

**Technical Forums I, Session II: Bifurcation PCI**

Expert case presentation: My Challenging Bifurcation PCI

# **3-D OCT Guided PCI in Coronary Bifurcation Lesion**

**Yoshinobu Murasato, MD, PhD**  
**Department of Cardiology,**  
**Kyushu Medical Center, Fukuoka, Japan**



Complex PCI 2017, November 30-December 1, Seoul

# Conflict of Interest

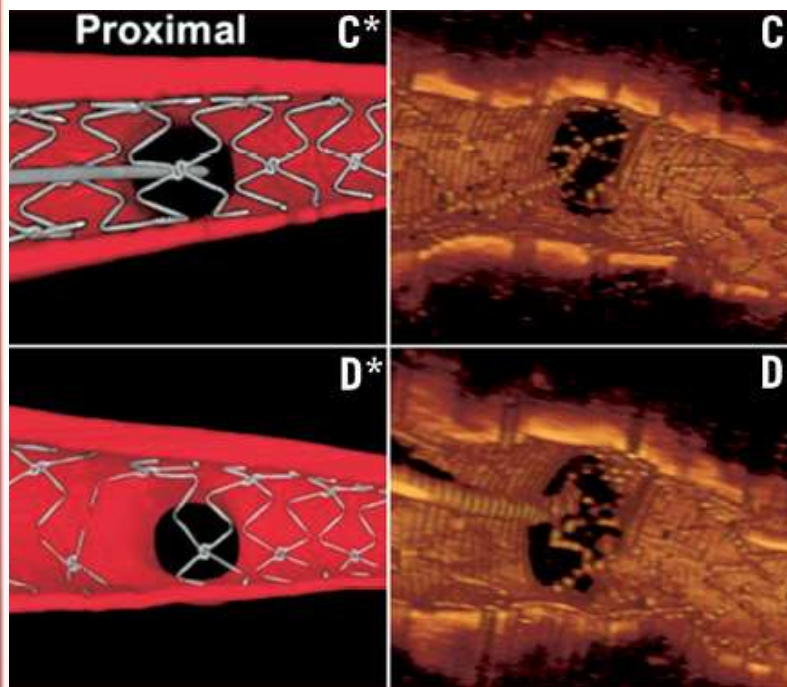
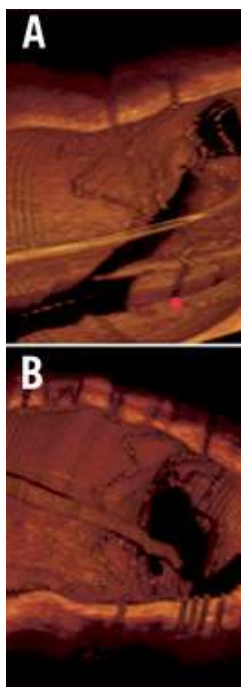
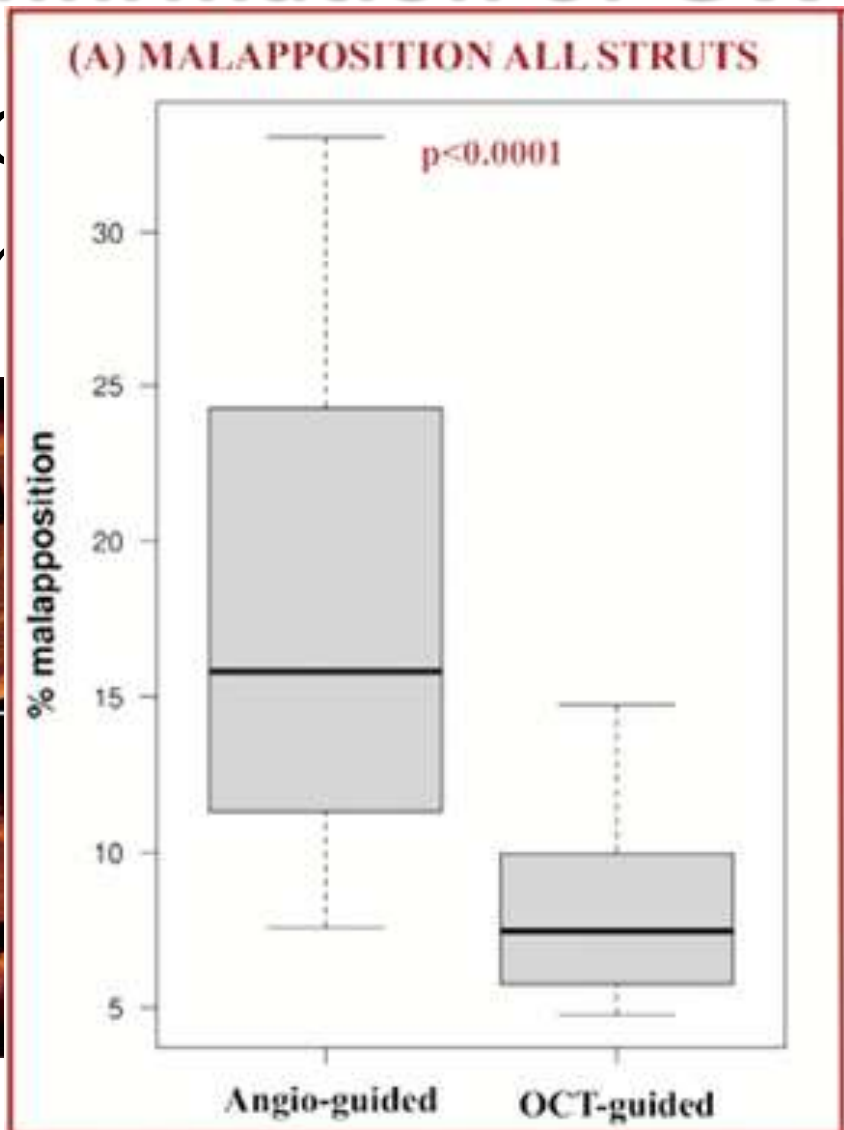
- I, Yoshinobu Murasato, do not have any conflict of interest.

# Confirmation of GW crossing point

- OC
- Fir

-guide (n=40)

malposition 67%



# 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)

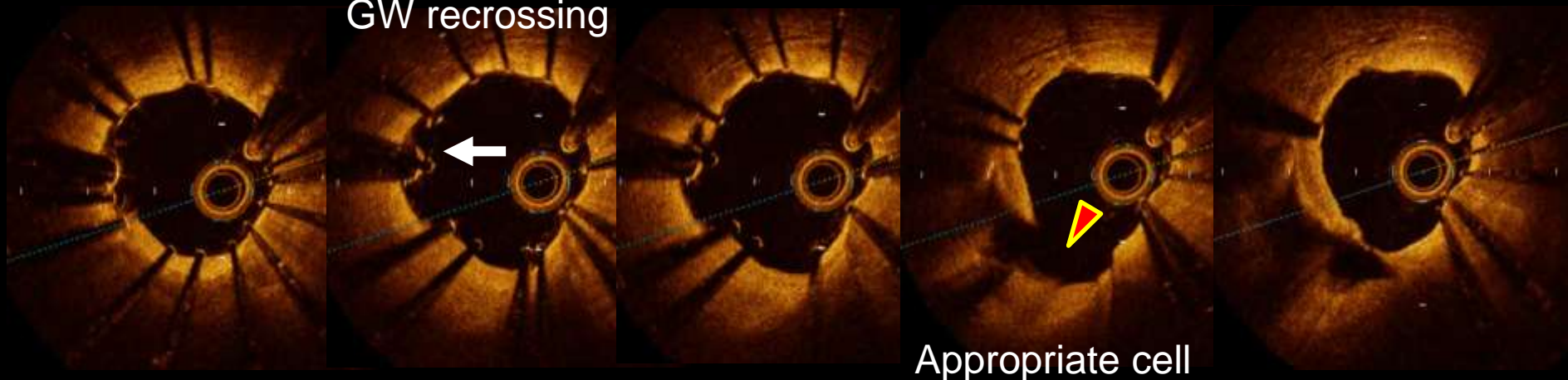
## Stent enhanced 3D OCT



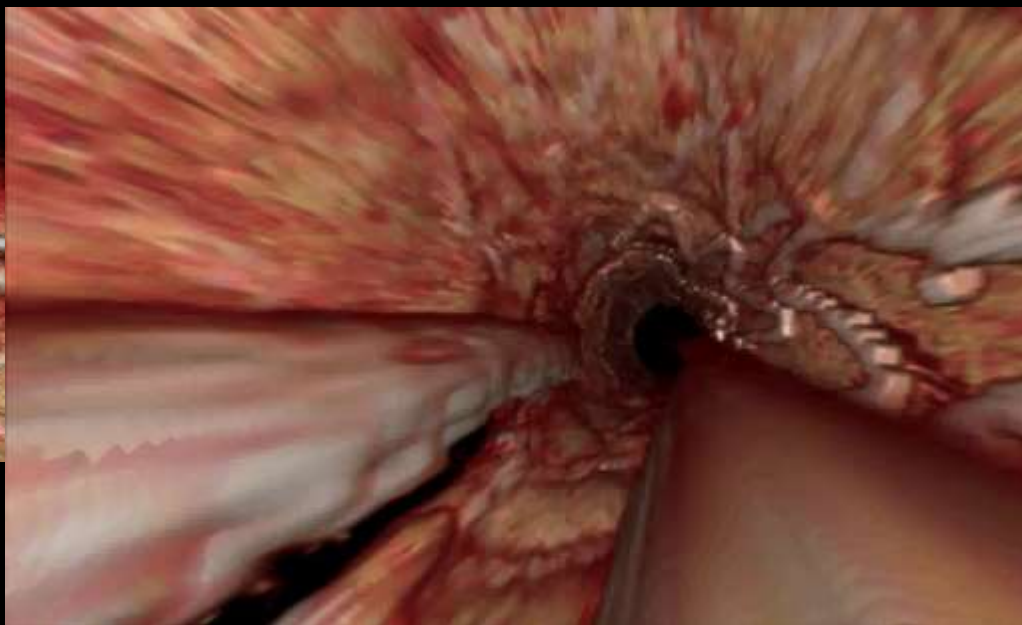
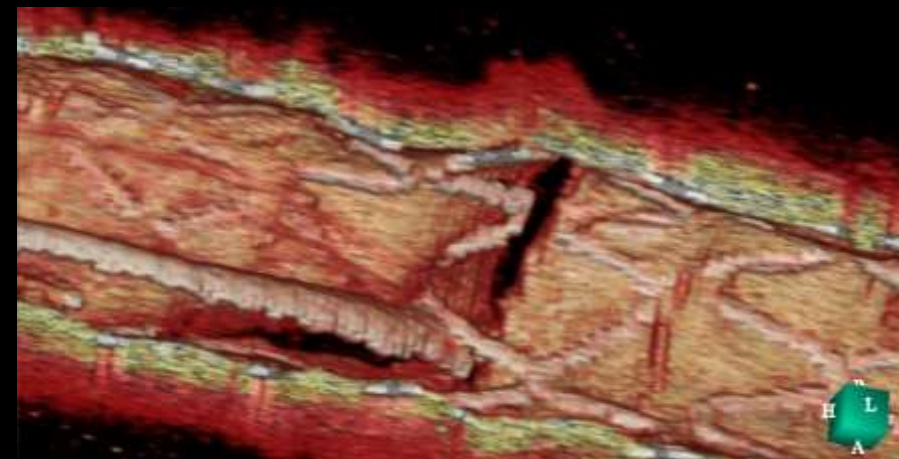
Okamura et.al EuroIntervention 2014

