

Upfront 2-Stenting for Bifurcation Lesions: When and How?

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Disclosure

I, Dr. Shao-Liang Chen, have nothing to disclose

When to use systematic two-stent ?

2018 ESC/EACTS Guidelines on myocardial revascularization

- Thus, provisional stenting should be the preferred approach for most bifurcation lesions
- Exceptions to this rule, where upfront side branch stenting may be preferable:
 - large SB (≥ 2.75 mm in diameter)
 - with a long ostial SB lesion (> 5 mm)
 - or anticipated difficulty in accessing an important SB after MV stenting
 - and **true** distal LM bifurcations

How important of bifurcation types?

2018 ESC/EACTS Guidelines on myocardial revascularization

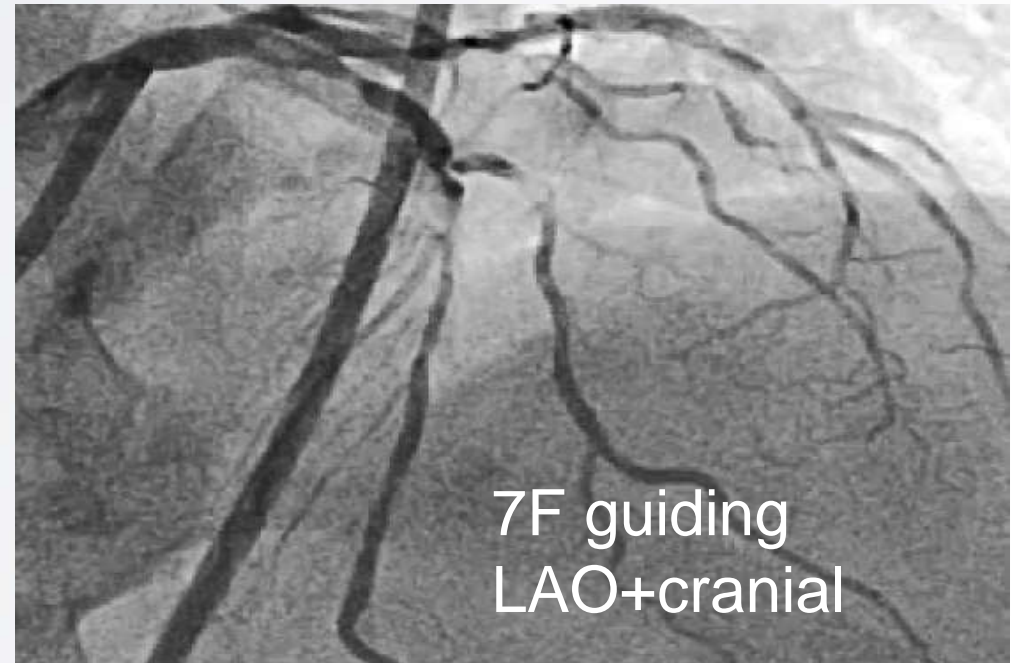
Table 6. Guide for calculating the SYNTAX score

The presence of a bifurcation lesion adds additional points based on the type of bifurcation according to the Medina classification:

- ✓ Medina 1,0,0–0,1,0–1,1,0 +1
- ✓ Medina **1,1,1**–0,0,1–1,0,1–**0,1,1** +2
- ✓ Bifurcation angle <70° adds one additional point

