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DES Cell Size and Bifurcational Stenting Techniques Used

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DES Cell Size and Bifurcational Stenting Techniques Used

Two crucial factors for successful bifurcation stenting:

1. Adequate wall coverage
2. Good positioning of the stent struts against the vessel wall

This can be achieved by applying a suitable stenting technique and using an appropriate stent design.

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In a perfect world, all stent struts should have contact with arterial tissue

1. To reduce the risk of stent thrombosis
2. To facilitate subsequent stent insertion in the side branch
3. To reduce blood flow turbulance
4. To optimize drug delivery

If the stent cell size are too small, this is not possible!

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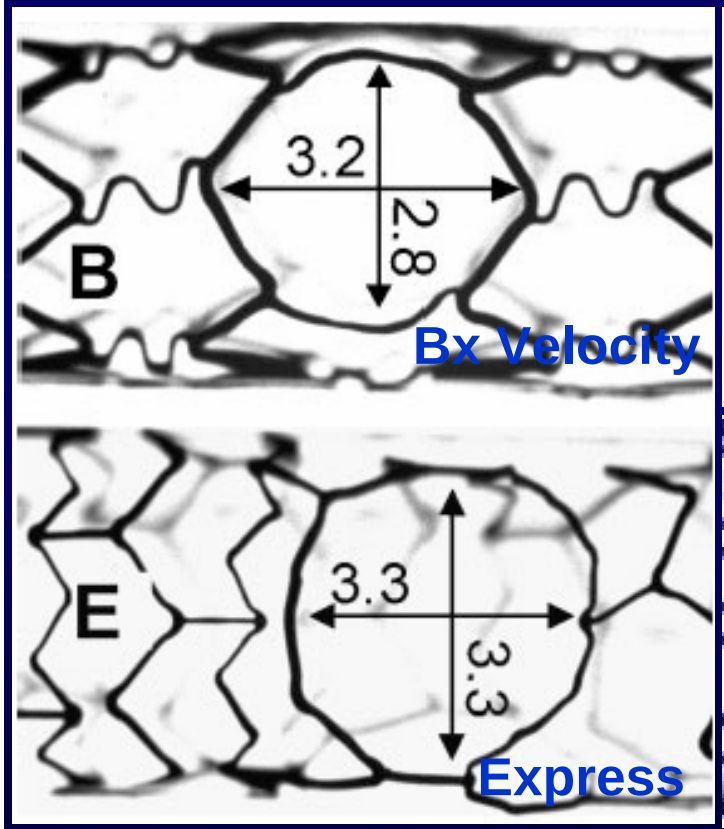
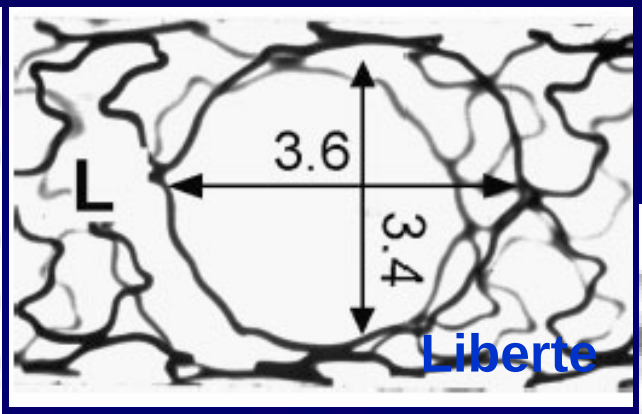
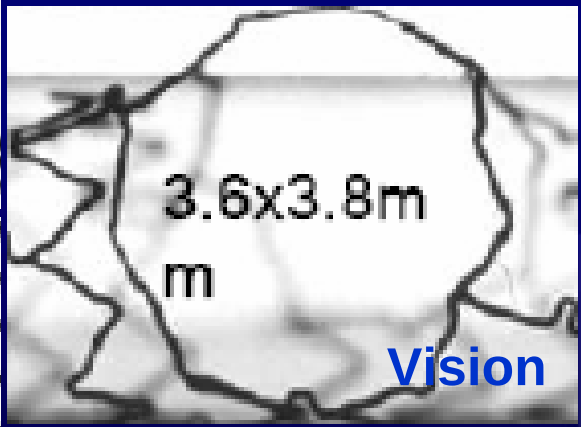
Stent Cell Size after SB Dilatation with a 3.5 mm Balloon







