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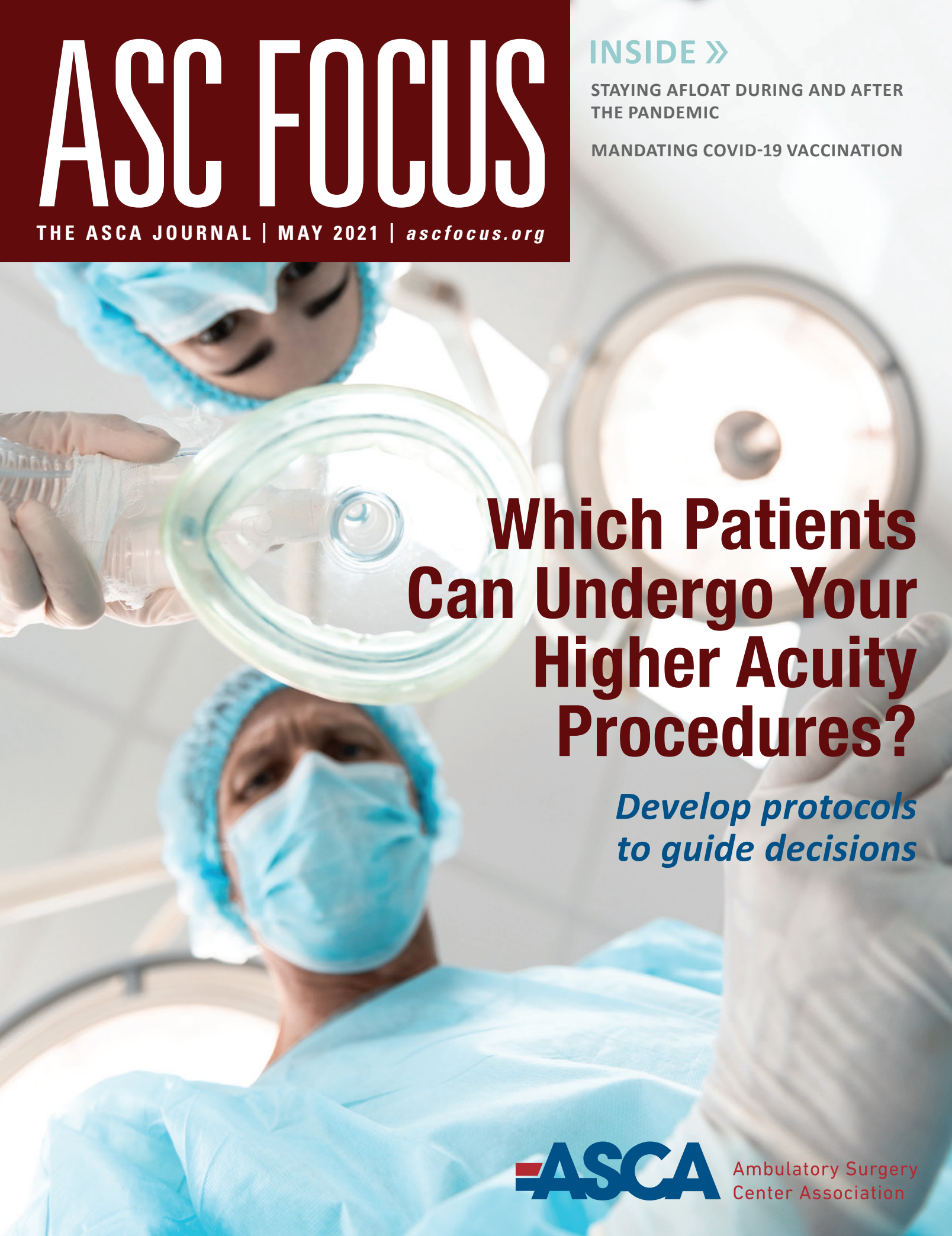


Which Patients Can Undergo Your Higher Acuity Procedures?

Develop protocols to guide decisions

ASCA Ambulatory Surgery Center Association

Shifting Dialysis Access Creation to ASCs

New endovascular technology makes vascular access faster and less invasive

BY BRIAN O'DEA AND GAUTAM BHANUSHALI, MD


At Nephrology Associates of Northern Illinois and Indiana (NANI), our goal has always been to improve the patient care experience and bring kidney care closer to home. This was our commitment in 1968, when the original NANI founders created a new model for dialysis by taking the treatment out of hospitals and starting one of the nation's first outpatient dialysis centers. It remains our focus even today, as one of the largest nephrology practices in the US with 130 physicians who specialize in kidney health and treating patients with chronic kidney disease (CKD) and related conditions.

