

History of Renal Transplantation

Transplantation of kidney for treatment of renal failure has been an attractive concept for many years.

Interest in modern transplantation developed in the early part of 20th century because of innovation in experimental & clinical surgical skills. Payr's demonstrated the first workable method of vascular suturing that led to widespread interest in organ transplantation.

In Vienna, Ullmann & Alfred Von Decastello were first to report a successful experimental organ transplant, using Payr's method of vascular suturing, in 1902.

Ullman managed to auto transplant a dog kidney from its normal position to the vessels of the neck and Von Decastello had carried out dog to dog kidney transplants.

In Lyon, Mathieu Jaboulay (1860-1913), along with Carrel, who had worked on improvement of vascular suturing, carried out first xenograft kidney transplant using pigs and goats as donor, transplanting the organ to the arm or thigh of patient with ESRD.

Soviet surgeon Yo-Yo Vorony performed first allograft human kidney transplant, transplanting kidney from a patient dying of head injury to the thigh vessels of recipient. The kidney did not work but post-mortem suggested patent donor vessels. In this era of first half of 20th century, it was now evident that although surgically organ transplantation is possible, but the organ were not be able to function. Thus simultaneous efforts were started in order to achieve proper function of the transplanted organ.

Dempstein, in London, and Simonsen, in Denmark, found that pelvic position of kidney was preferable to superficial site & also concluded that an immunological factor was the cause of failure in earlier allograft transplants.

In early 1950, various centres in Europe & USA had attempted renal allograft transplant but with a very little success.

The first kidney transplants between living patients were undertaken in 1954 in Boston and Paris. The Boston transplantations, performed on December 23,1954, at Brigham Hospital was performed by Joseph Murray, J. Hartwell Harrison, John P. Merrill and others. 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. The recipient died eight years after the transplantation.

There still remained the apparently almost insoluble problem of rejection of any kidney other than an identical twin kidney.

The first attempt to suppress the immune response was total body irradiation of recipient carried out by Dr. Merrill's group in Boston, Dr. Kuss & Dr. Hamburger in Paris & by Proff. Shackmans group in London. But radiation was associated with unacceptable complications.

Then came the discovery of 6 Mercaptopurine by Dr. Schwartz and Dameshek in 1959, which was the first light of emerging immune suppressants.

This is followed by introduction of Azathioprine in 1960 in New York & with addition of steroids; the standard immune suppressive therapy of today was introduced to the practice of renal transplantation in early sixties.

This was followed by, the clinical use of Cyclosporine in 1978 & of Tacrolimus in 1987. Simultaneous work on tissue typing had also contributed for long lasting success of transplant. First noted by Terasaki & associates it was described in more detail by Kissmeyer Niclson & coll. In 1966, Pre-transplant cross match between donor cells & recipient serum had led to a marked diminution in hyperacute rejection.