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Simultaneous Heart-Kidney transplantation: a case series from the University Hospital Centre Zagreb

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Introduction: Simultaneous heart-kidney transplantation (SHKT) is a therapeutic option for carefully selected patients with advanced heart failure and severe, predominantly irreversible kidney dysfunction. Compared with isolated heart or kidney transplantation, SHKT is performed far less frequently worldwide and requires specialized multidisciplinary transplant expertise. Observational studies

TABLE 1. Pretransplant characteristics and clinical outcomes following simultaneous heart–kidney transplantation

Characteristic	Patient 1	Patient 2	Patient 3
Pretransplant characteristics			
Age, years	54	40	54
Heart disease	ICM	NICM	ICM
Renal disease	PKD, DN, HN, CRS	DN, HN	Suspected TIN, CRS
BMI, kg/m²	25	25	30
LVEF, %	28	17	36
eGFR, mL/min/1.73 m²	20	<15	<15-50
Inotrope dependence	No	No	Yes
KRT duration, days	No	944	60
Time on waitlist, days	44	54	26
Perioperative characteristics			
Total cardiac ischemic time, min	149	168	244
Kidney cold ischemic time	6 h 10 min	7 h 2 min	9 h 10 min
Posttransplant outcomes			
Follow-up	27 months	25 months	65 days
Survival	Alive	Alive	Died
Organ rejection	No	No	No
Donor-specific antibodies	No	No	Transient low intensity DSA (Cw8 MFI on day zero 1300; MFI on day 3 600)
eGFR at discharge, mL/min/1.73 m²	56	70	–
eGFR at 2 years, mL/min/1.73 m²	107	128	–
Cardiac graft function at 2 years	Normal	Normal	–
Major complications	CMV viremia; fungal infection	BK nephropathy	Kidney graft dysfunction; sepsis; MOF

Abbreviations: BMI, body mass index; CMV, cytomegalovirus; CRS, cardiorenal syndrome; DN, diabetic nephropathy; DSA, donor-specific antibodies; eGFR, estimated glomerular filtration rate; HN, hypertensive nephropathy; ICM, ischemic cardiomyopathy; KRT, kidney replacement therapy; LVEF, left ventricular ejection fraction; MOF, multiorgan failure; NICM, nonischemic cardiomyopathy; PKD, polycystic kidney disease; TIN, tubulointerstitial nephritis; –, not applicable.

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suggest a potential survival benefit of SHKT over sequential kidney-after-heart transplantation.[1-3] We report our single-center experience with SHKT.

Patients and Methods: We retrospectively analyzed three patients who underwent SHKT at University Hospital Centre Zagreb between 2024 and 2026. Pretransplant clinical characteristics, renal disease etiology, dialysis requirements, perioperative complications, graft function, and clinical outcomes were evaluated.

Results: All three recipients were male, aged 40-54 years. Two had ischemic cardiomyopathy, and one had nonischemic cardiomyopathy. Renal dysfunction was multifactorial, involving underlying kidney disease and/or cardiorenal syndrome. Pretransplant eGFR was 20 mL/min/1.73 m² in the patient who was not dialysis-dependent. The other two patients required dialysis for 944 and 60 days, respectively. One patient died 65 days after transplantation due to sepsis and multiorgan failure following early kidney graft dysfunction. Notably, he was the only recipient requiring pretransplant inotropic support and had the longest total cardiac ischemic time (244 min) and kidney cold ischemic time (9 h 10 min). The remaining two patients completed approximately two years of follow-up, demonstrating preserved cardiac allograft function and favorable renal graft function. No cardiac or renal allograft rejection was documented during the available follow-up. Follow-up complications included treated cytomegalovirus viremia, cutaneous fungal infection, and BK polyomavirus-associated nephropathy (**Table 1**).

Conclusion: SHKT may provide favorable graft outcomes in carefully selected patients with advanced heart failure and severe, predominantly irreversible kidney dysfunction. Our limited single-center experience highlights both encouraging mid-term outcomes and the potential for serious early complications. Although no causal relationship can be inferred from this small case series, these findings underscore the importance of careful candidate selection, multidisciplinary expertise, and specialized transplant care.

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