

Simultaneous Living Kidney And Liver Transplantation in a Young Male From Two Living Donors

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ABSTRACT

Simultaneous kidney and liver transplantation (SKLT) is the surgical treatment modality for combined liver and kidney failure. Although it is a challenging procedure, but has got the added advantage of a single procedure and common immunosuppression therapy. Recently, the practice of deceased donors SKLT has increased dramatically in the West. However, it is less frequently performed with living donors. Here, we describe a successful SKLT procedure from two separate living donors in a 31-year male, who presented with end-stage renal disease secondary to hypertensive nephropathy and decompensated chronic liver disease secondary to hepatitis C infection. The patient had a smooth recovery and on 1-year follow-up, he is stable.

Key Words: *Simultaneous, Liver, Kidney, Transplantation.*

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INTRODUCTION

Simultaneous liver and kidney transplantation (SKLT) is the surgical treatment modality for combined liver and renal failure. The common indication of SKLT is an end-stage liver disease (ESLD) with irreversible kidney failure secondary to chronic renal parenchymal diseases or hepato-renal syndrome (HRS).¹

Solo liver transplantation, in patients having renal insufficiency, is associated with poor outcomes.² Similarly, patients with compensated cirrhosis, remain at risk of decompensation after solo renal transplantation.³ The SKLT has got the added benefit of a single procedure and common immunosuppression therapy. However, it has recorded longer ICU and hospital stays, and a poor short-term outcomes.²

In recent times, the practice of SKLT has increased with deceased donors in the West. However, this procedure is less frequently performed in living-related centres. Here, we report a successful SKLT procedure from two separate living donors.

CASE REPORT

A 31-year male presented to our department with a history of end-stage renal disease (ESRD) secondary to hypertensive nephropathy. He was on maintenance dialysis twice weekly. He also had chronic liver disease (CLD) secondary to hepatitis C infection with decompensated ascites.

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His Child-Turcotte-Pugh score was B9. CT-scan abdomen showed cirrhotic liver morphology, gross ascites, and bilateral echogenic kidneys. He was planned for the SKLT procedure. The patient and family were counselled about the morbidity, mortality, possible outcomes, and benefits of the procedure.

Two separate living liver and kidney donors' workup was completed. The kidney donor vascular anatomy and liver graft anatomy were evaluated through a contrast-enhanced CT-scan while biliary anatomy was delineated on MRCP. The renal donor functions were evaluated with a DTPA scan. The HLA typing and complement-dependent cytotoxicity were performed for the renal match.

Renal dialysis was performed preoperatively. First, the kidney was transplanted retro-peritoneally in the right iliac fossa by anastomosing the graft vessels with the recipient's vessels. The ureter was anastomosed with the urinary bladder over a DJ stent. Adequate urinary output was noted postimplantation. A right lobe liver graft without the middle hepatic vein (MHV) was implanted with the piggyback technique. A confirmatory doppler ultrasound scan and cholangiogram were performed at the end of implantation. The patient was kept ventilated overnight. Fluids and inotropic support were used to manage the patient in the intensive care unit. His vitals, ECG, drain output, and urine output were closely monitored. The patient was extubated the next day. Oral Tacrolimus, 1 mg, BID, Mycophenolate Mofetil, 1gm, BID, along with steroids were started as immunosuppressants. His hospital stay was uneventful and was discharged on the 15th postoperative day. On 1-year follow-up, the patient was doing well.

DISCUSSION

Since the introduction of the MELD scoring system, the trend of SKLT has increased worldwide. The indications for SKLT are ESRD secondary to metabolic liver diseases or dual organ failure

secondary to isolated liver and kidney pathologies. In metabolic disorders, the kidneys are damaged as a sequel to the defective liver.³ During transitory renal impairment such as HRS, the decision to undergo SKLT becomes difficult. Various guidelines have been formulated to make this decision easy.⁴

The advances in surgical techniques and progress in immunosuppressive therapy have led to better long-term SKLT outcomes. Performing living-related donor SKLT is a challenging task, as a bigger team force is needed to perform the procedure. Based on the surgeon's choice, liver transplantation can be performed either by piggyback technique or caval transposition. Also, the kidney can be transplanted peritoneally or retroperitoneally.⁵

Regarding various complications, literature has reported an increased frequency of operative blood transfusion, and shock in SKLT recipients. However, the higher incidence of shock was secondary to sepsis and not due to haemorrhage. Infective complications are more common during the first 6-months.⁶ This patient did not face any such complications.

SKLT procedure has also got challenges related to anaesthesia and critical care. Judicious fluid therapy is advisable, which can be guided by central venous pressure, PICCO monitor, and trans-esophageal echocardiography. Continuous venovenous hemodiafiltration is recommended for those who suffer from severe acidosis, prolonged an-hepatic phase, and hyperkalemia.⁷

Regarding immunosuppressant use, SKLT has got the added advantage of common immunosuppressant use.² Postoperative infections were blamed for lower 1-year survival in SKLT recipients. However, a high 5-year survival (64%) was noted compared to sequential transplantation (53%).^{2,8}

Due to limited donor availability, it is critical to choose patients who have clear indications for SKLT. Proper patient selection, preoperative optimisation, and better perioperative care are the key steps for a good outcome in such challenging cases.

PATIENT'S CONSENT:

Informed consent was obtained from the patient before surgery.

COMPETING INTEREST:

The authors declared no competing interest.

AUTHORS' CONTRIBUTION:

AWD: Performed the procedure and supervised the whole team.

KU: Wrote the paper and assisted the consultant in the procedure.

HBA: Assisted the consult in the procedure.

All the authors have approved the final version of the manuscript to be published.

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