➤ True bifurcation and bifurcation angle may correlate with clinical outcome

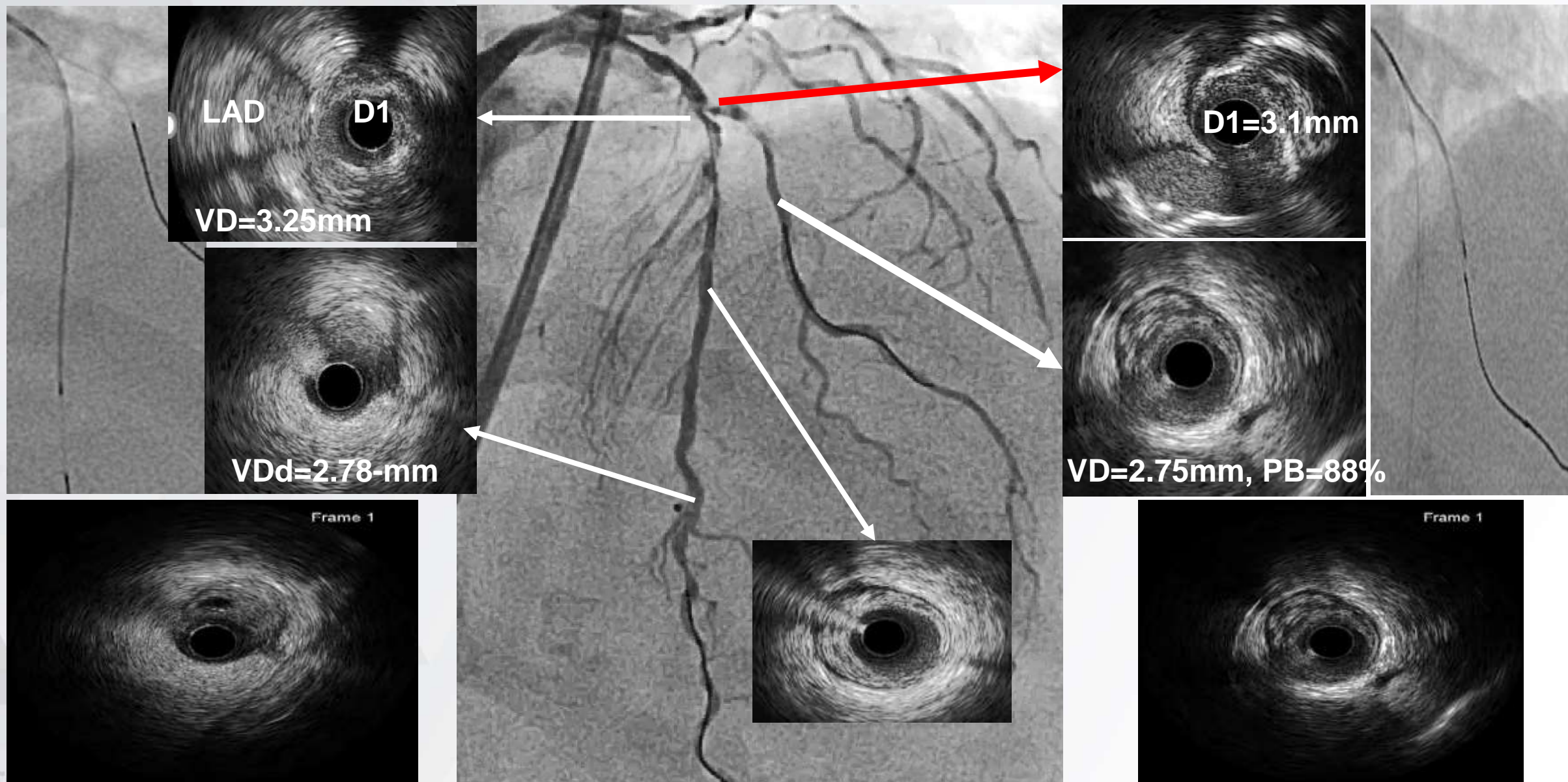
How important of SB size?



Ambiguous bifurcation angle

- Medina 111
- Severe calcification
- SB lesion length >10 mm
- SB-RVD <2.0-mm
- LADd-RVD <2.5-mm

Vessel size is commonly underestimated angiographically



How important of SB lesion length?

DKCRUSH II + DKCRUSH V+DKCRUSH VI trials

702 lesions were treated using provisional stenting from intention

| 1-year F/U | Cardiac death | TVMI | TLR | TLF | ST |
|--------------------------------------|---------------|------|------|-------|------|
| SB lesion length \leq 5-mm | 0.8% | 0 | 2.1% | 2.5% | 0 |
| SB lesion length= 5 mm but <10-mm | 1.3% | 3.3% | 4.5% | 6.6% | 0 |
| SB lesion length \geq 10 mm | 2.2% | 6.1% | 8.4% | 13.4% | 2.7% |

