

How Bench Testing has Aided Optimization of Bifurcation PCI

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10.38-10.46
8mins

Disclosure Statement of Financial Interest

John Ormiston has a potential conflict of interest

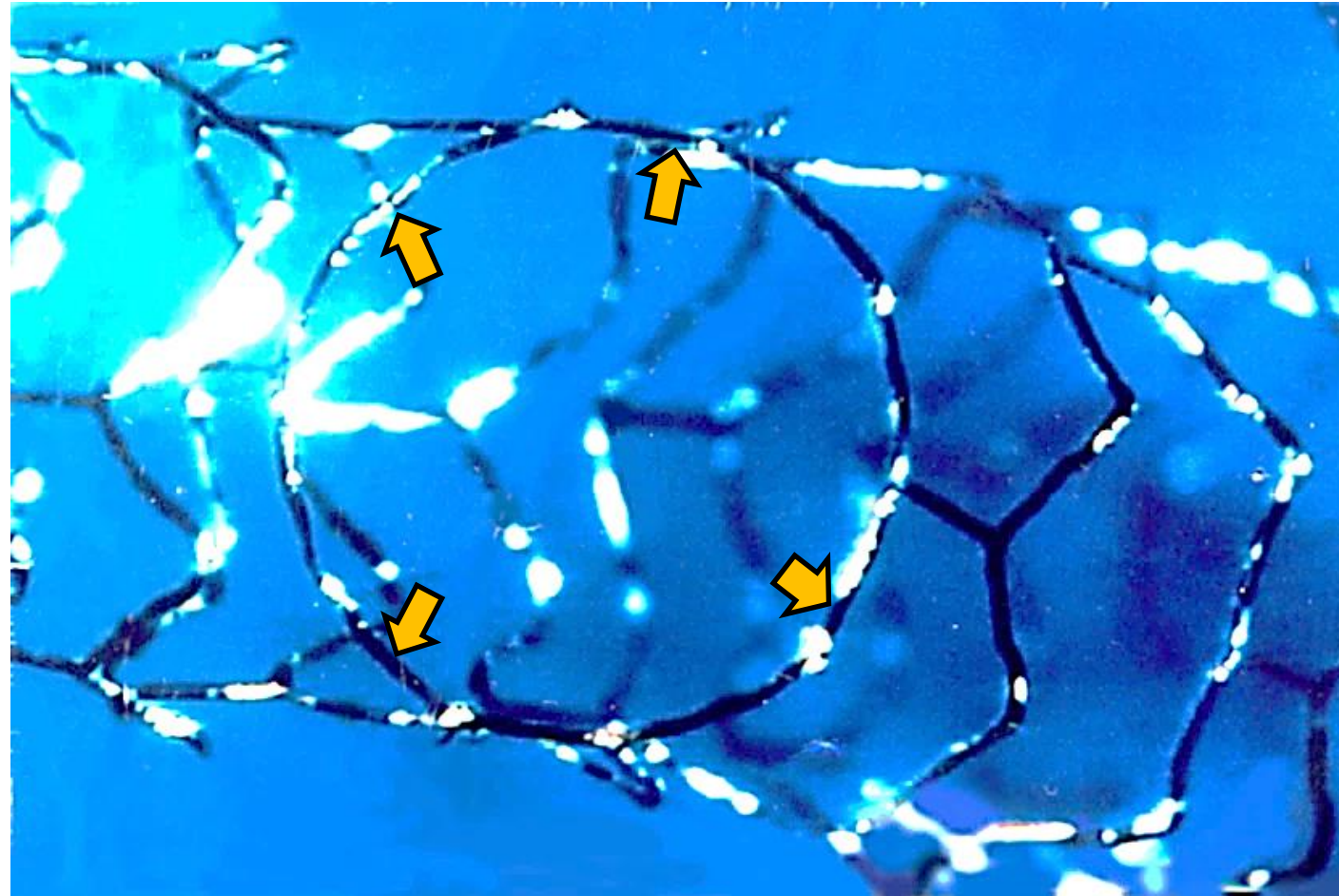
Advisory board and minor honoraria Boston Scientific

I will focus on
the Provisional Strategy

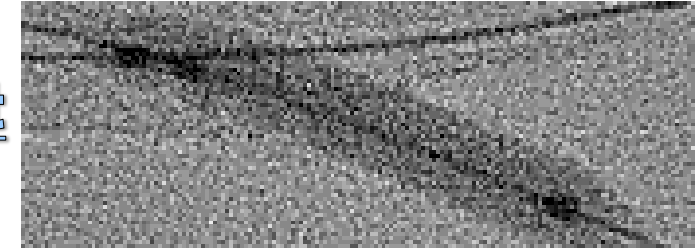
-optimal deployment and post-
dilatation
of a
single stent in a bifurcation

I became interested in bench testing in 1994

A manufacturer provided this photograph showing a round ostium without distortion following side-dilatation



