Sub for SAM: Mitral Subvalvular Interventions in Hypertrophic Cardiomyopathy

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Septal myectomy has become the gold standard for the treatment of patients with hypertrophic cardiomyopathy (HCM) and left ventricular outflow tract (LVOT) obstruction with proven positive long-term effects on symptomatology and survival.[1] Most surgical patients present with significant and symptomatic outflow tract obstruction from a combination of septal hypertrophy and systolic anterior motion (SAM) of the mitral valve. Remarkable mitral regurgitation is frequently associated with HCM, and some controversy exist whether isolated myectomy is sufficient to abolish associated mitral insufficiency[2] or whether additional leaflet[3,4] and subvalvular interventions[5] are needed to achieve optimal results. In this issue of the *Journal*, Bogachev-Prokophiev et al[6] present a randomized trial of 80 patients with HCM, significant LVOT obstruction, and at least moderate mitral regurgitation who underwent septal myectomy with or without a subvalvular procedure (MSA). The authors found that MSA patients had reduced postoperative LVOT gradients and lower prevalence of residual mitral regurgitation. However, clinical symptoms and quality of life were similar between the groups at 1 year. This effort of the authors represents an important contribution to the surgical understanding of this complex disease as few randomized data are otherwise available.

The patient population included in the study had a mean septal thickness of over 26 mm which is certainly to the higher end of published studies, yet the mean mass of resected tissue of 6.5 g and 5.8 g for MSA and myectomy patients, respectively, represents a very conservative muscle resection. It is feasible that adequacy of resection may have contributed to the relatively high rate of repeat cross clamping (17.5%) and residual SAM (27.5%) observed in the isolated myectomy patients. Prior studies[7] have suggested that patients with HCM and thinner septa (<18 mm), where only a limited myectomy is feasible, may particularly benefit from subvalvular procedures, but the current trial excluded patients with septal thickness of less than 20 mm thus potentially omitting the patients who would be most likely to benefit from the additional intervention. Furthermore, the authors did not use provocative maneuvers intraoperatively such as dobutamine infusion that more thoroughly interrogate postmyectomy LVOT gradients and degree of MR and may potentially better unmask the benefit of subvalvular interventions. The Mayo group[8] has achieved exemplary results in the largest published cohort to date and also advocates papillary muscle mobilization, division of false chords, and abnormal septal attachments corroborating the current experience. However, it is also important to define the often blurry line between subvalvular interventions and more traditional mitral valve repair. Recent report of US national trends in HCM surgery[9] revealed that 33.4% of patients having septal myectomy had additional mitral valve repair or replacement. Mitral valve repair increased surgical mortality and morbidity without providing better control of valvular insufficiency. These data point to the heterogeneity of mitral abnormalities associated with HCM but also underscore the need for prerequisite adequate septal myectomy. To this end, Hong et al[2] demonstrated that in 1830 patients with HCM undergoing surgery, the

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Central Message

Routine addition of mitral subvalvular interventions to concurrent septal myectomy may reduce degree of residual MR in patients with hypertrophic cardiomyopathy.

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percentage of patients with MR grade ≥3 decreased from 54.3% to 1.7% with sepal myectomy alone.

Overall, the influence of MSA on intraoperative LVOT gradients was mild with a difference of only 5 mm Hg between the 2 groups which was no longer present at 12-month follow-up. Clinically, the patients had equivalent symptomatology, walk test time, and satisfaction with quality of life at 1 year. Residual MR was greater in patients with isolated myectomy although none of the patients had more than moderate MR. It would be useful to know whether this difference was mainly driven by the presence of mild MR which is likely inconsequential or moderate MR which is more likely to progress. This important question will hopefully be answered by the authors with longer echocardiographic follow-up. Interval assessment of functional status in these young patients over the long-term will ultimately determine the clinical significance of the proposed subvalvular interventions.

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