## 2D OCT on site

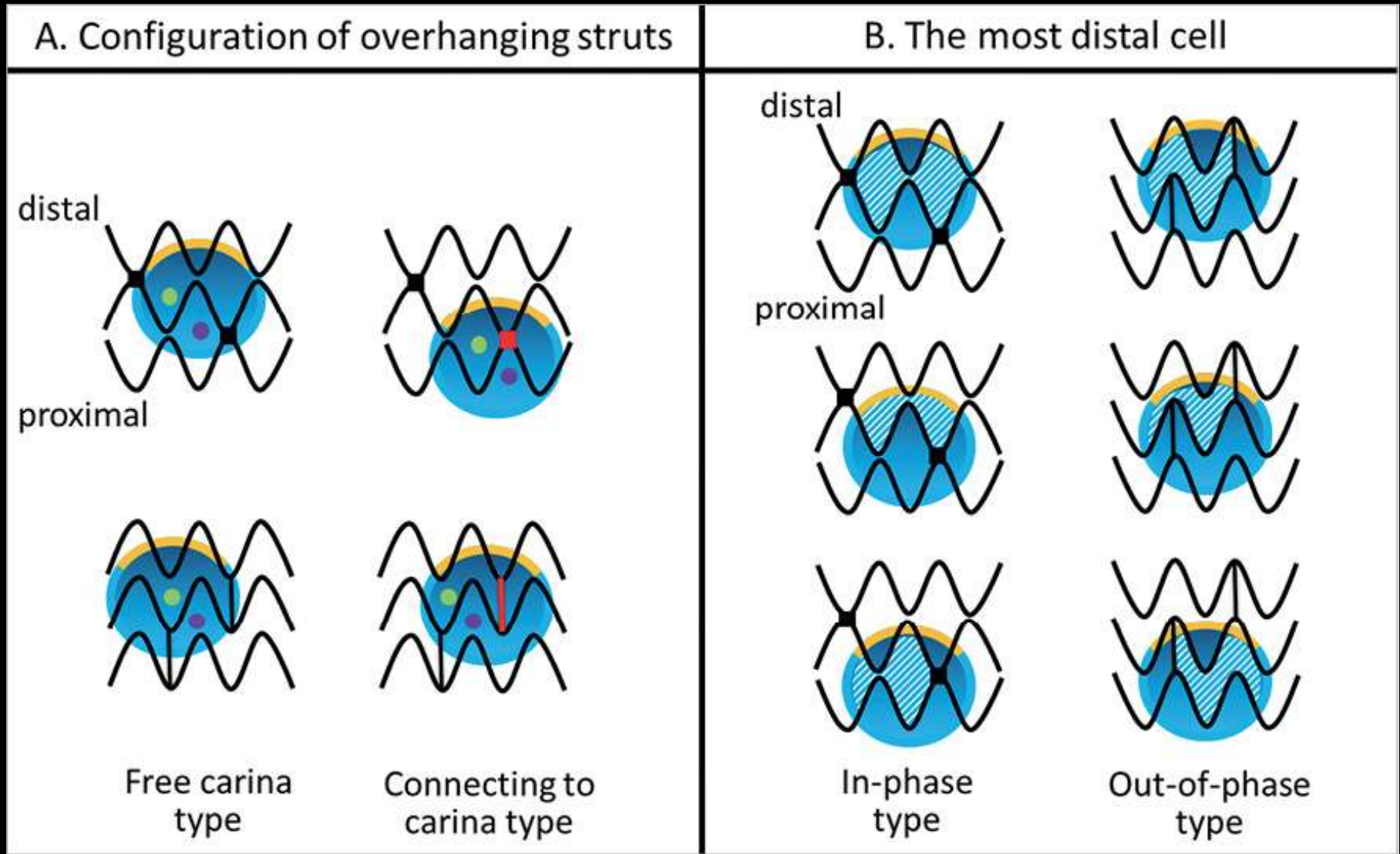
GW recrossing



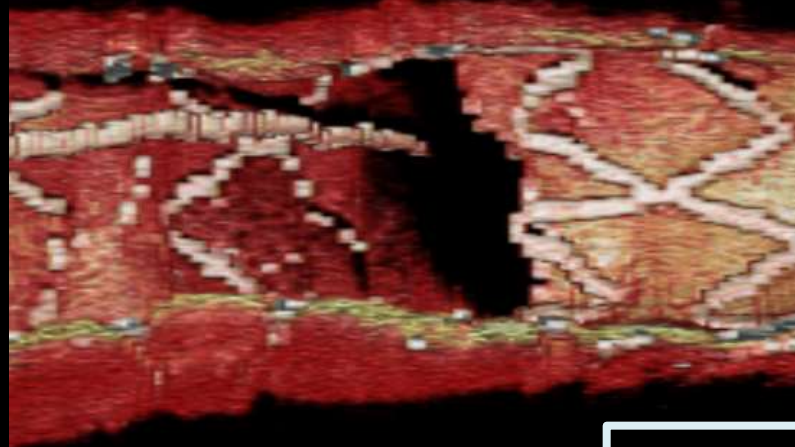
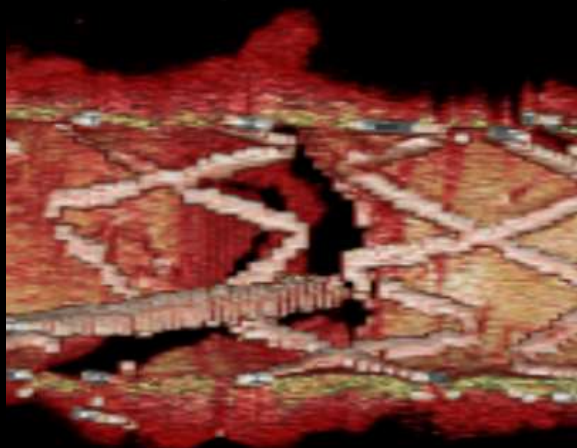
## 3D OCT reconstructed in core laboratory



# Pattern of link-connection and GW crossing point

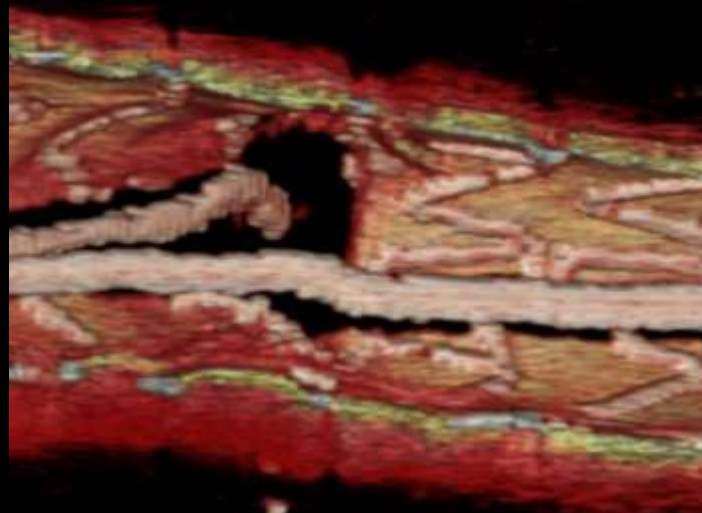
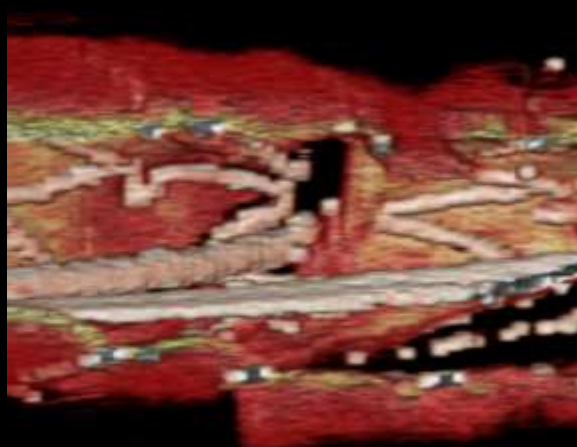


# Free Carina type

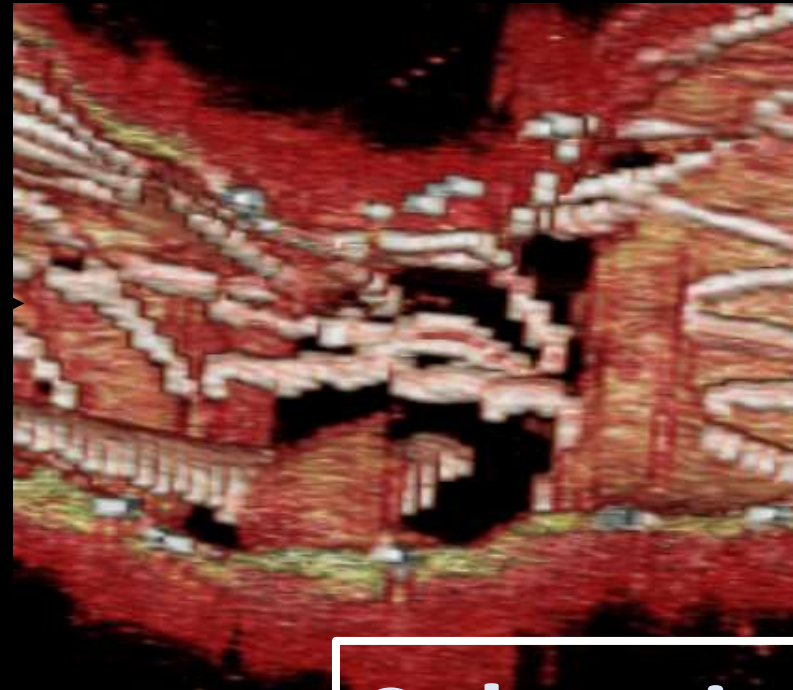
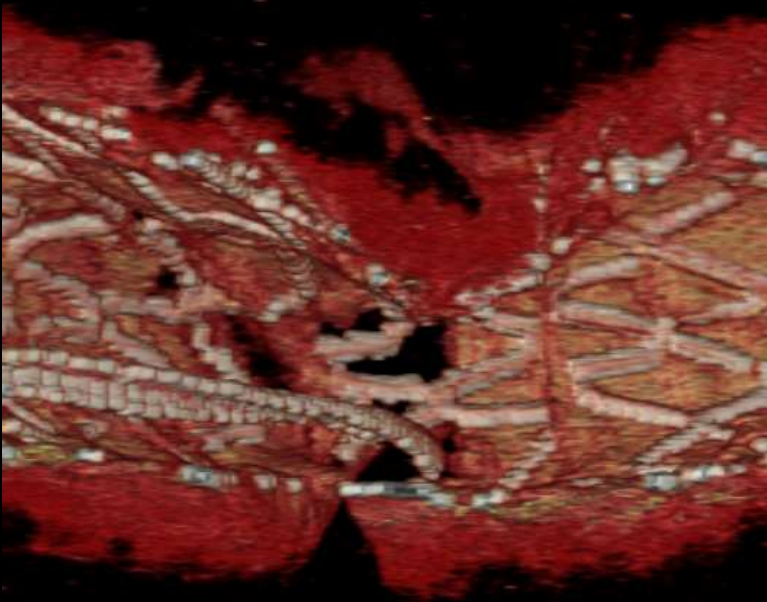


GW recrossing in the optimal distal cell of the free carina type leads to wide opening of the SB without remained jailed struts.

**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%

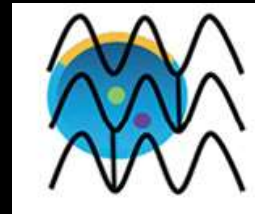
2D: 76%

3D: 91%

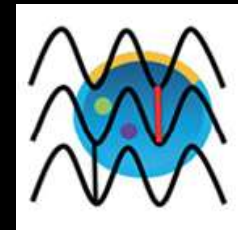
- Link-connecting to carina type decreased optimal GW recross.

