A Novel, Adjustable and Reversible Banding Procedure for Artegraft

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Abstract:

Objectives: Arteriovenous (AV) graft banding corrects Steal Syndrome of a distal extremity. Decreased flow in the AV graft returns to the distal limb. Traditional banding modified the arterial or venous ends of the graft. These methods had compromises that affect both the efficacy of hemodialysis and/or AV access lifespan. They are neither reversible nor modifiable without surgical intervention. I describe a banding procedure for Artegraft that does not have the same inflow or outflow compromises of described methods. Transonic flow probes help dial-in the best flows for both limb and AV graft.

Methods: My banding method utilizes medium Hemoclips placed in the midsegment of the Artegraft. (Figure 1) The clips are placed 10 mm apart (range 8-20mm) depending on the "length" of band desired. The angle of placement varies from 30 to 90 degrees varying the "depth" into the graft needed. A medium Hemoclip placed at 90 degrees occludes to a 3.5-3.7mm opening. Both the depth of the clip onto the graft and the distance apart will have an effect on the size of the band and the amount of diminished flow in the Artegraft. (Figure 2)

A 3 or 4 mm Transonic flow probe is placed on the distal artery. (Figure 3) Negative (reversed) flow in the distal artery establishes the Steal Syndrome. The 2 medium Hemoclips are placed significantly far apart and angled on the Artegraft to get a "positive" (antegrade) flow reading from the arterial probe. (Figure 4) Graft flow is measured at the venous end of the Artegraft with a 6mm Transonic flow probe. (Figure 5)

Results: This banding method gives unimpeded inflow and outflow from the Artegraft at the time of hemodialysis. Optimally, the arterial (inflow) needle is placed on the arterial ½ of the graft, and the venous (outflow) needle is placed on the venous ½ of the graft. (Figure 6) This results in "maximized" flows both into and out of the dialysis machine during dialysis. Clips (banding) can be "reversed/removed" with an angioplasty balloon at the time of the first graft thrombectomy, if necessary. Often in older, diabetic patients with peripheral artery disease, the banding reversal will not be tolerated. Steal Syndrome returns, and a more permanent banding method can be utilized to maintain optimal, long-term, lower Artegraft flow. This method was utilized in over 250 patients over the past eight years with excellent results in both graft patency and correction of Steal Syndrome.

Conclusions: I describe a novel, adjustable, and reversible banding method for Artegraft collagen AV graft utilizing Transonic flow probes and Hemoclips to treat Steal Syndrome.

Figure 1

Banding mark and Transonic probe

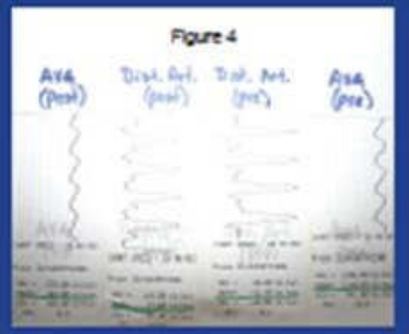
Figure 2

Clips placed for Banding

Figure 3

4mm probe on Distal Artery

Figure 4



Transonic Flow Charts (Steal)

Figure 5

6mm probe on Artegraft

Figure 6

Skin Marking for Dialysis