

Ethics of organ donation and transplantation history essay



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Grafting, transplanting or transferring, all are terms that mean replacing a failing vital organ with a healthy functioning one. Human body build up with multi of organs, some of them are vital organs as Brain, Heart, Lungs, Liver, Pancreas and Kidneys with no any of them human cannot live at all. On the other hand, tissues include bones, tendons (both referred to as musculoskeletal grafts), cornea, skin, heart valves, and veins.

Transplantation and organ donation are inseparably intertwined; this dream has inspired scientists during the history to obtain a successful organ transplant between humans and beat the immune system army from fighting the gift of life and improve the quality of the recipient life.

Ancient Transplants and Myths

In fact, organ replacement was a dream in ancient times. The Hindu deity Ganesha had his head replaced by an elephant's head soon after birth (Rig-Veda, 1500 B. C.). In the Christian tradition, Saints Cosmas and Damian (fl. 3rd century A. D.) are famous for replacing the diseased leg of a true believer with the leg of a dark-skinned Moor, thereby becoming the patron saints of physicians and surgeons.[i]

Many Roman and Chinese myths cite transplants of legs and hearts by saints and medicine men, but the first account of an actual transplant took place in the second century B. C. The Indian surgeon Sushruta transplanted skin from one man to help rebuild the nose of another man. Another recorded account of transplantation took place in the late 16th century, again with skin. Italian surgeon Gasparo Tagliacozzi also did a skin graft, but his is also the first recorded account of rejection of the transplant by the patient.[ii]He

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recognized it to the “ force and power of individuality” in his 1596 work *De Curtorum Chirurgia per Insitionem*.

This shows that the idea of using human body as treatment in end stage diseases was flying in the scientific horizon. The failed experiments verses the successful ones have established a solid database for their followers to reach the first successful organ transplantation in the early 1900s.

Keratoplastic operation or corneal allograft transplant was performed successfully by Eduard Zirm in Olomouc, Czech Republic, in 1905.[iii].

The most important experimenter of transplantation in the early 20th century was the French surgeon Alexis Carrel. He began to experiment with the transplantation of arteries and veins, one of his few successful human procedures. This work would earn him the Nobel Prize in 1912. Carrel also was the first to identify the problem of rejection, a dilemma that would stymie many scientists and doctors. Experimenting on dogs, Carrel learned the recipient body most often rejects donor organ material[iv]

Nevertheless, who crooked the history on its head was the collaboration between all of Dr. Joseph Murray, Dr. J. Hartwell Harrison and Dr. John Merrill, they have registered the first successful golden standard therapy in the end stage renal disease when they performed the first kidney transplant in 23 Dec 1954 in Brigham Hospital at Boston, The procedure was done between identical twins to eliminate any problems of an immune reaction. For this and later work, Dr. Murray received the Nobel Prize for Medicine in 1990.[v]

In the late 1940s, Peter Medawar, working for the National Institute for Medical Research, improved the understanding of rejection. He has identified the immune reactions in 1951. Medawar suggested that immunosuppressive drugs could be used. Cortisone had been recently discovered and the more effective azathioprine was identified in 1959, but it was not until the discovery of cyclosporine in 1970 that transplant surgery found a sufficiently powerful immunosuppressive.

Other organ transplantation attempts were not stopped. The journey has continued by James Hardy, when he performed the first successful deceased-donor lung transplant into a lung cancer sufferer in June 1963 in Jackson, Mississippi.

Thomas Starzl of Denver attempted a liver transplant during the same year, but was not successful until 1967.

The heart was a most important prize for transplant surgeons. However, as well as rejection issues the heart deteriorates within minutes of death so any operation would have to be performed at great speed. The development of the heart-lung machine was also needed. Lung pioneer James Hardy attempted a human heart transplant in 1964, but a premature failure of the recipient's heart caught Hardy with no human donor, he used a chimpanzee heart that failed very quickly.

In December 3, 1967, the media has published the first successful achievement by Christian Barnard in Cape Town, South Africa. Louis Washkansky, the recipient, survived for eighteen days amid what many saw as a distasteful publicity circus.

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The media interest prompted a spate of heart transplants. Over a hundred were performed in 1968-69, but almost all the patients died within sixty days. Barnard's second patient, Philip Blaiberg, lived for 19 months.

It was the advent of cyclosporine that altered transplants from research surgery to life-saving treatment. In 1968 surgical pioneer Denton Cooley performed seventeen transplants including the first heart-lung transplant. Fourteen of his patients were dead within six months.

By 1984 two-thirds of all heart transplant patients survived for five years or more. With organ transplants becoming commonplace, limited only by donors, surgeons moved onto more risky fields, multiple organ transplants on humans and whole-body transplant research on animals.