Gioia et al. JACC: CVINT. 2020;13:1432-1444

A clinical benefit of 2-stent techniques was observed over provisional stenting in bifurcation with side branch lesion length \geq 10 mm

DEFINITION criteria

Major criteria:

➤ For left main bifurcation

- SB lesion length ≥ 10 -mm, and
- SB diameter stenosis $\geq 70\%$

➤ For non-left main bifurcation

- SB lesion length ≥ 10 -mm, and
- SB diameter stenosis $\geq 90\%$

1 major

+

2 minor

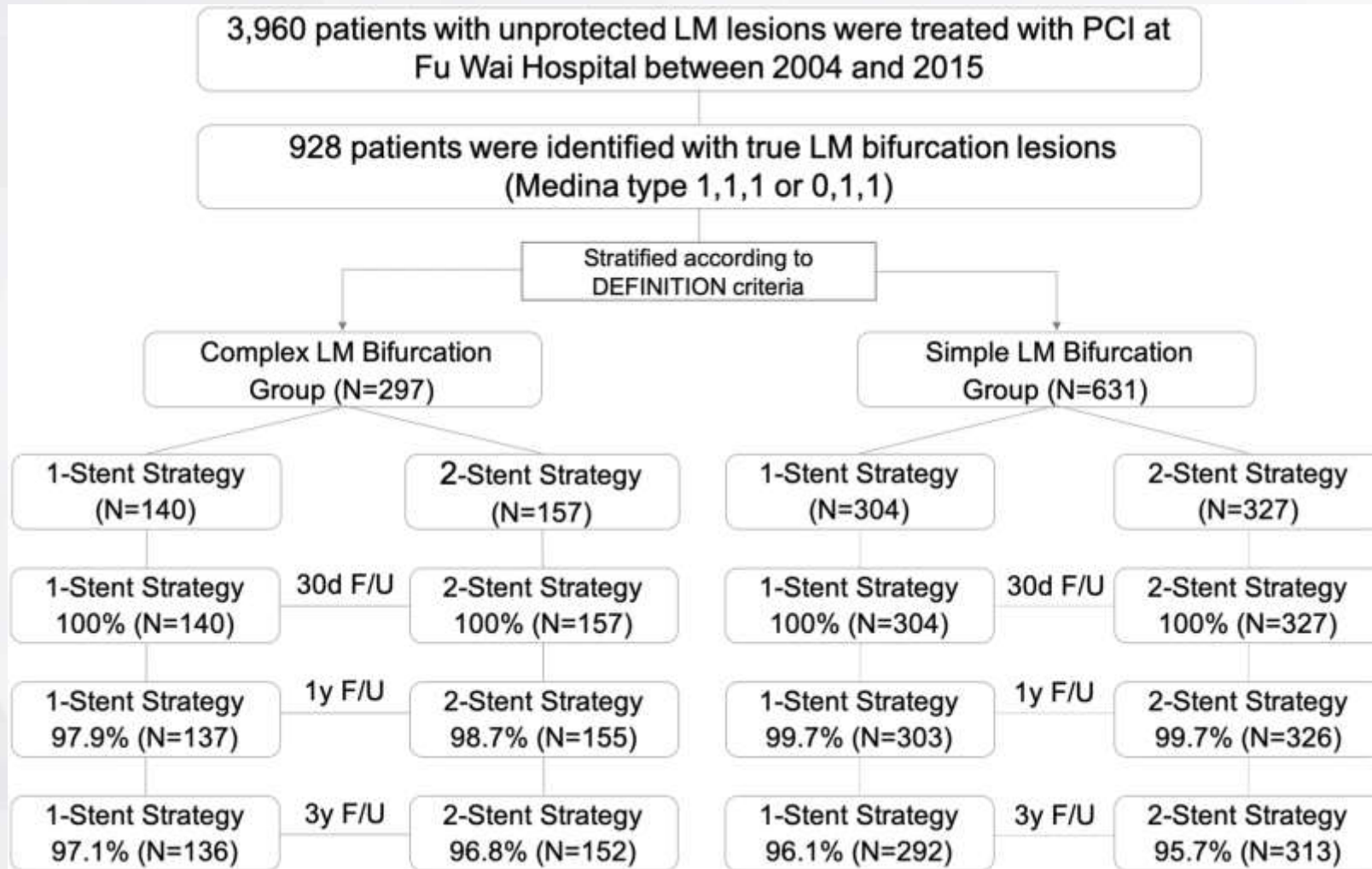
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Complex

