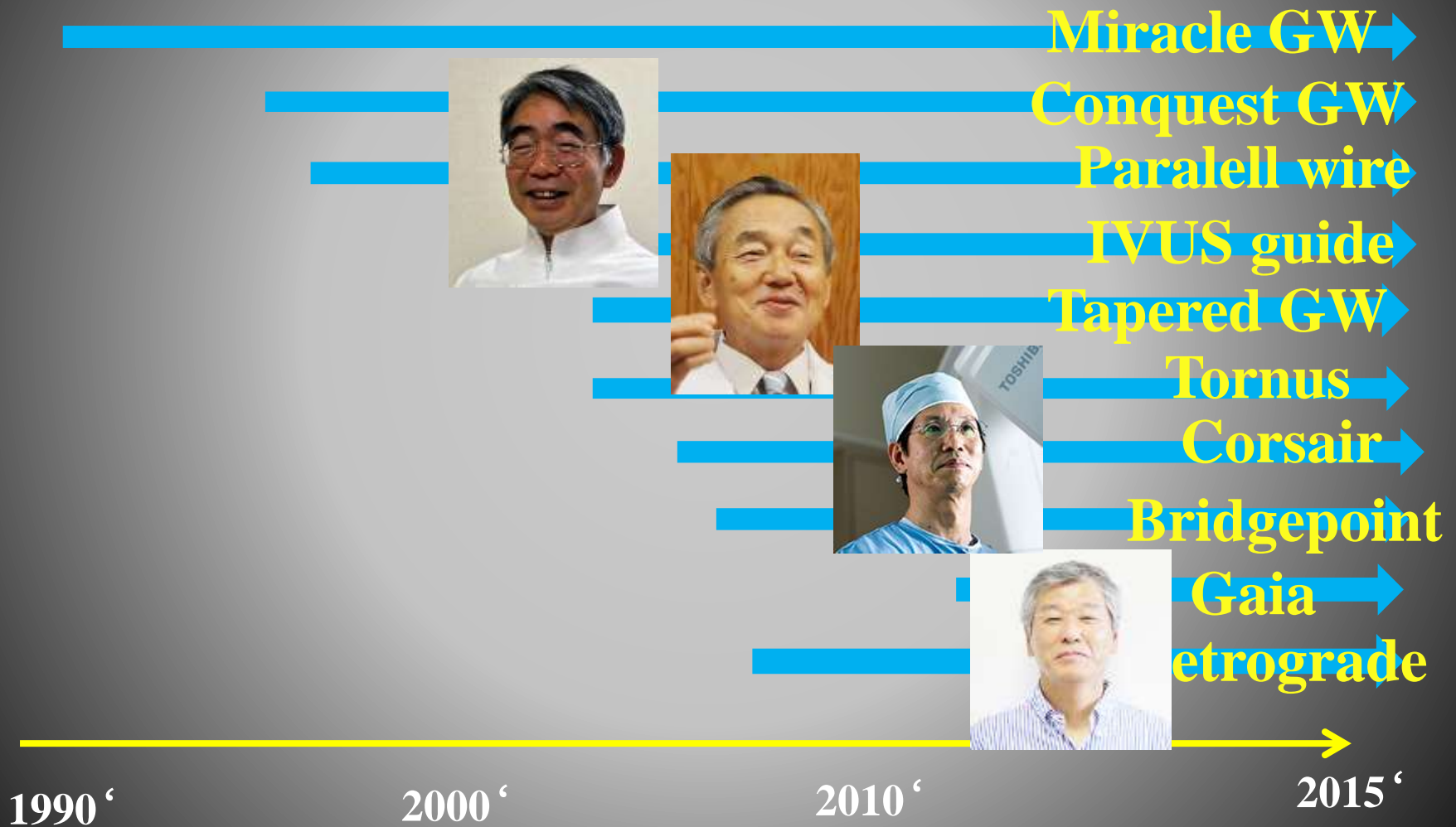


# Hand Down CTO PCI

**Toshiya Muramatsu**

**Tokyo Heart Center**

# History of PCI for CTO



1990'

2000'

2010'

2015'

