

Hemodialysis arteriovenous fistula after kidney transplantation: long-term patency, use and complications. National cohort study

Vajdič Trampuž B, Arnol M and Buturović-Ponikvar J
Department of nephrology, University Medical Center Ljubljana, Slovenia



Background

The fate of hemodialysis AVF following renal transplantation is poorly described in the literature. The aim of this historical national cohort study was to evaluate the long-term functional status and possible utility of an AVF and AVF related complications in kidney graft recipients.

Patients and methods

All Slovenian kidney graft recipients with functioning AVF at the time of transplantation were retrospectively identified from January 2000 to December 2015.

Results

Between January 1, 2000, and December 31, 2015, there were 757 consecutive adult recipients of kidney allograft at the University Medical center Ljubljana. Out of them, 626 (82.7% of all transplanted patients) with functioning AVF at the time of transplantation were included in the study cohort.

The functional AVF at the time of transplantation was constructed 66 ± 49 months (range 2 to 326) before kidney transplantation. 83.2% (521/626) of AVFs were located in the forearm, 16% (101/626) in the upper arm, four patients (0.6%, 4/626) had thigh polytetrafluoroethylene (PTFE) graft.

Patients were followed for a mean of 105 ± 61 months, ranging from 1 to 239 months.

AVF long-term patency

75% of AVF were functional at 1 year after kidney Tx and 49% at the end of follow up (table 1)

The mean duration of AVF patency was 147 ± 76 months (range 5 to 444) after AVF construction and 89 ± 55 months (range 1 to 228) after kidney transplantation. The main cause for AVF failure was spontaneous thrombosis in 37.5% (235/626), while 13.1% of AVF (82/626) were ligated or extirpated.

AVF use after kidney transplantation

AVF was used in 36.7% (230/626) of our patients (as a vascular access for hemodialysis or therapeutic plasma exchange or both) – table 2.

	All	Functional	Non functional	AVF status not known at that time
	626	626 (100%)	0	0
After 1 st year	606	454 (74.9%)	97 (16%)	55 (9%)
After 2 nd year	598	413 (69.1%)	130 (21.7%)	55 (9.1%)
After 3 rd year	583	377 (64.6%)	155 (26.5%)	51 (8.7%)
End of study	626	309 (49.3%)	317 (50.7%)	0

Table 1: Functional status of AVF at different times post-transplant

	Hemodialysis	210 patients
Delayed graft function (DGF)	145 patients	
Graft failure (GF)	127 patients 53 (with old AVF) 12 (with new or reconstructed old AVF) 62 (with CVC)	
Therapeutic plasma exchange	33 patients 6 (relapsing FSGS) 27 (AMR)	

Table 2: AVF use after kidney Tx

AVF related complications

Complications occurred in 183/626 patients (29.2%) including growing aneurysms (82), thrombosis with thrombophlebitis (WT) (50), thrombosis with central vein or artery involvement (3), venous hypertension with arm edema (7), distal hypoperfusion (7), high flow AVF (31), trauma with bleeding (3).

Conclusions

An AVF remains functional after kidney transplantation in half of the patients and is still useful as a vascular access for hemodialysis, plasmapheresis or therapy. An AVF complication is a frequent event after successful kidney transplantation.

References

1. Unger P, Wissing KM. Arteriovenous fistula after renal transplantation: utility, futility or threat? *Nephrol Dial Transplant* 2006; 21(2):254–257.
2. NKF-DOQI clinical practice guidelines for vascular access. National Kidney Foundation-Dialysis Outcomes Quality Initiative. *Am J Kidney Dis* 1997; 30(4 Suppl 3): S150-S191
3. Einollahi B, Sadeghi Ghahrodi M. Hemodialysis arteriovenous fistula after transplant: to keep or not to keep? *Iran J Kidney Dis* 2012; 6: 159–161
4. Vajdic B, Arnol M, Ponikvar R et al. Functional status of hemodialysis arteriovenous fistula in kidney transplant recipients as a predictor of allograft function and survival. *Transplant Proc* 2010; 42: 4006–4009