*Nagoshi R, Okamura T, Murasato Y, Shite J et al. Int J Cardiol, 2017*

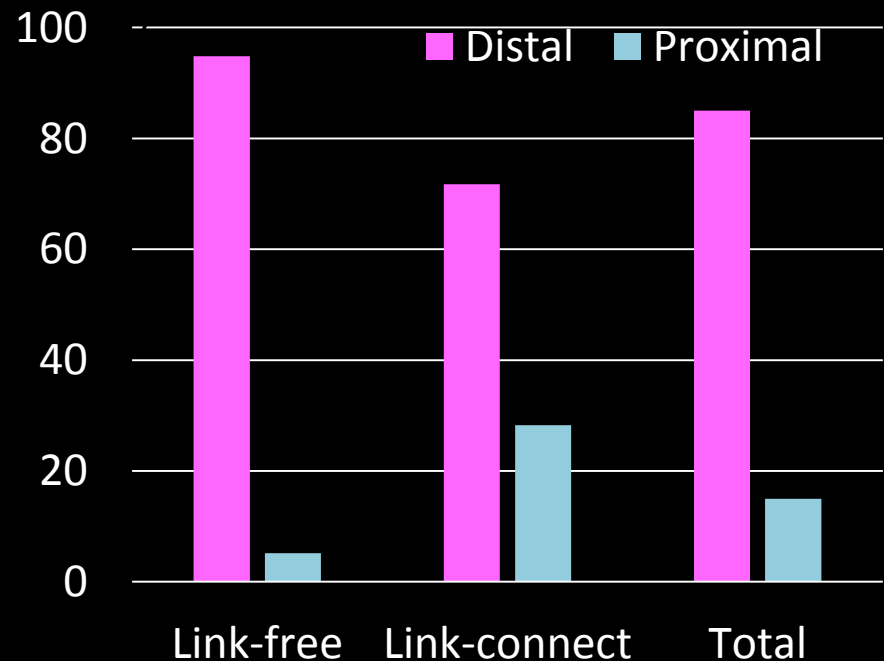
Link-free type



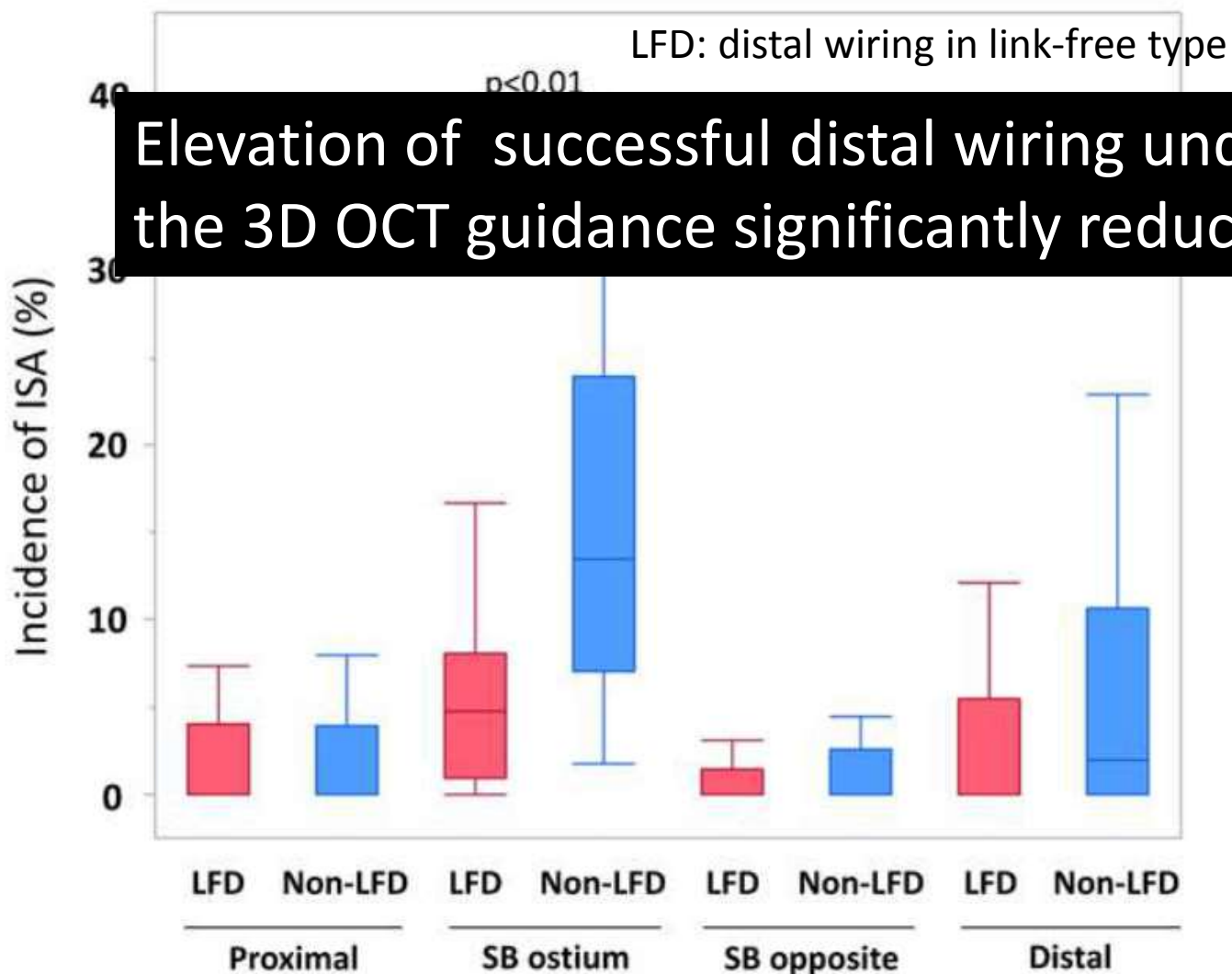
Link-connecting type



Distribution of GW recrossing point

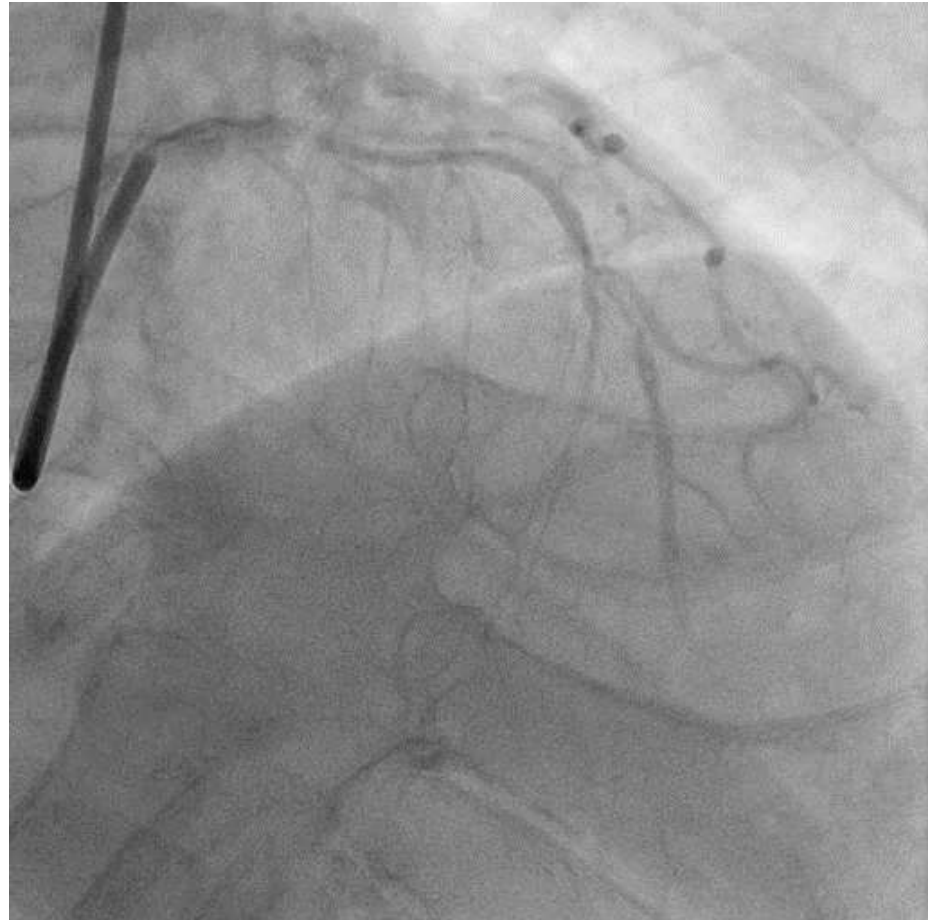


# Incomplete strut apposition (ISA) after KBI



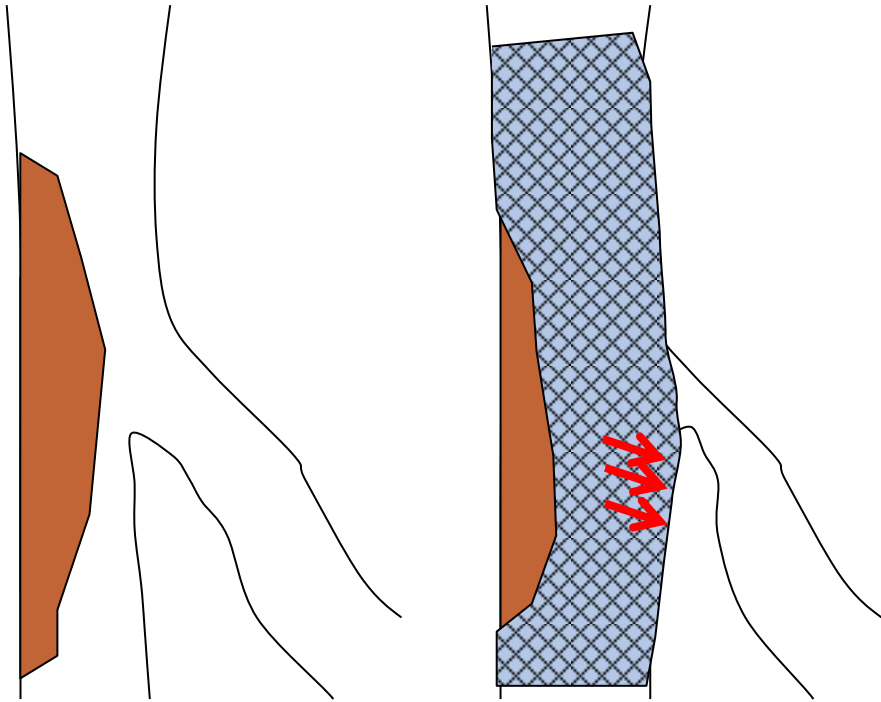
# Case: early 70's, Male, UAP

Severe calcified 0-1-1 lesion in LAD – D1 bifurcation



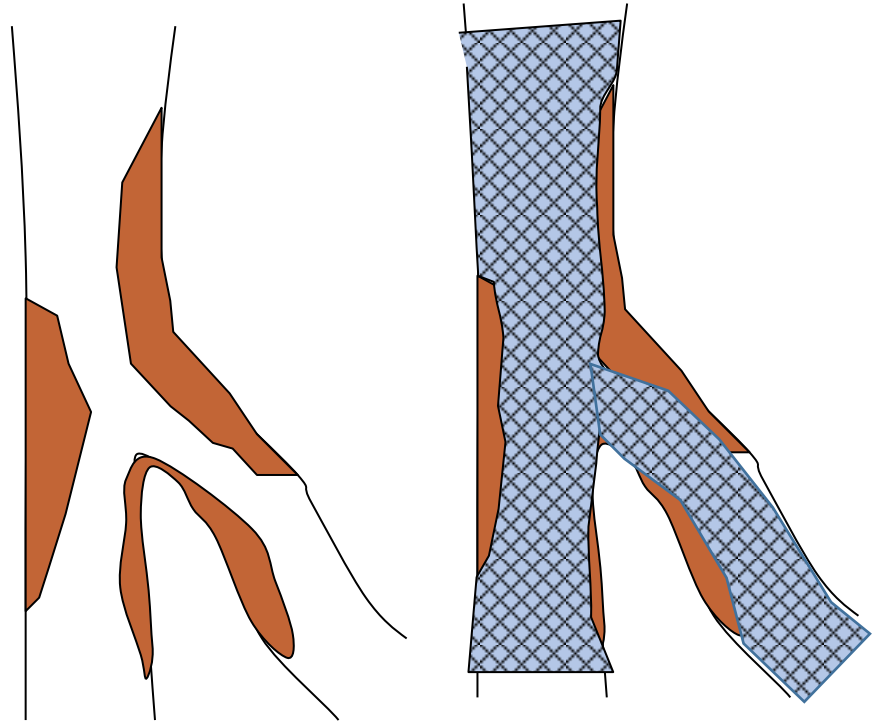
# Calcified bifurcation lesion: *Annoyance!*

Non-true bifurcation lesion



More carinal displacement to the SB is likely to occur due to eccentric calcification.

