Difficult Stent Delivery

Aravinda Nanjundappa, MD
Professor of Medicine and Surgery
West Virginia University
Charleston, WV
Difficult stent delivery

- Coronary
- Peripheral
- Structural heart
Background: Coronary

- Tortuous vessels, calcified, CTO and angulated vessels
- Poor vessel preparation
- Inappropriate guide support
- Wrong or poor wire support
- Repeated attempts at same technique
Tips and tricks

- Pre-dilate difficult lesions.
- Use Rotoblator/atherectomy when appropriate especially calcified vessels.
- Scoring balloon and non complaint balloon may help.
- Appropriate guiding catheters, femoral versus s radial access, large caliber 7 French vs 6 French.
- Use if buddy wires, anchor balloon technique, guide-liner, mother child catheter or Godzilla catheter.
Tips

• L main: Radial is acceptable but if involving distal segment and proximal LAD and LCX use 7 French femoral

• Choose good back up support rather than JL4

• LCX proximal: Amplatz rather than EBU

• RCA: Amplatz or Hockey stick rather than JR4
Case examples:

• 90 yr old patient with persistent angina despite medical treatment.
• Stress test showed lateral wall ischemia.
• Attempted PCI of distal LCX outside facility: deliver POBA and 2.25 stent lost in guide catheter. and subsequently noted in proximal LAD (intact LIMA)
Options

• Lesion involves distal L main and proximal LCX: Redo CABG/medical treatment: NO

• POBA results of distal LCX/PDA acceptable

• Un deployed stent in proximal LAD: Leave it or retrieve or new stent to crush it

• Stent L main into LCX after Roto
Case: Athrectomy and pre-dilatation
Still difficult to cross: support catheter
What about the un-deployed stent
Final angiogram and retrieved stent
70 yr old with positive lateral wall stress

- Radial 6 french access
- XB LAD 3.5 guide catheter
- LCX comes off at 90° to L Main and LAD
Options

- Change to femoral approach
- Upsize to 7French use
- Use buddy wire
- Pre dilatation
- Support catheter: Guideliner
Delivery of Stent via Guide-liner
Case: Difficult to deliver stent in a LAD
diagnosis of bifurcation lesion
Kissing balloon followed by Support catheter for stent delivery
Final angiogram: edge dissecting and additional stent
Case: Ostial OM lesion acute LCX take off and ESRD patient
Approach: Double wire

- Attempted stent delivery failed despite predilatation
- Options: Rotoblator, support catheter or anchor balloon
Anchor balloon and stent delivery
Final Images
How to precisely place stent at the ostium

- Leave a wire in the cusp
- Mark the ostium by IVUS
- Szabo technique
Szabo technique

- Leave one wire in main lumen and one in the cusp
- Inflate the stent to 2 atms with the cover on
- Isolate the distal last stent strut
- Insert the back end of the cusp wire through the distal last stent
Conclusions

• Stent delivery can be difficult in elderly calcified tortuous arteries
• Choose appropriate access and guide support
• Prepare the vessel with a balloon or athrectomy
• Learn tips and tricks such as double wire, anchor balloon