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Commentary: Wherever you go, go with all your heart

Tomasz A. Timek, MD, PhD

Septal myectomy has been shown to be a safe and durable procedure for relief of left ventricular outflow tract obstruction associated with hypertrophic cardiomyopathy.¹ However, the surgery represents a relatively rare procedure with a median of <1 surgery per year per center in the Society of Thoracic Surgeons database.² Referral to high volume-centers fosters standardization of treatment pathways and improved patients outcomes,³ yet it is possible that referral bias may contribute to differential results. Calderon-Rojas and colleagues⁴ from the Mayo Clinic present a large cohort of local, regional, and nation patients referred for septal myectomy. Although local patients had greater preoperative morbidity and more often required mitral valve intervention, the authors achieved excellent surgical outcome of 0.5% perioperative mortality for all patients with no differences between groups. These results are exemplary and speak to the experience and expertise of a center that has contributed greatly to our understanding of the surgical treatment of this disease.

Although the authors firmly demonstrate that referral bias does not influence outcomes at their center, a referral bias was indeed present because the national patients presented a younger and less morbid cohort that less frequently needed mitral intervention. In experienced hands, the outcomes are unaffected regardless of preoperative morbidity, yet this may not be generalizable across the country. Based on a recently published 3-year snapshot of surgical myectomies in the United States, only 16 out of 330 centers offering surgery for hypertrophic cardiomyopathy performed

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CENTRAL MESSAGE

Patients undergoing surgery for septal myectomy at a high-volume center have equivalent outcomes regardless of referral geography.

more than 7 myectomies per year. More than a half of the national of cases were performed at these high-volume centers that represented the top 5% of centers for patient volume with an outsized influence of the Mayo Clinic and the Cleveland Clinic. The remaining centers performed <1 myectomy per year, suggesting that the least-experienced surgeons are operating on the highest-risk (ie, local) patients. In analyzing surgical outcomes of septal myectomy based on hospital discharge data between 2003 and 2011, Kim and colleagues⁵ found in-hospital mortality of 15.5%, 9.6%, and 3.8% for first, second, and third terciles for hospital volume, respectively. Fortunately the outcomes gap is closing, with recent data from the Society of Thoracic Surgeons database revealing a mortality of 1.1% and 3.0% for low- and high-volume centers, respectively. This is in no small part due to the evangelical efforts of the Mayo group, which has standardized and simplified the procedure, disseminated their results, and generously shared their experience to the benefit of the surgical community and—above all—patients. These data demonstrate that the procedure is becoming generally safer, but further work remains. What is missing from the current report is the socioeconomic status of the different patient populations or distant outcomes. It is feasible that long-term outcomes may differ when stratified by socioeconomic status because national patients have the means to travel to a referral center and may therefore enjoy better access and superior aftercare. The authors do provide convincing data that surgical experience and high clinical volume bode

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well for all patients in need of septal myectomy regardless of ZIP code.

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Commentary: Surgery of hypertrophic cardiomyopathy: Focus really does matter

Jason J. Han, MD, Mark R. Helmers, MD, and Pavan Atluri, MD

Transaortic septal myectomy is indicated for patients with obstructive hypertrophic cardiomyopathy (HCM) that is refractory to conservative treatment options. High-volume centers have reported excellent long-term outcomes, with operative mortality of less than 1%.^{1,2} However, as with most specialized procedures, significant variance in outcomes has been observed, with estimated mortality as high as 5% in national studies.³ In this issue of the *Journal*, Calderon-Rojas and colleagues⁴ explore the potential source of this variance at their tertiary institution: referral bias.

Bias is a systematic error that can falsely estimate an effect. Referral bias denotes a difference among patients who are referred to specialized centers from those in the general, local population. The authors share their

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Jason J. Han, MD (right), and Pavan Atluri, MD (left)

CENTRAL MESSAGE

While differences in comorbidities may exist between patients who travel short and long distances for septal myectomy, outcomes remain superb at centers of excellence.

extensive institutional experience conducting transaortic septal myectomy with an overall cohort greater than 2000 patients, who were divided into 3 groups based on their residence: local (Minnesota), regional (5 surrounding states), or national (remaining states). As expected, referral bias was found, as these groups had several statistically significant, albeit subtle, differences in characteristics. Local patients carried a greater prevalence of comorbidities such as diabetes, atrial fibrillation, and coronary artery disease. Similarly, the rates of concomitant mitral valve surgery and coronary artery bypass grafting performed for concomitant native cardiac diseases were about 50% greater among local and regional patients than among national patients. In contrast, nationally referred patients were generally healthier and more likely to have undergone a failed septal ablation.