Liver transplantation: the past, the present and the legacy of Dr. Thomas Starzl

In the late spring of 2017, we were asked to be the guest editors of the *AME Medical Journal*'s special issue on liver transplantation. The timing of this invitation was, coincidental or not, poignant since it came only a few months after the passing of the legendary surgical pioneer of liver transplantation, Dr. Thomas E. Starzl who passed away in March of 2017 at the age of 90 years (1). Dr. Starzl had been appropriately called the "Father of Modern Transplantation" and if it were not for Dr. Starzl, the history of liver transplantation probably would have been very different. Today, the world accepts liver transplantation as a routine medical-surgical endeavour for end-stage liver disease and hepatocellular carcinoma that cannot be cured otherwise. However, it was not always this way. The first experiments in liver transplantation occurred in canine experiments establishing the basic anatomical surgical techniques. The first attempt at liver transplantation in a human patient occurred in 1963 (2) at the University of Colorado, Dr. Starzl's original university centre. This initial attempt at liver transplantation ended tragically. The patient, a 3-year-old child with biliary atresia, exsanguinated on the operating room table. In fact, the first seven liver transplants in those early years of the 1960s were failures with no patient surviving longer than 23 days (2). Not surprisingly, the procedure was controversial and considered highly experimental. By the mid-1960s to the 1970s, post-operative survival was longer but with immunosuppression borrowed from the renal transplant experience of the day, graft rejection was a major clinical problem although there were a few long-term survivors. Regardless, liver transplantation was still limited: in scope, availability and most importantly, credibility.

With every technological or scientific endeavour, there is a development that dramatically changes the field. In liver transplantation, that revolutionary breakthrough came via the development of the immunosuppressive drug cyclosporine. The effect that cyclosporine had on liver transplantation is epitomized by the paper published by Dr. Starzl (who by this time had moved to the University of Pittsburgh) and colleagues in the *New England Journal of Medicine* (3). In this landmark paper, with the use of cyclosporine, 11 of 12 liver transplant recipients survived 1 year, a remarkable accomplishment for its time. The successful use and availability of cyclosporine in the 1980s followed by the availability of tacrolimus in the 1990s (4,5), demonstrated that liver transplantation was feasible and with feasibility came greater availability—an expansion in the development of liver transplant medical and surgical training programs, and a proliferation of liver transplant centres around the world.

Today, there are thousands of liver transplants performed around the world. The transplant recipients range from infants for biliary atresia to adults in their 70s for end-stage liver disease of various etiologies. Thanks to an expanded armamentarium of immunosuppressive agents, antiviral and antimicrobial agents, these patients are now living many years to many decades and most have the potential to expect a full life expectancy. Keeping these patients alive and well, with a good quality of life, however, remains a complex clinical challenge and the field of transplantation must continue to evolve clinically and scientifically. The care of these patients, however, can no longer be confined just to expert liver transplant centres for the simple reason that there are simply too many dispersed geographically to areas that may or may not contain a regional transplant centre. It is highly likely that the average practitioner can expect to encounter these patients in the office, in the emergency room and on the medical/surgical wards. A passing familiarity with the medical and surgical issues surrounding liver transplantation is therefore desirable, hence the need for this supplement.

In conclusion, we would like to end this editorial with a dedication. This special issue on liver transplantation is dedicated to the surgical/medical transplant specialists and allied health care personal who make transplantation happen. It is dedicated to the organ donors and their families without whom, transplantation would not be possible. Lastly, it is dedicated to the liver transplant recipients. Each and every day that they experience life to its fullest is a testimony to the lasting legacy and vision of Dr. Thomas Starzl.

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