Courtesy of J. Ormiston

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Overview of the cell circumferences and the maximal diameters

Stents studied have a nominal diameter of 3 mm

Stent	Compnay	Circumference (mm)	Maximun achievable cell diameter (mm)
Cypher	J & J (Cordis)	9.5	3.0
Endeavor	Medtronic	19.8	6.3
PRO-Kinetic	Biotronik	10.8	3.4
Promus	BSC	12.6	4.0
Taxus Liberte	BSC	12.6	4.0

Mortier P et al. EuroIntervention, 2008

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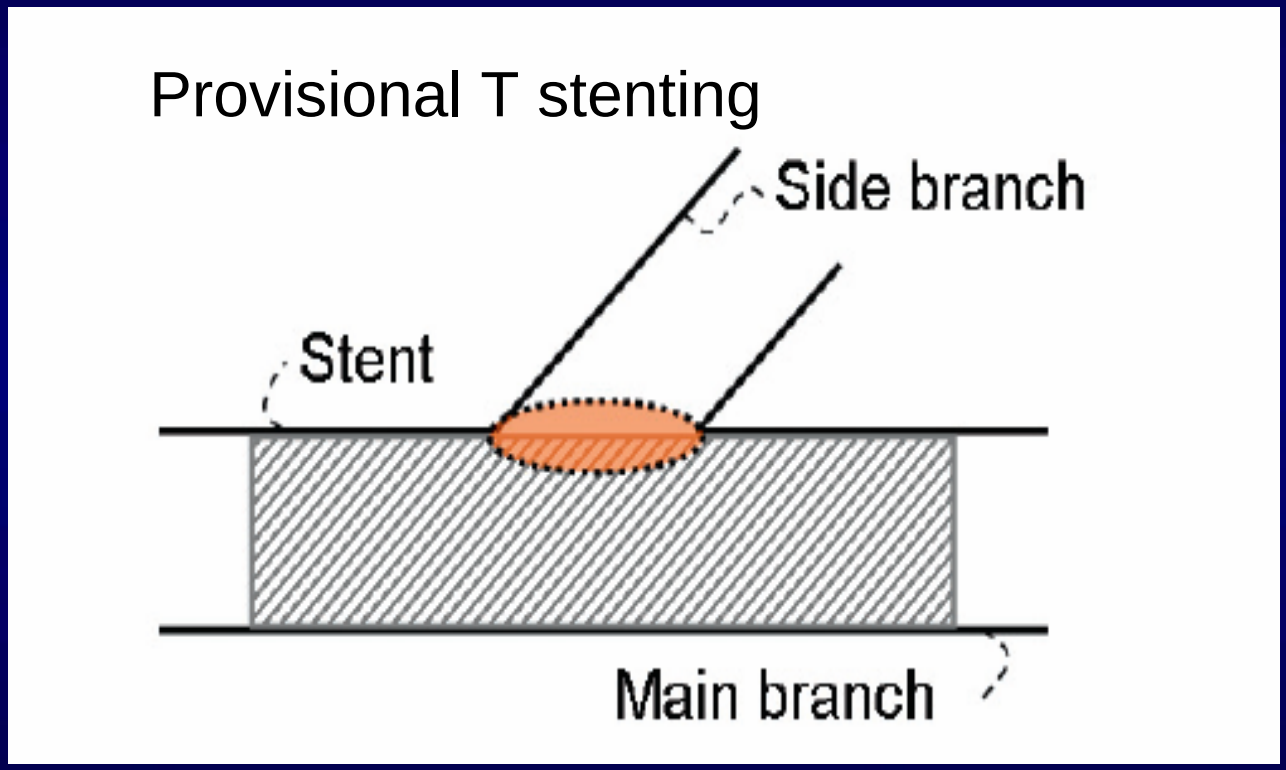

When performing provisional T stenting, the stent cell size should be at least as large as the side branch ostium circumference.

