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Optimizing Bifurcation, PCI current approach
Learn from cases - European Experience

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.

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<th>Affiliation/Financial Relationship</th>
<th>Company</th>
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<td>• Consulting Fees/Honoraria</td>
<td>• Philips Volcano</td>
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Case 1

IVUS Predictors of DES
Early Thrombosis & Restenosis

- Incomplete stent apposition
- Stent underexpansion
- Edge dissection
Case 2

60 years old, male
Risk factors: hypertension
STEMI inferior wall, 2 hours after chest pain onset
Directly transferred to the cathlab by Emergency System
SBP=90/60 mmHg, HR=110/min.
Echo-LVEF=35%

Medication:
ASA - 300 mg
Ticagrelor - 180 mg
UFH – 60U/kg i. v. bolus
Norepinephrin – i.v. infusion
**Primary Study Endpoint**

All-Cause Mortality or Renal Replacement Therapy

![Graph showing relative risk and confidence intervals for PCI strategies.](image)

- **Relative risk 0.83; 95% confidence interval 0.71-0.96; P=0.01**

**Number at risk:**
- Culprit lesion only PCI: 344
- Immediate multivessel PCI: 341

**Days after randomization**

0 5 10 15 20 25 30

**ALL-CAUSE MORTALITY OR RENAL REPLACEMENT THERAPY (%)**

- Culprit lesion only PCI: 45.9%
- Immediate multivessel PCI: 55.4%

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**What should be the next step of revascularization? HEART TEAM**

Heart failure, diabetes, advanced age, peripheral vascular disease, complex lesions, unstable angina/NSTEMI, prior surgery

**Patient Comorbidities**

**PCI or CABG?**

- Complex Coronary Artery Disease
- Multi-vessel disease, Left Main disease

**Hemodynamic Compromise**

Depressed ejection fraction (LVEF<35%)
What should be the next step of revascularization? HEART TEAM

Patient Comorbidities
- Heart failure, diabetes, advanced age, peripheral vascular disease, complex lesions, unstable angina/NSTEMI, prior surgery

Complex Coronary Artery Disease
- Multi-vessel disease, Left Main disease

Protected PCI
- Depressed ejection fraction (LVEF ≤35%)

Protected PCI

HEART TEAM

What should be the next step of revascularization?

IMPELLA REDUCES MAJOR ADVERSE EVENTS

Per Protocol
(N=427)

30 Day MAE
- IABP: 42.2%, p=0.092
- Impella: 34.3%

90 Day MAE
- IABP: 51.0%
- Impella: 40.0%

22% reduction

Log rank test, p=0.048

1) measurement of a true lumen and vessel (external elastic membrane [EEM]) dimensions in the mother and daughter vessel,
2) analysis of atherosclerotic plaque burden (PB), morphology and longitudinal distribution,
3) stent landing zone and reference analysis,
4) stenosis severity and negative remodelling assessment (mainly at ostial location),
5) measurement of the lesion length (only during automatic pullback), and
6) detection of angiographically silent disease (LM stenosis, diffuse disease in reference segments).

Case Presentation – Left Main PCI with LVAD Support

Legutko J, Hawranek M, Kleczynski P, Sobczynski R, Dudek D. University Hospital, Krakow, Poland
Dudek D, et al. Presented at TCT’2015

Presented at NFIC’2015

IVUS-guided Left Main PCI

Lesion preparation

Mild

Moderate

Severe
Case Presentation – Left Main PCI with LVAD Support

PCI Strategy:
- Predilatation: Scoring Balloon 3.5x15 mm, 16 atm
- Stent implantation: DES 3.5x26 mm, 14 atm
- POT: NC balloon 4.5x12 mm, 16 atm
- Side (CX dilatation): NC balloon 3.5x15 mm, 10 atm
- RePOT: NC balloon 4.5x15 mm, 20 atm

Dudek D, et al. Presented at TCT’2015

Legutko J, Hawranek M, Kiecynski P, Sobczynski R, Dudek D. University Hospital, Krakow, Poland
Presented at NFIC’2015

IVUS assessment of the bifurcation lesion during the procedure

1) direct control of wire re-crossing through the jailed SB,
2) assessment and optimisation of stent apposition (stent strut adherence to the vessel wall),
3) measurement and optimisation of stent expansion (ratio between minimum stent area and lumen area in adjacent reference segment of the vessel),
4) assessment of full lesion coverage by the stent (especially at the SB ostial location when using some double-stenting techniques such as T-stenting),
5) diagnosis and treatment of stent edge problems (geographic miss, secondary lesions, large plaque burden, dissection, etc.)

Case Presentation – Left Main PCI with LVAD Support

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 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!