On March 9, 1981, the first successful heart-lung transplant took place at Stanford University Hospital. The head surgeon, Bruce Reitz, credited the patient's recovery to cyclosporine-A[vi].

Recently, the rate of successful organ transplants has increased rapidly and it has become the standard therapy in all over the world for end stage organ failure diseases. Combining to it the modern immunosuppression, which make transplants more common. However, types of donation have enlarged the pool of organs to cover the critical shortage of organs such as:

Living-related donor.

Living unrelated donors.

Deceased donors.

Non-heart beating.

Xenotransplantation.

Peter K. Linden (January 2009) simply described this technology explosion as “ This field has progressed initially from what can accurately be termed a “ clinical experiment” to routine and reliable practice, which has proven to be clinically effective, life-saving and cost-effective”[vii].

To summaries the Organ Transplantation History, we can list the significant events in this timeline frame:

1954: On December 23, the first successful living-related kidney transplant led by Dr. Joseph Murray and Dr. David Hume at Brigham Hospital in Boston: A kidney was transplanted from Ronald Herrick into his identical twin, Richard.

1962: First successful kidney transplant from a deceased donor, led by Dr. Joseph Murray and Dr. David Hume at Brigham Hospital in Boston.

1963: First successful lung transplant led by Dr. James Hardy at the University of Mississippi Medical Center in Jackson, MS.

1966: First successful pancreas/kidney transplant led by Drs. Richard Lillehei and William Kelly at the University of Minnesota in Minneapolis, MN.

1967: First successful liver transplant led by Dr. Thomas Starzl at the University of Colorado in Denver, CO.

1967: First successful heart transplant led by Dr. Christiaan Barnard at Groote Schuur Hospital in Cape Town, South Africa.

1968: First successful heart transplant in the United States led by Dr. Norman Shumway at Stanford University Hospital in Stanford, CA.

1968: Uniform Anatomical Gift Act establishes the Uniform Donor Card as a legal document for anyone 18 years of age or older to legally donate his or her organs upon death.

1972: End Stage Renal Disease Act (ESRD) paves way for Medicare Coverage of Renal Dialysis and Kidney Transplants.

1981: First Successful heart/lung transplant led by Dr. Brice Reitz at Stanford University Medical Center, Stanford, CA.

1983: FDA approves Cyclosporine, the most successful anti-rejection medication developed to date; by 1984, two-thirds of all heart transplant patients survived for five years or more.

1983: First successful single lung transplant led by Dr. Joel Cooper from the Toronto Lung Transplant Group, at Toronto General Hospital in Canada.

1984: National Organ Transplant Act (NOTA) establishes a nationwide computer registry operated by the United Network for Organ Sharing (UNOS); authorizes financial support for Organ Procurement Organizations (OPOs); prohibits buying or selling of organs in the United States.

1986: Dr. Michael DeBakey performs the world's first heart transplant in 14 years. (USA)

1986: First successful double-lung transplant led by Dr. Joel Cooper from the Toronto Lung Transplant Group, at Toronto General Hospital in Canada.

1986: Required Request Laws require hospitals to develop policies to identify patients as potential donors and approach families about organ donation.

1988: FDA approves Viaspan, which greatly extends the preservation of donated livers.

1989: First successful small intestine transplant (a near-total small bowel from a deceased donor) into a child, led by Dr. Olivier Goulet in Paris, France.

1989: First successful living-related liver transplant led by Dr. Christoph Broelsch from Hamburg, Germany, at the University of Chicago Medical Center.

1990: First successful living-related lung transplant led by Dr. Vaughn Starnes at Stanford University Medical Center in Palo Alto, California. He transplants the lobe of one lung from an adult female into the woman's 12-year-old daughter.

1992: First baboon to human liver transplant performed by Drs. Satoru Todo, Andreas Tzakis and John Fung, under the direction of pioneer transplant surgeon Thomas Starzl, at the University of Pittsburgh Medical Center.

1998: National Conditions of Participation legislation enacted; required hospitals to refer all deaths, and imminent deaths, to the local Organ Procurement Organizations (OPOs)

1998: First successful hand transplant led by Australian Dr. Earl Owen and Frenchman Dr. Jean-Michel Dubernard in a 13-hour long operation in Lyon, France.

2005: First successful partial face transplant led by Dr. Bernard Devauchelle and Dr. Jean-Michel Dubernard in Amiens, France.

2008: Dr. Michael DeBakey, the world-famous cardiovascular surgeon who pioneered such now-common procedures as bypass surgery and invented a host of devices to help heart patients, died on July 11, at the age of 99.

2010: The world's first full-face transplant took place in Spain. The recipient was a man injured in a shooting accident. In July, the recipient who was only identified as Oscar (age 31), spoke with considerable difficulty at a news conference at Barcelona's Vall d'Hebron hospital, where he was operated on in late March[viii].

Advanced Medical Technologies Ethical Dilemma