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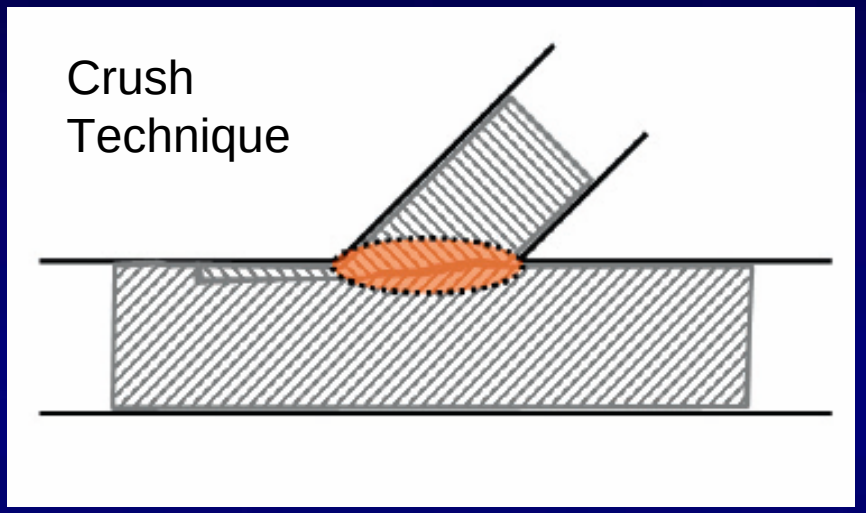

