



INSTITUT
CARDIOVASCULAIRE
PARIS
SUD

Clinically relevant SB in Bifurcation PCI

Yes we can define it well and apply it in real PCI

Thierry Lefèvre, Massy, France



What is a relevant SB ?

A branch that you do not want to loose during the procedure in the context of a particular patient

A branch that may be source of ischemia $> 10\%$ of the myocardium after the procedure

How to avoid SB occlusion and significant MI ?

Protect it with a wire

Respect the anatomy (don't push the carena)

Treat it in case of acute ischemia

How to avoid residual ischemia > 10%

Myocardium at risk of ischemia > 10%

SB length ?

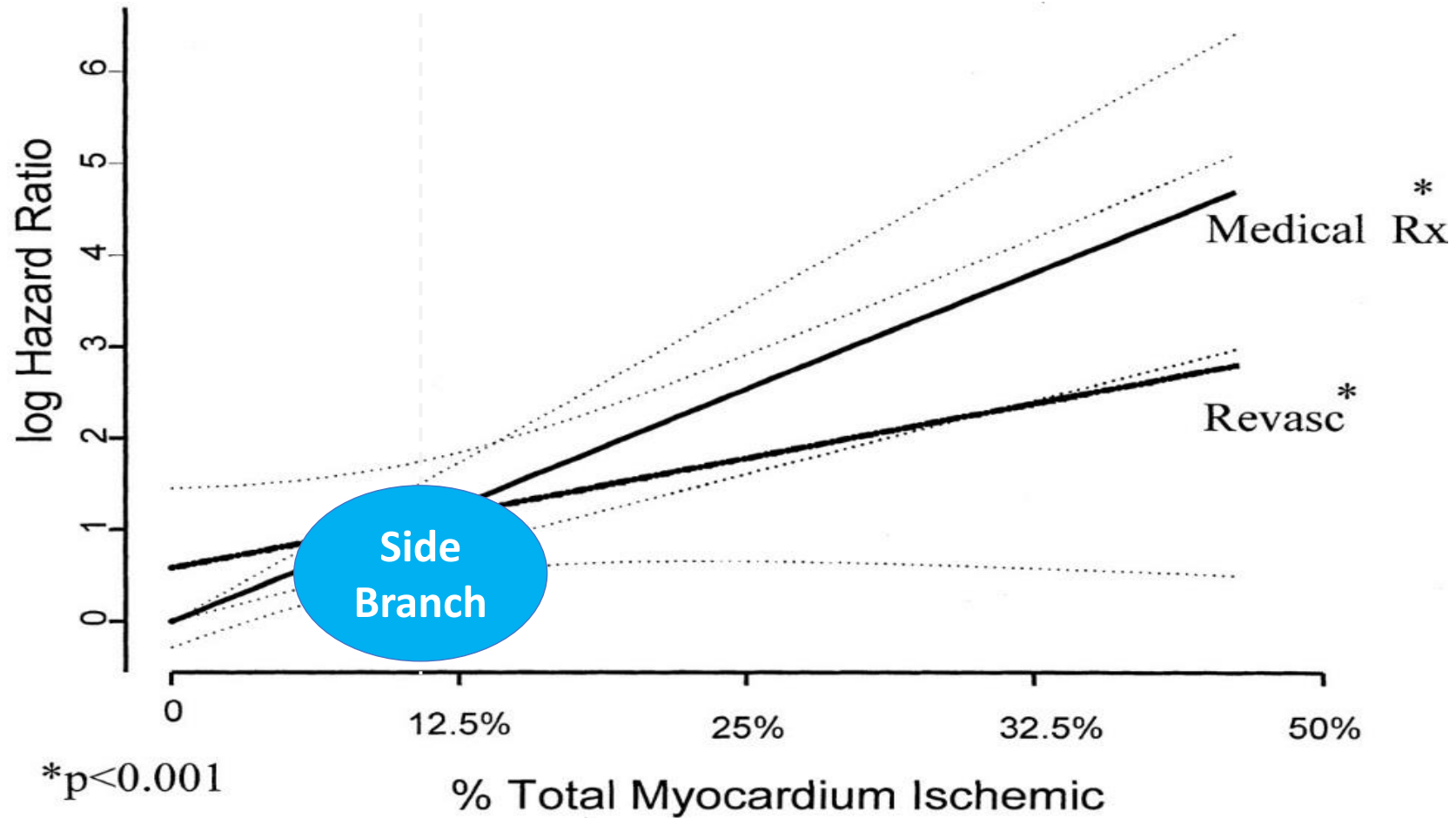
Side branch size ?

