Current Retrograde Approach
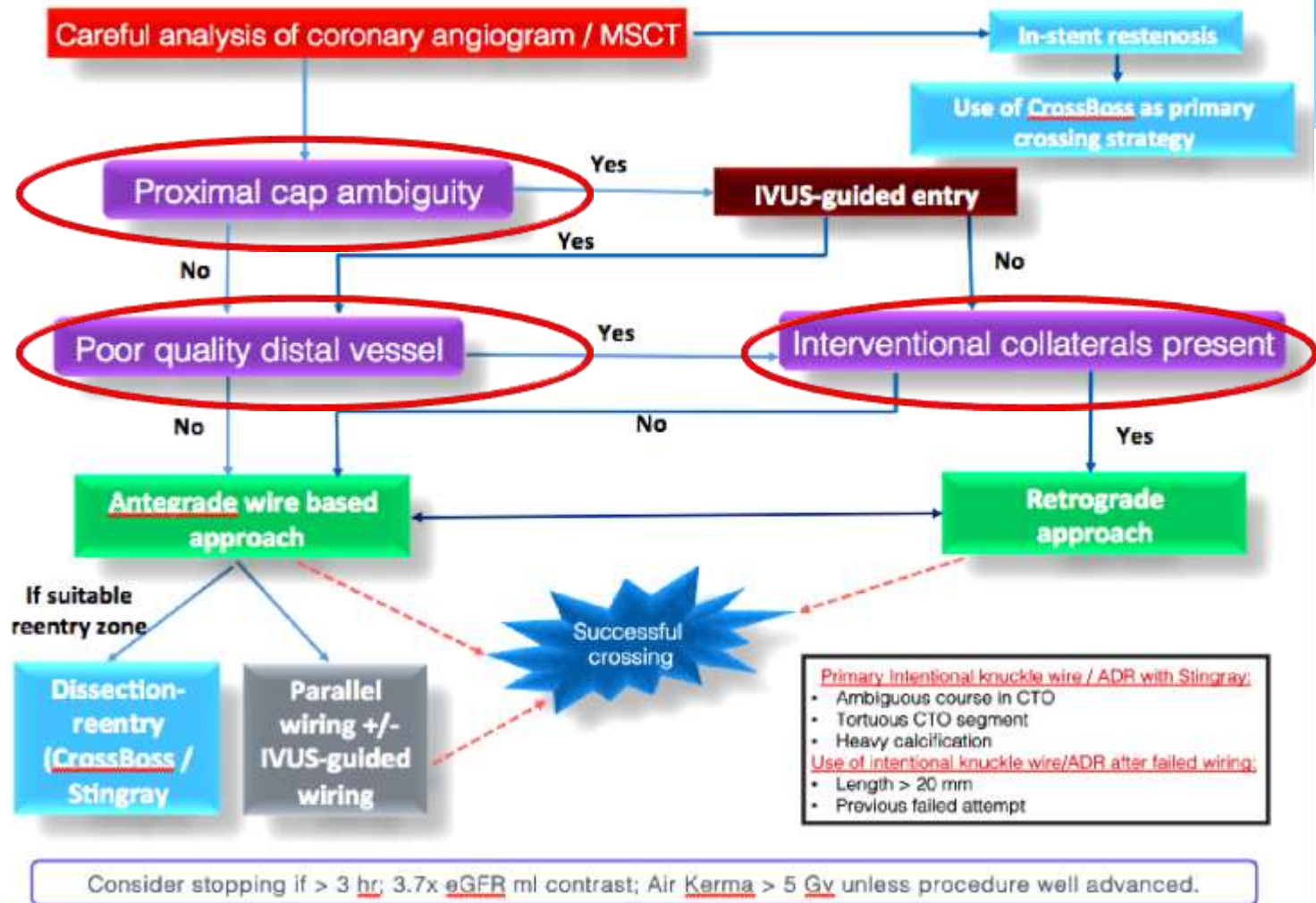
-- Based on APCTO Algorithm --

Paul Hsien-Li Kao, MD

Professor of Medicine

National Taiwan University Hospital

# When to start retro?

Careful analysis of coronary angiogram / MSCT → In-stent restenosis → Use of CrossBoss as primary crossing strategy

Proximal cap ambiguity — Yes → IVUS-guided entry
Proximal cap ambiguity — No
IVUS-guided entry — Yes
IVUS-guided entry — No → Interventional collaterals present