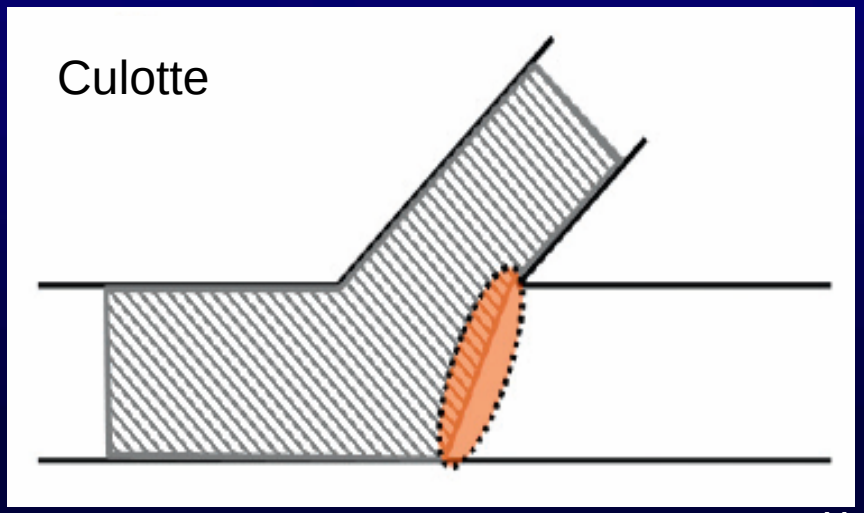

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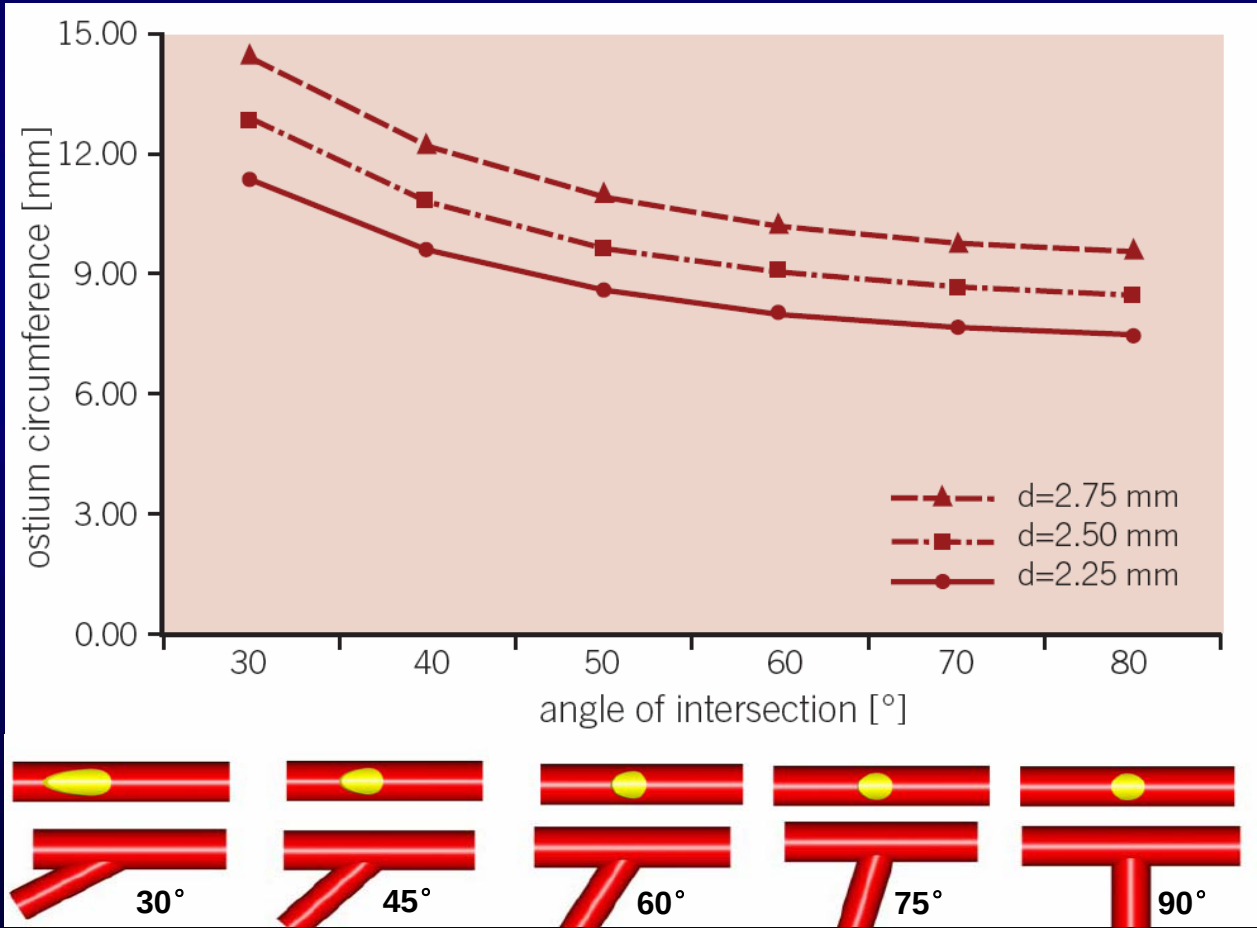
Ostium circumference depends on the main and side branch diameter and on the angle of intersection.



