Combined transcatheter aortic valve replacement and endovascular ascending aortic repair: Fiction or reality?

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This case report by Wilbring and colleagues¹ describes an entirely endovascular therapeutic approach to both calcific aortic valve stenosis and DeBakey type II aortic dissection. They carried out an endovascular repair of the ascending aorta with a Bolton NBS endograft (34 mm proximal diameter $\times$ 34 mm distal diameter $\times$ 109 mm length; Bolton Medical, Inc, Sunrise, Fla) with rapid pacing by transfemoral access. This was followed by percutaneous transcatheter aortic valve replacement, also transfemoral, with a 29-mm Medtronic CoreValve (Medtronic Inc, Minneapolis, Minn). Since the Edwards Sapien Transcatheter Heart Valve THV (Edward Lifesciences, Irvine, Calif) and the Medtronic CoreValve were approved for commercial use by the US Food and Drug Administration for patients with calcific aortic valvular stenosis who are of advanced age and have multiple prohibitive comorbidities, such as the individual described by Wilbring and colleagues,¹ transcatheter aortic valve replacement has become an approach of increasing frequency, if not the standard of care. Transcatheter aortic valve replacement is often denied patients with aortic valvular stenosis who have concomitant ascending aortic pathology. Consequently, Wilbring and colleagues¹ should be congratulated for their innovative therapeutic approach to address both pathologies in a single endovascular setting.

Currently, there is no established endovascular repair for proximal ascending aortic pathology. Within the literature, there are a number of case reports and a few small series, all with variable results, usually treating isolated problems such as pseudoaneurysms. Currently approved endovascular

stent grafts for the descending thoracic and abdominal aorta are not specifically designed for, nor are they suitable for, the ascending aorta. The average length of the ascending aorta is approximately 8 cm, and available thoracic endografts have a minimum length of 10 cm, increasing the risk of occluding either the coronaries or the innominate artery. The curved anatomy of the ascending aorta, the variable diameter proximally and distally, as well as the more profound hemodynamic aspects have made adapting current endograft technology to this segment of the aorta challenging. In cases of proximal aortic pseudoaneurysm, multiple abdominal aortic cuffs have been used with modest success, and results have been variable.

The potential management of proximal aortic dissection as a consequence of the usual complex aortic features is especially daunting. Adequate landing zones proximally and distally are usually not available, and because of the frequent presence of distal reentry sites, elimination of the false lumen, even with complete coverage of the inciting tear, remains problematic. As Wilbring and colleagues¹ point out, the clinical configuration of aortic stenosis and DeBakey type II aortic dissection isolated to the ascending aorta with proximal and distal landing zones remains a rarity. It is commendable, however, that Wilbring and colleagues¹ were able to identify such a case and manage both the aortic valve and ascending aorta completely endovascularly. The report highlights the need for continued efforts in collaboration between surgeons and industry to evolve the current technology to address ascending aortic pathology, including aortic dissection, as well as the aortic root to provide therapeutic and endovascular approaches to individuals not suited to open repair and even those who are faced with an open repair carrying excessive mortality and morbidity risk.

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Reference

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