

INTEGRATED USE OF FFR AND IVUS FOR LEFT MAIN BIFURCATION PCI

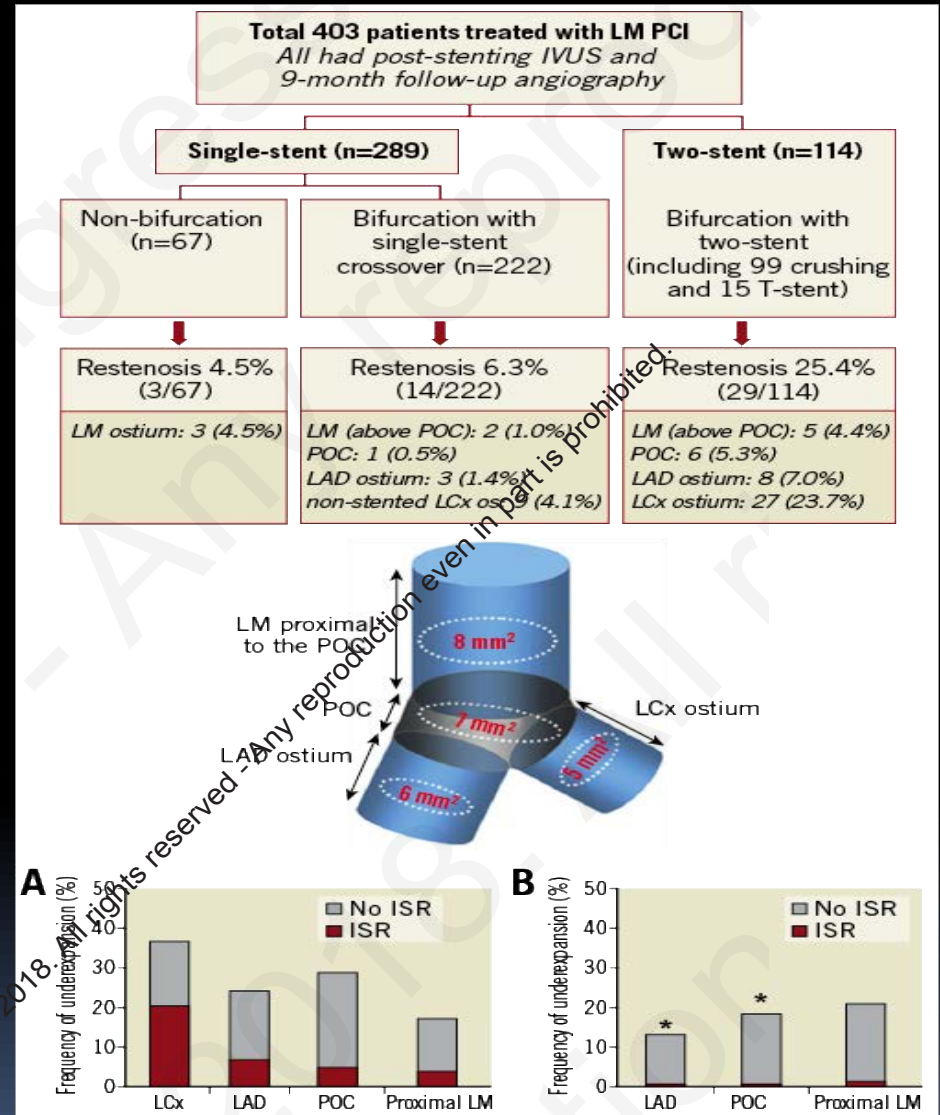
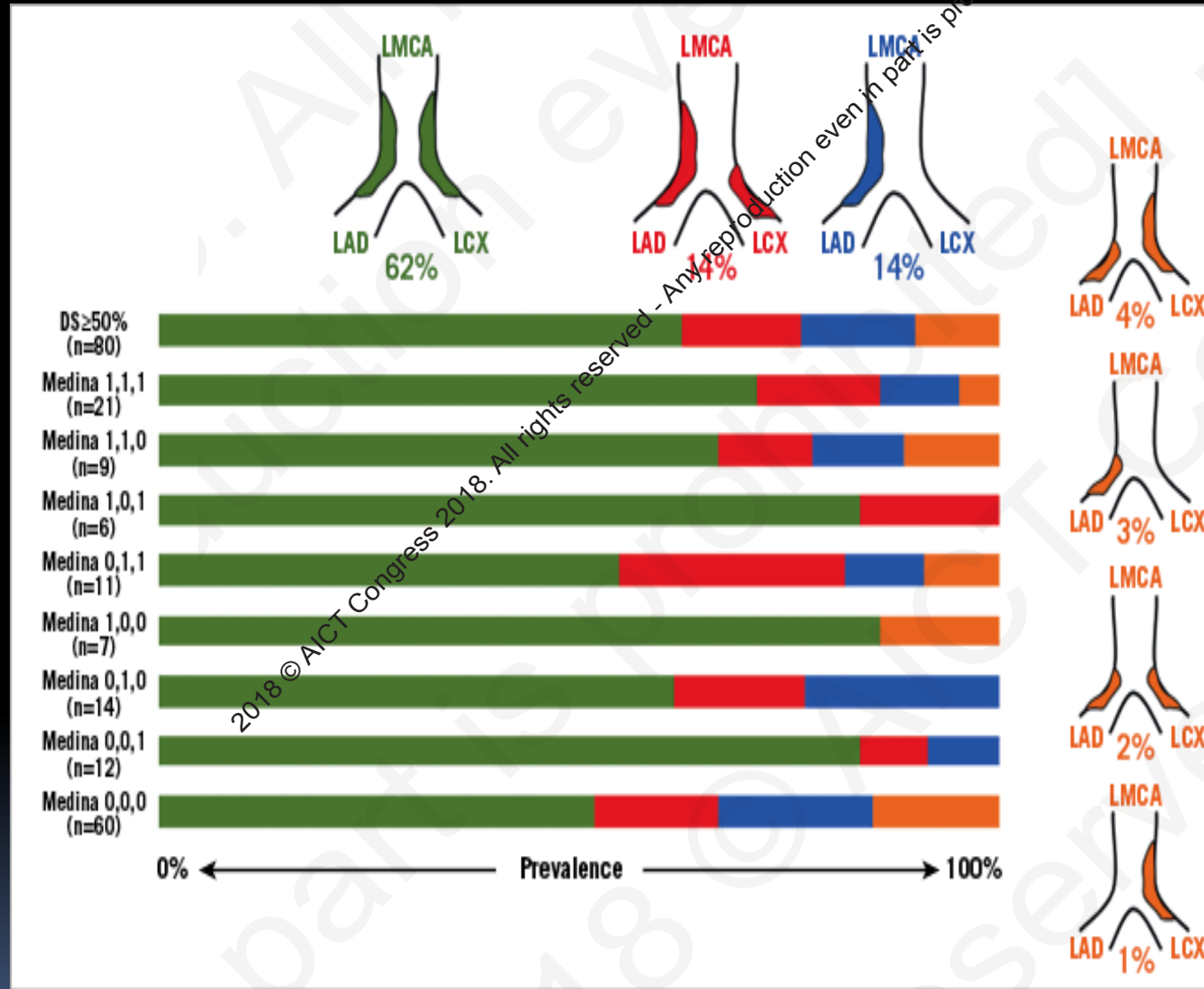
Asian Interventional Cardiovascular Therapeutics
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Art & Science of LMCA Bifurcations

