



# OCT and POT



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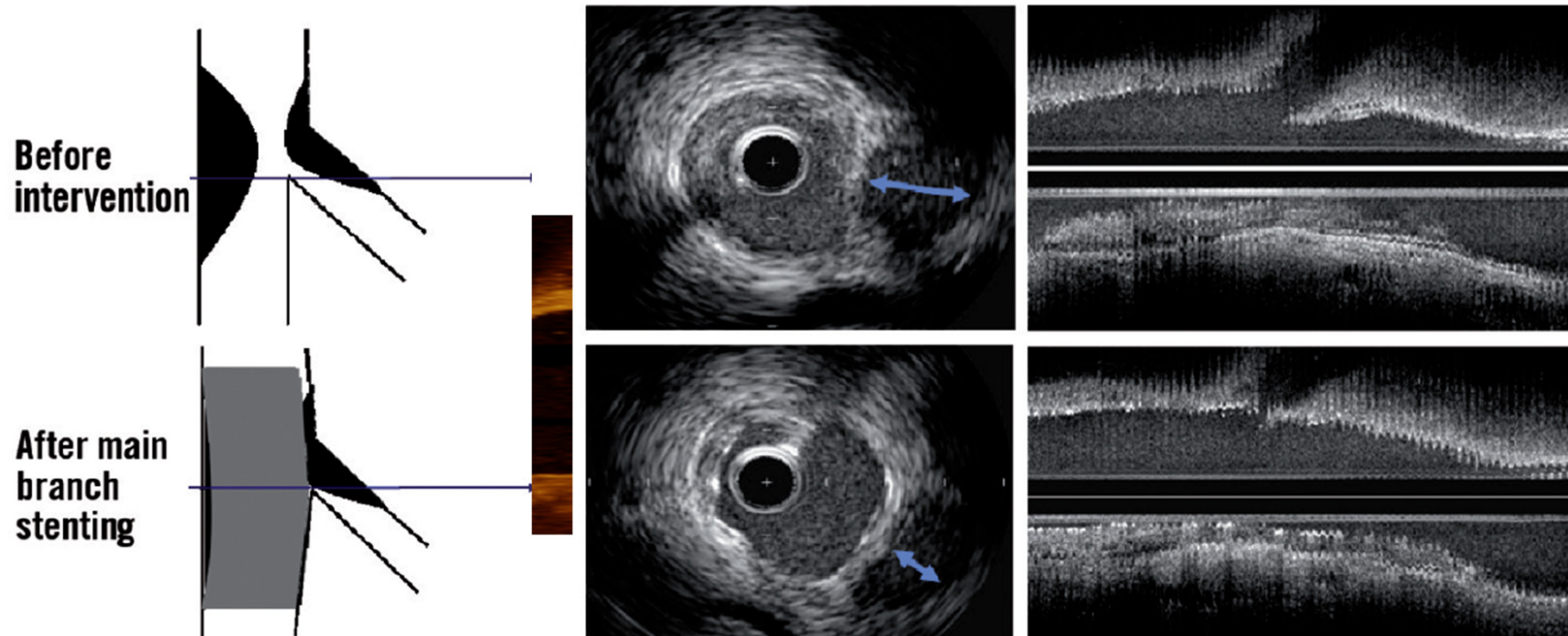


**National Heart  
Centre Singapore**  
SingHealth

# Stent sizing in bifurcation

## Anatomy of Bifurcations : Murray's law

➤ Risk of carina shift



BK Koo. Eurointervention 2011

## EuroIntervention

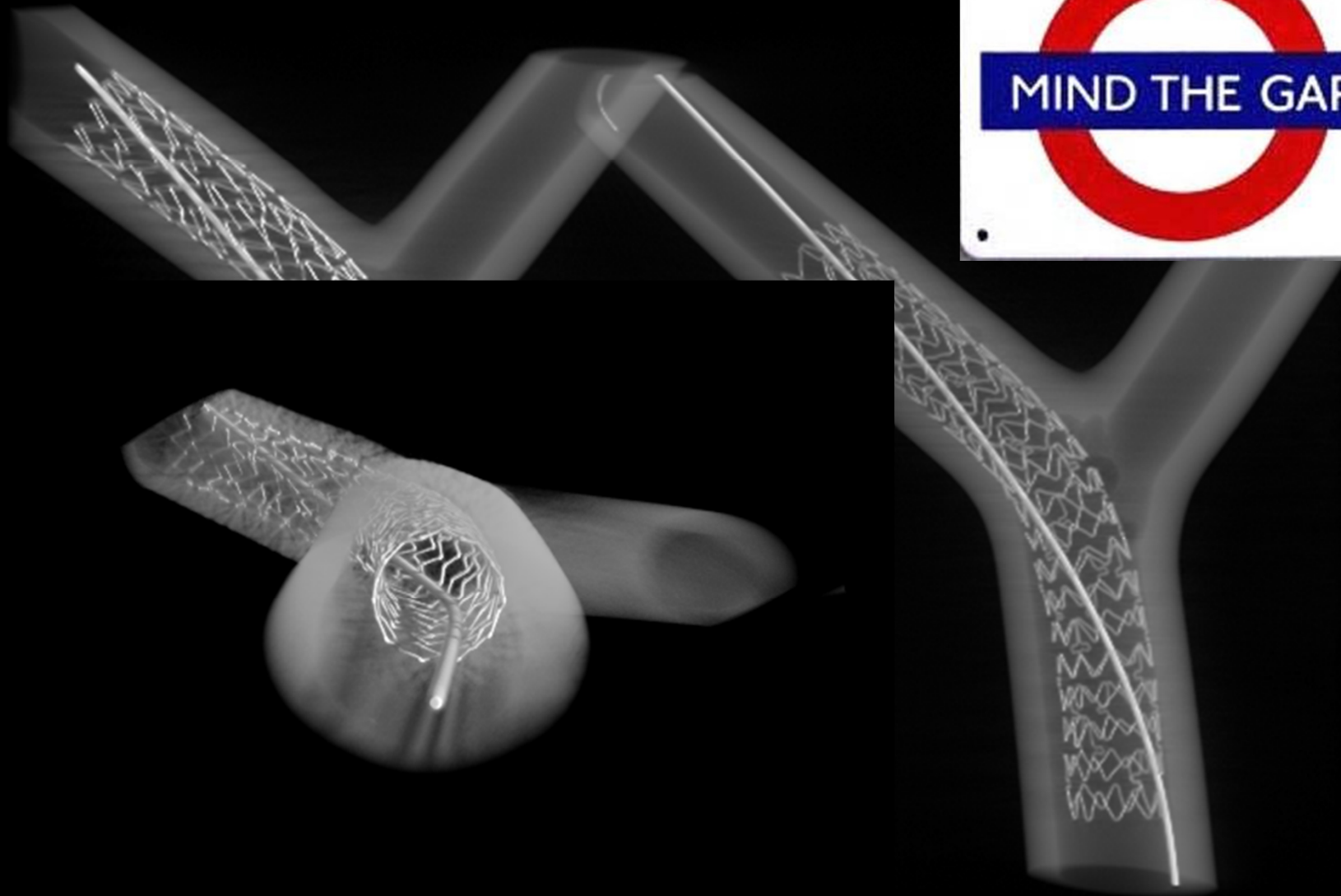
### Consensus from the 5<sup>th</sup> European Bifurcation Consensus Document

