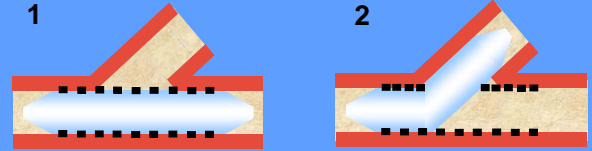


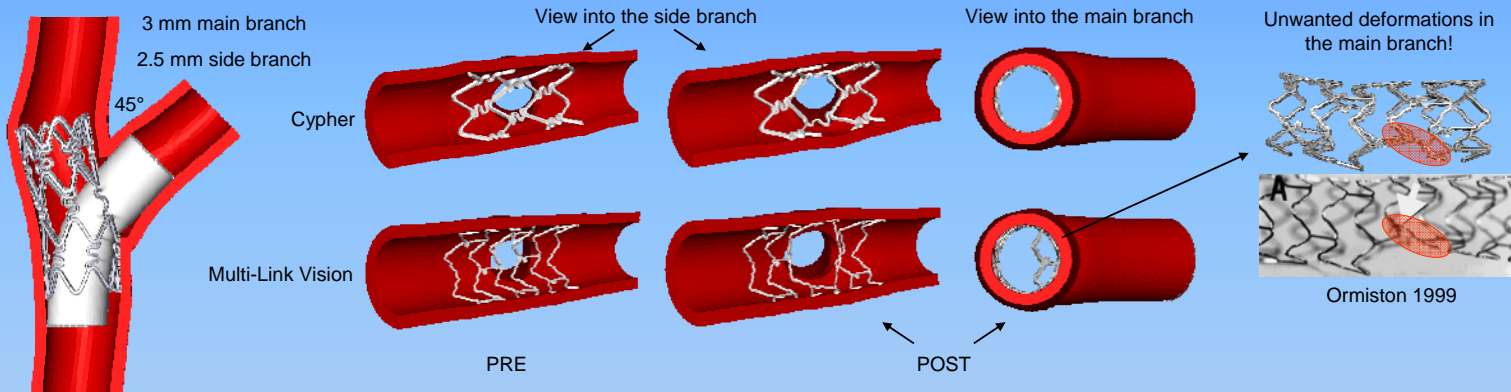
Bifurcation stenting: an unsolved problem!

- 49% of all European deaths are associated with cardiovascular diseases
- More than one million stent implantations every year
- Stenting bifurcation lesions remains a problem (many proposed techniques)!
- Investigated technique: 1) stent implantation in main branch
- 2) balloon inflation to improve side branch access



Virtual prediction of resulting stent deformations after dilating through the side

- Comparison of Cypher (Cordis) and Multi-Link Vision (Boston Scientific) stent using ABAQUS software
- Virtual dilatation through the side of the stents is performed with a validated trifolged Raptor balloon model (2.5 mm, Cordis)



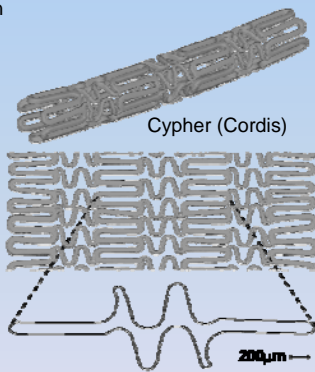
Stent cell size: an important parameter when stenting bifurcation lesions

Micro-CT
Segmentation + reconstruction
(Mimics)

Triangulated surface

Coordinate transformation
(<http://pyFormex.berlios.de>)

Cell selection +
circumference calculation

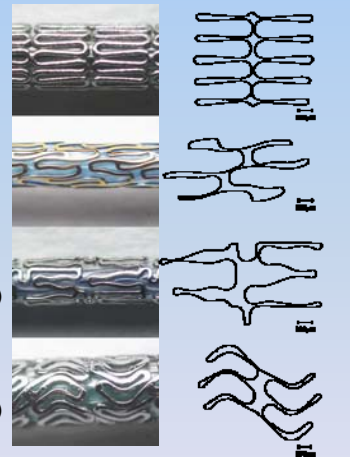


Endeavor
(Medtronic)

PRO-Kinetic
(Biotronik)

Promus
(Boston Scientific)

Taxus Liberté
(Boston Scientific)



Cell
circumference

Cypher	9.5 mm
Endeavor	19.8 mm
PRO-Kinetic	10.8 mm
Promus	12.6 mm
Taxus Liberté	12.6 mm

Conclusions

- The proposed virtual tool accurately predicts stent deformations occurring during bifurcation stenting
- This approach will give insights in the current shortcomings and will facilitate the development of dedicated bifurcation stents
- Cell sizes vary considerably (9.5 mm – 19.8 mm) and this should be taken into account when applying a particular bifurcation stenting technique
- Combining cell data with anatomical information may help to select an appropriate stent for a particular patient (and treatment technique)