Analysis of side branch access during bifurcation stenting

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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 trifolded Raptor balloon model (2.5 mm, Cordis)

Stent cell size: an important parameter when stenting bifurcation lesions

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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)

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)