David Hildick-Smith<sup>1\*</sup>, MD; Jens Flensted Lassen<sup>2</sup>, MD; Remo Albioli<sup>3</sup>, MD; Olivier Darremont<sup>5</sup>, MD; Manuel Pan<sup>6</sup>, MD; Miroslaw Ferenc<sup>7</sup>, MD; Yves Louvard<sup>6</sup>, MD

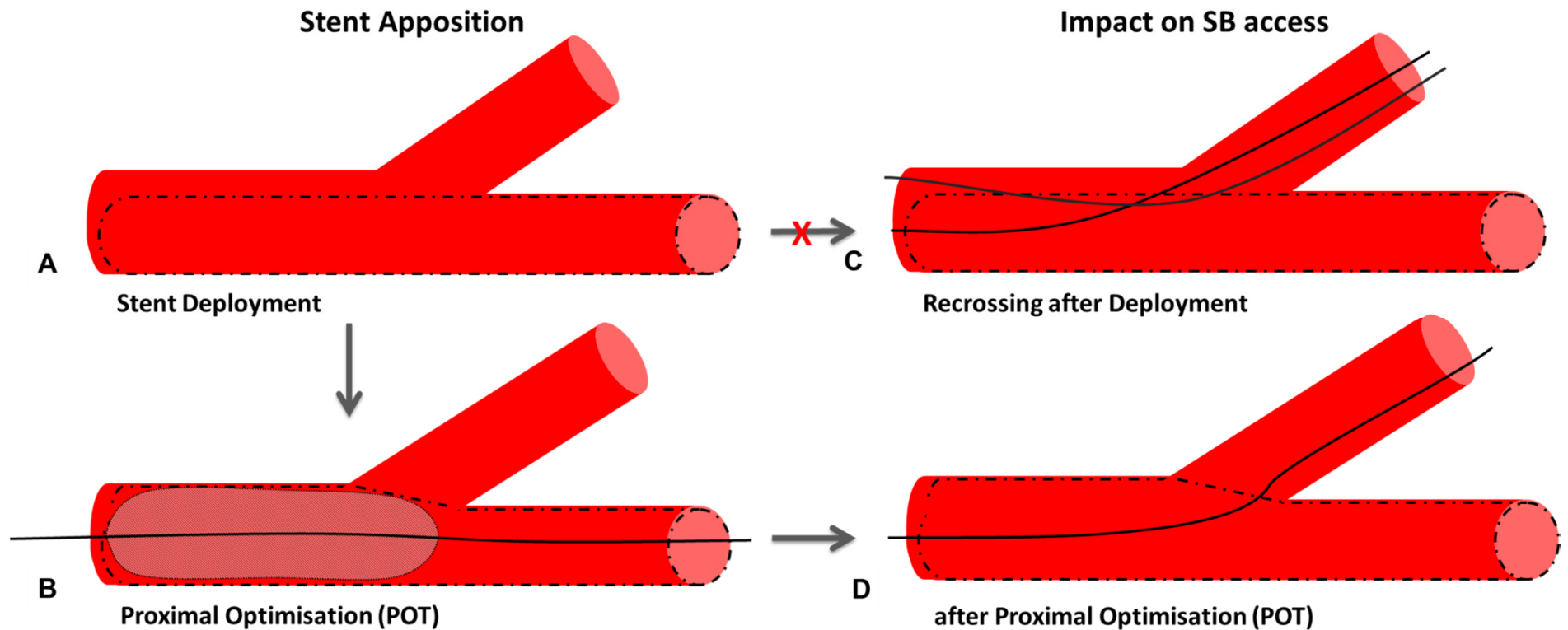
– In single stent techniques, the primary stent should be sized according to the distal main vessel diameter.

– Postdilatation, or kissing balloon inflations, are required to optimise the proximal main vessel stent diameter.

