

# **OCT : Mechanism of Stent Failure**

## **Neoatherosclerosis & recanalized thrombi**

**Hyun Woo Park, MD.**

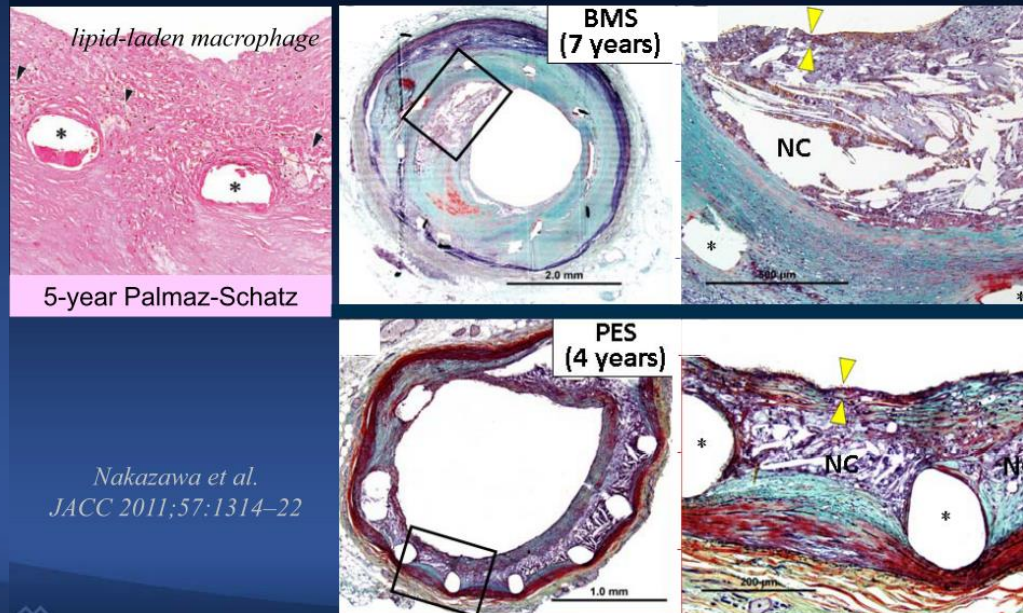
University of Ulsan College of Medicine  
Asan Medical Center, Seoul, Korea

# Disclosure

I have nothing to disclose

# Neoatherosclerosis

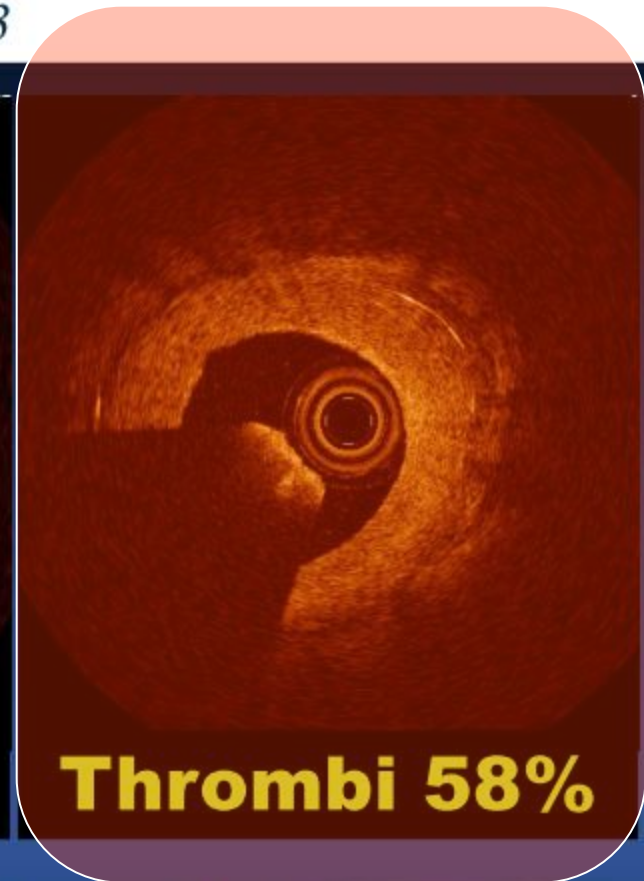
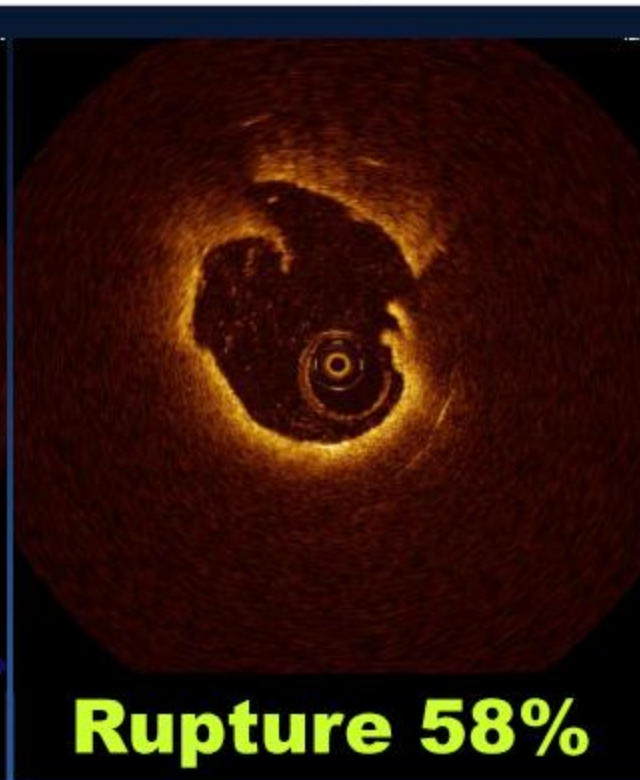
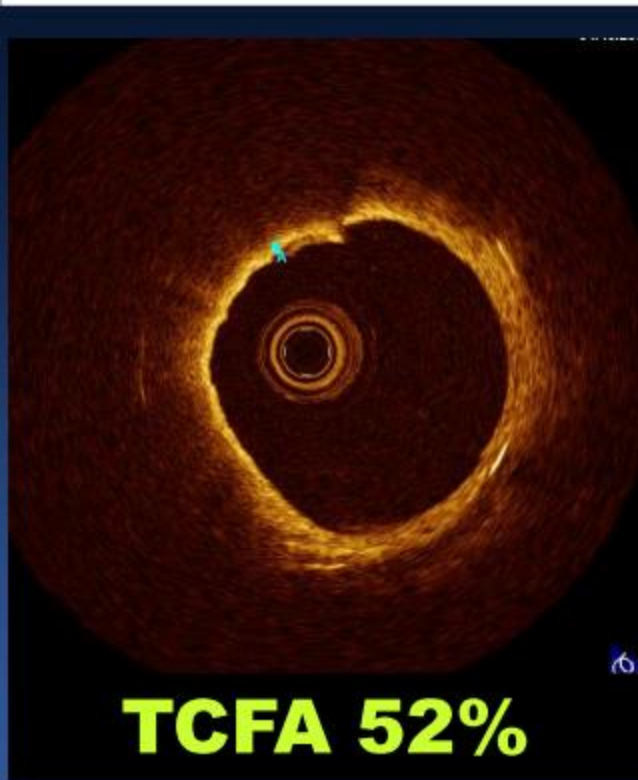
- Neoatherosclerosis means atherosclerotic change in neointima after stent implantation
- Atherosclerotic change is infiltration of inflammatory cell in neointima



