



Invited Commentary

Commentary on 'Multi-Center Experience of 164 Consecutive Hemodialysis Reliable Outflow Graft Implants for Hemodialysis Treatment'

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The creation and maintenance of permanent dialysis access can be a very challenging and frustrating problem for physicians and patients. The fistula first paradigm has been well accepted in the United States. The goal of this project has been to minimize the use of temporary catheters for hemodialysis access. The decreased use of catheters has been advocated as a means to reduce catheter-based infections as well as the development of central venous stenosis. But, central venous stenosis continues to plague many dialysis patients and their access surgeons and interventionalists.

Many surgeons will select a lower extremity site for the creation of permanent dialysis access if there is an upper extremity central venous stenosis or occlusion. The rationale has been the limited durability of a central venous angioplasty and stenting as a method to maintain an upper extremity permanent dialysis access. The HeRO graft has been proposed as a technology that can overcome the technical difficulties in maintaining an upper extremity access when a central venous stenosis or occlusion is present.

Gage et al. report on a 4-site review demonstrating the efficacy of the HeRO graft-tunneled catheter technology for complicated access patients. The authors report an excellent primary and secondary patency rate and decreased risk of infection as compared to a standard tunneled catheter. They also report a high rate of technical success despite placing catheters in patients with multiple prior upper extremity access efforts. Finally, they report an intervention rate of 1.5/year which is very appropriate given this complex patient population.

I have placed several of the HeRO grafts and find the technology to be very useful in difficult patients. I would like to highlight some of the limitations from my perspective that the authors do not explain in detail in their manuscript. The authors state that the incidence

of steal syndrome is low, but I have seen a higher incidence in HeRO patients as compared to standard grafts or fistulas. This is especially true in patients with small brachial arteries. I think the large bore venous outflow (19 Fr) can predispose to this problem. Even when an effort is made to create a relatively small arteriotomy, this challenging problem can still occur. A DRIL procedure is an option, but can be quite difficult due to the numerous procedures that these patients have previously undergone.

Another limitation is the central venous disease and the high medical risk of these patients for general anesthesia. The majority of patients require general anesthesia for placement of the HeRO graft. Many dialysis-dependent patients are considered to be high-risk for general anesthesia and may not be allowed to have this option for their treatment based on cardiac clearance. In addition, even if a patient is medically cleared, they may assume the risk of general anesthesia and then have a central venous stenosis or occlusion that can not be traversed. Although the authors state that is a low frequency situation, I believe that treating central venous disease can be very challenging. I would dislike a situation where a high-risk patient assumes the risk of general anesthesia and then can not have a HeRO graft placed.

Overall, I find the HeRO technology to be exceptionally useful as the authors have published in their 4 center experience with this device. Many dialysis patients are living longer and struggling with the complications of tunneled catheters and the difficulty of creating permanent access in this situation. The HeRO graft is able to overcome these issues. I have found steal syndrome, the need for general anesthesia, and the central venous disease that can not be traversed as a limitation of the device. But, I would still use the technology without hesitation in the appropriate patient.

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