

**How to will we get there?**

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# How to get CTO technique

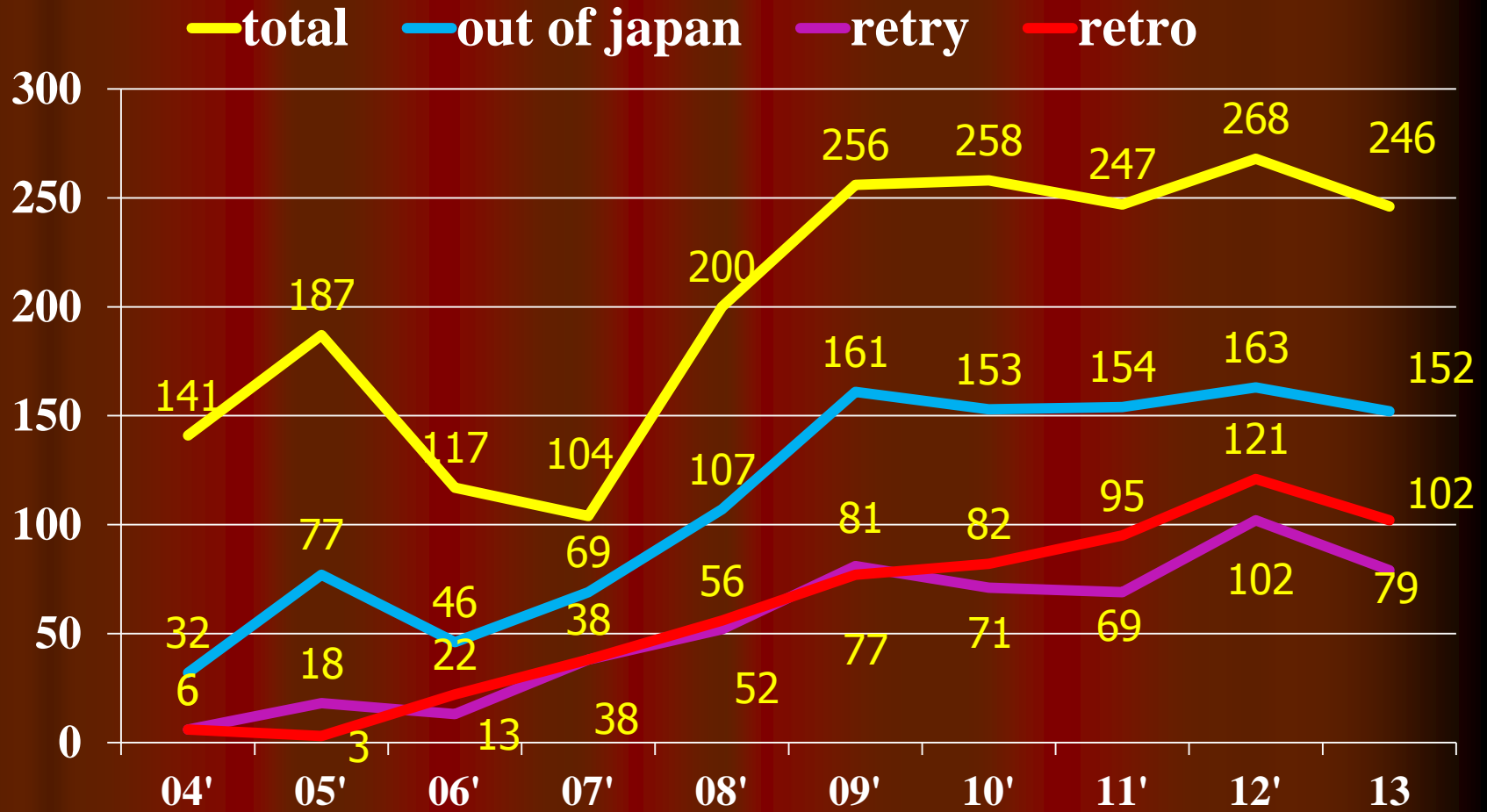
- Learn basic PCI experiences
- To add Complex PCI

- **Take a lot of years !**
- **No shory cut way**

Hard tip GW

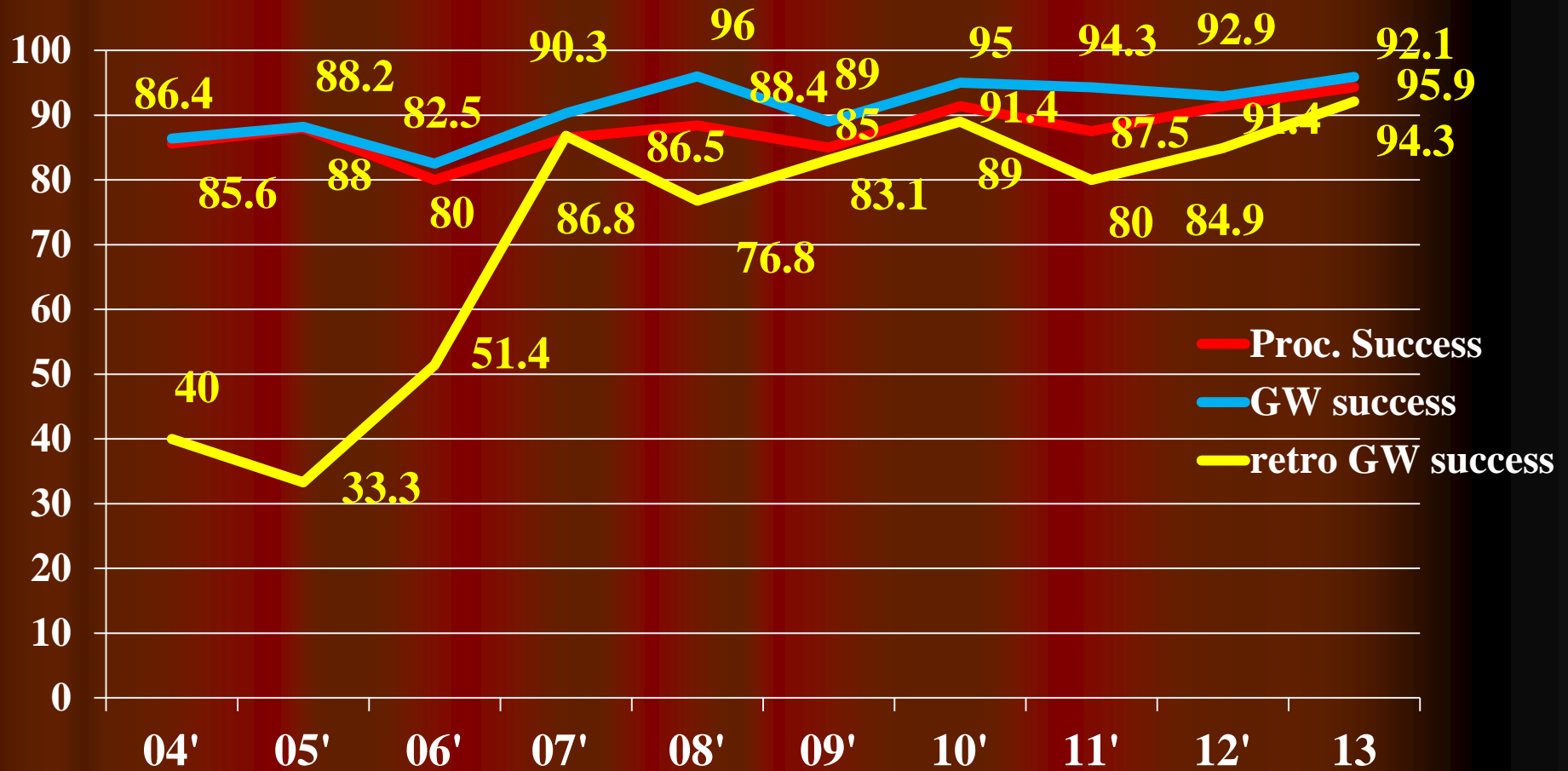
- Basic retrograde appraoch- septal channel
- Complex retrograde appraoch-epicardial channel