# Optical Coherence Tomographic Analysis of In-Stent Neoatherosclerosis After Drug-Eluting Stent Implantation

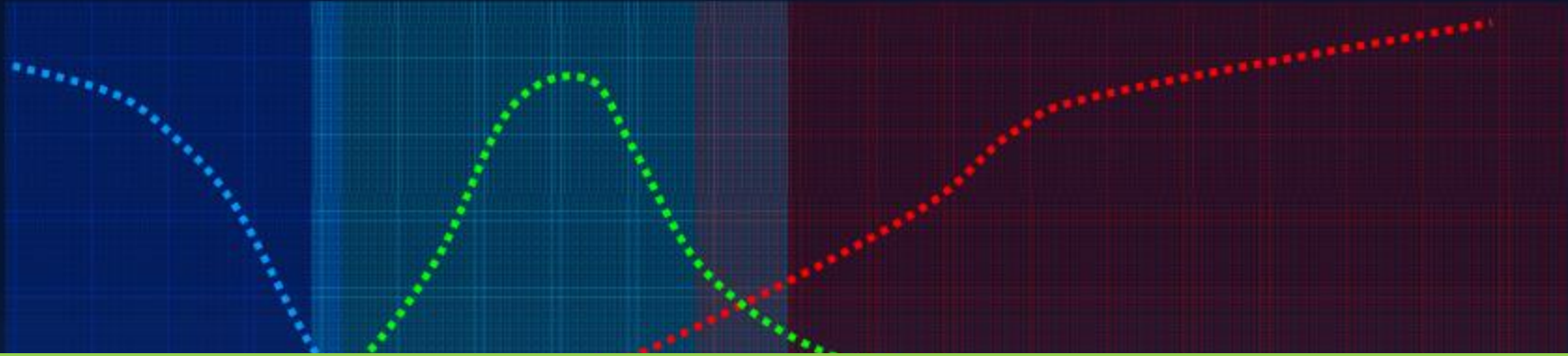
Soo-Jin Kang, MD; Gary S. Mintz, MD; Takashi Akasaka, MD, PhD; Duk-Woo Park, MD, PhD; Jong-Young Lee, MD; Won-Jang Kim, MD; Seung-Whan Lee, MD, PhD; Young-Hak Kim, MD, PhD; Cheol Whan Lee, MD, PhD; Seong-Wook Park, MD, PhD; Seung-Jung Park, MD, PhD