Side branch number ?

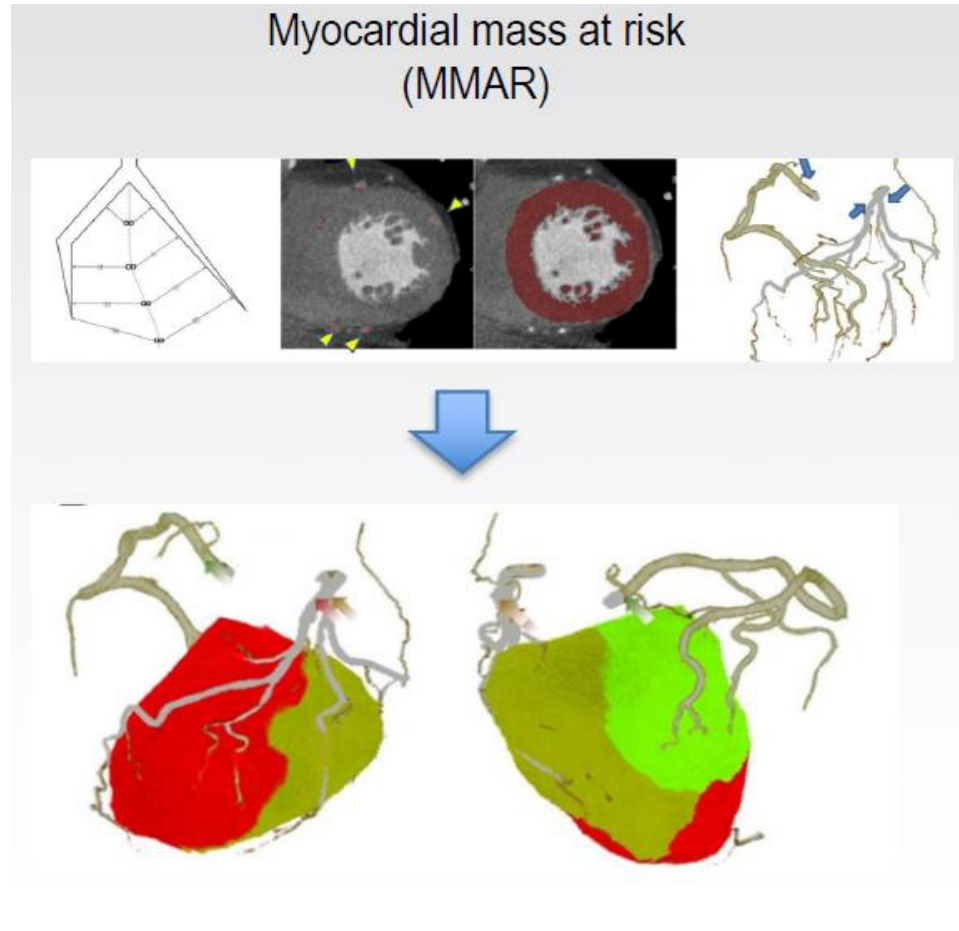
Ischemia

FFR/IFR

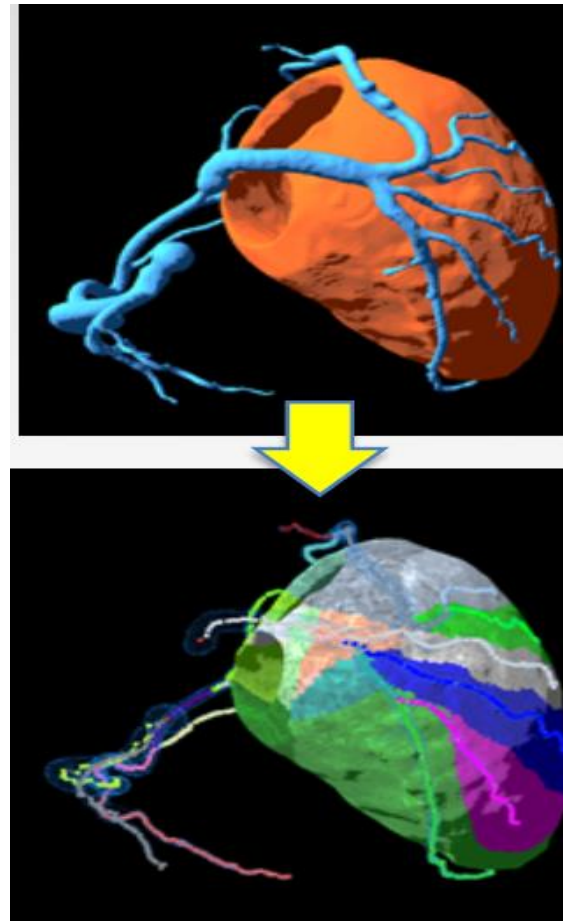
Short-Term survival benefit (Revascularization vs OMT)



