HHS Public Access

Author manuscript

J Am Coll Cardiol. Author manuscript; available in PMC 2018 August 02.

Published in final edited form as:

J Am Coll Cardiol. 2015 January 27; 65(3): 310–311. doi:10.1016/j.jacc.2014.10.038.

REPLY: Percutaneous Access, No Matter What!

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We thank Dr. D'Onofrio and colleagues for their interest in our early experience with transcaval access to the aorta to allow transcatheter aortic valve replacement (TAVR). To date, we are aware of 56 patients at 7 medical centers who have undergone transcaval TAVR, with no deaths or emergency surgery related to creation or closure of the aorto-caval fistula.

We agree that absolute contraindications to surgical access (transapical and transaortic) TAVR are few, but we disagree that the practice of surgical access leaves nothing to be desired. Surgical access confers heightened morbidity and mortality compared with transfemoral access (1,2), even if this in part reflects the very comorbidity that contraindicated transfemoral access. By definition, all of our patients had contraindications to conventional access, and our first patient had already undergone a failed attempt at transapical valve delivery. Without doubt, a less invasive strategy would be attractive.

By contrast with surgical access, the only absolute contraindication to transcaval access at present appears to be impenetrable "porcelain" abdominal aorta, which appears uncommon. Counter-intuitively, we have found access and closure to be more straightforward in aortic aneurysm and ectasia than in aortas without these features. Although our accumulated follow-up is admittedly limited, we are thus far aware of no late complications. Regarding emergency bailout transfemoral venous cannulation for cardiopulmonary bypass, the mean inferior vena cava diameter of 21 ± 3 mm in our series allows ample room for 10- to 12-mm cannulas alongside our 8- to 9-mm transcaval TAVR sheaths in these distensible venous structures. In our one patient who required emergency cardiac surgery, we readily closed the aorto-caval tract with the use of a nitinol occluder immediately before instituting cardiopulmonary bypass.

We understand that our technique challenges conventional wisdom and reflects less accumulated experience than surgical approaches. For this reason, we have initiated a multicenter US Investigational Device Exemption protocol to further evaluate safety and outcomes of the transcaval technique and have offered training to new operators. In parallel, we are initiating a worldwide transcaval registry. We are also seeking a purpose-built crossing and closure device solution further to simplify the technique.

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Please note: Drs. Greenbaum and Lederman are inventors on patent applications for devices for caval-aortic access that have been assigned to their employers, Henry Ford Hospital and the National Institutes of Health, respectively.

Caution similar to that raised by Dr. D'Onofrio and colleagues also had been appropriately expressed in the early days of percutaneous coronary intervention, transfemoral TAVR, transapical TAVR, and transaortic TAVR, all of which were introduced despite the comparative maturity of surgical alternatives. In the meantime, we will continue to develop and test technical innovation to enhance the care for all of our patients requiring invasive therapy.

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