Poor quality distal vessel — Yes → Interventional collaterals present
Poor quality distal vessel — No

Interventional collaterals present — No → Antegrade wire based approach
Interventional collaterals present — Yes → Retrograde approach

Antegrade wire based approach

If suitable reentry zone → Dissection-reentry (CrossBoss / Stingray), Parallel wiring +/- IVUS-guided wiring

Successful crossing

Retrograde approach

Primary Intentional knuckle wire / ADR with Stingray:
- Ambiguous course in CTO
- Tortuous CTO segment
- Heavy calcification

Use of intentional knuckle wire/ADR after failed wiring:
- Length > 20 mm
- Previous failed attempt

Consider stopping if > 3 hr; 3.7x eGFR ml contrast; Air Kerma > 5 Gy unless procedure well advanced.

HLK 2018

Interventional channel (IC)

* Depends on operator experience and device availability

* Low-mag bilateral injection with delayed exposure

* Careful tip injection

* Once IC tracking successful, final success is >95%

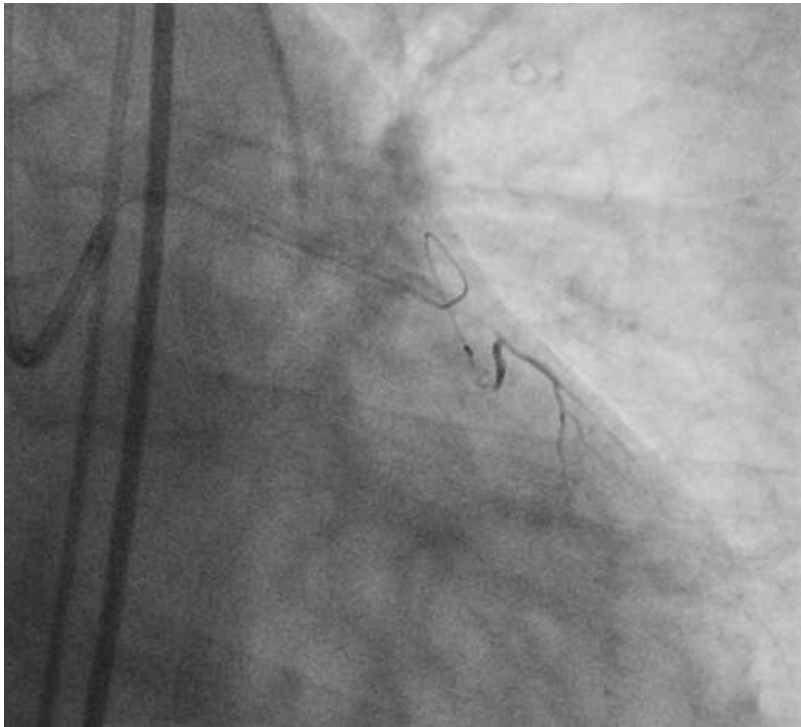* Complication occurs most frequently during IC tracking
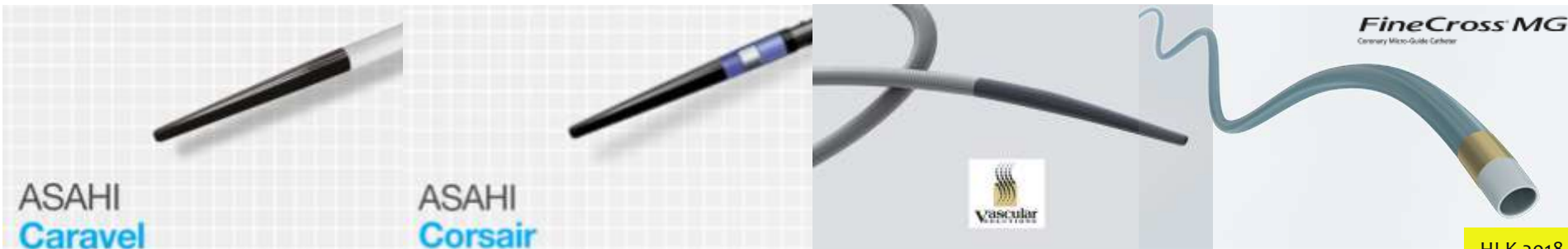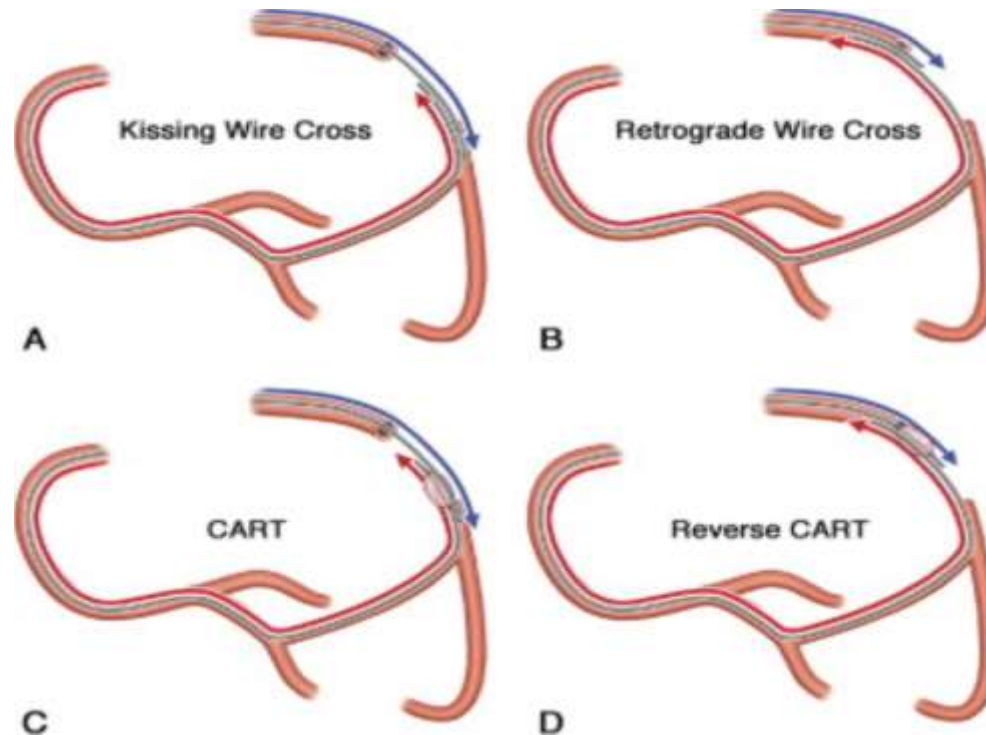
Good diagnostic imaging
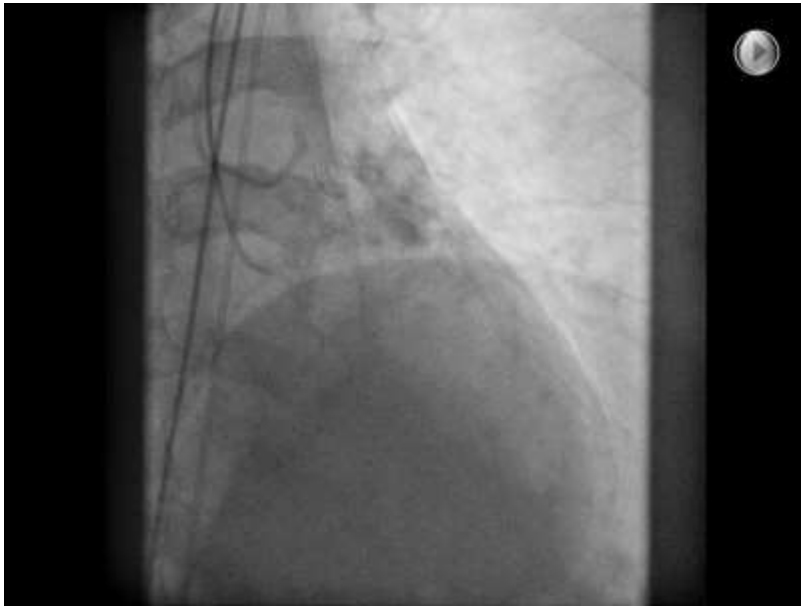
IC selection
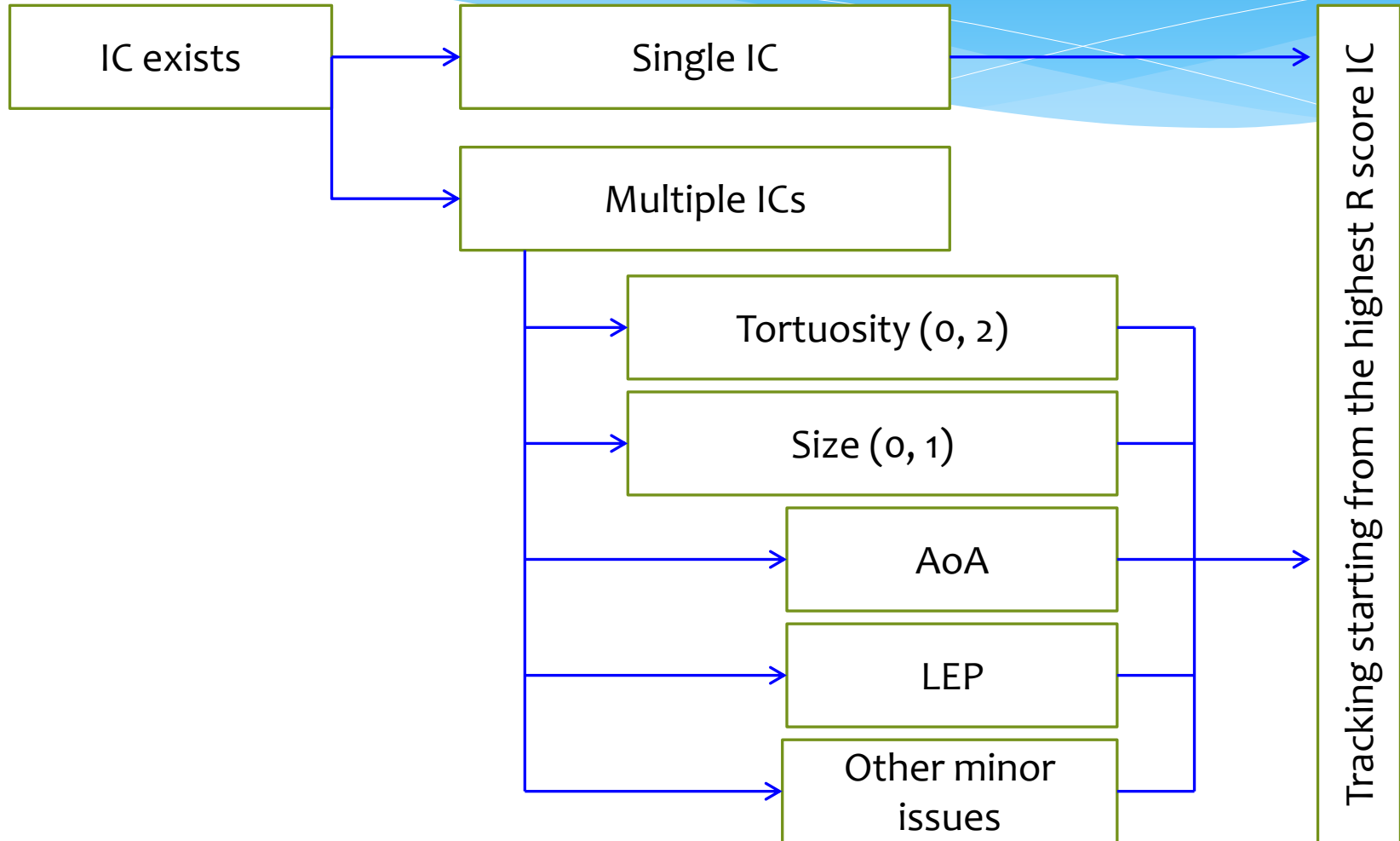
IC tracking