This commitment is what led NANI to become one of the first practices in Illinois to offer a minimally invasive alternative to surgery for creating vascular access in hemodialysis patients. The procedure offered our patients a better, more convenient treatment option and enabled us to move dialysis access creation out of hospitals and into the ASC setting just as our community was grappling with limited hospital resources amidst the COVID-19 pandemic.

Dialysis Access for ESRD Patients

End-stage renal disease (ESRD) or kidney failure affects more than 750,000 people in the US, according to *Chronic Kidney Disease in the United States 2021,* a report from the Centers for Disease Control and Prevention. Of those, more than a half million people rely on hemodialysis treatments to stay alive, according to the United States Renal Data System (USRDS) *Annual Data Report 2020*. Hemodialysis is typically performed three times a week and requires vascular access that is durable enough to be cannulated multiple times a week.

The staff at Nephrology Associates of Northern llinois and Indiana.
PHOTO COURTESY OF NEPHROLOGY ASSOCIATES OF NORTHERN LLINOIS AND INDIANA.

Since its inception in the 1960s, the gold standard for hemodialysis access has been the arteriovenous (AV) fistula. This is a permanent connection between a vein and artery in the arm, typically created either at the wrist (radiocephalic) or just above the elbow (brachiocephalic). Compared to a central venous catheter (CVC) or synthetic graft, the AV fistula is the preferred type of dialysis access because of its lower infection rate, lower hospitalization rate and reduced healthcare costs. Patients with CVCs, in particular, have higher rates of infection and even mortality compared to those with AV fistulas. Yet despite these risks, more than 80 percent of patients in the US initiate dialysis on a catheter, according to the USRDS report. Part of this might be because, until recently, the only way to create an AV fistula was through an invasive surgical procedure that most often requires general anesthesia and subjects patients to discomfort and long recovery times. Moreover, almost 40 percent of surgical AV fistulas fail to mature, according to a study published in *The Journal of Vascular Access* in September 2019, and even more suffer complications within the first year that require subsequent procedures to address. Most patients are eager to avoid surgery at any cost, particularly for a procedure that has a high likelihood of failure and/or complications.

EndoAVF Innovation

Fortunately, new endovascular technology—the first innovation in AV fistula creation in more than 50 years—has addressed the need for faster, less invasive vascular access for ESRD patients. One type of endoAVF technology uses a single needlestick and catheter under ultrasound guidance to fuse the proximal radial artery and perforating vein just below the elbow using thermal

energy. No radiation or contrast is used, no incisions or sutures are required and no foreign bodies are left behind.

For a patient, the benefits of this technology are clear. It transforms a complex surgery into a minimally invasive procedure that can be performed in as little as 30 minutes in an outpatient setting like an ASC. The patient leaves with just an adhesive bandage on the arm and unlike surgery, there is little to no recovery; most patients can resume normal activities within 24 hours.

Surgical fistulas have a high volume of blood flow, which can result in a bumpy, disfigured appearance of the arm over time. In contrast, the moderate flow of the endoAVF, combined with a lack of surgical scars, leads to better cosmetic outcomes and fewer complications for patients—all of which contribute to an overall improvement in quality of life.

