

# Coronary artery bypass surgery for elderly patients: Is our practice based on evidence or faith?

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A recent editorial<sup>1</sup> on coronary artery bypass graft (CABG) surgery in patients 65 years of age and over stated that “the beneficial effect on mortality in older patients with 3-vessel or left main coronary artery disease is not seriously questioned....” Given the risk of morbidity and mortality associated with CABG surgery in elderly patients and the lack of data on its effectiveness when compared with current medical therapy, perhaps bypass surgery in elderly patients should be reconsidered.

The total number and the rate at which CABG procedures are being done have increased rapidly in elderly patients,<sup>2</sup> despite the fact that each of the 3 major clinical trials<sup>3-5</sup> that compared outcomes following medical therapy or bypass surgery among patients with coronary artery disease excluded patients 65–67 years of age and older. An overview of these randomized trials and 4 smaller ones,<sup>6</sup> reported significantly better outcomes at 5-, 7- and 10-year follow-up for patients who had CABG surgery than for those who received medical therapy. The peak benefit was seen at 5 years, with mortality rates at 10.2% for the CABG patients and 15.8% for those receiving medical interventions ( $p < 0.001$ ); survival curves converged at 10 years, but significant benefit from surgery was still evident ( $p = 0.03$ ). The issue to be addressed is whether this demonstrated benefit of CABG surgery over medical therapy for younger patients can be generalized to older patients.

Several factors should be considered. Although more than 50% of elderly people are women, less than 5% of patients in these randomized studies were women. In addition, older patients are more prone than younger ones to ischemic cardiac disease and tend to experience worse outcomes — perioperative CABG mortality is 3–7 times higher in elderly patients.<sup>7-9</sup> Of even greater importance, given that the risk of death from surgery increases with age and the maximal survival benefit for surgery over medical therapy peaks at 5 years after CABG, the expected long-term mortality at 5–10 years post-CABG is 3–4 times greater for older patients (i.e., over 70 years of age) than for younger ones.<sup>8,9</sup> If we consider that younger patients may trade off a short-term (perioperative) risk for a benefit often not observed for 5 years, it is reasonable to ask how this trade-off changes for older patients when the perioperative risk is higher and the chance to live long enough to experience the survival benefit is lower.

For many elderly people there are fates worse than dy-

ing. Perioperative complications and postoperative events that can compromise quality of life for older CABG patients suggest caution when extrapolating data from younger patients and applying it to older ones. For example, after cardiac surgery older patients are at greater risk for stroke (6.1% of patients over 70 years of age v. 1.9% of those under 70),<sup>10</sup> acute renal failure (1.8% for patients over 80 years of age, 1.5% for those 70–79 and 0.9% for those 60–69)<sup>11</sup> and for developing other major complications.<sup>12</sup>

The quality of life experienced by elderly patients after CABG surgery has not been well studied, and when studied, it has usually been with retrospective designs, small samples and a variety of quality-of-life questionnaires. The Randomized Intervention Treatment of Angina Trial<sup>13</sup> compared the long-term effects of percutaneous transluminal coronary angioplasty (PTCA) and CABG surgery. Of the 501 patients who had CABG surgery, 311 were 59 years of age or younger, 169 were between 60 and 69 years of age and 21 were between 70 and 79. The study reported significant improvements in quality of life after both CABG and PTCA at the 2-year follow-up; unfortunately however, age was not one of the variables in the statistical analysis. Our group studied the impact of surgery on quality of life in 100 patients aged 75 years and older who had CABG surgery in Halifax, NS.<sup>14</sup> Although improvements in quality of life were observed at 3 and 6 months in nondisabled survivors, the perioperative death rate was 4%, and disabling strokes occurred in 6% of patients. One-year mortality was 16%, and the rate of death or stroke was 20%. Our institution reported the lowest operative death rate (i.e., 3.0% crude and 2.7% risk adjusted) in the country for the period 1992–1995.<sup>15</sup>

Medical and surgical therapies have changed substantially in the 25 years since the first large comparative CABG trials were conducted. The introduction of angiotensin-converting enzyme inhibitors and the use of  $\beta$ -blockers for patients with left ventricular dysfunction have significantly improved medical therapy, and the use of better anesthetic and perfusion techniques and arterial grafting procedures has improved surgical outcomes for all ages. Interestingly, however, 2 recent studies comparing PTCA and medical therapy for the management of coronary artery disease<sup>16,17</sup> reported no mortality benefit for patients who had angioplasty, despite definite improvements in anginal symptoms and exercise capacity associated with PTCA. Indeed, the RITA-2 trial reported death or my-

ocardial infarction in 6.3% of those treated with PTCA and in 3.3% treated with medical therapy ( $p = 0.02$ ).<sup>17</sup>

More recently, a prospective randomized multicentre study comparing invasive and noninvasive treatments for patients with unstable coronary artery disease<sup>18</sup> reported a reduced incidence of death or myocardial infarction at 6-month follow-up in patients who underwent surgery or angioplasty compared with those who did not. Most of the composite endpoint reduction was associated with a significant decrease in myocardial infarction alone; mortality rates were not significantly different. About half of the patients were 65 years of age and older; although the authors reported that patients over 75 years of age were excluded from the study, some patients in their 80s were included. A total of 282 patients were excluded on the basis of age, but the criteria for their exclusion are not immediately evident. Thus, which elderly patients benefited is uncertain.

Given that both mortality and morbidity rates are higher in older patients undergoing bypass surgery and the effects on quality of life are unclear, a large randomized trial comparing current optimal medical management with the latest surgical interventions in elderly patients should be considered. The patient sample should reflect the characteristics of those currently being treated (i.e., no upper age limit) and the heterogeneous nature of the health status of elderly patients; surrogate estimates of biological, as opposed to chronological age, as a further indicator of relative fitness or frailty might also be useful in this regard.<sup>19</sup> Priority should be given to identifying factors by which the risk of adverse outcomes could be stratified, and perioperative complications should be carefully monitored. Outcome measures should be simple but focus on both the quantity and quality of life. It will continue to be difficult to make rational recommendations to an increasingly diverse and aging population until such studies are done. Until then, we must acknowledge what we do not know and make this uncertainty clear to our patients.

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