4D Computed Tomography Visualization of Effective Septal Reduction After Alcohol Septal Ablation for Fatal Hypertrophic Obstructive Cardiomyopathy

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A 54-year-old woman, diagnosed with hypertrophic obstructive cardiomyopathy (HOCM) complained of exertional dyspnea. After she fell down stairs, a bystander initiated cardiopulmonary resuscitation and subsequently she received an implantable cardioverter-defibrillator (ICD). The AV-delay adjustment improved her left ventricular outflow tract pressure gradient (LVOT-PG) from 150 to 65 mmHg. However, she still experienced New York Heart Association (NYHA) class III dyspnea. Septal myectomy was recommended but she refused. Instead, she underwent alcohol septal ablation (ASA). Because her maximum septal thickness was 23 mm, an extended “myectomy-like” ablation was necessary. The 4 septal arteries were ablated with 7.5 mL of ethanol (**Figure**). Her peak LVOT-PG decreased to 5 mmHg. Dyspnea improved to NYHA class I. In the comparison of the 4D computed tomography (4D-CT) before and 6 months after the ablation, her left ventricular mass decreased from 246 to 221 g, while her cardiac output increased from 4.70 to 5.50 L/min. In this case, the extended “myectomy-like”

ablation accomplished adequate septal reduction,¹ and 4D-CT revealed significant left ventricular volume reduction after ASA, which implied that ASA accomplished an equal extent of septal reduction as a septal myectomy due to septal thinning and consequent reverse remodeling.

Disclosures

None.

Reference

1. Maekawa Y, Akita K, Takanashi S. Contemporary septal reduction therapy in drug-refractory hypertrophic obstructive cardiomyopathy. *Circ J* 2018; **82**: 1977–1984.

Supplementary Files

Supplementary Movie 1. 4D-CT before ASA.

Supplementary Movie 2. 4D-CT at 6 months after ASA.

Please find supplementary file(s);
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Figure. (A) Angiogram before alcohol septal ablation (ASA). The 4 septal arteries (red arrows) were candidates for ablation. The peak-to-peak pressure gradient was 65 mmHg. (B) Echocardiogram before ASA. (C) (Left) Cardiac CT and (Right) CT analysis before ASA. (D) Angiogram after ASA. The pressure gradient was 5 mmHg. (E) Echocardiogram at 6 months after ASA. The basal thickness decreased from 23 to 17 mm. (F) (Left) Cardiac CT and (Right) CT analysis at 6 months after ASA. The ablated area became low-density (yellow arrow) and thinner (red arrow). Ao, aorta; CI, cardiac index; CO, cardiac output; EDV/ESV, end-diastolic/end-systolic volume; EF, ejection fraction; HR, heart rate; LV, left ventricle.