

# How to Optimize 2-stent Deployment with 3-D OCT in Bifurcation Lesions

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# Conflict of Interest

- I, Yoshinobu Murasato, do not have any conflict of interest.

# The relation between the place of GW cross and stent deformation after KBT

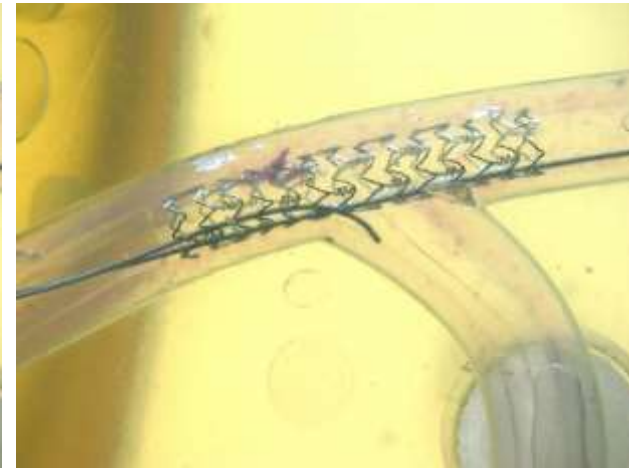
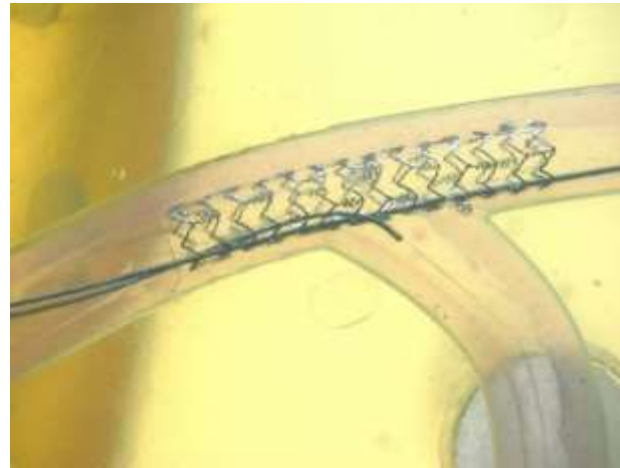
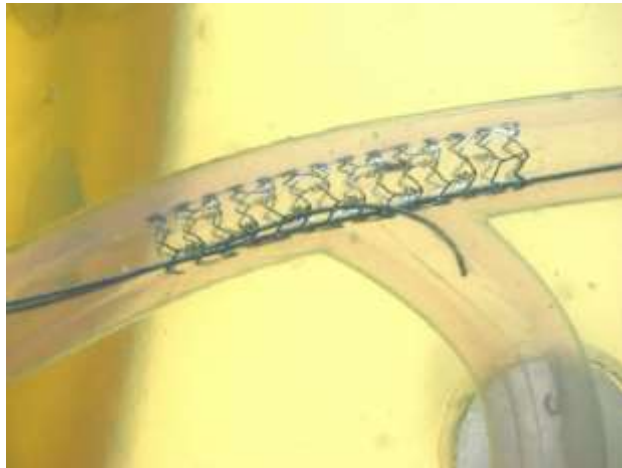
Murasato Y, Colombo A, Moussa I

“Tips and Tricks in Interventional Therapy of Coronary Bifurcation Lesions

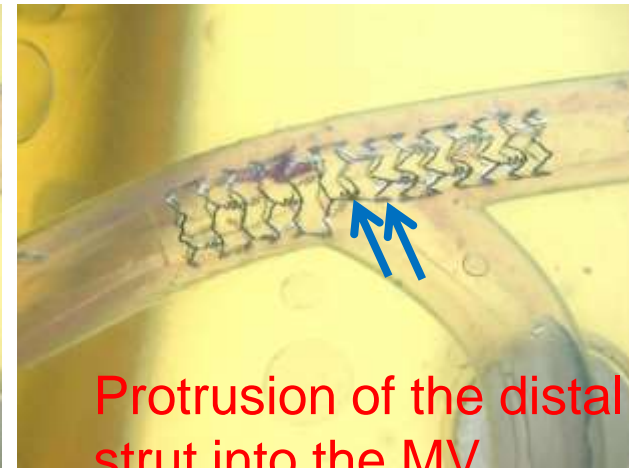
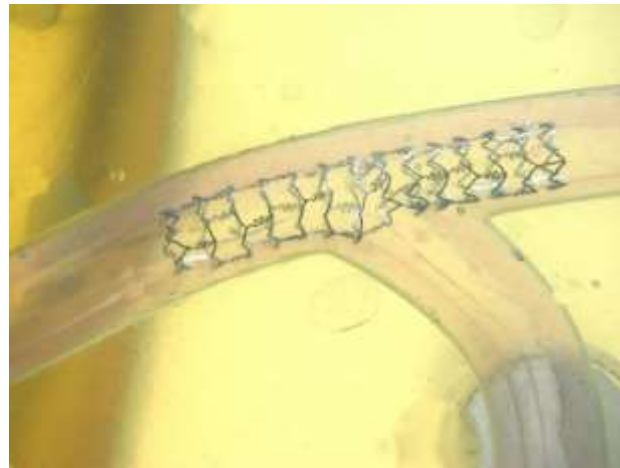
Distal strut

Mid strut

Proximal strut



Scaffolding at the SB ostium



Protrusion of the distal strut into the MV

# 3D-OCT Bifurcation Registry



## Design

Multicenter prospective non-randomised observational study from 10 Japanese Centers

## Aim

To investigate the effect of the detection of guide wire (GW) recrossing point to the SB using 2D/3D OCT on the bifurcation stenting

## Objective

168 bifurcation lesions in 167 patients who underwent bifurcation stenting under the guidance of OCT

## Period

2014/06/01~2015/12/31

## P.I.

Junya Shite & Takayuki Okamura  
(Saiseikai Nakatsu Hp) (Yamaguchi Univ)

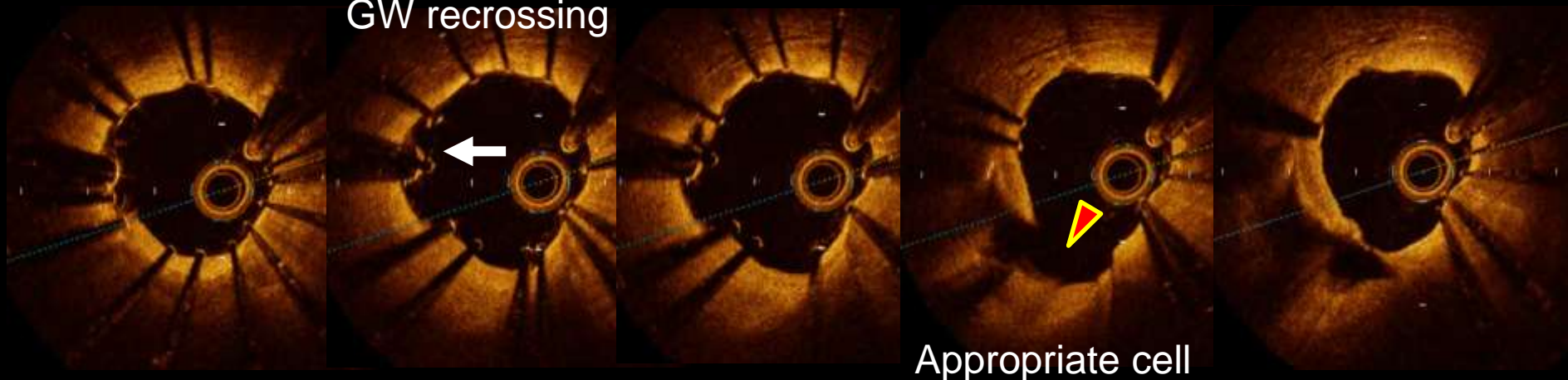
## Stent enhanced 3D OCT



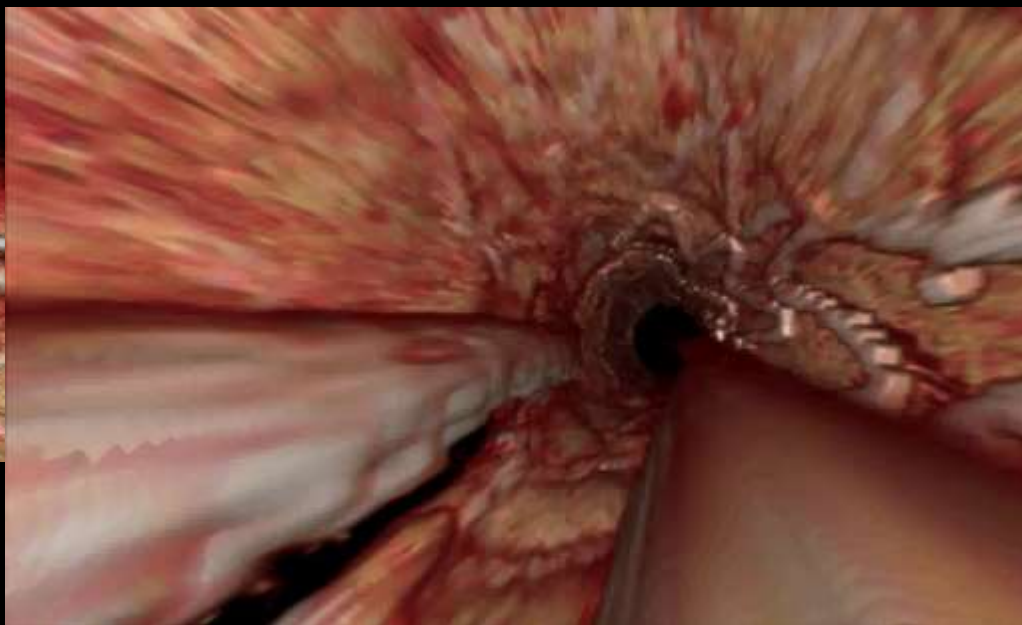
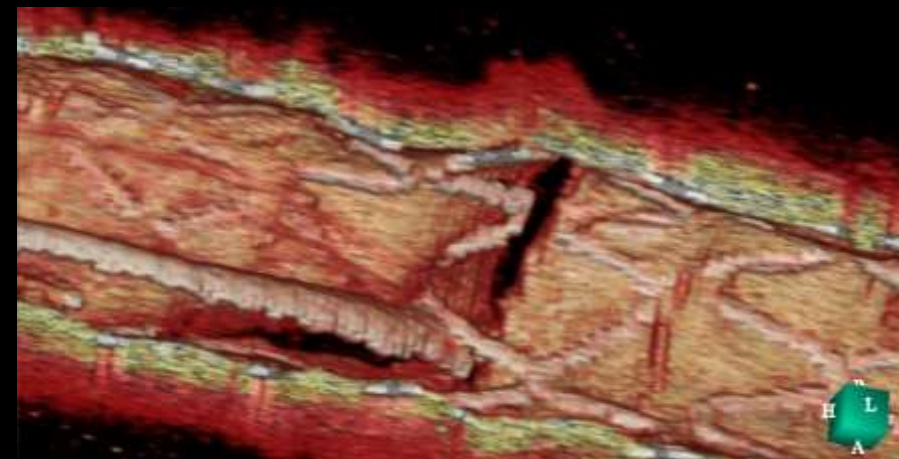
Okamura et.al EuroIntervention 2014