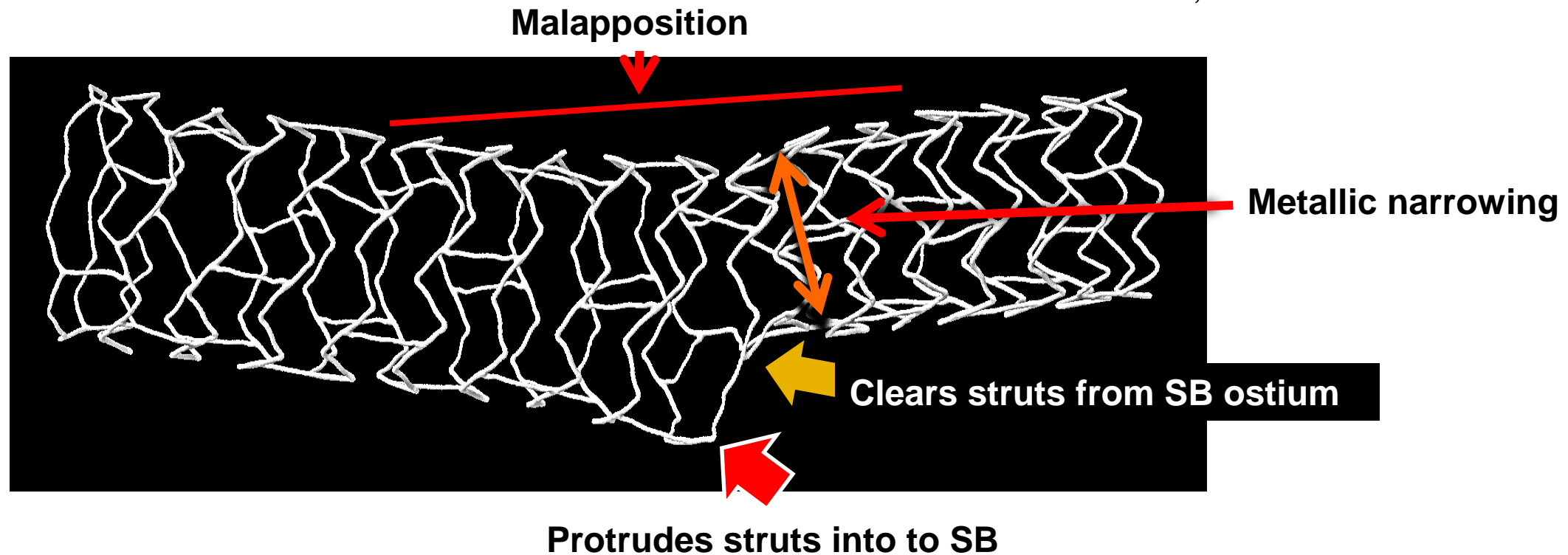
To our surprise when we dilated through the side of stents we showed (for the first time) that there was distortion



We will come back to correction of distortion

Ormiston J Am Coll Cardiol 1998;31:18A.

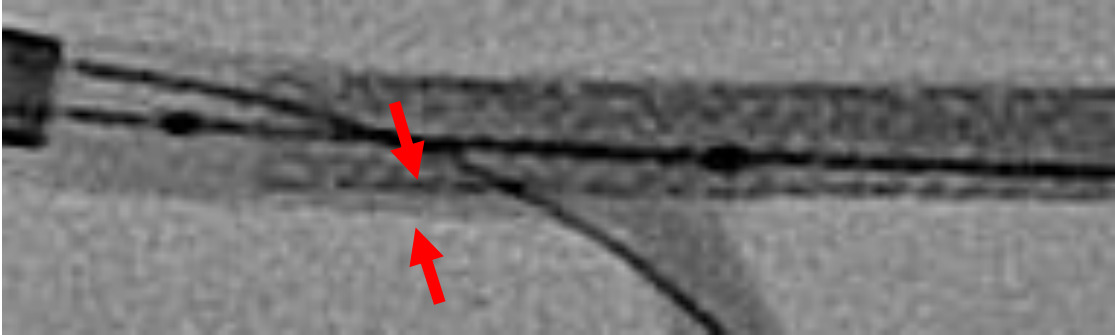
Ormiston. Cathet Cardiovasc Interv 1999;47:258



Steps of a provisional bifurcation strategy

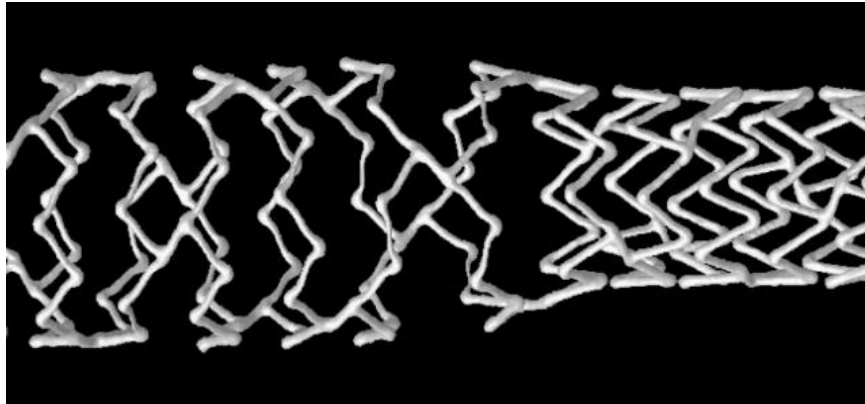
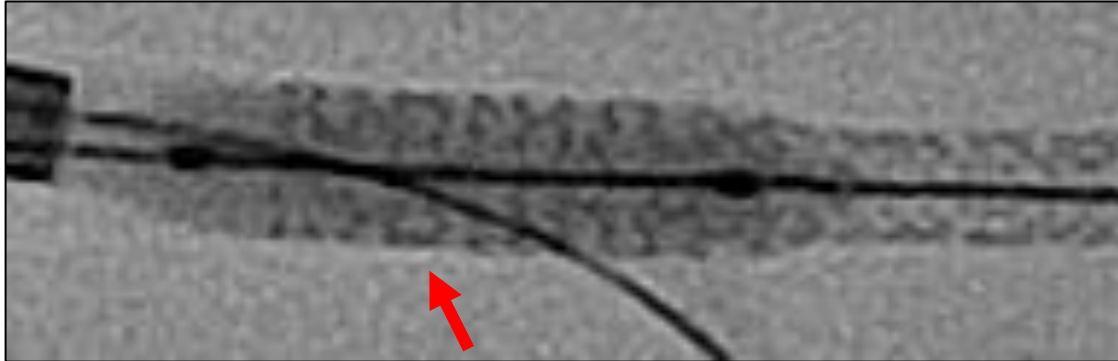
1. Place a wire in MB and in SB

