

# Doctors combine a pig kidney transplant and a heart device in a bid to extend woman's life

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Lisa Pisano looks at photos of her dog after her surgeries at NYU Langone Health in New York on Monday, April 22, 2024. Doctors transplanted a pig kidney into Pisano, who was near death, part of a dramatic pair of surgeries that also included a fix for her failing heart. Credit: AP Photo/Shelby Lum

Doctors have transplanted a pig kidney into a New Jersey woman who

was near death, part of a dramatic pair of surgeries that also stabilized her failing heart.

Lisa Pisano's combination of heart and [kidney failure](#) left her too sick to qualify for a traditional transplant, and out of options. Then doctors at NYU Langone Health devised a novel one-two punch: Implant a mechanical pump to keep her heart beating and days later transplant a kidney from a genetically modified pig.

Pisano is recovering well, the NYU team announced Wednesday. She's only the second patient ever to receive a pig kidney—following a landmark transplant [last month at Massachusetts General Hospital](#)—and the latest in a string of attempts to make animal-to-human transplantation a reality.

This week, the 54-year-old grasped a walker and took her first few steps.

"I was at the end of my rope," Pisano told The Associated Press. "I just took a chance. And you know, worst case scenario, if it didn't work for me, it might have worked for someone else and it could have helped the next person."

Dr. Robert Montgomery, director of NYU Langone Transplant Institute, recounted cheers in the operating room as the organ immediately started making urine.

"It's been transformative," Montgomery said of the experiment's early results.

But "we're not off the hook yet," cautioned Dr. Nader Moazami, the NYU [cardiac surgeon](#) who implanted the heart pump.

"With this surgery I get to see my wife smile again," Pisano's husband

Todd said Wednesday.



In this photo provided by NYU Langone Health, surgeons operate on Lisa Pisano at the hospital in New York on April 12, 2024. Doctors transplanted a pig kidney into Pisano, who was near death, part of a dramatic pair of surgeries that also included a fix for her failing heart. Credit: Joe Carrotta/NYU Langone Health via AP

Other transplant experts are closely watching how the patient fares.

"I have to congratulate them," said Dr. Tatsuo Kawai of Mass General, who noted that his own pig kidney patient was healthier overall going into his operation than NYU's patient. "When the heart function is bad,

it's really difficult to do a kidney transplant."

## The pig organ quest

More than 100,000 people are on the U.S. transplant waiting list, most who need a kidney, and thousands die waiting. In hopes of filling the shortage of donated organs, several biotech companies are genetically modifying pigs so their organs are more humanlike, less likely to be destroyed by people's immune system.

NYU and other research teams have temporarily transplanted pig kidneys and hearts into brain-dead bodies, with promising results. Then the University of Maryland transplanted pig hearts into two men who were out of other options, and [both died within months](#).

Mass General's pig kidney transplant last month raised new hopes. Kawai said Richard "Rick" Slayman experienced an early rejection scare but bounced back enough to go home earlier this month and still is faring well five weeks post-transplant. A recent biopsy showed no further problems.

## A complex case at NYU

Pisano is the first woman to receive a pig organ—and unlike with prior xenotransplant experiments, both her heart and kidneys had failed. She went into [cardiac arrest](#) and had to be resuscitated before the experimental surgeries. She'd gotten too weak to even play with her grandchildren. "I was miserable," the Cookstown, New Jersey, woman said.

A failed heart made her ineligible for a traditional [kidney transplant](#). But while on dialysis, she didn't qualify for a heart pump, called a left

ventricular assist device or LVAD, either.

"It's like being in a maze and you can't find a way out," Montgomery explained—until the surgeons decided to pair a heart pump with a pig kidney.



In this photo provided by NYU Langone Health, a gene-edited pig kidney with thymus is removed from its transport container to be prepared for transplantation at the hospital in New York on April 12, 2024. Doctors transplanted a pig kidney into a patient, who was near death, part of a dramatic pair of surgeries that also included a fix for her failing heart. Credit: Joe Carrotta/NYU Langone Health via AP

## Two surgeries in eight days

With emergency permission from the Food and Drug Administration, Montgomery chose an organ from a pig genetically engineered by United Therapeutics Corp. so its cells don't produce a particular sugar that's foreign to the human body and triggers immediate organ rejection.

Plus a tweak: The donor pig's thymus gland, which trains the immune system, was attached to the donated kidney in hopes that it would help Pisano's body tolerate the new organ.

Surgeons implanted the LVAD to power Pisano's heart on April 4, and transplanted the pig kidney on April 12. There's no way to predict her long-term outcome but she's shown no sign of organ rejection so far, Montgomery said. And in adjusting the LVAD to work with her new kidney, Moazami said doctors already have learned lessons that could help future care of heart-and-kidney patients.

Special "compassionate use" experiments teach doctors a lot but it will take rigorous studies to prove if xenotransplants really work. What happens with Pisano and Mass General's kidney recipient will undoubtedly influence FDA's decision to allow such trials. United Therapeutics said it hopes to begin one next year.

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