

## Editorial



# Can Multidetector Computed Tomographic Angiography Replace Transesophageal Echocardiography for Preoperative Transcatheter Edge-to-Edge Mitral Valve Repair Planning Purposes?

Sung-Ji Park , MD, PhD

Division of Cardiology, Department of Internal Medicine, Cardiovascular Imaging Center, Heart Vascular Stroke Institute, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

► See the article “Utility of Multidetector Computed Tomographic Angiography as an Alternative to Transesophageal Echocardiogram for Preoperative Transcatheter Mitral Valve Repair Planning” in volume 31 on page 18.

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### Address for Correspondence:

**Sung-Ji Park, MD, PhD**

Division of Cardiology, Department of Internal Medicine, Cardiovascular Imaging Center, Heart Vascular Stroke Institute, Samsung Medical Center, Sungkyunkwan University School of Medicine, 81 Inwon-ro, Gangnam-gu, Seoul 06351, Korea.  
Email: tyche.park@gmail.com

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Transcatheter edge-to-edge mitral valve repair (TEER), using the MitraClip device for severe mitral regurgitation (MR) was first introduced in 2003. Since then, it has remained the most established percutaneous therapy available for the treatment of severe MR.<sup>1)</sup> Current guidelines recommend it is indicated for severe, symptomatic functional MR in patients who continue to have significant symptoms despite optimal guideline-directed medical therapy, as well as in symptomatic patients with severe degenerative MR who are deemed too high risk for conventional surgical therapy in the opinion of the heart team.<sup>2)</sup>

Echocardiography provides a better understanding of mitral valve anatomy and allows us to classify and quantify mitral regurgitation. Transesophageal echocardiography (TEE) is essential in-patient screening, intraprocedural guidance, and post-procedure evaluation for patients undergoing TEER with MitraClip. Real-time 3D TEE is also commonly used to guide TEER and facilitate the procedure.<sup>3)4)</sup>

In this issue of the *Journal of Cardiovascular Imaging*, Basman et al.<sup>5)</sup> retrospectively analyzed data on patients who underwent or were evaluated for TEER for degenerative MR with preoperative multi-detector computed tomographic angiography (MDCT) and TEE. There were no differences in the measurements for mitral valve area (MVA), flail width, commissural or anterior-posterior (AP) diameter, posterior leaflet length, and leaflet thickness. MDCT overestimated the measurements of flail gap. Authors concluded MDCT provides similar measurements to TEE for the comprehensive assessment of mitral valve anatomy for preoperative planning for TEER and can be considered as an isolated preoperative diagnostic modality for the planning of patients undergoing TEER in select patients during a pandemic.

Authors thought TEE is a semi-invasive diagnostic test and requires esophageal intubation and anesthesia. In patients with esophageal stricture, tumors, diverticulum, or lacerations,

TEE cannot be used. Therefore, there is a need for advanced non-invasive preoperative mitral valve imaging techniques that provide equivalent information to TEE. However, it is not common that TEE is contraindicated in patients who are indicated for TEER, and even if MDCT was performed for preoperative planning, it is inevitable that TEE should be performed during TEER. To assess the anatomically feasible candidate for TEE in primary MR, flail width and flail gap are important.<sup>6)</sup> By the results, MDCT overestimated the measurements of flail gap.

The strength of MDCT is to evaluate mitral annular dimensions (perimeter and inter-trigonal, inter-commissural and septolateral distances), mitral annular calcification, leaflet length, distance between papillary muscles, left ventricular outflow tract area and the course of the coronary sinus and circumflex coronary artery relative to the annular plane.<sup>7)</sup>

With the evolving landscape of TEER, the paradigm of treating patients with severe MR is changing. As outcomes of TEER improve, multimodality imaging will undoubtedly continue to play an essential role in the success of TEER.

#### ORCID iDs

Sung-Ji Park 

<https://orcid.org/0000-0002-7075-847X>

#### Conflict of Interest

The author has no financial conflicts of interest.

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