PCI or CABG for LM & MVD

Gurpreet S. Sandhu MD, PhD

Professor of Medicine
Chair of Interventional Cardiology
Dr. Earl Wood Cardiac Cath Lab

Mayo Clinic
DISCLOSURE

Relevant financial relationship(s) with industry
None

Off Label Usage
None
Clinical case

93 female, lives independently, HTN, HLD

*Progressive chest pressure - 3 weeks*
93 female

*Refer for Surgery?*

73 female?

53 female?
Guideline based treatment

Three vessel

Cabg
Original CABG data is from early 1970s

VA Study  (n=1015)

No benefit 1, 2, 3VD. Increased survival LM

ECASS  (n=768, males < 65)

Improvement for 3VD, p-LAD, LM

CASS  (n=780, 90% male < 65)

Similar 5-year survival
3VD & low EF – non-significant trend for improved survival
Age and Risk of Perioperative Mortality

![Bar chart showing predicted mortality by age and risk score]

- Predicted Mortality, %
- Age: 65, 70, 75, 80, 85, 90
- STS
- Euroscore

Sandhu 2017
Do current studies provide an answer?

**Syntax** - mean age 65 years

*CABG better for high syntax score*

**Freedom** - mean age 63 years

*CABG better for patients with DM*
The 65 and Over Population Will More Than Double and the 85 and Over Population Will More Than Triple by 2050

Prevalence of coronary artery disease by age and sex in US adults

67,764 patients (4,743 octogenarians)
National Cardiovascular Network

\[\text{Complication Rate} \quad \text{Age} \]

- Mortality
- Renal failure
- CVA

Sandhu 2017
Critical Analysis of Early and Late Outcomes After Isolated Coronary Artery Bypass Surgery in Elderly Patients

Akshat Saxena, BMEdSc, Diem T. Dinh, BS, PhD, Cheng-Hon Yap, MBBS, MS, Christopher M. Reid, MS, PhD, Baki Billah, MS, PhD, Julian A. Smith, MBBS, FRACS, Gilbert C. Shardey, MBBS, FRACS, and Andrew E. Newcomb, MBBS, FRACS

Department of Cardiothoracic Surgery, St. Vincent’s Hospital, Melbourne, Fitzroy; Department of Epidemiology and Preventive Medicine, Monash University, Prahran; Department of Surgery (MMC), Monash University, Monash Medical Centre, Clayton; Department of Cardiothoracic Surgery, Monash Medical Centre, Clayton; and Cabrini Medical Centre, Malvern, Victoria, Australia

Table 1. Intraoperative Characteristics, Stratified by Age

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Age &lt;80 Years</th>
<th>Age &gt;80 Years</th>
<th>p Value</th>
<th>Age &gt;80 Years Adjusted Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent stroke (%)</td>
<td>147 (0.73)</td>
<td>22 (1.32)</td>
<td>0.517</td>
<td>1.19 (0.70–2.01)</td>
</tr>
<tr>
<td>Transient stroke (%)</td>
<td>72 (0.36)</td>
<td>15 (0.90)</td>
<td>&lt;0.001</td>
<td>2.96 (1.63–5.39)</td>
</tr>
<tr>
<td>Postoperative myocardial infarction (%)</td>
<td>145 (0.73)</td>
<td>13 (0.78)</td>
<td>0.721</td>
<td>0.89 (0.47–1.68)</td>
</tr>
<tr>
<td>New renal failure (%)</td>
<td>667 (3.36)</td>
<td>122 (7.34)</td>
<td>&lt;0.001</td>
<td>2.34 (1.88–2.93)</td>
</tr>
<tr>
<td>Deep sternal wound infection (%)</td>
<td>144 (0.72)</td>
<td>14 (0.84)</td>
<td>0.376</td>
<td>1.32 (0.72–2.43)</td>
</tr>
<tr>
<td>Septicemia (%)</td>
<td>184 (0.93)</td>
<td>29 (1.74)</td>
<td>0.002</td>
<td>1.94 (1.27–2.98)</td>
</tr>
<tr>
<td>Multisystem failure (%)</td>
<td>138 (0.69)</td>
<td>33 (1.99)</td>
<td>&lt;0.001</td>
<td>2.46 (1.59–3.81)</td>
</tr>
<tr>
<td>Gastrointestinal complications (%)</td>
<td>200 (1.0)</td>
<td>42 (2.53)</td>
<td>&lt;0.001</td>
<td>2.32 (1.60–3.37)</td>
</tr>
<tr>
<td>Prolonged ventilation (%)</td>
<td>2637 (13.27)</td>
<td>234 (14.10)</td>
<td>&lt;0.001</td>
<td>1.75 (1.48–2.07)</td>
</tr>
<tr>
<td>Return to theatre (%)</td>
<td>949 (4.78)</td>
<td>120 (7.22)</td>
<td>0.001</td>
<td>1.46 (1.18–1.81)</td>
</tr>
<tr>
<td>Return to theatre for bleeding (%)</td>
<td>458 (2.30)</td>
<td>51 (3.07)</td>
<td>0.083</td>
<td>1.32 (0.96–1.81)</td>
</tr>
</tbody>
</table>
ACC/AHA Guidelines
Revascularization after age 75 years

- Higher risk profile
  - absolute clinical benefit also higher
  - Success rates & benefits similar to <75 yrs

- CABG and PCI procedural risks
  - Mortality – short and long term differences
  - Periprocedural stroke, cognitive impairment
  - Bleeding – DAPT
Variables to consider

• Life expectancy
  • Durability of grafts
  • Improve survival or symptoms?

• Impact of comorbidities
  • Diabetes
  • Renal function
  • Low EF
  • Pulmonary status
  • Prior Cardiac surgery

• Frailty
  • Recovery and Rehabilitation
Revascularization options

• Medical management only
  • Side effects

• CABG
  • LIMA failure ~ 5%
  • SVG failure ~ 20% at 1 year, 50% at 10 years

• PCI
  • DES restenosis ~ 5%
  • Stent thrombosis ~ 0.5 to 0.7%
Current Practice: 86 M, LM ACS
70 M, occluded abdominal aorta - IMA collaterals to legs

Moderate carotid stenosis, EF 40-45%

Sandhu 2017
63 F, Shock, Failed CABG, EF 10%, unable to wean off IABP
Heart Team
Take home points

• “PCI vs. CABG” needs to be individualized
  • Age vs. durability of grafts
  • Life expectancy & Quality of life
  • Comorbidities & Frailty

• Patient, Family, Heart team discussion
  • Establish realistic expectations
Thank you!