



Background

The relative importance of different factors of side branch compromise (SBC - significant ostial stenosis occurrence) after stent implantation in coronary bifurcation lesions is still unknown.

Objective

The present study aim - to explore the relative importance of the carina length (CL) on its displacement and plaque shift on SBC.

Materials

Patient population – 84 pts, 92 bif. lesions, analyzed angiographically before and after stenting.

Methods

- CL - the distance between the carina tip and the intersection point of main vessel outer wall tangent line and tangent line of SB internal wall (the part of the SB wall, rotated because of the stent strut expansion, obstructing branch ostium). The shorter CL causes less SBC, longer CL will cause more SBC compared with optimal configuration of bifurcation.

- Actual and optimal carina lengths calculation:

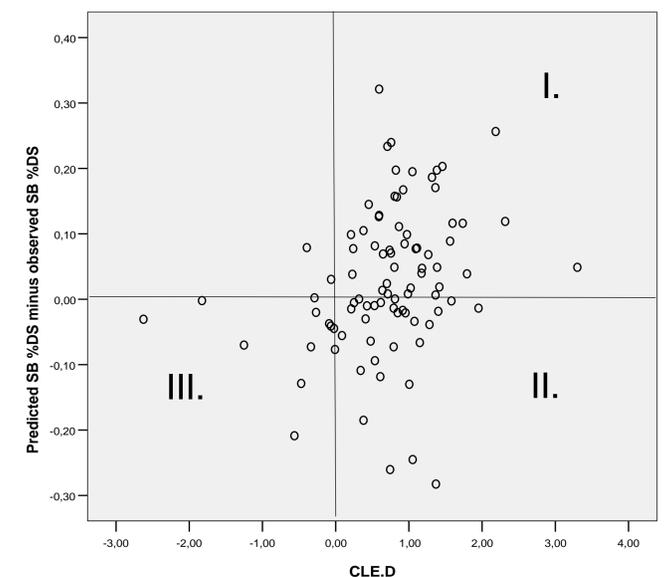
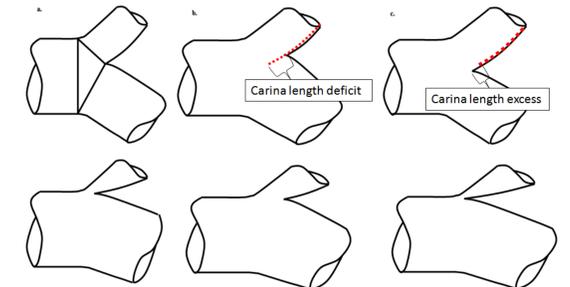
$$CLM = CL_o - CL_a = cs \cdot \operatorname{cosec} \alpha - ds \cdot \operatorname{cotan} \alpha.$$

- The theoretically expected SBC if bifurcation is in optimal configuration with full carina displacement (%DS=cos α.100) was compared with actually observed values.

Results

The comparison plot of CLM and difference between expected and observed SBC is presented on the figure. 3 zones are formed

- zone I - smaller than expected SB compromise and smaller CL, 54% (n = 50) of cases – main mechanism for SBC – carina displacement;
- zone II - higher than expected SBC with shorter CL, 30% (n = 27) – plaque shift compromising SB;
- zone III - higher SB compromise, longer CL, 13% (n = 12) – possible combination of carina displacement and plaque shift.



Conclusion:

The side branch compromise is a complex change occurring after deformation of the carina region of the coronary bifurcation and is a result from the carina displacement, SB walls stretch and plaque shift.