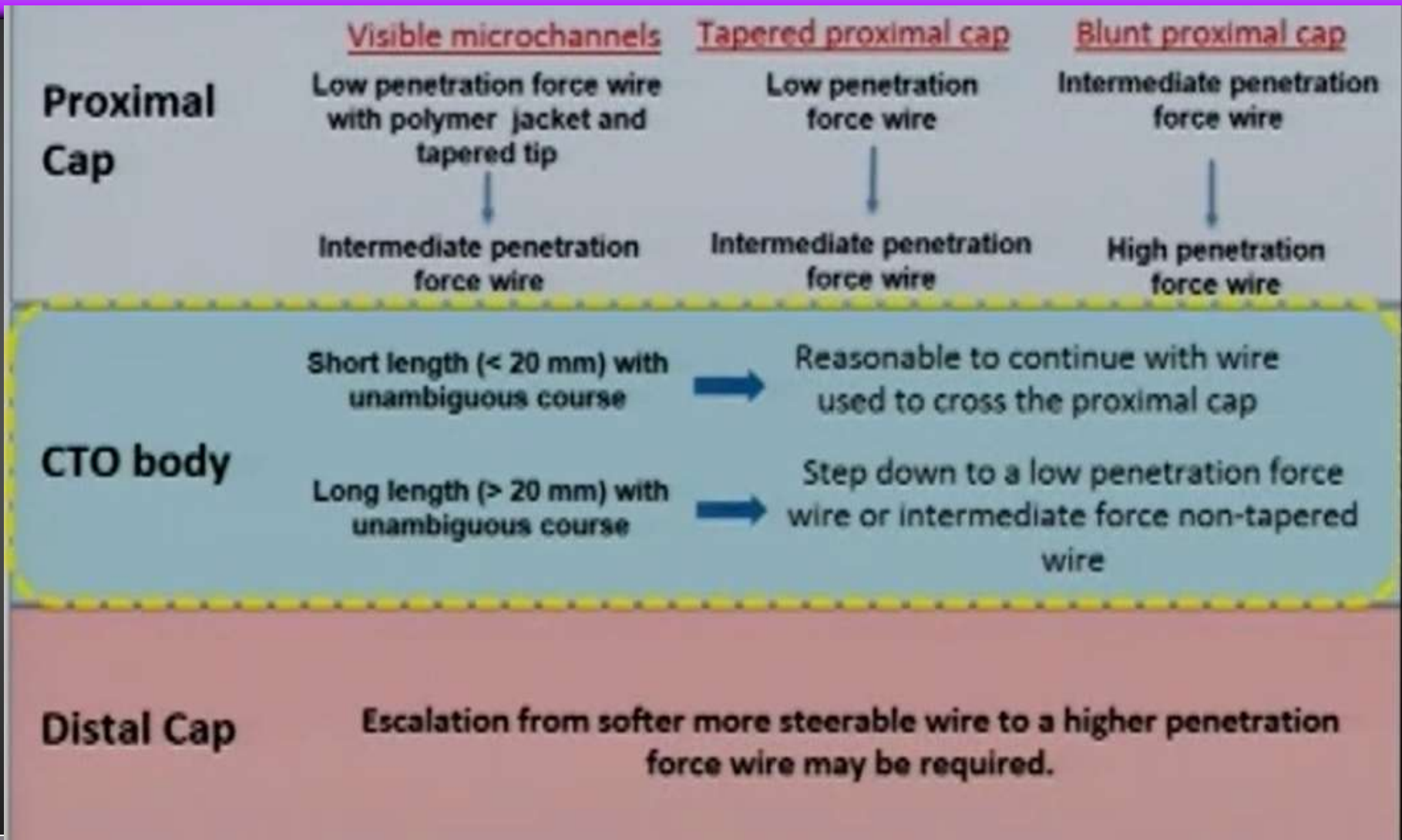
# Antegrade approach of CTO

- **Analysis and reading of CTO anatomy**
- **Progress of CTO Guidewire**
  - Polymerjacket Guidewire**
  - New inovative Guidewire**
- **Paralell wire technique**

**Progress of CTO**

**Guidewire ?**

# Antegrade wire based approach



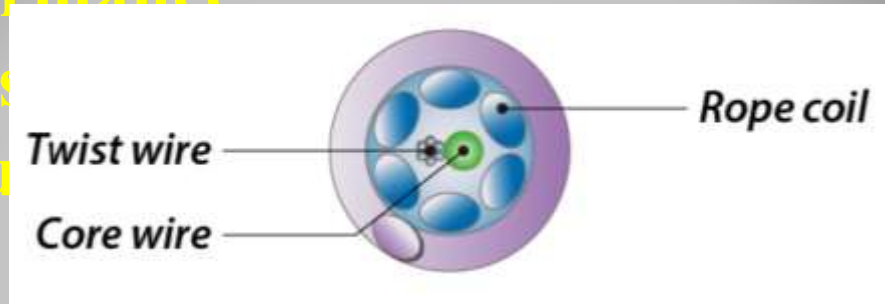
# Characteristics of GW structure

- Shaft performance

Core size

- Coil structure

Rope length



- Tip design

Tapered, tip coating

- Tip load

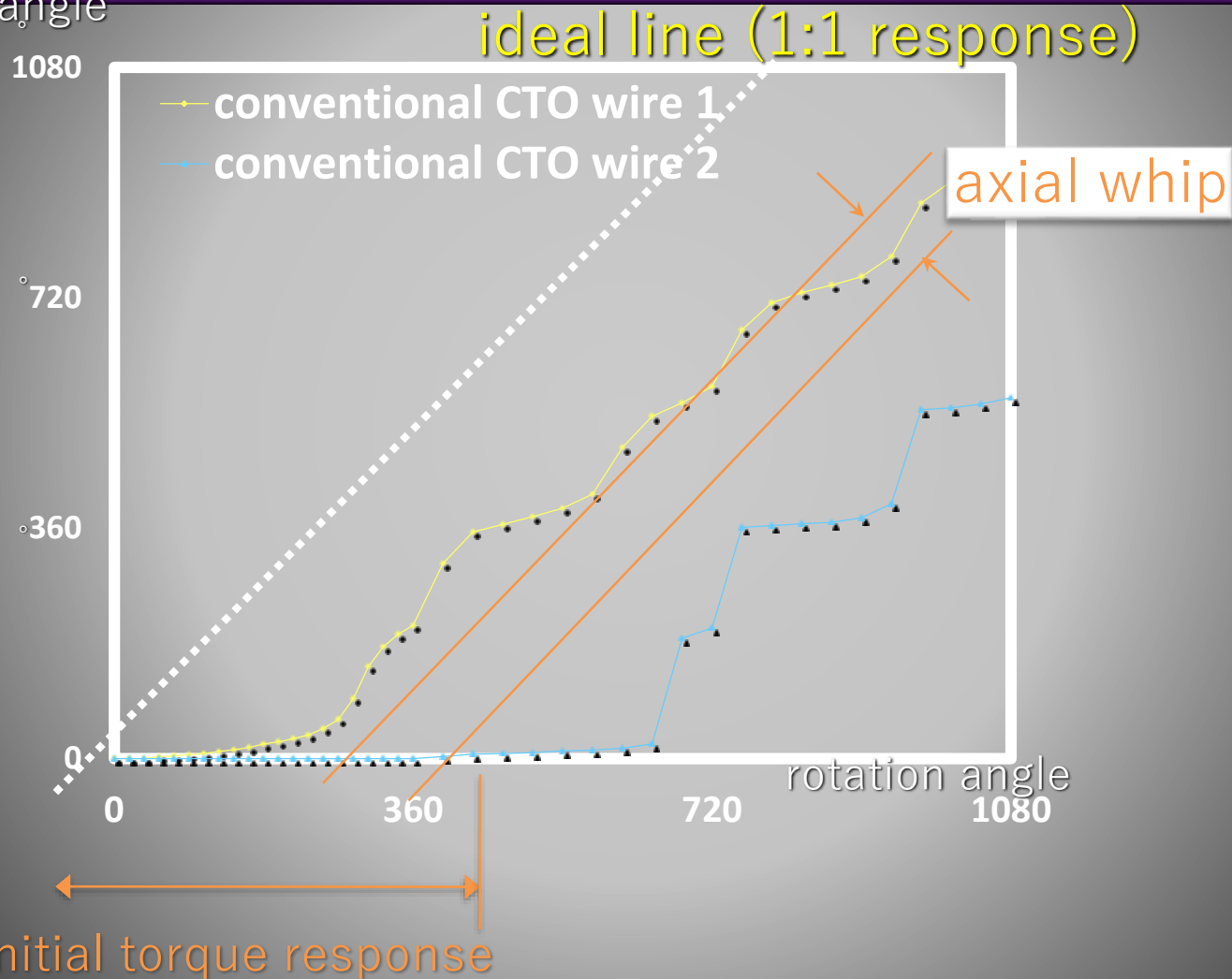
0.3g~12g

- Coating

hydrophilic, slip coating, silicon coating  
polymerjacket coating

# Importance of Torque response

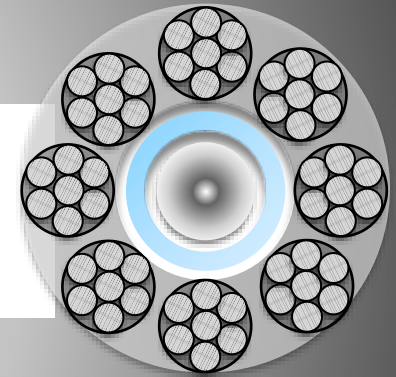
responded angle



# Characteristics of Gaia Next

## XTRAND coil

- ✓ Decreased breakage risk within the occlusion
- ✓ Improved resistance in case of trapping into the lesion
- ✓ Increased torque via counter clockwise rotation