Mortier P et al. EuroIntervention, 2008

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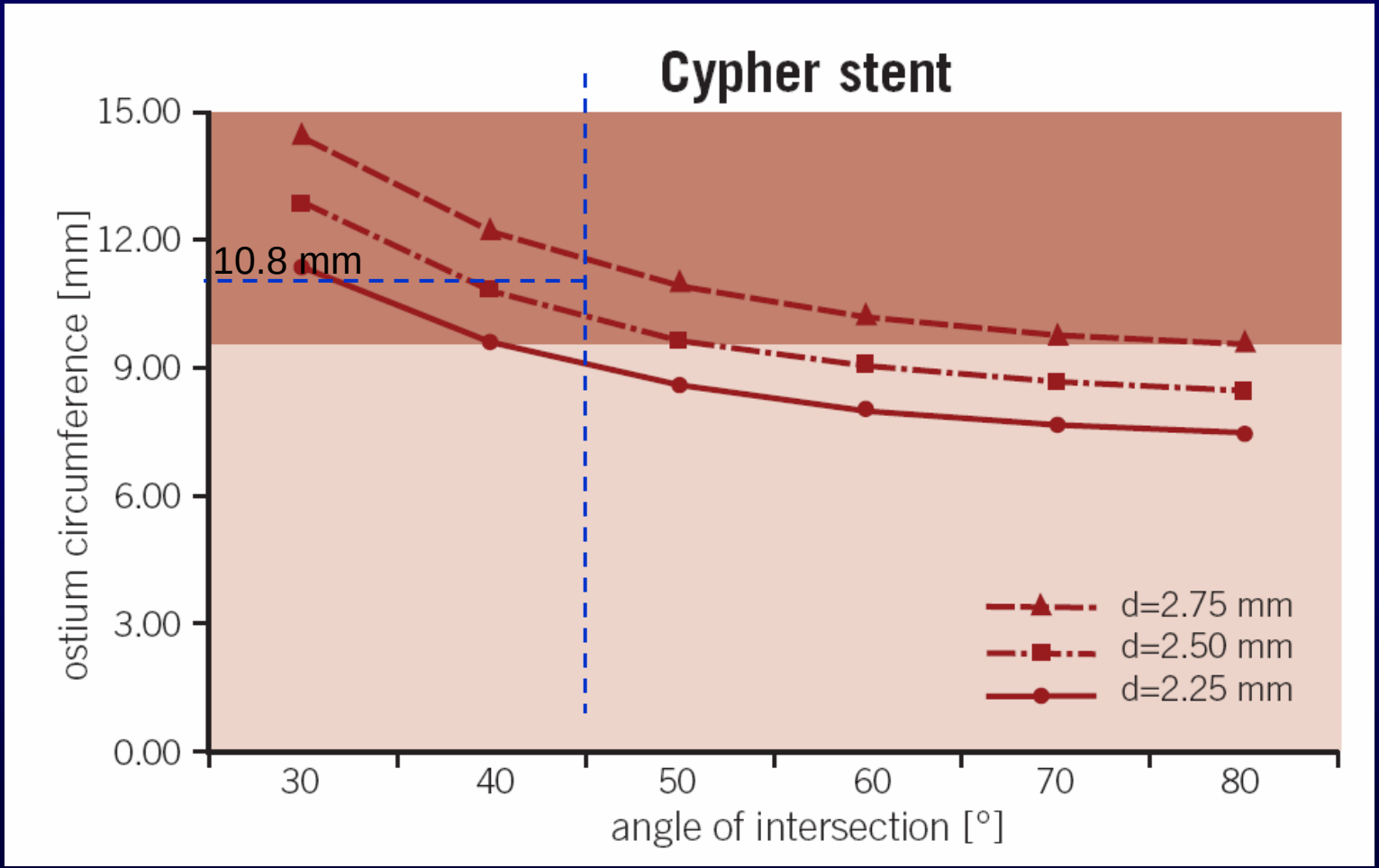