# Number of CTO lesion



# Success rate and retrograde approach for CTO

(%)

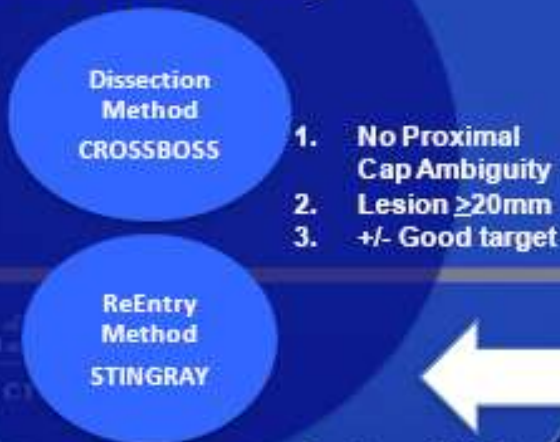


ANTEGRADE

Wire Escalation



Antegrade Dissection ReEntry



Wire Escalation 09INSIDEhvi&UTnewBL

RETROGRADE



Retrograde Dissection ReEntry

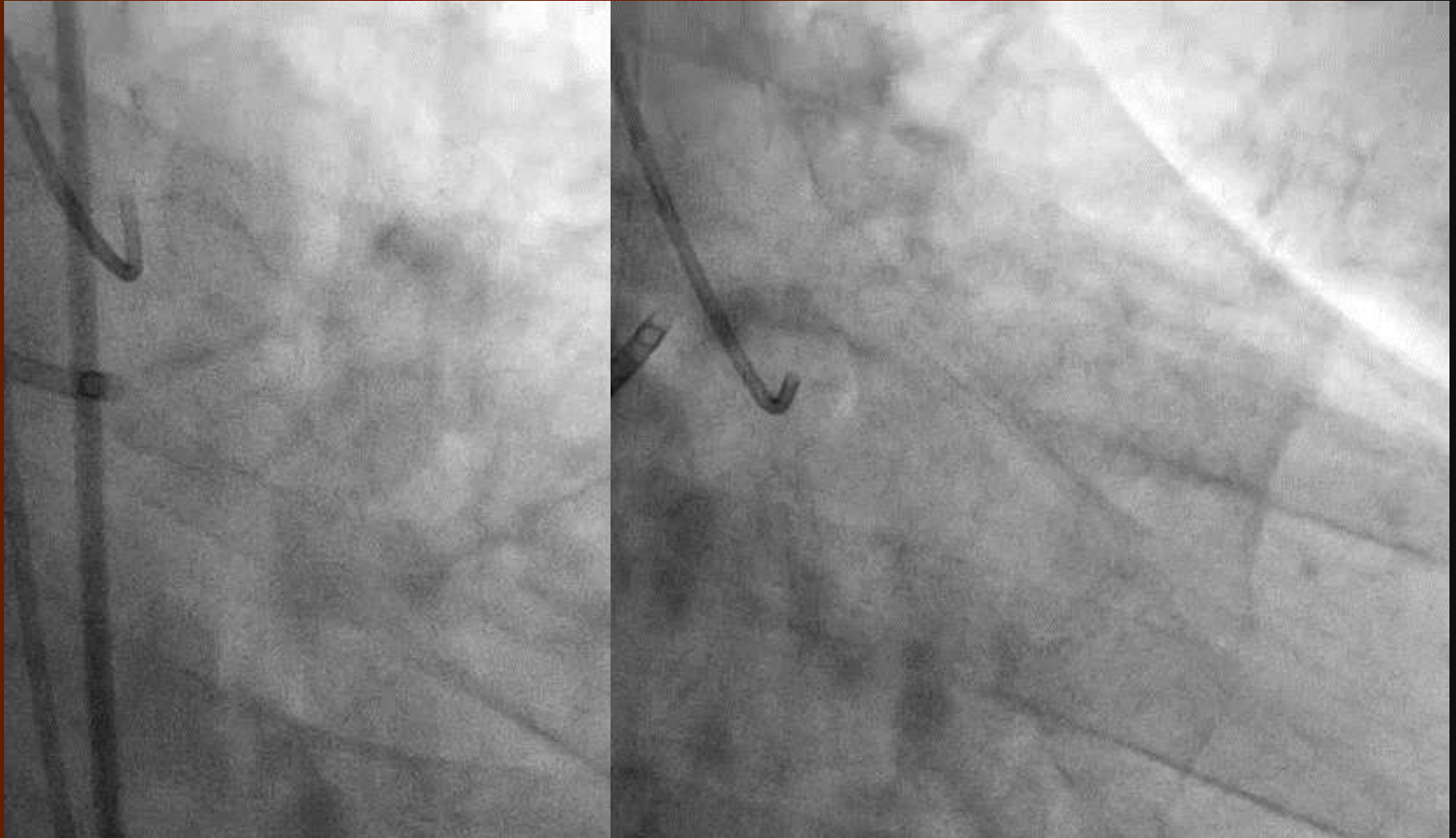


# Major contents of CTO

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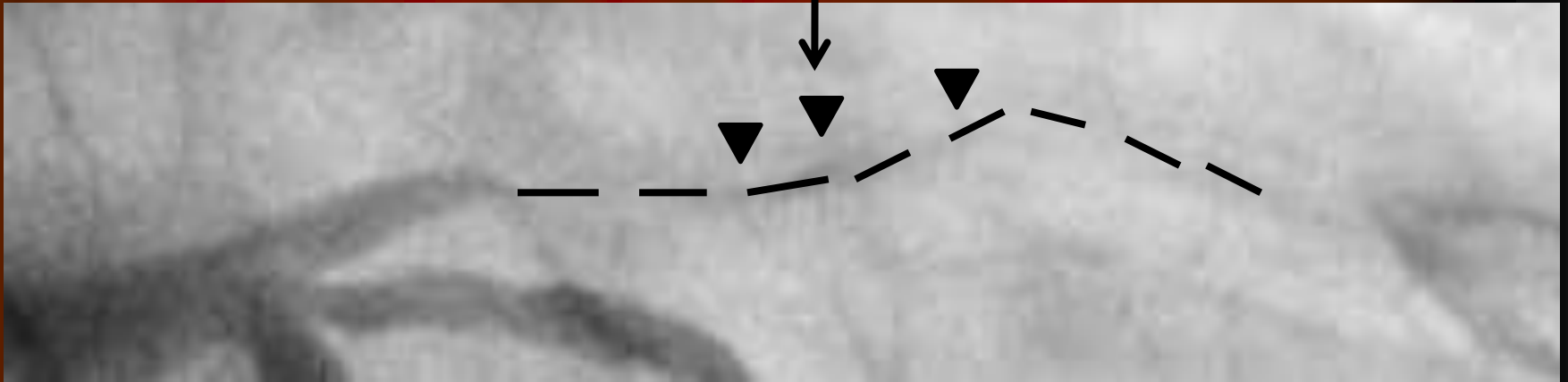
- **Reading angiogram**
- **Antegrade GW selection**
- **Retrograde approach**