ASAHI Gaia Next 1	2.0gf	0.36mm/0.27mm (0.014inch/0.011inch)
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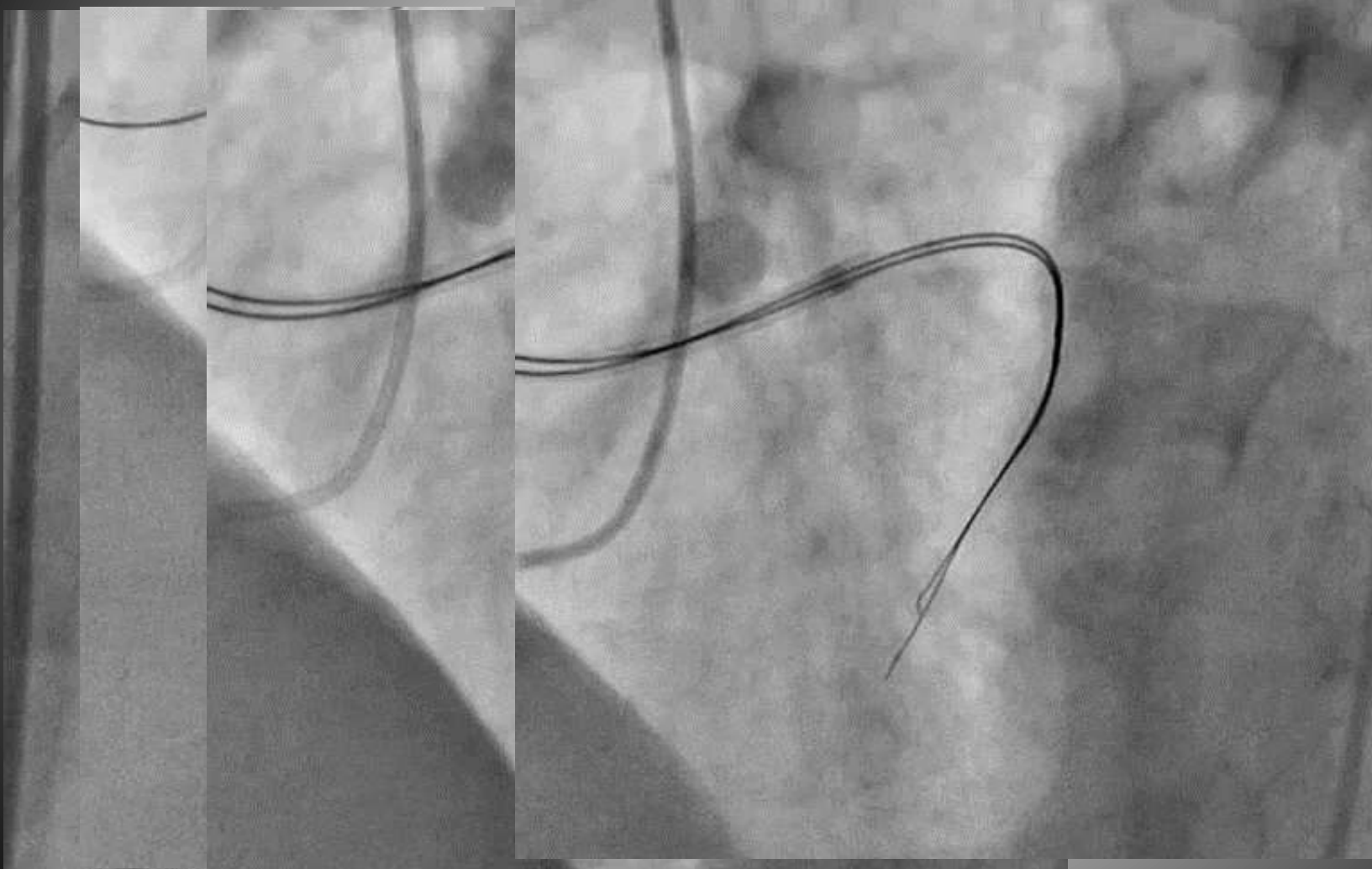
ASAHI Gaia Next 2	4.0gf	0.36mm/0.30mm (0.014inch/0.012inch)
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ASAHI Gaia Next 3	6.0gf	0.36mm/0.30mm (0.014inch/0.012inch)
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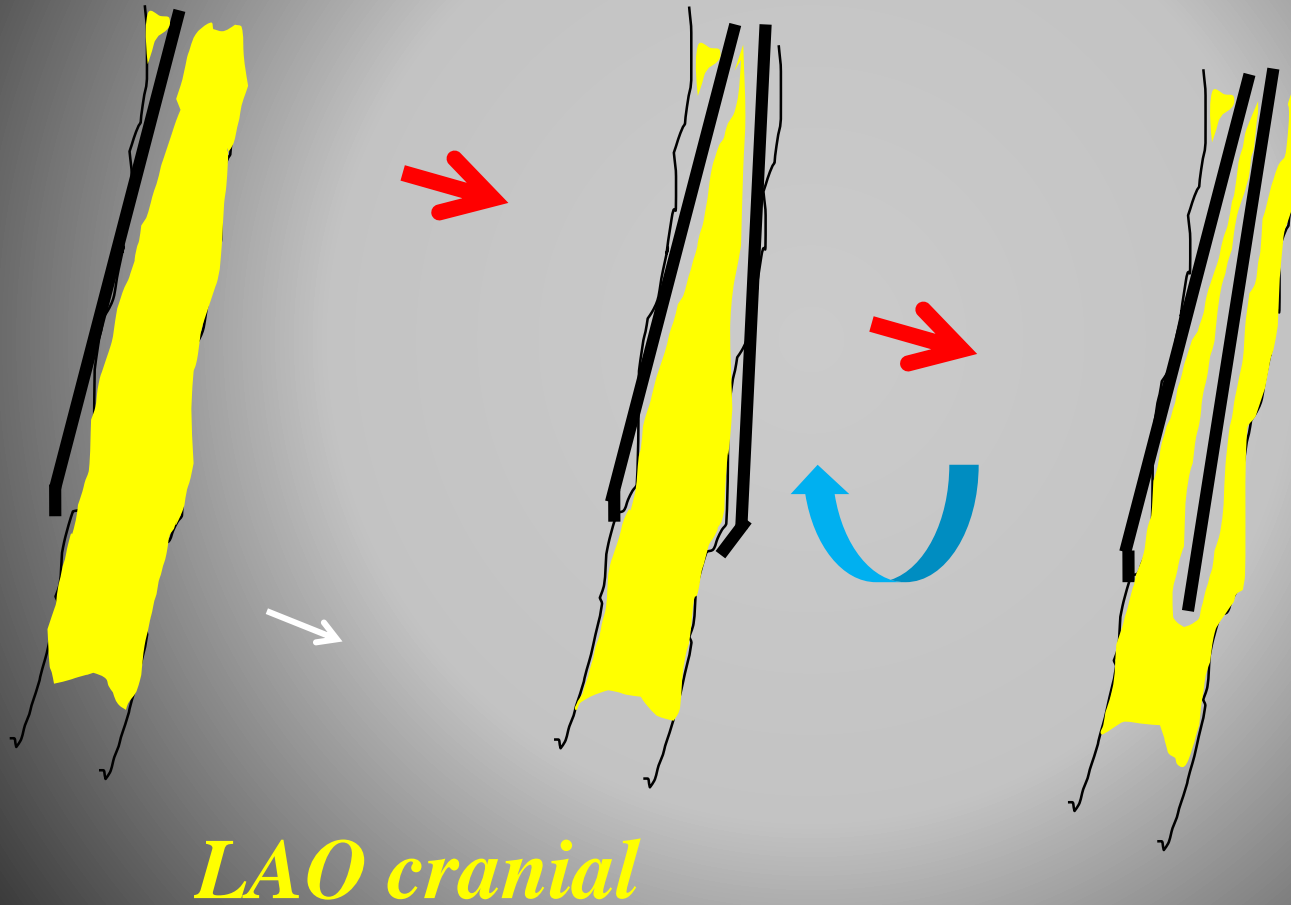