*Circulation 2011;123:2954-63*



50 DES-ISR (Median F/U 32 months)

# Timing and Mechanism of **DES Thrombosis**



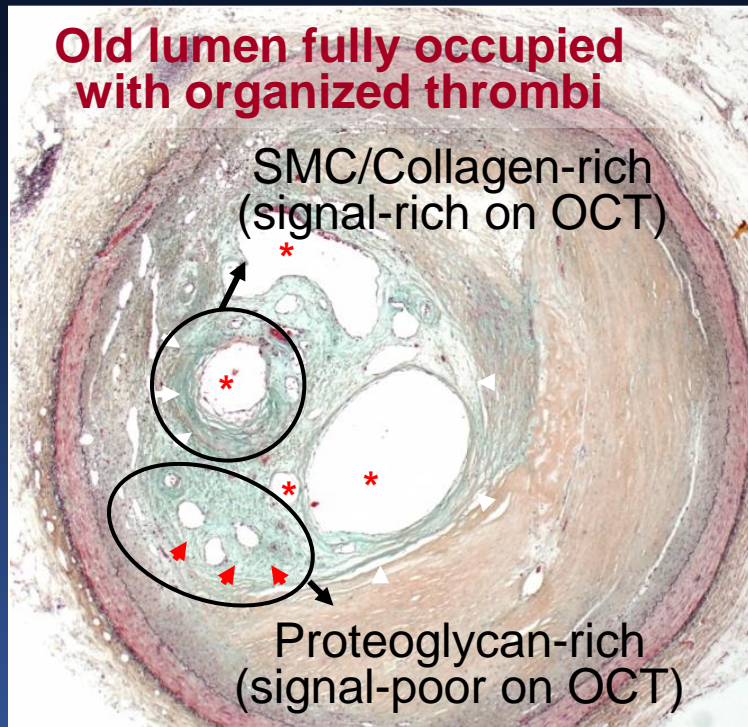
**Neoatherosclerosis is final common pathway of stent failure**

| <b>Early (&lt;30d)</b>                               | <b>Late (1-12 Mo)</b>                 | <b>Very late (&gt;12 Mo)</b>  |
|--|---------------------------------------|---|
| <b>Procedural</b>                                    | <b>Delayed healing</b>                | <b>Abnormal vascular response</b>   |
| Underexpansion<br>Edge dissection<br>Residual plaque | Uncovered struts<br>Fibrin deposition | Hypersensitivity<br>Extensive fibrin deposition<br>Late malapposition?<br><b>Neoatherosclerosis</b> |

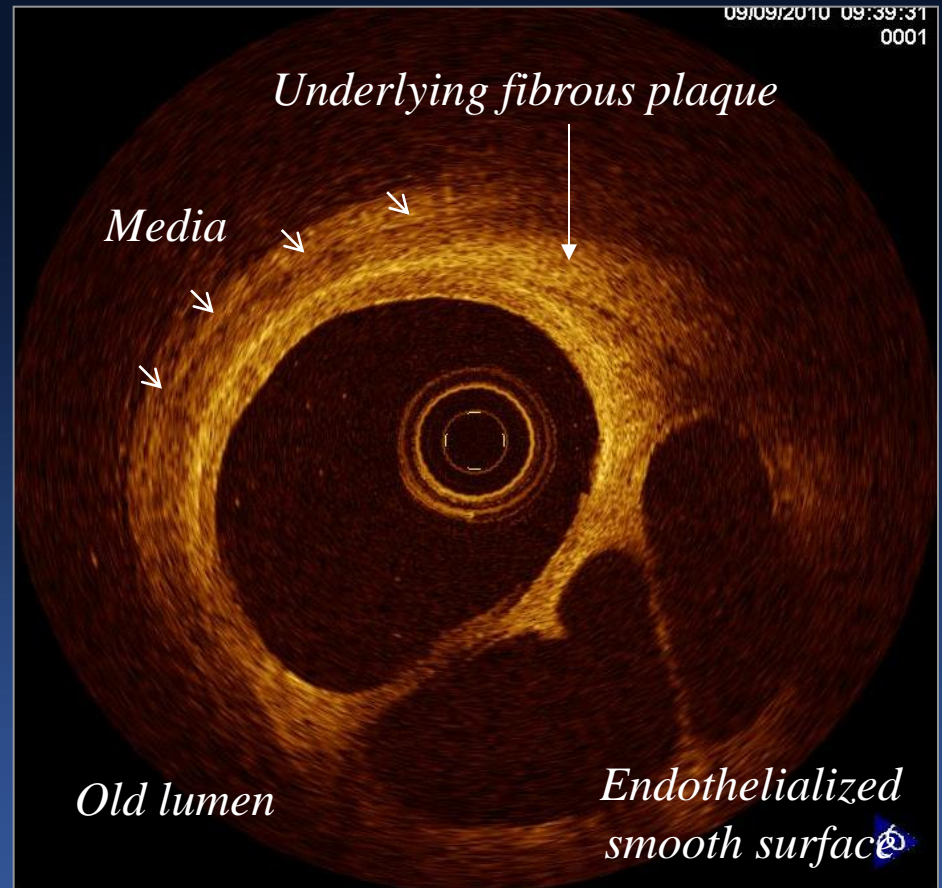
*Nakazawa et al. J Cardiol 2011;58:84-91*

# OCT Findings in Patients with Recanalization of Organized Thrombi

- rarely recognized in real practice. Histologically, defined as multiple channels divided by thin septa

