Case presentation, decision making in three vessel disease

PD Dr. med. Pedrazzini Giovanni
MD, FESC

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Guidelines on myocardial revascularization

The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

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Table 8 Indications for revascularization in stable angina or silent ischaemia

<table>
<thead>
<tr>
<th>Subset of CAD by anatomy</th>
<th>Class</th>
<th>Level</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Left main &gt;50%</td>
<td>I</td>
<td>A</td>
<td>30, 31, 56</td>
</tr>
<tr>
<td>2. Any proximal LAD &gt;50%</td>
<td>I</td>
<td>A</td>
<td>30–37</td>
</tr>
<tr>
<td>3. 2VD or 3VD with impaired LV function</td>
<td>I</td>
<td>B</td>
<td>30–37</td>
</tr>
<tr>
<td>4. Proven large area of ischaemia &gt;10% LV</td>
<td>I</td>
<td>B</td>
<td>13, 14, 38</td>
</tr>
<tr>
<td>5. Single remaining patent vessel &gt;50% stenosis</td>
<td>I</td>
<td>C</td>
<td>—</td>
</tr>
<tr>
<td>6. IVD without proximal LAD and without &gt;10% ischaemia</td>
<td>III</td>
<td>A</td>
<td>39, 40, 53</td>
</tr>
</tbody>
</table>

For symptoms

- Any stenosis >50% with limiting angina or angina equivalent, unresponsive to OMT
- Dyspnoea/CHF and >10% LV ischaemia/visibility supplied by >50% stenotic artery
- No limiting symptoms with OMT
Role of the personal attitude
Multidisciplinary decision – PCI vs CABG

**Therapeutic Intent**
- Prognostic
  - Symptomatic

**Procedural Risk**
- Surgical Risk
  - PCI Risk

**Revascularization strategy**
- Complete
- Incomplete

**Discussion/Evaluation points**
- Patient prognosis
- Symptoms’ severity
- Technical possibilities
- Vessel prognosis
- Log EuroScore, others
- SYNTAX Score
Decision making in three vessel disease

Angiography forms the basis of most revascularization decisions. This approach is perfectly reasonable when the angiogram clearly demonstrates either a severely stenosed coronary artery or a normal one.

…however, angiography has well-known limitations and the significance of lesions of only moderate severity is often difficult to determine based on just the angiogram. This uncertainty may result in inappropriate care with stenting of nonflow limiting lesions or failure to revascularize significant ones.
Case nr 1 (average difficulty)

83-year-old lady, AP CCS III for 3 months, positive stress test at 75W, log ES 6

Syntax Score 16
Your decision

1. PCI LAD
2. PCI LAD + CTO RCA
3. Single Bypass on LAD
4. Bypass LAD/RCA
Multidisciplinary decision – PCI vs CABG

Negotiation’s points

Therapeutic Intent
- Prognostic
- Symptomatic

Revascularization strategy
- Complete
- Incomplete

Procedural Risk
- Surgical Risk
- PCI Risk

Discussion/Evaluation points
- Patient prognosis
- Symptoms’ severity
- Technical possibilities
- Vessel prognosis
- Log EuroScore, others
- SYNTAX Score
Your decision

1. PCI LAD + CTO RCA
2. Single Bypass on LAD
3. Bypass LAD/RCA

Our decision: Single Bypass LIMA on LAD
Case nr 2 (more difficult)

63-year-old male, AP CCS II to III for 1 months, positive stress test at 50W, EF 60%, BPCO Gold III

Syntax Score 18
Your decision

1. 3 x Bypass
2. Conservative treatment
3. PCI LCX/LAD
4. CTO RCA + PCI LCX/LAD
Multidisciplinary decision – PCI vs CABG

Therapeutic Intent

- Prognostic
  - Symptomatic

Revascularization strategy

- Complete
- Incomplete

Procedural Risk

- Surgical Risk
  - PCI Risk

Discussion/Evaluation points

- Patient prognosis
- Symptoms’ severity

Technical possibilities
- Vessel prognosis

Log EuroScore, others
- SYNTAX Score
Case nr 2, our decision

Staged PCI procedure
Case nr 3 (increasingly difficult, whatever you do...is wrong)

72-year-old lady, AP CCS III for 2 months, positive stress test, EF 60%,

Syntax Score 17
Your decision

1. PCI LAD + RCA
2. PCI RCA
3. Bypass LAD/RCA/LCX
Multidisciplinary decision – PCI vs CABG

**Therapeutic Intent**
- Prognostic
  - Symptomatic

**Revascularization strategy**
- Complete
- Incomplete

**Procedural Risk**
- Surgical Risk
  - PCI Risk

**Discussion/Evaluation points**
- Patient prognosis
- Symptoms’ severity
- Technical possibilities
- Vessel prognosis
- Log EuroScore, others
  - SYNTAX Score
Our decision
Case nr 4 (embarassing)