# Theory of Pararell wire technique

# *Theory of parallel wire of CTO image*



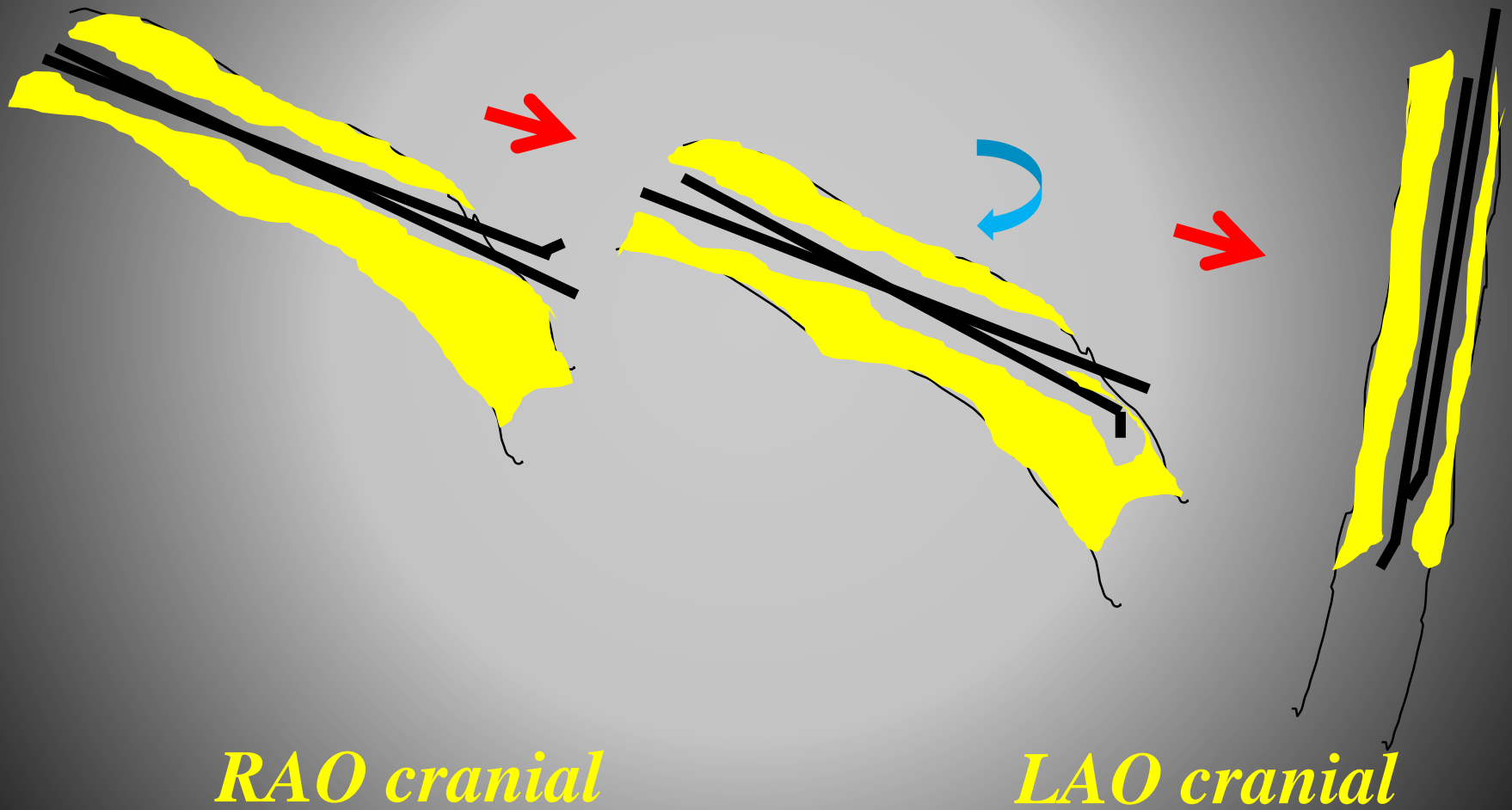
# *Theory of reconstruction of 3-D CTO image*