Minor criteria:

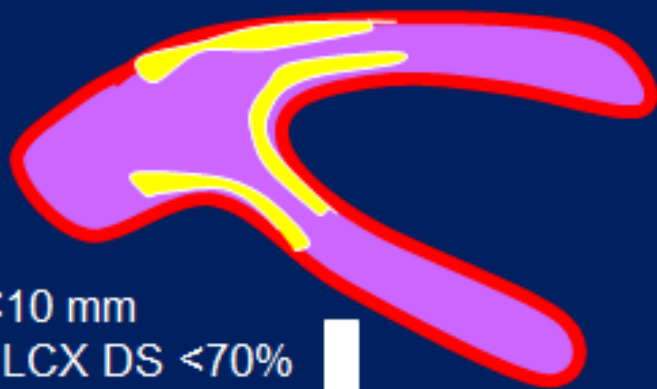
- mild calcification
- Multiple lesions
- bifurcation angle $< 45^\circ$ or $> 70^\circ$
- MV-RVD < 2.5 -mm
- MV lesion length ≥ 25 -mm
- Thrombus-containing lesions

Validation of bifurcation DEFINITION criteria and comparison of stenting strategies in true left main bifurcation lesions



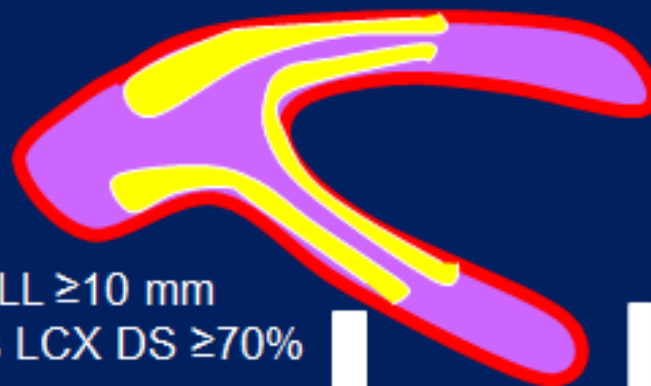
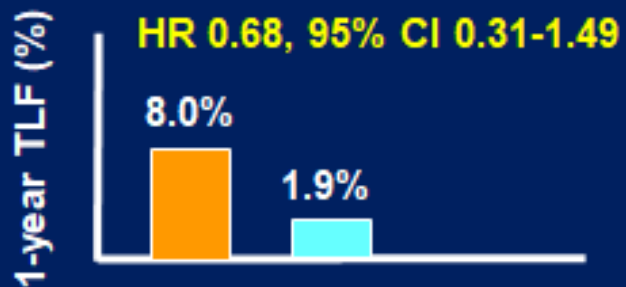
- DEFINITION criteria was able to risk-stratify LM bifurcation patients.
- Two-stent technique yielded lower MI and numerically low 3-year cardiac mortality regardless of LM bifurcation complexity

