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## Hypoattenuated Leaflet Thickening in a Tendyne Bioprosthetic Mitral Valve

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### Keywords

cardiac computed tomography; hypoattenuated leaflet thickening; transcatheter mitral valve replacement

A 76-year-old woman with paroxysmal atrial fibrillation, and chronic nonischemic heart failure with mildly reduced ejection fraction, developed progressive mitral regurgitation (MR) with worsening exertional dyspnea. She underwent transthoracic (TTE) and transesophageal echocardiograms that showed severe MR, posterior leaflet restriction due to mitral annular calcification, and a dilated left ventricle with an ejection fraction of 45% to 50%. She had a high Society of Thoracic Surgeons Predicted Risk of Mortality score (11.5%), and transcatheter interventions were considered. Her small stature (body mass index 16.06 kg/m<sup>2</sup>) and mitral annular calcification precluded edge-to-edge repair. She was enrolled in a multicenter prospective trial and received a transapically delivered Tendyne bioprosthetic mitral valve (Abbott). The procedure was successful with no residual MR and a mitral mean gradient of 2.7 mm Hg by TTE on postoperative day 1. She was discharged on aspirin 81 mg daily and 6 months of warfarin. One week hence, she was readmitted with diarrhea and anemia concerning for gastrointestinal bleeding, received a blood transfusion, and warfarin was held. At a 1-month follow-up visit, her symptoms had improved with no ongoing bleeding. TTE showed mild paravalvular MR and a mildly elevated mitral mean gradient of 4.9 mm Hg. Cardiac computed tomographic angiography performed per trial protocol showed hypoattenuated leaflet thickening (HALT) with >75% involvement of the leaflet closest to the left ventricular outflow tract with reduced excursion (Figure 1, Video 1). She was instructed to resume warfarin but discontinued this 3 months later due to difficulty keeping the international normalized ratio in range. She continued to do well at 1-year follow-up.

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the Author Center.

### APPENDIX

For a supplemental video, please see the online version of this paper.

Subclinical leaflet thrombosis, which can be accurately delineated by HALT on cardiac computed tomographic angiography, is known to occur in bioprosthetic aortic valves. It may be a precursor of valvular dysfunction and therapeutic anticoagulation may be protective.<sup>1</sup> Whether HALT warrants long-term therapeutic or prophylactic anticoagulation remains unclear. The occurrence of HALT in bioprosthetic mitral valves is rare. To the best of our knowledge, we report the first case of HALT in a Tendyne valve.

## Supplementary Material

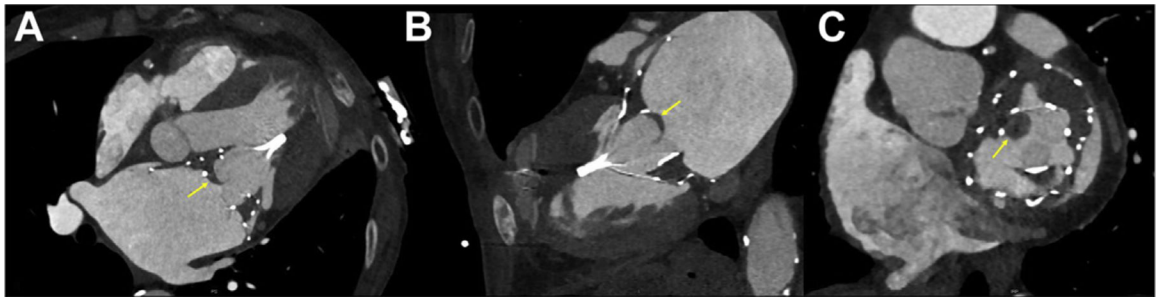
Refer to Web version on PubMed Central for supplementary material.

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The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

## REFERENCE

1. Chakravarty T, Søndergaard L, Friedman J, et al. Subclinical leaflet thrombosis in surgical and transcatheter bioprosthetic aortic valves: an observational study. *Lancet* 2017;389(10087): 2383–2392. [PubMed: 28330690]



**FIGURE 1. Cardiac Computed Tomographic Angiography of Tendyne Valve at 1-Month Postprocedure**  
Multiplanar oblique images (A to C) of hypoattenuated leaflet thickening (arrows).