



Opinion

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Who Really Did the First Successful Human Heart Transplant!?



Shahzadi Hossein*

Assistant Professor, Department of Pediatric Cardiology, Rajaie Cardiovascular Medical and Research Institute, Tehran, Iran

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***Corresponding author:** Shahzadi Hossein, Assistant Professor, Department of Pediatric Cardiology, Rajaie Cardiovascular Medical and Research Institute, Tehran, Iran

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Opinion

There is a desire for “permanence in history” in the existence of all humans. For every milestone and impressive development in the history of human knowledge, many scientists have tried but many of these scientific revolutions in knowledge is known as a unique name and a single scientist. But who is that one person!? is the name of a scientist that has been preserved in history for an event, true!? On the way to realizing great progress in knowledge, there are two groups of scientists. Those who try to make that progress faster for the first time and those who try to make that progress real and effective to help mankind, although slowly. But who is the real winner!? Rabbit or Turtle!? Human heart transplantation is one of the greatest achievements of medical knowledge that created a new hope for a better and longer life for patients with advanced heart failure. Despite the remarkable advances in medical knowledge, heart transplantation is still a standard method of treatment for patients with advanced heart failure.

More than 55 years have passed since the first human heart transplant but there is still this basic question: Who really did the first successful human heart transplant? In the late 1950s, Dr. Norman Edward Shumway and Dr. Richard Rowland Lower, with the aim of doing clinical heart transplants in humans, started researching and performing heart transplants in dogs, at Stanford university. The result of their 8 years of continuous efforts was the survival of several days of heart transplanted dogs. [1,2] however, Dr. Lower left Stanford in 1965 and went to medical college of Virginia to continue his independent research in the field of heart transplantation. On November 20, 1967, Stanford university and Dr. Shumway announced that they are ready to perform heart

transplants on humans. when they were waiting to find a suitable donor, Dr. Christian Barnard, who learned the heart transplant surgical techniques from Shumway and Lower, with cleverness and punctuality, performed the world’s first heart transplant at Groote Shur Hospital in Cape Town, South Africa, on December 3, 1967. recipient was Louis Washkansky, a 54-year-old man who was suffering from severe heart failure and donor was a 25-year-old girl, Denise Darvall who was brain dead due to an accident. Washkansky survived 18 days after the transplant and then died of a severe lung infection. this news quickly spread around the world as a great revolution in medicine; “... a man with a new heart...” and Barnard became a superstar in the world [1,2].

Three days later, on December 6, 1967, Dr. Adrian Kantrowitz performed the second heart transplant at the Maimonides medical center in Brooklyn, New York, using the same Shumway technique, on a baby who survived for about 6 hours. The recipient was a 17-day-old baby with severe Ebstein cardiac anomaly, and the heart donor was an anencephalic baby [1,2]. On January 2, 1968, Barnard performed his second heart transplant on a dentist, Dr. Philip Blaiberg, who survived 19 months [1,2]. Shumway performed his first heart transplant on January 6, 1968, on a 43-year-old worker man, Michael Kasperak, who survived for 14 days. Shumway’s first heart transplant was the fourth heart transplant in the world and Lower performed his first heart transplantation in May 1968, on a 54-year-old man, who survived for 7 days [1,2].

The great enthusiasm and excitement that arose from performing heart transplants around the world caused surgeons from different countries who had spent a little time to learn this

surgical technique and just to perform heart transplants in their own name as quickly as possible, for one year, 1968, more than 100 heart transplants were performed in different parts of the world, but unfortunately the initial results were very disappointing. Of 166 heart transplant cases during 1968 - 1970 in the world, only 30 patients (18 %) survived for more than one year: the two main causes of death in patients were acute graft rejection and infection [3,4]. The high death rate of the transplanted patients caused the fire of this passion to cool down very soon, so that in 1969 only 48 cases of heart transplants were performed in the world and in the following year, 1970, only 16 cases of heart transplants were performed in the world and soon many surgeons and societies demanded to stop performing heart transplants. Dr. Barnard and many other surgeons who considered themselves pioneers and first in heart transplantation, abandoned this surgery very soon after the disappointing results of heart transplantation [3].

Surgeons understood that it is easy to perform heart transplant surgery, but what is necessary for real success!? The answer was this: prevent early rejection of the transplanted organ. This is the real difference between success and failure in heart transplant. But the one who refused to surrender was Dr. Shumway. He returned to his laboratory and worked hard for nearly two decades to save the heart transplant and to help patients survive. He completed the heart transplant techniques, modified the heart transplant protocols, modified the selection criteria of the patients and the conditions of keeping the donated heart. He also developed the heart biopsy technique for early diagnosis and treatment of heart rejection.

But the main progress in the survival of transplanted patients was the discovery and development of a new immunosuppressant drug called cyclosporine. First, the researchers of Sandoz pharmaceutical company's microbiology laboratory in Basel,

Switzerland, isolated the *Tolypocladium inflatum* fungus from Norwegian soil samples in 1971 and subsequently produced the drug cyclosporine. In 1976, Dr. Jean Francois Borel discovered the immunosuppressive effect of this drug [4]. This drug specifically inhibited lymphocyte-dependent immunity and had less toxic and destructive side effects of other drugs. In the 1980s, Shumway and his team used this drug in heart transplants, and the one-year survival rate of heart transplant patients reached 80%. This was a great change in heart transplantation.

With the efforts of Shumway, heart transplant that seemed to have failed at the beginning, today is a lifesaver and according to available statistics, more than 8,000 heart transplants are performed annually in the world [5]. Today, with looking back, this question is raised: Who really did the first successful human heart transplant? Barnard? Kantriwitz? Shumway? Lower? Borel? or others?

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