison, his body tethered to a ventilator because of a devastating stroke, his limbs paralysed and his voice silenced.

The 53-year-old man's brain functions normally, but his body doesn't respond to its commands. Alert and intelligent, he could only communicate by blinking.

Until now.

Six months after Emory University researchers implanted a tiny, Star Trek-like device in his brain to amplify its signals, J. R. can express his thoughts with words.

"See you later," he says, through the computer's voice synthesizer.

"Nice talking with you."

Researchers believe the tiny implant -- the size of the tip of a ballpoint pen -- is the first device that allows direct communication between the brain and a computer. It's been used on a patient once before. The implant is allowing J. R., a patient at the Atlanta Veterans Affairs Medical Centre, to use brainpower to move a cursor across a screen and convey simple messages such as "hello" and "goodbye."

BRAIN SIGNALS

The implanted device amplifies J. R.'s brain signals, which are then transmitted to a laptop computer through an antenna-like coil on his head.

"Of all things people lose, the ability to communicate is the most frightening thing --to know what you want to say and not to be able to say it," said Dr. Warren Selman, a neurosurgeon at University Hospitals of Cleveland who was not involved in the research. "This is the first step to unlocking that."

Like a computer mouse, the brain signals can move a cursor across the computer screen and point at icons with messages.

The man can also use the cursor to tell others that he is hungry or thirsty.

"It's like we're making the mouse the patient's brain," said Dr. Roy Bakay, one of two **Emory** University doctors who developed the technology.

Eventually, researchers hope to use the technology to teach patients to write letters, send e-mail and turn lights off and on via computer.

Bakay and Dr. Phillip Kennedy implanted the tiny glass cone into the man's brain six months ago.

A substance that encourages nerves to grow prompted the brain's nerves to link up to electrodes in the cone, forming what Bakay calls "a little brain" inside the cone.

The electrodes transmit electrical impulses produced by the brain to a computer.

To train J. R.'s brain, researchers told him to think about grabbing a glass. The cone is implanted in an area of the brain that can produce signals designed to cause movement.

The first human patient, a woman suffering from Lou Gehrig's disease, was able to control computer signals for 76 days before she died.

J. R., who was not identified further by researchers, is the second patient.

The National Institutes of Health is paying for research on at least one more patient.

ANIMALS

Bakay and Kennedy have been testing the technology on animals for 12 years.

Kennedy has patented the technology.

For more than a decade, some paralysed people have communicated with a computer program that translates their coded blinking into letters on a screen. J. R. can blink, but "I think he enjoys doing this," Bakay said.

Selman expressed caution about using the technology on anyone except patients with long-term paralysis.

"You'd hate to put something in somebody in an area (where) they're going to recover."

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