Pressure and Persistence: Optimizing PTA in AV Access

A commentary on the keys to achieving a durable result with percutaneous transluminal angioplasty alone.

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With the proliferation of devices to treat stenosis in arteriovenous (AV) access and randomized trials supporting some of those devices over percutaneous transluminal angioplasty (PTA), one might be led to conclude that plain old balloon angioplasty (POBA) is dead in AV access. Nothing could be further from the truth. Indeed, what we have learned from several of these trials is that AV access PTA can yield excellent and durable results if performed correctly (and vice versa).

ACHIEVING OPTIMAL PTA RESULTS

The National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI) recommendation of 6-month primary patency of 50% for access PTA[1] was based on a large number of published studies of varying quality, none of them randomized. More often than not, when a technique is studied in a prospective, highly controlled fashion, the results are not as good as those reported in retrospective studies. However, recent randomized studies of PTA in AV fistulas have yielded patencies in the PTA control arm that are considerably better than the KDOQI recommendation. Both the Lutonix AV trial and the IN.PACT AV trial yielded 6-month primary patency rates of 63% and 69%, respectively, which are well above the KDOQI recommendations.[2,3]

How are such excellent POBA results achieved? The answer is no secret: The recipe for good PTA has been around as long as PTA itself. Long before days of stents, stent grafts, and drug-coated balloons (DCBs), interventionalists knew exactly how to manage a suboptimal PTA result: prolonged inflation. In AV access in particular, we have learned the value of ultra-high-pressure PTA in successful waist effacement; the new KDOQI 2019 update underscores the value of this approach.[4] Prolonged PTA resulted in better immediate results in a randomized controlled trial,[5] although admittedly, the 6-month results were not better in that study. Progressive oversizing, long a staple of AV access PTA, has not been studied in a randomized fashion but is also a part of the "secret sauce" of good POBA.

What distinguished the aforementioned two trials from most other trials in AV access was the requirement that a good PTA result be achieved before the patient could be randomized; full effacement of the waist and < 30% residual stenosis were required. Investigators had to use the full spectrum of POBA tools, including high-pressure PTA, progressive oversizing, and prolonged inflation to achieve this result. Given that they were held to a high POBA standard, it is not surprising that the long-term results in the control arm were so good.

SUMMARY

Excellent results can be achieved with POBA in AV access, and we should maximize the use of this cost-effective modality as the primary treatment approach. If the duration of the result is suboptimal, a more expensive (yet proven) device, such as a DCB, should be considered. Now more than ever, keeping costs down in health care is of paramount importance. ■

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