# *Island sign in CTO*



# *Island sign in CTO*

*island sign*

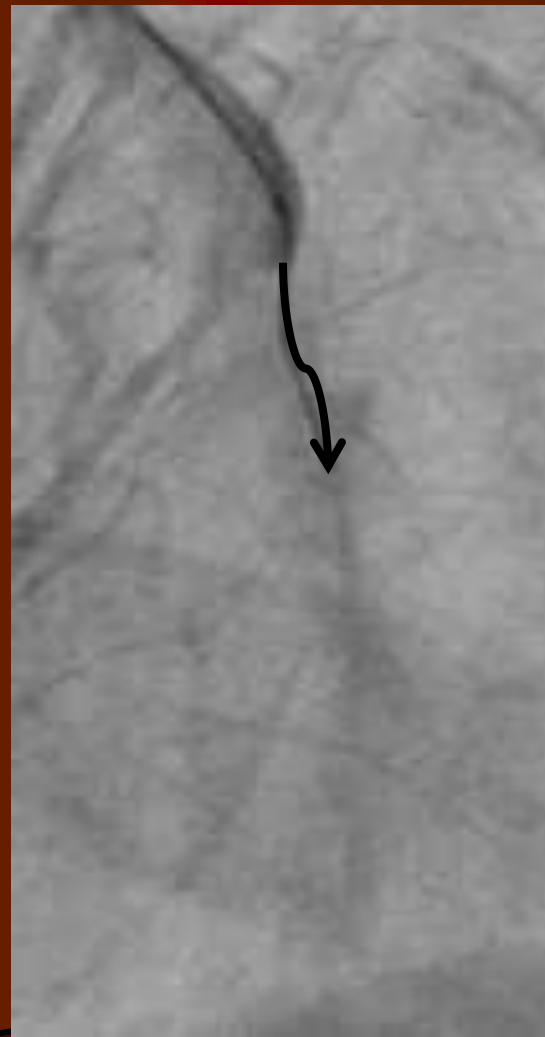
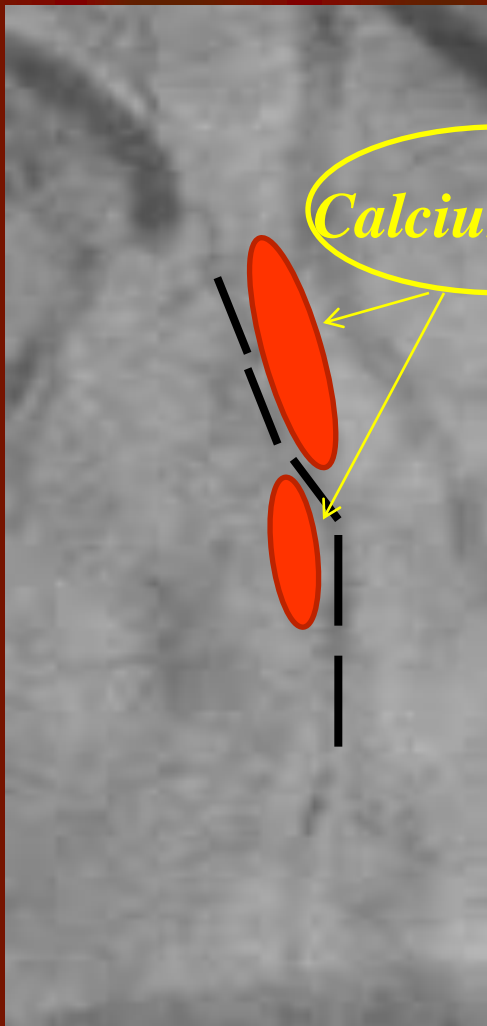




# *Calcium sign in CTO*



# *Calcium sign in CTO*



# Major contents of CTO

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- **Reading angiogram**
- **Antegrade GW selection**
- **Retrograde approach**

# Pathohistology of CTO vessel

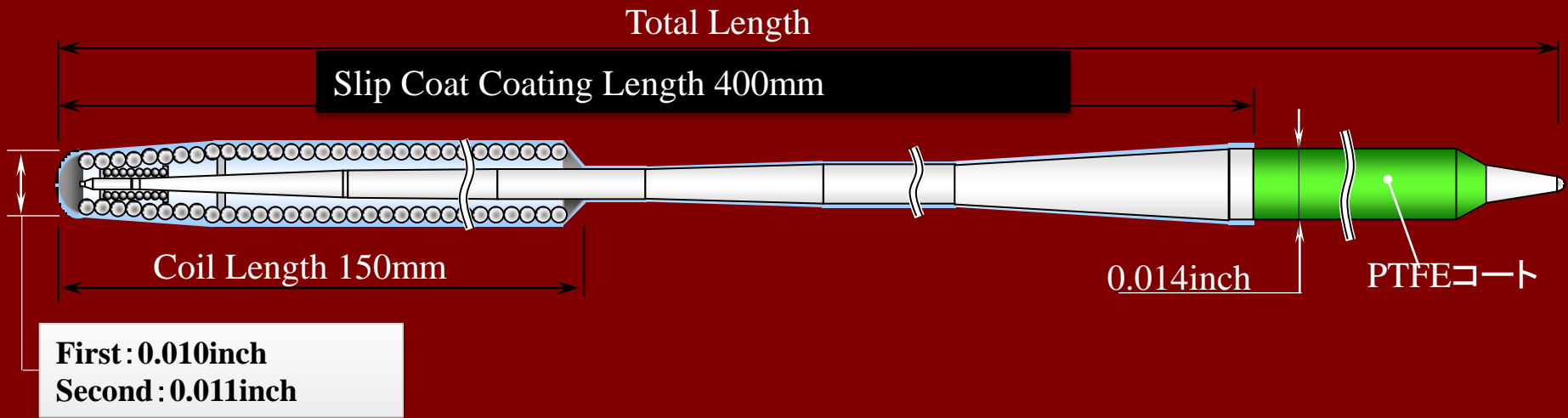


Dia. (inch)	Dia. ( $\mu\text{m}$ )	Area ( $\mu\text{m}^2$ )	Area Ratio	Area Ratio
0.008"	0.203	0.031	0.30	0.74
0.009"	0.229	0.042	0.41	1
0.014"	0.356	0.102	1	2.43