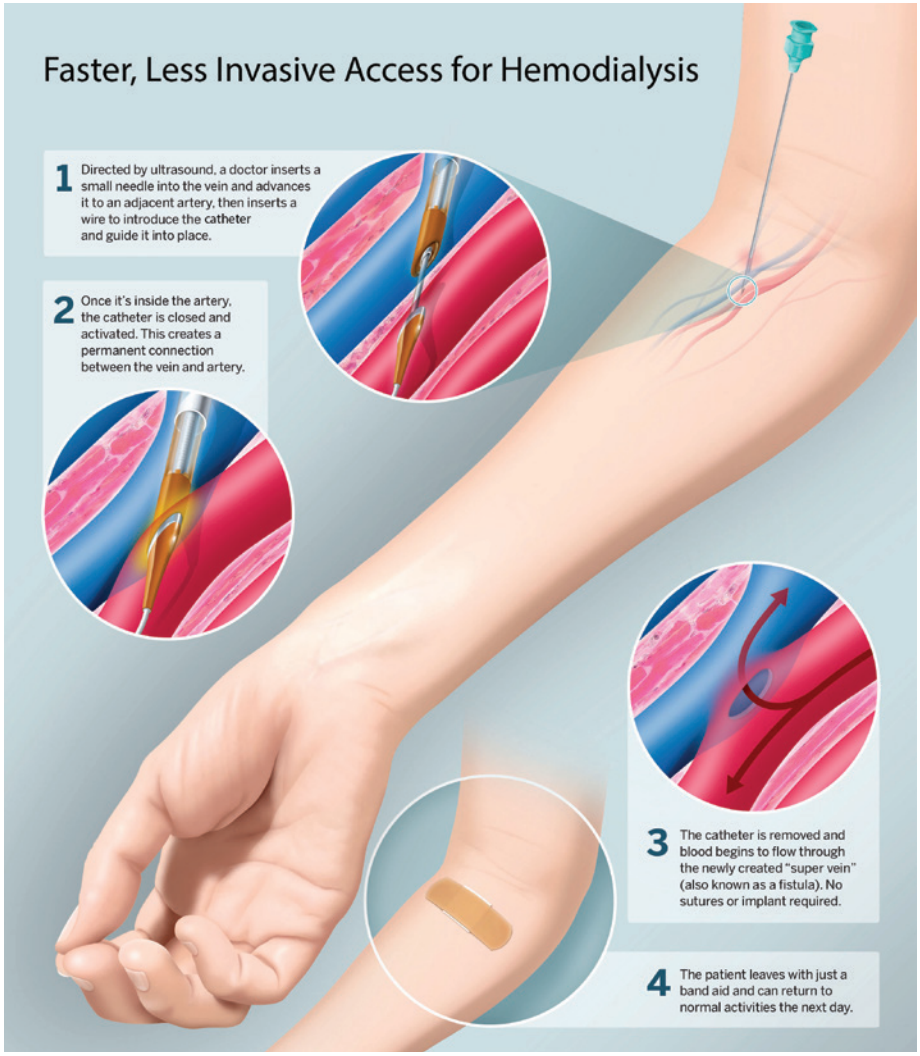
There are significant clinical benefits with this endoAVF technology, as well. Recent studies demonstrate that it is a safe and effective method for fistula creation. Long-term data, according to the study in the September 2019 *Journal of Vascular Access*, show that more than 90 percent of endovascular fistulas are still functional after two years, while less than 75 percent of surgically created fistulas last two years, despite multiple interventions, according to a study published in the April 2020 *Journal of Vascular Surgery*. In addition, multiple studies—including one published in the April 2020 *Journal of Vascular and Interventional Radiology*—indicate that endovascular fistulas mature faster than surgical fistulas. This faster maturation is significant, as it can reduce, or even eliminate, the amount of time patients rely on riskier methods of vascular access for dialysis, such as CVCs.

NANI Pioneers EndoAVF Technology

As an organization dedicated to improving the patient care experience, one of our main goals has always been to help make life easier for our patients. This is especially true for hemodialysis patients, who already spend so much of their lives under the care of various physicians; any improvement in their quality of life can have a significant impact.

As a result, we were very interested in a procedure that would enable us to quickly and easily create dialysis access that would last a long time without the need for surgery or numerous additional procedures. For patients that are not suitable for a wrist radiocephalic AV fistula, the endoAVF is an alternative. Approximately, 60 percent of ESRD patients we screen are candidates for endoAVF in our practice. Candidates for the procedure are identified by a simple vein-mapping appointment in one of our offices. When endoAVF is an option, most patients are excited about this safe and effective procedure that allows them to avoid surgery.

In May 2020, Bhanushali performed the first endoAVF procedure at our Willow Springs Surgery Center. To date, we have performed more than a dozen procedures with excellent outcomes. NANI has a total of six vascular access centers—three ASCs and three office-based laboratories—across Illinois and Indiana, and we eventually plan to offer the endoAVF procedure at all six centers. With an estimated annual total of 7,000 procedures across all sites, we have the unique ability to bring the benefits of



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endoAVF technology to many patients across the region.