# POT to complete stent expansion and reduce risk of complications



# POT: what for ?



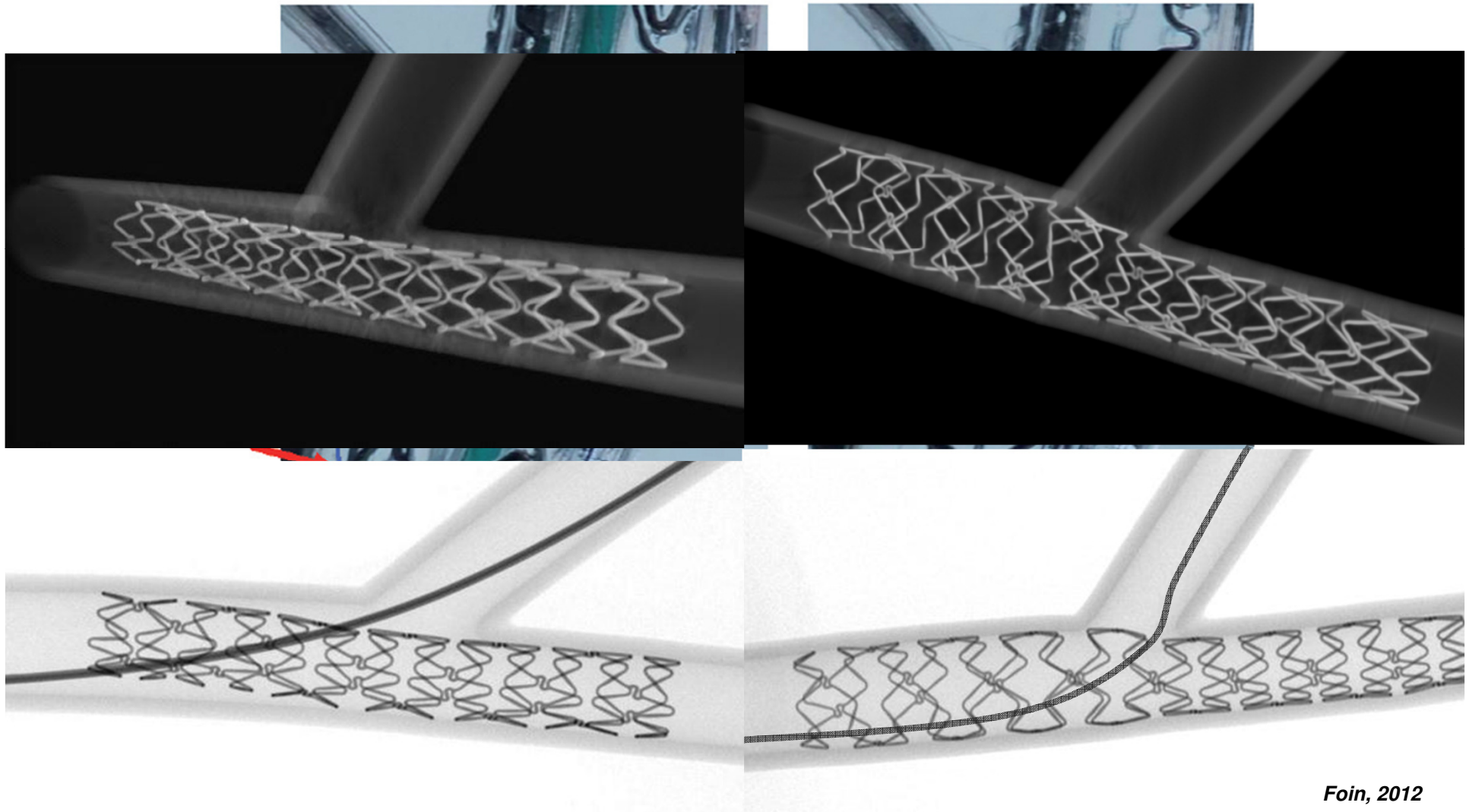
**Proximal Optimisation Technique (POT)**, introduced by Dr. Darremont to facilitate SB access, is performed with a balloon matching the proximal stent segment.