Myocardial segmentation techniques with CT scan



Sumitsuji, Cardiovasc Interv and Ther 2015



Fractional Myocardial Mass (FFM)

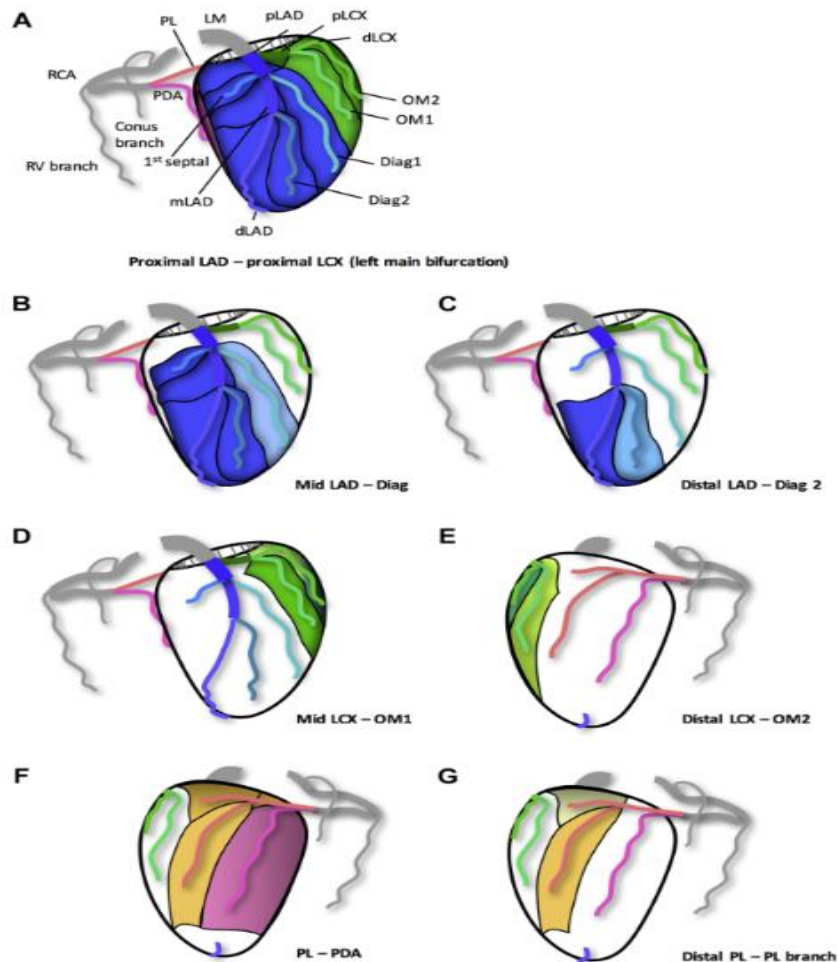
Calculated from vessel length

FMM computed using stem and crown model based on allometric system

HY Kim, JACC Cardiovasc Interv 2017

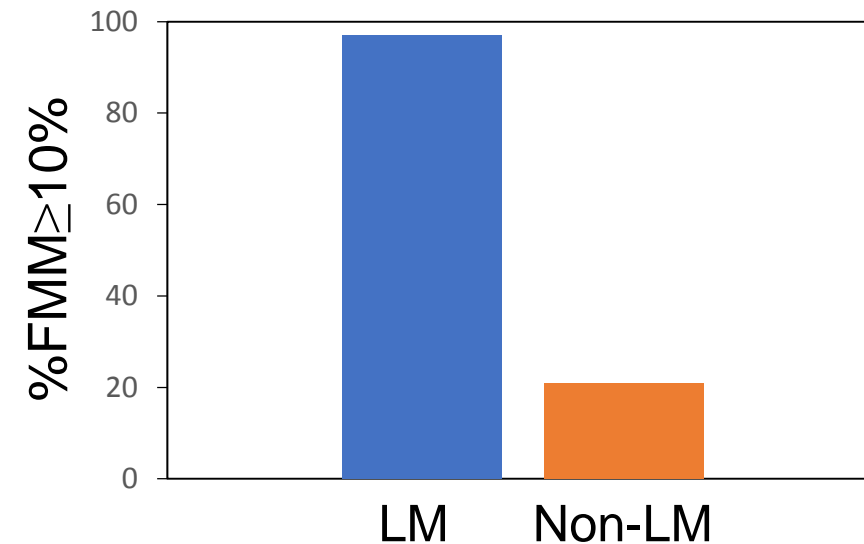
Side Branch That May Benefit From Revascularization