Device for IC tracking

* ## Wire choice and shaping is very important
  * Tip load/torque transmission/lubricity
  * c/w "Intentional" tip fracture

* ## Micro-catheter
  * Tip flexibility/entry profile
  * Shaft thickness/pushability

ASAHI
Caravel

ASAHI
Corsair

Vascular

FineCross MG
Coronary Micro-Guide Catheter
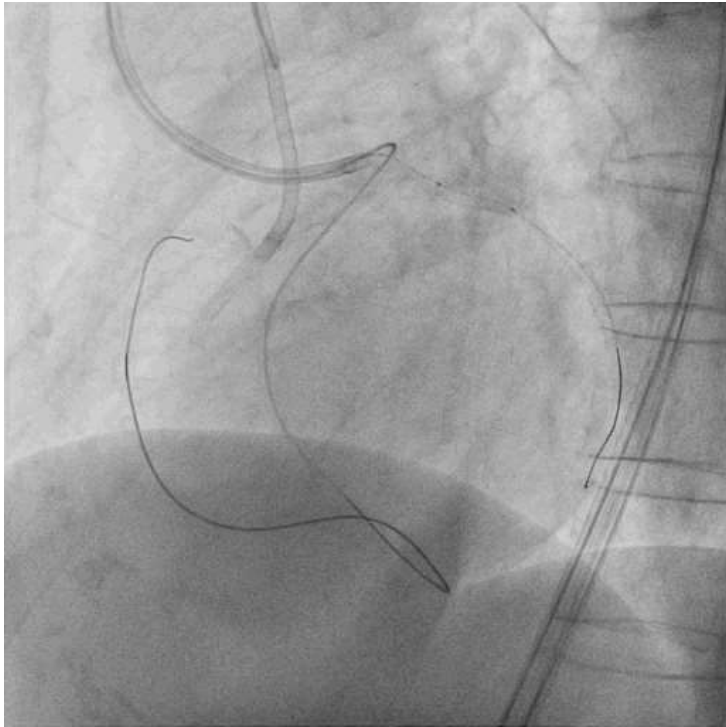
HLK 2018