# POT technique to facilitate SB recrossing

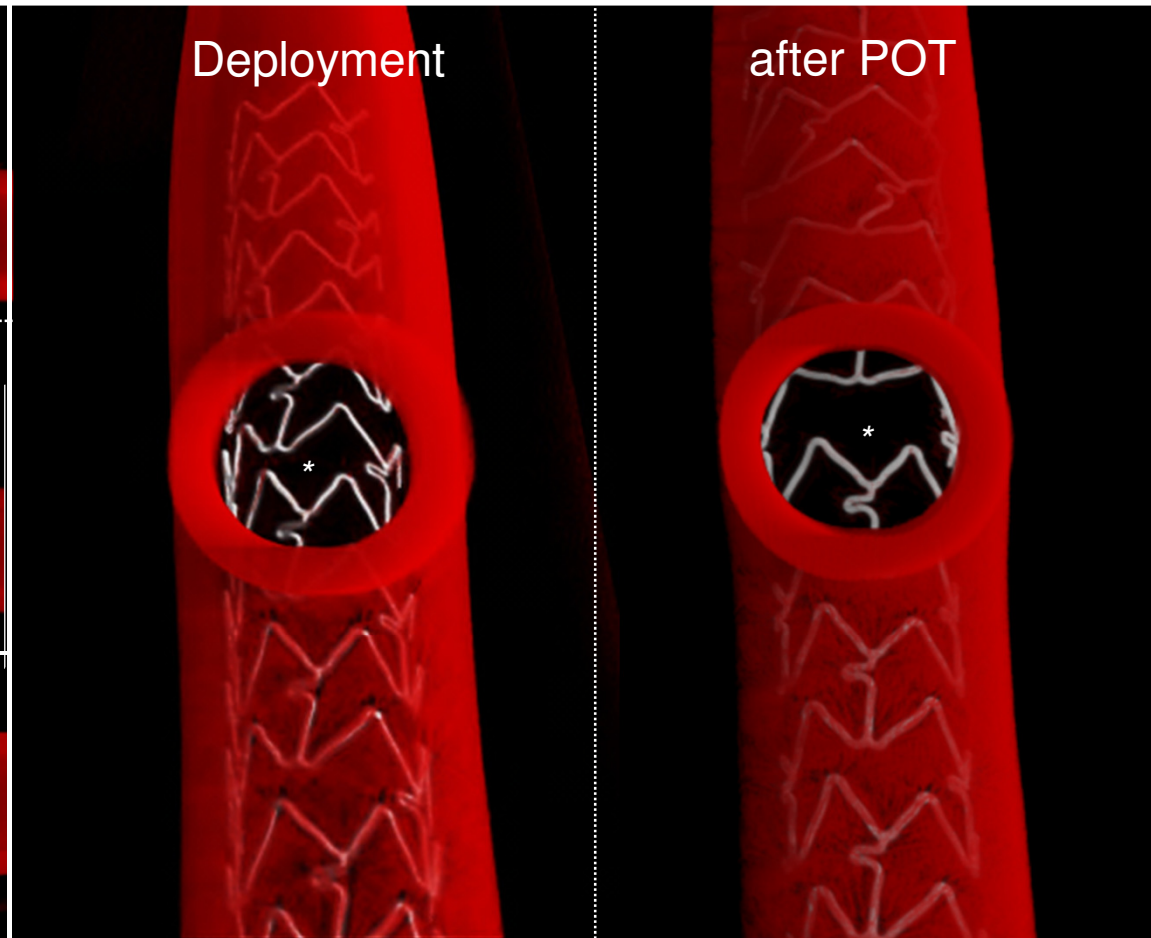
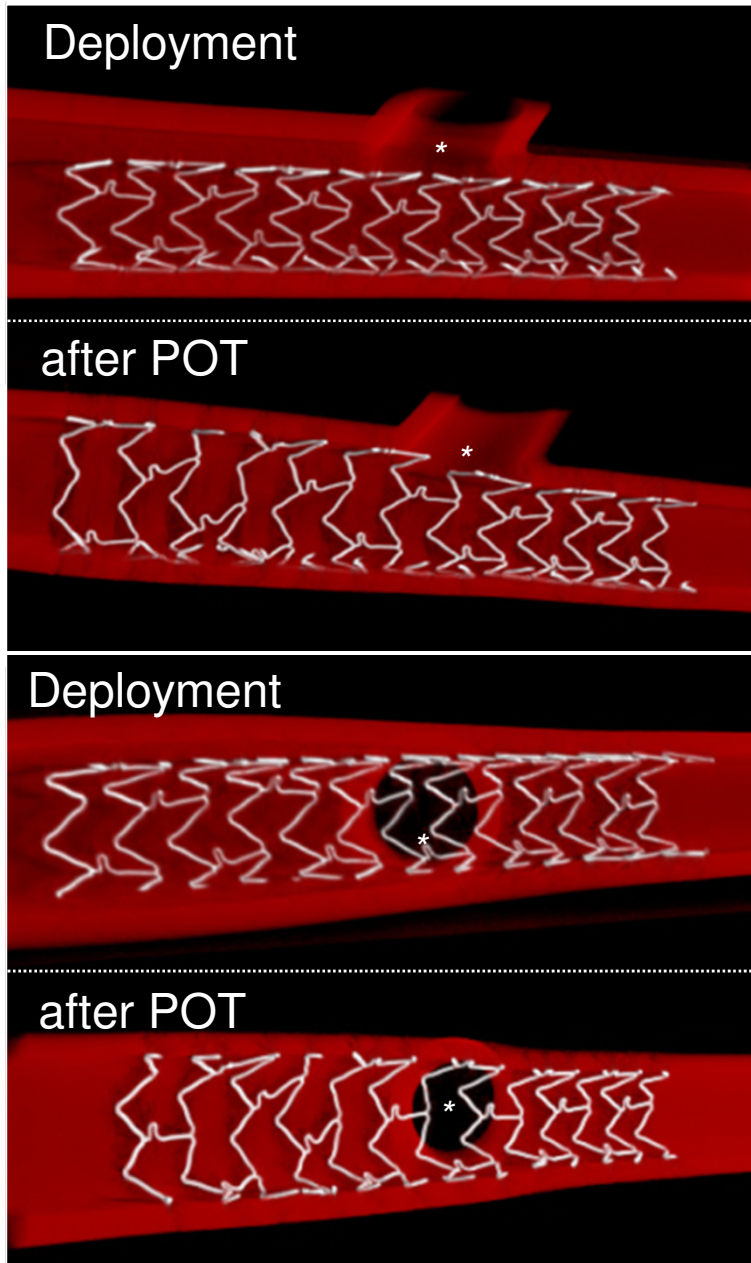
O. Darremont, EBC consensus

