Publication Brief

Vascular access in patients with arterial insufficiency. Construction of proximal bridge fistulae based on inflow from axillary branch arteries

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BACKGROUND
Patients with renal failure and underlying peripheral vascular disease pose a difficult management problem in establishing long-term angioaccess for chronic hemodialysis. Initially, complete ligation of the fistula is generally performed to restore circulation to the hand and arm.

OBJECTIVE
To summarize experience with five debilitated patients who developed acute upper extremity ischemia after forearm fistula construction corrected by fistula ligation.

RESULTS
• Successful angioaccess was achieved without ischemia recurrence by construction of proximal bridge fistulae with arterial inflow based on branch arteries of the axillary artery.
• The relatively small size of the branch vessel was the main factor in limiting fistula flow while permitting normal distal axillary artery flow.
• In four patients direct fistula flow measurements ranged from 200 mL per minute to 620 mL per minute. Axillary arterial flow distal to the fistula ranged from 120 to 200 mL per minute and did not significantly change after fistula construction or during temporary occlusion of the fistula.
• Four of the five patients continued to dialyze uneventfully from 4 to 8.5 months. One patient died after discontinuation of dialysis 1 month after operation

TRANSONIC OBSERVATIONS
• The authors detail a procedure creating a proximal bridge fistula using a branch of the axillary artery as an alternative to using a subclavian dialysis catheter for longterm access.
• Intraoperative arterial flow measurements using the Transonic flowmeter were performed to assure adequate upper arm arterial flow after placement of the fistula to prevent upper arm ischemia. Precise flow measurements are required since extremity ischemia can occur with even a modest fistula blood flow causing a reduction in the remaining blood flow to the extremity.
• Intraoperative measurements showed no significant change in distal axillary artery flow after proximal fistula constriction or during temporary fistula occlusion with this technique.
• Arterial insufficiency following the placement of a standard fistula does not preclude successful vascular access in the same extremity. Confirmation of adequate flow with intraoperative flow measurements allowed safe placement of successful vascular access in these high-risk patients.

REFERENCE