**Micro Channel Diameter  
(160-230 $\mu\text{m}$ , Ave.200 $\mu\text{m}$ )**



# Gaia Guidewire



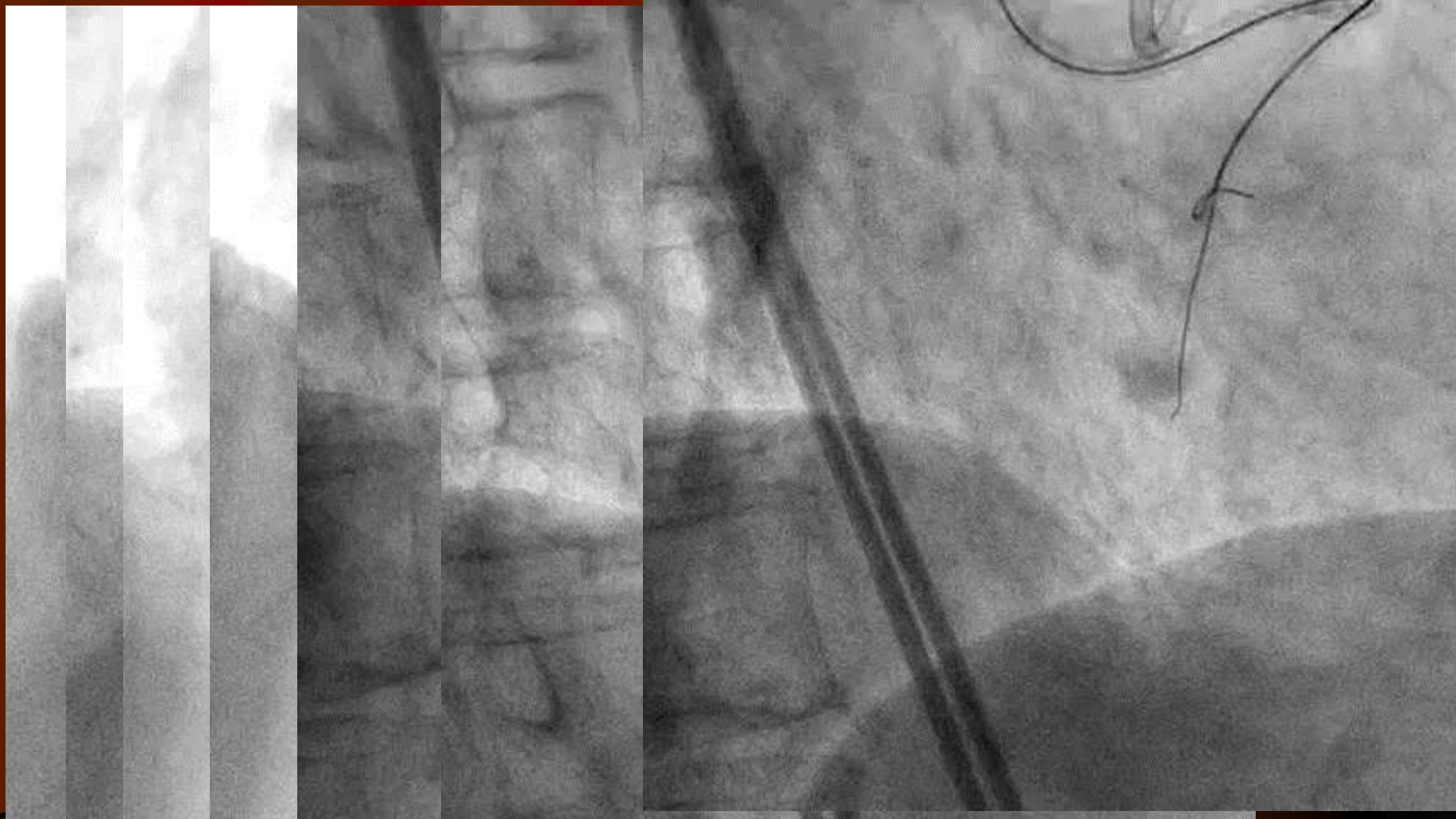
Gaia First

Tip load : 1.5gf

