

First Successful Pig-to-Human Heart Transplant

Sujatha Suriyamoorthi, Sunil Shroff
MOHAN Foundation, India

The transplant world witnessed a breakthrough with the first successful animal-to-human transplant performed on a 57-year-old man from Maryland. This first-of-its-kind transplant was performed at the University of Maryland Medical School, Baltimore in January 2022. David Bennett Sr. had been on cardiac support for almost two months. However, he could not receive a conventional transplant due to his health condition and other reasons. On New Year's Eve, the United States Food and Drug Administration approved an emergency surgery and Bennett agreed to undergo this experimental treatment as he would have died without a new heart.

The heart came from a genetically modified pig that had ten genetic modifications. Three genes in the donor pig responsible for rapid antibody-mediated rejection by humans were knocked out. In addition, six human genes responsible for the immune acceptance of the pig's heart were inserted into the pig's genome. One more gene from the pig was removed to prevent excessive growth of the pig's heart tissue after being transplanted into a human.

This was a breakthrough surgery and brings us one step closer to solving the organ shortage crisis. There are simply not enough human organs available to meet the long list of potential recipients," said Bartley P. Griffith, the director of the cardiac transplant program at the University of Maryland Medical School, who performed the transplant surgery on Bennet.

Xenotransplant shall potentially offer new options for patients with end-stage organ damage, but this may also face ethical considerations including choosing suitable patients for such transplants, long-term transplant outcomes, and the risk of infections transmitted from animals to humans.

Corresponding Author: Dr. Sunil Shroff,
MOHAN Foundation, Chennai, Tamil Nadu, India
Email: shroff@mohanfoundation.org

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