Tips and Tricks in Bifurcation Stenting Techniques

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Bifurcation Stenting Techniques

- Limited role for direct stenting in bifurcational lesions
- Wire both branches before dilating the main branch (most of the times)
- Dilate the main branch to evaluate how the side branch behaves
- Dilate the side branch only if diseased or significantly deteriorates after dilatation of the main branch
Bifurcation lesions classification

Fig. 1. Classification of bifurcation lesions according to their angulation.

Fig. 2. Classification of bifurcation lesions according to their morphology.
Figure 2. Bifurcation lesion classification from the Duke University Angiographic Core Lab, Duke University, Durham, North Carolina. Type A: Prebranch stenosis not involving the ostium of the side branch. Type B: Postbranch stenosis of the parent vessel not involving the origin of the side branch. Type C: Stenosis encompassing the side branch but not involving the ostium. Type D: Stenosis involving the parent vessel and ostium of the side branch. Type E: Stenosis involving the ostium of the side branch. Type F: Stenosis directly involving the parent vessel and ostium of the side branch.
Plaque Shifting (Snow-Plough Effect)

Figure 5.

Snow-plough effect in type 3 lesion after coronary stenting. Using the “classical approach, high risk of plaque shifting in both branches. (Covering the side branch is a better approach because plaque shifting occurs only in the side branch and can be treated by kissing balloon inflation.)
Snow-plough effect in type 4a lesion after coronary stenting. Using the “classical approach, high risk of plaque shifting proximal to the bifurcation (a). Covering the side branch (b) is a better approach because plaque shifting occurs only in the side branch and can be connected by kissing balloon inflation.
Types of Bifurcational Stenting
Bifurcation Stenting Strategies

Provisional T Stenting

Systematic T Stenting

V Stenting

Cuoluotte Stenting
Provisional T Stenting

Type 2 Y shape lesion. Predilatation of the main branch with axial plaque redistribution in the side branch. Main branch stenting, kissing balloon inflation. Side branch stenting is only provisional.
Cross the most distal possible stent cell!

When opening the main branch stent towards the side branch, two or three struts are generally accessible: a) opening of the most proximal strut. b) opening the mid strut. c) opening the distal strut. The stent deformation in the main branch is corrected by kissing balloon inflation. Side branch scaffolding is obtained only if the most distal strut is open.
After stenting of the main branch, the wire is pulled back to enter the side branch. Then the “jailed” wire is pulled-back and pushed in the main branch. Stent deformation during strut opening. Stent implantation in the side branch is only provisional. Final kissing balloon inflation.
"Simultaneous Kissing Stent" (SKS) Technique

- Pre (A)
- Stent positioning (B)
- Post (C)
Figure 1. A schematic diagram of the in-stent segmental approach to intravascular ultrasound analysis after crush stenting. MV = main vessel; SB = side branch.
Figure 1. (A to E) Deployment sequence of the Frontier stent. (A) The system is advanced into the main branch over a conventional rapid-exchange wire. (B) The joining mandrel is retracted to release the over-the-wire side branch tip. A long guidewire is inserted into the side branch. (C) The system is advanced up to the carina. (D) With a single inflation device, the stent is deployed by kissing balloon inflation. (E) After deflation the delivery system is retracted.
IVUS did not cross

RADI pressure wire
Stent Thrombosis

- Increased with two stents deployed in bifurcations.

- Reason: stent distortion, no kissing performed.

- Better to accept an aesthetically less pleasing result than to have SAT