# *Theory of parallel wire of CTO image*



# *Theory of parallel wire of CTO image*



# Retrograde approach of CTO

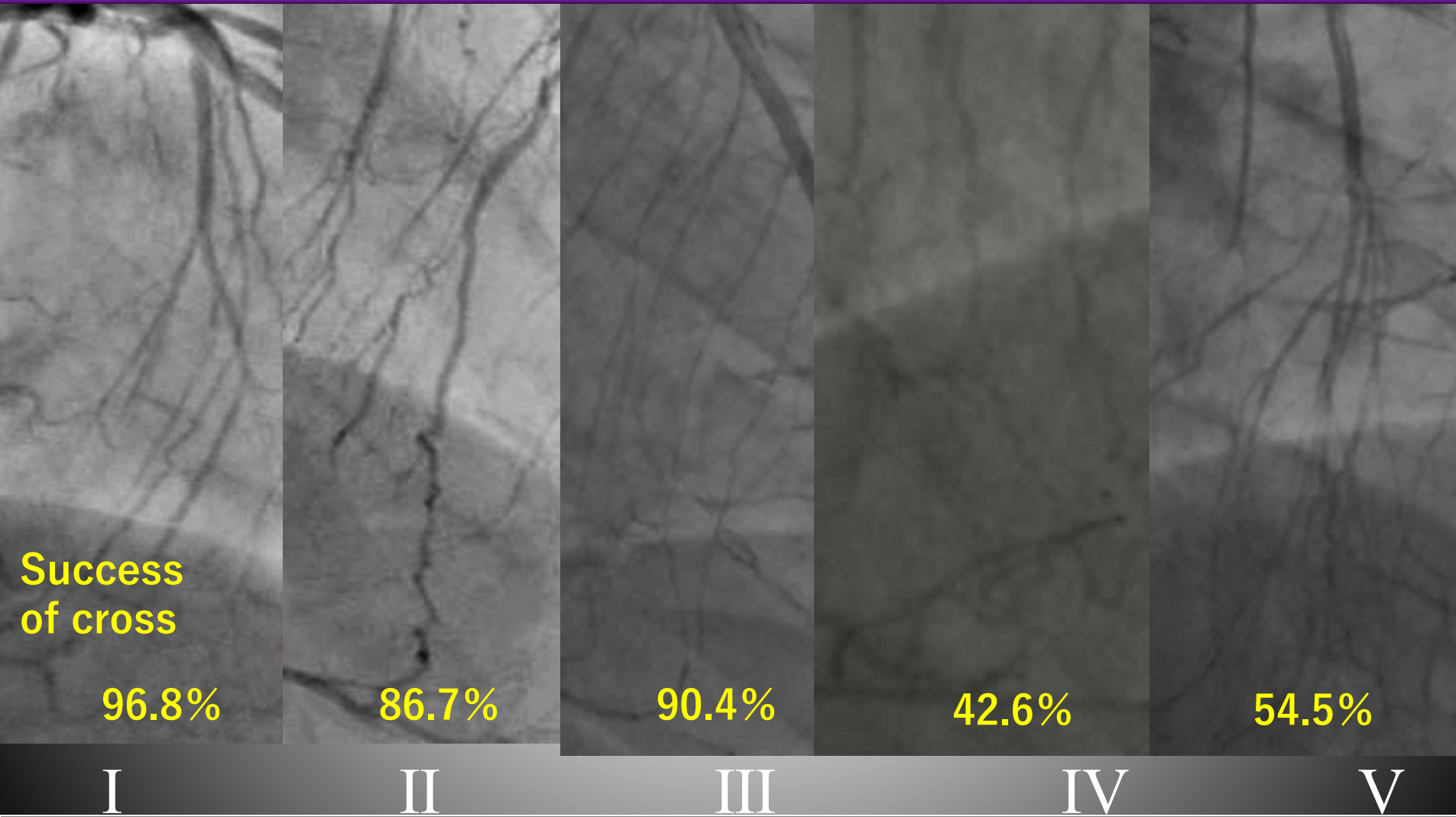
- **Collateral channel crossing**
  - **Septal channel classification**
  - **Epicardial channel GW choice**
- **CTO crossing**
  - **IVUS evaluation**
  - **r-CART**
  - **Knuckle wire technique**
- **Subintimal stenting**

