

Endovascular Recanalization of Thrombosed AVFs

W. Perry Arnold, M.D.
Dialysis Access Specialists
RMS Lifeline, Inc. – Baltimore
Timonium, MD USA

Objectives

- Recognize types and causes of fistula thrombosis
- Understand the influence of time as a risk factor for successful endovascular thrombectomy
- Be introduced to the respective treatment for short-segment and long-segment thrombosis
- Understand the outcomes benefit to patients by aggressive fistula

Causes of AVF Thrombosis

- Short-segment thrombosis
 - Beaded J-A segment stenosis
 - Large stealing vein associated with high grade multi-focal stenoses
- Long-segment thrombosis
 - Multiple stenoses in a single draining vein
 - Aneurysms with mural thrombus
 - Stents in fistula veins

AVF Declot Technique

- Venous directed puncture from base of the fistula (may be into aneurysm)
- Glide wire into SVC, catheter , central venogram, give heparin
- Arterial directed puncture, 6 mm balloon into artery, angio, PTA anastomosis and J-A segment, park inflated balloon in inflow to prevent emboli
- Aspirate thrombus through 9 f sheath (several passes)
- Check flow with **gentle** angio

AVF Declot Technique - 2

- PTA all stenoses to appropriate size (8 mm)
- Remove mural thrombus if necessary; fresh adherent clot will grind away with ATPTD; organized but loose clot will require extraction manually with a hemostat (control flow with arterial balloon and aspiration to prevent PE)
- PTA/"bottle brush" fistula to clear adherent clot (may require ATPTD)
- Check flow with angio
- Hemostasis and home/dialysis

Declot Outcomes

- | French Experience | Baltimore Experience |
|-----------------------|-----------------------|
| • 93 Procedures | • 239 Procedures |
| • 93% Initial Success | • 91% Initial Success |
| • 50% 1 yr. Prim. Pat | • 48% 1 yr. Prim. Pat |
| • 80% 1 yr. Sec. Pat | • 74% 1 yr. Sec. Pat |

3 Year AVF Patency Summary

Rx	3 mo	6 mo	12 mo	Median
Declot	35(77%)	25(55%)	12(27%)	7.5 m
PTA	172(79%)	131(60%)	90(41%)	9.0 m
Mature	42(78%)	30(56%)	15(28%)	8.1 m
Coils	26(72%)	21(58%)	15(42%)	9.0 m

Overall cumulative secondary patency at 36 months f/u – 80%

Graft vs AVF Primary Patency

• Graft	3 mo	6 mo	12 mo	Median
Declot	50%	31%	16%	3 m
PTA	79%	57%	38%	7.5 m
• AVF	3 mo	6 mo	12 mo	Median
Declot	60%	52%	44%	8.5 m
PTA	92%	77%	69%	15.2 m

Literature Experience

Turmel-Rodrigues L. *Nephrol Dial Transplant* (2000) 15: 2029-2036

AVF Declot	AVF PTA
• 93 procedures	• 726 procedures
• 93% initial success	• 98% initial success
• 50% 1 yr Prim. Pat	• 45% 1 yr Prim. Pat
• 80% 1 yr Sec. Pat	• 80% 1 yr Sec. Pat

Baltimore Experience

10/6/97 – 6/25/03

AVF Declots	AVF PTA
• 239 procedures	• 902 procedures
• 91% Initial success	• 98% Initial success
• 48% 1 yr Prim. Pat	• 48% 1 yr Prim. Pat
• 74% 1 yr Sec. Pat	• 84% 1 yr Sec. Pat

Overall success with AVF preservation is 96.8%

38 month secondary cumulative patency is 80%

Conclusions

- NKF –DOQI guidelines have generally increased the # of AVFs
- Thrombosed AVFs can generally be recanalized up to 2 weeks (@90%)
- Long term patency of native AVFs is superior to access grafts, but requires patience, practice and persistence.
- Abandonment of a thrombosed or immature AVF without a trial of endovascular treatment is a disservice to the patient