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Effective Flow Reduction Surgery for Vascular Access Complications in a Non-High-Flow Hemodialysis Patient

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Case Study : Case study: Flow reduction procedures are typically performed in cases of high-flow vascular access; however, they can also be beneficial for patients with persistent venous pressure elevations and prolonged hemostasis, even in the absence of high flow. A 58-year-old female with diabetic end-stage renal disease on hemodialysis presented with prolonged hemostasis and, in particular, ulcerative skin lesions at the venipuncture site, with signs suggesting an impending rupture. She had a left upper-arm ulno-cephalic arteriovenous fistula (AVF) with a high bifurcation of the brachial artery and recurrent cephalic arch in-stent restenosis, requiring frequent percutaneous transluminal angioplasty (PTA). Ultrasound revealed an inflow artery blood flow of 660 mL/min, which increased to 960 mL/min after PTA for cephalic arch in-stent restenosis; however, strong AVF pulsation persisted. To address the patient's primary concern of a non-healing ulcerative skin lesion, aneurysmorrhaphy was initially planned. However, the persistent strong pulsation was expected to hinder the healing process. Graft interposition to the axillary vein was considered but ultimately ruled out due to the risk of jailing from the cephalic arch stent. Likewise, creating a new vascular access was deemed less favorable due to the 1–2 months maturation period and the need for a temporary hemodialysis catheter. Given the risk of impending rupture, a flow reduction operation (vein tandem tie banding) was performed in conjunction with aneurysmorrhaphy. Postoperatively, blood flow decreased to 420 mL/min, AVF pulsation reduced, and the ulcerative skin lesion healed successfully. This case illustrates that even in non-high-flow patients, when outflow vein stenosis is difficult to resolve, a flow reduction operation can effectively mitigate complications such as increased venous pressure, prolonged hemostasis, and, in particular, ulcerative skin lesions.

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