## 2D OCT on site

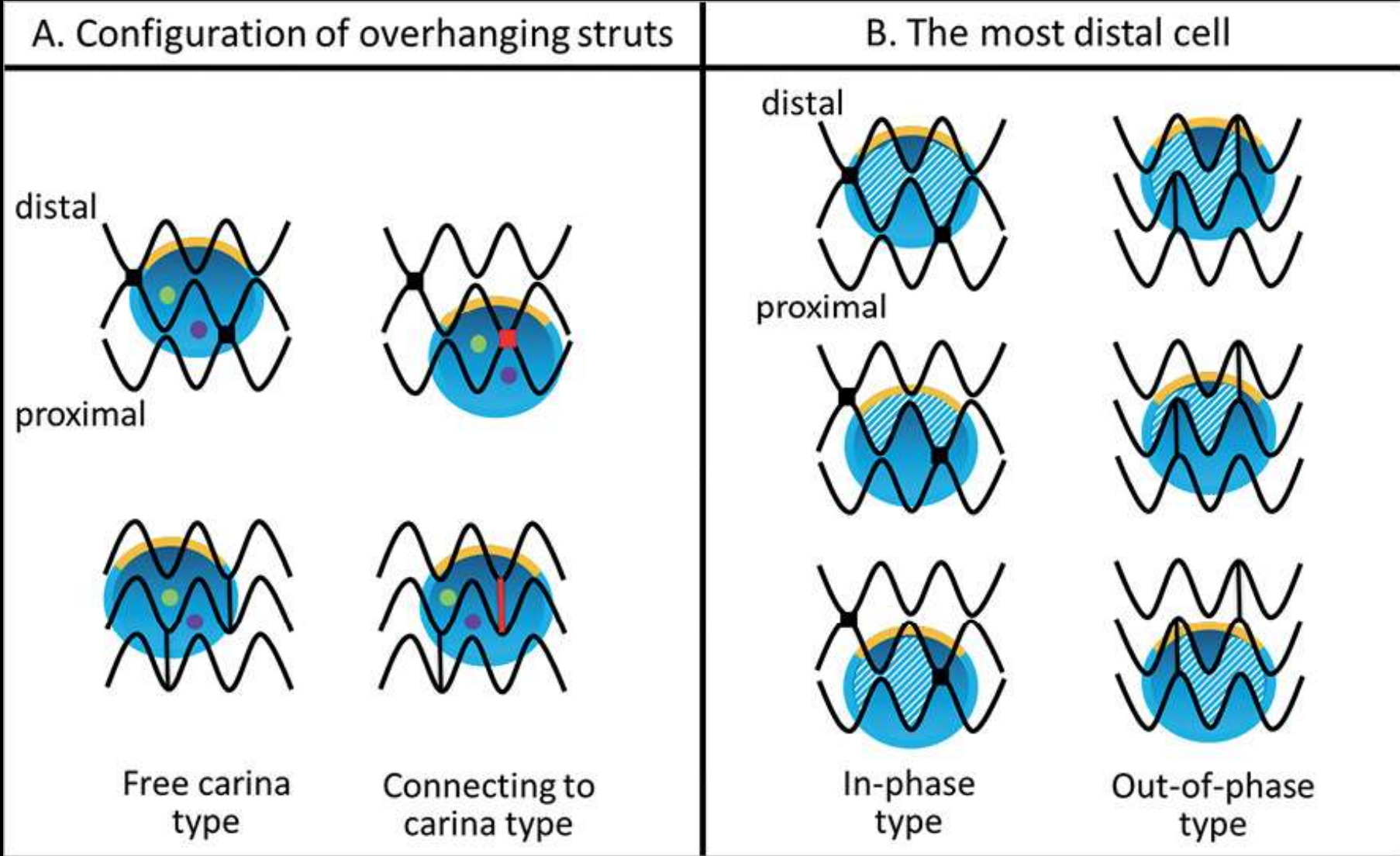
GW recrossing



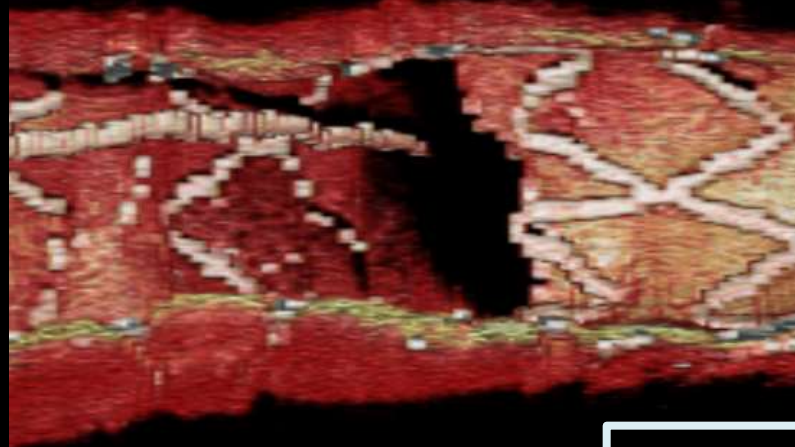
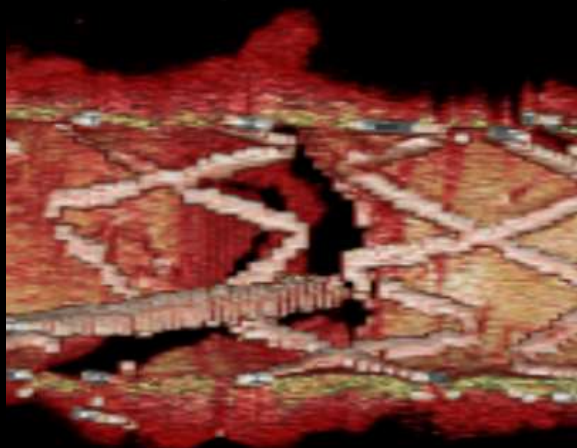
## 3D OCT reconstructed in core laboratory



# Pattern of link-connection and GW crossing point

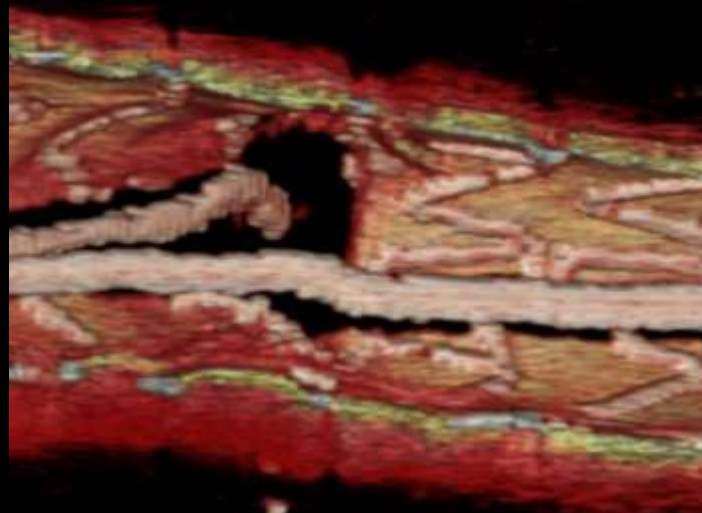
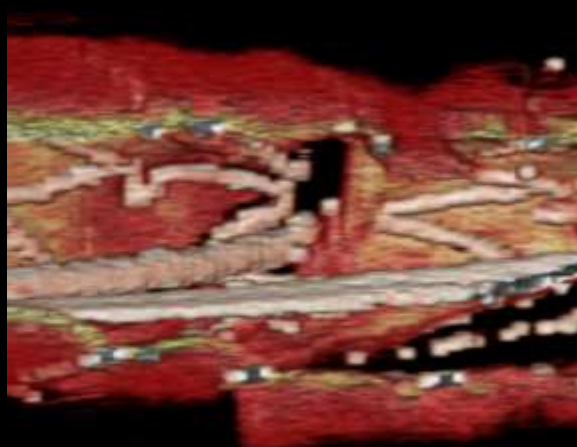


# Free Carina type

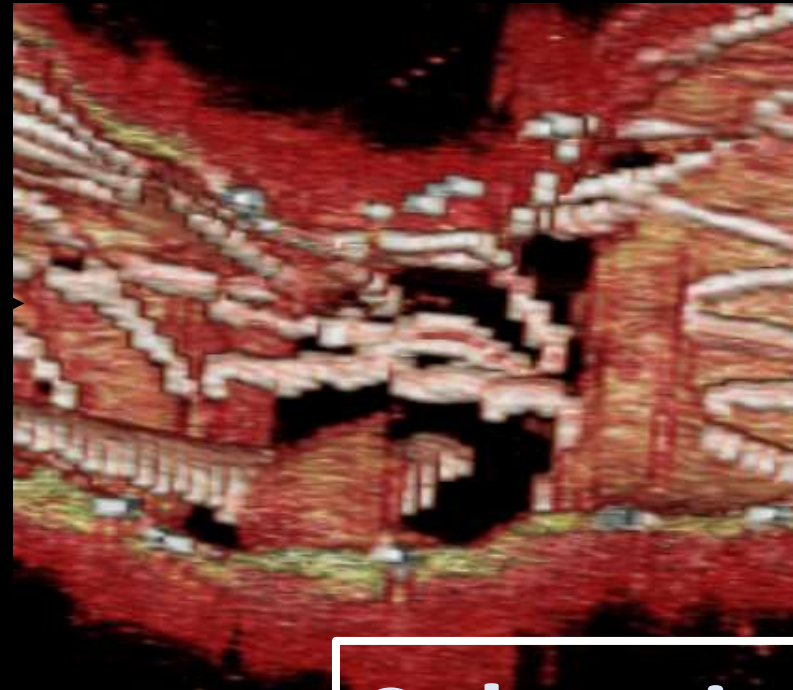
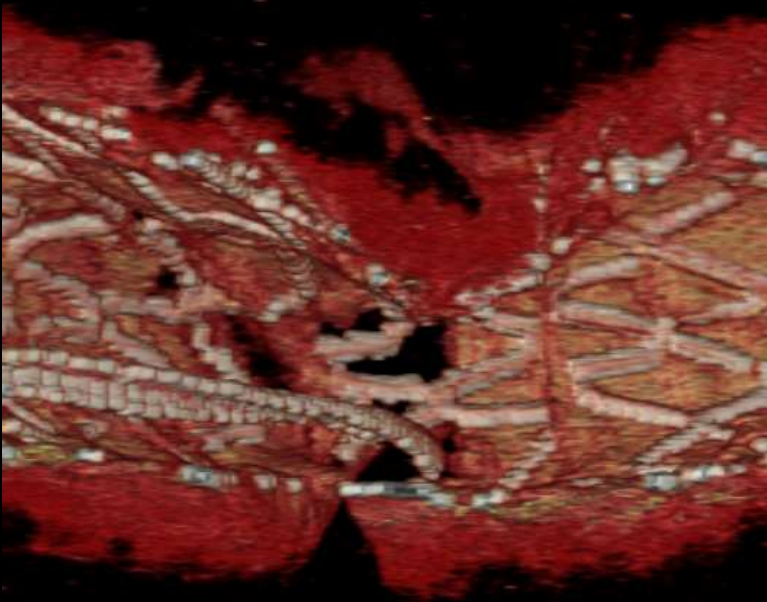


GW recrossing in the optimal distal cell of the free carina type leads to wide opening of the SB without remained jailed struts.