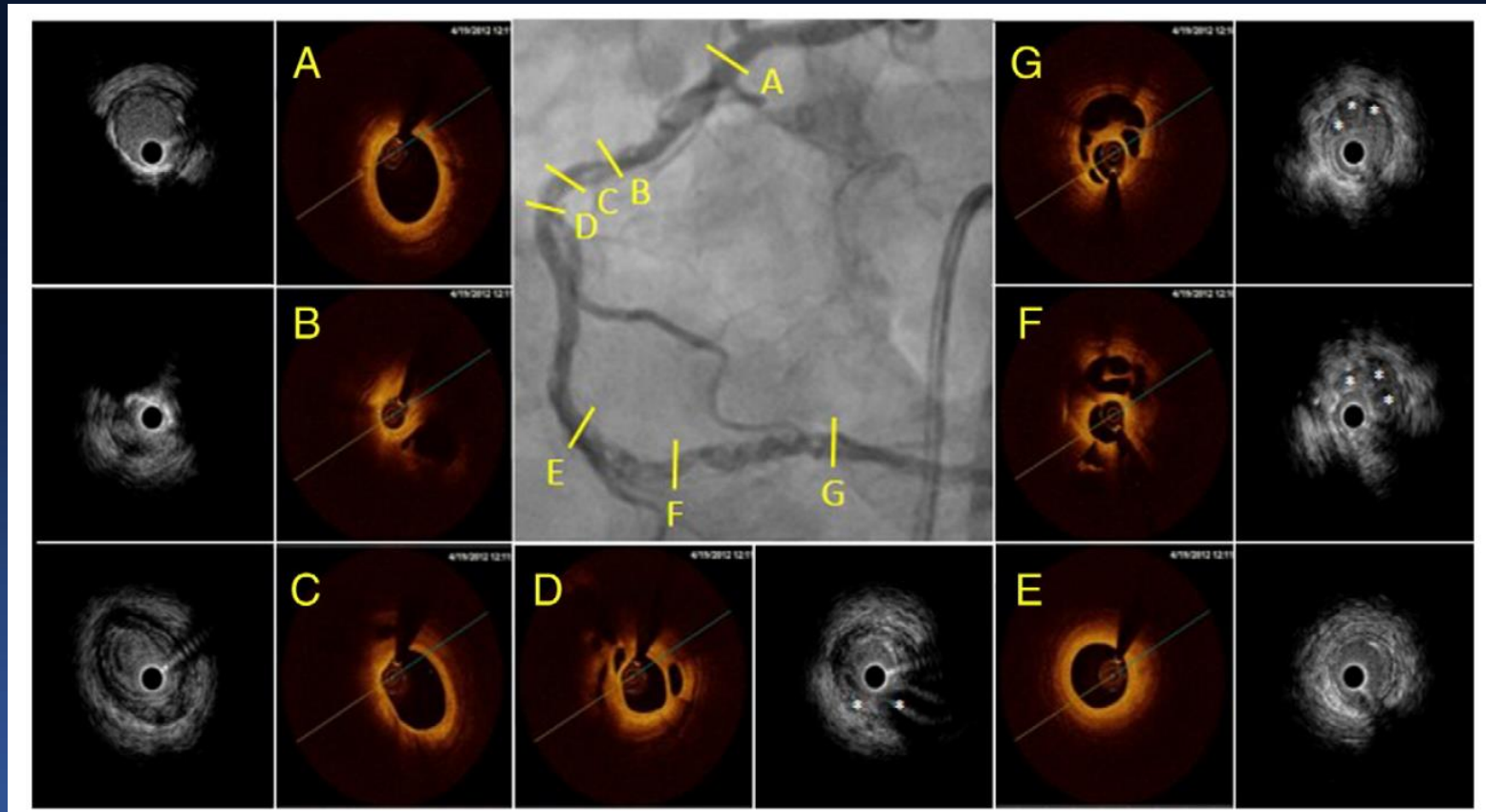


by R Virmani and M Nakano, CVPPath



- Signal-rich high backscattered septa dividing the lumen into multiple cavities communicating with each other **'Swiss-cheese'**

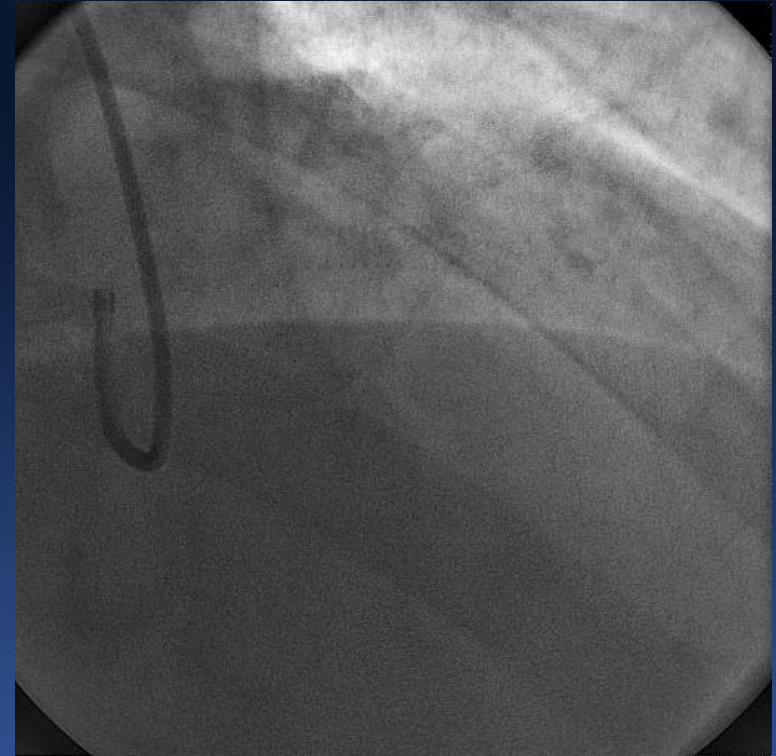
# Case of Recanalized Thrombi in BMS failure



