Artificial Heart Patient With End-Stage Renal Failure Recovers Kidney Function

At only 20 years old, Tiernee Gonzalez has been battling two major diseases for most of her young life: heart failure and kidney failure. When she became the first patient at Cincinnati Children's Hospital Medical Center to receive the SynCardia temporary Total Artificial Heart on Nov. 9, her doctors hoped it would bring her one step closer to winning her battle against end-stage heart failure. What they didn't expect, was that it would also help save her one remaining kidney.

"The SynCardia Total Artificial Heart is the only device that lowers CVP to single digits, which creates the potential for liver and kidney recovery," said Dr. David L.S. Morales , chief of pediatric cardiothoracic surgery at Cincinnati Children's. "In the case of this patient, what we initially defined as end-stage renal failure simply became delayed recovery thanks to the total artificial heart."

As a young girl, Gonzalez suffered from a form of kidney cancer called renal cell carcinoma. In addition to having one of her kidneys removed, she had to undergo chemotherapy, which weakened her heart. In August 2006, the summer before she started eighth grade, Gonzalez received a heart transplant.

However, over the next few years, her body rejected the donor heart and her health began to deteriorate. She progressed to end-stage renal failure and was looking at needing dialysis for the rest of her life. Doctors didn't think she would survive the wait for another heart transplant, so they decided to implant the SynCardia Total Artificial Heart.

"I was nervous at first, obviously," said Gonzalez. "After I got over the initial shock, I just kind of thought, 'OK... They're going to put this device in me and I'm not going to have a heart. It's going to be mechanical.'"

For almost two months after the implant surgery, Gonzalez continued to produce no urine, so she was scheduled for surgery on Jan. 2 to receive a permanent catheter. However, on Jan. 1, she began making urine.

"Even I had started to lose hope," said Dr. Morales. "And now, she has normal function to her kidney. This experience has made me very optimistic that many of the livers and kidneys that fail due to heart disease could actually be recoverable with the total artificial heart. Every time we put in this device, we learn something new."

On Jan. 12, Cincinnati Children's received approval from the FDA to switch Gonzalez to the Freedom® portable driver, the world's first wearable power supply for the SynCardia Total Artificial Heart. The Freedom driver will allow Gonzalez, who feels healthier than she has in years, to leave the hospital and return home for the first

time since October.

"I keep telling her that I don't know what God's plan is, but there is a plan," said Gonzalez's mother, Leslie Hudson . "And she just has to keep pushing through."

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