Septal myectomy in context: Clinical acumen and procedural expertise

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Surgical septal myectomy for the relief of symptomatic outflow tract obstruction in hypertrophic cardiomyopathy (HCM) has been of continual interest since its initial introduction nearly 60 years ago. Despite early concerns about overall safety, repeated investigations have shown myectomy to be safe, efficacious, and durable when performed by experienced surgeons in experienced centers.^{1,2} There are also data that suggest that myectomy may “normalize” survival.³ This compelling experience has positioned myectomy to be the preferred treatment for most patients with drug-refractory symptoms attributed to dynamic left ventricular outflow tract obstruction.⁴

In this issue of the *Journal*, Desai and colleagues⁵ provide an update on the Cleveland Clinic experience with myectomy in 990 patients and compared these patients with 540 other patients HCM who were seen at their center and not offered myectomy. They report better long-term survival in the patients who underwent myectomy than among the patients who did not undergo operation.

IN CONTEXT

Essentially, this study confirms those published in the past decade: myectomy is safe, with a procedural mortality rate approaching 0%; myectomy is effective in relieving outflow tract obstruction and the attendant symptoms; and myectomy results in excellent postoperative survival. The survival curves reported in this issue by Desai and colleagues⁵ are nearly identical to those reported by Mayo Clinic and Toronto General Hospital.^{3,6} Data consistency and outcome from these institutions is notable. These most recent data focus on late survival or appropriate ICD discharge. In addition to overall survival, the prior study demonstrated improvements for myectomy patients in terms of HCM-related death and survival free from sudden cardiac death, and survival after myectomy was equivalent to that of an age- and sex-matched population.³ Indeed, the safety and efficacy of myectomy at institutions with large experiences has asymptotically approached the extremes

Extended left ventricular septal myectomy.

Central Message

Surgical myectomy is safe and effective when performed in the context of experienced and skilled clinical and surgical teams.

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to the point that it is practically untenable for subsequent studies to show any improvement in these end points.

CLINICAL SKILLS

Although HCM surgical centers have long included objective measures of exercise capacity in their assessment and decision making, Desai and colleagues⁵ highlight the finding that a significant number of their patients underwent myectomy on the basis of underperformance on treadmill testing. It is important that this is not interpreted as a mandate that myectomy (or other procedures) be offered on the basis of advanced New York Heart Association functional class *or* impaired exercise capacity. Clinicians understand that the decision to pursue a therapeutic path is not predicated on a single variable outside the broader clinical context of the patient and the impact on the patient's life. When examined closely, those clinicians who are skilled at helping patients to determine the best therapies often arrive at a tentative assessment on the basis of history and physical examination and then factor in other testing data. When the clinical impression and testing data are congruent, decision making is straightforward; when they are discordant, treatment recommendations are more difficult. There are numerous reasons other than outflow tract obstruction that contribute to exertional symptoms or underperformance on exercise testing. If the subjective New York Heart Association functional class and objective performance are conflicting, then thoughtful assessment, integration of the available data, and shared decision

making with the patient will lead to optimal patient selection and outcomes with respect to the role of myectomy.

SURGICAL EXPERIENCE

Desai and colleagues⁵ also highlight another unique aspect of the HCM practice at their institution, the high frequency of mitral valve repair and replacement as an adjunct to surgical myectomy. Of the 990 patients, 25% had a mitral valve procedure performed during the initial operation or at subsequent operation for residual obstruction, and 4% of the total myectomy population received a mitral prosthesis.⁵ That is notable in light of the Mayo Clinic experience, in which mitral valve procedures of any kind have been considered necessary in fewer than 4% of patients undergoing myectomy.^{7,8} Although referral differences may explain some discrepancy, this seems unlikely given the robust experiences at both of these institutions. Rather, it is more likely that the Cleveland team has evolved toward mitral valve manipulation as part of their surgical approach. In parallel, our team has developed a comfort with a more extensive myectomy when needed, with sparing of the mitral valve when the mechanism of regurgitation is systolic anterior motion. We have not seen higher rates of subsequent mitral regurgitation or the need for mitral intervention, nor have we seen untoward consequences from a more extensive myectomy.⁹ In the absence of *structural* mitral valve disease (flail, prolapse, or accessory papillary muscle or chordae), our approach is to perform isolated extended myectomy only. After myectomy, postbypass intraoperative transesophageal echocardiography and direct pressure measurements are analyzed for residual obstruction or mitral regurgitation. Residual obstruction is addressed by further extending (to a more apical extent) the myectomy, particularly when there is residual septal and free wall hypertrophy. With this approach, mitral valve repair or papillary muscle repositioning is rarely needed. In short, our philosophy has been to address the muscular hypertrophy and to spare the valve.

Taken together with existing evidence, the report by Desai and colleagues⁵ confirms the safety and efficacy of surgical myectomy. The excellent results observed in this report and others during the past decade are based on experiences of expert centers and surgeons, as recommended by the American College of Cardiology, American Heart Association, and European Society of Cardiology.^{4,10}

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