*by Shinichiro Sakurai et al.*

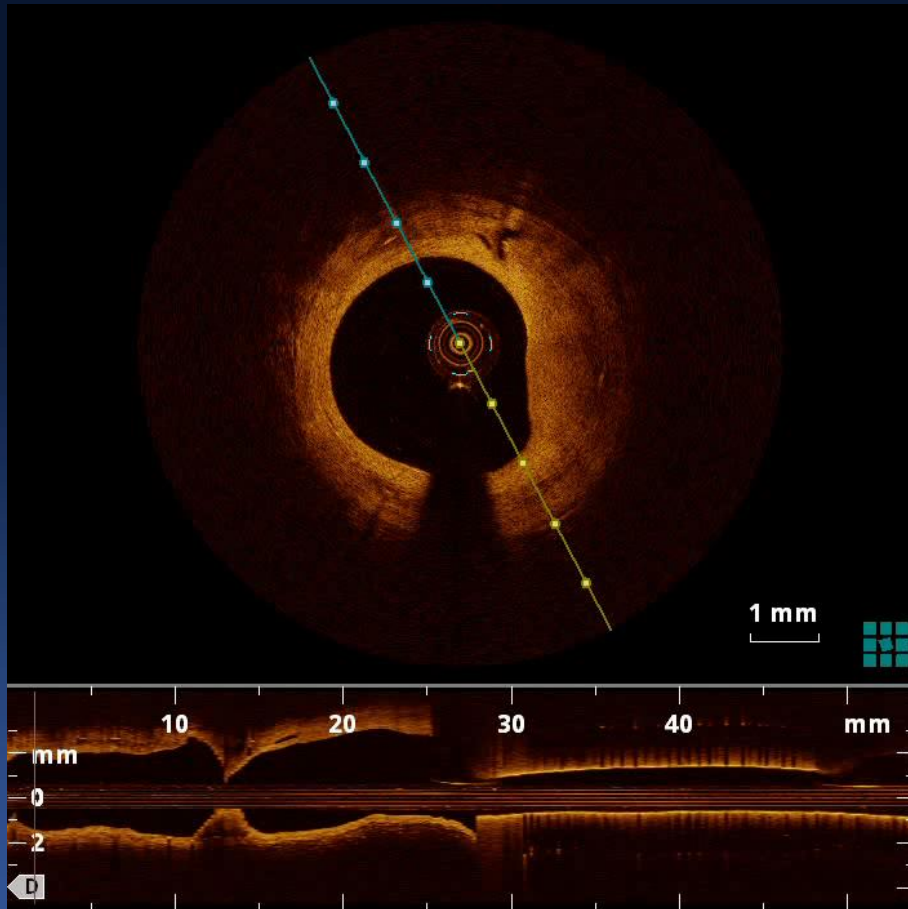
## **CASE 1** 58 years old male

- 7YA History of PCI at pLAD with Taxus 3.5(20)
- Unstable angina
- Echo : Normal LV function without RWMA





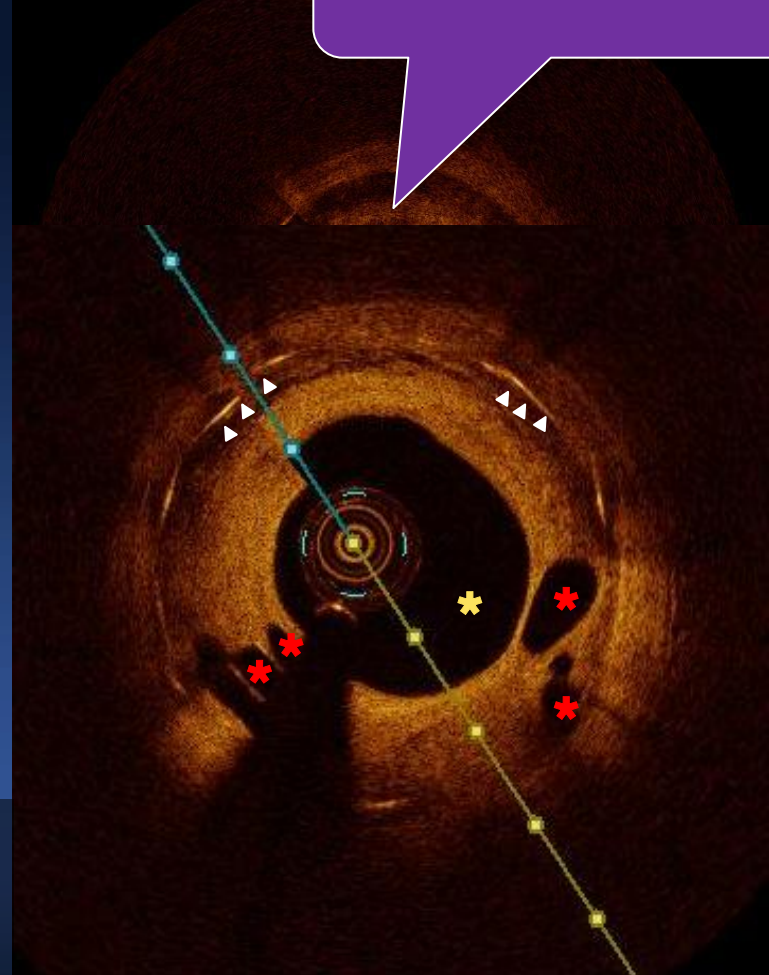
# OCT finding 'Swiss-cheese'



