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Images in Cardiovascular Medicine

Misdeployment of Edwards Sapien Valve in Transfemoral Aortic Valve Implantation Due to Iatrogenic Endarterectomy

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Transcatheter aortic valve implantation is an expanding procedure thus far restricted to a target population of old and high-comorbidity patients with symptomatic aortic stenosis. The need for bulky devices (up to 24F) combined with the high prevalence of peripheral vascular disease in these patients explains the increased risk of vascular complications in transfemoral Edwards Sapien (Edwards Lifesciences, Irvine, Calif) transcatheter aortic valve implantation procedures, with a rate of >20% for the transfemoral arm of either the Placement of AoRTic traNscathetER valves in the European Union (PARTNER EU) trial or the SOURCE Registry.

A frail 84-year-old woman with symptomatic severe aortic stenosis was referred for transcatheter aortic valve implantation owing to a prohibitive surgical risk (Society of Thoracic Surgeons score 19.2%). Multidetector computed tomography showed a suitable mildly calcified and tortuous left femoral-iliac artery axis with a minimal diameter greater than 7.5 mm, except for a focal eccentric calcified lesion at the common femoral artery, with a minimal diameter of 5.3 mm (Figure A). The patient was scheduled for transfemoral transcatheter aortic valve implantation with a 23-mm Edwards Sapien balloon-expandable valve. Vascular access was obtained by surgical cutdown. After the left common femoral artery was exposed and punctured directly, a 22F sheath was introduced up to the abdominal aorta, despite some degree of progressive resistance. After successful aortic valvuloplasty, a 23-mm Edwards Sapien valve mounted on a RetroFlex catheter was advanced and crossed the aortic valve without difficulty. When it was time...
to deploy the valve, balloon inflation was unexpectedly asymmetrical, with complete inflation at the proximal mid portion and no expansion at the distal mid portions (Figure B). With continuing inflation, the balloon slipped backward, which left the prosthesis partially undeployed, cone shaped, and trapped at the aortic valve. Unsuccessful attempts to recross the valve with the balloon and the rapid hemodynamic deterioration of the patient forced us to push the valve inside the left ventricle, where the valve remained through the coiled tip of the guidewire, and the patient stabilized. The patient was immediately taken to the cardiac surgery room, where the native aortic valve was successfully replaced with a bioprosthesis (21-mm Mitroflow valve, Sorin Group, Milan, Italy). When the misdeployed Edwards Sapien valve was removed from the left ventricle, the distal part of the stent valve was found to be forcefully introduced into a biological structure, 4 cm in length (Figure C). Pathological examination revealed it to be an endarterectomized vascular segment that included both intimal and medial layers of the femoral-iliac vessel wall, which had been cut by the 22F sheath and which left only the adventitia in place (Figure D).

Operators performing transcatheter aortic valve implantation procedures should be aware of iatrogenic endarterectomy risk when femoral-iliac arteries present with borderline diameter and eccentric plaques. Because this complication is undetectable by fluoroscopy, the role of transesophageal echocardiography is crucial for its identification.

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Disclosures
None.

References