2. Deploy single stent sized to the distal MV across SB



The stent in the proximal main vessel is mal-apposed

3. First POT. Short post-dilating balloon sized to the proximal MV is advanced up to the carina and inflated

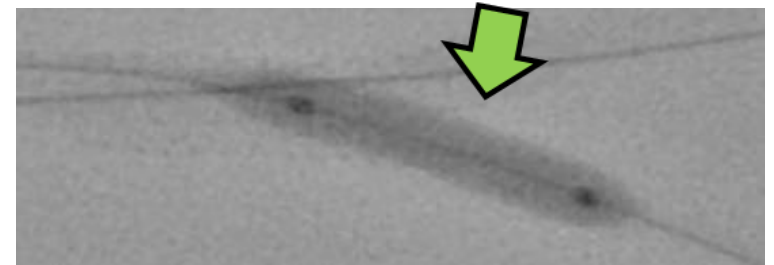
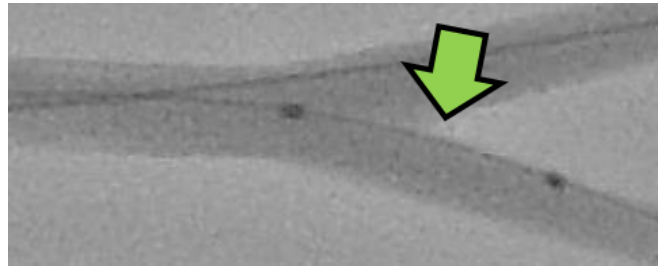
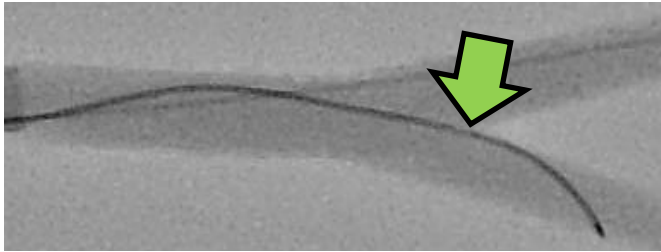


After POT the stent in the proximal vessel is no longer mal-apposed

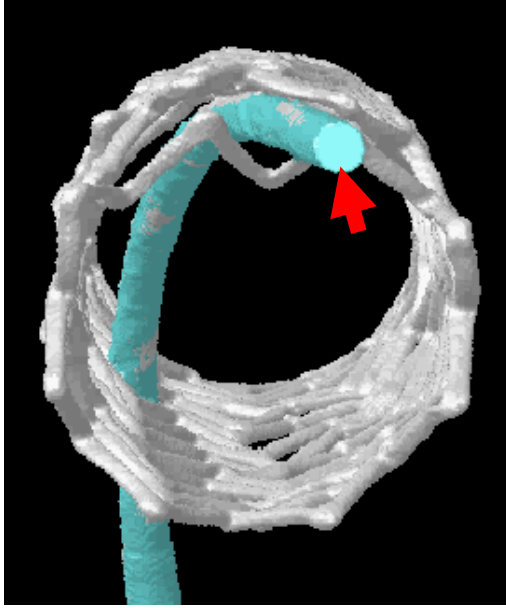
In addition, POT facilitates distal wire crossing from the stent lumen to the SB

With good stent apposition, wire passage outside the stent is less likely

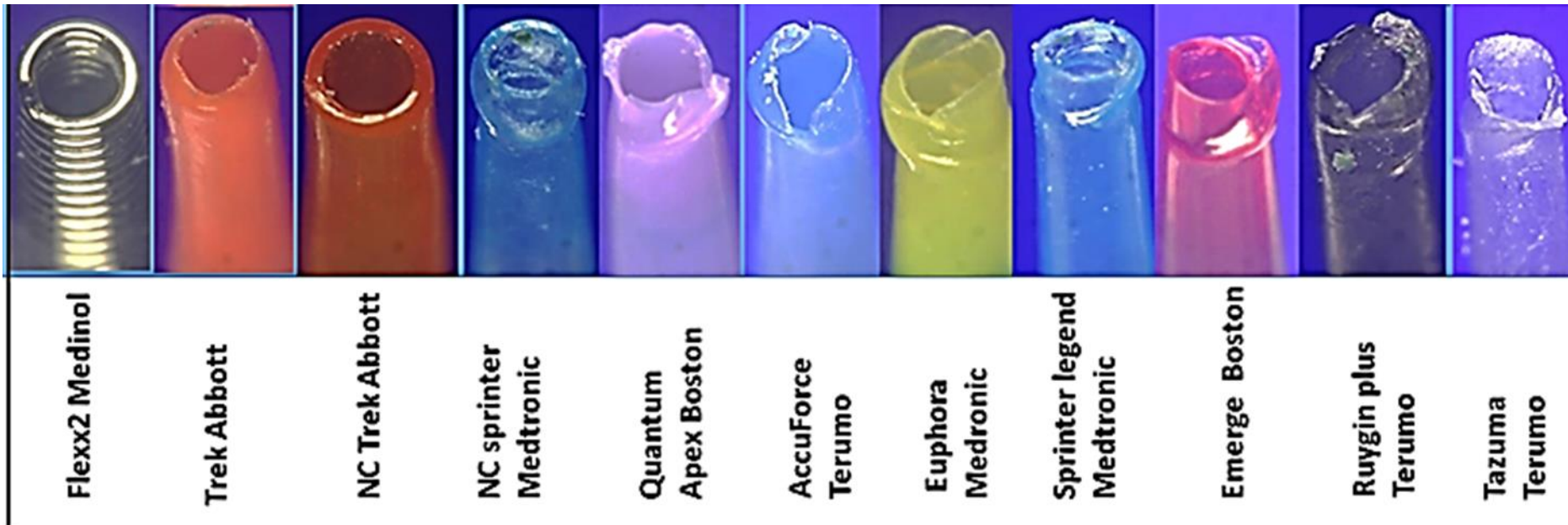
4. The side-branch is dilatated ideally after distal wire cross cross (checked by OCT)



