EDITORIAL COMMENT

Valve Surgery in the Elderly

A Question of Quality (of Life)?*  
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Over the next two decades, the aging of the population will force a major shift in clinical care in the U.S. By 2010, over 40 million Americans will be age 65 years and older, 18 million Americans will be over the age of 75 years, and the burden of cardiac disease among older persons will continue to rise (1,2). Clinicians caring for patients with cardiovascular disease will need to make tough decisions about the use of therapies and interventions in older persons. This will be a tremendous challenge for multiple reasons. First, older age is an independent risk factor for higher mortality and morbidity in cardiac populations (3). Second, elderly patients have a heavy burden of comorbid diseases, which complicates management and further increase the risk of adverse outcomes (4,5). Third, the evidence base for most cardiovascular therapies stems from clinical trials that have excluded elderly patients (particularly those >75 years of age), leaving clinicians with relatively little direct evidence to guide treatment (3,6). And finally, few studies have focused on patient-centered outcomes, including health-related quality of life (HRQL). Ultimately, for clinicians to make the best decisions about cardiovascular therapies, a clear understanding of the impact of these therapies on the HRQL of patients is essential. This is particularly true for elderly patients because many older persons express a preference for quality of life over quantity of life, and survival benefits may not be the primary therapeutic goal (7).

Cardiac valve surgery is an excellent example where HRQL considerations are critical, but where evidence is lacking. Valve surgery is increasingly performed on older patients, including those over 75 years (6,8). At the same time, advanced age is a risk factor for operative mortality with valve surgery (6,8,9). While data is limited, studies of valve surgery in octogenarians have reported short-term (e.g., 30-day) mortality rates of approximately 8% to 20%, with lower mortality for isolated aortic valve surgery and higher mortality for mitral valve surgery and multiple valve, and valve-coronary artery bypass graft (CABG) operations (6,8,10–12). Very limited data on valve surgery on nonagenarians suggests operative mortality in excess of 15% (13). Clearly, the elevated operative mortality risk in older persons undergoing valve surgery must be balanced against the potential benefits of the operation.

A principal goal of cardiac valve surgery is improvement in HRQL through reduction of symptoms and better physical function. Although valve surgery will be undertaken in select elderly patients for potential survival benefit (e.g., isolated severe aortic stenosis in a patient without significant comorbidities), the primary goal of the operation for most elderly persons should be improvement in HRQL. Unfortunately, the potential HRQL benefits of the operation may be offset in older patients by neurocognitive deficits after surgery, increased short- and long-term complications, and incomplete recovery resulting in significant residual functional limitations (6). Coupled with the technical challenges of valve surgery in older persons, including the potential for extensive calcification of the aortic valve, annulus, and aortic root, and the prevalence of ischemic mitral regurgitation, it cannot be assumed that surgery to correct valvular pathology will improve HRQL. Without evidence supporting HRQL benefits of valve surgery in the elderly, clinicians are faced with the decision of recommending an intervention for which the risks may outweigh the potential gains.

In this issue of the Journal, Sedrakyan et al. (14) evaluated whether older age attenuates the HRQL benefits of cardiac valve surgery in a cohort of 220 patients undergoing aortic or mitral valve operations. They measured HRQL at baseline and 18 months after the operation using the Short-Form 36 (SF-36) health status survey. The SF-36 does not contain disease-specific questions (i.e., there are no questions directly relating to symptoms or functional limitations from valve disease), but is a widely validated measure of overall physical and mental health status (15). The authors found clinically significant mean improvements in overall physical and mental health status for patients in the <65-, 65- to 74-, and ≥75-year-old age groups. The average improvements in SF-36 scores were similar across the age spectrum and for both aortic and mitral valve operations. Remarkably, postoperative SF-36 scores were restored to population norms for all age groups. Therefore, the authors concluded that age does not appear to limit the HRQL benefits of valve surgery.

