

# **Prevention and solution of maturation failure and swing point stenosis**

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Arteriovenous fistulas (AVFs) currently are regarded as the gold standard for dialysis access because of their superior long-term patency and lower intervention and infection rates compared with other types of dialysis accesses. However, AVFs are prone to early failure because of poor maturation and subsequent thrombosis resulting from several factors, including inadequate inflow or limited venous outflow.

The Fistula First project was initiated by the Centers for Medicare & Medicaid Services with the goal of AVF rates of 50% in incident and 40% in prevalent hemodialysis patients. With this increasing trend toward predialysis fistula placement and imminent increase in problems, early identification of lesions associated with this preferred type of vascular access becomes a necessity.

Swing-segment lesions predispose to early fistula failure, defined by some as failure of a new AVF to mature within 3 months of creation. A distal swing segment is the segment of the native vein that is mobilized during radial-cephalic, brachial-cephalic, and transposed brachial-basilic fistula creation. It is located about 2 to 3 cm above the anastomotic region known as the juxta-anastomotic segment. A proximal swing segment occurs in the basilic vein near the axillary region during transposition surgery. A naturally occurring swing segment occurs in the arch of the cephalic vein or cephalic arch segment as it drains into the axillary vein. This segment of the vein may experience turbulent flow and altered shear mechanical stress because it forms the outflow conduit for autogenous radial-cephalic and brachial-cephalic fistulas.

These swing segment stenoses were described previously, and swing-segment stenosis is the most common lesion in dysfunctional AVFs; juxta-anastomotic stenosis is the predominant lesion independent of fistula type. Whether the occurrence of swing-segment stenosis is caused by mobilization of the vein during surgery is not clear.