A Surgeon's Perspective: Before You Create That pAVF

Tips for keeping future dialysis access options open.

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The advent of percutaneous arteriovenous fistula (pAVF) creation has expanded the locations that can be routinely used for fistula creation as well as the specialists who can create them. Interventional nephrologists and interventional radiologists, who do not usually create open surgical fistulas, are now able to screen patients for, create, mature, and maintain AVFs.

The National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI) 2019 guideline update provides a nice framework in which to consider access creations in the end-stage kidney disease (ESKD) life plan.[1] Each patient needs to be evaluated based on their unique circumstances. The same is true for pAVF creation—every access created, whether using the Ellipsys vascular access system (Avenu Medical, Inc.) or the WavelinQ endoAVF system (BD Interventional), should take into consideration the options for future needs. This article provides key points that must be considered when creating a pAVF.

EXPECTATIONS

Be realistic! It is essential to convey to patients the limitations of all AVF options, whether open or percutaneous. If an operator overpromises, it may affect any attempts at access in the future.

COMMUNICATION

Communication is the key to success. As with any other area of medicine, thorough documentation of the procedure is essential. Stay in close contact with the patient and coworkers (especially with your ultrasound technicians). With pAVF creation, the procedure note must clearly indicate the site of AVF creation. The artery (radial, common ulnar, proper ulnar) and vein (including laterality [medial or lateral]) used for creation are essential for the consideration of future surgical options. The location of coil embolization is key to determining deep venous outflow for AV grafts.

SELECTION

It is important to avoid repeated interventions and procedural fatigue. If the likelihood for maturation of a

TIPS TO CONSIDER BEFORE CREATING A pAVF

DO

- Set realistic expectations
- Communicate the specifics of the procedure with the patient and medical team
- Ensure proper procedural planning
- Improve your ultrasound skills
- Consider the ESKD life plan

DON'T

- Impair future surgical options
- Limit future fistula creation
- Let stents impair future fistula creation
- Overlook central venous stenosis
- Create an AVF that may require multiple interventions to mature

pAVF is felt to be low (compromised perforator, marginal superficial veins, etc), the operator must consider whether a primary surgical fistula or AV graft would be preferable. Particularly in the time of the COVID-19 pandemic, we must be cognizant of multiple interventions to mature a fistula that may not have enduring patency. As with the ESKD life plan, the patient's comorbidities, life expectancy, and social situation must be considered. Additionally, many patients may experience "procedure fatigue" if repeated interventions are required to mature and/or maintain a fistula and become frustrated with attempts at access creation and refuse future surgical procedures.

INTERVENTION

Limit coiling of superficial veins. The median cubital vein can be used for cannulation as well as communicating with the basilic vein. It can be essential for later basilic vein transpositions to maintain options for native AVFs. Therefore, consideration of this possibility must be weighed against the benefit of ligating or coiling it to divert flow to the cephalic vein. Some have advocated banding the median cubital vein to maintain patency while limiting its overall flow volume.

Avoid stenting the perforating vein. The perforating vein, which is crucial to both currently available pAVF devices, should not be stented if possible. Future surgical options, such as the Gracz fistula, which uses the perforator to perform an end-to-side anastomosis to the brachial or radial artery, would not be possible. Additionally, the stent may also preclude an open brachiocephalic fistula by impinging on the cephalic vein.

SUMMARY

As a final point, we have a duty as physicians during this time of COVID-19 to minimize hospital visits for the patient when possible. We must find the right procedure and most reliable AV access with the least need for intervention. ■

1. Lok CE, Huber TS, Lee T, et al; KDOQI Vascular Access Guideline Work Group. KDOQI clinical practice guideline for vascular access: 2019 update. Am J Kidney Dis. 2020;75(suppl 2):S1-S164. doi: 10.1053/j.ajkd.2019.12.001

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