Several limitations of the Sedrakyan et al. (14) study should be noted. First, the study was performed at a single tertiary care center, which may limit generalizability. Second, over one-third of the patients had combined valve-CABG procedures, so the relative HRQL improvement due to repair of the valve lesion versus coronary revascularization cannot be determined. Finally, the baseline HRQL assessment was administered after surgery, raising some concern of bias. It is possible that patients who have survived a cardiac operation would overstate their preoperative HRQL.

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deficits, leading to an overestimation of the improvement in HRQL after the operation. Furthermore, this study design leads to the exclusion of patients with early deaths and those that were too ill or cognitively impaired after the operation to participate. This may result in a study cohort largely composed of patients who benefited from the procedure.

Nonetheless, the results of this study are consistent with previous studies that have examined HRQL after valve surgery in the elderly (10–12,16–18). Furthermore, the current study avoids many of the limitations of previous studies, such as very small sample sizes, short follow-up, failure to use validated HRQL measures, and/or failure to assess HRQL longitudinally. The study by Seredkyn et al. (14), therefore, moves us toward a better understanding of the impact of valve surgery on HRQL.

The primary implication of the study by Sedrakyan et al. (14) is that older patients undergoing cardiac valve surgery can have significant improvements in HRQL, on par with improvements seen in younger patients. It is essential to recognize, however, that the average HRQL improvements reported in this study will not be realized in all patients undergoing the operation. More importantly, the study does not tell us which elderly patients should be chosen for the operation. The decision to recommend valve surgery for a given older patient will need to be individualized based on the specific valvular pathology and severity, the actual age of the patient (because the term “elderly” remains a broad concept), associated comorbid diseases, and patient preferences regarding the potential risks and benefits of the operation. It will be essential to supplement this decision-making with an understanding of which patients are most likely to derive an HRQL benefit from the operation.

Therefore, the study by Sedrakyan et al. (14) should be viewed as an important first step toward a greater understanding of how to choose cardiac therapies to optimize patient-centered outcomes. To achieve this goal, expanded research efforts are needed to measure the impact of cardiac therapies on the HRQL of older cardiovascular patients. Studies are also needed to identify the determinants of HRQL in cardiac populations and to evaluate interventions to improve patient-centered outcomes. Ideally, new clinical trials will be undertaken, such as the recently published Trial of Invasive versus Medical therapy in Elderly patients (TIME) (19). In many instances, however, new clinical trials are not likely to be forthcoming, and we must rely on careful observational studies like the one by Seredkyn et al. (14). Registries are a potentially rich source of data for observational studies, and there are several well-established registries for cardiac surgery (20). However, a key deficiency of existing cardiovascular registries is the lack of data on patient-centered outcomes. The time has come for HRQL measures to be incorporated in all cardiovascular clinical trials, observational studies, and cardiovascular registries.

Although further research is critical, we can gain some insight from the existing literature on how HRQL measures may be helpful in clinical decision-making. It has been shown in multiple cardiac populations that HRQL independently predicts subsequent mortality (21–23). This has not yet been evaluated for valve surgery, but we can anticipate that patients with diminished preoperative HRQL will be at higher risk for operative mortality. On the other hand, it is likely that only those patients with significant HRQL deficits will derive HRQL benefits with the operation (24). This paradox is directly analogous to patients with reduced left ventricular ejection fraction, who are at increased risk for CABG surgery, but can derive a greater survival benefit (25). Thus, clinicians should strongly consider formal measurement of HRQL before cardiac valve surgery to aid in risk stratification.

In conclusion, cardiovascular clinicians will increasingly be faced with the challenges of decision-making in elderly patients. The issues prominent in the growing field of “geriatric cardiology” are moving into mainstream cardiology. An understanding of the impact of therapies on the HRQL of older cardiac patients, and an understanding of how HRQL data can be used in the clinical management of elderly patients, will be critical. Only through dedicated research and clinical practice efforts will we be ready to make decisions in elderly patients that will optimize patient-centered outcomes, and, ultimately, provide the highest quality of care.

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