Intra-aortic phased-array imaging: new guiding tool for transcatheter aortic valve implantation

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With the introduction of the 8F AcuNav™ catheter (Siemens-Acuson Inc., Mountain View, CA, USA), also used for intracardiac echocardiography, intra-aortic phased-array imaging (IPAI) became feasible not only in the descending but also in the ascending aorta. Intra-aortic phased-array imaging can be used instead of transoesophageal echocardiography (TEE) to guide transcatheter aortic valve implantation. Generally, any TEE probe positioned at the level of the aortic valve hinders posterior-to-anterior fluoroscopic viewing, which is mandatory for balloon dilatation, final adjustment of the prosthesis, and subsequent valve implantation. On the other hand, simultaneous echocardiographic guidance is very helpful to early exclude potential complications and to confirm prosthetic valvular function immediately after implantation. In contrast, IPAI does not interfere with fluoroscopic viewing. The catheter can be left in position with the probe aimed at the aortic valve during whole procedure (Panels A–F). Consequently, ultrasonic viewing using IPAI can be considered a valuable alternative to TEE.

Panel A. Calcified native aortic valve showing mild regurgitation. AR, aortic regurgitation.
Panel B. Guidewire passing through the native valve. W, wire.
Panel C. Systolic transvalvular flow after predilatation of the valve. W, wire.
Panel D. Moderate aortic regurgitation after predilatation of the valve. AR, aortic regurgitation.
Panel E. Deployment of the transcatheter heart valve. B, balloon carrying the valve prosthesis; THV, transcatheter heart valve.
Panel F. Competent transcatheter heart valve after deployment and right coronary artery branching off the ascending aorta distally to the valve prosthesis. RCA, right coronary artery; THV, transcatheter heart valve.

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