# Classification of septal collateral way



	Channel size		V
Channel bent	1mm<	1mm>	
90 degree>	I	III	
90 degree<	II	IV	

# Classification of septal collateral way





# *Suoh 03 guidewire*

SLIP COAT® coating 21cm

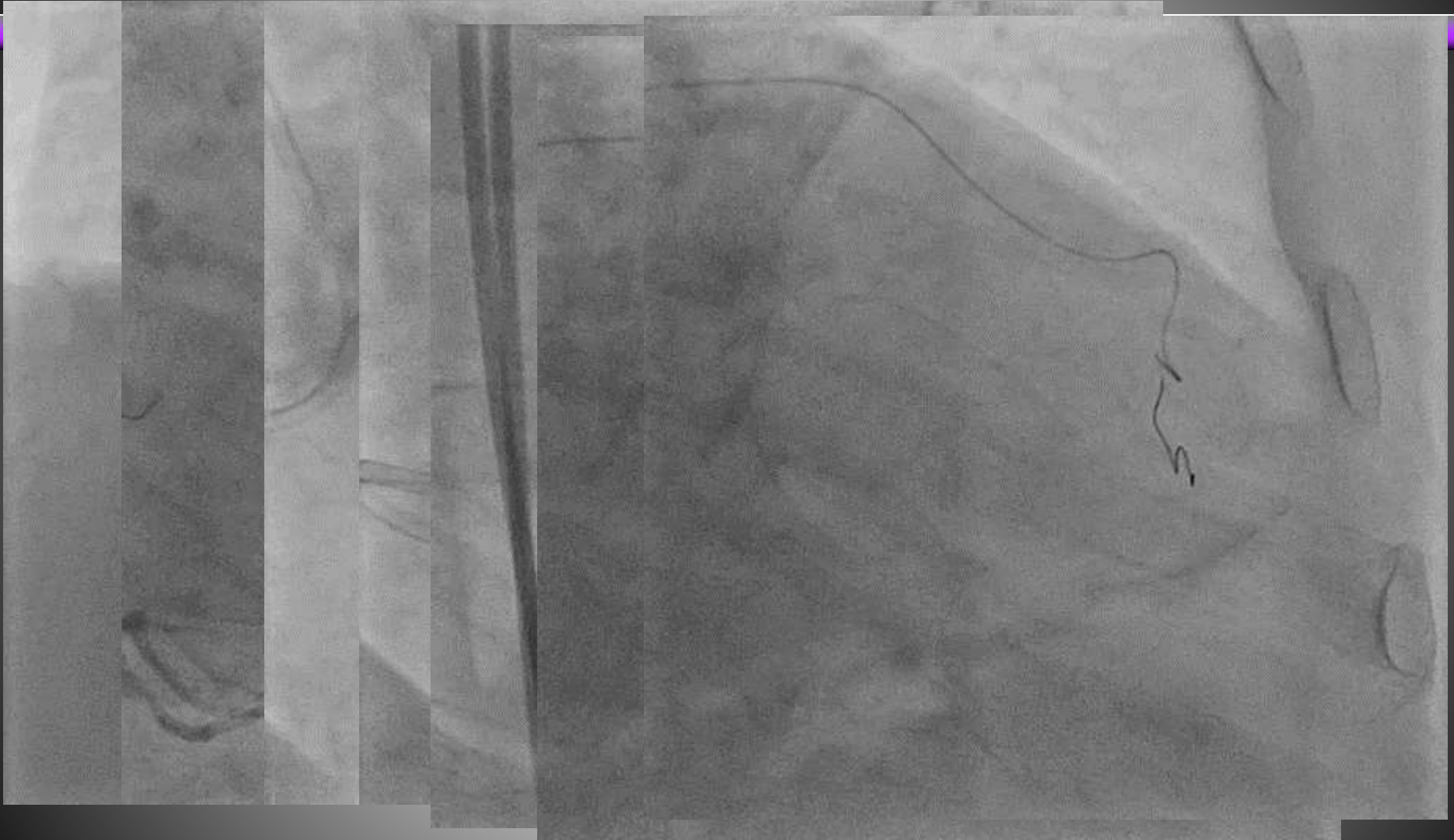
PTFE coating

0.014"