Target Lesion Failure at 1-Year Simple vs. Complex Bifurcation Lesions



LCX-LL < 10 mm
and/or os LCX DS < 70%

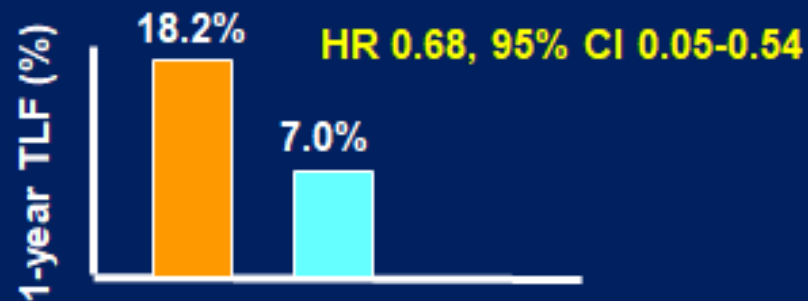
Simple Lesions



LCX-LL ≥ 10 mm
and os LCX DS ≥ 70%

Plus ≥ 2 of 6
minor criteria

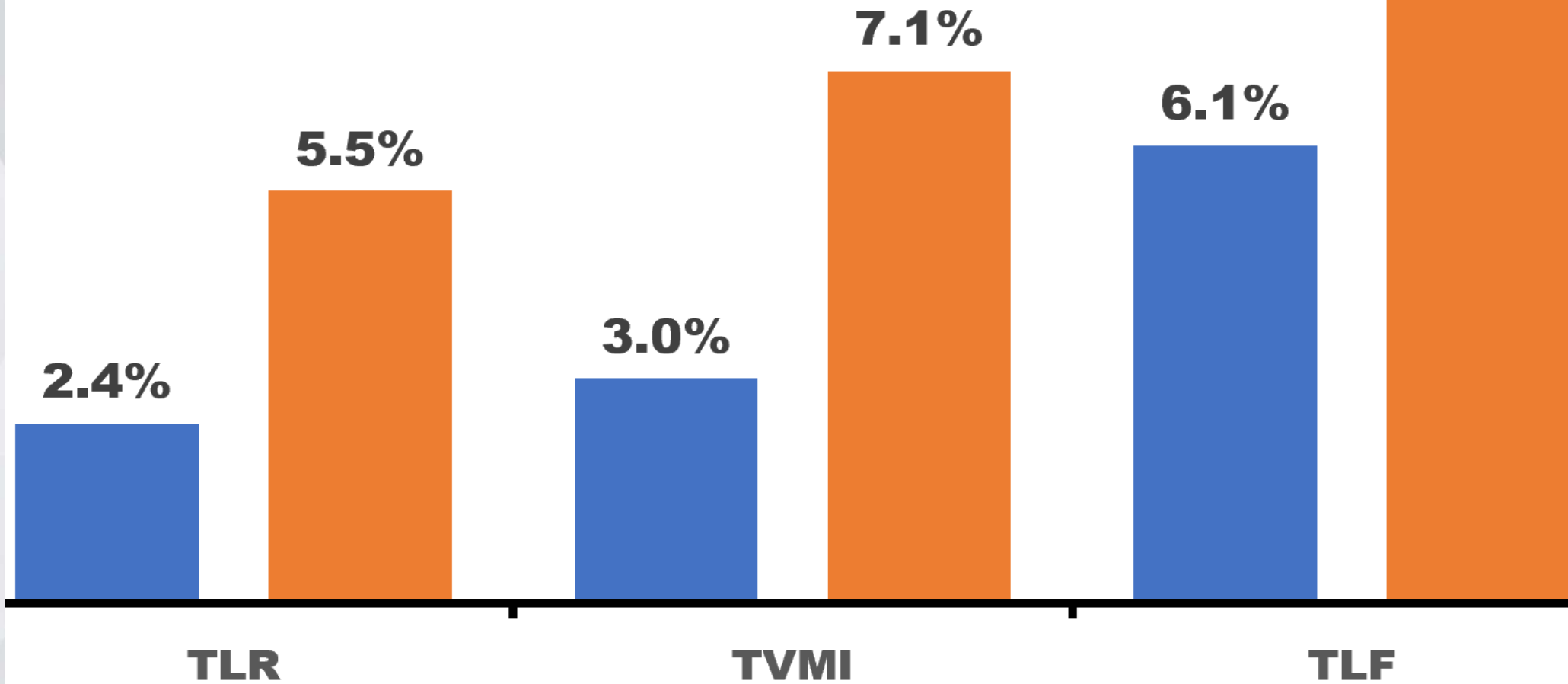
Complex Lesions



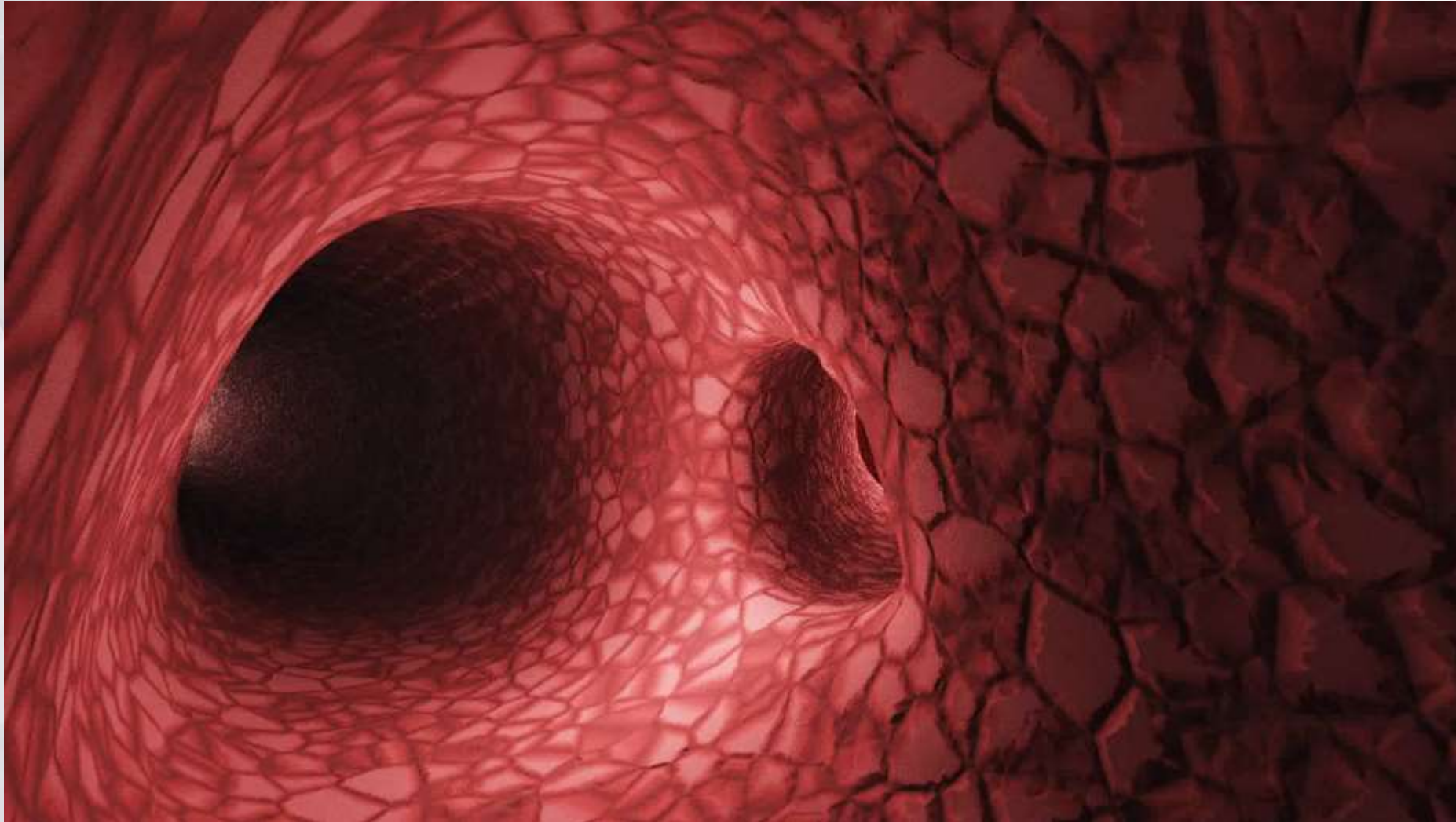
■ Two-stent ■ Provisional

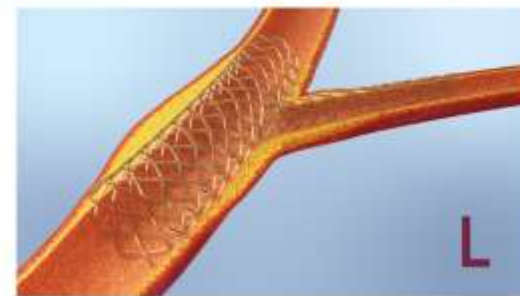
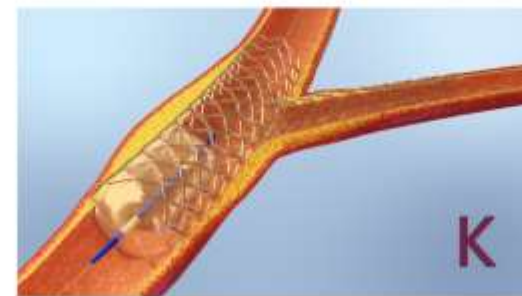