**Before POT**

**After POT**



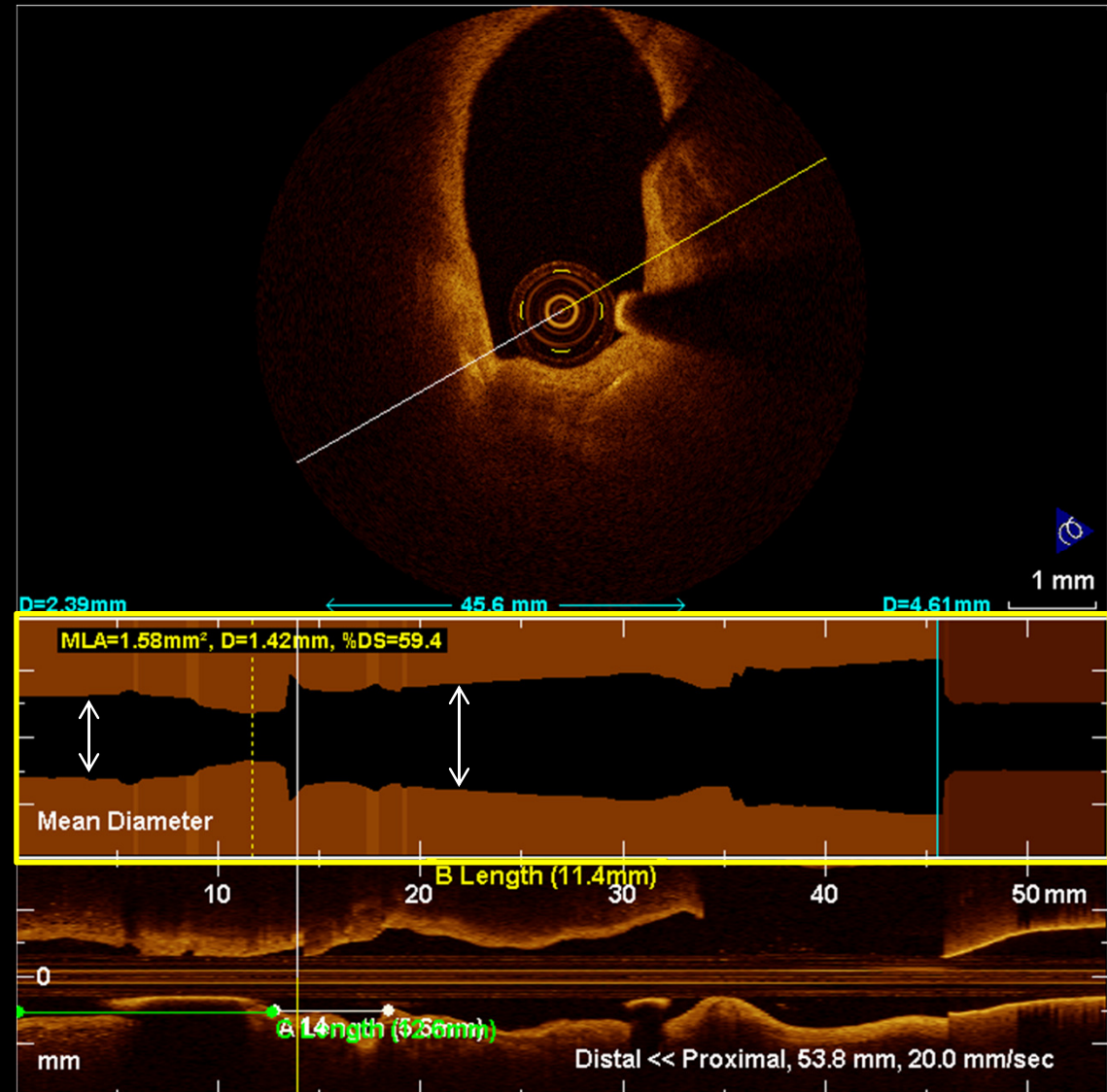
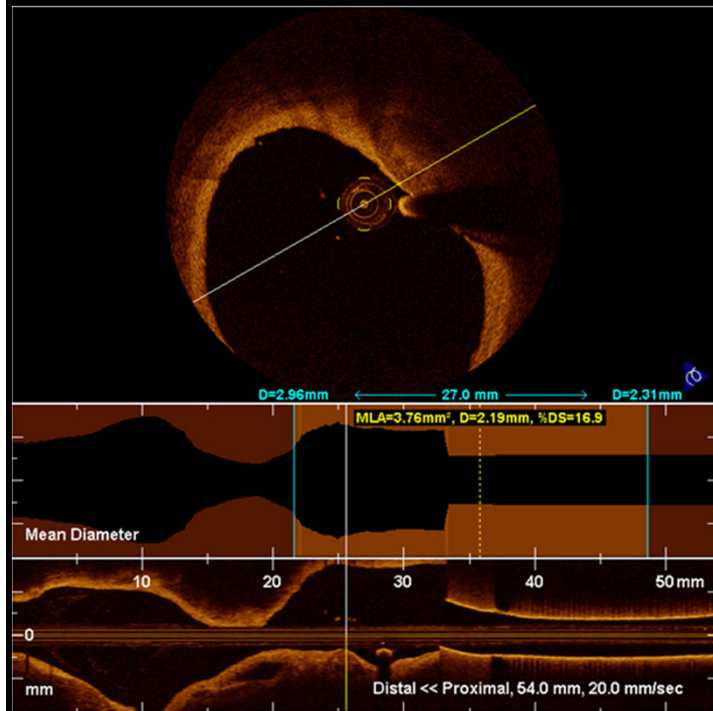
# IMPACT OF PROXIMAL OPTIMISATION ON SIDE BRANCH ACCESS



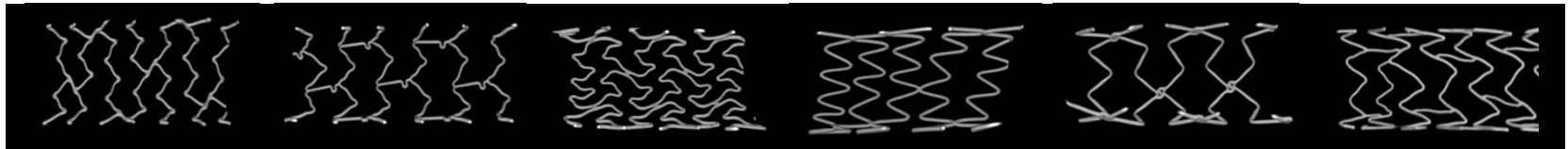
Xience 3.0mm  
after deployment  
at NP (9 ATM)

after POT (3.5  
mm proximal)