DES Cell Size and different diameter of SB with different angulation



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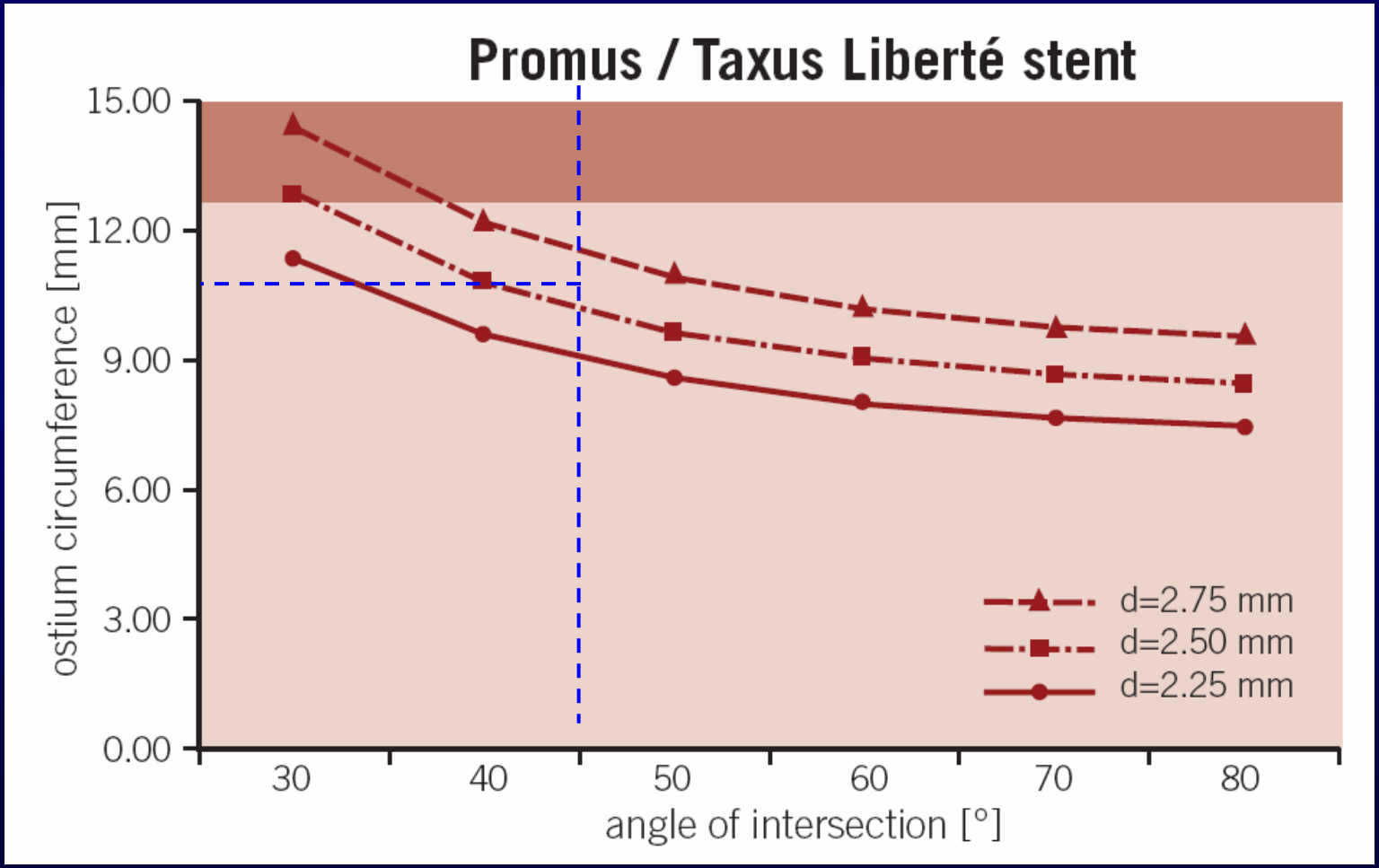