**Optimal**



# Connecting to carina type



**Suboptimal**

Once the link-connection locates closed to carina, it is difficult to remove the jailed struts by KBI.

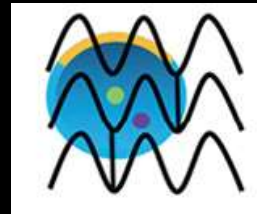


# OCT guidance for optimal GW recross

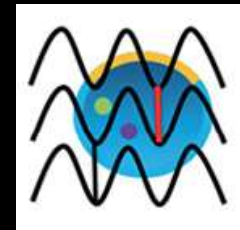
## Distal GW recross

- Angio-guide: 67%  
*Alegria-Barrero E et al. EuroIntervention 2012;8:205-213*
- OCT guide: 84%  
2D: 76%  
3D: 91%
- Link-connecting to carina type decreased optimal GW recross.  
*Nagoshi R, Okamura T, Murasato Y, Shite J et al. Int J Cardiol, 2017*

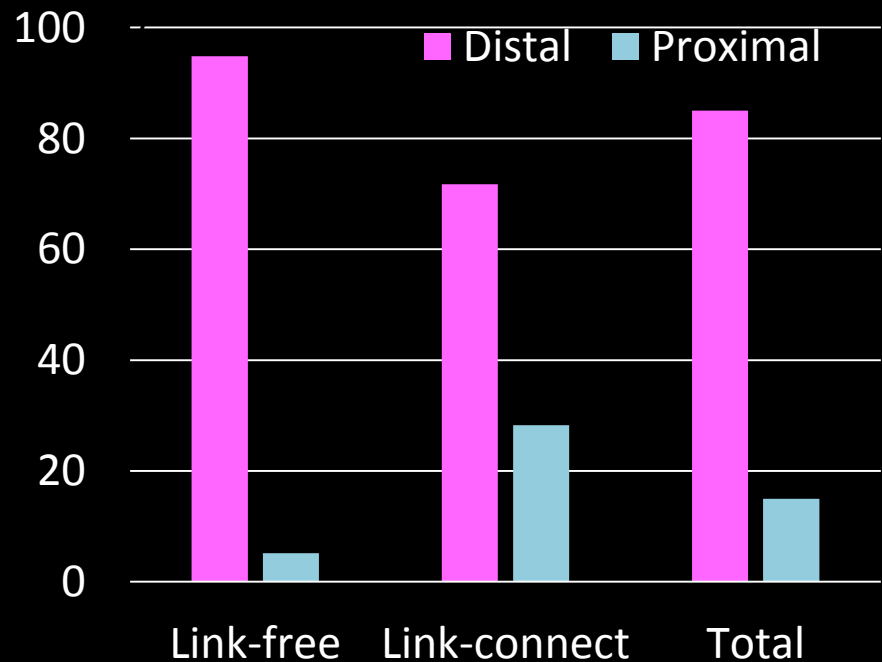
Link-free type



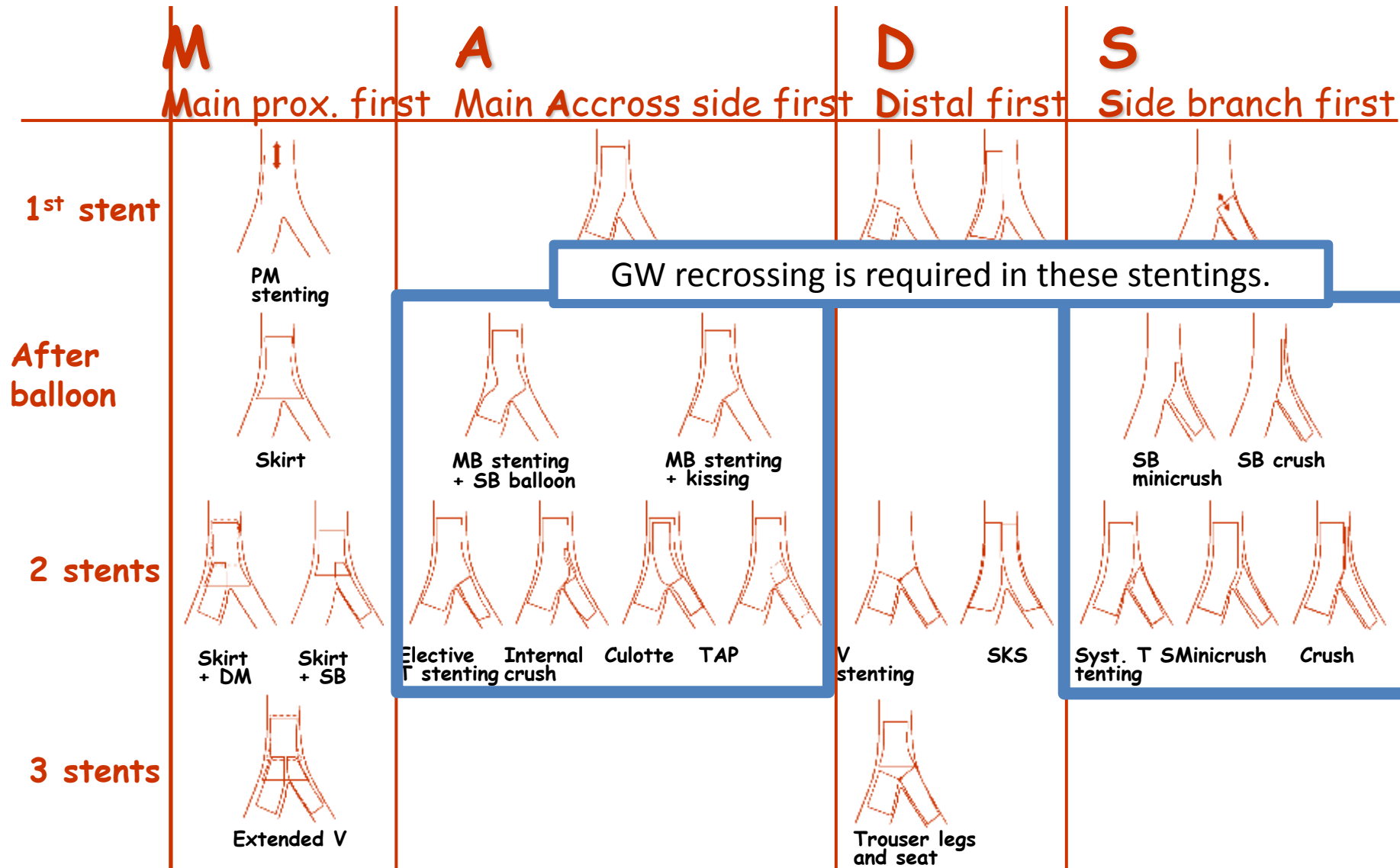
Link-connecting type



Distribution of GW recrossing point

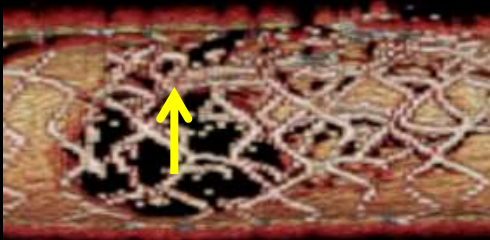


# Various bifurcation stenting techniques



# Crush stenting: GW recross, middle or distal?

GWR into the middle cell



MV pull back

Remaining metallic carina



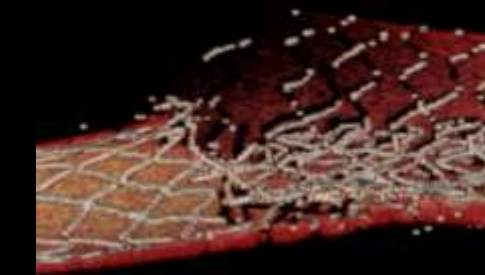
SB pull back



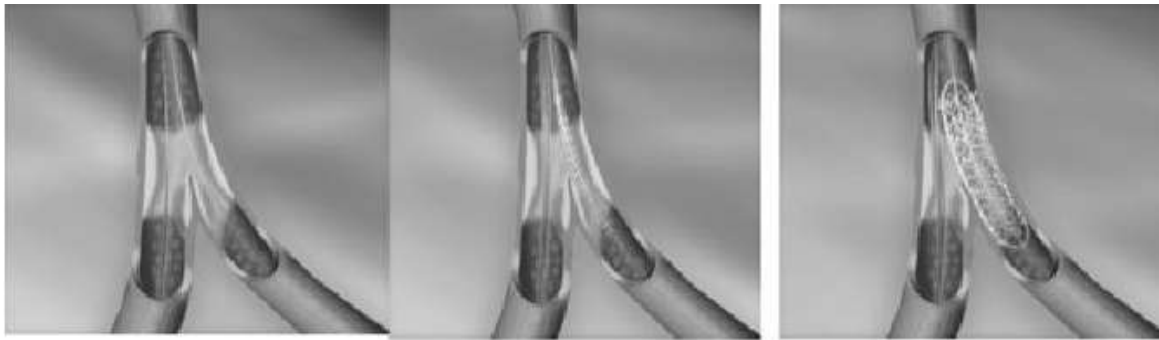
View from prox  
MV

Centralized

GWR into the distal cell



# DK crush stenting



A

B

C



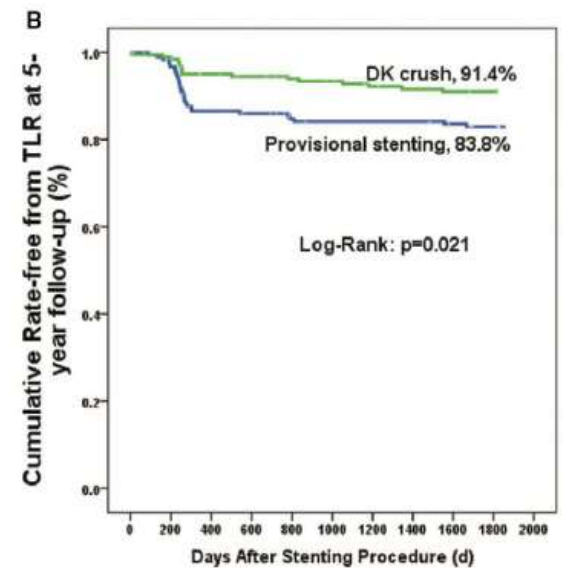
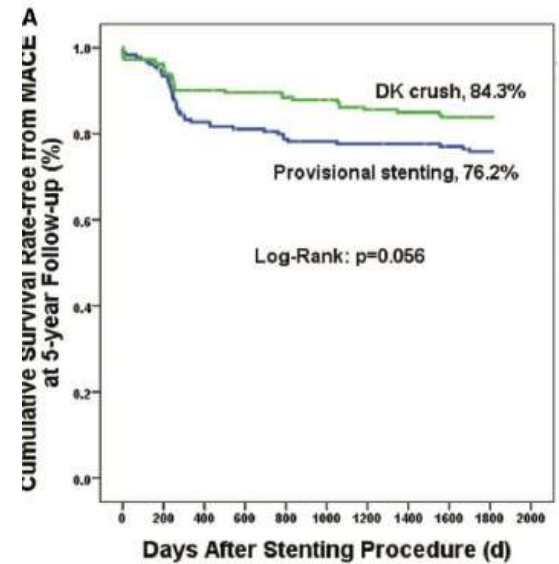
D