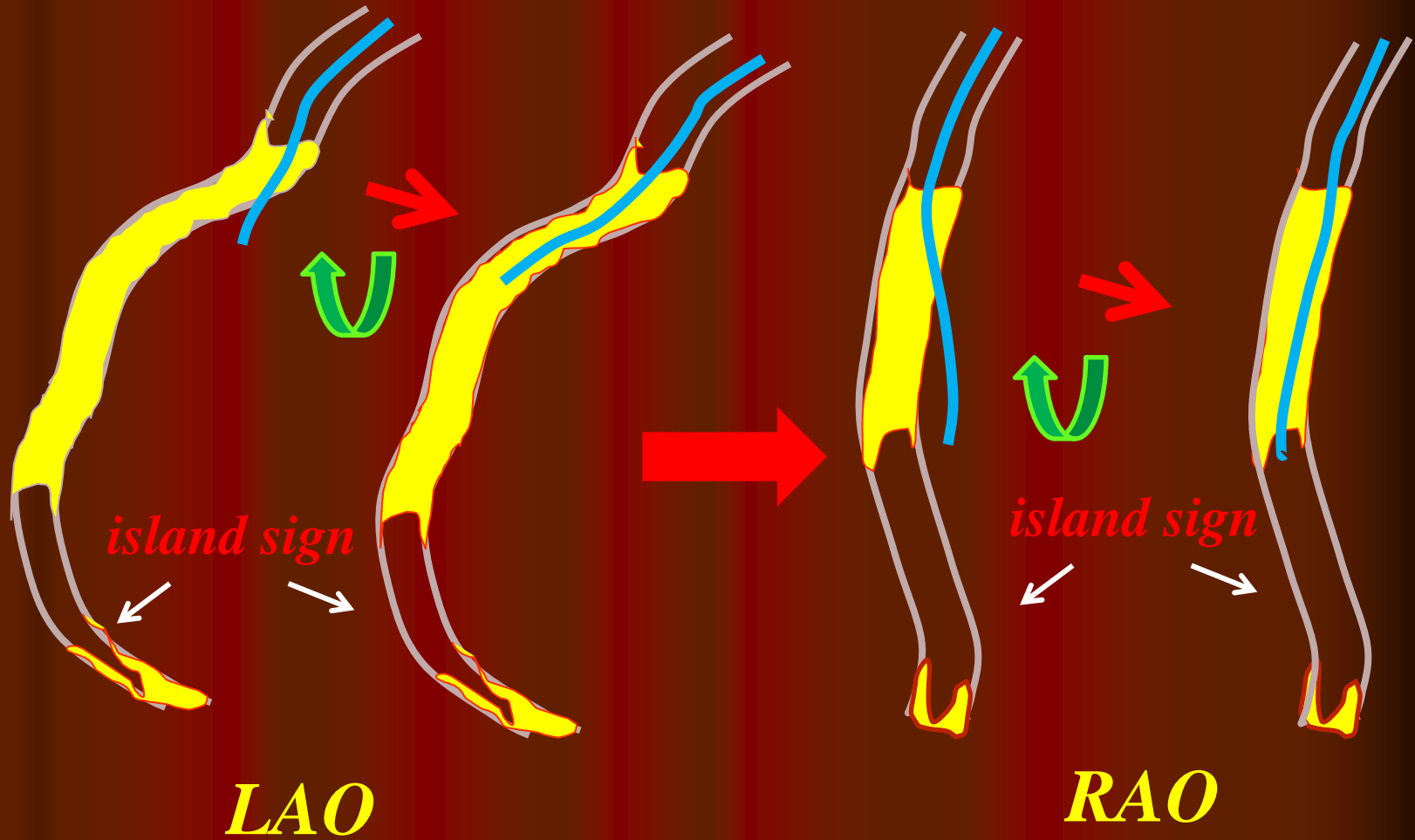
Gaia Second

Tip load : 3.5gf

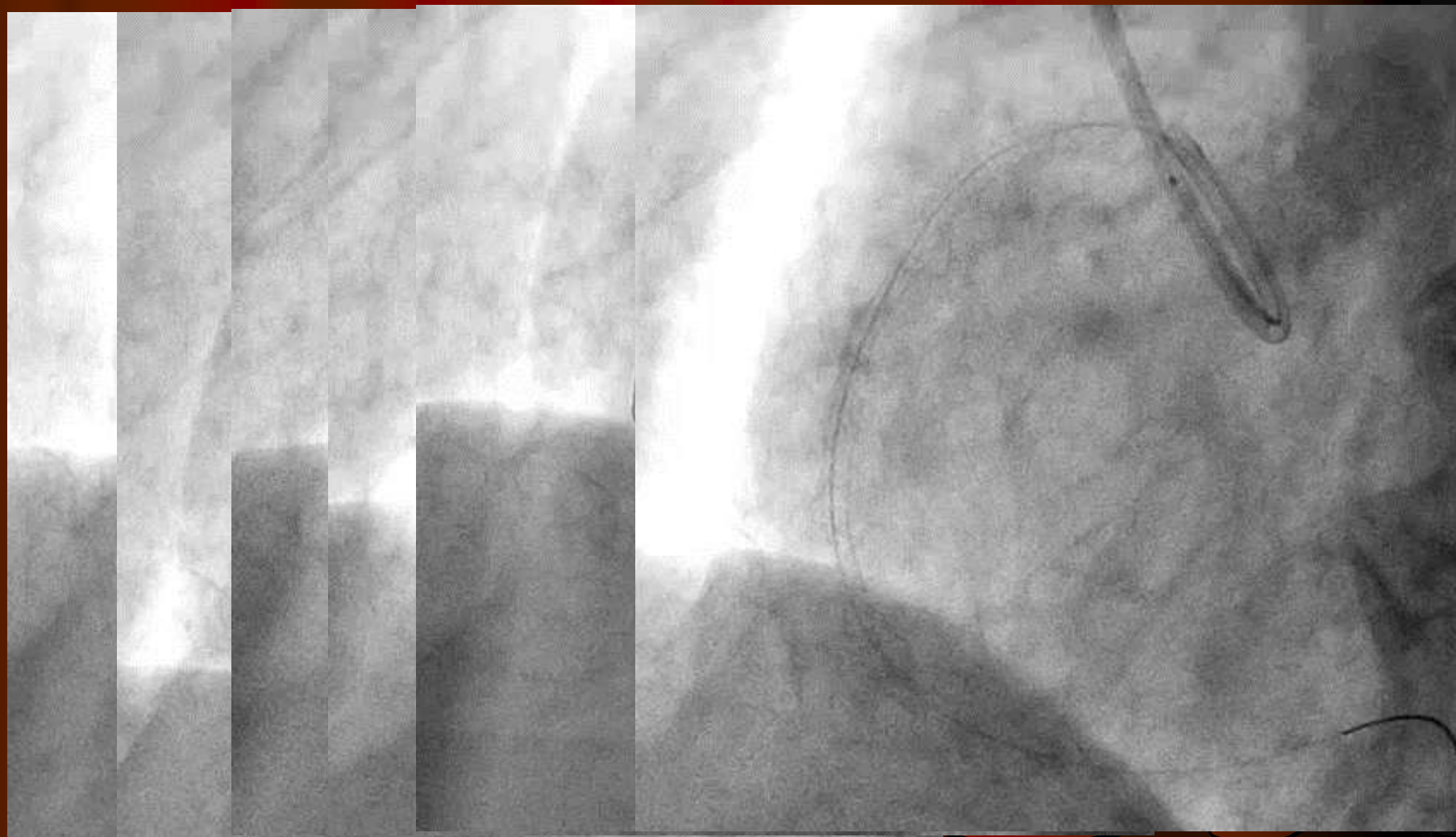
*Pararell wire plus island sign for  
tourtous double CTO*