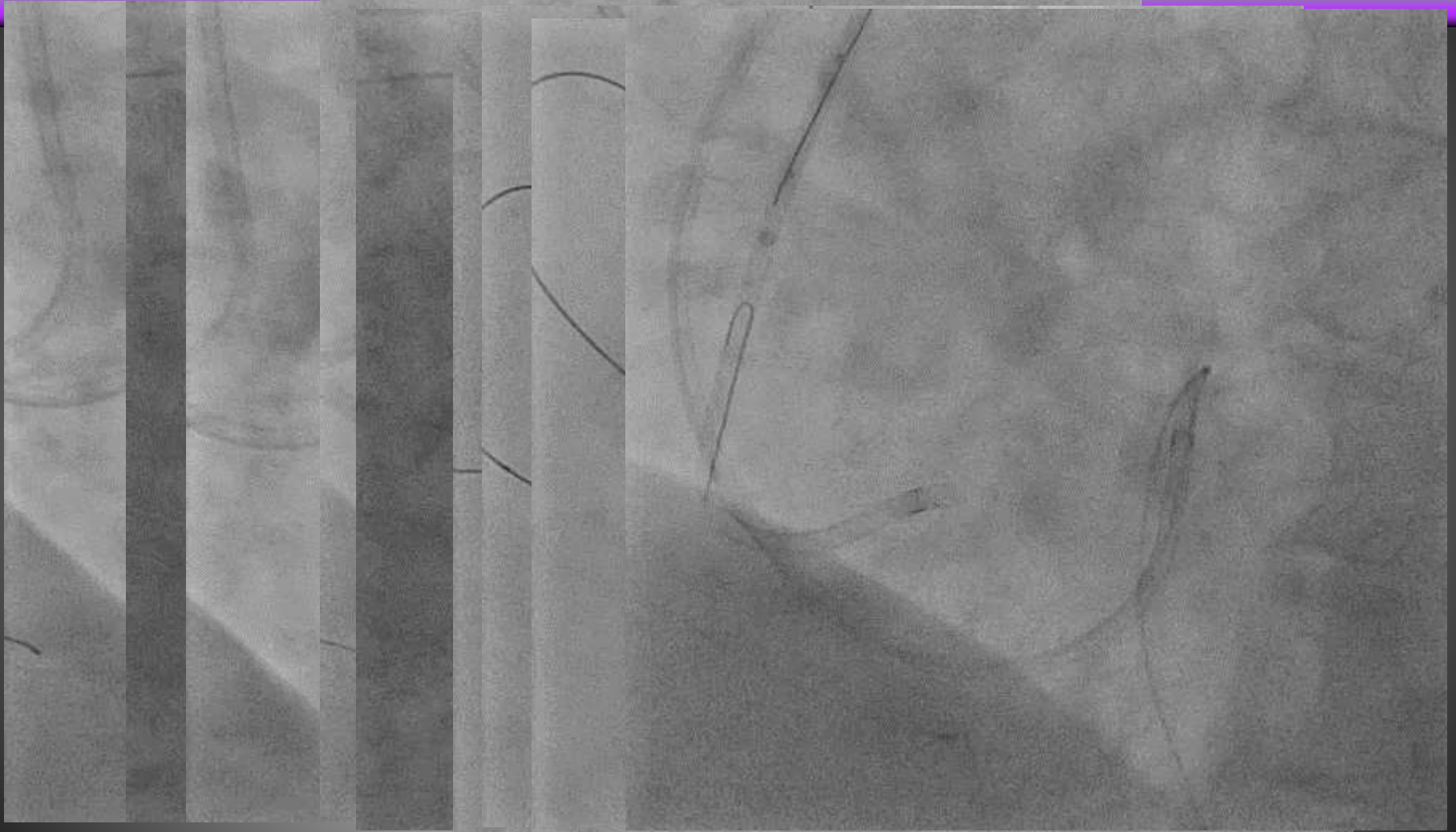


rope coil / radiopacity 3cm

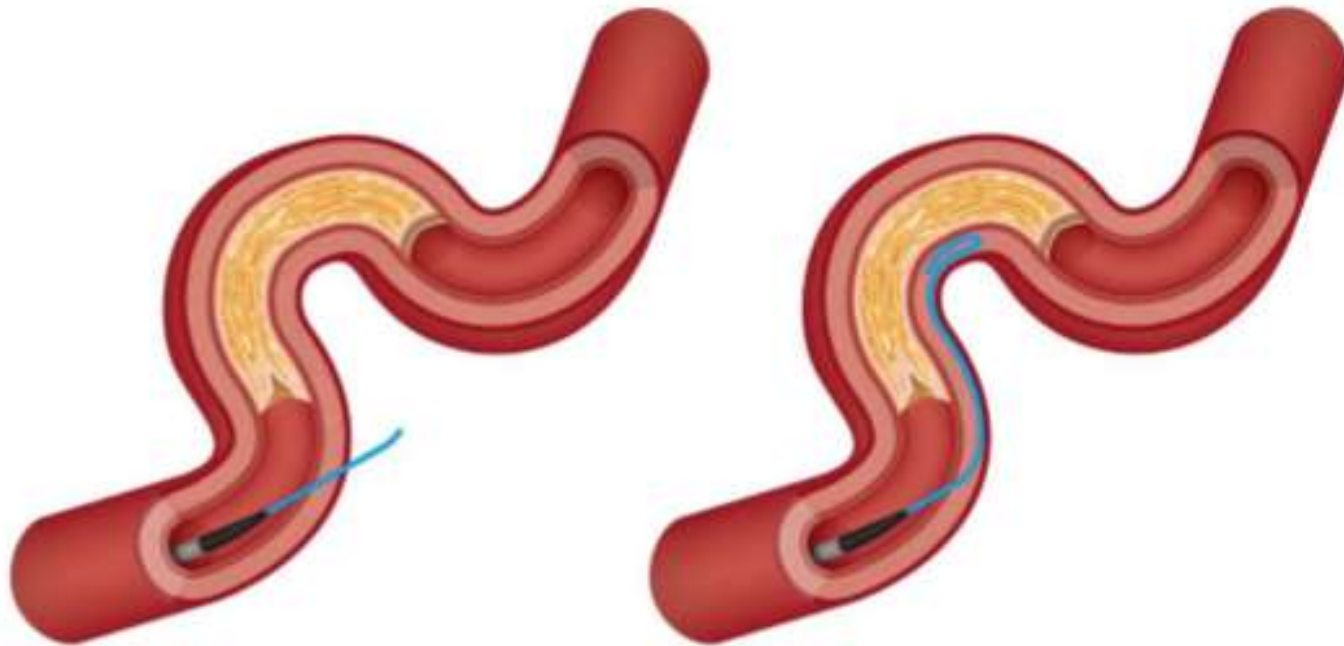
# Case of Suoh 03 GW+Caravell



# Case of Suoh 03 GW+Caravell



## Straight vs. Knuckled wires

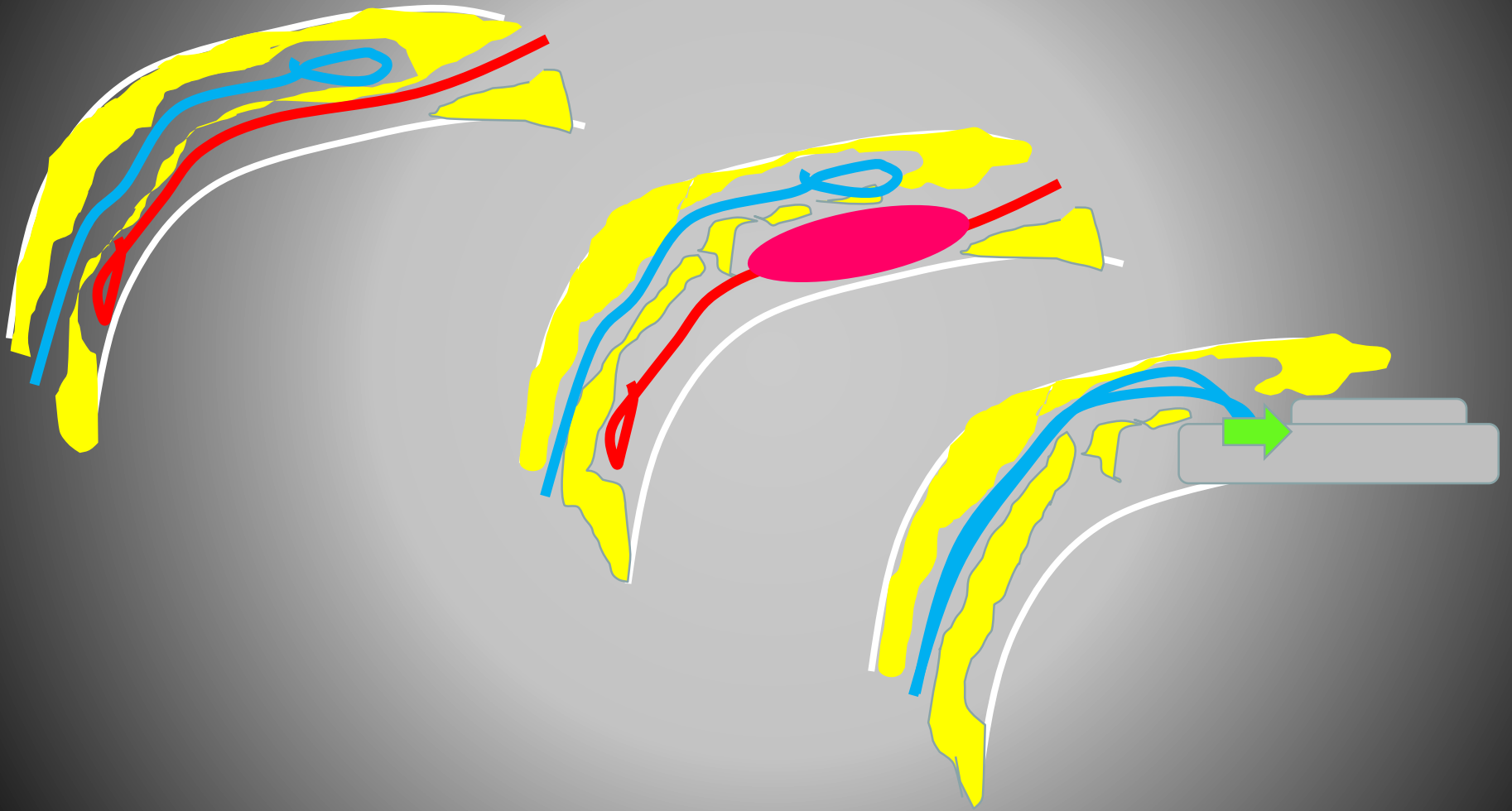


Illustrations from 'A Guide to Mastering Retrograde CTO PCI' / [www.ctoibooks.com](http://www.ctoibooks.com)

