Main Concern About Bifurcations – SB Obstruction

Reduction in side branch ostial lumen size is primarily driven by carinal shift (reduced vessel volume) and much less so plaque shift

Predictors of SB Obstruction

COBIS II Registry
- 2227 bifurcation lesions
- SBO (i.e. TIMI flow <3) 8.4% (of which 1/3 was not restored)


Other Predictors
- Plaque burden in MV on side of SB ostium
- Calcification in MV opposite side of SB ostium
- Lipid-laden plaque in MV at site of SB origin
- Size of post-dilating balloon in distal segment of MV stent

So, Does That Mean We Need Two Stents?
### NORDIC I BIFURCATION Study

- **413 patients randomized**
  - 207 patients Stenting MV
  - 206 patients Stenting MV + SB

- Clinical follow-up after 1, 6, 14, 24, and 36 months

- * SB stent 4.3%, Final KBI 32%

- **MACE free survival**

- **Table**
  - | Event | MV (n=207) | MV + SB (n=206) | P value |
  - | --- | --- | --- | --- |
  - 6 months | Cardiac death, n(%) | 2 (1.0) | 2 (1.0) | 1.00 |
  - | Total death, n(%) | 2 (1.0) | 3 (1.5) | 0.61 |
  - | MI, n(%) | 0 (0.0) | 1 (0.5) | 0.31 |
  - | TVR, n(%) | 4 (1.9) | 4 (1.9) | 0.99 |
  - | Stent thrombosis, n(%) | 1 (0.5) | 0 (0.0) | 0.31 |
  - | TLR, n(%) | 4 (1.9) | 2 (1.0) | 0.36 |

- **36 months**
  - | Total death (%) | 2.9 | 5.8 | 0.15 |
  - | Cardiac death (%) | 1.4 | 1.5 | 1.00 |
  - | MI (%) | 3.0 | 3.6 | 0.78 |
  - | TVR (%) | 8.0 | 9.7 | 0.60 |
  - | TLR (%) | 9.5 | 11.7 | 0.52 |
  - | Stent thrombosis (%) | 2.5 | 1.0 | 0.45 |


### NORDIC III BIFURCATION Study

- Primary Endpoint: cardiac death, index lesion MI, TLR, or stent thrombosis at 6 mons.

- **Table**
  - | Event | No kissing balloon (n=239) | Kissing balloon (n=238) | P = NS |
  - | --- | --- | --- | --- |
  - 1 and 6 months | Clinical follow-up | n=477 (100%) | 2.9 | 2.9 |

British Bifurcation Coronary (BBC) Study

Primary Endpoint: Death, MI, TVF

Total Population
n=500

Simple (Provisional T)
n=249
- Stent MV 69%
- Stent + Kiss 26%
- T Stenting 3%

Complex (Total coverage)
n=248
- Crush n=169 (double stent + kiss 72%)
- Culotte n=75 (double stent + kiss 89%)

Five Year Mortality of NORDIC I and BBC ONE

Primary Endpoint: Death, MI, TVF

Five Year Mortality of NORDIC I and BBC ONE

David Hildick-Smith et al. Circulation. 2010;121:1235-1243

Provisional Single Stent Strategy

- Plan on one stent in MV crossing over SB
- Consider whether PTCA of the SB is needed
- Keep wire in SB even with stenting of MV
- Consider PTCA or stenting of the SB if TIMI flow <3
- Consider kissing balloon inflation
Provisional Single Stent Strategy

- Small percentage of cases
- With SB flow TIMI <3 and/or DS>70%
- Realistically, 2 technical options for SB after MV is stented
  - T or modified T stenting with minimal protrusion
  - Culotte technique
- Proximal optimization and kissing balloon inflations are mandatory

Bailout Stenting in Provisional Strategy
Modified T Stenting (T and minimal protrusion)

Modified T Stenting (T with min protrusion)
Modified T Stenting (T with min protrusion)

Culotte Stenting
Conclusions

- Provisional one stent strategy should be the default approach to most bifurcation lesions (simpler, less contrast, less radiation, similar success rates and better long term outcomes)

- Plans should be in place for possible ‘bail-out’ 2nd stent in case of SB compromise (TIMI flow <3 &/or DS>70%)

- In these situations, T- or modified T-stenting (TAP) or culotte techniques are the most likely to succeed

Thank You