

## Cardiac Surgery in Octogenarians

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### ABSTRACT

In Europe and North America, cardiac surgery can be done successfully on octogenarians, but differences in patient selection, surgical and bypass techniques prevent us from concluding similarly in Pakistan. This study investigated the short and long-term outcomes of cardiac surgery in octogenarians operated over a 5 years period at The Aga Khan University Hospital, from January 2001 to December 2006. Seventeen octogenarians, (mean age  $81.7 \pm 2.3$ ) underwent coronary artery bypass graft (CABG). Thirty-days hospital mortality was reported in only 1 patient. Surgical complication of any kind was reported in 13 (76.5%) patients with pleural effusion being the commonest in hospital complication seen in 11 (64.7%) patients. About 13 (92.9%) patients were satisfied with the results of the surgery and reported post-surgery improvement in quality of their life. Cardiac surgery has an important role in the management of elderly patients with medically refractory cardiac symptoms, but the implications of widespread cardiac surgery in the elderly need to be addressed.

**Key words:** Cardiac surgery. Octogenarians. Pakistan. Pleural effusion. Coronary artery bypass graft.

An estimated 17 million people die of cardiovascular diseases (CVD) globally every year. According to WHO the global mortality due to coronary artery disease alone is about 7.2 million per annum.<sup>1</sup> Currently life expectancy in Pakistan is 64 years and about 160,1459 (1.21%) people are over 75 years old.<sup>2</sup> Octogenarians have a high prevalence of cardiac disease and are more likely to have medically refractory symptoms, but are less likely to be suitable for less invasive procedures such as coronary angioplasty.<sup>3</sup> Although many studies have shown that cardiac surgery can be done successfully on octogenarians, most of the data reported, is from US and Europe.<sup>3</sup> Differences in patient selection, surgical and bypass technique make it difficult to draw firm conclusions for Pakistan. These studies suggest that morbidity and mortality is significantly increased in older patients, but the operative risk is acceptable and the long-term outlook in survivors is good.<sup>4,5</sup>

A retrospective review was carried out to find out the short and long-term outcomes of cardiac surgery in octogenarians operated from January 2001 to December 2006 at the Aga Khan University Hospital. Seventeen octogenarians (10 males, 7 females) underwent coronary artery bypass graft (CABG). Mean age of subjects was  $81.7 \pm 2.3$  years. Overall 70.5% of the patients were in a bad condition falling in NYHA functional class III-IV. All

were ASA class IV. Of the total 6 (35.3%) patients were diabetic, 11 (64.7%) were hypertensive, 7 (41.2%) were hyperlipidemic and 14 had angina while 7 (41.2%) had suffered at least one myocardial infarction.

On pump CABG was performed in 14 patients and 3 underwent off pump CABG. All surgical procedures were performed through a median sternotomy, and intermittent cold blood cardioplegia was used for myocardial protection. For anastomosis, reverse saphenous vein was used in 13 patients, left internal mammary artery (LIMA) in one patient and both used in 3 patients.

Status of procedure was elective in 11 (64.7%) patients, urgent in 2 (11.8%) patients and emergent in 4 (23.5%) patients. Mean left ventricular ejection fraction was 35%; 2 (11.8%) patients received pre-operative inotropic support and Intra-aortic Balloon pump (IABP) was inserted in 5 (29.4%) patients preoperatively.

Mean pump time was 107.21 (65-209 range) minutes and mean cross clamp time was 63.36 minutes (33-94 range). Average hospital stay and ICU stay was 11.8 (median 12), 4.3 (median 4) days respectively. Four patients, 1 male and 3 females all with NYHA functional class III or IV, had prolonged hospital stay (> 14 days). All 3 females also experienced unstable angina. One of them, who underwent emergent surgery, was pre-operatively on ventilator, had recurrent episodes of pulmonary edema and had an episode of myocardial infarction one week prior to surgery. The second female who underwent emergent surgery had LVEF 30-35%. Whilst the third female, died on 26th day post-surgery.

The 30 days hospital mortality was reported in only 1 patient who was an 85 years old lady and had undergone elective on-pump CABG. On long-term follow-up, mean time 25 (range 3-69) months, mortality

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was 11.8% occurring in 2 female patients. One died of cardiac arrest 8 months after surgery and the other died 2 years postsurgery from stroke.

Surgical complication of any kind was reported in 13 (76.5%) patients, with pleural effusion being most common in hospital complication in 11 (64.7%) patients. Three patients had at least one episode of atrial fibrillation, 2 patients suffered cardiogenic shock and one patient had a CVA within one month of their operation.

Long-term survival was determined through telephonic interviews and was evaluated with the help of Kaplan Meier's survival plot (Figure 1). Fourteen patients were alive out of which 11 (78.6%) were in NYHA functional class I-II and 3 were in NYHA IV. Out of these survivors, 13 (92.9%) were satisfied with the results of the surgery and felt that cardiac surgery was a good choice as it had improved their quality of life.

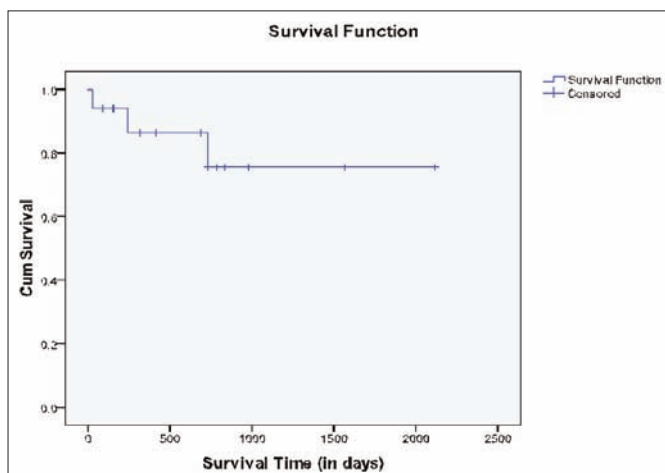


Figure 1: Meier's survival plot.

Of the 17 octogenarians, 12 (70.5%) presented to us with a poor functional class (NHYA III/IV). Poor functional class has been associated with higher mortality<sup>4</sup> and poor postoperative survival. A 30-day mortality of 5.9% (1/17) was observed which is comparable to and even lower than that reported by others evaluating CABG outcomes.<sup>5</sup> In this cohort we observed an overall mortality of 17.6% (3/17) at 5 years follow-up compared to Shigemitsu *et al.* who reported 30 days mortality of 16.1% and overall mortality of 29% in his series of 31 patients undergoing cardiovascular surgery using Cardio Pulmonary Bypass.<sup>6</sup>

This study demonstrates acceptably low morbidity and mortality for cardiac surgery in patients over 80 years however, there are several limitations to the generalizability of our findings. It was a single centre study, with a single surgical and anaesthesiological group; studies of this kind are inherently limited as they only include patients who were accepted for surgery and have no control group to compare to. Furthermore a small sample size also reflects the difficulty in finding cases in a single tertiary care centre and restricts the validity of results. Moreover, self report of post operative quality of life by patients is not an objective assessment of impact of surgical outcome which limited us from comparing it across patients. The primary aim here was to share findings of this limited cohort of patients in a developing country, and to recognize the need for a multi-centre robust clinical trial to assist in developing evidence base to help in formulating clinical and health policy guidelines for cardiac surgery patients.

Cardiac surgery can have an important role in the management of elderly patients with medically refractory cardiac symptoms. Although it is more risky in octogenarians, further research needs to address this question, but this should not discourage surgical referral of such patients for further evaluation.

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