Left Main PCI – Rules of Engagement

Technical challenges in LM PCI: “Case Based”

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Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Affiliation/Financial Relationship
• Consulting Fees/Honoraria

Company
• Philips Volcano
• Abbott Vascular
• Terumo
• MSD
• Astra Zeneca
• Siemens
• Bracco
• Balto
Left Main PCI remains a challenge

Operator and center experience

At least 15 LM PCIs per year for at least 3 consecutive years


Xu B. et al. JACC Cardiovasc Interv. 2016; 9:
Complex Left Main PCI with DES
Femoral approach, Guiding catheter – 7FEBU3,5

PCI Strategy for Complex Distal Left Main Disease
Vascular Access Site for Intervention

Vascular access site is not important unless does not influence one of the three important factors:
• Operator experience
• Optimal guiding catheter support
• Enough internal size of the guiding catheter
Complex Left Main PCI with DES
Provisional stenting vs. Two Stent Strategy

Elective two-stent strategy

- A planned two-stent technique may be indicated for bifurcations with long SB lesions, difficult SB access or high risk of SB compromise.
- Vessel anatomy, vessel sizes, a need for stenting the SB first and operator proficiency affect the choice of strategy.
- Recommended techniques include reverse provisional stenting, T-stenting, culotte and DK-crush.
- POT is recommended and ensures optimal stent expansion in both the MB and SB.
- Always finalise a double stent procedure with KBI, followed by POT.

Complex Left Main PCI with DES
Two Stent Strategy – technique selection
Elective two-stent strategy – which technique?


Double Kissing Crush Versus Provisional Stenting for Left Main Distal Bifurcation Lesions

DKCRUSH-V Randomized Trial

**PCI: LMCA/LAD/CX – DK-CRUSH**

Lesion predilatation with NC balloons sized according to IVUS assessment

LCX – NCB: 3.0x20 mm, 14 atm
LAD – NCB: 3.5x15 mm, 14 atm

Stent implantation in LCX – DES: 3.0x23 mm, 18 atm
Postdilatation - NCB: 3.5x15 mm, 18 atm

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**PCI: LMCA/LAD/CX – DK-CRUSH**

Stent implantation in LAD
DES: 4.0x28 mm, 18 atm

Proximal Optimization Technique (POT)
NCB: 4.5x15 mm, 14 atm
Two Mechanisms of Stent Longitudinal Distortion When Stenting the Left Main Coronary Artery


Balloon Pullback

Jailed Wire Pullback
IVUS-guided Left main PCI

Stent Deformation in EXCEL

- Multiple overlapping strut layers within a single stent accompanied by stent shortening.
- Observed in 33 pts (6.6%) and was most commonly located at the LMCA ostium (27/33 [81.8%])

<table>
<thead>
<tr>
<th>3-yr LMCA-related events</th>
<th>Deformation</th>
<th>No Deformation</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac death/MI/IDR</td>
<td>28.3%</td>
<td>13.9%</td>
<td>0.02</td>
</tr>
<tr>
<td>- Cardiac death</td>
<td>9.4%</td>
<td>3.6%</td>
<td>0.08</td>
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<tr>
<td>- MI</td>
<td>16.9%</td>
<td>4.7%</td>
<td>0.0005</td>
</tr>
<tr>
<td>- Ischemia-driven TLR</td>
<td>19.9%</td>
<td>8.0%</td>
<td>0.02</td>
</tr>
<tr>
<td>Definite/probable ST</td>
<td>3.1%</td>
<td>1.1%</td>
<td>0.29</td>
</tr>
</tbody>
</table>

HR [95%CI] = 2.15 [1.05, 4.40], p=0.04

Gary Mintz. European Bifurcation Club Meeting, Porto 2017

Angio vs. IVUS-guided Left main PCI

Comprehensive Intravascular Ultrasound Assessment of Stent Area and Its Impact on Restenosis and Adverse Cardiac Events in 463 Patients With Unprotected Left Main Disease

Circ Cardiovasc Interv. 2011;4:562-569
PCI versus CABG for Left Main Disease

**IVUS guidance – 77%**  
**IVUS guidance – 74%**

- In the IVUS sub-study of the Excel trial decision making within the procedure was changed by IVUS in **52%** of cases.
- There was a strong trend towards both excess mortality and MACE at 30-days in those with the smallest MLA post PCI (MSA=4.4-8.7 mm²).
IVUS-guided Left main PCI

Despite prescribing the “Kang criteria” for optimal stent expansion, this was frequently not achieved.

Gary Mintz. European Bifurcation Club Meeting, Porto 2017

Left Main PCI remains a challenge

IVUS-guided PCI for Left Main Disease
Meta-analysis of available data

All-cause death

Cardiac death

Left Main PCI remains a challenge

The 12th consensus document from the European Bifurcation Club

- LM PCI remains challenging and the entire team should be able to manage serious complications.

- Stent implantation involves the bifurcation in in 80-90% of LM stenting cases.

- Provisional stenting is the recommended strategy in most distal LM bifurcation lesions.

- Planned two-stent techniques may be indicated in cases with long LCX lesions, high risk of LCX compromise or difficult access.

- It is strongly recommended to have access to intravascular imaging modalities (IVUS/OCT/OFDI) during elective PCI of LM


Thank you for your attention!

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