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Independent prdictors of Binary Restenosis of Cullotte Stenting

	Odds Ratio (95% CI)	P value
Age(increase of 10 yrs)	2.38 (1.24-4.96)	0.01
Bifurcation angle (increase of 10°)	1.53 (1.04-2.23)	0.03
Baseline MB DS (increase of 10%)	1.47 (1.03-2.09)	0.03
SB ref. Vessel diameter (decrease by 1mm)	31.83 (1.71-592.77)	0.02
Kissing balloon post-dilatation	0.37 (0.13-1.10)	0.07

Adriaenssens T et al. EHJ, 2008

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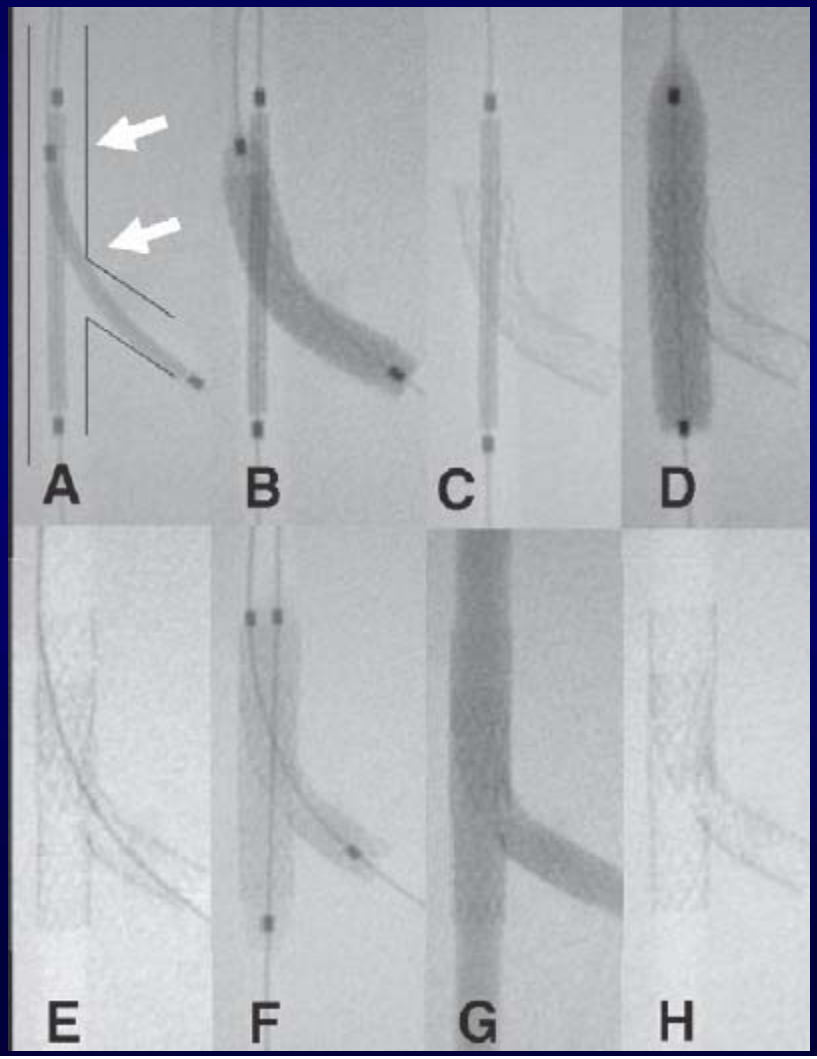
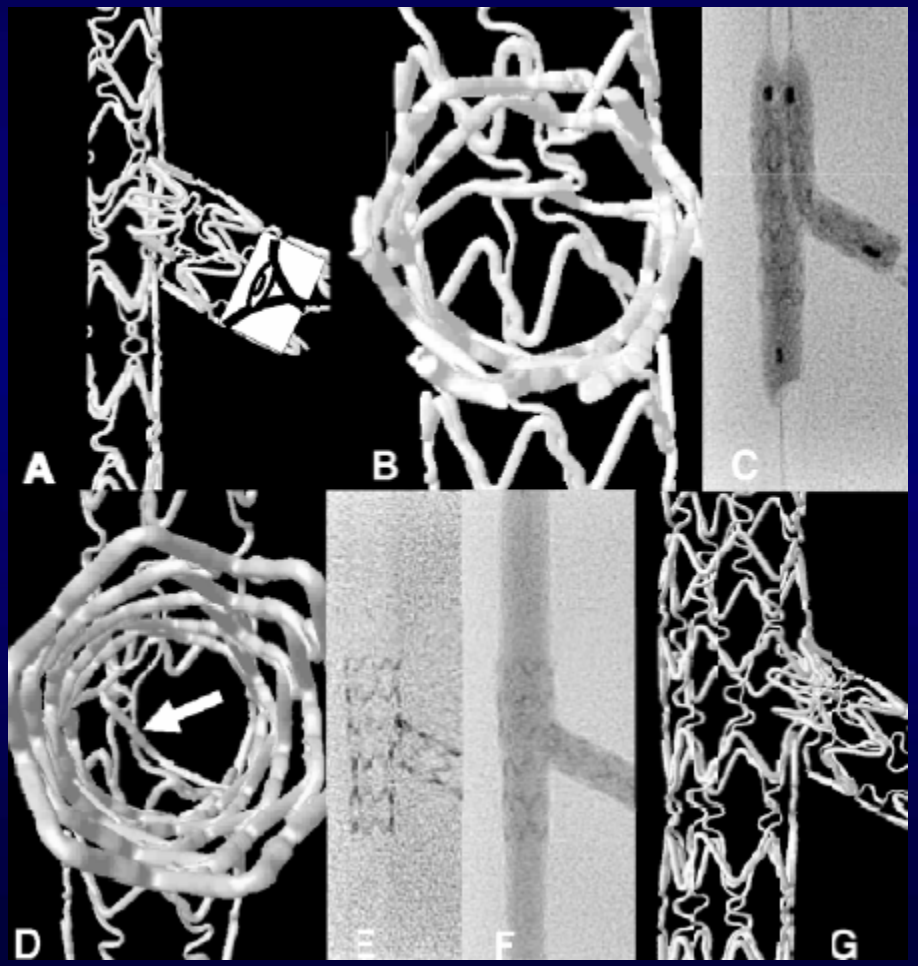
Classic Crush with 1-Step Kissing balloon





