

Evolution and Challenges of Pancreas Transplantation

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The pancreas has long been perceived as a formidable organ and it took the realm of pancreas transplantation nearly 30 years, from the experimental stage in the 1980s, to emerge as a standardized transplant procedure. The first pancreas transplant was performed in December 1966 by Kelly, Lillehi and Fredrick Goetz as a combined pancreas-kidney transplant procedure⁽¹⁾.

At present, pancreas or islet transplantation is recognized as the only cure for type 1 diabetes mellitus and certain cases of type II diabetes. The success of the pancreas transplant program has largely been due to improved techniques with a better understanding of how to avoid the complications of the surgery. This has resulted in continuing improvement in both short-term and long-term outcomes, as well as significant enhancements of quality of life, end-organ disease management with lower overall mortality⁽²⁾. However, the procedure's acceptance in India has been relatively sluggish.

India first ventured into pancreas transplantation under the stewardship of Dr. Sandeep Guleria at AIIMS, New Delhi. However, subsequent transplant procedures have been sporadic with only a few surgeons having performed this surgery.

This edition of ITN shares both global and Indian data on pancreas transplants. In 2021, India contributed 19 of the total 2025 pancreas transplants performed worldwide. Given that the total number of organ transplants was 144,302, pancreas transplants only constituted 1.4% of the total.

The year 2000 marked a significant breakthrough with the introduction of the "Edmonton protocol," a simpler and less complex method for successful solitary islet transplantation. Although this protocol has advanced from a theoretical concept to a viable treatment option for type 1 diabetes patients globally, its success has been limited due to limited number of pancreas donated and difficulty in maintaining the survival and function of the transplanted islet cells over time. Research is ongoing to improve the effectiveness and availability of this treatment, such as methods to grow large numbers of islet cells in the lab and the development of better immunosuppressive and anti-rejection therapies. This type of transplant will be a true game-changer when it is universally available and becomes the standard of care for diabetes.

References

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