True bifurcation lesion

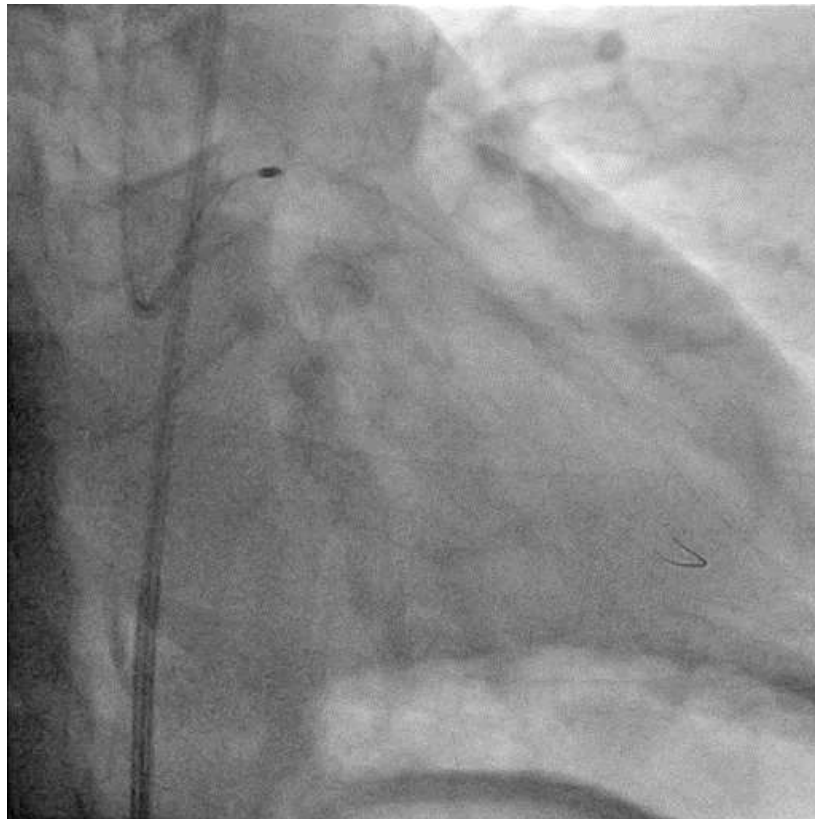


Less stent expansion in both MV and SB branches.

