Left Main and Bifurcation Summit

"Paradigm Shift: Bifurcation Summit"

My top 10 rules in non-LM Bifurcation stenting

Speaker - 12'

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Presenter Disclosure Information

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Preamble

The main limitation of all randomized studies comparing provisional versus routine double stenting is that bifurcation lesions which are randomized are suitable for provisional. Bifurcation lesions which need to be treated with two stents are usually not randomized.

For bifurcation lesions, which are suitable for 1 stent or 2 stents, routine implantation of 2 stents does not give any advantage compared to routine implantation of 1 stent and cross-over to 2 stents when needed.
Different approach for non-LM vs. LM bifurcations

In non-LM bifurcations we are more keen to accept an intermediate or suboptimal result on the SB, more common the keep it open approach, need to cross over to 2 stents about 20%

In LM bifurcations an optimal result on the LCX is important, need to cross over to 2 stents 30-40%
This is not an ideal lesion for a 1 vs. 2 stents trial
Why the provisional single-stent approach is not always the right strategy, arguments for the development of dedicated bifurcation devices; Maik J. Grundeken et al. Euro Interv 2012

Not all lesions in these trials were true bifurcations. In addition not every Medina with SIDE BRANCH ostial stenosis are the same

Crush stenting and in general 2 stent technique was not performed according to current standards

The decision about the need to cross over was very subjective
My view

If you decide to implant 2 stents you take more responsibilities: an optimal result will give you a low MACE rate, even if you perform angio f-u, a suboptimal result may increase the risk of thrombosis of the side branch and sometimes of the main branch.

If you decide to implant one stent you are mainly responsible about the side branch: an incorrect decision may lead to side branch closure.

The final decision is a balance between the clinical relevance of the side branch (risk of occlusion) and how confident is the operator to obtain an optimal result.
Problems with bifurcation lesions

✓ Should I wire the side branch? YES, very little to lose (except for a guide wire) to take this decision

✓ Should I implant 1 or 2 stents? 1 stent most of the times; 2 stents if you are afraid to lose the SB, if the SB is large and diseased extending distal to the ostium and if you are confident with 2 stent technique
Mini-Crush Case 1

Xience 2.5x18mm

Promus 3.0x28mm
Mini-Crush Case 1

Result post Kissing
Mini-Crush Case 1

Promus 2.5x28mm

Distal Stent

Final Result
Problems with bifurcation lesions

- Should I perform kissing inflation? Absolutely if you have implanted 2 stents and always sequential inflations and then kissing. In other circumstances if the side branch is relevant and shows an unsatisfactory result: KISSING IS NOT VERY IMPORTANT IN ALL PROVISIONAL

- What is "Keep It Open"? When you are only concerned about side branch occlusion regardless of residual stenosis
European Bifurcation Club Consensus

- Complex technique: Kissing balloon inflation for carina reconstruction is mandatory in two stent techniques;
- Simple technique: Kissing balloon inflations, or pressure wire interrogation, should be used in provisional stenting when an angiographically significant (>75%) side branch lesion remains after main branch stenting;

NORD-BIF III "Nordic kiss"

FKB inflation reduced restenosis in the SB: overall from 15% to 8% and in true bifurcations from 20% to 7%
KIO: Keep it Open

- This strategy means to place a guide wire in the side branch with the goal to finish the procedure with flow (TIMI 1, 2, or 3) in the side branch without any concern for residual stenosis.

- When should I plan for KIO? For any side branch which is large enough to be worried about closure and without much concern about residual stenosis and extent of ischemia.
Optimal performance of 2 stent techniques important in reducing event rates
1. Guide catheter: do not compromise for a small guide if you do not feel comfortable

2. Provisional not always a must
A Typical Case for 2 stents

Baseline

Following Crush
3. Lesion preparation
IVUS Images Post Rotablator

LAD Os

Cx Os
4. If crush 2 steps kiss

No large registry or randomized trial evaluating crush performed step kissing. The only technique which come close to step kissing is DK crush. Studies with DK crush demonstrated good results with 2 stents.
We observed that two-step kissing was more effective than one-step kissing for improving metallic side-branch ostial area.

Two steps:
1) Inflate at high pressure only the SB balloon
2) Perform kissing inflation

SB ostial stenosis (%) with one step vs. two step kissing:
- One-step: 53% (CI 46.59)
- Two-step: 33% (CI 28, 37)

p = < 0.0001
5. IVUS evaluation: if IVUS cath does not cross the stent perform a better postdilatation
IVUS-Guided Stent Bifurcation

Diag: Xience 2.5x18mm 14atm

LAD: Xience 3.5x18mm 18atm

Stents in bifurcation

Result after stent
IVUS-Guided Stent Bifurcation

More can be done

Suggested 3.0 mm balloon for diagonal post-dilatation and agreed on 2.5mm very high pressure

Result after stent
IVUS-Guided Stent Bifurcation

LAD: 3.5mm x 28 atm
Diag: 2.5mm x 26 atm

High-pressure dilatation

Result post high-pressure dilatation
IVUS-Guided Stent Bifurcation

Result post high-pressure dilatation

Bifurcation

Distal LAD

Distal LAD Refer

Stent area

60% 3.0 = 4.24mm²
IVUS-Guided Stent Bifurcation

9 months Follow-Up
After appropriate sizing
6. The final angio should not look worse than the baseline: keep the side branch open.
Example of Keep It Open (KIO)

Baseline
Example of Keep It Open (KIO)

Balloon inflated on SB (Should not have been done)  Post Balloon inflation on SB
Example of Keep It Open (KIO)

Stenting of MB
Rewiring of SB with large dissection
Example of Keep It Open (KIO)

Perforation of SB attempting to gain true lumen

Final Result after cover stent on the MB
7. When needed, predilatation of the side branch, will direct about the strategy to employ
Cross-over to 2 Stents in Bifurcation Lesion

Baseline
Cross-over to 2 Stents in Bifurcation Lesion

Pre-dilatation of Diagonal
Cross-over to 2 Stents in Bifurcation Lesion
Cross-over to 2 Stents in Bifurcation Lesion

Final Result
8. A significant ostial stenosis on the side branch may be functionally not relevant.
9. The final result is more important than the technique utilized

10. If you feel unsecure about the procedure, call for help or do not perform the intervention
The come into play of new bifurcation stents

PROVISIONAL

SBA: Side Branch Access (DES): Abbott
(provisional with easy 2 stents cross over)

2 STENTS

AXESS: Biosensors

Sideguard: Cappella

Tryton: Tryton Medical
Bifurcation lesion in mid LAD: Medina 0-1-1
Predilation of LAD with 2.5mm balloon
Implantation of Xience SBA 3.0/2.5 x18 at 12atm
IVUS showed excellent result