# Theory of reconstruction of 3-D CTO image

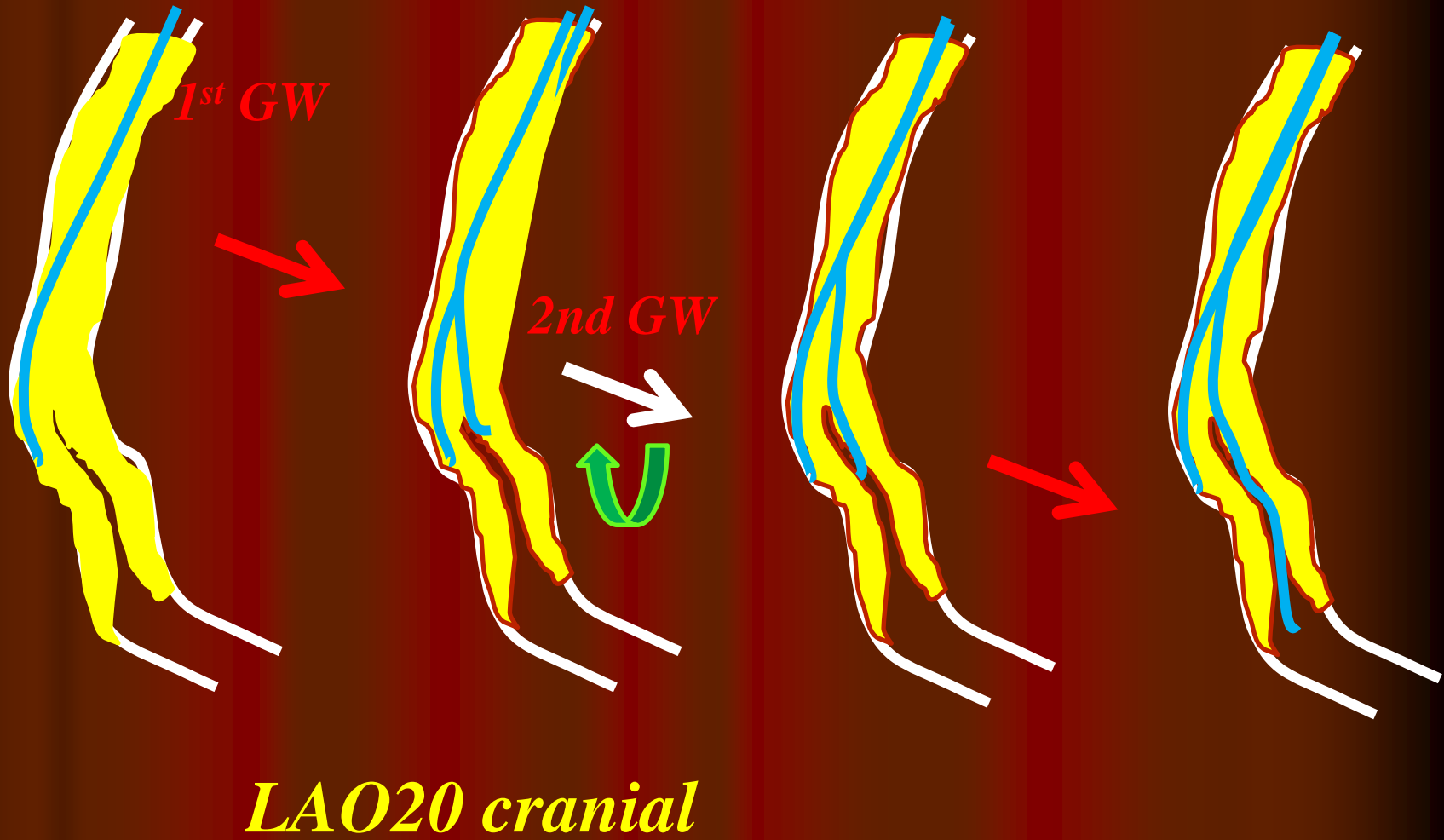


# *Pararell wire using island sign for tenuous CTO*





# Theory of parallel wire of CTO image

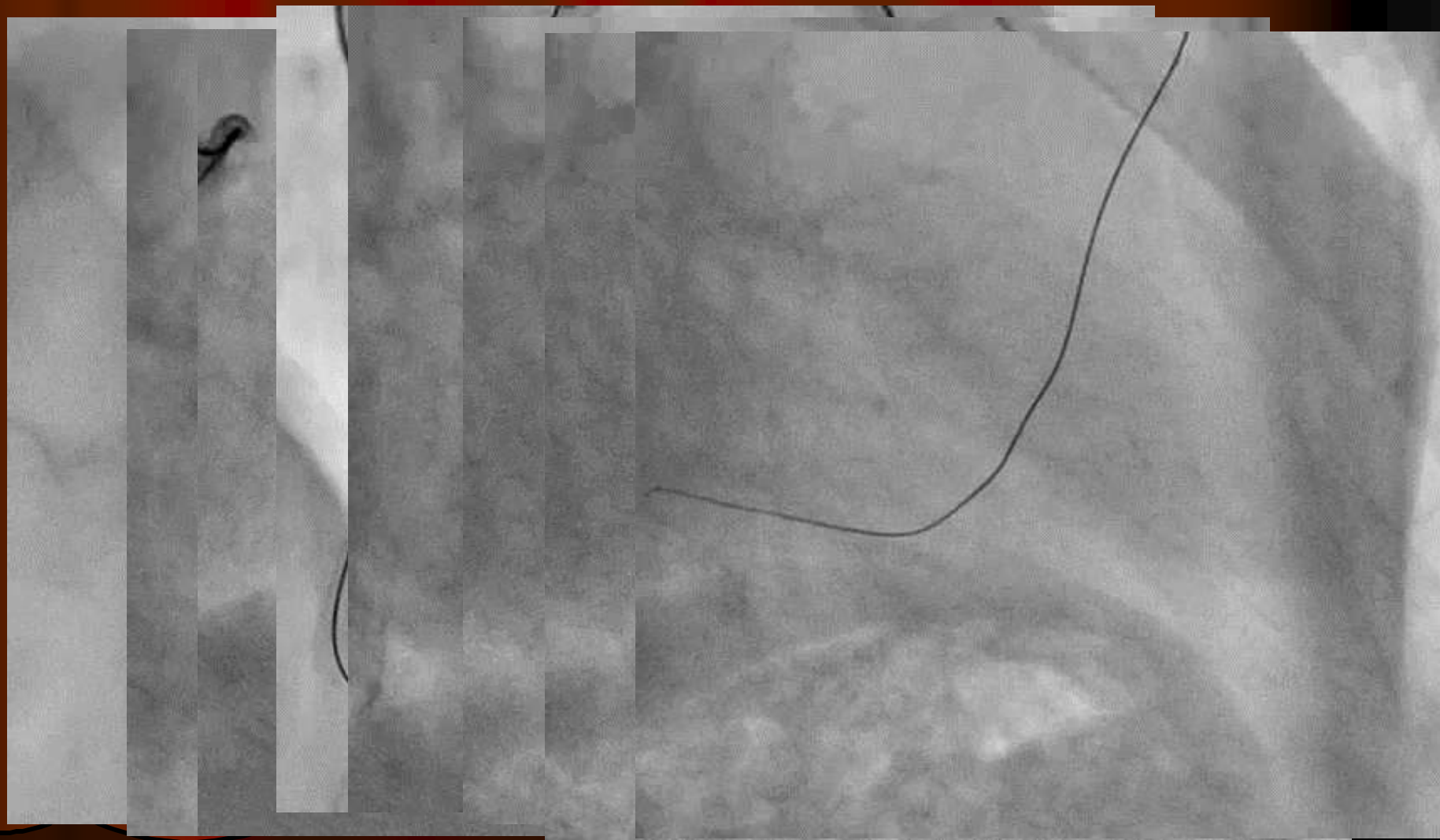


# Major contents of CTO

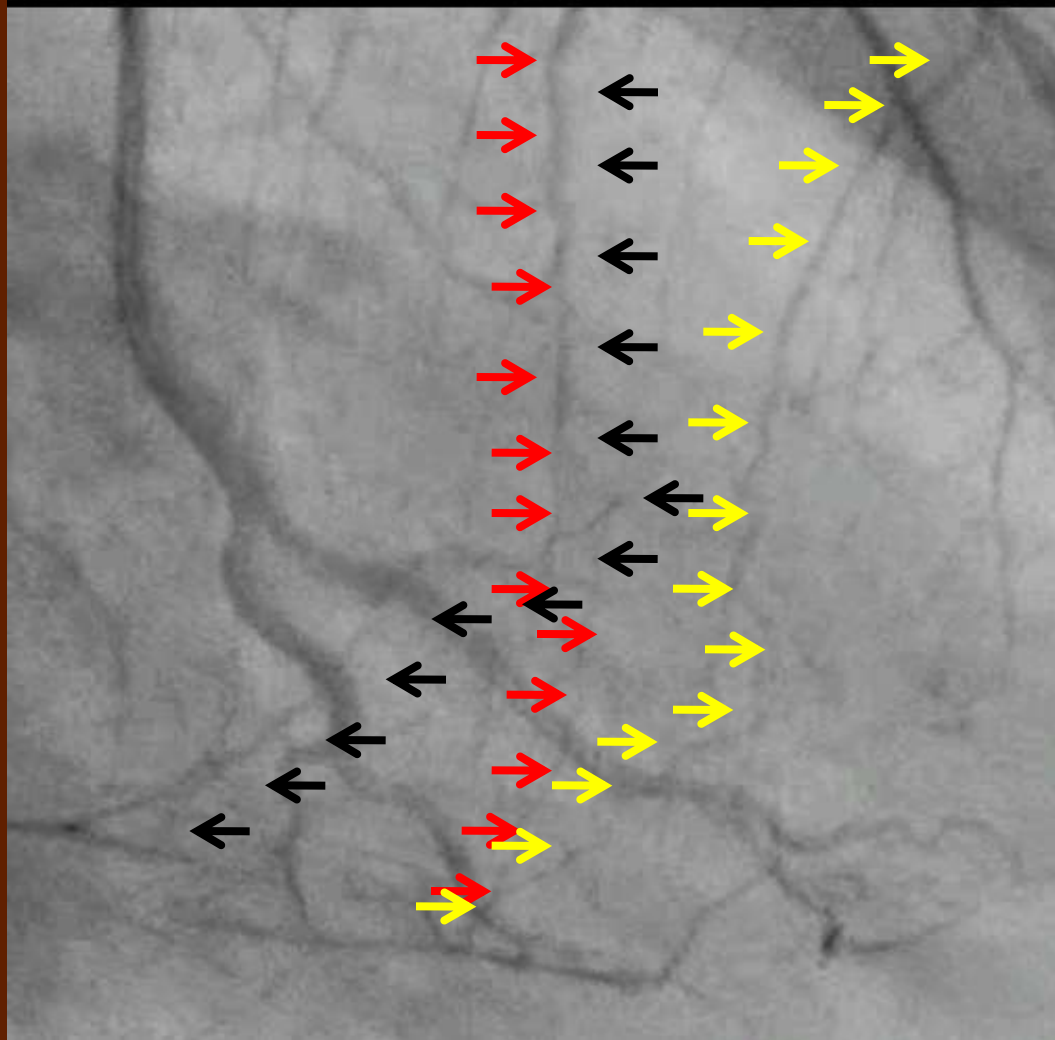
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- **Reading angiogram**
- **Antegrade GW selection**
- **Retrograde approach**