- LCX ostium is the key and its evaluation is critical
- It is precisely for the LCX ostial assessment that IVUS and FFR have an important role
- Unless functionally significant, LCX should be left alone to ensure good short and long-term results
- Keep in mind that results for single stent strategy are superior to a two stent approach



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Role of IVUS in LMCA Bifurcations

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RESEARCH ARTICLE

Percutaneous coronary intervention in left main coronary artery disease with or without intravascular ultrasound: A meta-analysis

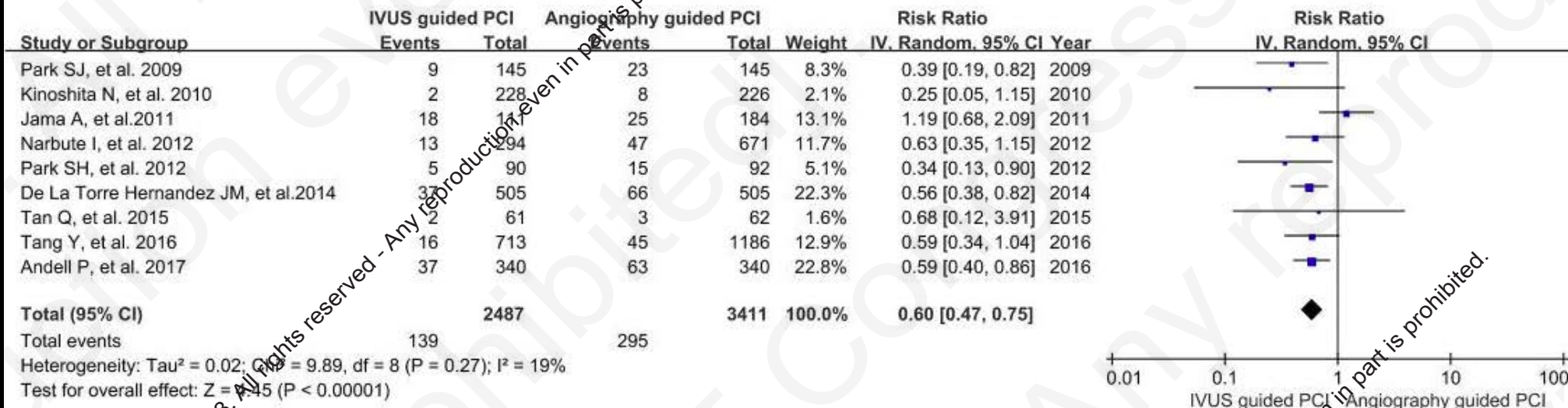
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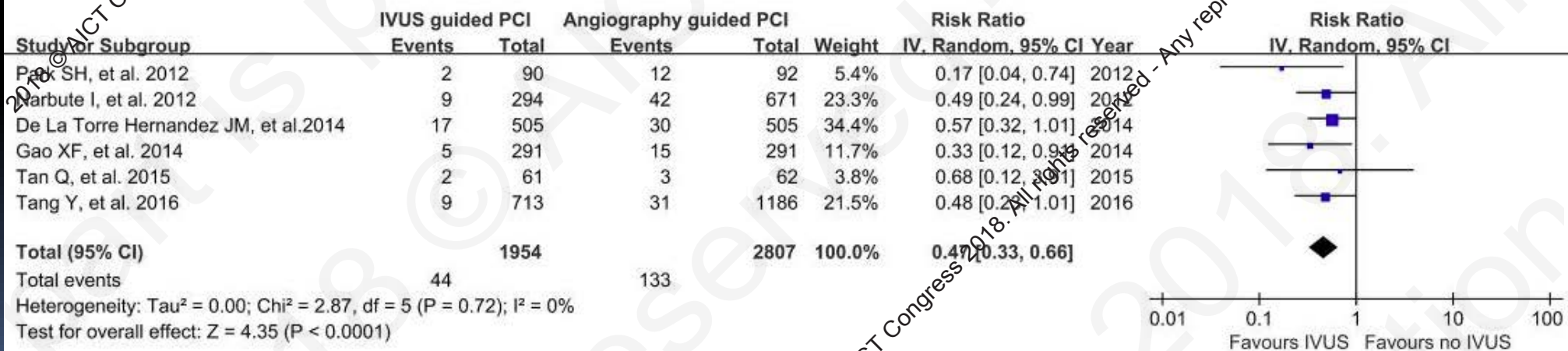
Conclusions

This meta-analysis suggested that IVUS-guided PCI is superior to angiography-guided PCI in LMCA PCI, based on reductions in the risks of both all-cause and cardiac death. Still, a larger scale RCT should be conducted to confirm these conclusions.

A



B



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IVUS Goals in LMCA Bifurcations:
Ostium LCX > 5mm², ostium LAD
> 6mm², POC 7mm², LMCA distal
8mm²