Why does a balloon sometimes fail to cross to the SB

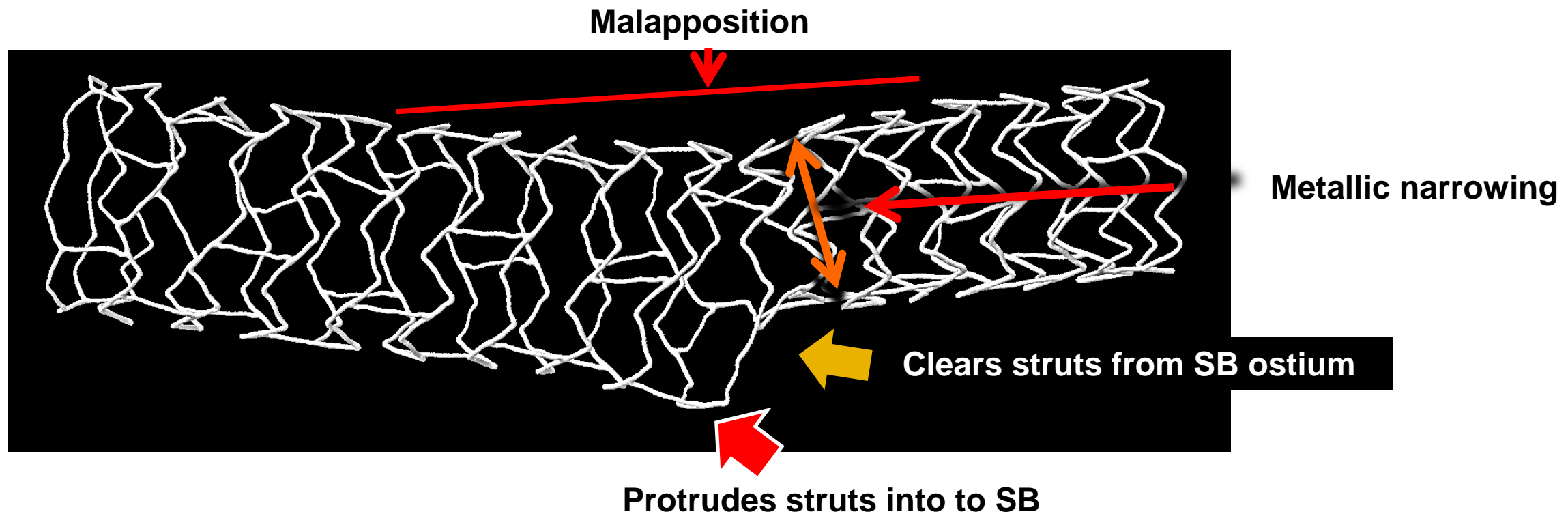


- abluminal wire passage (rewire)
- Catheter tip damage which is common (Change balloon)



Barkholt , Ormiston ,
Cath Cardio Int 2017

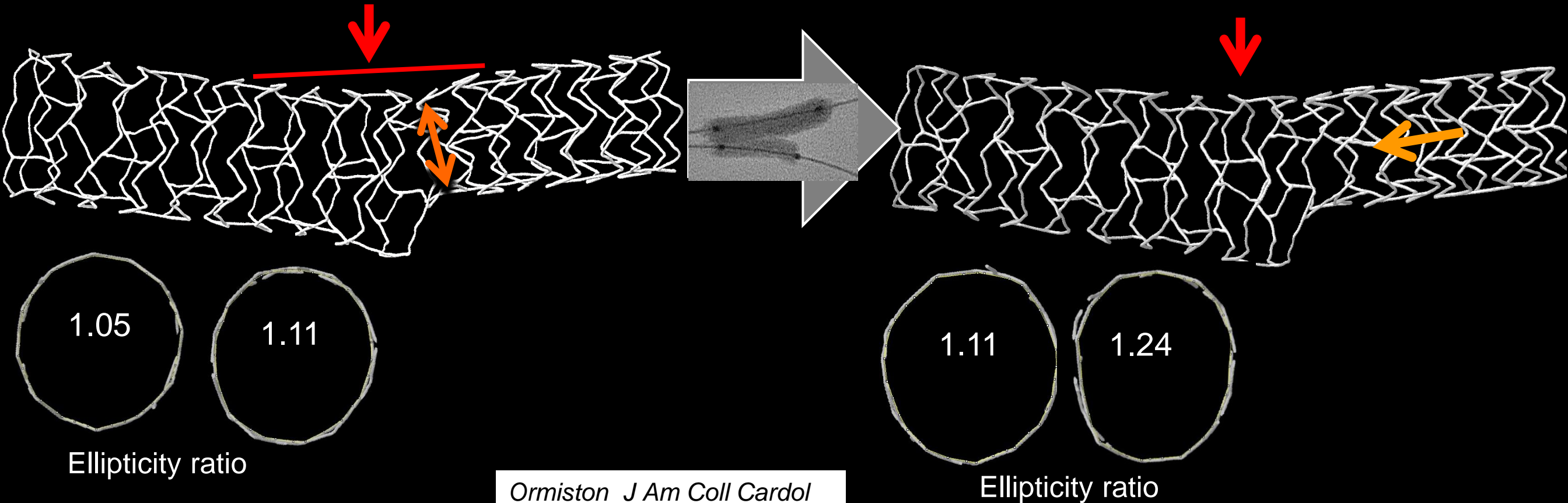
4. Side-branch is dilatation after distal wire cross causes stent distortion



5. Kissing balloon post-dilatation

Corrects malapposition and metal narrowing without altering SB ostial size or strut protrusion to SB

