Off-Pump Coronary Artery Bypass in Octogenarians: Results of a Statewide, Matched Comparison

Objectives

• Coronary artery bypass (CAB) may be safely performed in the elderly while providing satisfactory long-term survival benefits
• Reports suggest that certain groups benefit from OPCAB; especially women, those with renal failure, and high-risk profiles
• We sought to understand whether octogenarians could attain a similar benefit
• Hypothesis: octogenarians may benefit from avoiding CPB and cardiopulmonary arrest

Methods

• Patients ≥ 80 years (octogenarians) undergoing isolated CAB from July 2011 to July 2016 in the state of Maryland
• 926 octogenarians were dichotomized into on-pump CAB (ONCAB, n=128) versus off-pump OPCAB (n=128)

We calculated a score to predict propensity of being assigned to OPCAB among 36 preoperative factors (c-statistic=0.89)
• 128 pairs were matched (1:1) using nearest-neighbor principle
• Primary outcomes:
  • Operative mortality
  • Completeness of revascularization = total grafts / diseased vessels
• Secondary outcomes:
  • Length of stay
  • Discharge pathways
  • Occurrence of major complications

Results

• OPCAB was performed in 14% of octogenarians
• Overall, the majority of patients were male (64%), had hypertension (91%), and 3-vessel coronary disease (80%)
• Mean STS predicted risk of mortality was 5% and overall operative mortality was 4.5% (p/E ratio=0.9)
• Factors associated with OPCAB were female sex, African American race, diffuse coronary disease, liver disease, renal replacement therapy, and fewer diseased coronary vessels (all p-values ≤ 0.01)
• Matching yielded 128 pairs with adequate balance (all SMD < 0.20) within a comprehensive spectrum among possible scores (Figure C)
• There was no difference in operative mortality after matching (p=0.36)
• Rates of complications and discharge pathways were similar between groups
• OPCAB patients have a lower revascularization ratio (0.92 vs 1.15, p<0.01), mostly from a lower number of vein grafts (median 1 vs 2 grafts, p<0.01)

Conclusions

• OPCAB did not offer a survival benefit to octogenarians after matching
• Furthermore, OPCAB was associated to inferior completeness of revascularization
• OPCAB should continue to be considered the standard of care for this patient population

Acknowledgments: This study was supported by the Maryland Cardiac Surgery Quality Initiative (MCSQI), Johns Hopkins University, Baltimore, MD.

Limitations:

• Intention-to-treat bias may be considered from a retrospective study design
• Potential for unrecognized miscoding of data

Disclosures: The authors have no relevant financial disclosures or conflicts of interest to report