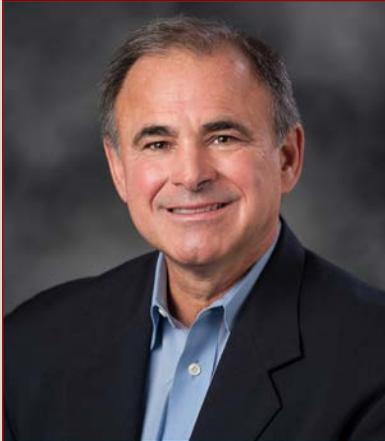


Avoiding Peripheral Vascular Complications With Large Bore Devices



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Hello and welcome to the January 2018 edition of *Vascular Disease Management*. I have decided to comment on Dr Arnaldo Poli and colleagues' article on the implantation of the ACURATE neo transcatheter aortic valve to treat a patient with severe aortic stenosis via a subclavian artery that was surgically exposed.

Dr Poli and colleagues chose this access as the patient had ilio-femoral arterial occlusive disease and obesity that precluded safe femoral arterial access as a means by which to deliver and implant the prosthesis. The technique of subclavian access that was utilized is eloquently described. The authors relate that this was the first case in which this particular transcatheter aortic valve prosthesis was implanted via the alternate subclavian artery access.

Transcatheter aortic valve replacement has become firmly established as a less invasive, highly effective means of treating aortic valvular pathology with results that are at least as good as open surgical valve replacement in most cases. The most commonly utilized delivery is transfemoral arterial. Alternate access is frequently required with transcatheter aortic valve replacement as these devices are large and the conduit via the femoral arteries may be impaired by obstructive, calcific, or aneurysmal disease. Small arteries, particularly in women, may preclude femoral delivery. Obesity may be problematic. Transapical ventricular delivery is an alternate approach that is frequently utilized, but it has inherent risks and is more invasive. The CoreValve can't be placed via transapical approach. The transfemoral venous approach utilizing vena cava to distal aorta connection with needle puncture of

the distal aorta that is adjacent to the vena cava followed by sheath placement across the venous-aortic connection into the aorta is a technically challenging approach that has been utilized to deliver transcatheter valves when femoral arterial delivery is not possible and there is no critical abdominal aortic disease. Transvenous approach typically includes percutaneous closure of the aorto-vena-caval connection following valve implantation. The axillary artery has been utilized as alternate arterial access.

In this report in *Vascular Disease Management*, Dr Poli and his colleagues discuss the use of the subclavian artery as an alternate access site to deliver the transcatheter valve. This requires surgical cut down, and the subclavian artery must be large enough and free of significant obstructive disease to accommodate placement of a large sheath. The arterial segment must allow easy transit of the transcatheter aortic valve with low risk of vascular injury and embolization.

Large bore devices are being utilized frequently to treat disorders including not only cardiac valve pathology, but also aneurysms and occasionally occlusive disease. Many of these procedures are performed entirely by percutaneous technique. Although great strides are being made in reducing the size and complexity of these devices, they are still large and relatively stiff. Peripheral vascular complications associated with the delivery of large bore transcatheter devices are among the most dreaded complications faced by physicians performing these procedures. These complications may preclude successful device delivery, and they may also result in vascular dissection, obstruction, perforation, embolization, bleeding, limb loss, and death. Risk avoidance is of the utmost importance in planning these procedures. The access route must be carefully scrutinized prior to the procedure. Vessel size, tortuosity, calcification, and presence of obstructive or aneurysmal disease must all be delineated a priori and carefully considered before the final access site is determined.

Even with careful planning and meticulous technique, vascular complications may arise. These catheters are large bore and relatively rigid. The devices should be advanced under close visual guidance, avoiding forceful advance against resistance.

Expertise in the prompt recognition and treatment of vascular complications is paramount in achieving desired outcomes.

Peripheral vascular disease is common. It has been established as a marker of increased cardiovascular event rates such as stroke and myocardial infarction. This article highlights that it also affects potential treatment modalities. Peripheral arteries are an integral part of the cardiovascular system that should be routinely evaluated by history and physical examination in all new patients.

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