# OCT: Automated lumen analysis for stent sizing



# DES Model designs

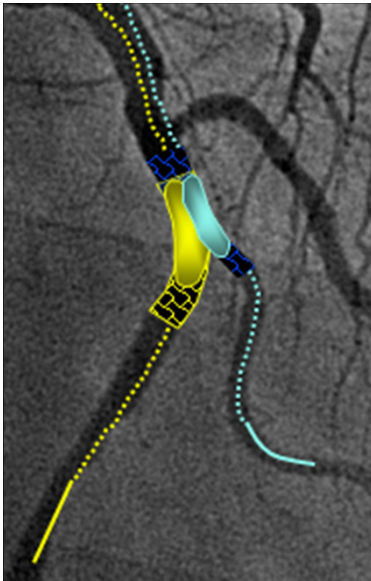


|      | Element  | Xience   | Taxus  | Integrity  | BioMatrix  | Orsiro  |
|------|--|--|--|--|--|---|
| 2.25 | Very Small (2 connectors)                        | Medium vessel workhorse (6 crowns, 3 connectors) | Small vessel workhorse (6 crowns, 2 connectors)  | Small vessel workhorse (7 crowns, 2 connectors*)<br><i>*1.5 in Endeavor Resolute</i> | Medium vessel workhorse (6 crowns, 2 connectors) | Small vessel workhorse (6 crowns, 3 connectors) |
| 2.50 | Small vessel workhorse (8 crowns, 2 connectors)  |  |  |  |  |   |
| 2.75 |  |  | Medium vessel workhorse (9 crowns, 3 connectors) |  |  |   |
| 3.00 | Medium vessel workhorse (8 crowns, 2 connectors) |  |  | Medium/Large vessel workhorse (10 crowns, 2 connectors)                              |  |   |
| 3.50 |  | Large vessel (9 crowns, 3 connectors)            |  |  | Large vessel (9 crowns, 3 connectors)            | Mid-Large vessel (6 crowns, 3 connectors)       |
| 4.00 | Large vessel (10 crowns, 2 connectors)           |  | Large vessel (9 crowns, 3 connectors)            |  |  |   |

- Labeled expansion for DES generally limited to 0.5-0.75 mm above largest nominal diameter
- Unknown performances/limitations with severe overexpansion above labelled use: impaired scaffolding, drug delivery, metal fatigue, etc..
- In presence of a large diameter mismatch/long stent > check stent model designs



# OCT : assessment of stent expansion after optimisation

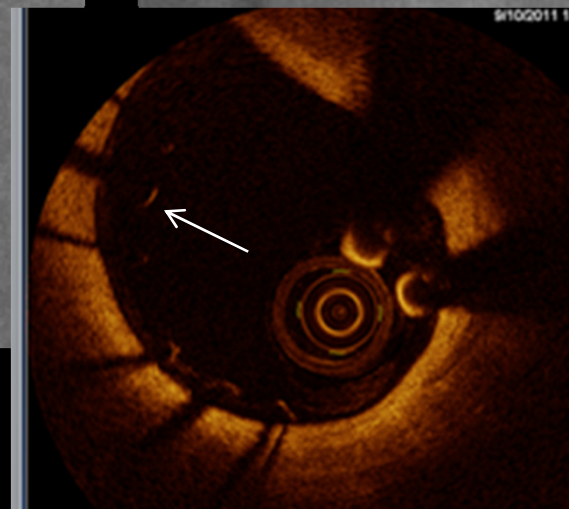
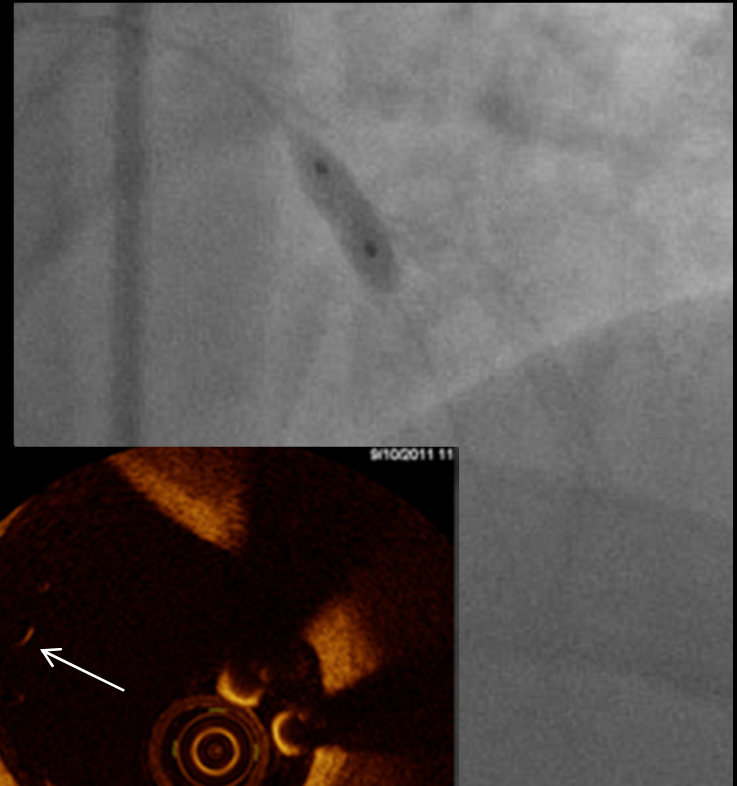


