

## PANEL VI: SURGICAL ASPECTS OF ORGAN TRANSPLANT

Reporter - DALE McMAHON

Dr. Richard Lillehei opened the discussion with a light hearted look at the history of transplants from the time of the Greeks through St. Cosmos and St. Damian to the early years of this century and Guthrie, Carrel and Dorfler.

He then spoke briefly concerning his own present activities. He told the group of his work with pancreatic transplants. He has done four such procedures on patients with severe Juvenile Diabetes and Renal Failure. Although none of these patients are still living he feels that much was learned from these and is optimistic for future endeavours. The next logical step he believes would be to pre-form the transplant on a patient with Simple Diabetes.

Panel Chairman Dr. Thomas Starzl briefly described his own series of sixty-four kidney transplants. In these patients there is a minimum follow up of 4½ years. Of these sixty-four, thirty are still alive and all but two of these have good function. He then pointed out that all of these transplants were carried out in the pre-Donor Selection stage of transplant Surgery. It was his hope that today with modern techniques, especially Donor Selection, that close to a 90% One Year Survival Rate could be obtained. After this first year the rate of loss of patients, even in the old series, was not great, and survival to the first complete year was the measure of improved techniques and management.

Dr. S. G. Lannon then spoke on the "Assessment of Viability of Cadaver Organs". He referred to the Donor Bank concept of the not too distant future and emphasized how important it would be to ascertain the functional ability of an organ before its implantation.

Anoxic damage he said was the most important consideration. This anoxic damage could occur in three ways.

- (1) Prior to the death of the donor.
- (2) During the death of the donor and before adequate storage.
- (3) During extra-corporeal storage.

He referred to his own studies on the renal cortex and reported that measurement of PAH (para amino Hippuric acid) transport in stored kidneys was a more sensitive test of their functional ability than was the measurement of oxygen utilization or protein synthesis. He then stated that storage in a solution containing THAM in a concentration of 15 m M/l significantly lengthened the survival time (with regard to the preservation of adequate function) in the dog kidney.

Dr. Thomas King then commented on transplant research. One of the points concerned the regulation of heart rate in a transplanted heart. The heart rate is controlled by the catecholamines of the recipient. This has been shown he said by experiments in which a donor's heart is attached in parallel to a recipients. Assays were then able to show that the rate of the donated heart depended on circulating catecholamines. Looking quickly into the future Dr. King predicted the advent of heterograft transplants.

In response to a question from Dr. King, Dr. Starzl reported on his own series of liver transplants. During the past 1½ years Dr. Starzl has preformed 14 liver transplants. Three of these have been classed as technical failures. One patient died of hepatom metastasis 13½ months after receiving a liver to replace one removed because of hepatoma. Five patients are today alive and out of hospital. The remaining five died between 35 days and 6½ months of thrombosis of the right hepatic artery which developed in all cases early in the post-operative period.

Dr. Lillehei was asked about the current status of preservation of organs. Hypothermia he stated enabled an organ to be stored

for 3-4 hours and still retain acceptable function. If combined with hyperbaric oxygen 50-75% of stored organs would retain adequate function for 12 hours and 30-40% for 24 hours. If perfusion of the organ was included with the hypothermia and hyperbaric oxygen then virtually 100% of organs

retain adequate function for 24 hours.

The latest advances said Dr. Lillehei were being made in the development of containers suitable for the transportation of organs which would incorporate the features mentioned above. For the future he predicted the freezing of organs for their preservation.



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