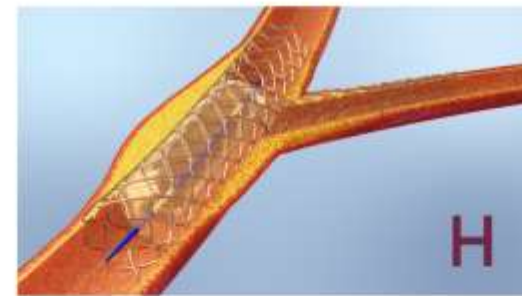
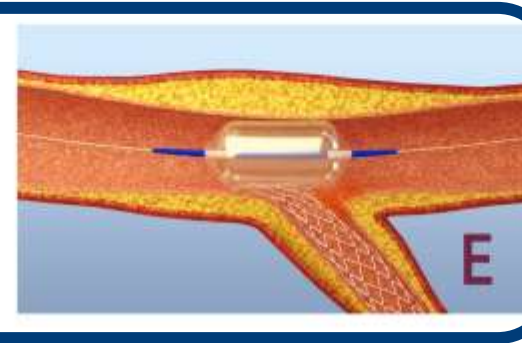
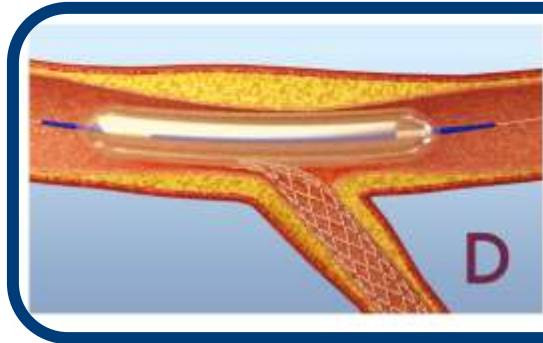
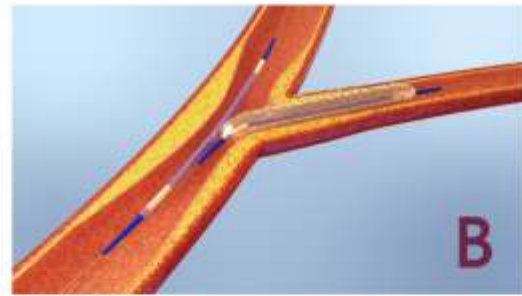
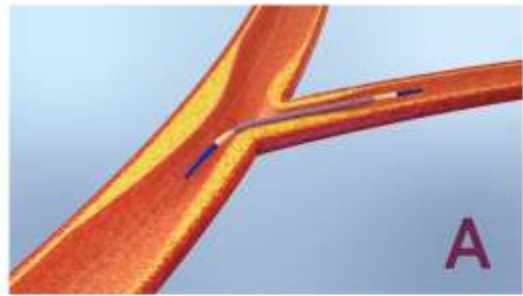
All p < 0.05

All complex bifurcations



How to perform 2-stent ?---DK crush





Take-home Message

- Provisional stenting works well for simplex bifurcation lesions (~70% of all bifurcations)
- Systematic 2-stent, particularly DK crush, is associated with lower rate of TLF at 1-3 years follow-up for complex bifurcations or LM true bifurcations.
- DEFINITION criteria, used friendly to identify a complex bifurcation lesion, have been confirmed by meta-analysis, consecutive study, and RCTs.
- Unknown results:
 - PS with 1-stent vs. PS with 2-stent
 - PS with T vs. PS with TAP
 - Is IVUS/OCT or FFR guidance superior to others?

Thanks for your attention!