Bifurcation Lesions
Clinical Issues
Technical Challenges
and Emerging Solutions

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Clinical Issues

Side branch involvement in at least 30% of all PCI cases (need treatment in ~15% of cases)

- Clinical aspects
- Anatomy classification
- Bifurcation techniques
- Strategic PCI planning
- Emerging technologies
Medina Classification (1/0)

Main vessel and/or side branch involvement

[Diagram showing different categories and percentages for Medina Classification]

Medina A et al. Rev Esp Cardiol 2006;59:183
Side-branch inspection

- Careful inspection of the SB is mandatory:
  - Severity of SB narrowing
  - SB diameter (>/≤ 2.5 mm)
  - SB angulation (>/≤ 50°) in relation to the MB
  - Lesion length (>/≤ 5 mm) beyond the ostium
  - Degree of calcification
  - Changes in SB angiographic findings during PCI:
    - Plaque or carina shift
    - Dissection
    - ↓ flow, abrupt closure
    - Symptoms, ECG changes, hemodynamic status
3D Angiography
3D reconstruction techniques (Paieon-CardiOp™)
Bifurcation Lesion Imaging

The role of CTA
Technical Issues

Specialized techniques w/ standard devices

- Main branch stenting
- Provisional side-branch stenting
- T or modified T stenting
- Y or Culottes stenting
- V or “Kissing” stenting
- “Crush” or “Mini Crush” technique
- Reverse “Y” or “Crush” technique
- Etc.
Strategic planning

Clinical significance of the SB
Vessel Size, myocardial jeopardy, LVEF, procedural complexity, contrast load, etc.

SB could be “ignored”

MB Stenting alone
Regardless of the SB fate

SB should be preserved

Upfront strategic planning
Define procedural technique
Dedicated Bifurcation Stents

TAXUS petal
Guidant frontier
YMed sidekick

Devax (+ BA9)
“true” bifurcation designs
sidebranch designs

Stentys
Tryton
Bifurcation Lesions

Conclusions (1)

- Catherer-based treatment of bifurcation lesions remains a major therapeutic challenge.
- The optimal mode of treatment remains to be elucidated.
- Provisional” technique using DES may be the preferred mode of treatment in suitable cases.
- Two stents are mandatory when sub-optimal results are achieved in the side-branch or excessive plaque burden is located in the SB origin.
Bifurcation Lesions: Conclusions (2)

- Dedicated bifurcation stents systems address the technical challenges of bifurcation lesions and might improve the management and outcomes.
- Variability of lesions anatomy should be considered as the major challenge for specific dedicated bifurcation systems.