E

F

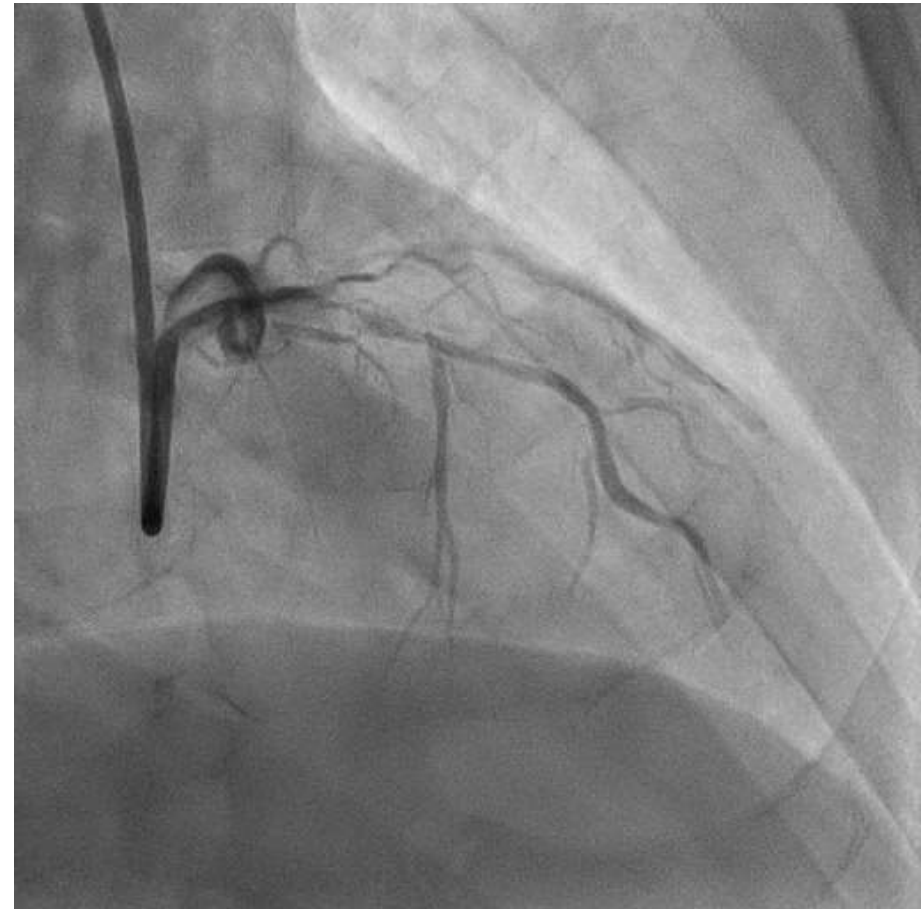
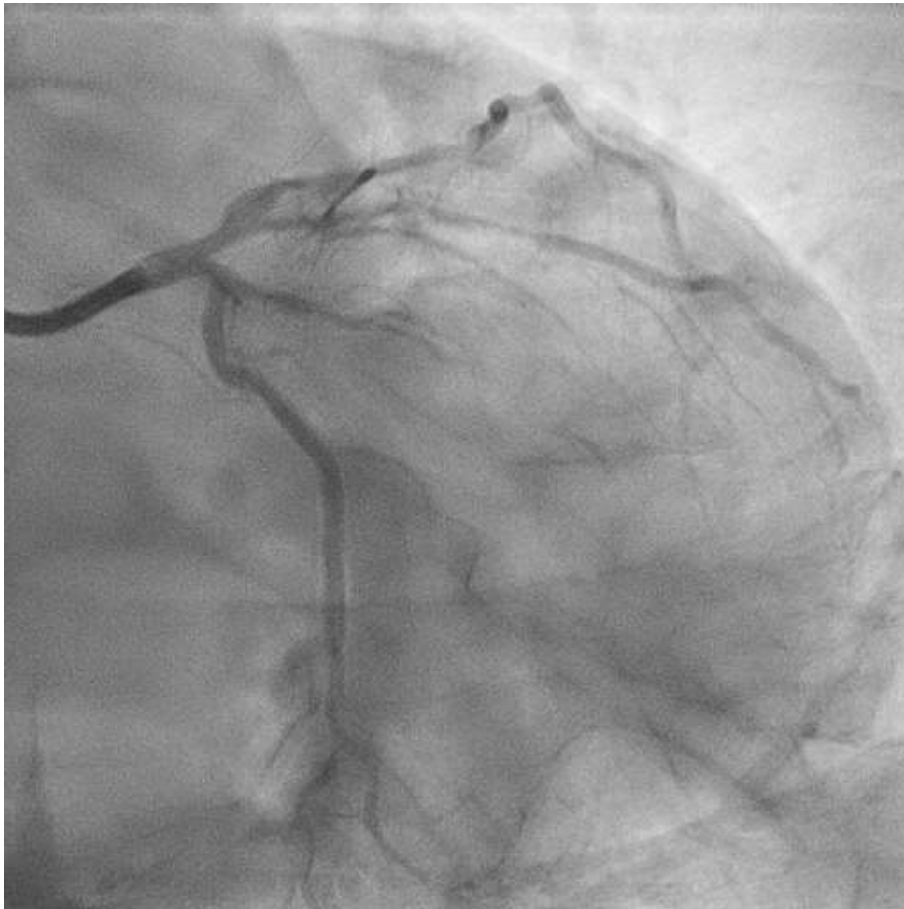


G



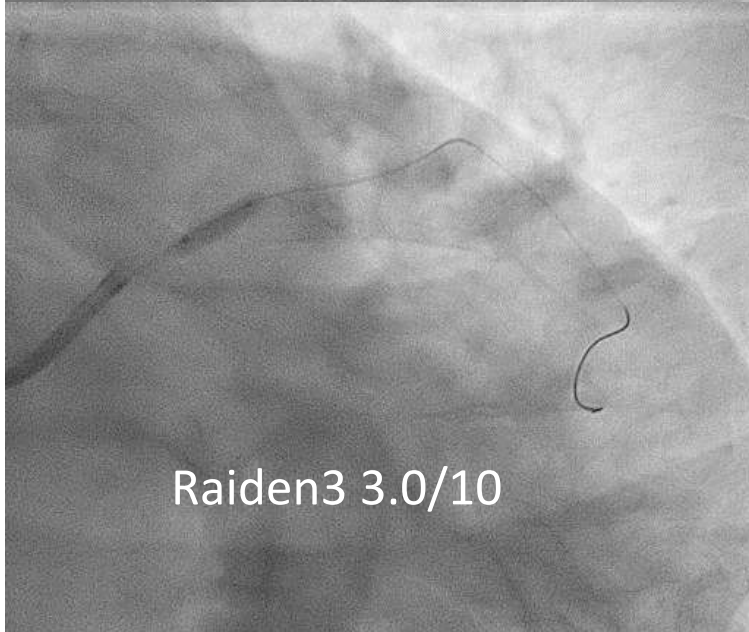
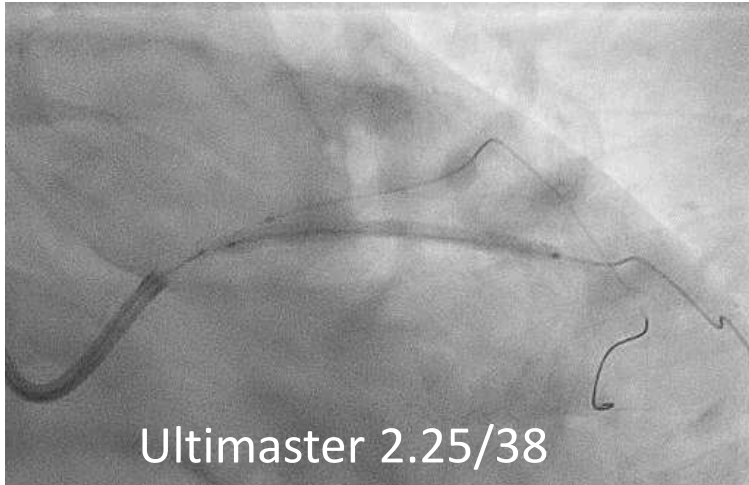
# Case: Late 60's, male, OMI inferior

LAD ostium 50%, LAD-diagonal 0-1-1 lesion

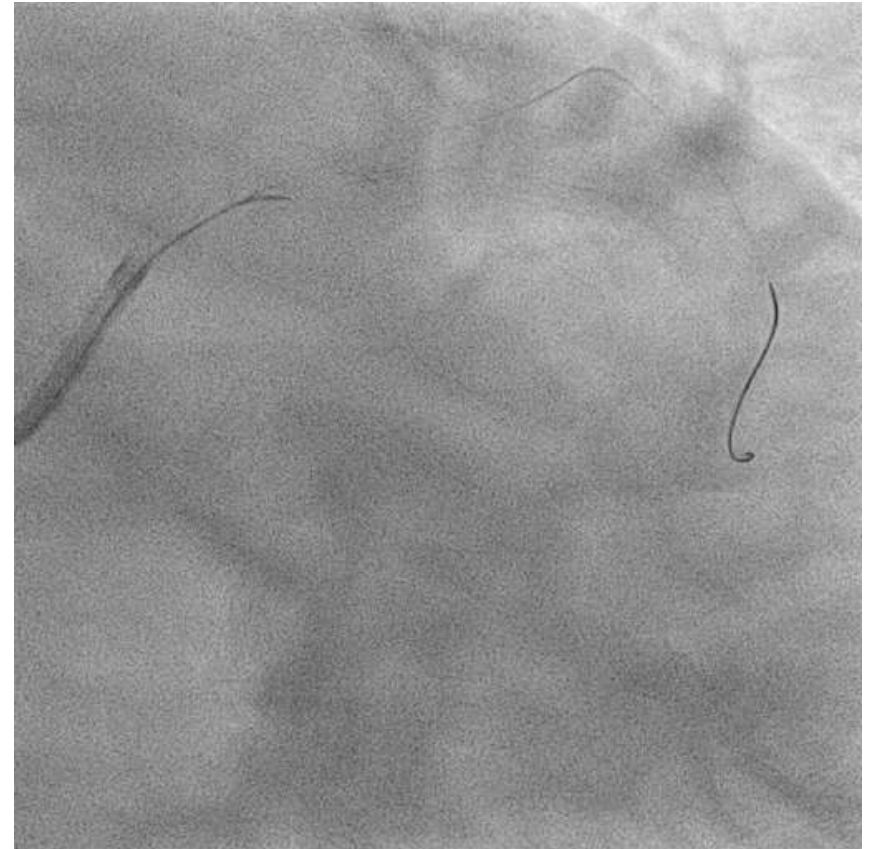


Approach: Rt. radial artery, Glide sheath slender 6/7Fr  
GC: Hyperion SPB 3.5 7Fr

