14. Management of vascular access outflow stenosis

Draft CARI Guidelines

a. **Percutaneous angioplasty (PTA) is the preferred initial intervention for stenosis, with surgery as a back-up. (Level B evidence)**

b. **There is no pharmacological means of preventing venous intimal hyperplasia. (Level C evidence)**

Practice tips

- Venous outflow stenosis remains the commonest cause of AV graft occlusion.
- Angioplasty has similar results to surgery, but recurrences are common. There is level B evidence to support angioplasty as a first-line treatment because of its low morbidity and cost, decreased hospitalisation and the fact that it does not restrict subsequent surgical intervention.
- In selected cases stenting may be useful. Its use should be restricted to prolong patency where other options are limited, and its use should not compromise future surgical intervention.
- Surgical correction is required if recurrences are frequent, early or not amenable to angioplasty.
- The aim is to preserve each access site for as long as possible before moving to a new site.

What is the evidence?

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Oakes DD, Sherck JP, Cobb LF. 1998. Surgical salvage of failed radiocephalic arteriovenous fistulae: techniques and results in 29 patients. Kidney Int 53: 480-87.

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Farber A, Barbey MM, Grunert JH et al. 1999. Access-related venous stenoses and occlusions: treatment with percutaneous transluminal angioplasty and Dacron-covered stents. Cardiovasc Intervent Radiol 22: 214-18.

Funaki B, Szymski GX, Leef JA et al. 1997. Wallstent deployment to salvage dialysis graft thrombolysis complicated by venous rupture: early and intermediate results. AJR Am J Roentgenol 169: 1435-37.

Patel RI, Peck SH, Cooper SG et al. 1998. Patency of Wallstents placed across the venous anastomosis of hemodialysis grafts after percutaneous recanalization. Radiology 209: 365-70.

Dapunt O, Feurstein M, Rendl KH et al.1987. Transluminal angioplasty versus conventional operation in the treatment of haemodialysis fistula stenosis: results from a 5-year study. Br J Surg 74: 1004-05.

Glanz S, Gordon GH, Butt KM et al. 1987. The role of percutaneous angioplasty in the management of chronic hemodialysis fistulas. Ann Surg 206: 777-81.

What do the other guidelines say?

DOQI:

Stenosis treatment: Stenoses that occur in a dialysis AV graft or primary AV fistula (venous outflow or arterial inflow) should be treated with percutaneous transluminal angioplasty or surgical revision if the stenosis is > 50% of the lumen diameter and is associated with the following clinical/physiologic abnormalities: (Evidence)

- previous thrombosis in the access
- elevated venous dialysis pressure
- abnormal urea or other recirculation measurements
- abnormal physical findings
- unexplained decrease in measurement of dialysis dose
- decreasing access flow.

Each dialysis centre should determine which procedure (angioplasty versus surgical revision) is best for the patient based on the expertise at that centre. (Evidence/Opinion)

Stenosis, as well as the clinical parameters used to detect it, should return to within acceptable limits following intervention. (Evidence)

Stenosis treatment outcomes: Centres should monitor stenosis treatment outcomes on the basis of patency. Reasonable patency goals (for the centre as a whole) for PTA and surgical revision in the absence of thrombosis are:

- PTA: 50% unassisted patency* at 6 months (Evidence); no more than 30%

residual stenosis post-procedure and resolution of physical indicator(s) of stenosis

- surgical revision: 50% unassisted patency at 1 year. (Opinion)

If angioplasty is required more than twice within 3 months, the patient should be referred for surgical revision if such an option is available and if the patient is a good surgical candidate. (Opinion)

Stents are useful in selected instances (eg limited residual access sites, surgically inaccessible lesions, contraindication to surgery) when PTA fails. (Evidence)

*Unassisted patency is defined as patency until either a thrombosis or access failure or an intervention to prevent thrombosis is performed.

BRA: No guidelines available.

CSN: Treat stenosis that occurs in a dialysis AV graft or primary AV fistula (venous outflow or arterial inflow) if the stenosis is > 50% of the lumen diameter and is associated with haemodynamic change. (Evidence level II)

Suggestions for future research

1. A prospective study of the role of brachytherapy in limiting intimal hyperplasia and re-stenosis.
2. A prospective study of pharmacological prevention of intimal hyperplasia