CLINICAL RESEARCH
Coronary

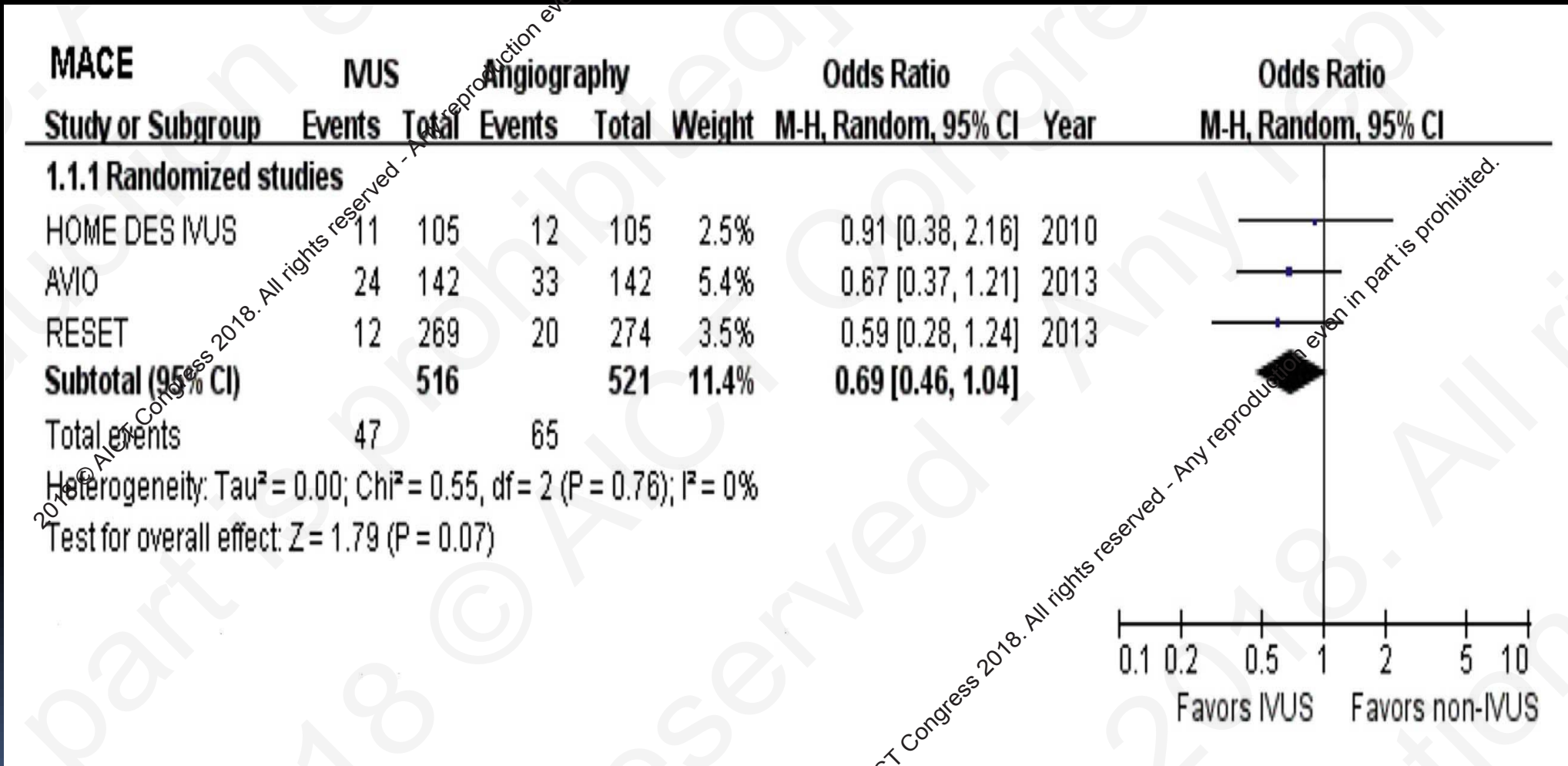
Intravascular Ultrasound-Guided Implantation of Drug-Eluting Stents to Improve Outcome

A Meta-Analysis

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Odd Ratios for MACE with IVUS- vs Angiography-Guided PCI in Randomized Studies



Intravascular ultrasound in the evaluation and treatment of left main coronary artery disease: a consensus statement from the European Bifurcation Club

Published on 20 July 2018

Conclusions

The EBC believes that IVUS guidance is useful at each step of an LMCA interventional procedure: (1) to decide whether or not revascularisation is necessary, (2) to decide whether a one-stent crossover technique (the default strategy) is sufficient or whether a two-stent technique may be more appropriate, (3) to size the stent (diameter and length) and select the optimum landing zones, and (4) to optimise the final result (expansion, apposition, and geographic miss). While randomised trials are limited, data suggest that IVUS guidance is superior to angiographic guidance in terms of death, MI, TLR, ISR, and ST.

