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Abstract: The complex anatomy of the aortic annulus warrants the use of three dimensional (3D) modalities for prosthesis sizing in transcatheter aortic valve implantation (TAVI). Multislice computed tomography (MSCT) has been used for this purpose, but its use may be restricted because of contrast administration. 3D transesophageal echocardiography (3D-TEE) lacks this limitation and data on comparison with MSCT is scarce. We compared 3D-TEE with MSCT for prosthesis sizing in TAVI. Aortic annulus diameters in the sagittal and coronal plane and annulus areas in 3D-TEE and MSCT were compared in 57 patients undergoing TAVI. Final prosthesis size was left at the operator's discretion and the agreement with 3D-TEE and MSCT was calculated. Sagittal diameters on 3D-TEE and MSCT correlated well ($r=0.754$, $p<0.0001$) and means were comparable (22.3±2.1 vs. 22.5±2.3 mm; $p=0.2$; mean difference: -0.3 mm [-3.3-2.8]). On 3D-TEE, coronal diameter and annulus area were significantly smaller ($p<0.0001$ for both) with moderate correlation ($r=0.454$ and $r=0.592$). Interobserver variability was comparable for both modalities. TAVI was successful in all patients.
with no severe post-procedural insufficiency. Final prosthesis size was best predicted by sagittal annulus diameters in 84% and 79% by 3D-TEE and MSCT, respectively. Agreement between both modalities was 77%. Annulus diameters and areas for pre-procedural TAVI assessment by 3D-TEE are significantly smaller than MSCT with exception of sagittal diameters. Using sagittal diameters, both modalities predicted well final prosthesis size and excellent procedural results were obtained. 3D-TEE can thus be a useful alternative in patients with contraindications to MSCT.