Commentary: From the aorta to the femoral artery and back again: An iconic round trip

Kareem Bedeir, MD, Tsuyoshi Kaneko, MD, and Sary Aranki, MD

From the Division of Cardiac Surgery, Brigham and Women's Hospital, Harvard Medical School, Boston Mass. Disclosures: T.K. is a speaker and proctor for Edwards, Medtronic, and Abbott. All other authors have nothing to disclose with regard to commercial support.

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Address for reprints: Sary Aranki, MD, Division of Cardiac Surgery, Brigham and Women's Hospital, 75 Francis St, Boston, MA 02115 (E-mail: saranki@partners.org).

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Kareem Bedeir, MD, Tsuyoshi Kaneko, MD, and Sary Aranki, MD

Central Message

The tool box of nonfemoral access for TAVI has evolved, with the optimal alternative approach yet to be determined.

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Porterie and colleagues¹ report on 203 patients who underwent transaortic access transcatheter aortic valve implantation (TAVI) via an upper ministernotomy. The cohort includes patients with a hostile ileofemoral artery anatomy and a mean Society of Thoracic Surgeons score of 8.9 (standard deviation, 5.4). Over the period of approximately 5 years, changes have been made; 4 different valves have been used, and the latter 73% of cases underwent an innominate artery (IA) access as opposed to the ascending aorta (AAo), which correlated with a shorter length of stay. Major clinical outcomes reported are within the expected range with favorable hemodynamic outcomes with no cases of more than mild paravalvular leaks.

The authors suggest that the shorter length of stay with IA access is related to the absence of pericardiotomy and less invasiveness of the procedure. Although this may be the case given the lower transfusions required with IA access, this subset of patients in their cohort had a significantly lower average Society of Thoracic Surgeons score, lower New York Heart Association class, and less prior hospitalization, so this conclusion may be biased. Another interesting statistic in this cohort is the survival over the study period. They report a periprocedural mortality of 1.5%, a 30-day mortality of 5.3%, a 1-year mortality of 15%, and an overall mortality of 40%. This striking progression highlights how procedural success may represent only a small step toward the well-being of these patients with high-risk aortic stenosis from a vantage point. This becomes more of an ethical issue; the counseling of patients with pre-TAVI must set a realistic goal whether an enhanced quality of life or survival is what they are trying to gain. It would have been interesting to know the predictors of late mortality and whether even mild paravalvular leaks had a significant impact on late results.

The Transcatheter Valve Therapy registry reports that transfemoral access increased from 47% of cases in 2013 to 94% of cases by the end of 2017.² In the study by Porterie and colleagues,¹ 20% of all patients who underwent TAVI

received AAo access, which is a proportion that is easily predicted to decrease in the future. In their strategy selection, the subclavian/axillary (SC/Ax) access has been used in 1.3% versus AAo/IA access in 20%, and the former being reserved for contraindications to AAo/IA. We would be curious to see the comparison between the 2 groups, as with the transfemoral group during the same period.

With the smaller devices available, peripheral access such as SC/Ax or the carotid approach is becoming more popular as shown in the Transcatheter Valve Therapy registry data. The SC/Ax access is a well-established, less-invasive approach with reported consistent good outcomes.^{3,4} We believe that the peripheral approach will be the future of alternative access for TAVI, although there will always be a patient who will need AAo access as a last resort.

The gold standard treatment of aortic stenosis has been surgical AVR using the ascending aortic approach on cardiopulmonary bypass. This was revolutionized by off-pump AVR, that is, TAVI. The initial approaches for TAVI in the first large clinical trials were retrograde (transfemoral) or antegrade (transapical). We are taking the iconic round trip back to the aorta with the transaortic approach. It remains to be seen what the next destination will be (if any).

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