# Rotablation in LAD

Approach: femoral  
GC: Mac1 CLS 4.0, 8Fr

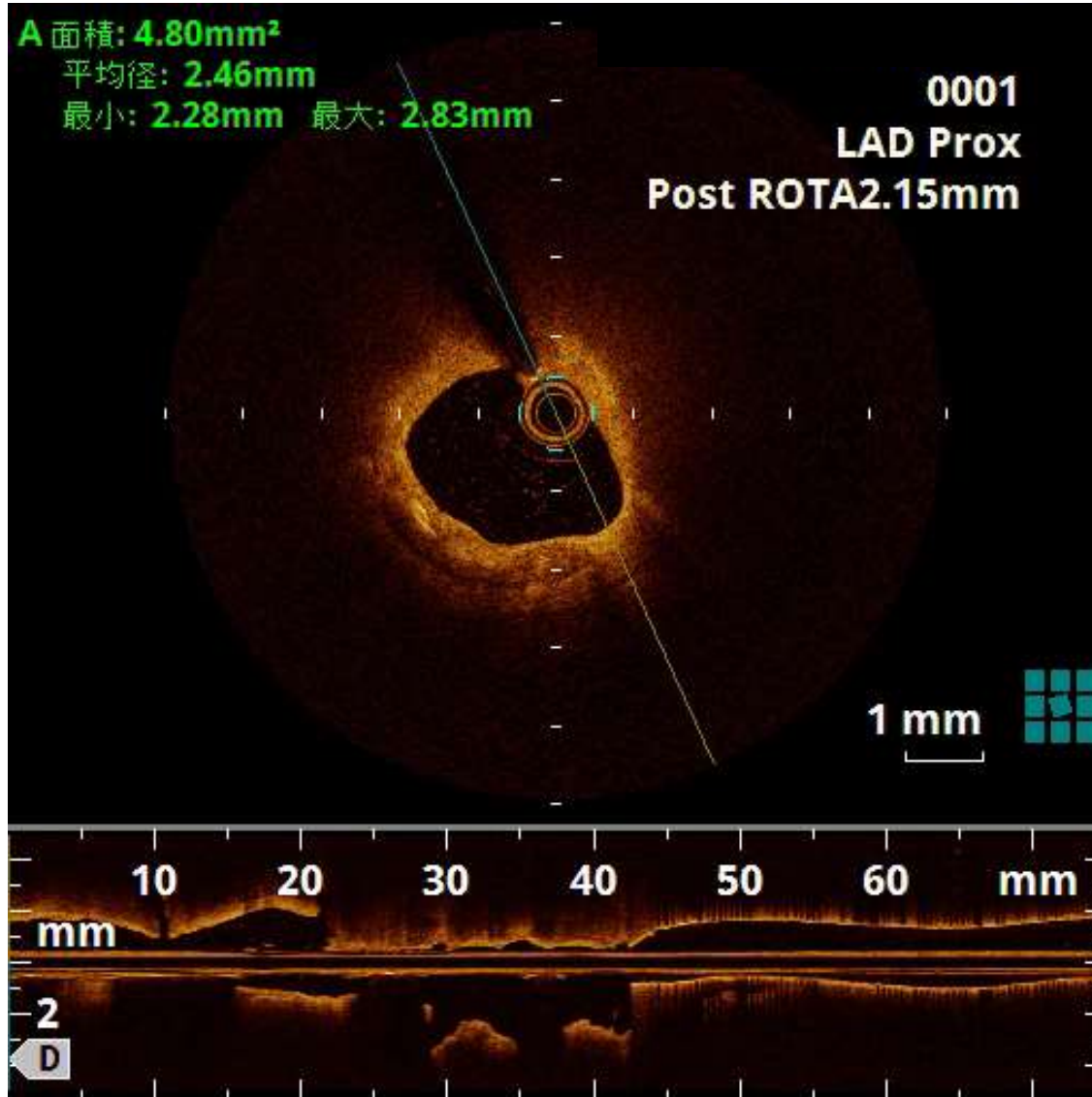
1.75mm burr



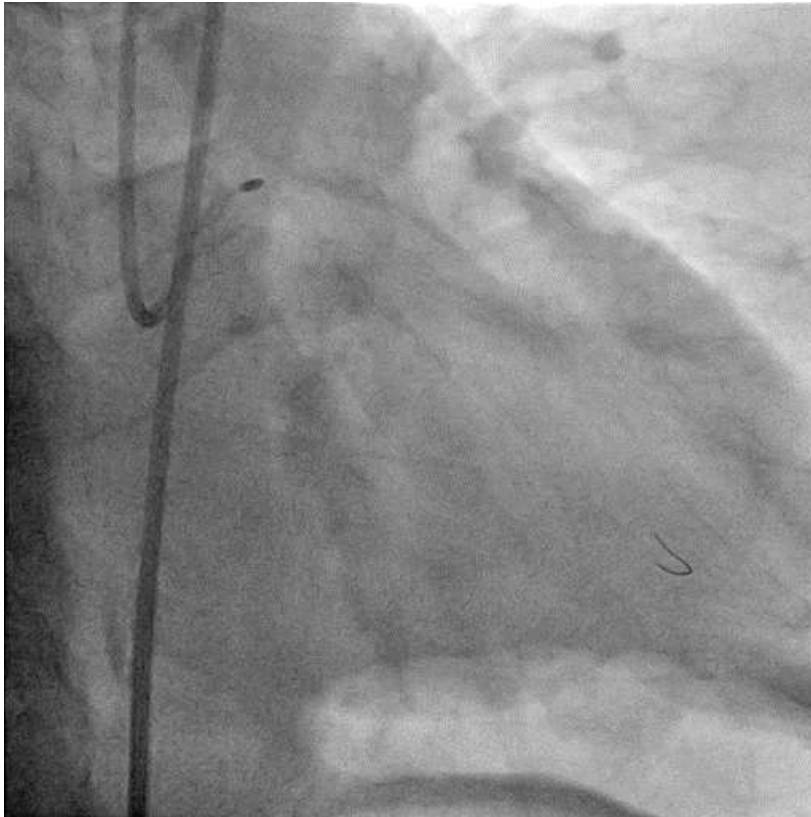
2.15mm burr



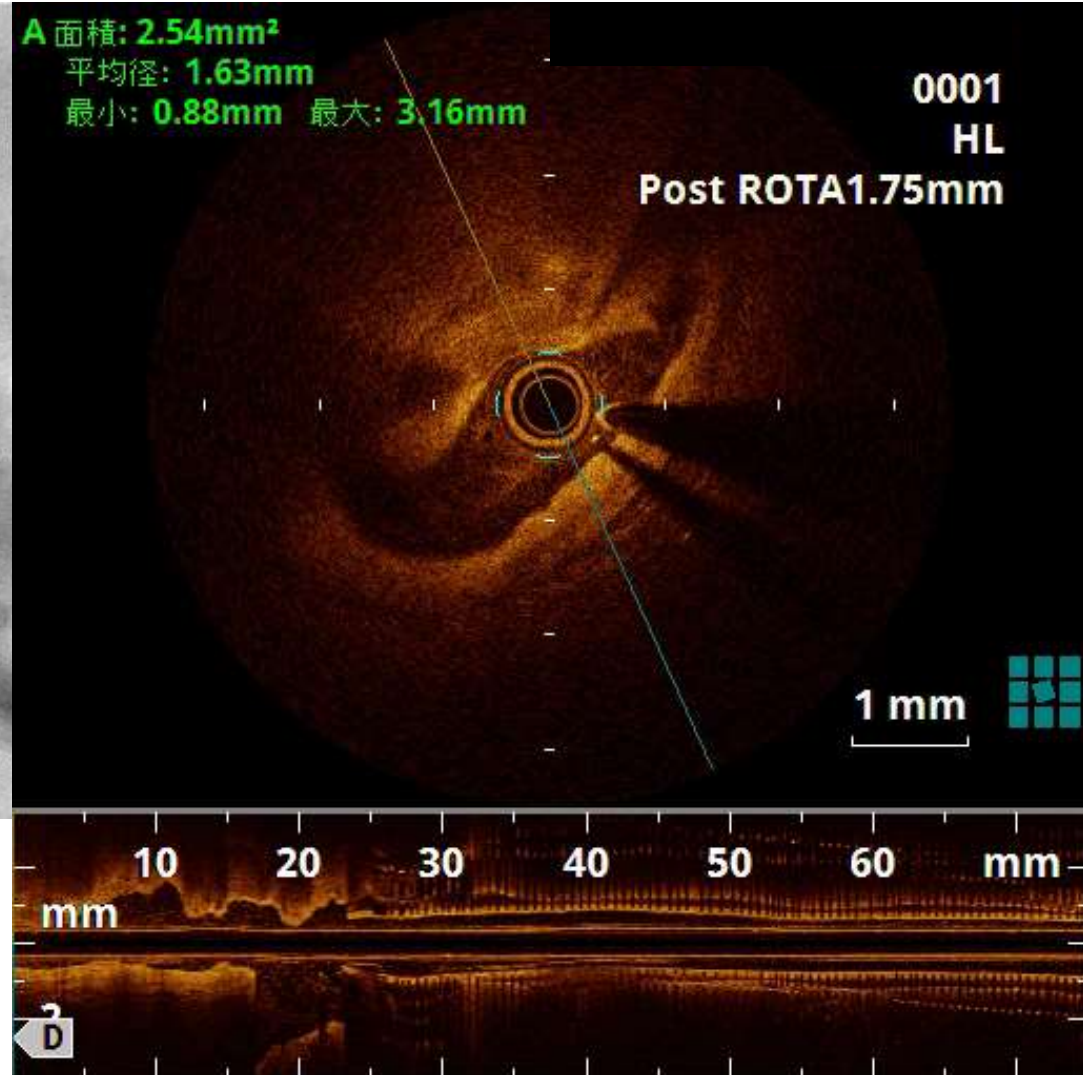
# OCT after rotablation



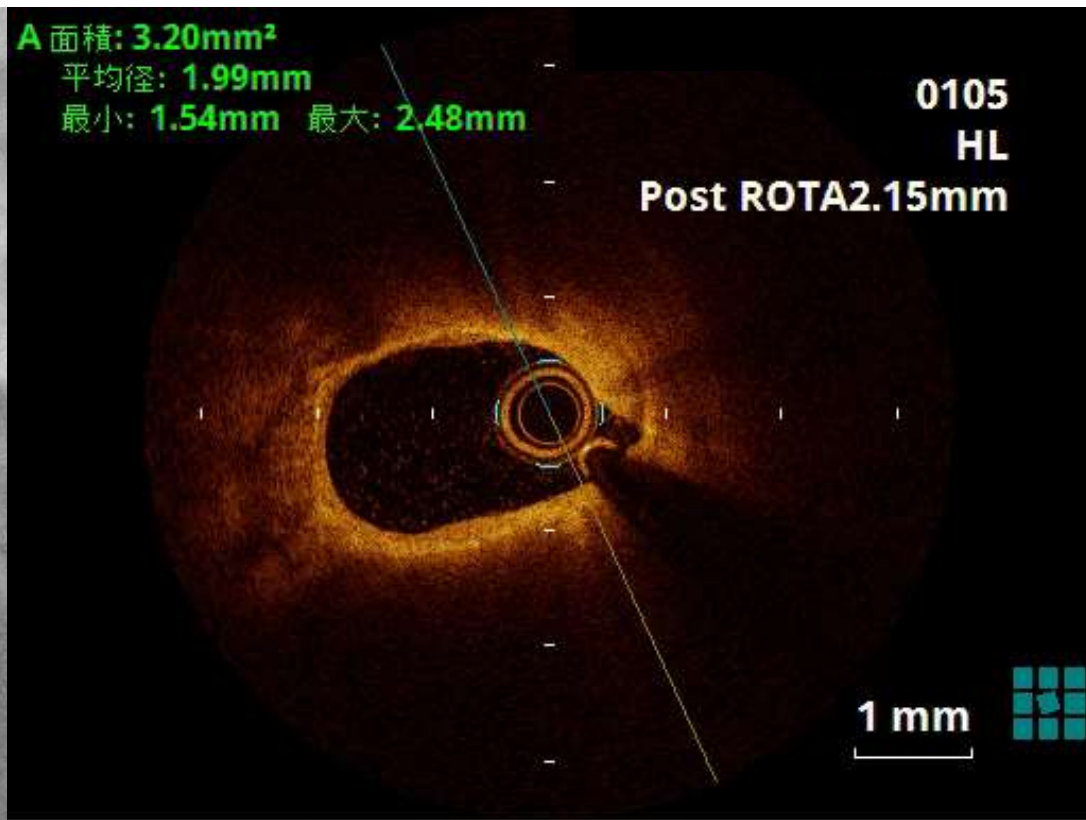