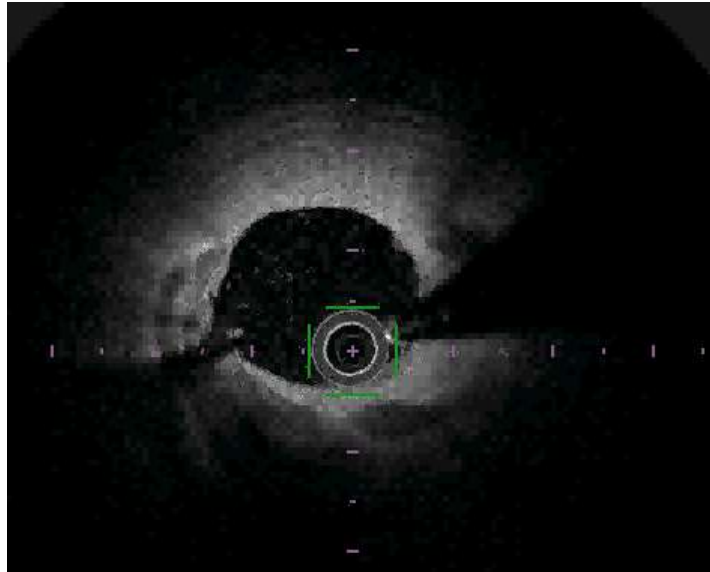
# DK crush stenting



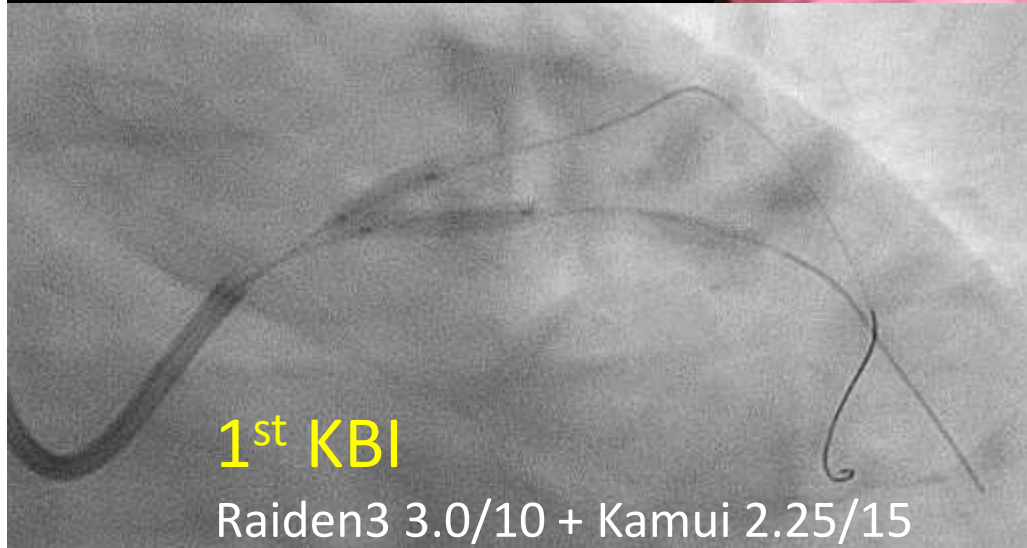
SB GW recrossing



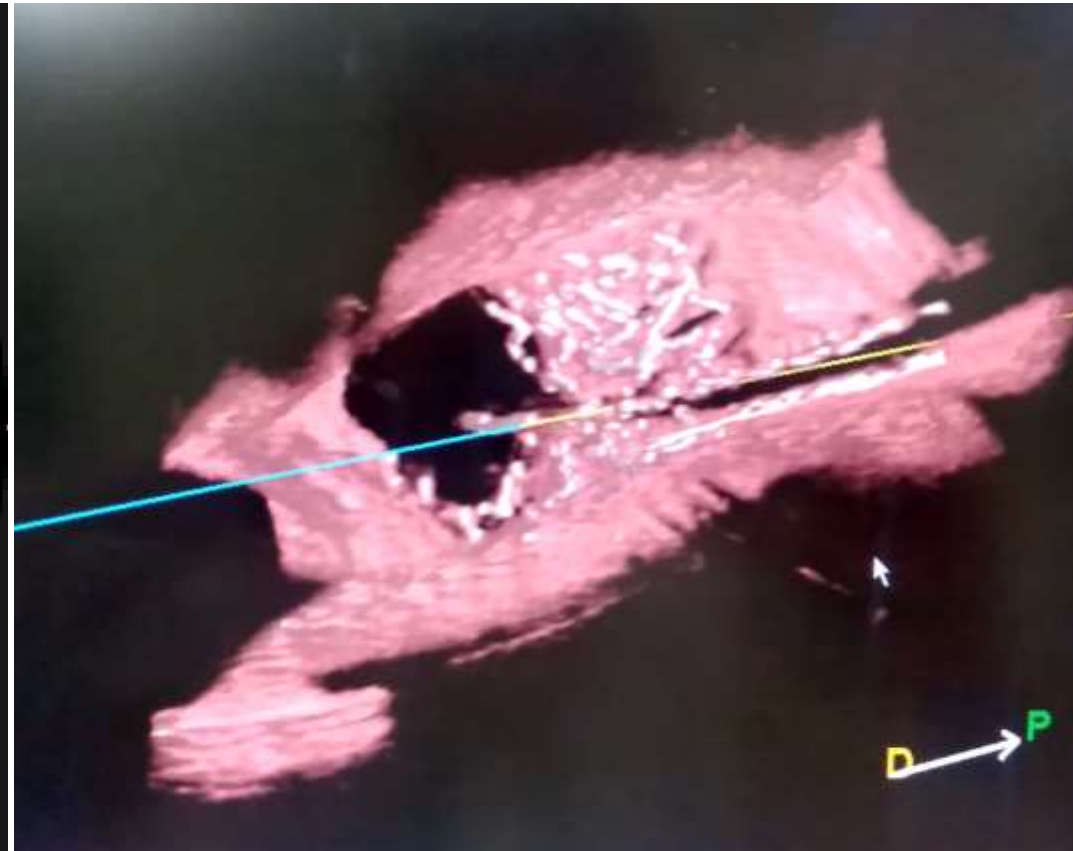
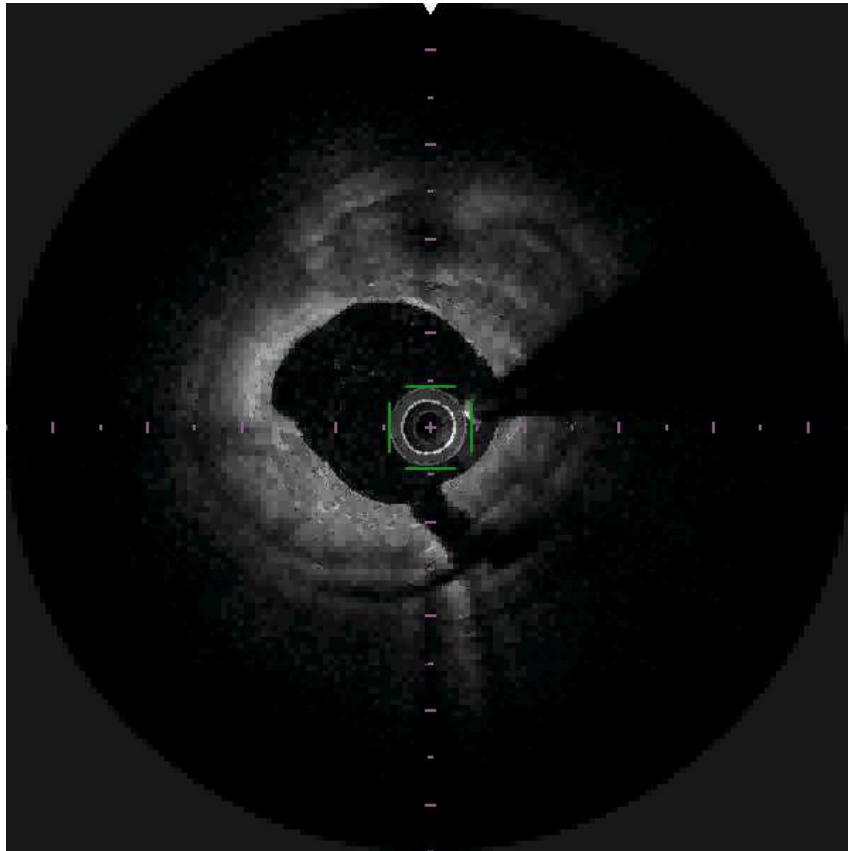
# SB GW recrossing after crush of SB stent



GW was recrossed at the optimal distal cell.