# *knuckle wire+guide extention method*

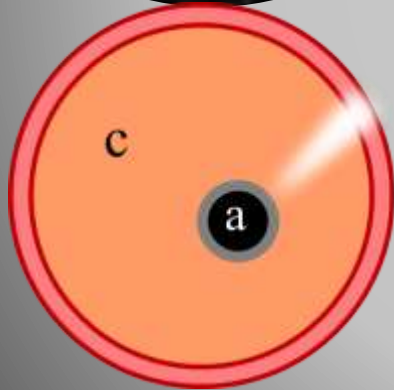
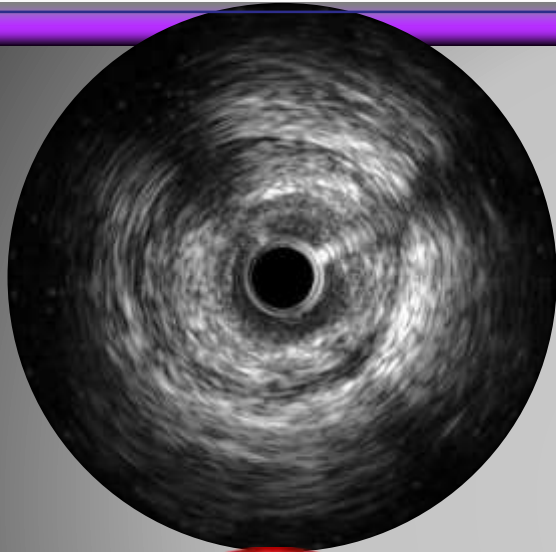


# *knuckle wire+guide extention method*

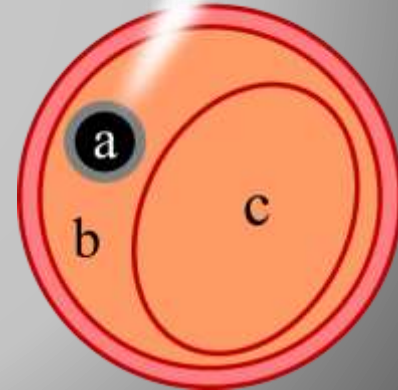
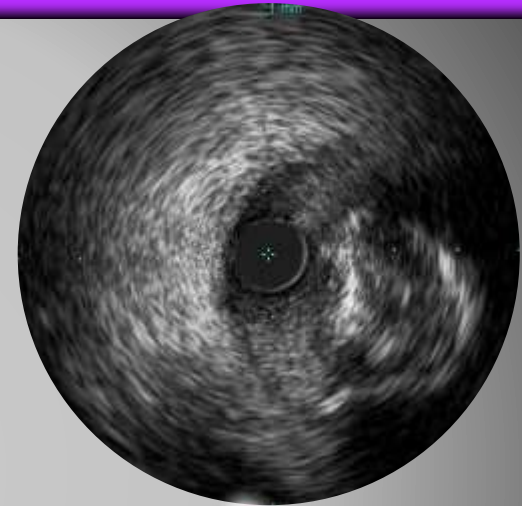


# IVUS Image

## Intimal vs. Sub-Intimal Tracking



**Intimal Plaque Tracking**

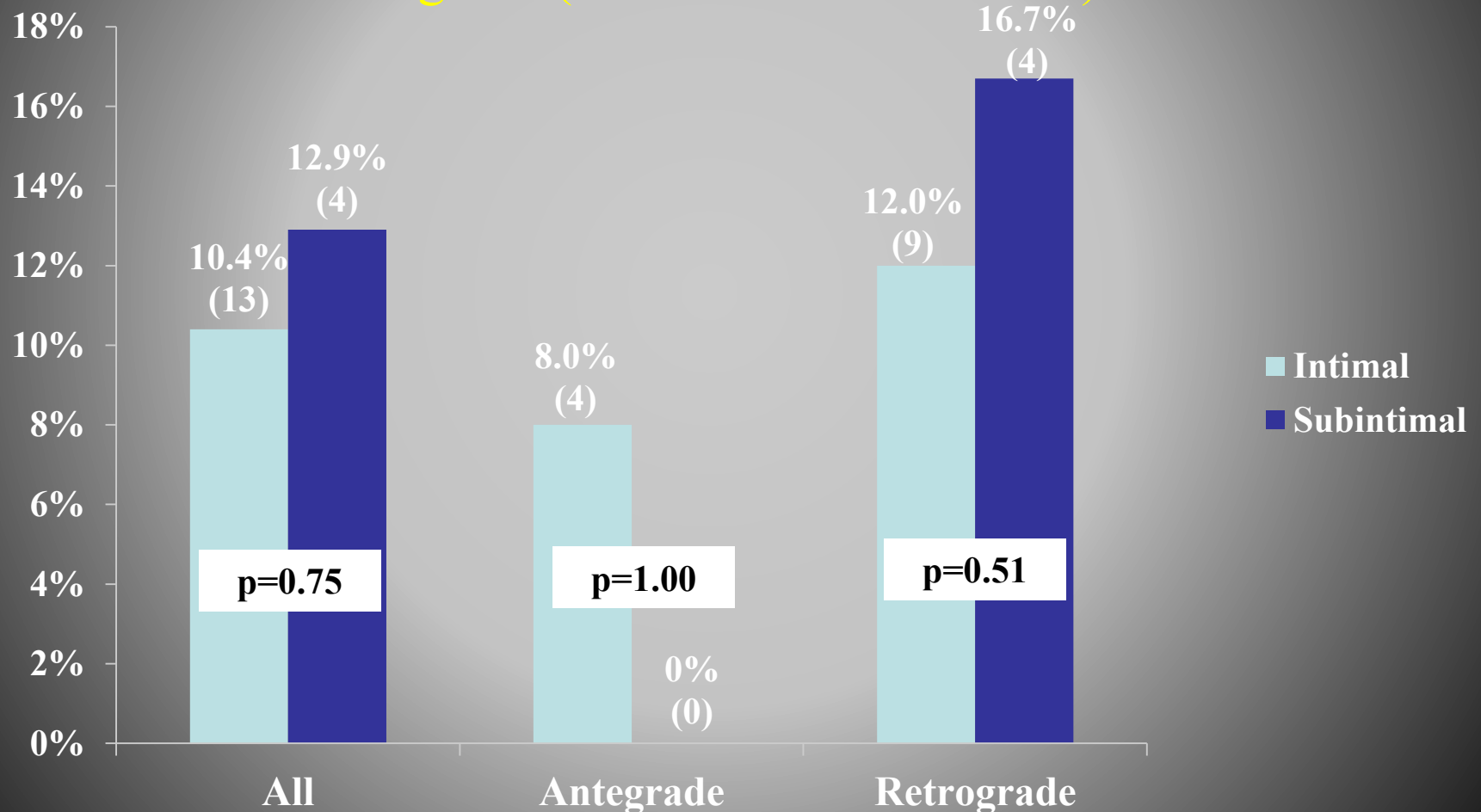


**Sub-Intimal Tracking**

a = IVUS catheter , b = Sub-Intimal space, c = the Intimal Plaque

# TVR at 12 months

Antegrade (Intimal vs. Sub-intimal)  
Retrograde (Intimal vs. Sub-intimal)





# PCI Operator

- Patience
- Sincere
- Eager
- Cool
- Expectation
- Humble
- Face oneself