Multiple small channels, divided by thin septa, surrounding a larger central lumen

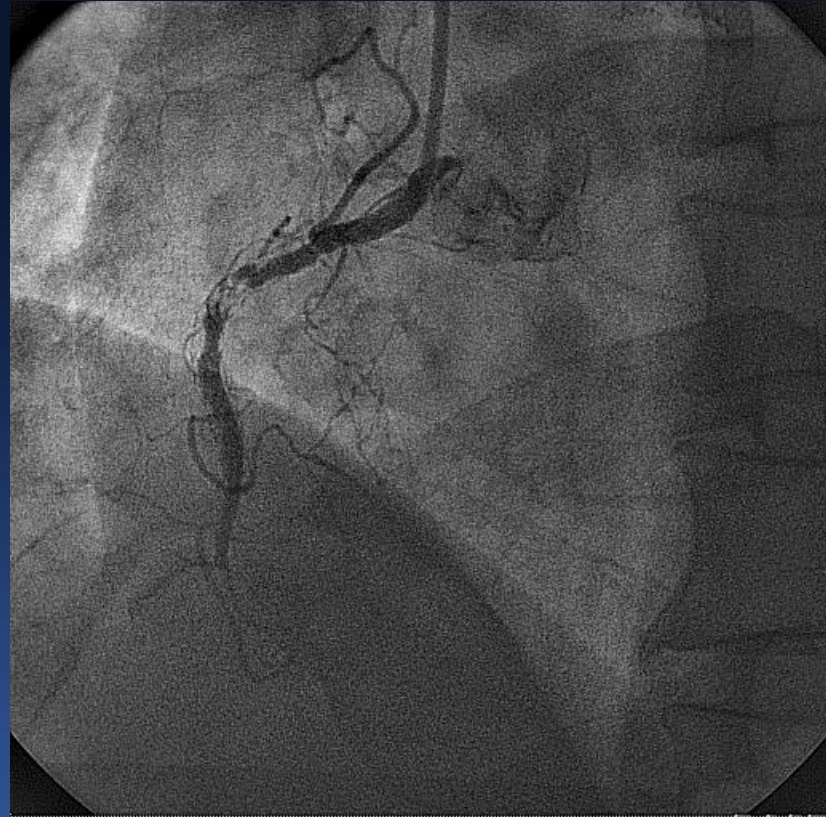
A Area: 1.28mm<sup>2</sup>  
Mean Diameter: 1.27mm  
Min: 1.19mm Max: 1.38mm