Fractional Myocardial Mass (FMM) Based on CT



Predictors of %FMM \geq 10%

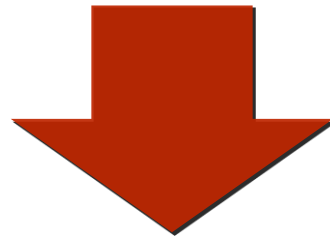
- Side branch length \geq 73mm
- Left main bifurcation



Side Branch That May Benefit From Revascularization

%FMM>10% in Non-LM SB: 21%

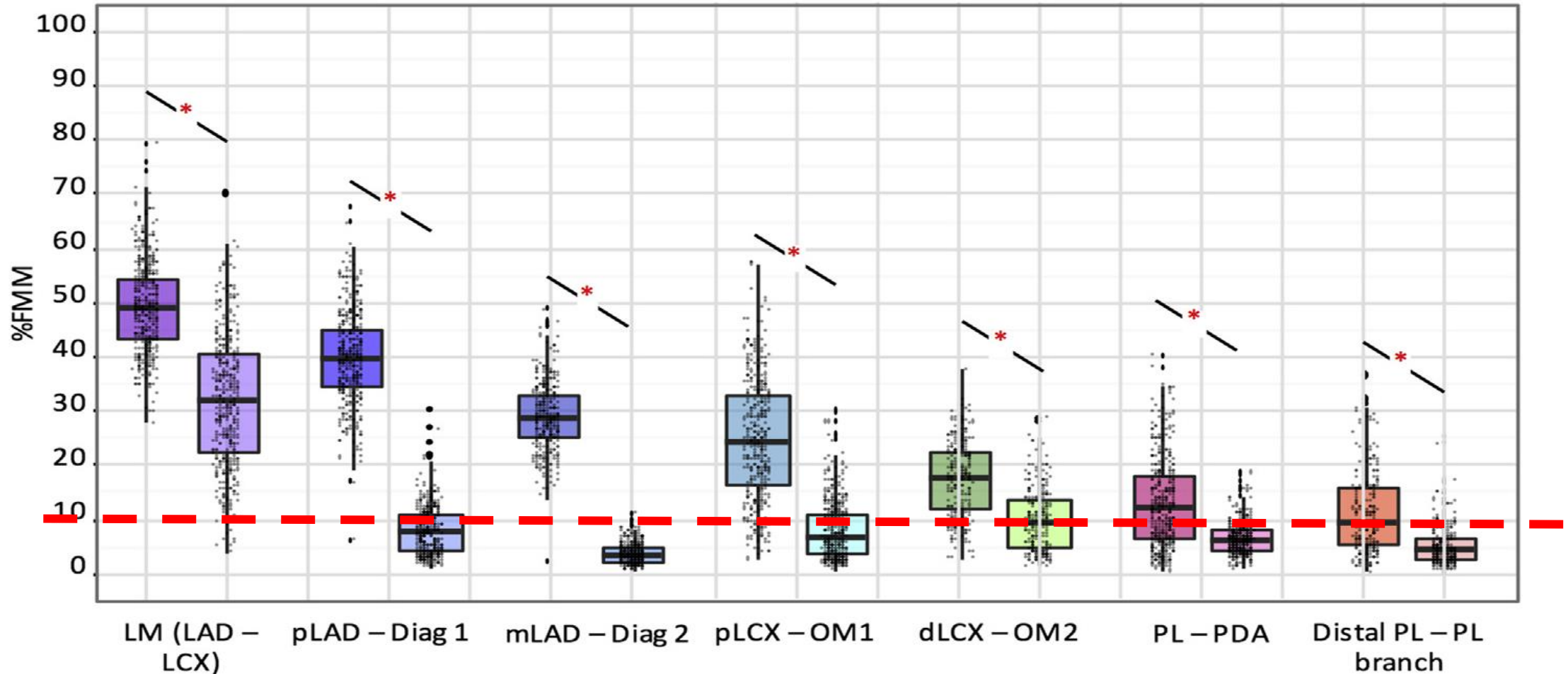
FFR≤0.80 in Jailed Non-LM SB: 26%



Clinically Important SB after Simple Cross Over is
Only 5.5%

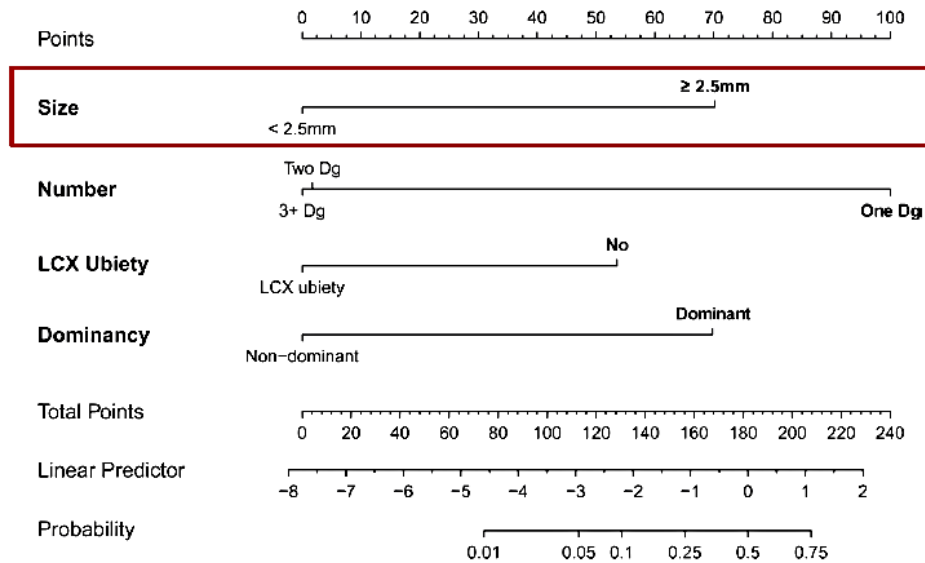
Side Branch That May Benefit From Revascularization

%FMM in major coronary artery and its branches

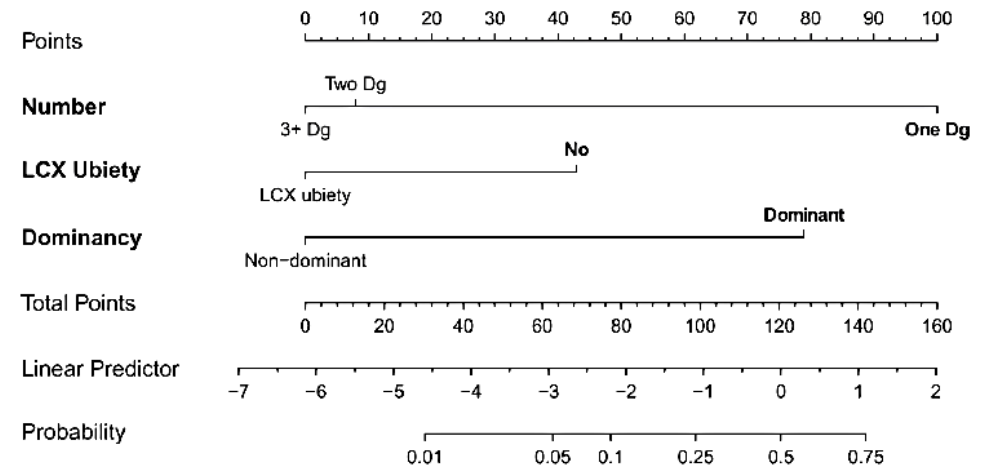


Nomogram to Predict Likelihood of Diagonal Branch %FMM $\geq 10\%$

With diameter



Without diameter



Identification of clinically relevant side branch

- ✓ Identification of clinically relevant side branch should be the **1st evaluation step** for bifurcation lesions.
- ✓ There are many tools and ways to assess myocardial territory or ischemic burden. However, each modality has its own strengths and weaknesses.
- ✓ For all branches, **ischemic territory is smaller than supplying territory**
- ✓ Most side branches do not supply >10% of myocardium and cannot cause >10% ischemia

Therefore, don't do too much for side branches

Conclusion

1. Long-term clinical outcomes are determined by the main vessel in the majority of cases, not by the side branch.
2. Protect the SB and respect the fractal anatomy if you don't want to lose it
3. Optimizing main vessel stenting is far more important than correcting angiographic appearance of the side branch.
4. Think twice (area of myocardium and IFR/FFR) before stenting the side branch