Updates in Surgery and Beyond

Robot-assisted kidney transplantation

Sung SHIN

Comparison of clinical outcomes between robot-assisted and open kidney transtplantation according to an immunological risk

Robot-assisted kidney transplantation (RAKT) offers several advantages over open kidney transplantation. However, it remains uncertain whether RAKT is feasible for recipients with increased risk factors for acute rejection and graft failure.

Methods:

Between August 2020 and August 2022, 684 patients underwent living-donor KT at Asan Medical Center. Of these, 86 patients (13%) underwent RAKT, while 598 patients (87%) underwent open KT. Recipients were classified into high- or low-risk groups based on immunological factors. High-risk recipients had positive flow cytometry or pre-transplant donor-specific antibodies (DSA). Among RAKT recipients, 21 (24%) were included in high-risk group, while 156 (26%) of the open KT recipients were in high-risk group.

Results:

Baseline characteristics were similar between groups, except for RAKT recipients being younger (50.5 ± 12.5 vs. 44.2 ± 14.0 years, $p < 0.0001$), having a shorter dialysis duration (15.3 ± 29.7 vs. 5.5 ± 10.5 months, $p < 0.0001$), and higher rates of left kidney donation (57.3% vs. 73.3%, $p = 0.005$). Univariable analysis showed associations between BPAR and younger age, female gender, HLA mismatch, positive flow cytometry, pre-transplant DSA, and unrelated living donor. However, adjusted Cox proportional hazards models revealed that neither RAKT in high-risk patients (aHR = 3.12, 95% CI 0.84 to 11.52, $p = 0.09$) nor RAKT in low-risk patients (aHR = 1.64, 95% CI 0.49 to 5.43, $p = 0.42$) were significantly associated with BPAR within 18 months post-transplant. Estimated glomerular filtration rate (GFR) did not differ significantly between the groups at one, six, twelve, or eighteen months post-transplant.

Conclusion:

This study demonstrates that RAKT is comparable to open kidney transplantation in terms of post-transplant renal function and the occurrence of BPAR in living-donor kidney transplantation, regardless of immunological risk.