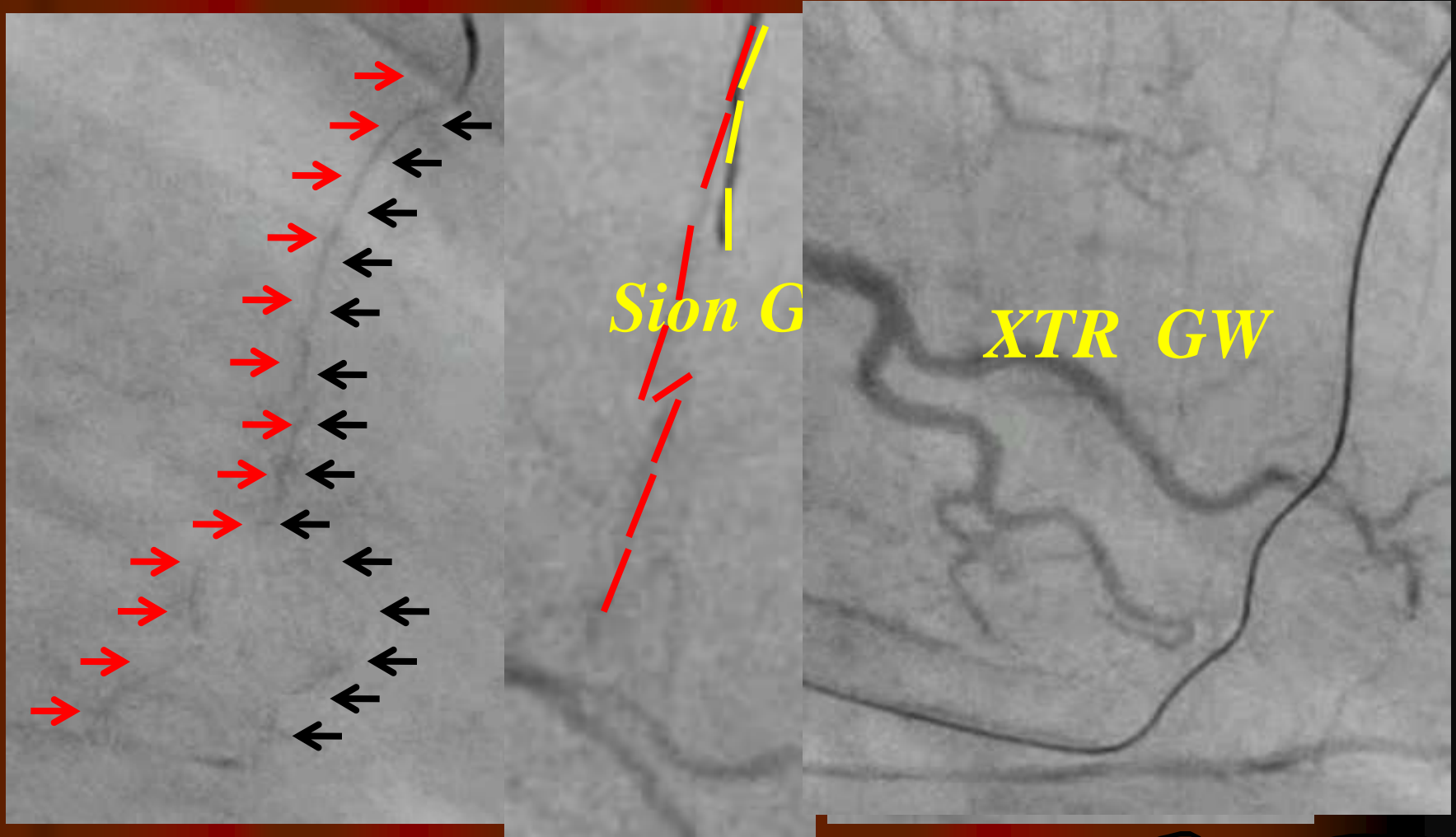
# *Complex r-CART case*



# *Selection of septal collaterals*



# *Tough channel crossing by Sion+XTR GW*

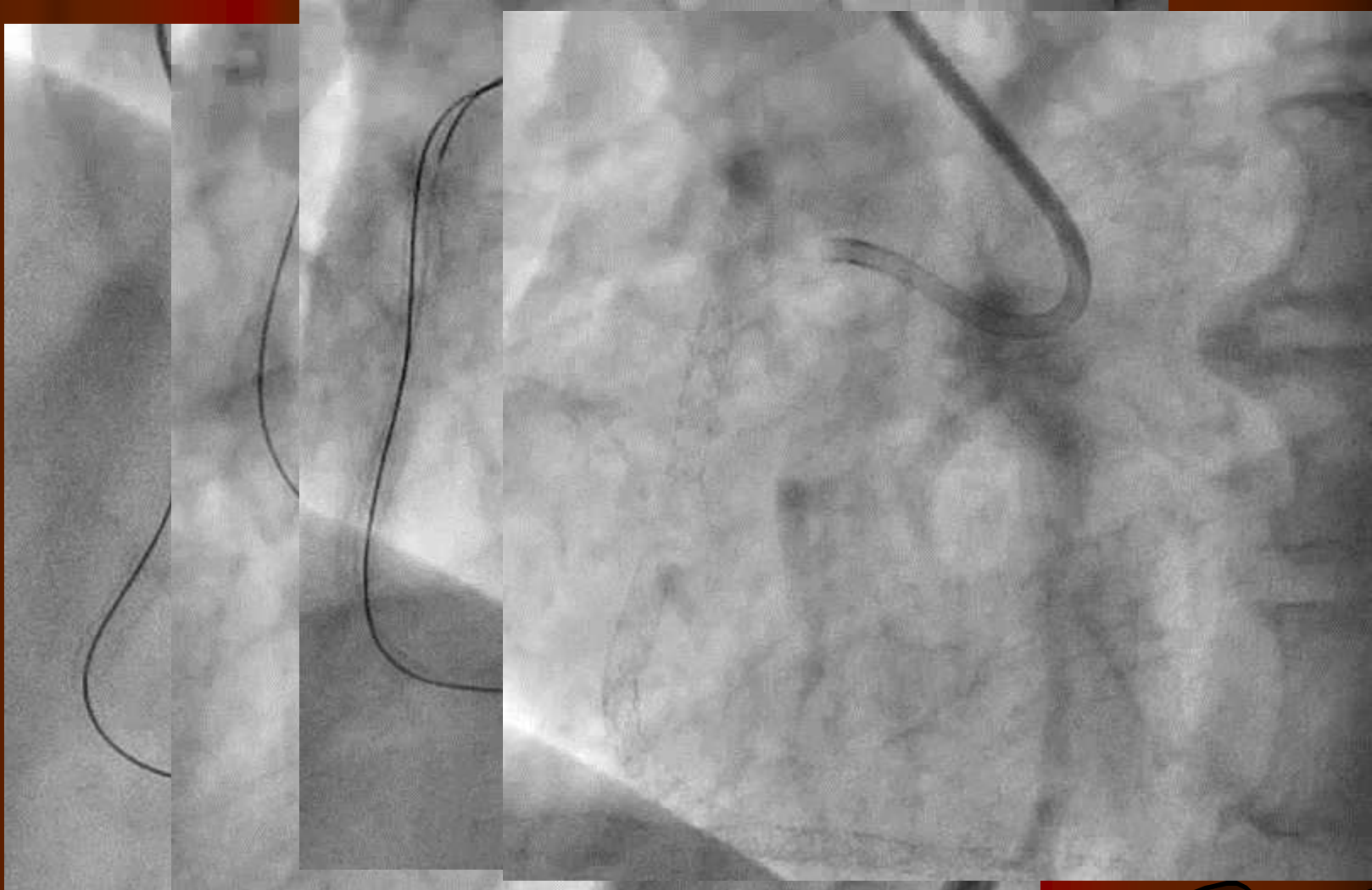


# Fielder XTR GW

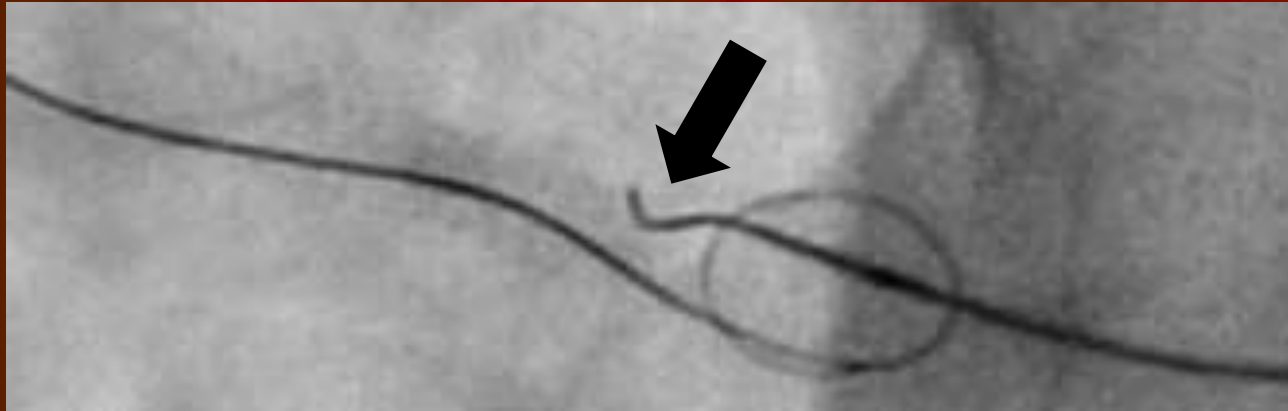


- Tip size 0.010inch
- Polymer coat

# *Difficult chanel connect ante and retrograde GW*



# Change GW more slippery one

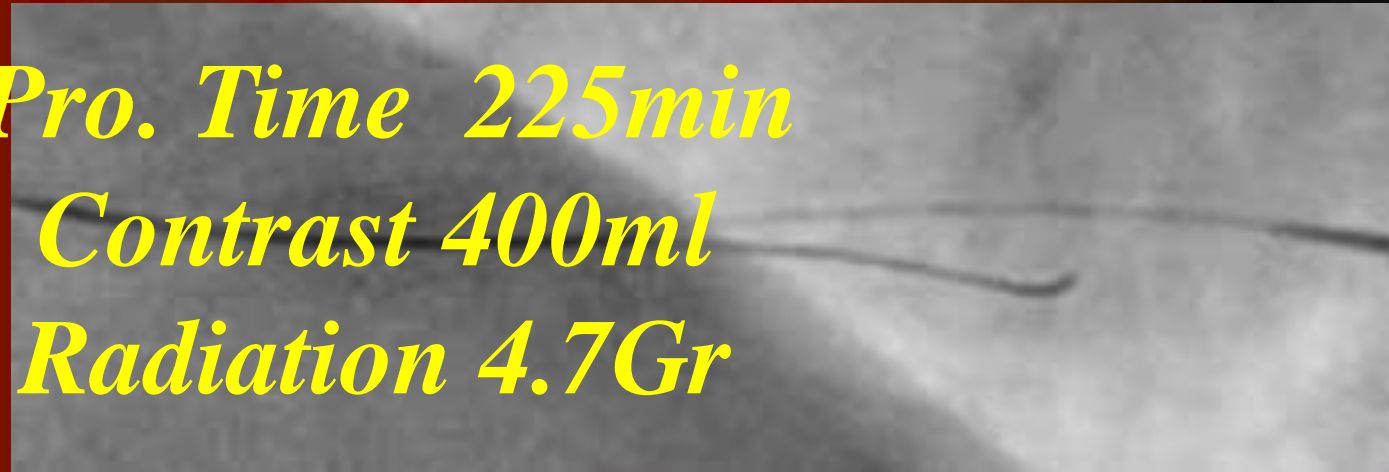


*Pilot 200g GW → Sion GW*

*Pro. Time 225min*

*Contrast 400ml*

*Radiation 4.7Gr*





# *DES implantation*



# Conclusion

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1. PCI to CTO has improved the rate of an initial success to about 90% by the progress of treatment technology, devices and strategy.
2. Basically, Reading angigram is most important making strategy for CTO.
3. New guidewire and microcatheter was developed for advanced CTO
4. Retrograde approach is most impact technique in cases of failed antegrade approach.
5. It's take long times for getting be there. Never give up and continuous practical training will be necessary.