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Role of FFR in LMCA Bifurcations

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Role of FFR in LMCA Bifurcation

- Functional assessment of LCX is the key
- The intent is to have a two stent strategy only if FFR of LCX is <0.80
- FFR can also be overall a beneficial strategy for LMCA bifurcation but evaluation of LCX is the best indication

Practical based approach to left main bifurcation stenting

Jung-Min Ahn, Pil Hyung Lee and Seung-Jung Park ✉

BMC Cardiovascular Disorders 2016 16:49

<https://doi.org/10.1186/s12872-016-0227-1> | © Ahn et al. 2016

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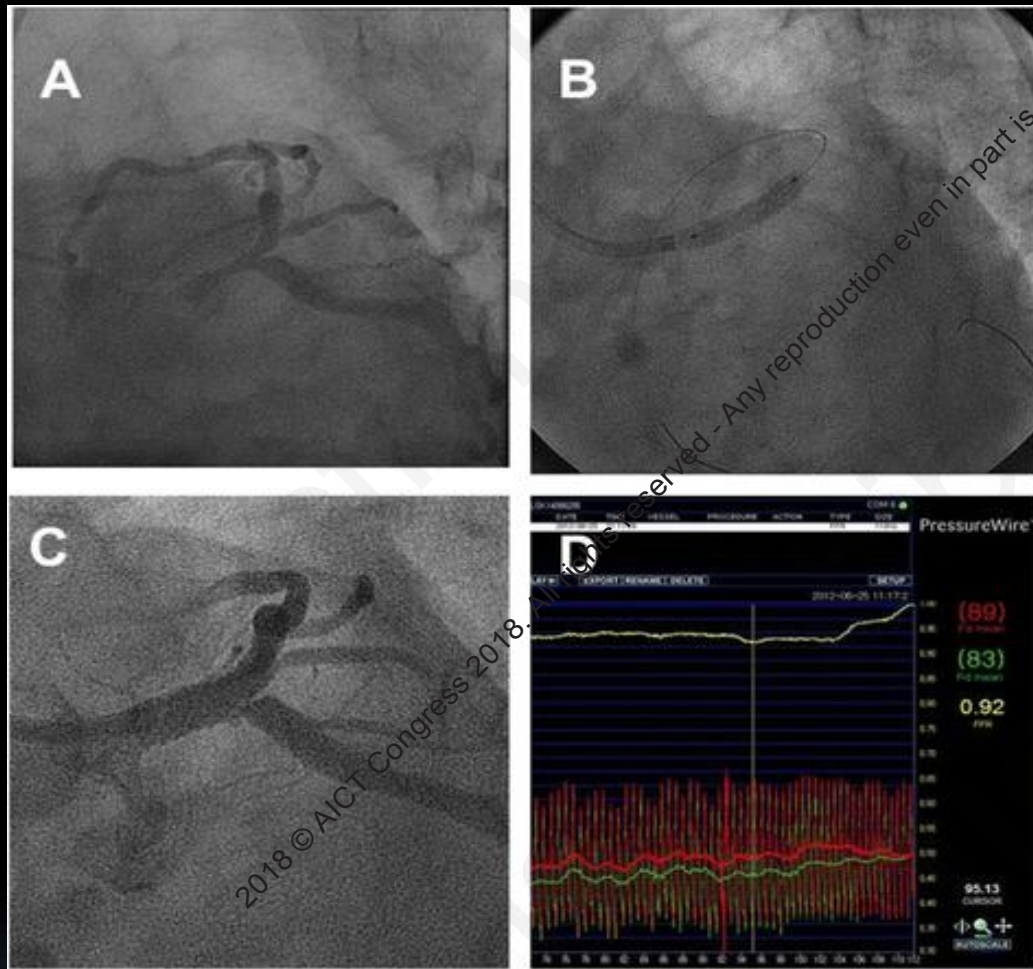
Conclusion

Careful selection of candidates for the provisional approach is the most important step in avoiding procedure-related complications and ensuring favorable individual outcomes. Incorporating the FFR-guided PCI strategy in treating isolated LCX may further help avoid unnecessary SB interventions. Meticulous evaluation of LM bifurcations using intravascular imaging is crucial in selecting the proper stent strategy and in achieving optimal stent results.

