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Session Title : Kidney allograft in multi-organ transplantation

Indication and outcomes of simultaneous kidney transplantation with other organ transplantation

Sung Shin
Asan Medical Center, University of Ulsan, Republic of Korea

Kidney allograft in simultaneous heart & kidney Transplantation

Simultaneous heart-kidney transplantation (SHKT) is becoming increasingly common for patients with end-stage heart failure and chronic kidney disease. A study involving 35 patients from a single-center, spanning 1996 to 2015, showed promising outcomes. 37% had delayed graft function (DGF) after transplant. Factors like mechanical circulatory support device therapy and pulmonary hypertension before transplant were linked to DGF, which affected long-term renal allograft function. Cardiac dysfunction leading to renal dysfunction is labeled as cardiorenal syndrome. As the number of patients needing both heart and kidney transplants grows, a balanced perioperative management protocol is essential. For intraoperative management, a combination of inotropes, vasopressors, and fluid administration is preferred. Despite the promising outcomes, studies are needed to standardize guidelines for patient selection and management for SHKT. In contrast, the United Network for Organ Sharing (UNOS) registry data evaluated 749 adults undergoing SHKT post-2000. The study concluded that in the current transplant era, survival after SHKT in patients with pre-transplant MCS was equivalent to that of conventional SHKT. However, pre-transplant dialysis status determined post-SHKT dialysis, which was a major risk factor for both in-hospital and long-term mortality. Another study focusing on the changes in the UNOS allocation policy in 2018 demonstrated that although the new policy improved waitlist outcomes, posttransplant outcomes worsened. Factors like undersized hearts, use of extra-corporeal membrane oxygenation, and the policy change itself were linked to increased mortality. An alternative to SHK transplantation is the "Safety Net" strategy, which involves kidney transplantation 6 months post-heart transplant, but only if native kidney function doesn't recover. A decision-analytic model suggested that SHK might be inefficient in certain scenarios. The findings highlight the need for more defined criteria for SHK transplant eligibility. Another conference in 2019 discussed the challenge of differentiating patients with reversible kidney injury due to cardiorenal syndrome from those with advanced kidney disease. This collaborative effort aimed to develop guidelines for kidney transplantation in

SHK candidates. Further research using the OPTN/UNOS database identified risk factors associated with kidney DGF in SHK recipients. It was found that SHK recipients with DGF had a greater mortality rate. Proper matching of recipients and donors and improved peri-operative management might reduce the risks. Lastly, a retrospective study compared 27 patients undergoing HKTx with a matched cohort undergoing solitary kidney transplantation (KTx) from 1987 to 2019. The results indicated similar graft function and patient survival rates for both groups, except for those with prior cardiac surgery requiring sternotomy, which showed reduced early graft and patient survival. In the U.S., primary kidney dysfunction due to chronic hypertension and diabetes is the major reason for kidney transplants. However, a rising indication is secondary kidney dysfunction associated with other severe organ failures. Thus, multiorgan transplantation, especially involving the kidney, is becoming more common. Notably, there's been a stabilization in combined liver-kidney transplants since the introduction of the 'safety net' policy. However, combined heart–kidney and lung–kidney transplants have seen increased utilization. The decision-making process for combined heart–kidney transplants in obese patients, especially with non-dialysis-dependent kidney disease, is intricate. Data from the United Network for Organ Sharing indicates that heart-kidney transplants might lead to reduced long-term mortality compared to isolated heart transplants. For pediatric patients, simultaneous heart-kidney transplantation (sHKTx) is advised in cases of kidney failure requiring dialysis or when eGFR is ≤35 ml/min/1.73 m2. Delaying kidney implantation in simultaneous heart-kidney transplantation may result in better renal graft function. Finally, the 2018 heart allocation policy might have affected the survival rate of certain patients undergoing simultaneous heart-kidney transplants, calling for more research in this field.

