

Title: Virtual crossmatch as a tool to increase transplant volume while maintaining safety

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Introduction: The COVID 19 pandemic has caused significant staff shortages in health care. Nighttime surgeries cause increased stress on OR staff and resources. The use of virtual crossmatch (VXM) has been shown to increase efficiency of organ allocation and decrease cold ischemic time (CIT). We examined the association between the use of the VXM and the timing of transplant, CIT, technical complications, and immediate graft function.

Methods: Our center adopted VXM in February 2021. This single-center retrospective cohort study included 109 adult patients who underwent deceased donor renal transplants (DDRT) from February 2020 to January 2021 (pre-VXM) and 171 adults who underwent DDRT from April 2021 to March 2022 (post-VXM). Student's t-tests and Pearson's Chi-square test was used to establish baseline characteristics and correlation between cohorts for time of transplant (day vs night), technical complications requiring return to OR, and immediate graft function.

Results: There was no significant difference in CIT between our post and pre-VXM cohort (1118 vs 1008 minutes, $p = 0.1$). Operative length was decreased in the post-VXM cohort (152 vs 165 minutes, $p < 0.05$). There was a positive correlation toward daytime transplants ($p = 0.55$), immediate graft function ($p < 0.05$), as well as a decrease in technical complications requiring return to OR ($p = 0.16$).

Conclusion: The use of VXM has led to decreased operative times and increased immediate graft function with no significant difference in CIT. This may be due to a trend towards more daytime kidney transplants as well as an associated decrease in technical complications. Our center has been able to accept more kidneys and perform more transplants.

One-liner: The use of VXM has allowed our center to increase transplant volume and efficiency as we no longer need to wait for a physical crossmatch to be completed.

Table 1. Transplant outcomes

	Pre (N=109)	Post (N=171)	P value
Length in minutes:			
Cold ischemic time	1008	1118	0.1
Operative time	165	152	< 0.05
Number of:			
Daytime transplants	67	111	0.55
Technical complications	13	12	0.16
Txps with immediate graft function	61	103	< 0.05