52-year-old male, asymptomatic, electrical positive stress test, EF 65%

Syntax Score 15
Your decision

1. Isolated PCI LCX
2. PCI LCX/LAD
3. CABG LCX/LAD
4. Other
Multidisciplinary decision – PCI vs CABG

Negotiation’s points

- Therapeutic Intent
  - Prognostic
    - Symptomatic

- Revascularization strategy
  - Complete
  - Incomplete

- Procedural Risk
  - Surgical Risk
    - PCI Risk
  - PCI Risk

Discussion/Evaluation points

- Patient prognosis
- Symptoms’ severity

- Technical possibilities
- Vessel prognosis

- Log EuroScore, others
- SYNTAX Score
Angiography forms the basis of most revascularization decisions. This approach is perfectly reasonable when the angiogram clearly demonstrates either a severely stenosed coronary artery or a normal one. However, angiography has well-known limitations and the significance of lesions of only moderate severity is often difficult to determine based on just the angiogram. This uncertainty may result in inappropriate care with stenting of nonflow limiting lesions or failure to revascularize significant ones.
Perfusion imaging

Bypass LAD and LCX

Late enhancement

Dynamic images

By courtesy St. Muzzarelli
Case Nr 4 (whatever you decide … is dangerous)

85-y-old woman, angina CCS III-IV, MVD,

Syntax Score 38
Your decision

1. CABG (beating heart)
2. CABG with cardiac arrest
3. PCI RCA/LAD
Multidisciplinary decision – PCI vs CABG

Discussion/Evaluation points
- Patient prognosis
  - Symptoms’ severity

Revascularization strategy
- Complete
- Incomplete

Procedural Risk
- Surgical Risk
- PCI Risk

Technological possibilities
- Vessel prognosis

Therapeutic Intent

Surgical Risk
- PCI Risk

Prognostic
- Symptomatic

Vessel prognosis

Log EuroScore, others
- SYNTAX Score
Your decision

1. CABG (beating heart)
2. CABG with cardiac arrest
3. PCI RCA/LAD
CONCLUSIONS, decision making in three vessel disease

- Whatever we decide (PCI, CABG, ...), the decision should be based on strong arguments.
- Guidelines (particularly ESC-GL on revascularization) are very helpful as long as the final decision is individualized to the single patient.
- Functional tests have become an essential part of decisional process.
- For difficult cases/decision the heart team has become an essential part of the decision process.
We have no other alternative than... 

Walk together
Multidisciplinary decision – PCI vs CABG

Therapeutic Intent

Prognostic
Symptomatic

Revascularization strategy

Complete?
Incomplete?

Procedural Risk

PCI Risk

Surgical Risk

Discussion/Evaluation points

Patient prognosis
Symptoms’ severity

Technical possibilities
Vessel prognosis

Log EuroScore, others
SYNTAX Score
Our decision

1. PCI RCA

2. CABGr
Case nr 5 (the diabetic patient)

69-year-old male, asymptomatic, diabetic on insulin, positive stress test, EF 50%

Syntax Score
THANK YOU for your attention
CONCLUSIONS

• The new Guidelines on revascularization are an essential and daily useful tool in the increasingly complexe revascularization “word”

• The different risk scores offer a valid tool to individualize procedural risk and benefit

• The multidisciplinary approach needs to take into account all the different variables and not just the therapeutical goal
Case nr 4 (conceptual)

70-year-old man, AP CCS III for 2 months, non conclusive stress test, EF 70%

Syntax Score
Our decision

Isolated PCI LCX

FFR 0.86

FFR 0.77
Case nr 1 (Male Bernardino)

Syntax Score
Case Nr 4 (extremely difficult)
Case nr 4
Multidisciplinary decision – PCI vs CABG

Therapeutic Intent
- Prognostic
  - Symptomatic
- Symptomatic

Revascularization strategy
- Complete
- Incomplete

Procedural Risk
- Surgical Risk
- PCI Risk

Log EuroScore
- SYNTAX Score

Patient prognosis
- Symptoms’ severity

Technical possibilities
- Vessel prognosis

Discussion/Evaluation points

Patient prognosis
- Symptoms’ severity

Long term Risk
- Veins prognosis
- Dual antiplatelet
- Stent prognosis

Tissue characteristics, RF
- Drug resistance, compliance
- Stent characteristics