**Kissing-Balloon**  
Match Balloon to  
Distal Vessel  
Diameter

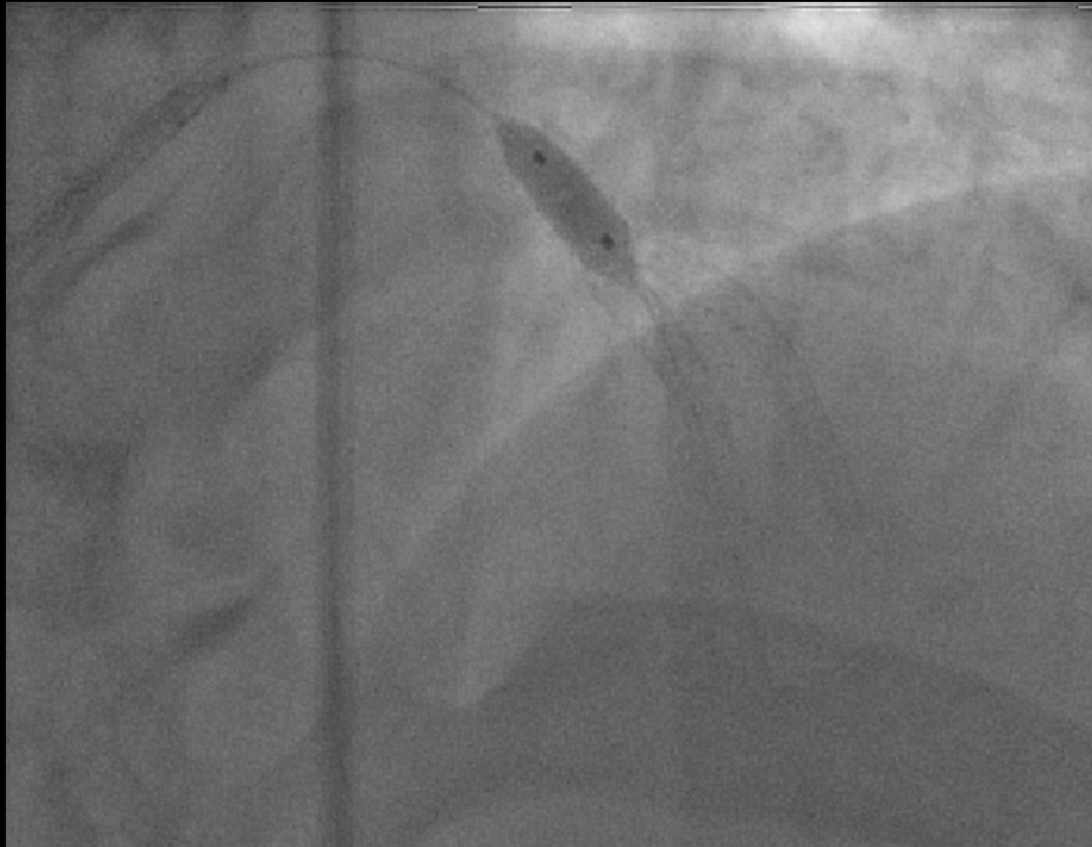
*Kissing balloon*  
*3.0 & 2.5 mm at 14 atm*



*Final Proximal optimization*  
*3.5mm at 16 atm*

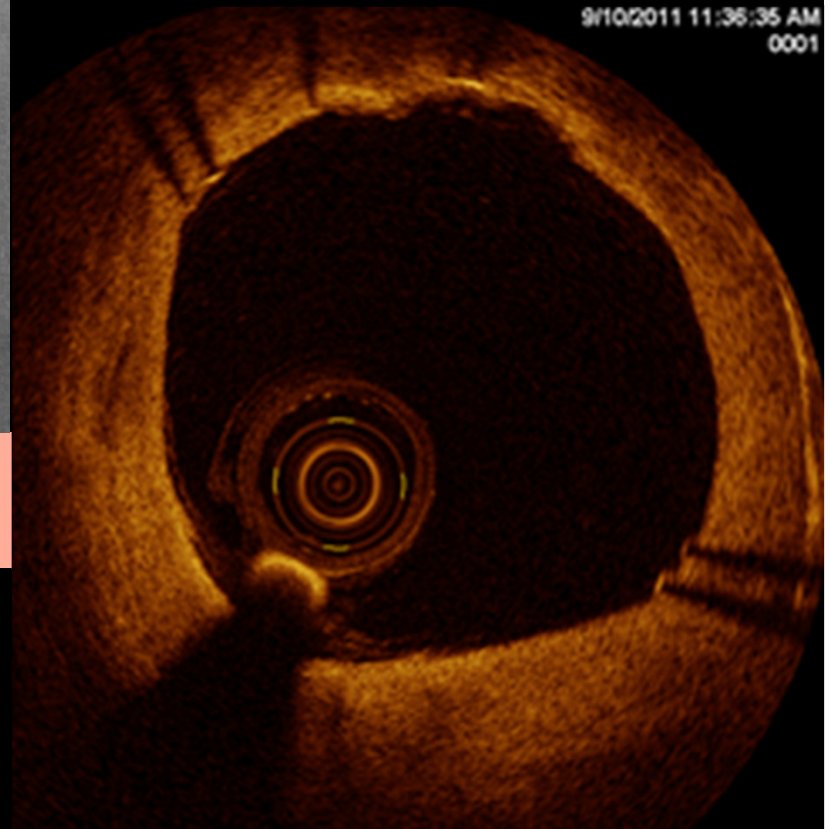


# Further Proximal Optimization



*Diameter 4 mm  
Area 14.1 mm<sup>2</sup>*

*Post-dilatation with  
4.0 mm at 10 atm*





## **Do Biodegradable ABSORB Stents Offer the Same Acute Results of Second Generation Metallic Stents in Complex Lesions? Insight from 100 Matched OCT Studies**

Alessio Mattesini<sup>1,3</sup>, Gioel G Secco<sup>1,4,5</sup>, Gianni Dall'Ara<sup>1</sup>, Matteo Ghione<sup>1</sup>, Juan C Rama-Merchan<sup>1</sup>, Alessandro Lupi<sup>4</sup>, Nicola Viceconte<sup>1</sup>, Alistair C Lindsay<sup>1</sup>, Ranil De Silva<sup>1</sup>, Nicolas Foin<sup>1</sup>, Toru Naganuma<sup>2</sup>, Serafina Valente<sup>3</sup>, Antonio Colombo<sup>2</sup>, Carlo Di Mario<sup>1</sup>

### **Population:**

50 lesions treated with BVS under OCT guidance at the Royal Brompton and Columbus Hospital were prospectively enrolled in the BVS-group.

