

IMAGES IN INTERVENTION

Acute Coronary Syndrome Resulting From Systolic Compression of Left Main Coronary Artery Secondary to Aortic Subvalvular Aneurysm



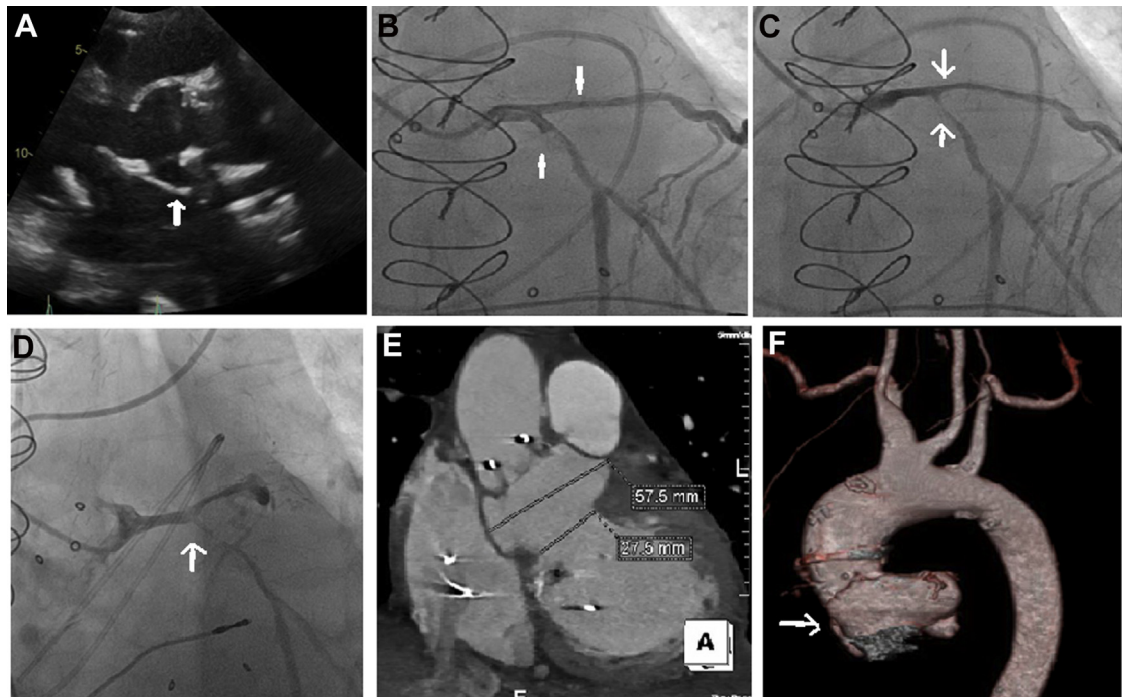
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A 73-year-old man was admitted with acute decompensated heart failure. He had a history of coronary artery bypass graft and aortic valve replacement (AVR) 12 years prior, left anterior descending artery (LAD) stent, and repeat AVR and mitral valve replacement with bioprosthetic valves for endocarditis 5 years prior. Echocardiogram showed aortic valve instability, significant subvalvular dilatation with an aneurysmal left ventricular outflow tract (LVOT) (4.8 cm), and moderate paravalvular leak (Figure 1A). A prior echocardiogram (1 year) did not show any paravalvular leak and LVOT diameter was 2.4 cm. During the hospital stay and pre-surgical planning for valve disease, he developed severe recurrent anginal chest pain; troponin was elevated to 1.42 ng/ml, which was suggestive of

non-ST-segment elevation myocardial infarction. Urgent coronary angiogram showed patent left main coronary artery (LMCA) but with significant systolic compression of both LMCA and proximal left circumflex artery, likely secondary to aortic subvalvular aneurysm (Figures 1B to 1D, Online Video 1). He had 50% stenosis in proximal LAD stent and 70% lesion in the proximal left circumflex artery, and known occluded right coronary artery with left to right collaterals. Bypass graft angiogram remained unchanged in comparison to previous angiogram 8 years prior; patent left internal mammary artery to diagonal with occluded limb to the LAD, known occluded saphenous vein graft to right posterior descending artery. Multidetector computed tomography showed focal dilation or pseudoaneurysm inferior to the level

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Manuscript received January 3, 2017; accepted January 12, 2017.

FIGURE 1 Echocardiogram, Coronary Angiograms, and Computed Tomography

(A) Echocardiogram, showing aneurysmal left ventricular outflow tract, significant aortic subvalvular dilation. **Arrow** indicates edge of aneurysm. (B) Left main coronary artery and proximal left circumflex artery during diastole. **Upper arrow** indicates LAD; **lower arrow** indicates left circumflex during diastole. (C, D) Compression of left main coronary artery and proximal left circumflex artery during systole ([Online Video 1](#)). **Upper arrow** demonstrates left anterior descending artery; **lower arrow** indicates left circumflex compression during systole. (E, F) Contrast enhanced computed tomography: focal well-defined dilation/pseudoaneurysm inferior to the level of the bioprosthetic aortic valve, up to 5.7 cm diameter compared to 2.7 cm diameter at the neck of the left ventricular outflow tract. **Arrow** indicates edge of aneurysm.

of the bioprosthetic aortic valve, up to 5.7 cm diameter compared to 2.7 cm diameter at the neck of the LVOT ([Figures 1E and 1F](#)). The patient was referred for urgent repeat AVR, coronary artery bypass graft, and aortic root repair. This case illustrates a very unusual etiology of acute coronary syndrome in LMCA, due to mechanical compression resulting from aortic subvalvular aneurysm secondary to prosthetic valve malfunction and paravalvular aortic regurgitation.

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KEY WORDS aneurysm, aortic valve replacement, coronary artery disease

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