

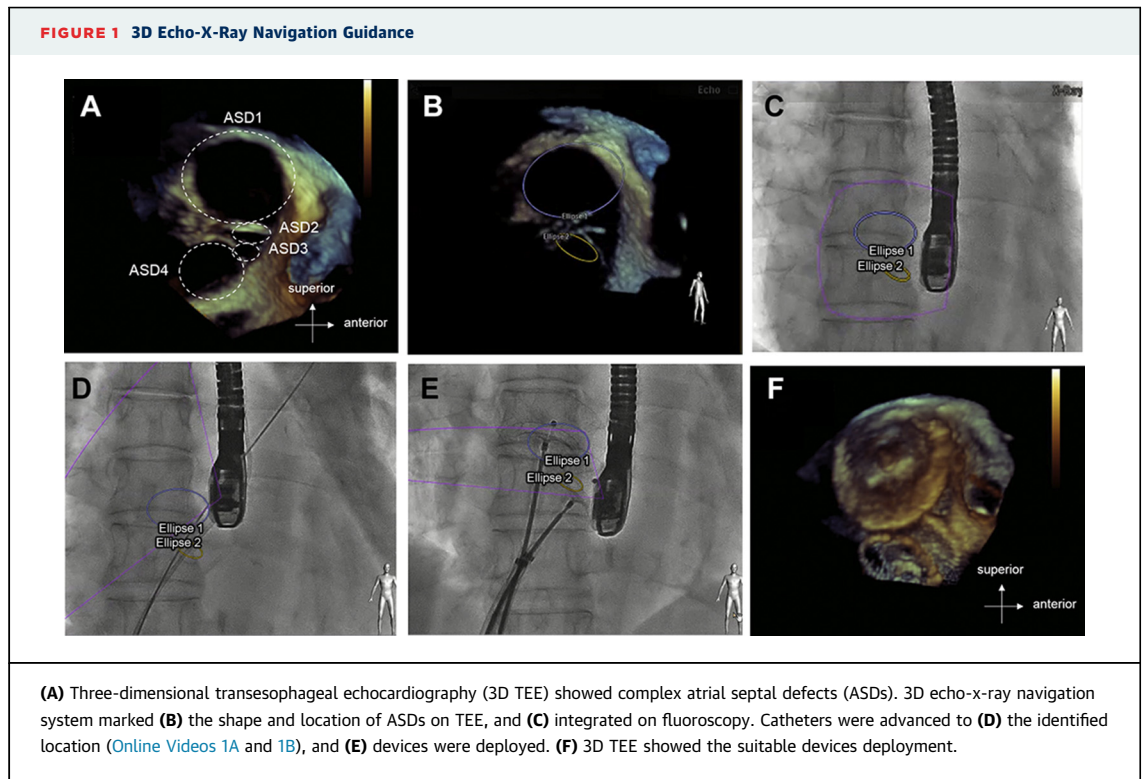
IMAGES IN INTERVENTION

Integrated 3D Echo-X-Ray Navigation Guided Transcatheter Closure of Complex Multiple Atrial Septal Defects



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A 73-year-old woman was referred to our institution for transcatheter closure of atrial septal defect (ASD). Three-dimensional transesophageal echocardiography (3D TEE) showed complex multiple ASDs of 26 mm (ASD1), 10 mm (ASD2), 8 mm (ASD3), and 15 mm (ASD4) (Figure 1A). We planned to close relatively large ASDs (ASD1 and ASD4), using 2 devices. The 3D echo-x-ray navigation system



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(Echonavigator; Philips Medical Systems, Andover, Massachusetts) was used to facilitate accurate deliver devices, marking the shape and location of ASD1 and ASD4 during the procedure (Figures 1B and 1C). Catheters were then advanced to the identified location (Figure 1D, Online Videos 1A and 1B). After balloon sizing, 28 mm and 20 mm Amplatzer Septal Occluders (St. Jude Medical, St. Paul, Minnesota) were deployed at the appropriate sites (Figures 1E and 1F).

This is the first report of successful transcatheter closure of complex multiple ASDs under the 3D echo-x-ray navigation guidance. Transcatheter closure of multiple ASDs remains challenging because of complicated techniques, including the risk of

incorrect device delivery into unexpected defects. The 3D echo-x-ray navigation system integrates TEE and fluoroscopy images (1), identifying the shape and location of ASDs evaluated by 3D TEE on fluoroscopy. This system provides more comprehensible image, and contributes to valuable guidance in the approach to complex multiple ASDs.

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APPENDIX For a supplemental video and its legend, please see the online version of this article.