50 matched lesions treated with 2<sup>nd</sup> generation DES with a final OCT were selected from the Royal Brompton, San Salvatore and Careggi Hospital OCT databases

### **Lesion inclusion criteria ( $\geq 1$ for selection):**

- Lesion length > 28 mm
- Bifurcation and/or ostial involvement
- Moderate to severe calcification
- Chronic total occlusion
- In stent restenosis

### **OCT parameters evaluated:**

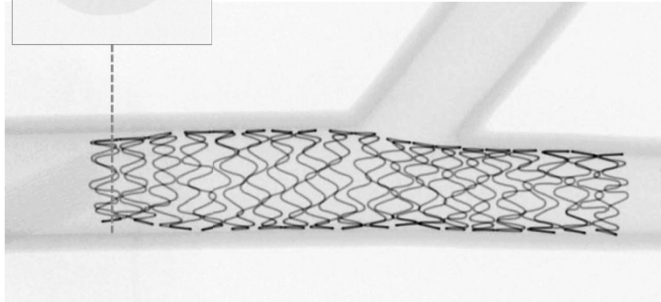
- Minimal and mean lumen area
- Residual Area Stenosis
- Incomplete strut apposition
- Prolapse area
- Eccentricity and Symmetry index
- Edge dissection
- Strut fracture



# OCT analysis results: Malapposition Analysis

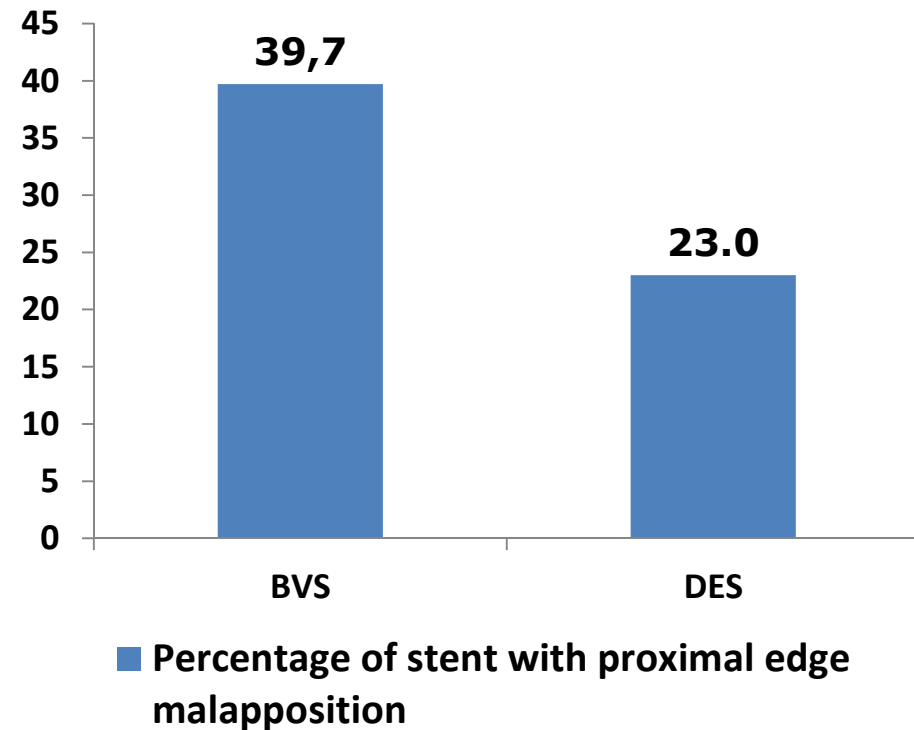
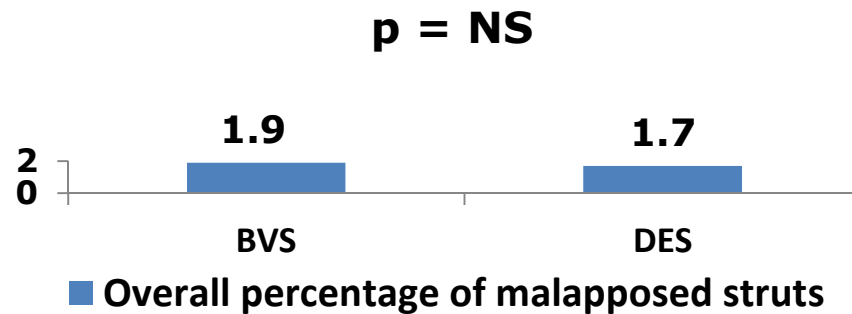


3.0 x 18mm stent with 3.5 x 8 mm NC proximal post-dil



➤ risk of incomplete stent apposition at the proximal stent edge in both DES and BVS

**p = 0.05**



Overall n. stent analyzed **124**, BVS **63**, DES **61**

# Summary

- 1. distal reference stent sizing = proximal underexpansion of the stent > POT needed to complete stent expansion**
- 2. POT facilitate optimal mid-distal SB recrossing**
- 3. OCT guidance is useful for stent sizing and assessment of strut apposition**
- 4. BVS sizing in bifurcation ? Proximal or distal ref ?**

Thank you !



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