

Dialysis

Vascular Access

15. Management of acute peripheral access thrombosis

CARI Guidelines

- a. Medical, surgical and radiological interventions to restore the patency of occluded grafts are available (level B evidence).
- b. There is no convincing evidence that any one of these techniques is better than the others to restore patency. (level B evidence).

Practice Tips

- Occlusions of fistulas may not be readily salvageable unless associated with recognised precipitants such as prolonged hypotension or external occlusion.
- Restoration should be attempted promptly (within 24 hours). Although resumption of graft patency is possible up to 1 week, early intervention (within 2 hours or before need for temporary access) is recommended to avoid morbidity from temporary access procedures.
- Early (<30 days) graft thrombosis suggests technical failure and should be salvaged surgically.
- The first thrombotic event after the initial 30 days is suitable for radiological thrombolysis.
- Early re-thrombosis requires surgical revision. Later thromboses may remain amenable to thrombolysis, but it is recognised that grafts have a finite life which limits the number of salvage procedures.
- The option of converting occluded or multiple revised forearm AV grafts to upper arm fistula using the developed venous run-off is strongly recommended.
- If intervention is attempted, it should be done before the next dialysis session is due.
- Radiological intervention is often associated with re-occlusion unless the cause is adequately treated at the time of thrombolysis.
- A fistulogram should be performed after (2-4 weeks) a successful procedure to ensure no residual stenosis that requires further correction by angioplasty or surgery.

What is the evidence?

Sands JJ et al. Pharmacomechanical Thrombolysis with Urokinase for Treatment of Thrombosed Hemodialysis Access Grafts. *ASAIO Jn* 1994; 40: M886-M888

Poulain F et al. Local Thrombolysis and Thromboaspiration in the Treatment of Acutely Thrombosed Arteriovenous Hemodialysis Fistulas. *Cardiovasc Intervent Radiol* 1991; 14: 98-101

Andriani M et al. Recombinant Tissue Plasminogen Activator (rt-PA) as First-Line Therapy for Declotting of Haemodialysis Access. *Nephrol Dial Transplant* 1995; 10: 1714-19

Winkler TA et al. Study of Thrombus from Thrombosed Hemodialysis Access Grafts. *Radiology* 1995; 197: 461-465

Trerotola SO et al. Pulmonary Emboli from Pulse-Spray and Mechanical Thrombolysis : Evaluation with an Animal Dialysis-Graft Model. *Radiology* 1996; 200: 169-176

What do the other guidelines say?

DOQI: Thrombosis of an AV graft should be corrected with surgical thrombectomy or with pharmacomechanical or mechanical thrombolysis. The choice of technique to treat thrombosis should be based on the expertise of the center. However, it is essential that:

- Treatment be performed rapidly following detection of thrombosis to minimize the need for temporary access. (No more than one, and preferably, no femoral vein catheterization should be required.) (Opinion)
- The access be evaluated by fistulogram for residual stenosis post-procedure. (Evidence)
- Residual stenosis be corrected by angioplasty or surgical correction. Outflow venous stenoses are present in >85% of instances of thrombosis; the need for PTA or surgical revision is expected in most instances. (Evidence)
- The procedure be performed as outpatient procedure under local anesthesia. (Access revision may require up to a 24-hour observation to evaluate swelling and steal.) (Opinion)
- Monitoring tests used to screen for venous obstruction should return to normal following intervention. (Evidence)

Centers should monitor outcome results on the basis of patency; minimum reasonable goals (for the center as a whole) for percutaneous thrombolysis and surgical revision thrombectomy should be:

- Percutaneous thrombolysis with PTA: 40% unassisted patency and functionality at 3 months (Evidence)
- Surgical thrombectomy and revision: 50% unassisted patency and functionality at 6 months and 40% unassisted patency and functionality at 1 year (Opinion)
- For Both Techniques: Immediate patency, defined as patency to the next dialysis session, of 85%.
- Thrombosis of an AV fistula is difficult to treat. Neither percutaneous nor surgical techniques offer good results. Each institution should attempt to resolve thrombosis with the technique that is preferred at their institution. (Opinion)

BRA: No guidelines available

CSN: Correct thrombosis of an AV graft with pharmacomechanical or mechanical thrombolysis or surgical thrombectomy.

Implementation and Audit

Events, interventions, and outcomes should be recorded.

Reasons for delays in interventions, time to intervention, percentage successful outcomes

Suggestions for Future Research

RCTs: surgery vs medical; early vs delayed surgical intervention

Outcomes: re-stenosis and thrombosis