

In a first, key pancreatic cells inserted in wounded airman's liver

December 17 2009, By Fred Tasker and Lesley Clark

In what medical officials say is a first, the bullet-scarred pancreas from a service member who was shot in Afghanistan was flown from Walter Reed Army Medical Center in Washington to the University of Miami, where insulin-producing cells were salvaged from the organ and flown back to be dropped into the man's liver.

Three weeks later, a jubilant surgical team announced Tuesday that the transplanted [cells](#) are producing insulin and Airman Tre F. Porfirio, 21, of St. Marys, Ga., was feeling good enough to meet the University of Miami surgeon whose team spent six hours before dawn on Thanksgiving isolating the cells from the ravaged pancreas.

"It's an operation we would have done for anyone, but for someone who is putting his life on the line for all of us, I couldn't think of a better way to spend Thanksgiving," said Dr. Camillo Ricordi, the chief of the University of Miami medical school's Diabetes Research Institute, who developed the method for isolating the cells from the pancreas.

The procedure is the first known case of transplanting insulin-producing cells after a severe trauma and the first time that such a transplant has been conducted remotely, in an emergency situation. Ricordi said he hoped that it could lead to near-cures for people who were facing diabetes, which Porfirio would have faced without a functioning pancreas.

"This could become an unlimited cure available for everyone," Ricordi

said, noting that the procedure could lead to transplanting cells from even a damaged segment of a pancreas.

Doctors were working against the clock when Porfirio reached Walter Reed. He'd been shot in the back by an insurgent in a remote area of Afghanistan. Surgeons there had removed parts of his pancreas, stomach and gallbladder and his entire [duodenum](#), the part of the small intestine that's directly below the stomach. Part of his large [intestine](#) also had to be removed.

When Porfirio arrived at Walter Reed to have his abdominal structure reconstructed, Dr. Craig Shriver, the hospital's chief of general surgery, realized that the airman's pancreas was damaged beyond repair and pancreatic enzymes were leaking into his body, posing a threat.

Removing the pancreas can result in a severe, life-threatening form of diabetes that Shriver hoped to prevent. He asked transplant surgeon Rahul Jindal about alternatives. Familiar with Ricordi's work, Jindal called him.

"The answer was, 'Tell us what we can do to help,' " Shriver said.

At Walter Reed, surgeons removed what was left of Porfirio's pancreas, packed it into a container that would hold it at 32.3 degrees and shipped it on a commercial flight to Miami. Ricordi and his team got the organ at 11 p.m. and spent the next six hours removing the insulin-producing "islet" cells.

Using enzymes and gentle heat, they extracted hundreds of thousands of cells, which range from 0.002 inch to 0.02 inch in diameter, put them in a plastic bag similar to those used in blood donations, put them back in the container -- this time at 46 degrees -- and by 6:30 a.m. more than 220,000 purified islets were on a flight back to Walter Reed.

There, doctors hoisted the bag on a pole and, using gravity, fed the cells into a duct in the airman's [liver](#), with Ricordi and his team coordinating the procedure via the Internet.

The cells in Porfirio's liver now are producing insulin, though doctors are providing extra insulin to avoid stressing the new cells.

"The cells are lodged in his liver now, and they will develop their own new blood vessels there within weeks," Ricordi said.

Ricordi is optimistic about Porfirio's prognosis, even long term.

"There's no reason to think (the cells) will fail at any time," he said. "He has a very good chance for long-term health."

While Porfirio's case is the first with a traumatic injury, Ricordi and his colleagues developed the procedure for transplanting cells in 1990. It's used mostly in worst-case patients, often those with Type 1 diabetes, in which the pancreas produces no insulin.

In such cases, however, the cells were extracted from donated cadavers, meaning that the recipients had to stay on powerful anti-rejection drugs, as if they'd had full organ transplants. In recent years, sophisticated anti-rejection drugs are prolonging the lives of the transplanted cells, Ricordi said.

"In the past five years we're seeing tremendous progress," Ricordi said. "In the most recent trials, 70 percent of patients were showing success at five years ... the same as with an organ transplant."

His doctors say that Porfirio -- who's had 11 surgeries in the 20 days he's been at Walter Reed -- is mending well. He got to visit with Ricordi on Tuesday, and Ricordi, who speaks with a thick Italian accent and

attended medical school in Milan, noticed a tattoo on the airman:
"Italia."

Porfirio's father, Karl, who talked to the surgeons by phone from St. Marys, which is just north of Jacksonville, Fla., told the surgeon that the family hails from Abruzzi.

"I can't thank you enough for saving my son's life," Porfirio said to the surgeons. "I'm just overwhelmed."

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Citation: In a first, key pancreatic cells inserted in wounded airman's liver (2009, December 17)
retrieved 3 May 2024 from

<https://medicalxpress.com/news/2009-12-key-pancreatic-cells-inserted-wounded.html>

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