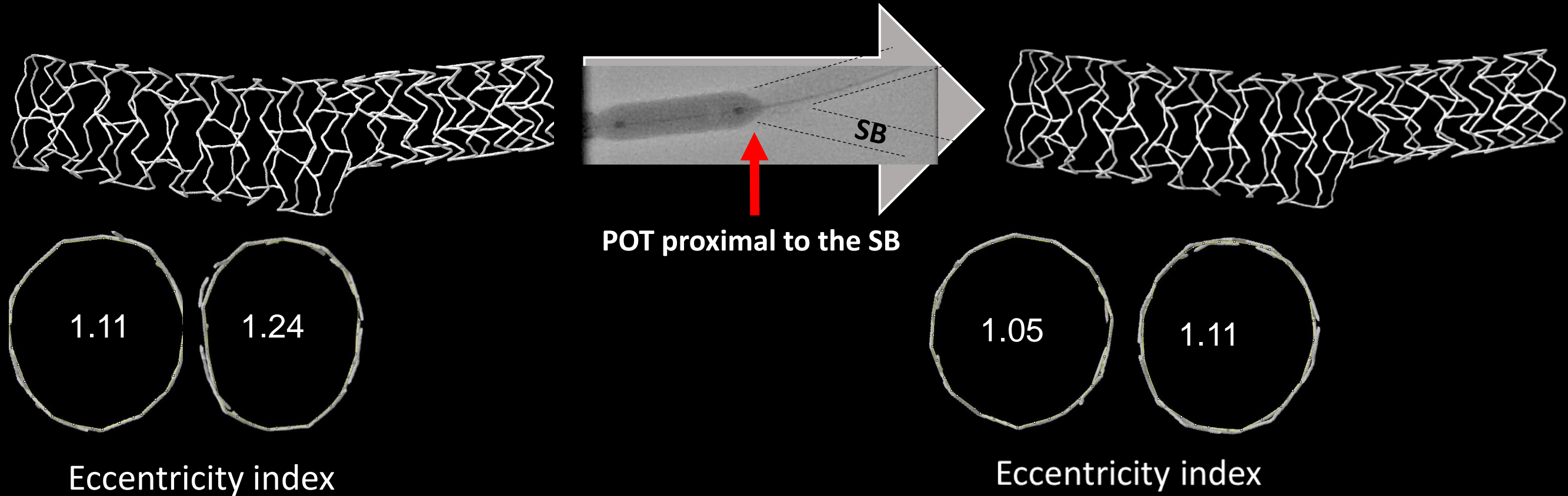
But causes eccentricity of the proximal stent



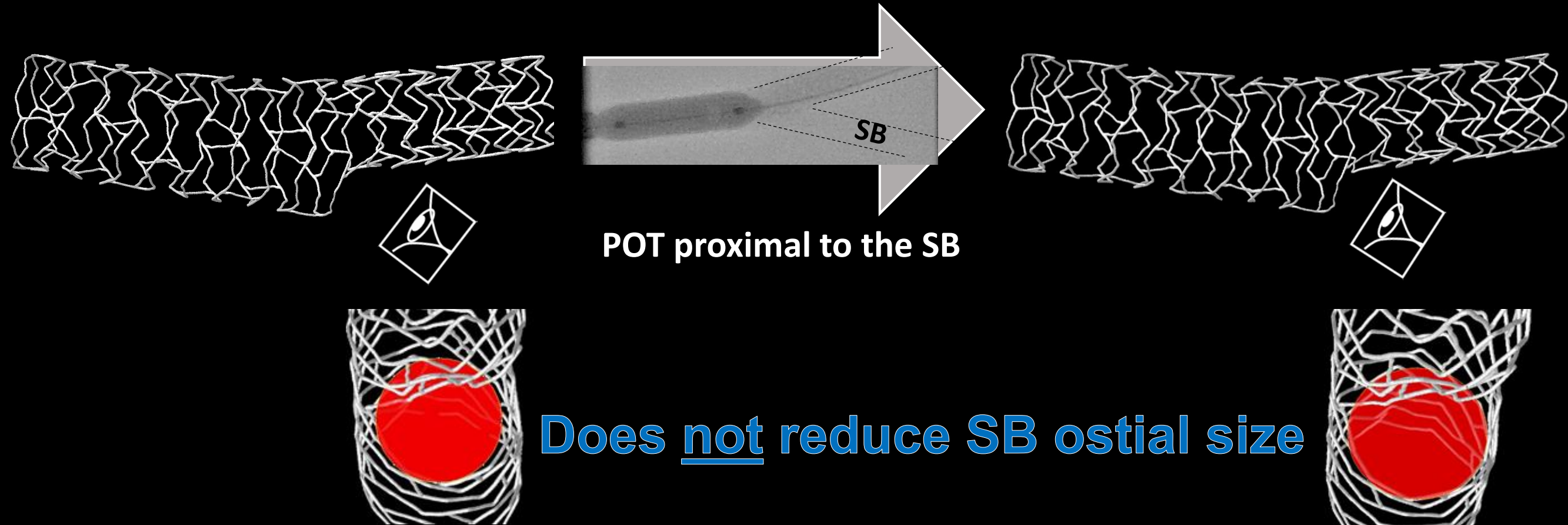
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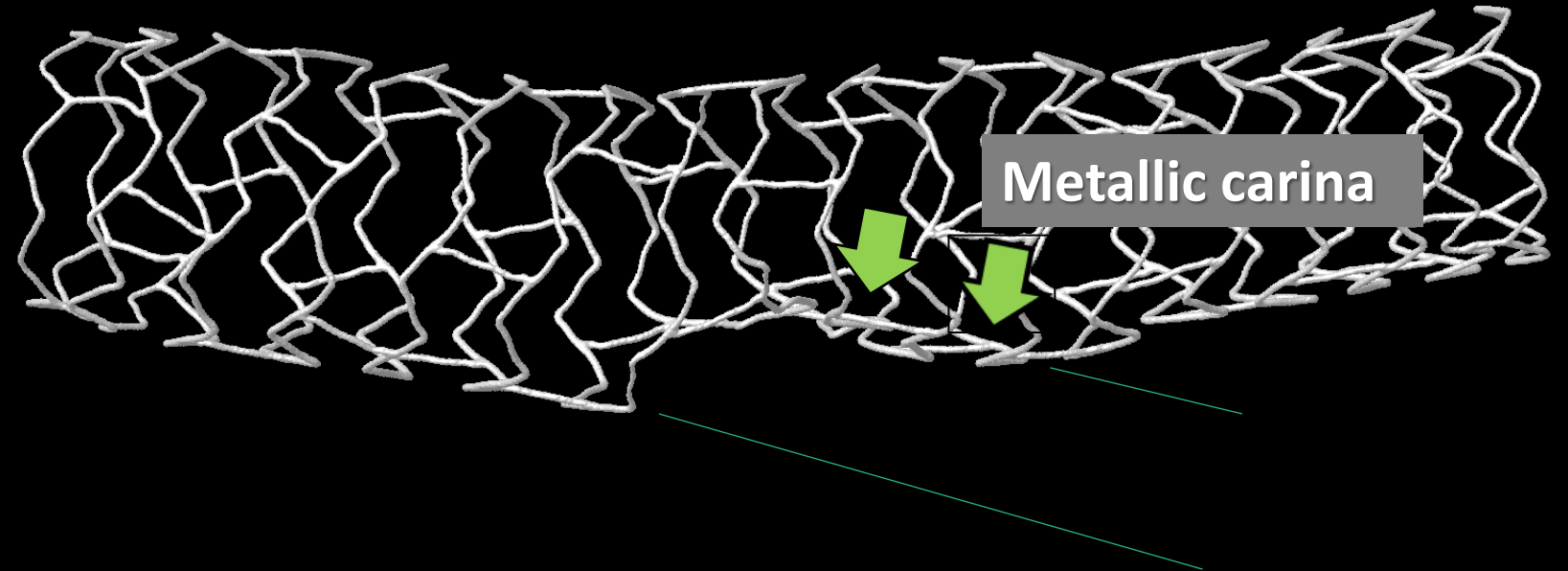
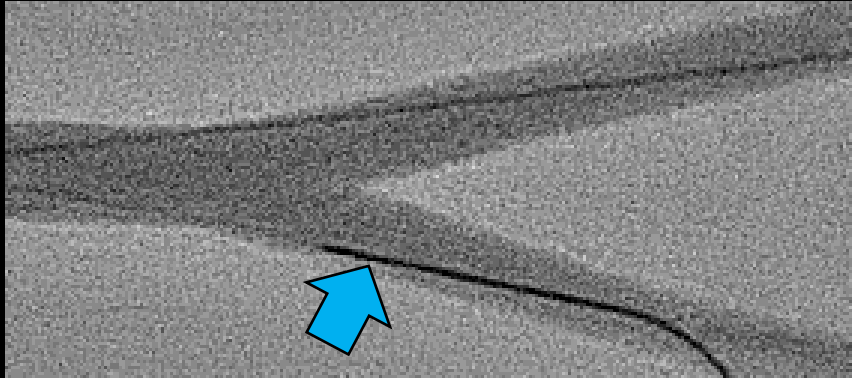
Proximal POT after KBPD restores proximal stent circularity