Dialysis Access Creation in ASCs

Industry estimates suggest that approximately 50 percent of endoAVF procedures are performed in ASCs. In our experience, shifting dialysis access creation to an outpatient setting like an ASC enables NANI to provide our patients with better continuity of care, which ultimately results in a higher overall quality of care and improved quality of life for patients.

An ASC can prioritize dialysis access creation in a way that hospitals simply cannot. With hospitals, limited operating room (OR) or catheter lab time can cause delays in scheduling. The pandemic has reduced hospital staff and resources, making OR time even harder to come by. Fistula creation is not often considered a priority, and thus, these procedures are likely to be bumped in the event of an emergency.

In contrast, NANI can ensure a patient's access is placed in a timely manner, sometimes within a week or two of their initial vessel mapping appointment. Our staff follows up directly with patients and can assist with any barriers that may prevent them from scheduling their access placement, whether those are transportation issues or language barriers.

We also can facilitate better communication among a patient's healthcare team. When a patient is referred to a hospital for access creation, our nephrologists often do not have access to those records, making two-way communication difficult. If a patient's procedure is rescheduled, we might not even know until they tell us at a subsequent follow-up appointment.

When our patients have their access created and maintained by an interventional nephrologist within the NANI network, the nephrologist automatically has access to information about the status of the initial procedure, as well as the maturation process and when the fistula will be ready to use for dialysis. Patients also benefit from knowing their access is placed and maintained by the same physician and staff, all of whom have specific expertise in kidney disease.

Any delay in the creation of a functional, mature fistula puts a patient at a greater risk of "crashing" into dialysis, which requires hospitalization and reliance on a catheter until a patient can undergo fistula creation and maturation. In addition to the benefits of improved scheduling and better communication to prevent these delays, we also have started using the less invasive endoAVF technology to preemptively create fistulas in patients with stage 4 or 5 CKD, before they even need dialysis. This gives the access time to mature and significantly increases the likelihood that these patients will be able to initiate dialysis with their fistula and avoid the risks of a catheter altogether.

EndoAVF Lowers Healthcare Costs

Moving dialysis access procedures to ASCs with endoAVF technology can significantly reduce the cost associated with treating ESRD. Considering that hemodialysis care costs an average of $90,000 per patient annually in the US ($28 billion total) according to the 2020 USRDS annual data report, reducing cost while ensuring quality care is a high priority for the Centers for Medicare & Medicaid Services (CMS).

EndoAVF procedures cost less to perform in an ASC—approximately $9,000 dollars, compared to approximately $12,000 in a hospital. Beyond that, the technology enables us to meet many of the quality metrics that are being incentivized by new value-based care models.

In 2020, CMS launched the Kidney Care Choices Model (KCC) to encourage treatment options that improve overall health outcomes while saving healthcare dollars. NANI is currently participating in two CMS-driven value-based care models: ESRD Treatment Choices (ETC) and Comprehensive Kidney Care Contracting (CKCC).

These models encourage clinicians to make real improvements in patients' quality of life and incentivize organizations to meet key quality metrics. These metrics include "optimum starts," which occurs when a patient is prepared to choose a dialysis modality before they need it, initiates dialysis with any type of access except a CVC and is not hospitalized when it is time to begin dialysis. The result is a great improvement in patient health at the onset of dialysis and a reduction in costs to the healthcare system.

This is precisely what the endoAVF technology enables us to do for our patients. With faster maturation and fewer procedures required to mature an endoAVF, we help patients reduce catheter contact time or even avoid the need for a catheter altogether when they are starting dialysis. Less catheter time means fewer complications, like infections, and less hospitalization, all of which reduces costs to the healthcare system. An endoAVF also lasts longer than a surgical fistula and requires fewer interventions to maintain, which further reduces costs over the patient's lifetime.

> *"Compared to a central venous catheter or synthetic graft, the AV fistula is the preferred type of dialysis access because of its lower infection rate, lower hospitalization rate and reduced healthcare costs."*
>
> *—Brian O'Dea and Gautam Bhanushali, MD, Nephrology Associates of Northern Illinois and Indiana*

The costs of kidney disease are staggering, both to an individual's quality of life and to our healthcare system. By adopting endoAVF technology and shifting dialysis access procedures to ASCs, we can lower costs associated with treating ESRD while reducing the burden of kidney care on our patients. «

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