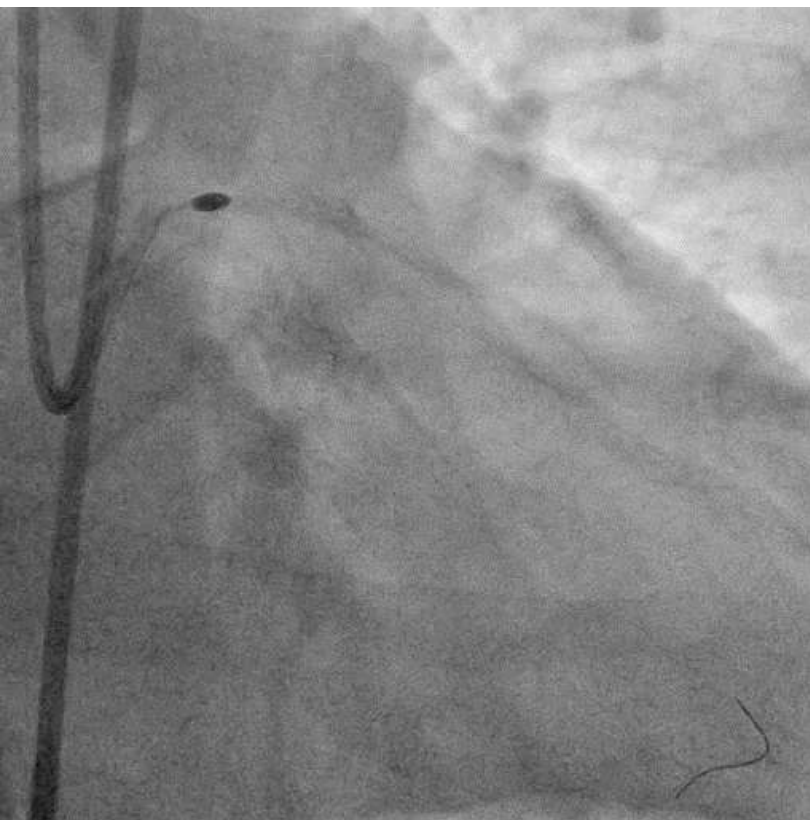
# Rotablation in Diagonal branch (1)



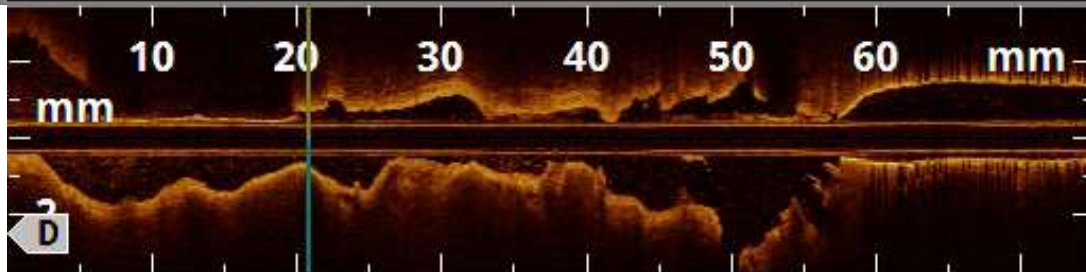
1.75mm burr



# Rotablation in Diagonal branch (2)



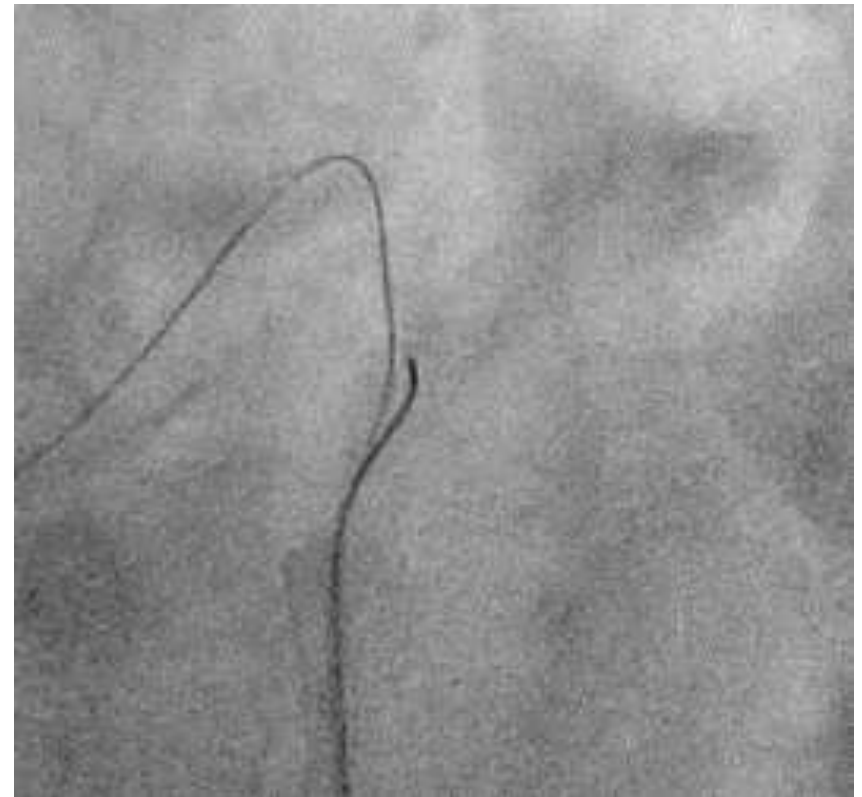
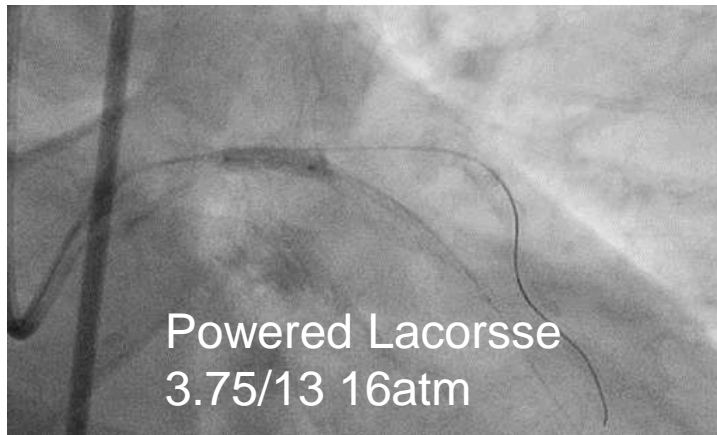
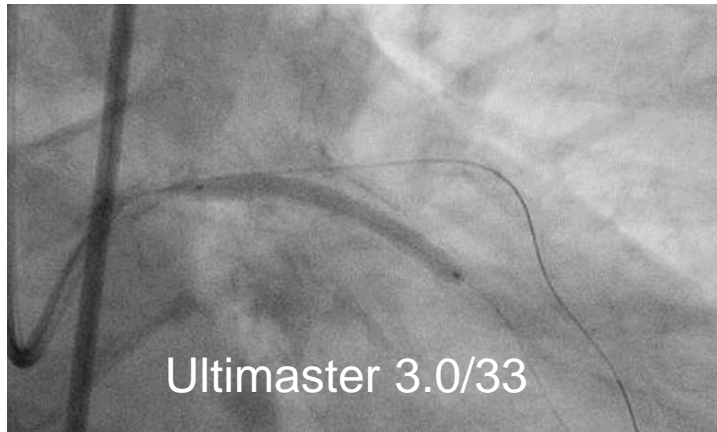
2.15mm burr