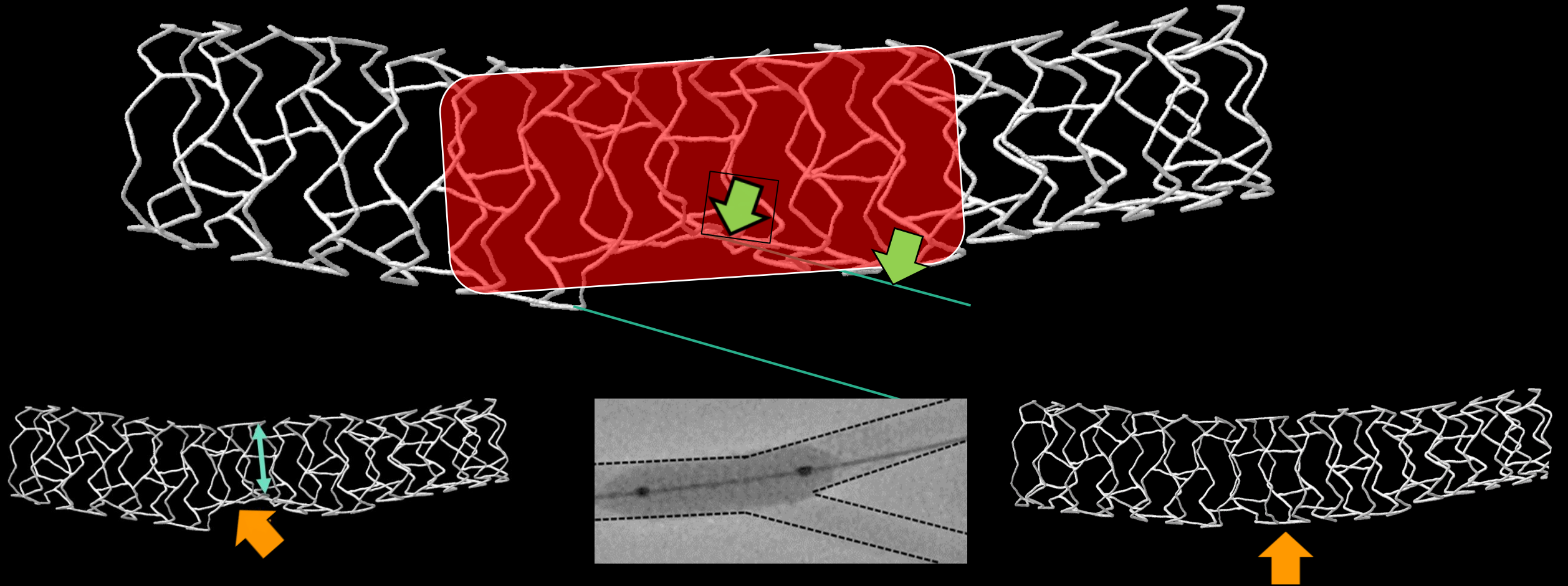
Proximal Final POT after KBPD



If the wire crosses proximally, SB balloon dilatation causes a metallic carina



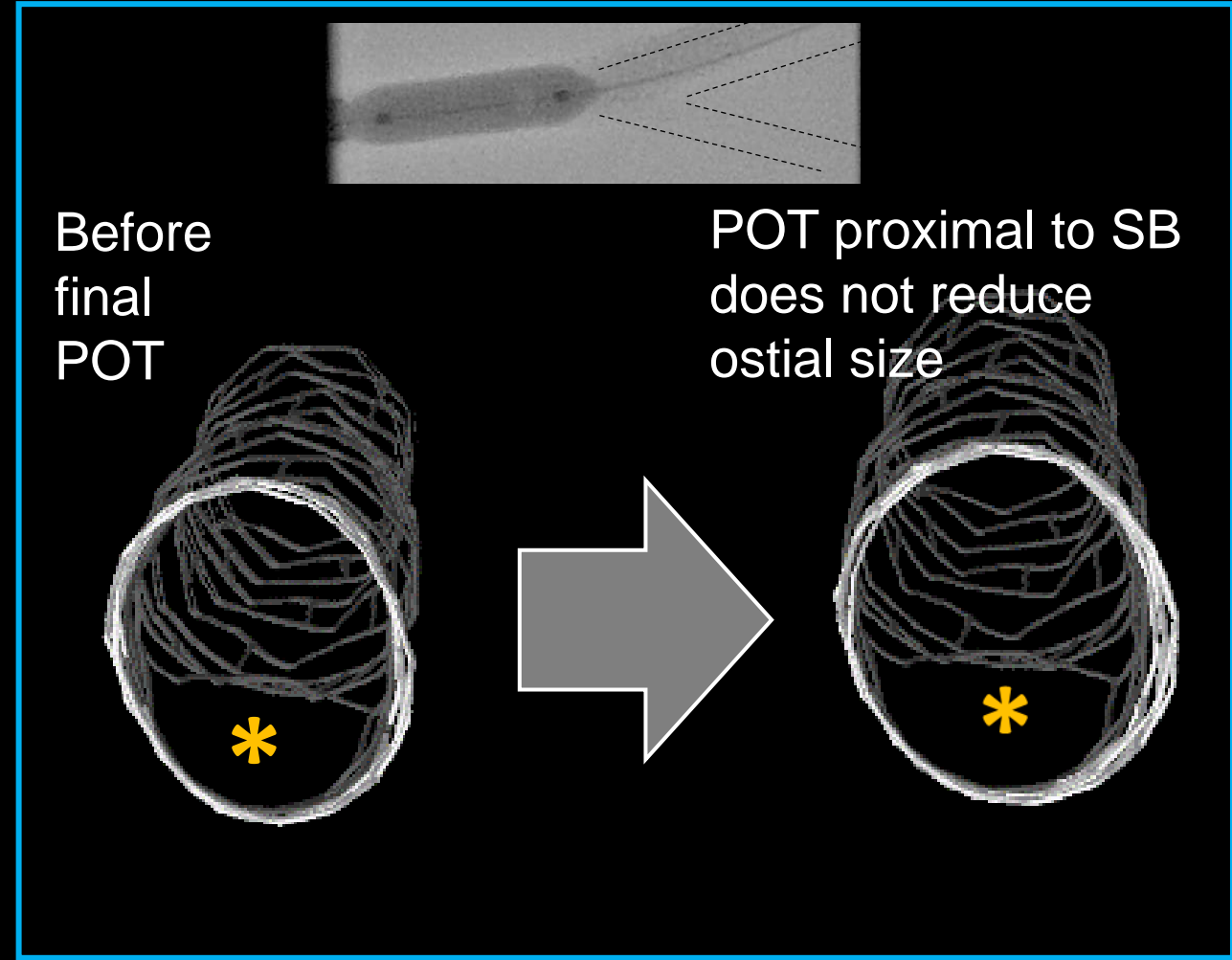