Kidney allograft in simultaneous liver & kidney Transplantation

Due to a rising number of liver transplant candidates with renal dysfunction and a shortage of donor organs, there is a need to reassess guidelines for simultaneous liver-kidney transplantation (SLK). This consensus meeting critically evaluated data on patient and renal outcomes after liver transplantation alone or SLK. The combined liver-kidney transplant is a crucial procedure for patients with end-stage liver and kidney diseases. Kidney injury is prevalent in liver disease patients, accounting for 10% of liver transplants in the US. Current policies standardize medical criteria and introduce a 'safety net'. This review evaluates recent data and best practices in this field. The prioritization of liver recipients with renal dysfunction has increased the use of SLKT. Data reveals 20% short-term loss of transplanted kidneys after SLKT, suggesting that renal transplantation might be delayed for liver recipients at high risk. A kidney allocation variance may help in conserving rare renal allografts. Despite the increased use of SLKT, there's uncertainty about the immunological benefits and protocols. This review evaluates SLKT outcomes considering factors like donor-specific HLA antibody testing and suggests the need for continued research to improve immune-related outcomes. The study compared survival rates after different transplant types in the US from 2002 to 2018. Early kidney after liver transplantation (KALT) had survival rates equivalent to SLK, supporting the "safety net" policy. However, fewer African-Americans underwent early KALT, indicating potential access issues. Examining patients who underwent SLKT, those with hypertension/diabetes (HTN/DM) had lower survival rates than

those with acute tubular necrosis/hepatorenal syndrome (ATN/HRS), even if they were less acutely ill. Consideration of these factors is essential in allocation schemes. Since 2002, SLKs in the US have increased due to policy changes. Despite the introduction of the new kidney allocation system (KAS), a large portion of high-quality kidneys may be allocated to patients who might not need them. This underscores the need for clearer criteria. Kidney injury is common in end-stage liver disease patients. Simultaneous liver kidney (SLK) transplantation has been on the rise since 2002. The criteria for allocation is consistent for patients with chronic conditions but varies for those with acute conditions. Accurate differentiation of AKI causes and strategies for optimal organ allocation are essential.

Kidney allograft in simultaneous pancreas & kidney transplantation

In patients with type 1 diabetes and end-stage renal disease, the study aimed to determine if simultaneous pancreas-kidney (SPK) transplantation offers better survival than kidney transplantation alone. SPK transplantation resulted in longer median survival times compared to other methods. SPK transplants, especially those with a functioning pancreas graft after 1 year, had improved patient survival. A systematic literature review examined the outcomes of simultaneous pancreas and kidney transplantation for both type 1 and type 2 diabetes patients. Current evidence shows good results for type 1 diabetes patients across several metrics, while the applicability for type 2 remains controversial. Despite potential complications, the procedure can be seen as a last resort for severe or life-threatening diabetic complications. The study looked at patients who underwent an SPK transplant at the University of Wisconsin-Madison between 1986 and 1993 and had a functioning pancreas allograft for over 25 years. Although the procedure can have complications, with careful follow-up, some recipients show exceptional outcomes, highlighting the importance of managing complications in these patients. The research compared outcomes of SPK transplantation in type 1 and type 2 diabetes patients, assessing the association of factors like age, BMI, and pretransplant insulin requirements with post-transplant results. The study suggests a less restricted approach to using SPK transplantation in type 2 diabetes patients, as outcomes are similar between the two types of diabetes. The study compared outcomes between simultaneous deceased donor pancreas and living donor kidney transplant (SPLK) with the traditional simultaneous pancreas-kidney transplant (SPK). While SPLK offers some advantages, the study found higher incidences of rejection and graft failure for the pancreas in SPLK, suggesting more refinements are needed before SPLK can be a routine alternative. Pancreas transplantation trends in the USA were analyzed, especially in relation to simultaneous pancreas kidney (SPK) transplantation. While pancreas transplantation rates have declined, outcomes have improved. There's a growing frequency of SPKs in type 2 diabetes patients and older patients, with excellent results. The impact of early pancreas allograft loss on subsequent kidney graft and patient survival post simultaneous pancreas-kidney transplantation (SPK) was studied using national transplant registry data. The study concluded that SPK recipients with a functioning pancreas graft 3 months post-transplant have better outcomes. Early pancreas graft loss leads to worse kidney and patient survival compared to kidney transplant alone.