Resuming Healthcare Services During the Coronavirus Disease 2019 Pandemic: A Multi-disciplinary Team Approach to Delivering Kidney Transplantation

Editor
In the UK an estimated 1670 kidney transplant opportunities may be lost due to the COVID-19 pandemic, resulting in suboptimal outcomes for patients remaining on dialysis and pressure on existing capacity to deliver this treatment. This study reports a multi-disciplinary team approach to reopening a deceased donor kidney transplant program, and summarises protocols that enabled 70-kidney transplants during 2-months of the COVID-19 pandemic (an 8-fold increase in local deceased donor transplant activity).

Recipients received advice about risks and benefits of transplantation in the context of the COVID-19 pandemic from two different physicians and discussions were documented in a standardised additional consent form. Recipients were screened for COVID-19 and confirmed as negative before transplantation by establishing a pathway for urgent testing and reporting with the local virology laboratory.

Immunosuppression was with prednisolone, mycophenolate mofetil and tacrolimus (target trough ≥10 μg/L) with Basiliximab induction reserved for younger recipients (<40 years) and those with a poor HLA mismatch (2DR or 2B and 1 DR).

Theatre access, which is typically restricted during the COVID-19 pandemic, was facilitated by partnership work with a “COVID-19-free” NHS site at the Belfast Royal Victoria Hospital, and private sector provider at the Ulster Independent Clinic. Additional support for staff unfamiliar with transplantation was provided by relocation of transplant nurses.

Surgery was through a Gibson incision with extension if a native polycystic nephrectomy was required. Local anaesthetic wound infiltration catheters were placed in the transversus abdominis plane at the upper end of the wound. Intravenous fluids were discontinued when patients were drinking. Urinary catheters were removed when patients were mobile.

Transplant pharmacists delivered a 7-day service of individualised education, which required connection via telemedicine with carers (since visitors were prohibited). Patients were discharged home to self-isolate when comfortable, mobile, and acquainted with immunosuppression. Review was on alternate days, then twice weekly in outpatient clinics on a “COVID-19-free” site. Patients remained in their transport until there was capacity to enter clinic, thus maintaining social distancing.

The majority of kidneys (83%) were from DBD donors, and a minority (14%) were from extended-criteria donors. There was one dual kidney and one horseshoe kidney graft. Two patients (3%) required a simultaneous native polycystic nephrectomy for space to transplant.

Forty-seven (67%) recipients were ≥50-years, and 25 (36%) were obese (body mass index ≥30 kg/m²). Thirty-four (49%) recipients were on haemodialysis, 21% on peritoneal dialysis, and 30% were pre-emptively transplanted. Forty-one (59%) recipients received a kidney with ≤three HLA A, B, or DR mismatches, four (6%) were highly sensitised (calculated reaction frequency ≥85%); all but one proceeded with a virtual crossmatch.

All intravenous fluids were discontinued within 24-hours. Median time to urinary catheter removal was 2-days (range 1-4). Median hospital stay was 4-days (range 1-10) (Fig. 1). Ten (14%) patients were discharged before graft function (defined by ≥10% fall in serum creatinine). Six (9%) were readmitted.

One patient immediately returned to theatre with haemorrhage after avulsion of the renal vein at the hilum of the kidney when waking from general anaesthesia. A graft nephrectomy was performed. This patient was the only individual admitted to critical care, and they were subsequently re-transplanted 2-days later (70-transplants in 69-patients). A further patient had a graft nephrectomy for a renal artery thrombosis 3-weeks post-operatively. At a median follow-up of 50-days (range 16-75), 68 of 69 patients (99%) have a functioning kidney graft, and no one has developed symptoms of COVID-19.

The protocols for resetting a kidney transplant program highlight the need for adaptability and creativity in the current climate. Principles of safety first, service agility, and shared decision-making with patients, are widely applicable as healthcare services reconfigure in the recovery phase of the pandemic with the ‘second and third waves’ of patients waiting for non-COVID treatments.

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Fig. 1 Post-operative day of discharge for study population \((N = 70^*)\). *One patient was re-transplanted 2 days after early graft loss and data are presented for discharge day following first transplant (day 7) and second transplant (day 9).

Contributions, statements and declarations

Each author has made a substantial contribution to the conception, design, drafting and critical revision of this article for important intellectual content; and has given final approval of the version to be published.

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