# Post 1<sup>st</sup> KBI

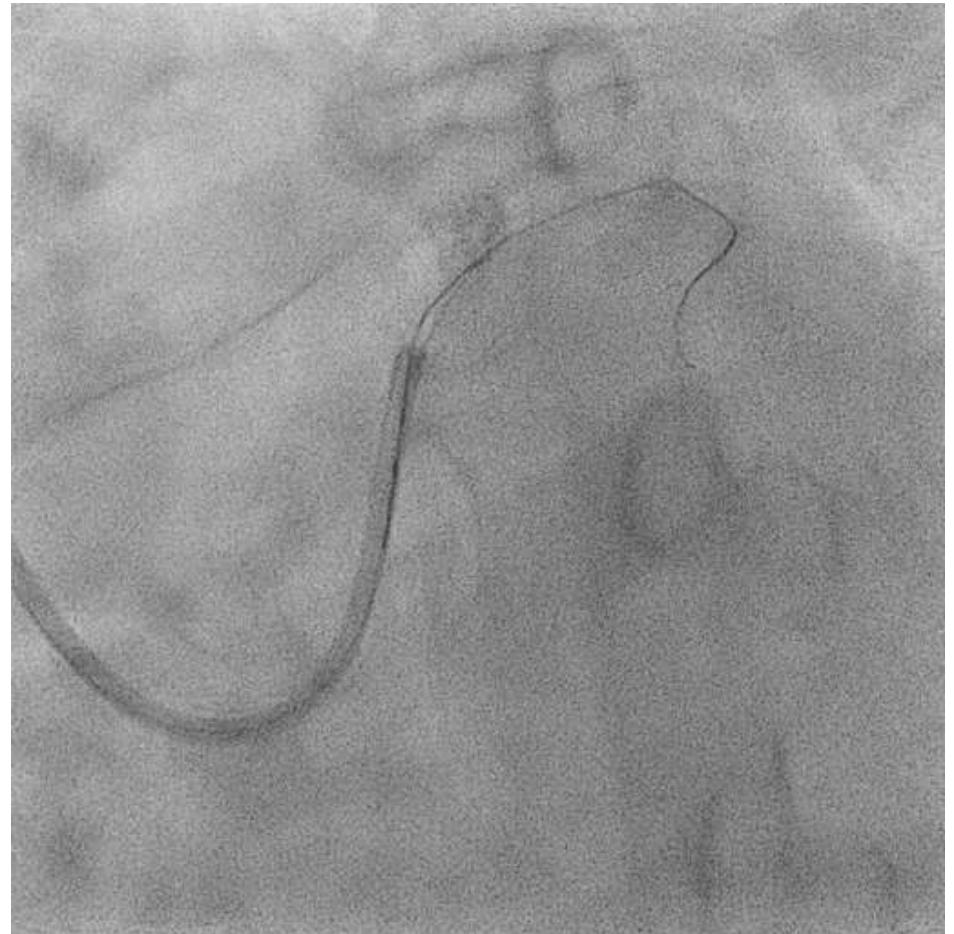
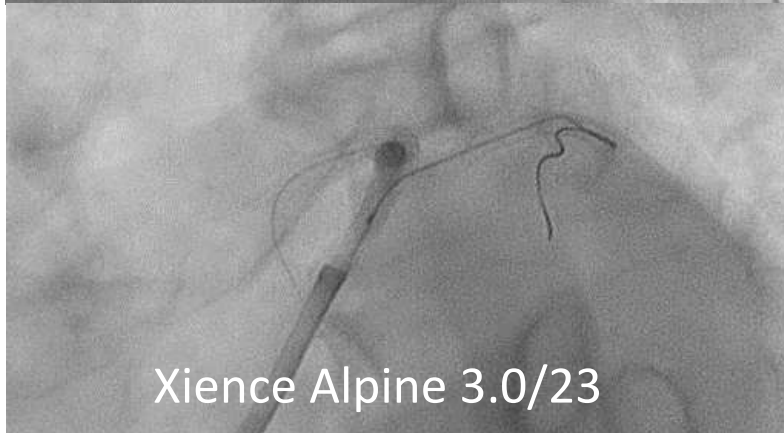


Jailed struts in the SB ostium was completely removed after the KBI.

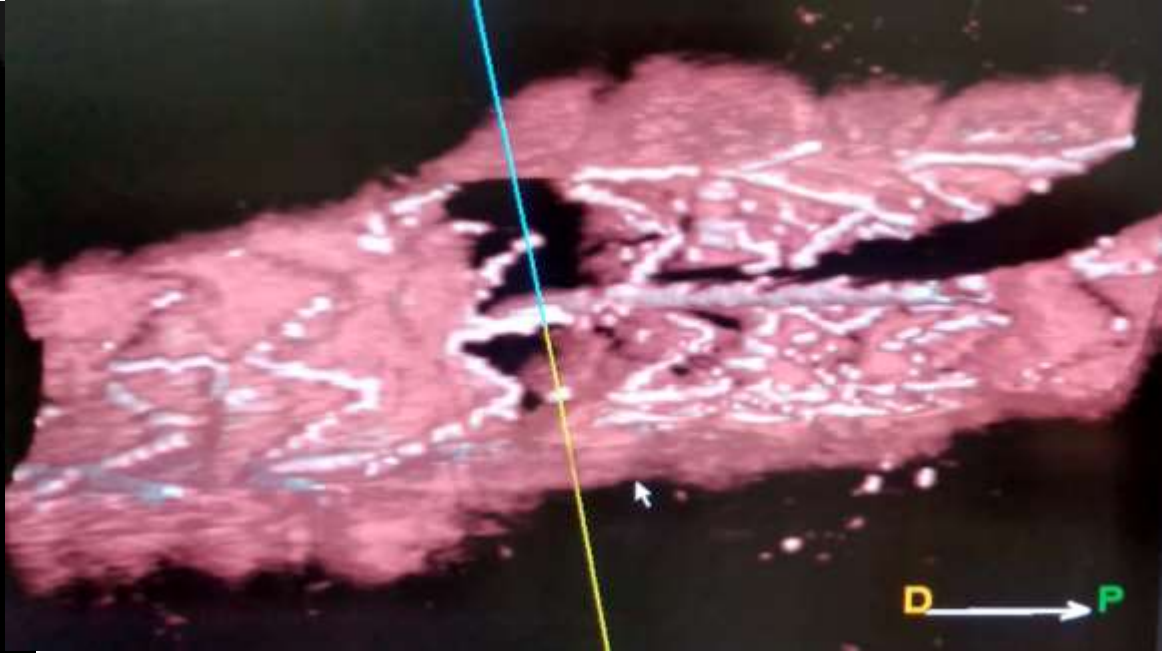
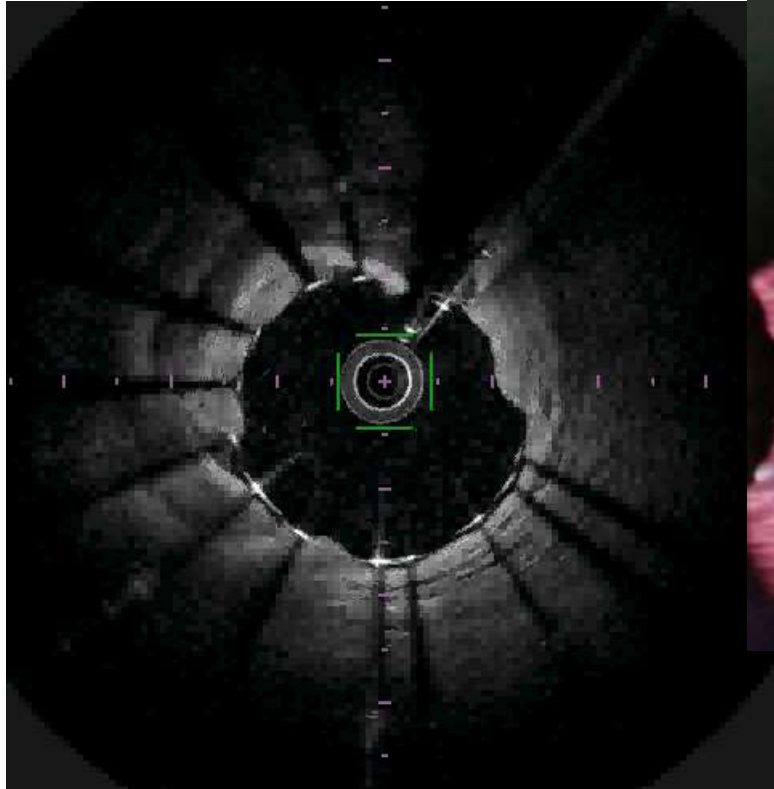