# Culotte stenting

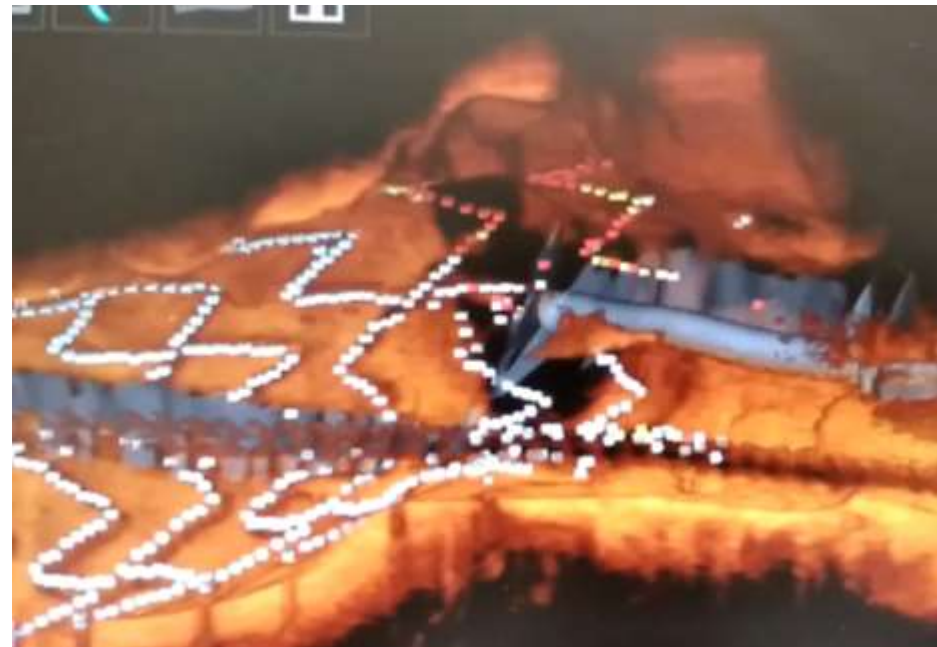
## (1) Diagonal branch stenting



# 3D OCT: GW recrossing point

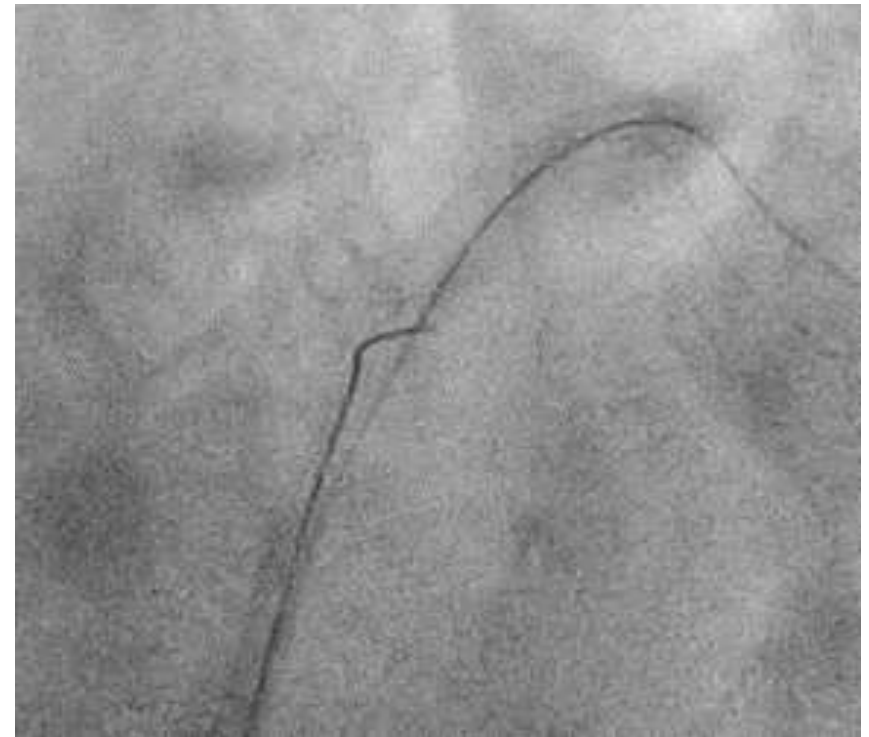
Default view

Original view



Stent enhancement  
GW display

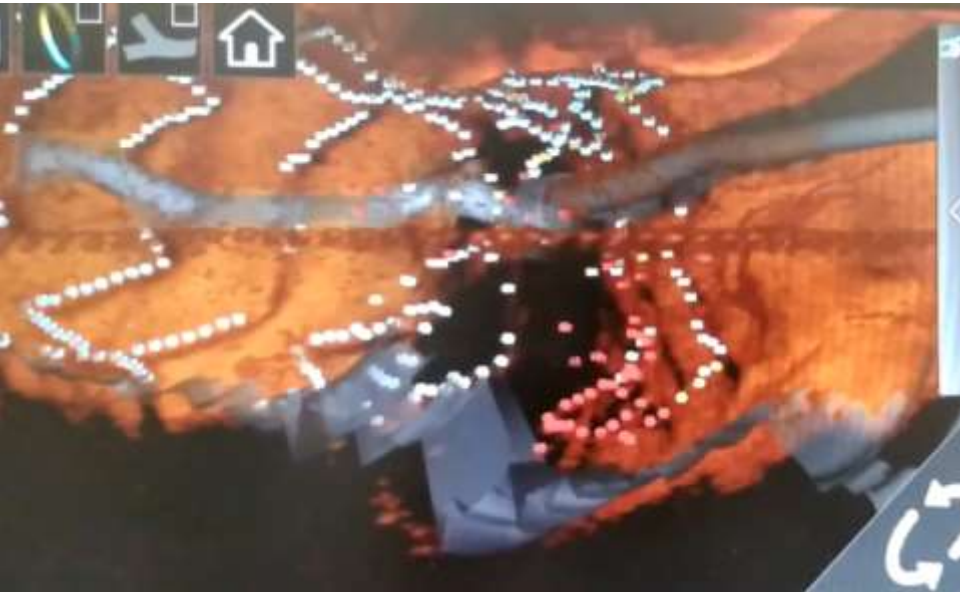
# Culotte stenting (2) LAD stenting



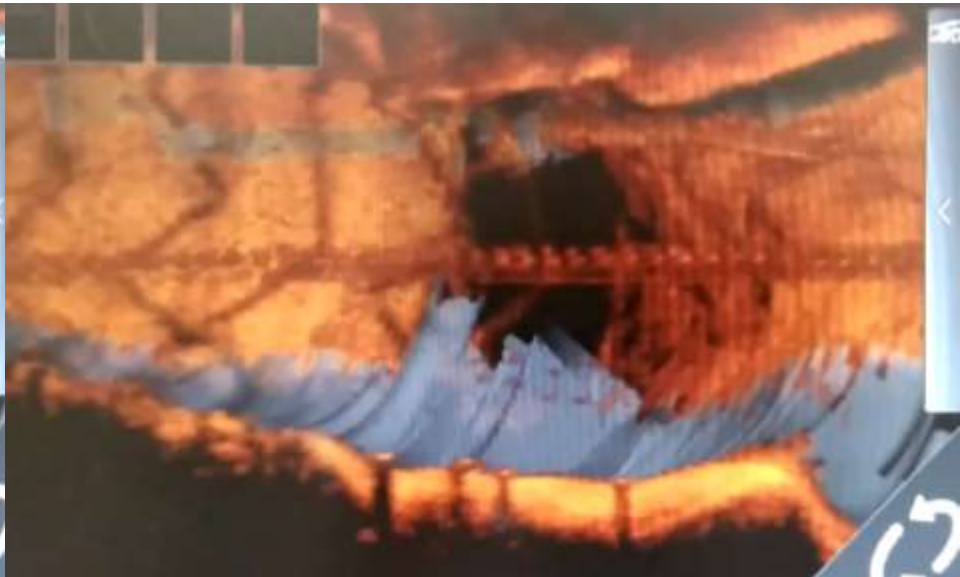
GW recross to D1 branch

# 3D OCT: GW recrossing point

Default view



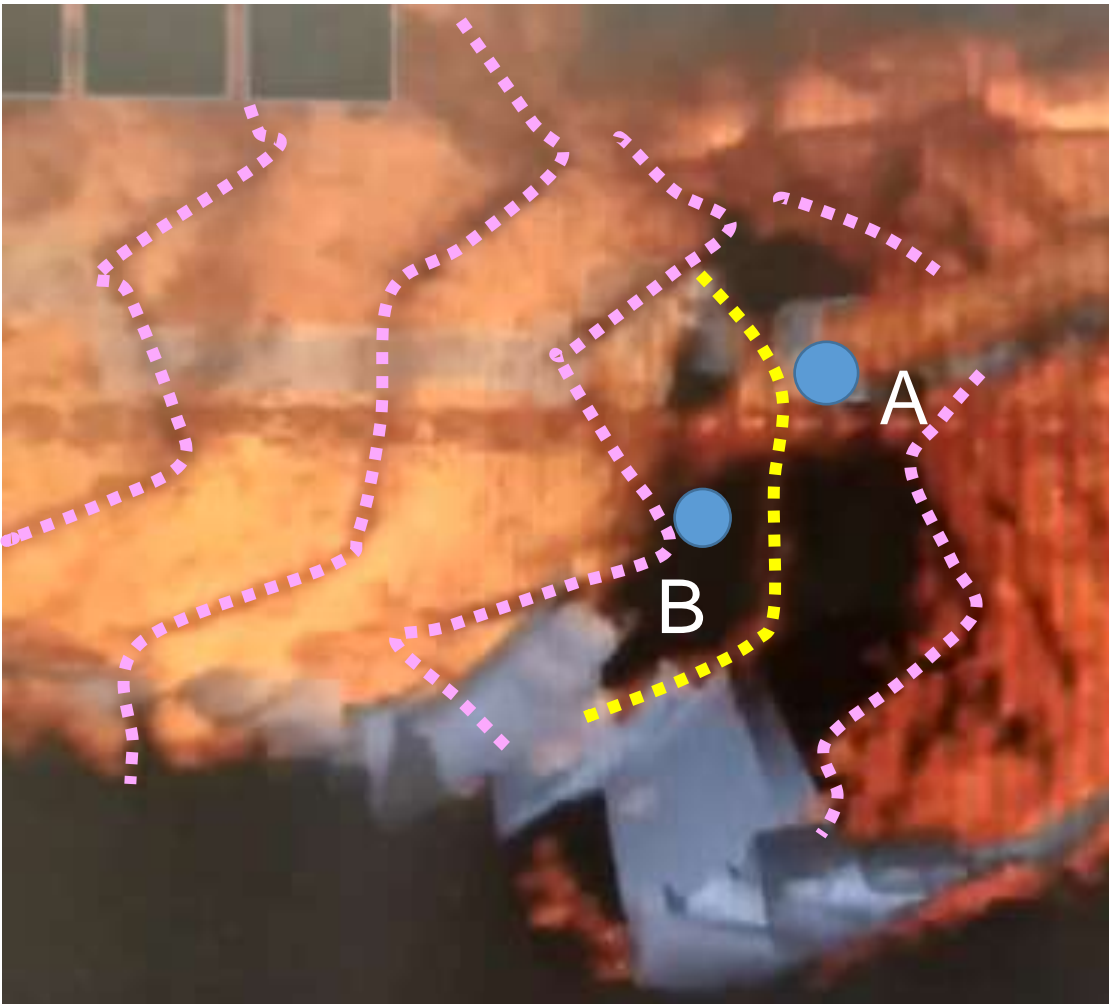
Original view



Stent enhancement  
GW display: failure

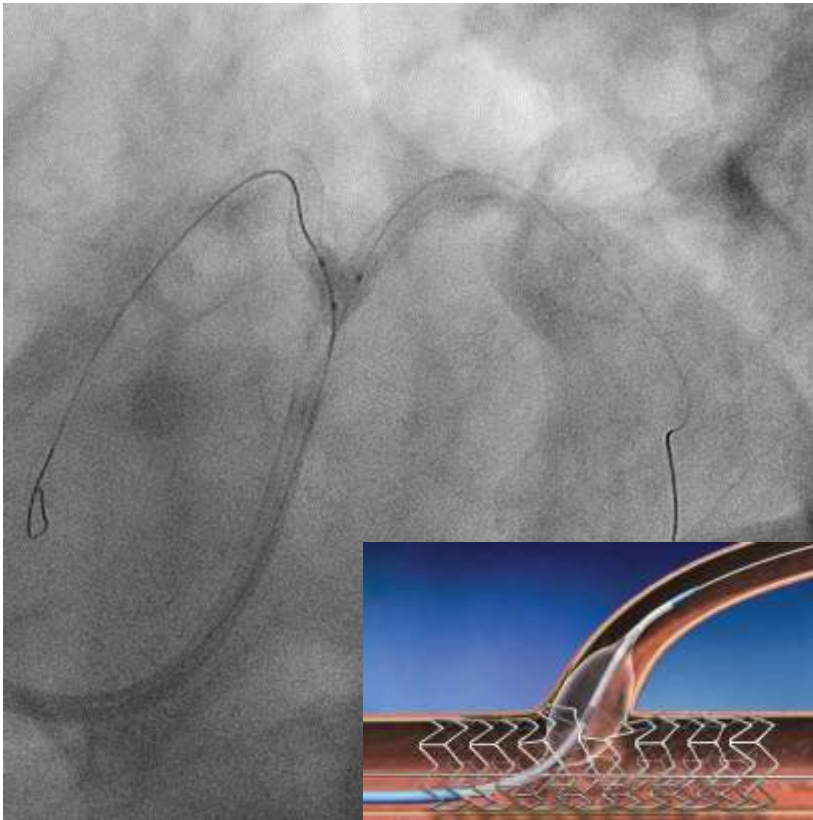
# Which is an optimal cell for GW recrossing?

A: present GW position, B: more distal location



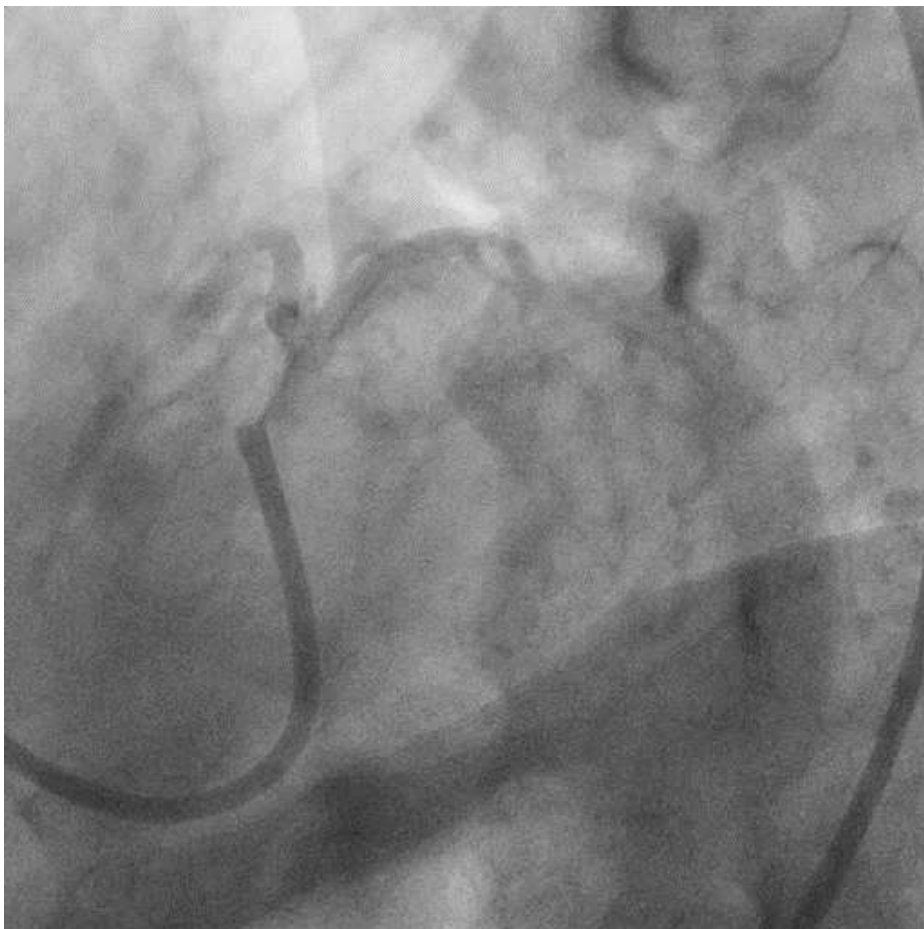
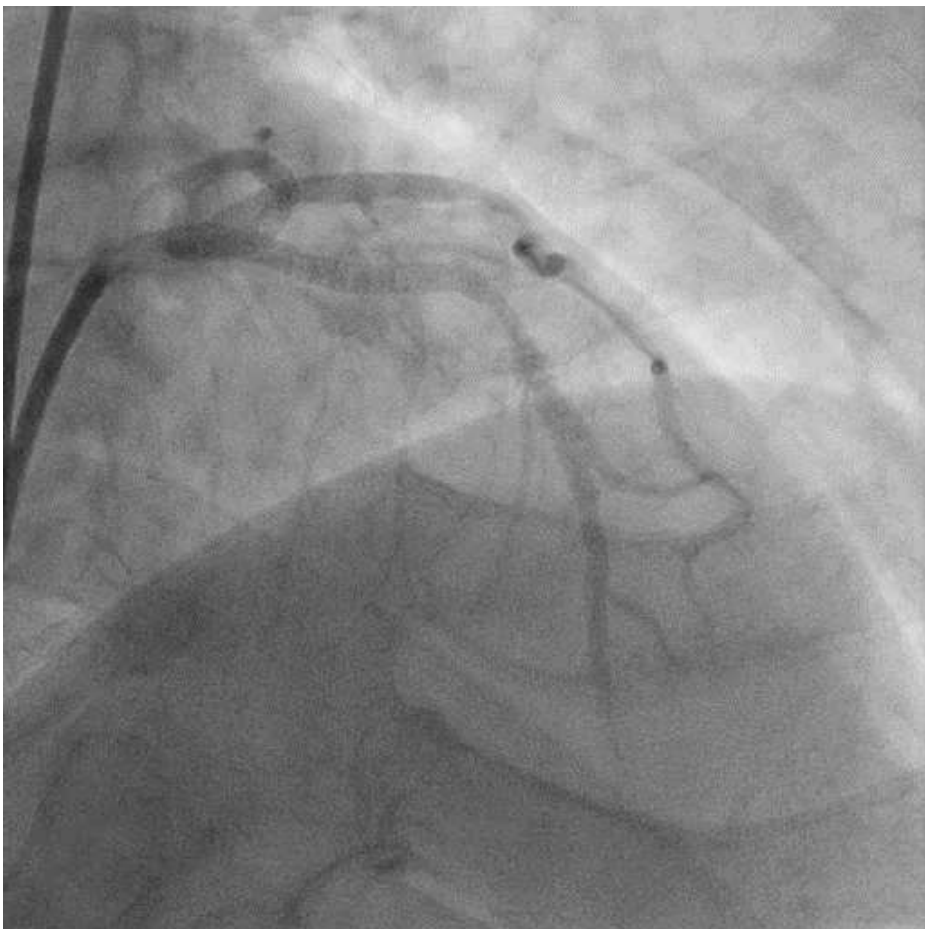
POT brought wide opening of the jailed struts of MV stent (pink struts) and some deflection of protruded cell of the SB stent (yellow strut). GW recrossing into the position B will lead to SB stent deformation.