Neointima hyperplasia with previous stent

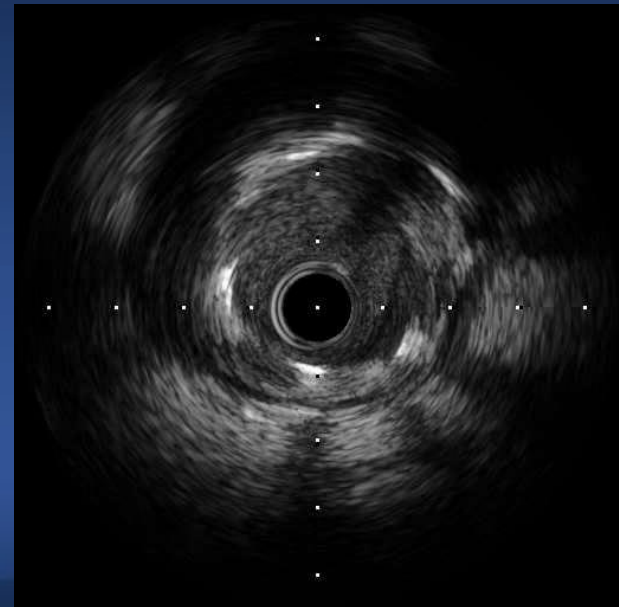
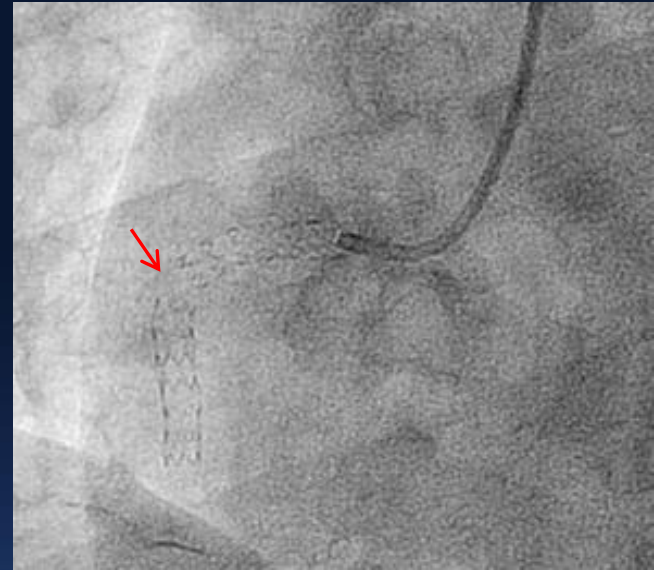
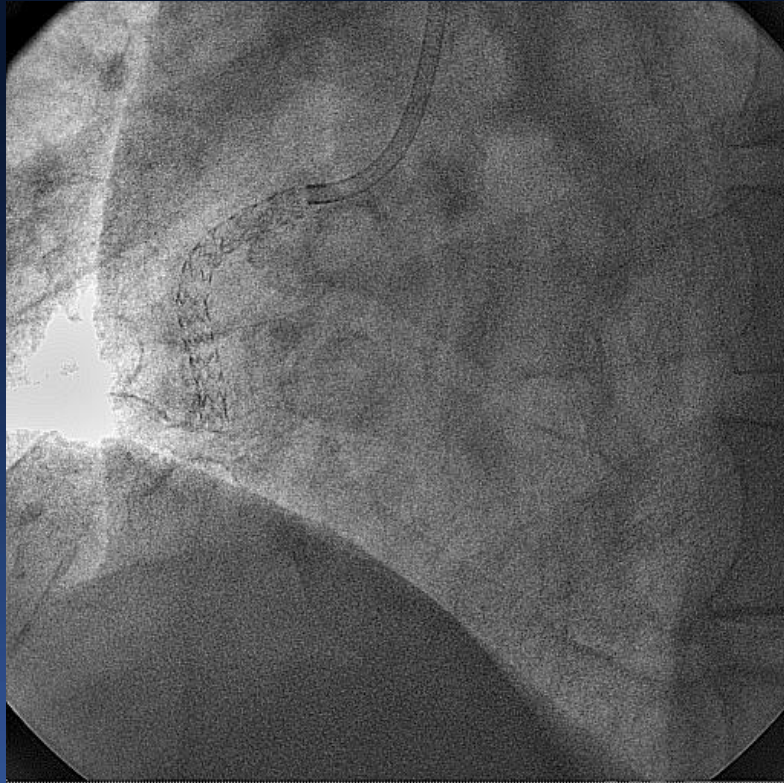


