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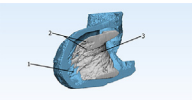

LEFT VENTRICLE REMODELING AFTER SEPTAL MYECTOMY SURGERY, "SEPTAL BAND" THEORY, AND "VIRTUAL" MYECTOMY CONCEPT INTRODUCTION

To the Editor:

With great interest we read the article "Left ventricular remodeling following septal myectomy in hypertrophic obstructive cardiomyopathy" by Yamabe and colleagues.[1] We congratulate the contributing authors with their results, which demonstrated postoperative changes in the interventricular septum myocardial volume and total left ventricle (LV) myocardial volume in patients with hypertrophic obstructive cardiomyopathy (HOCM). Postoperative LV remodeling might favor early surgical intervention in symptomatic patients with significant obstruction within the LV. LV remodeling, however, presumes not only a change in LV myocardial volume but also in its dimensions, LV volume, and shape. The present study showed that LV dimensions remained unchanged and results were lacking the information regarding LV volume and shape changes. Changes in LV volume and geometry are especially important in patients with HOCM because they are directly related to diastolic myocardial dysfunction. The authors showed a statistically significant decrease in postoperative LV ejection fraction at discharge and during follow-up. It requires more profound analysis of the LV remodeling dynamics and diastolic dysfunction for proper pathophysiological understanding of the chronic heart failure progression in patients with HOCM.

Yamabe and colleagues developed a "septal band" concept, which is of significant interest and was confirmed in part by their 3D computed tomography data. HOCM, however, is characterized by variability of anatomical forms that cannot fit into single "septal band" theory (eg, midventricular form, diffuse form, and especially apical form). In many cases septal myectomy requires myocardium resection beyond the "septal band" described. The authors performed septal myectomy mainly within the "septal band" and obtained suboptimal results[2]: LV outflow tract peak gradients of 22.5 mm Hg and 15.5 mm Hg (at discharge and during follow-up, respectively), 10% of mitral valve replacement, 56% of mitral valve plasty, and 6% of residual systolic anterior motion. Previously we presented our series of 103 cases of septal myectomy for HOCM using 3D imaging and 3D printing,[3] in which results were as follows: LV outflow tract mean gradients 6.5 mm Hg and 6 mm Hg at discharge and during follow-up, respectively, 0% of mitral valve replacement, 12.6% of mitral valve plasty, and 2% of residual systolic anterior motion.

With regard to the introduction of the "virtual" septal myectomy idea we would like to point out that concepts of "virtual," "ideal," and "optimal" septal myectomy were initially

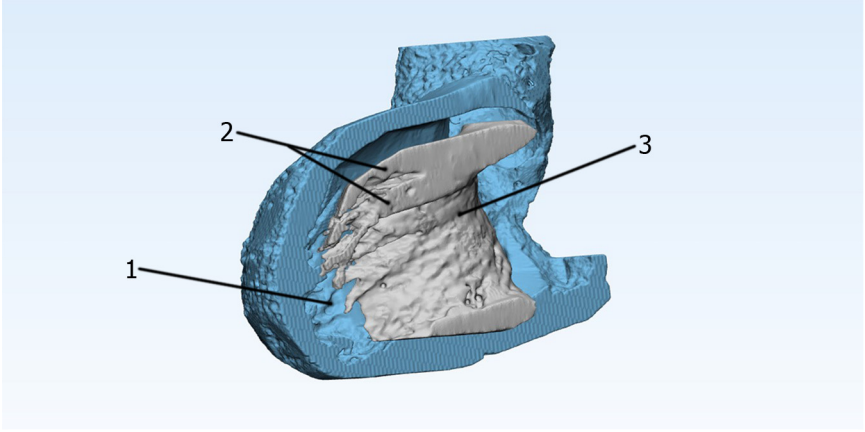

FIGURE 1. Ideal interventricular septum (*1*); abnormal myocardial bundles (*2*); and interventricular septum fragment planned for resection (*gray*; *3*).

pioneered in our 2018 publication (advance access from 2017).[4] They were then refined in later works[3,5] and were discussed with members of Yamabe's group. We absolutely agree that the role of 3D visualization is essential in planning and performing septal myectomy (Figure 1) and it was shown to significantly improve the postoperative results.[3-5]

In conclusion, further in-depth studies are required to investigate the dynamics of LV remodeling and LV diastolic dysfunction in patients with HOCM after septal myectomy. The proposed "septal band" concept and its practical implementation should be considered critically by the centers performing HOCM surgery. We also encourage extensive literature search and analysis in justifying the introduction or pioneering of developed concepts, terms, and theories.

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