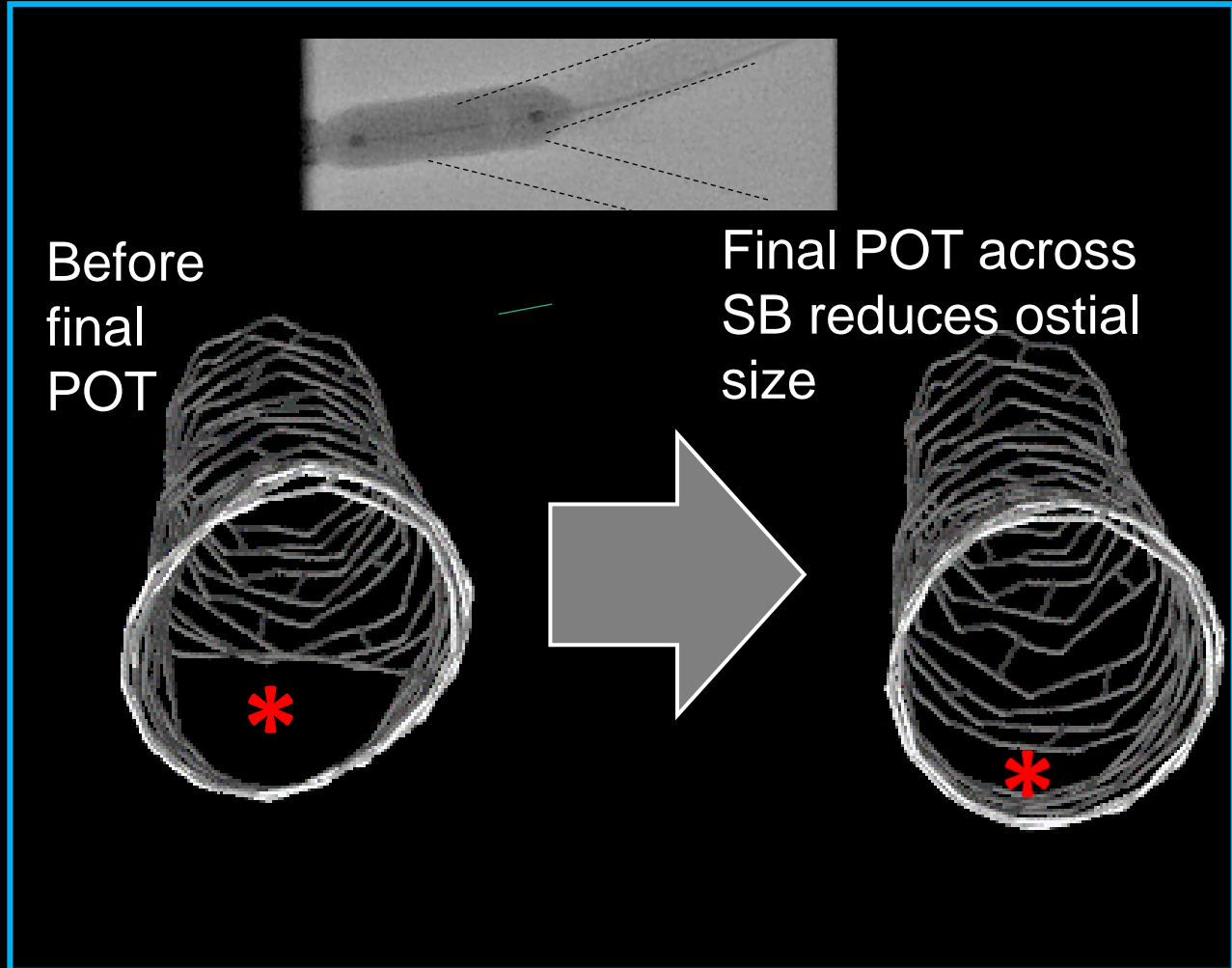
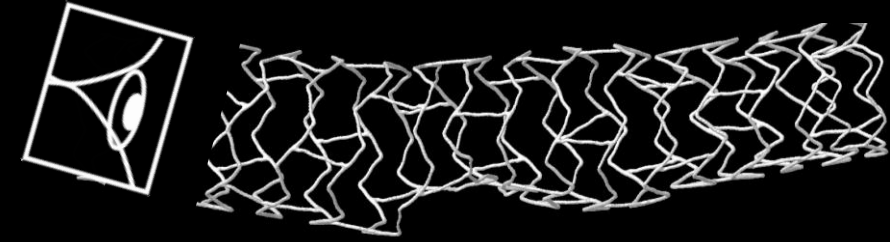
After proximal cross and metallic carina formation, POT across the SB  pushes the metallic carina and reduces the SB stent ostial size