Crossing mode of CTO segment

HLK 2018

APCTO retro sub-algorithm

Retrograde wire access → Occlusion lesion < 20mm

Course ambiguity/ calcification/tortuosity

Reverse CART ← Retrograde wire crossing Or Kissing wiring

Retrograde knuckle wiring

IVUS exam

If failed to enter proximal cap

CART → Subintimal Rota Other methods
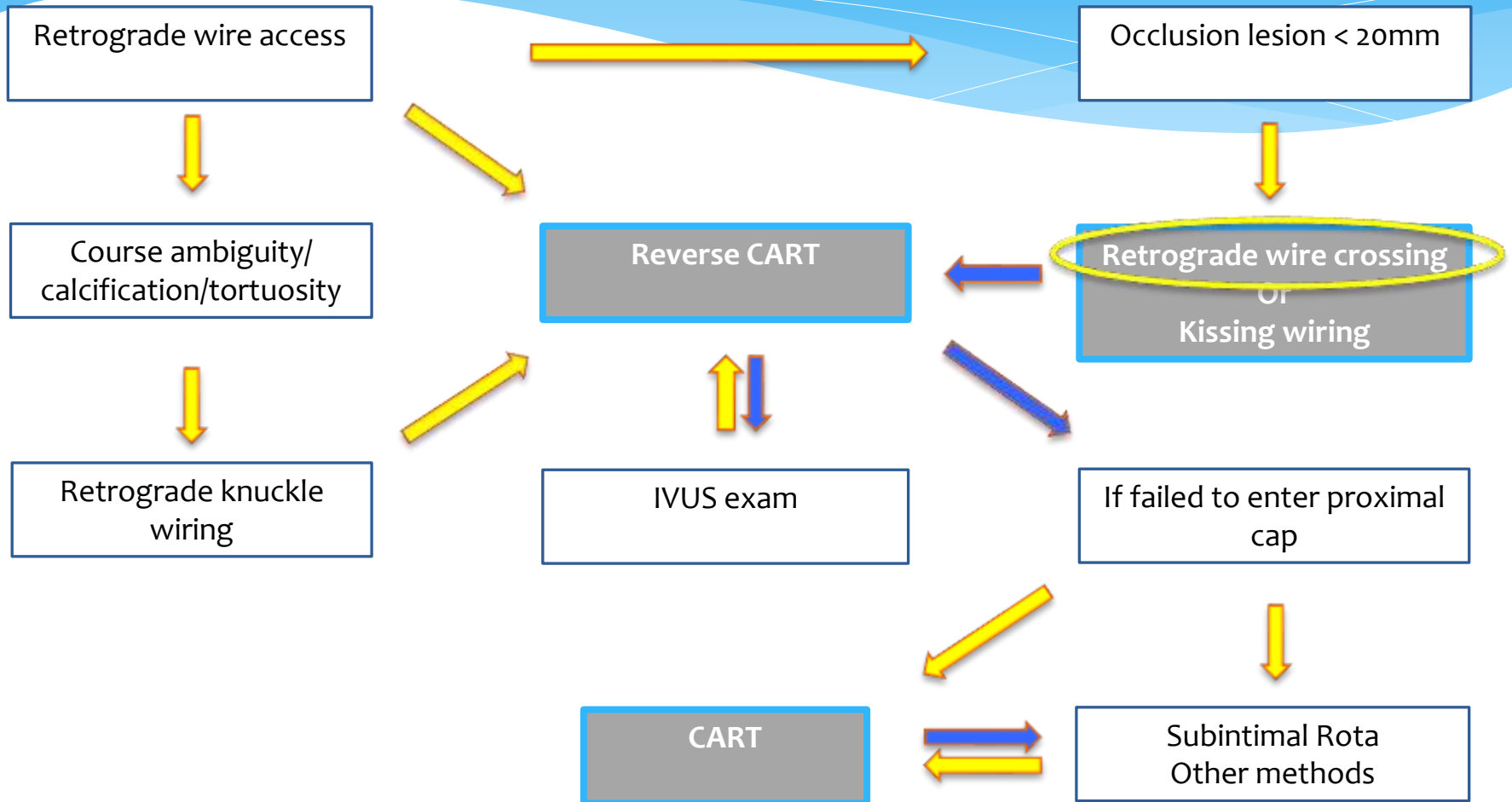
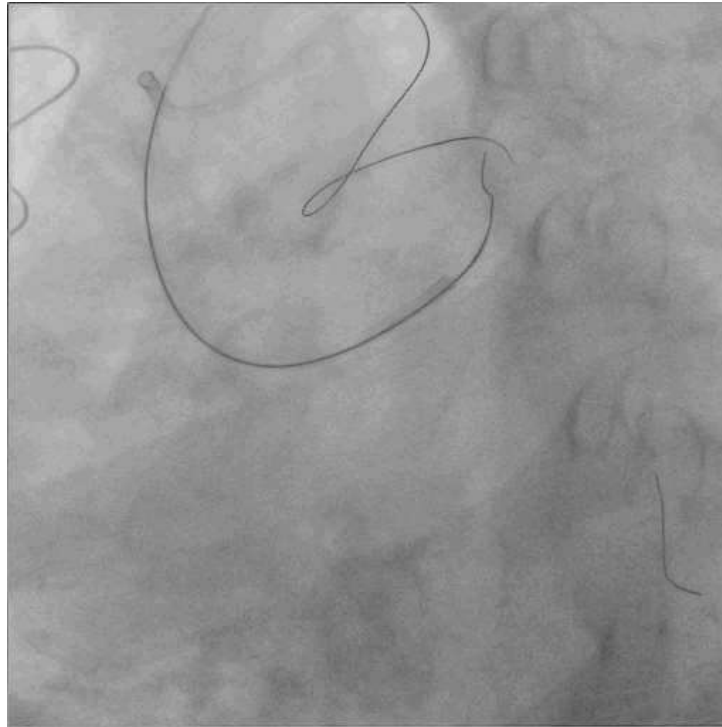# Bilateral injection
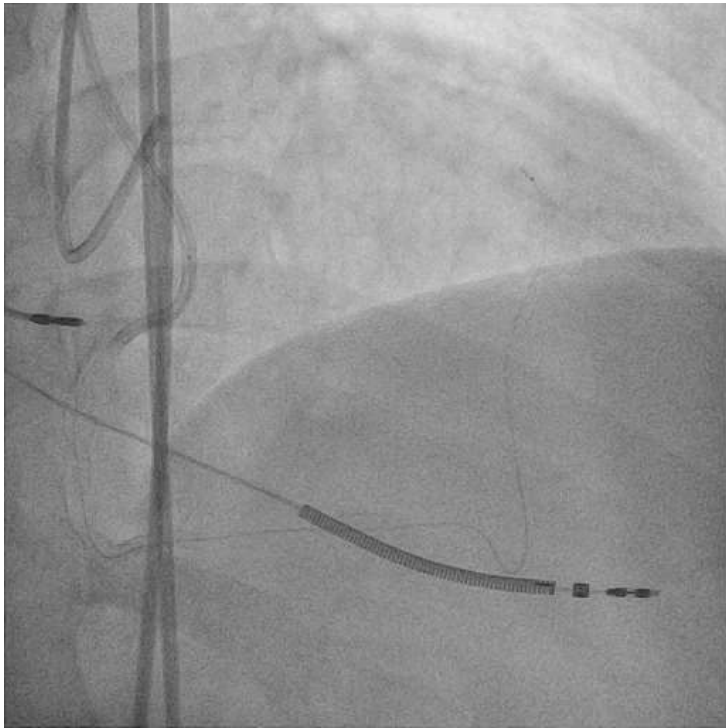
Retrograde wire crossing
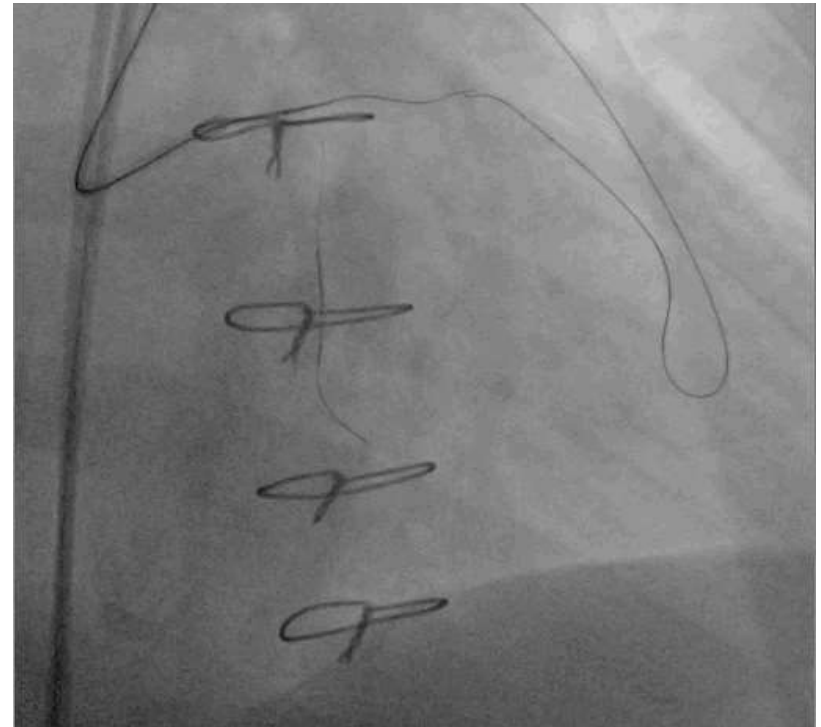
Another RWC case