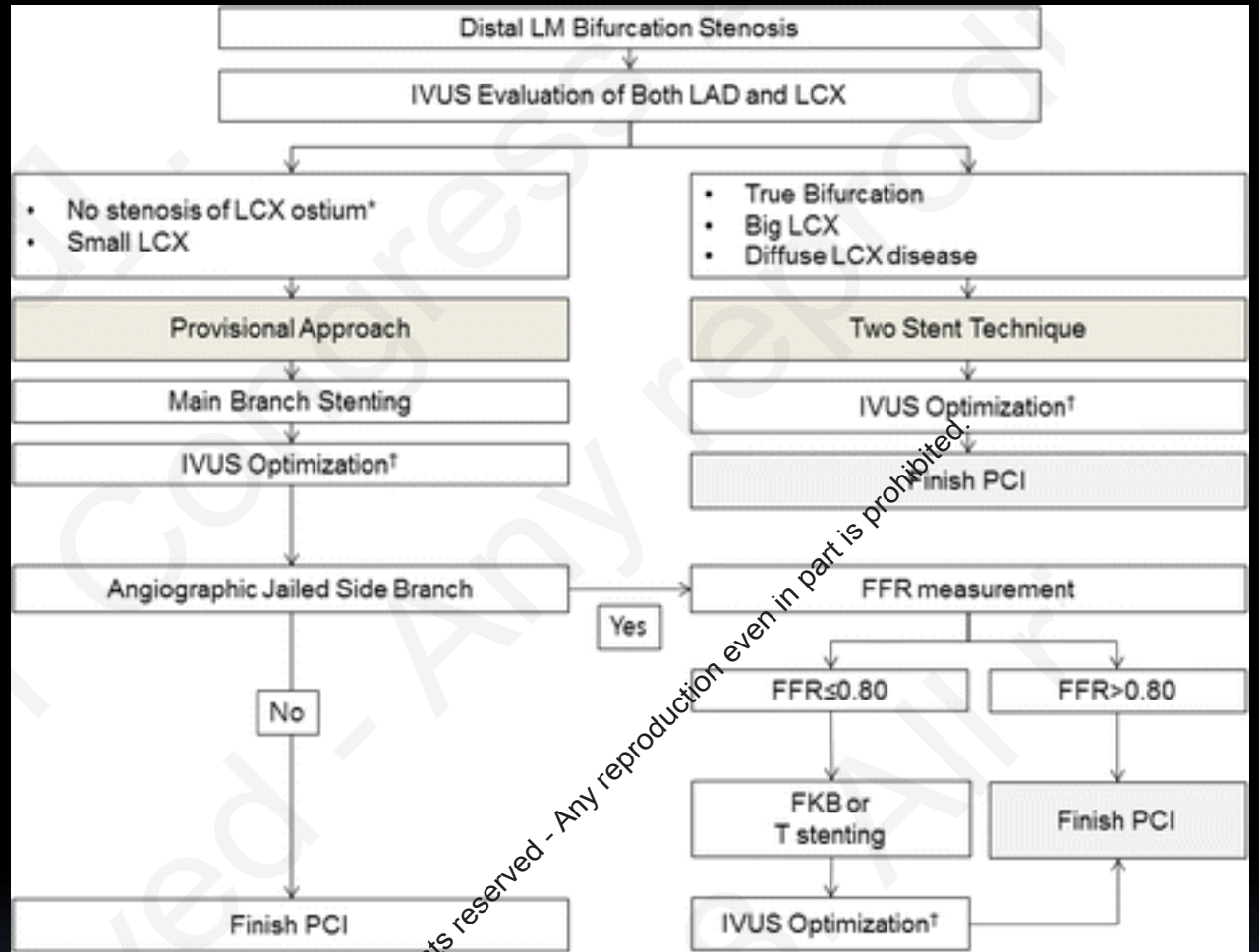
Putting it all together!

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Fractional flow measurement after main vessel stenting. A patient with a distal LM bifurcation disease (a) underwent provisional one-stent implantation (b). After main vessel stenting, significant stenosis was observed at the ostium of the left circumflex artery (c). However, fractional flow reserve value was 0.92, indicating functionally insignificant stenosis (d), and suggesting that additional procedures were unnecessary



Flow chart for the interventional treatment of distal left main bifurcation lesions. *In general, minimal lumen area >4 mm² or plaque burden <50 % of the ostium of the left circumflex artery is considered insignificant stenosis. †The stent should be well opposed to the vessel wall and sufficiently expanded to avoid restenosis (minimal stent area: 5 mm² for the ostium of the left circumflex artery, 6 mm² for the proximal left anterior descending artery, 7 mm² for the polygon of confluence, and 8 mm² for the distal left main artery), without procedure-related complications. Abbreviations: FKB, final kissing balloon; IVUS, intravascular ultrasound; LAD, left anterior descending artery; LCX, left circumflex artery; LM, left main; PCI, percutaneous coronary intervention

Conclusions

- For distal LMCA, use the following 3-step strategy:
- 1. Single stent approach is preferable
- 2. IVUS as default strategy
- 3. FFR for functional assessment of LCX.

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