# MV stenting

SB GW recrossing

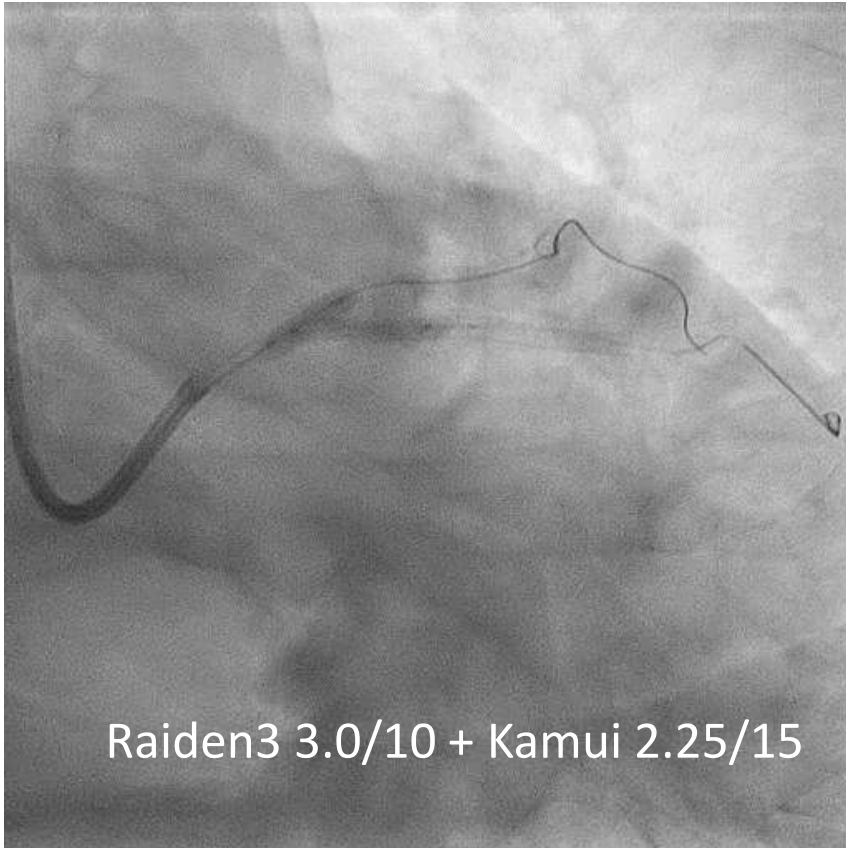


# GW recrossing after MV stenting



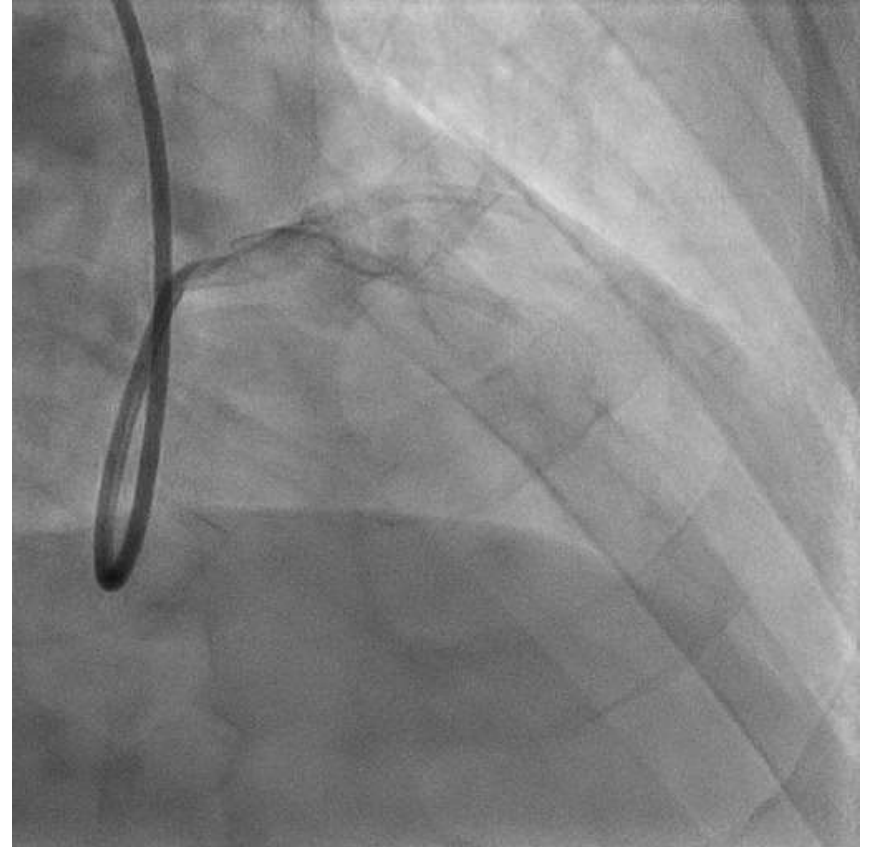
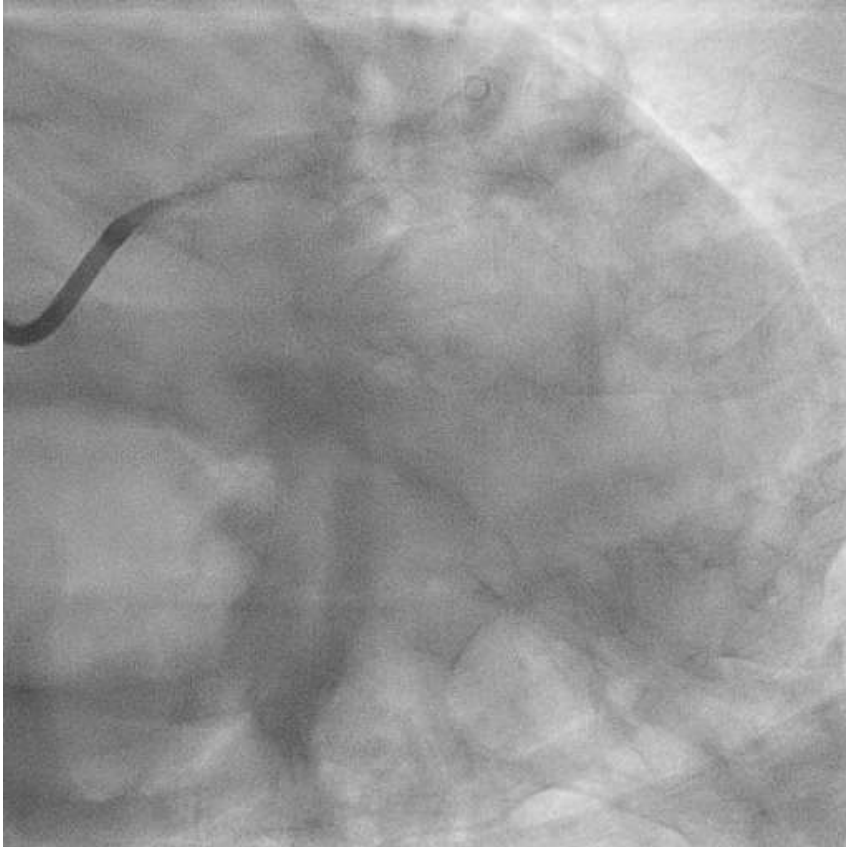
Connecting to carina type  
GW was recrossed in the distal large cell of the  
Xience stent.

## 2<sup>nd</sup> KBI



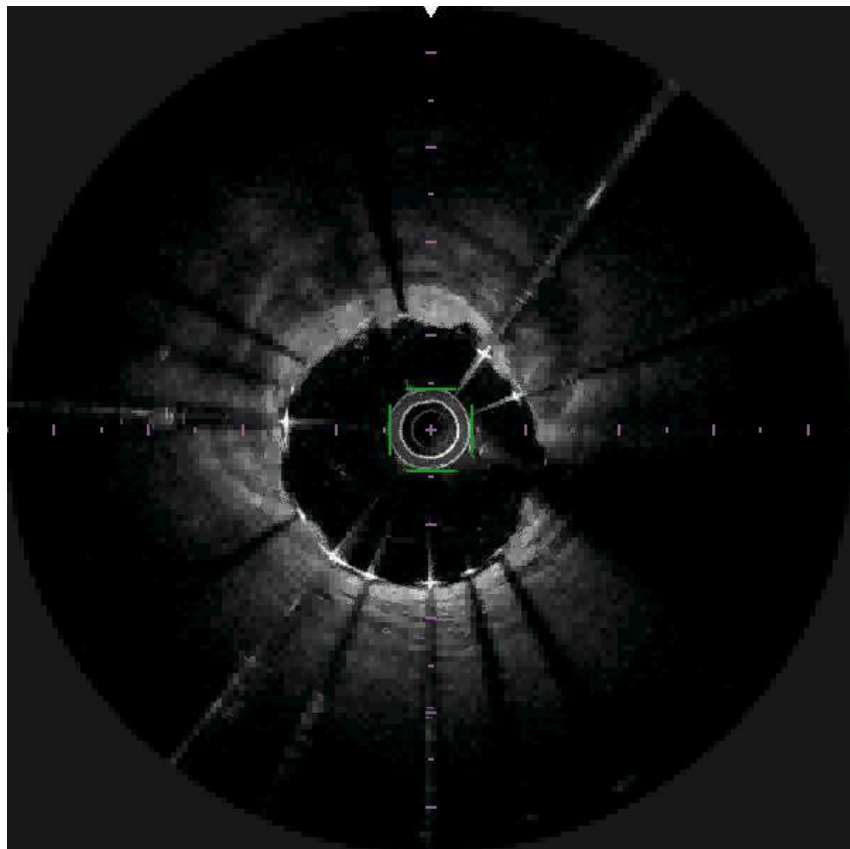
To avoid overdilation in the proximal LAD, high pressure ballooning of each branch and subsequent minimal overlapping KBI was performed.

# Final CAG

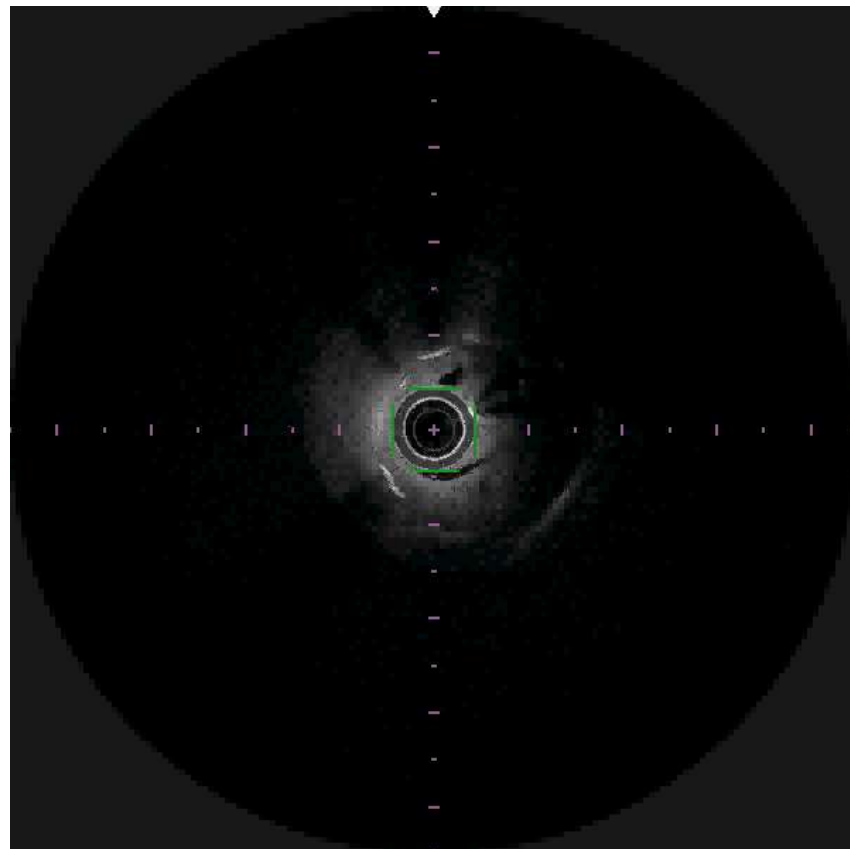


# Final OFDI

LAD

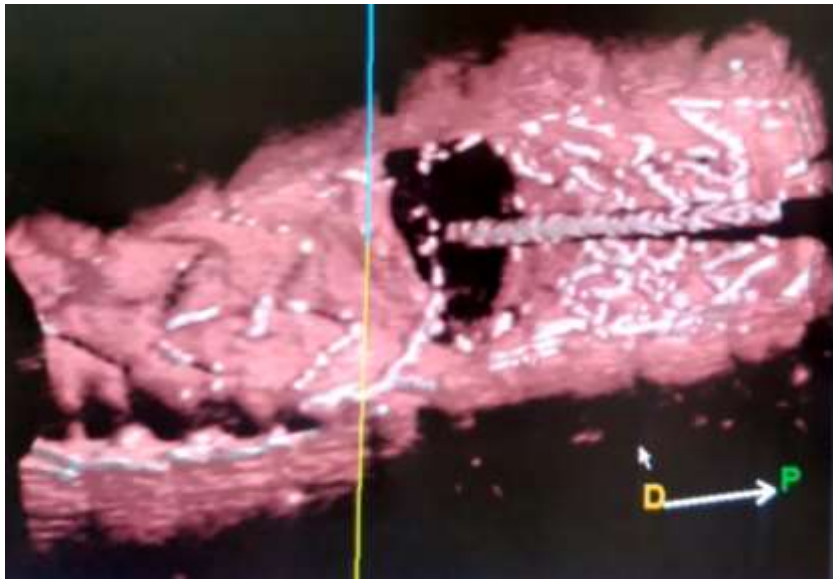


Diagonal branch

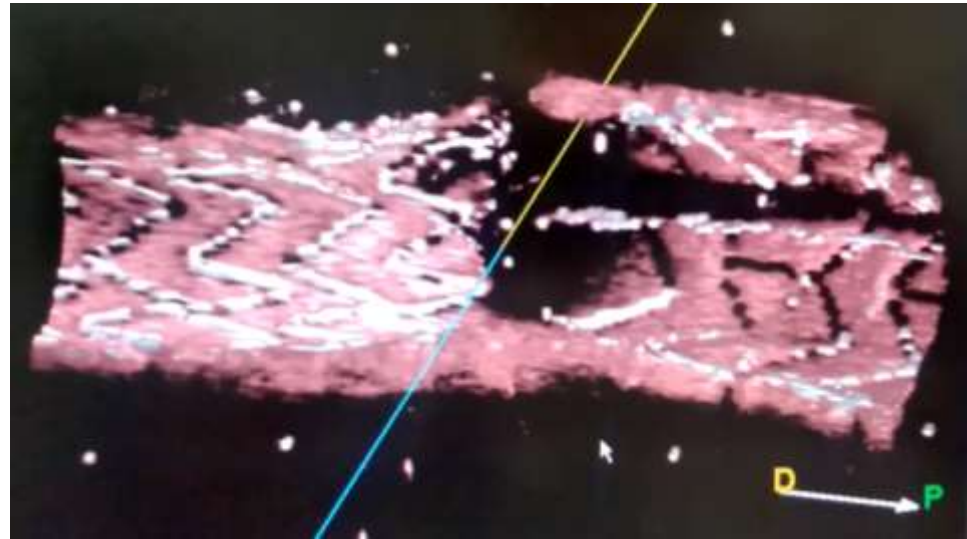


# Final OFDI

LAD



Diagonal branch



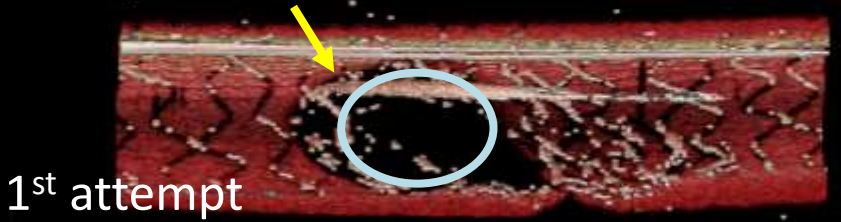
Only single strut was remained at the carina, which was expected to be covered with intima. Both branch ostium were adequately expanded.