After provisional stenting with proximal re-wiring and SB dilatation

Final POT across SB reduces SB ostial size *

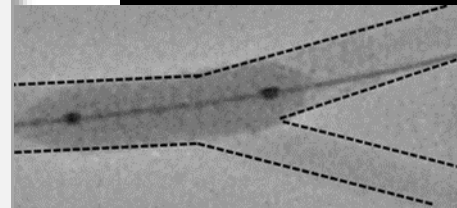
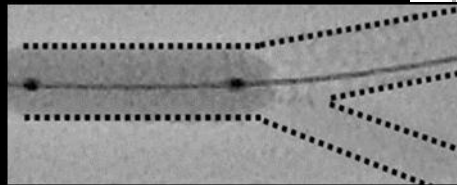
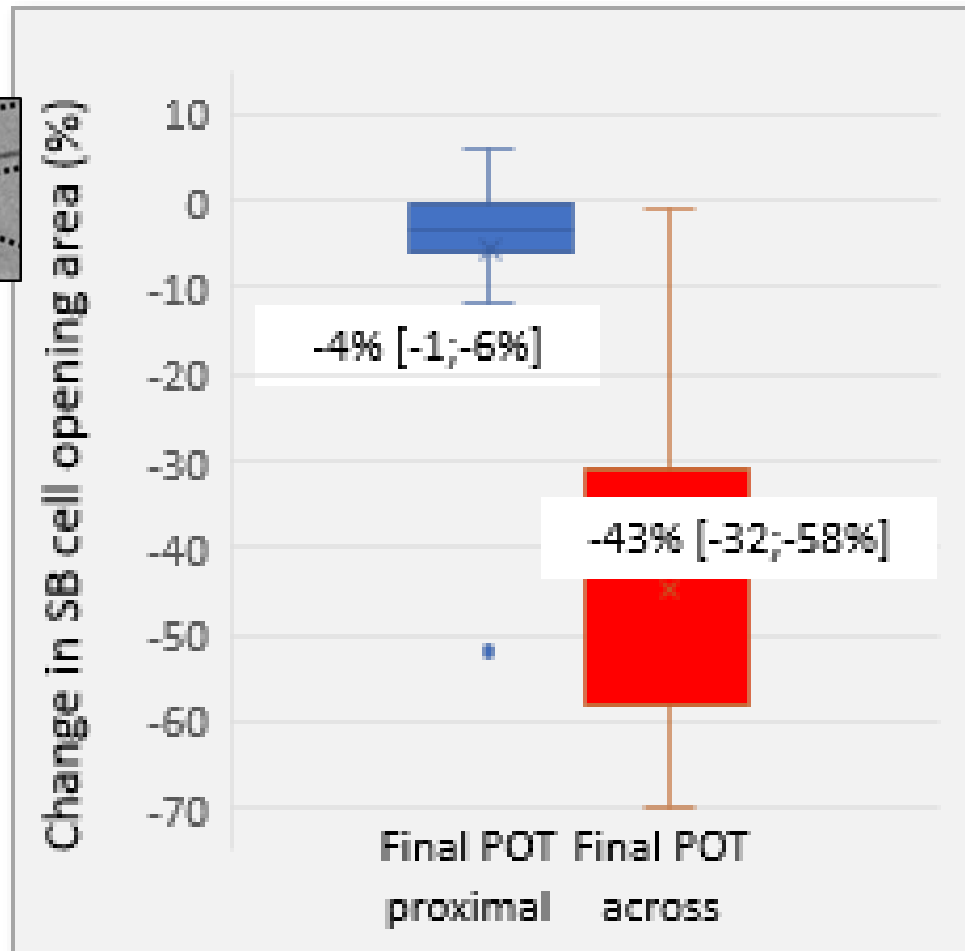
Final POT proximal to the SB retains SB ostial size *



Final POT across the SB causes the SB ostium to narrow

Lene Nyhus Andreassen

D: Pooled final POT analysis



Conclusions

For provisional stenting, the optimal post-dilatation strategy is KBPD followed by final POT proximal to the side-branch

Final POT across the SB causes reduction in SB ostial area

Ideally wire crossing to the SB should be distally close to the carina (can be checked by OCT)