## **CASE 2** 76 years old male

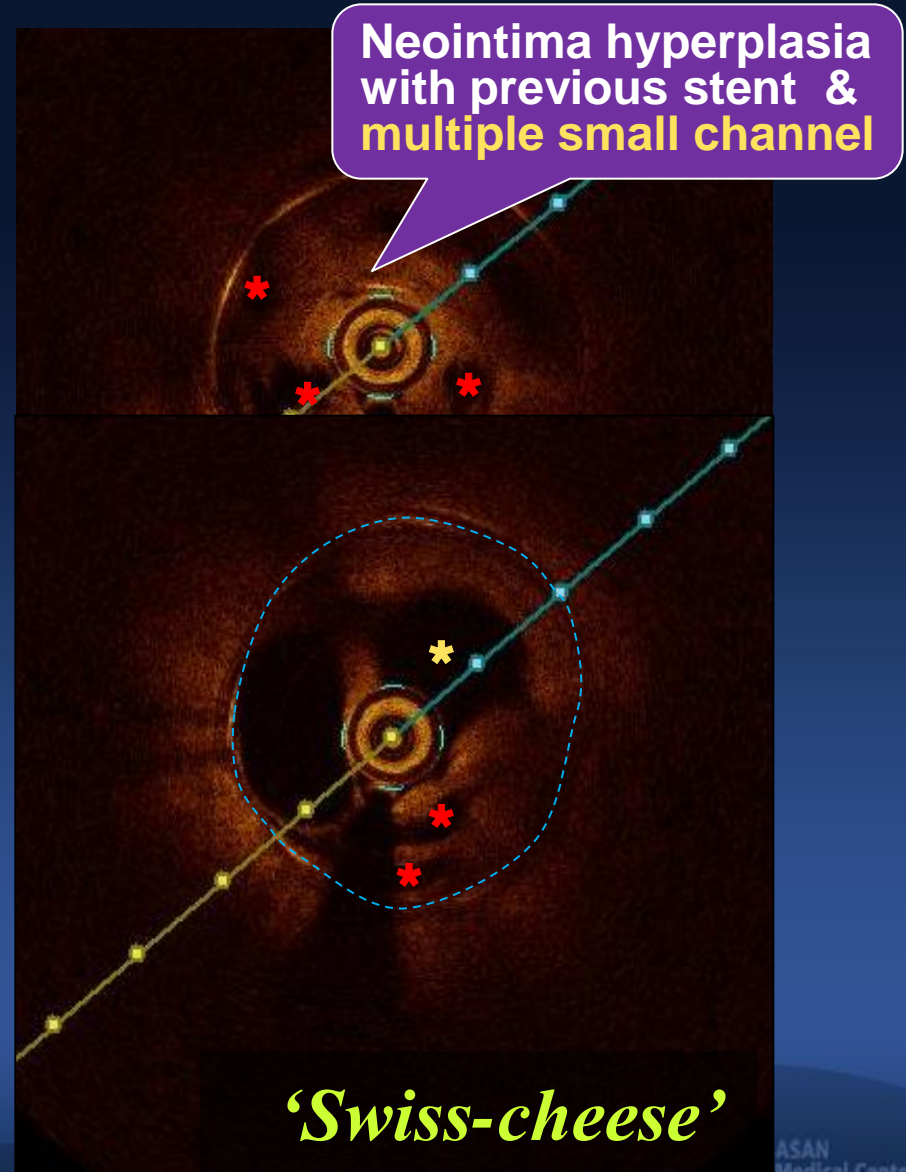
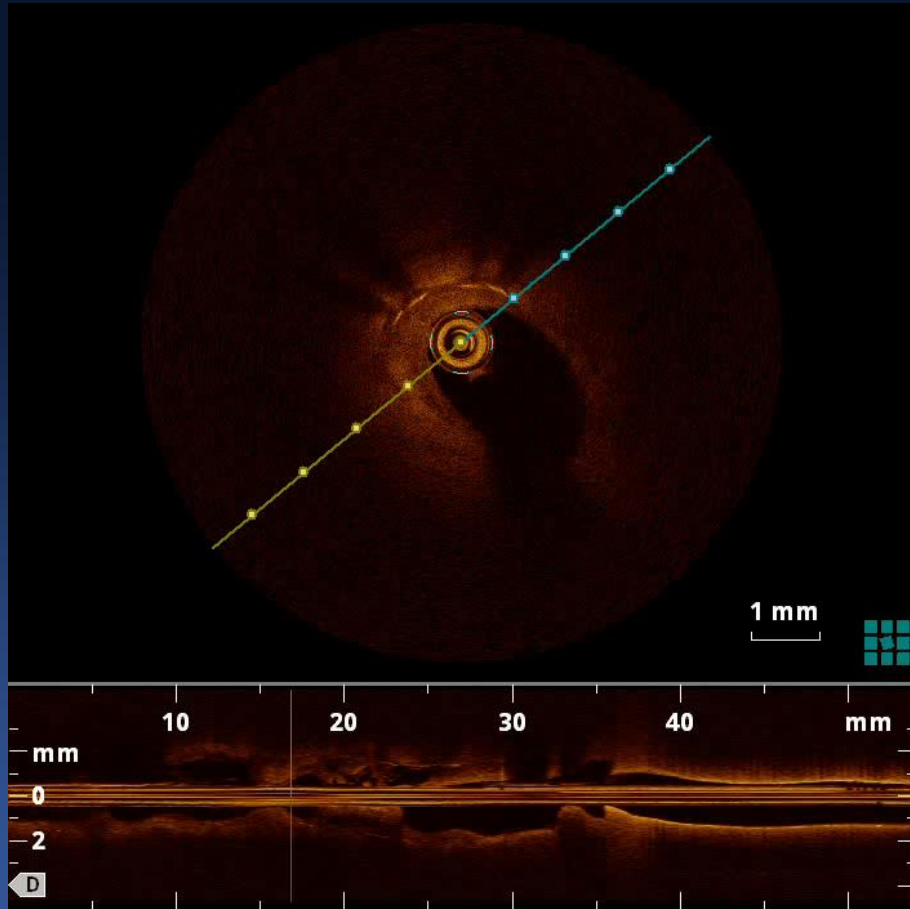
- 6YA History of PCI at pRCA with Cypher 3.5(33)
- 2YA Efforting chest pain



# ISR with Stent Fracture



# OCT finding **'Swiss-cheese'**



# Recanalization of thrombi after stent

|                      | Gender<br>Age | Dx.    | Stent  | Lesion            | Risk Factor   |
|----------------------|---------------|--------|--------|-------------------|---------------|
| Case 1               | M/58          | UA     | Cypher | LAD               | Smoking       |
| Case 2               | M/76          | SA     | Taxus  | RCA               | DM            |
| Shinichiro<br>et al. | M/74          | SA     | BMS    | RCA               | DM, HL        |
| Seiji et al          | F/39          | angina | Cypher | Saphenous<br>vein | HTN, HL, ESRD |

**Clinical presentation were all angina  
No myocardial infarction.  
=> it's same finding as previous report!**

# SUMMARY

- OCT can assess the mechanism of stent failure
- Recanalization of organized thrombi can be observed in neoatherosclerosis after stent implantation
- To know effects of recanalization in prognosis or management, more cases and investigations are needed.