# Kissing balloon inflation



Powered Lacrosse 3.0/13  
Glider 3.0/4  
8atm

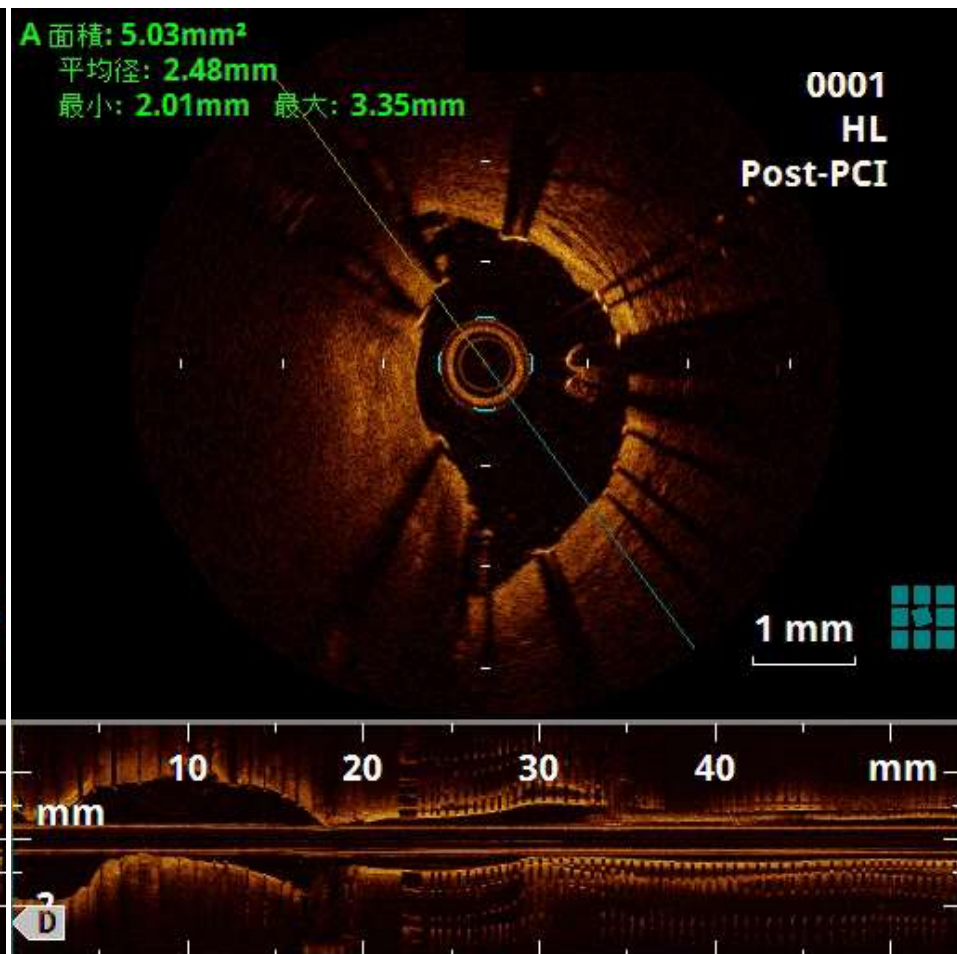
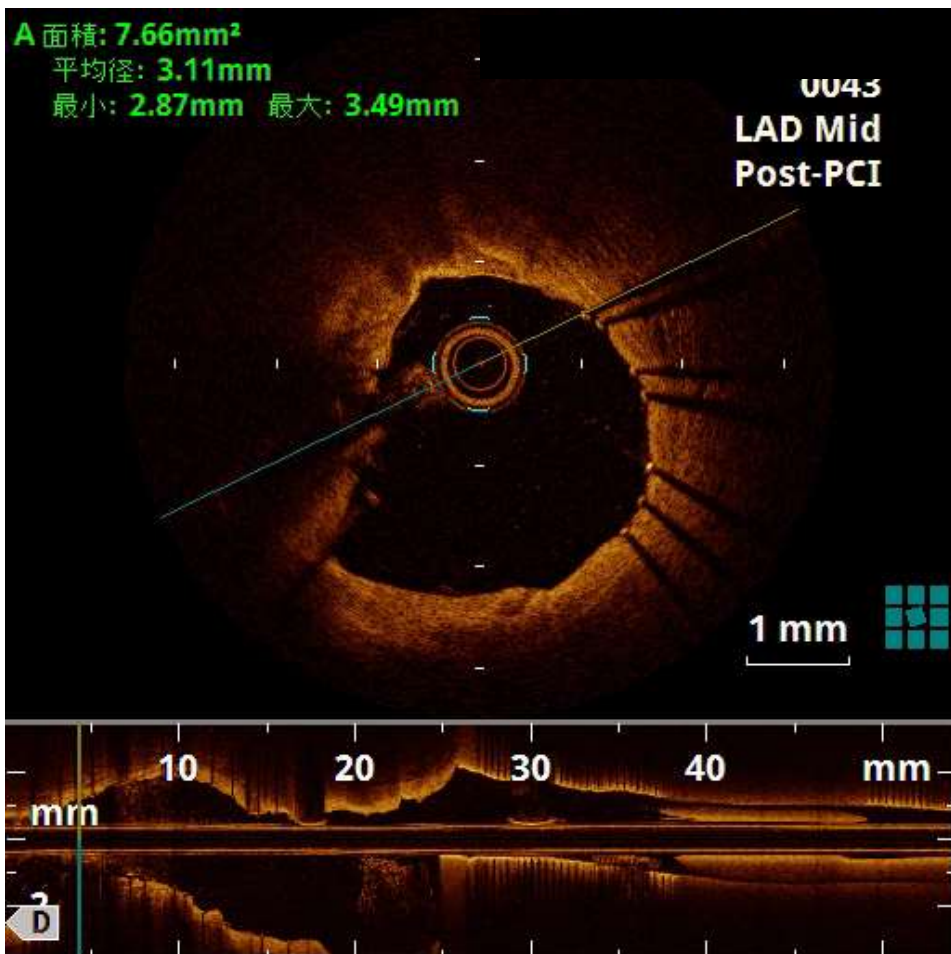
# Final CAG



# Final OCT

LAD OS 8.7mm<sup>2</sup>

LCX OS 6.1mm<sup>2</sup>





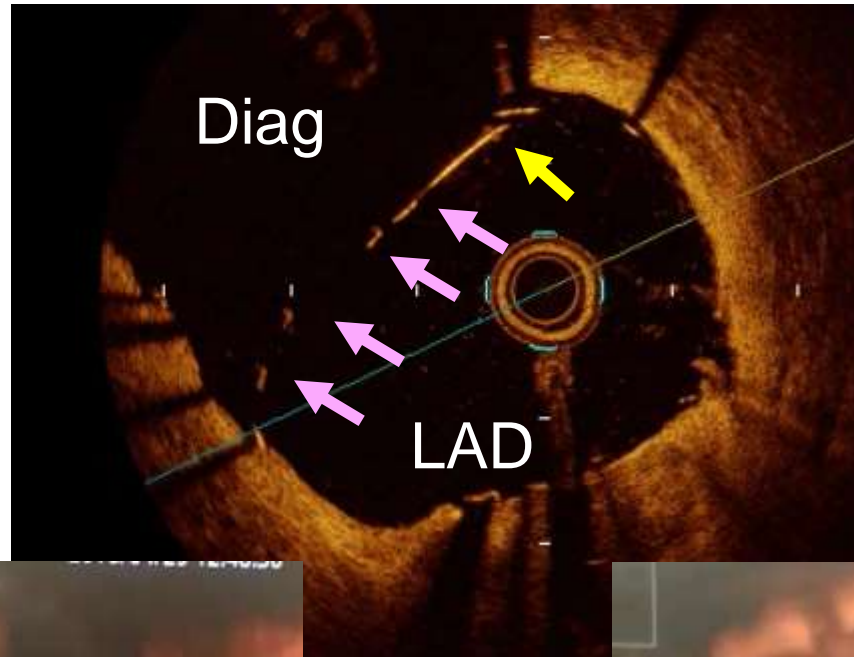
# Final 3D OCT

Pullback from diagonal branch

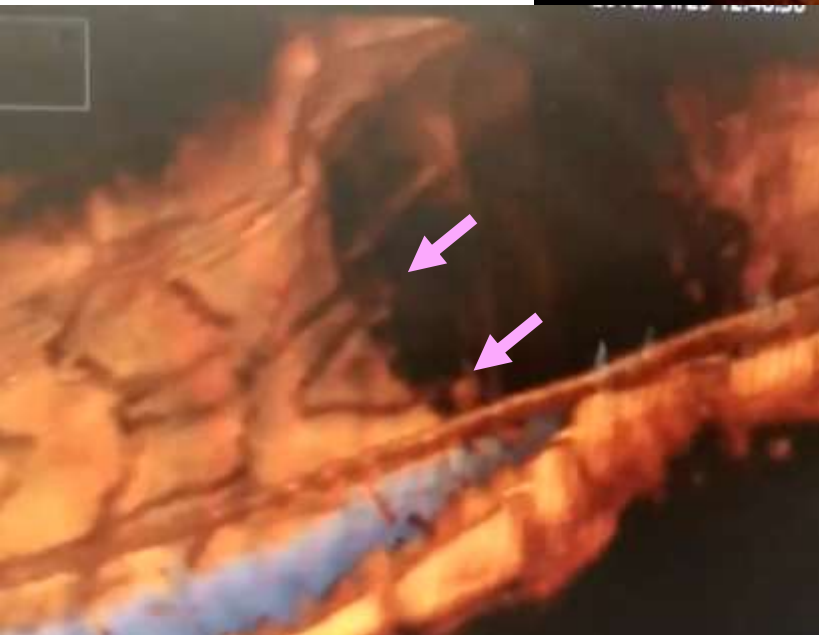


# Protruded struts: within acceptable range

Protruded strut  
of SB stent

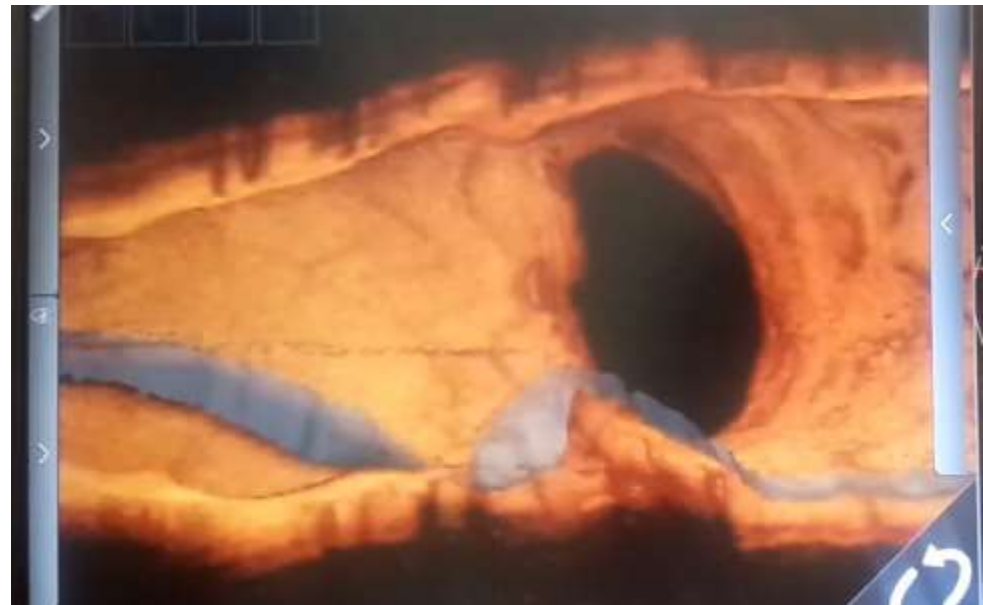
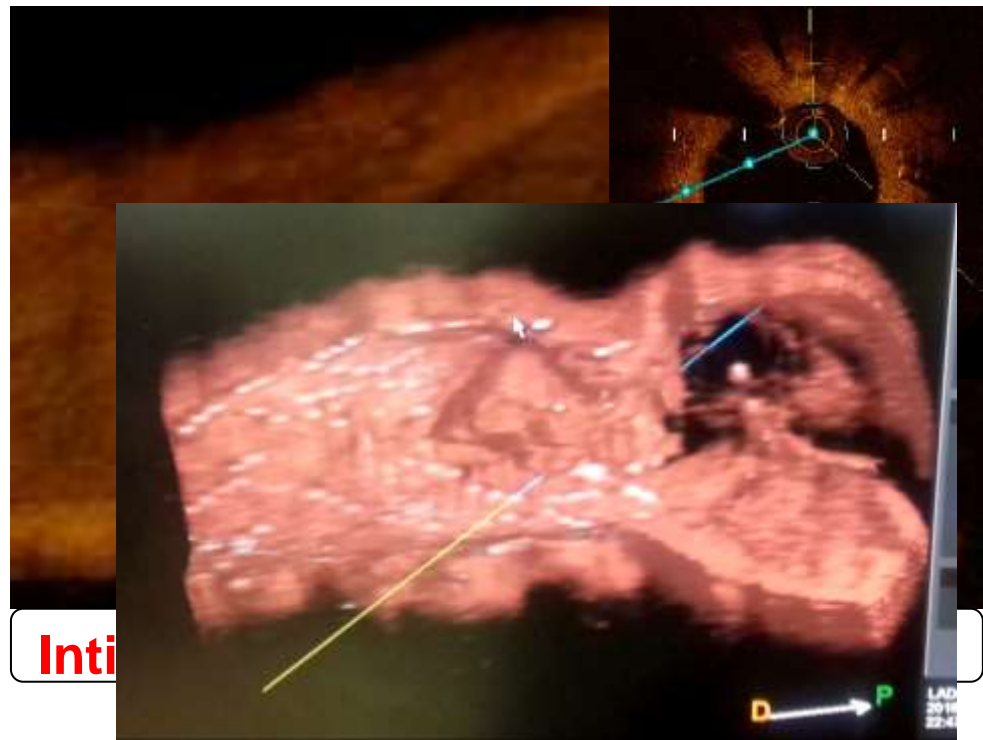


Protruded strut  
of MV stent



# SB Dilation or Not?

Complete removal of the jailed struts and optimal dilation in each branch will promote ideal intimal coverage with less restenosis.



# Conclusion

- OCT-guided rotablation provided adequate lesion preparation for culotte stenting in the calcified true bifurcation lesion.
- 3-D OCT was useful for the assessment of GW recrossing point even in the 2-stent deployment. It provided wide opening of the branch ostium with less jailed struts and minimized the stent deformation.

**Thank you for your attention!**