Omiston et al.JACC, 2008

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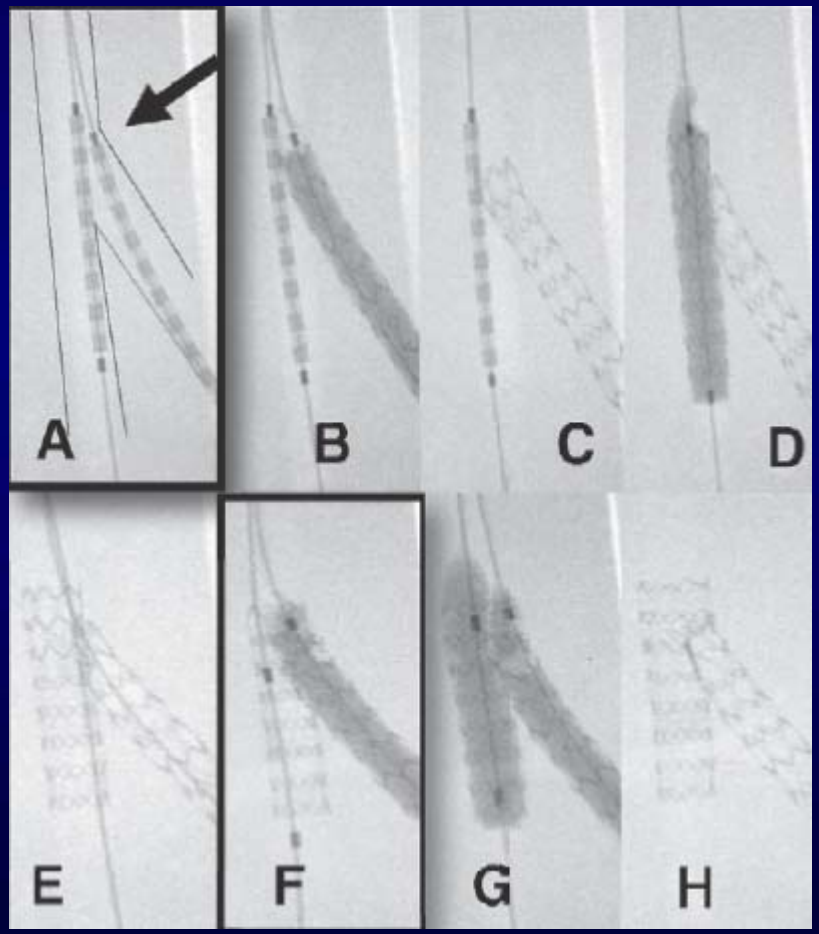
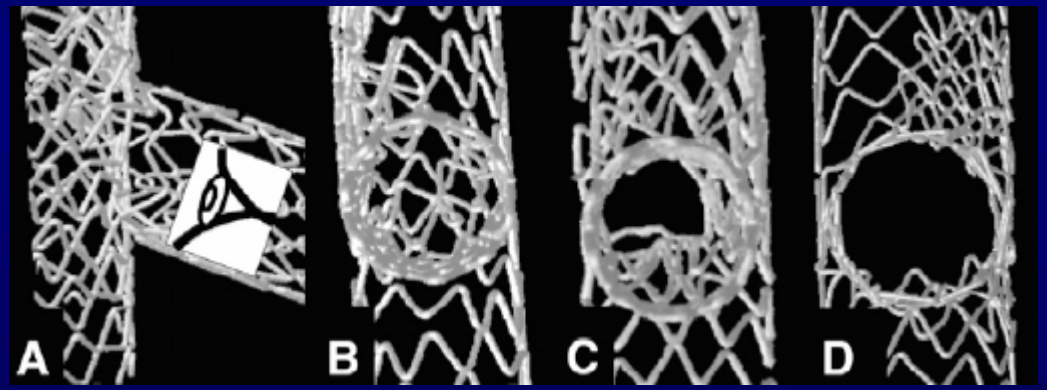
Mini Crush with 2-Step Kissing balloon





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Side-branch Ostial Area Stenosis following Different Deployment Strategies

	Side-branch Ostial Area Stenosis %	P Value
Post-dialtaion Strategy		
1-step kissing	53	
2-step kissing	33	<0.001
Stent cell size		
<3.5*3.5mm	52	
>3.5*3.5mm	37	<0.001

Omiston et al.JACC, 2008

Conclusion

To adequate strut expansion and coverage of the SB ostium, the stent cell size should be at least as large as the side branch ostium circumference.