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Interventional Nephrology: Recrudescent and Ascendant

It is 2009 and with it comes the stretch goal of achieving a nationwide fistula prevalence rate of 66%. Are we there yet? No, but the impetus of the national arteriovenous (AV) "Fistula First" initiative has resulted in better planning of vascular access constructions and clearly more of them, with a 52.3% point prevalence as of April 2009 (<http://www.esrdncc.org/index/cms-file-system-action?file=/fistulafirstdashboard2.pdf>). Launched in early 2003, this project was designed by the Centers for Medicare and Medicaid Services, the 18 ESRD Networks, and the Institute for Healthcare Improvement as a 3-year initiative whose goal was to specifically increase the use of AV fistulae for hemodialysis access.

Thereafter, Fistula First generated intense activity among nephrology groups. Dedicated education in pre-ESRD classes was developed to more fully inform patients regarding the various modalities of renal replacement therapy and their knowledge of vascular accesses and peritoneal dialysis catheters. CKD clinical activity rose, despite the busy schedules of nephrologists, and patient visits were increasingly punctuated by discussions for the necessity to "see the vascular access surgeon." Academic curricula for fellows-in-training now included dedicated and specific learning objectives regarding vascular access. More

frequent and dedicated collaborations took place among nephrologists, CKD and ESRD nursing staffs, interventional radiologists, and vascular access surgeons. Nowhere did such dedication to the vascular access and collaboration among interested parties occur than at the Aberdeen Dialysis Center, in Olympia, WA, where the AV fistula prevalence rate grew to 90%. To achieve this outcome, an epiphany had to occur first: vascular access care was important, equally important as the other domains of ESRD care.

However, the success of this center did not become viral, at least not yet, and, despite Fistula First's laudable agenda and its aggressive promulgation, the rate of hemodialysis catheter implantations substantially increased, clearly an unintended consequence. How did this happen? A fundamental aspect of Fistula First was ignored, which is "to increase AVF use for all *suitable* hemodialysis patients." Blind devotion to the goal, without appropriate intermediary evaluations, resulted in failed fistulas and subsequent hemodialysis catheter insertions in patients who were not *a priori* suitable for a fistula. Failure to heed the past dooms one to repeat history, and, thus, each dialysis medical center director should have a specific vascular access plan that is wedded to best practice, performance metrics, and clinical outcomes, and this is not a trivial document.

Catheter insertions are neither benign nor inexpensive. Catheter insertions may subvert future opportunities for the creation of AV

fistulas and/or grafts by inducing venous stenosis that may not be amenable to repair. This complex pathobiological response is exposited in this issue of *Advances of Chronic Kidney Disease*. The expenses associated with catheter-related blood stream infections have staggered the healthcare payment system. Therefore, a moderation of Fistula First may be called for: the most suitable arteriovenous access for each ESRD patient that opts for hemodialysis. Nonetheless, the nephrologist is responsible for the care of his/her patients, and it is incumbent that we acknowledge the burgeoning vascular access body of knowledge. Failure to do so fails our patients.

Some nephrology groups, particularly those that are particularly large, have literally "taken matters into their own hands." They construct their own fistulas, a practice that had already taken foothold in Europe, and this stem-to-stern approach is described herein. In general, vascular access construction will not be in the toolkit of the majority of practicing nephrology groups in the United States; however, the emergence of interventional nephrology as a bona fide clinical domain of CKD care challenges the concept of what constitutes a nephrologist. The development of expertise in interventional techniques involves cognitive skills combined with multiple procedural competencies. These competencies must now be shown in a volume-based fashion, with sufficient quality, as delineated by the multidisciplinary American Society of Diagnostic and Interventional Nephrology.

Accordingly, as with many other subspecialties of internal medicine, the nephrologist as a proceduralist has become a reality. In truth, the nephrologist was already, and the history of interventional nephrology divulged in this compendium attests to this fact.

Belding Scribner and his collaborator, biomedical expert Wayne Quinton, and, later, chemical engineering professor Les Babb, devised the first AV fistula in 1960 in order that hemodialysis could be accomplished in an extended format, not simply until the patient's arteries and veins were depleted by repeated cannulations.

During those formative years of vascular access, the nephrologist drove technological and surgical advances so much so that these advances outstripped those of the hulking dialysis machine itself. Over several decades, nephrologists' interest in vascular access waned, and access care was forfeited to vascular surgeons, rarely vascular access surgeons. The ability for the nephrologist to cannulate an access, once a clinical requirement, became an anachronism. AV grafts and "permanent" tunneled, cuffed catheter insertions became norms rather than exceptions, that is, until the catheter-induced complications began to appear persistently on the quality dashboards of many hospitals and piqued the interests of so-called "quality" fora and institutions.

So, interventional nephrology is not new; it is recrudescant after a period of prolonged dormancy. The affirmation of board-certifying bodies that fellows-in-training must develop not only a knowledge base regarding peritoneal and vascular accesses but also a defined level of procedural competence will accelerate the re-emergence of this welcome subdiscipline of kidney care. As the sciences of vascular biology and vascular access, with its attendant techniques, converge and continue to grow, interventional nephrology will become ascendant once more and so will patient outcomes.

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Editor