# Importance of confirmation of GW recrossing in DK Crush Stenting

SB GW recrossing after stent crushing

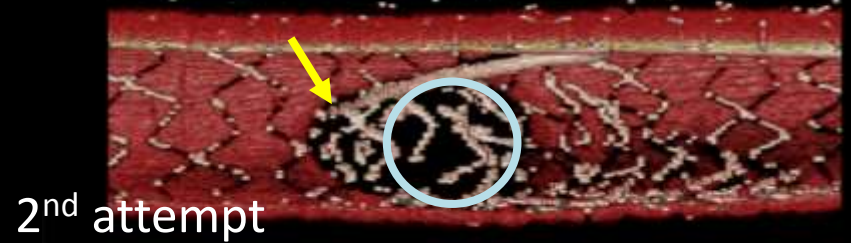
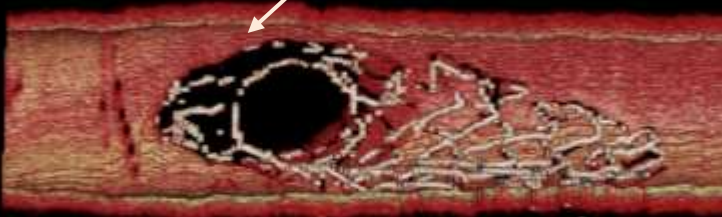


SB GW recrossing after MV stenting

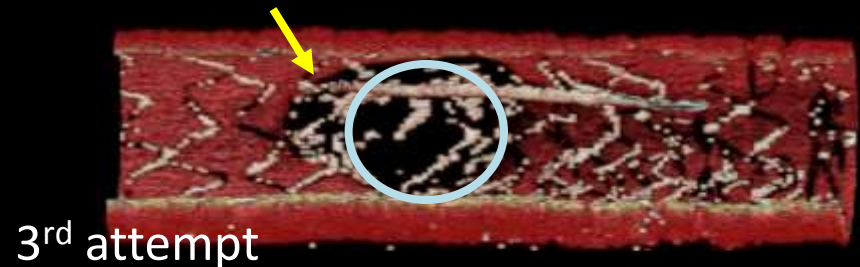


Metallic carina protrudes into the MV.

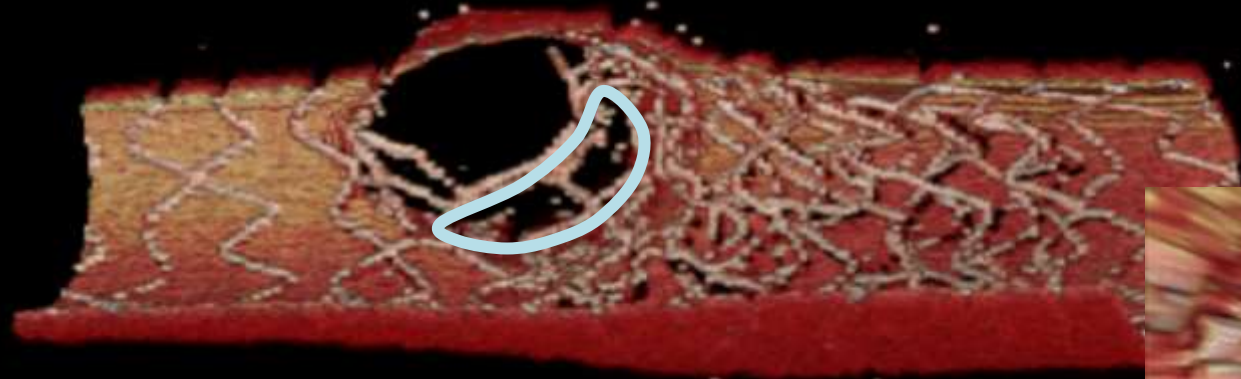
First KBI



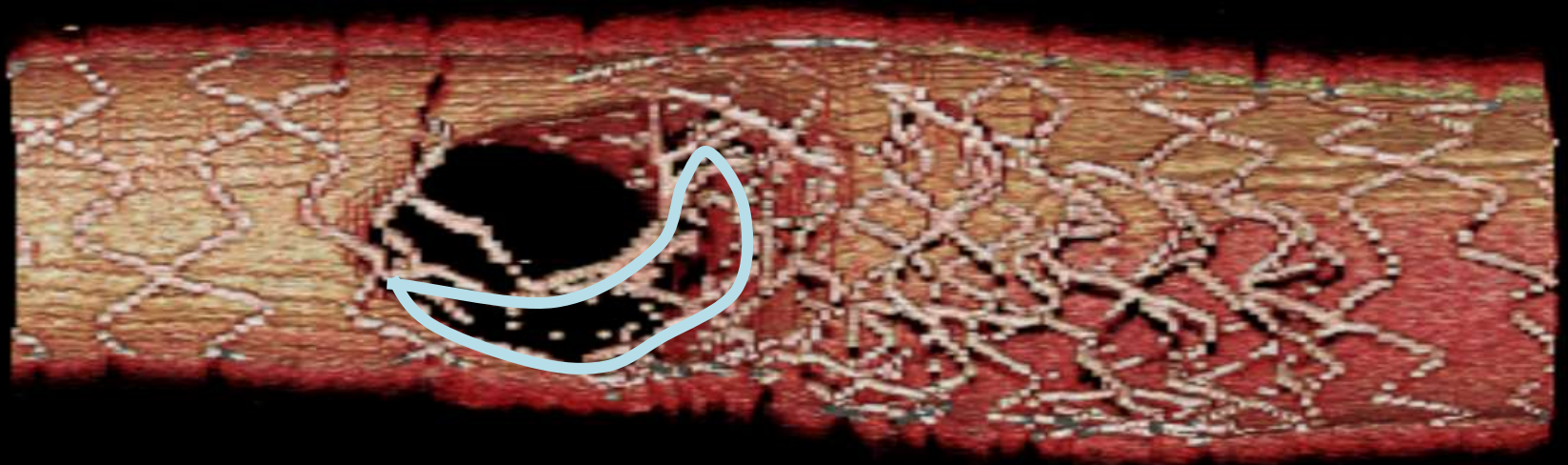
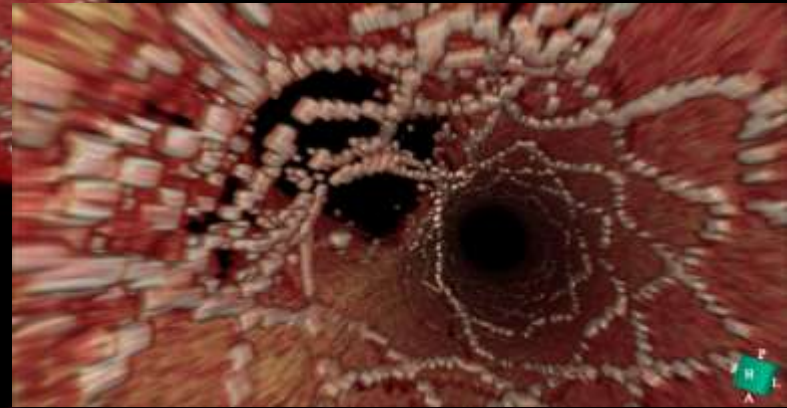
The SB GW was recrossed outside of the hole made by first KBI.



# Importance of confirmation of GW recrossing in DK Crush Stenting



The hole made by first KBI was compressed incompletely.





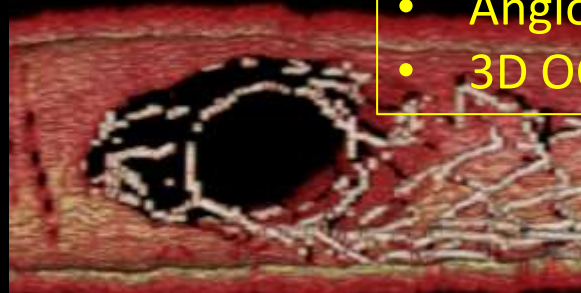
# GW recross: 3D OCT guidance

Classical crush



GW recross point: unclear

DK crush



Optimal wiring

- Angio-guide: SB 70%
- 3D OCT: SB 90%



# Culotte stenting

MV GW crossing after SB stenting  
@ proximal strut



SB dilation



SB GW recrossing

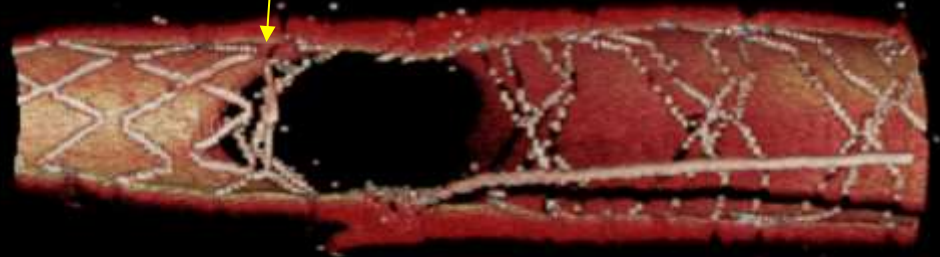


MV



Metallic carina remained.

SB



Optimal wiring

- Angio-guide: MV 70% × SB 70% = 49%
- 3D OCT: MV 90% × SB 90% = 81%

# Take home messages

- Suboptimal GW recrossing has a great risk of stent deformation and malapposition, which leads to large amount of jailed struts remaining in the SB ostium.
- These disadvantages may introduce flow disturbance or inhomogeneous drug infiltration, which are related to worse clinical outcome of 2-stent deployment.
- Confirmation of GW recrossing and SBOS connection in the SBOS may improve clinical outcome of the 2-stent deployment. ***(Next 3DOCT Bifurcation Registry will address this issue.)***

**Thank you for  
your attention!**