APCTO retro sub-algorithm

Retrograde wire access

Occlusion lesion < 20mm

Course ambiguity/ calcification/tortuosity

Reverse CART

Retrograde wire crossing Or Kissing wiring

Retrograde knuckle wiring

IVUS exam

If failed to enter proximal cap

CART

Subintimal Rota Other methods
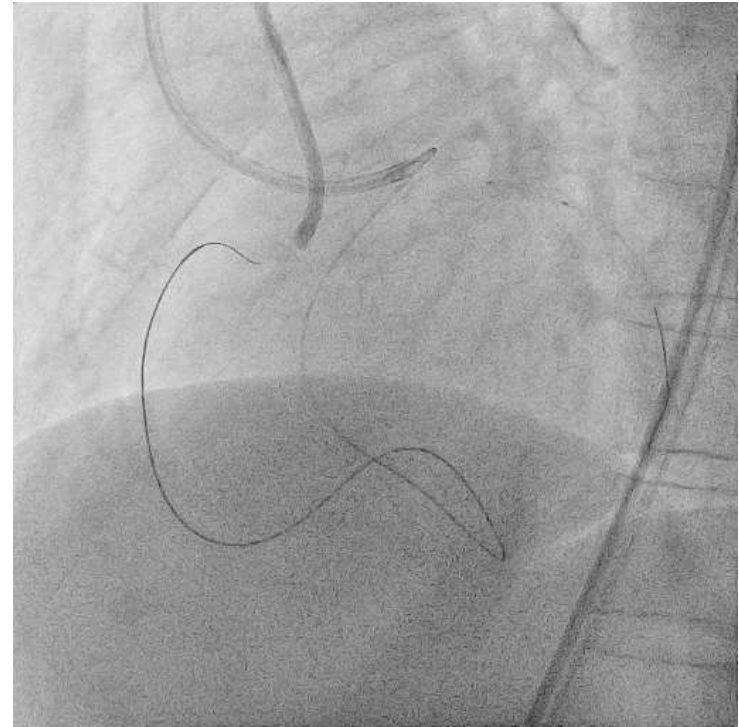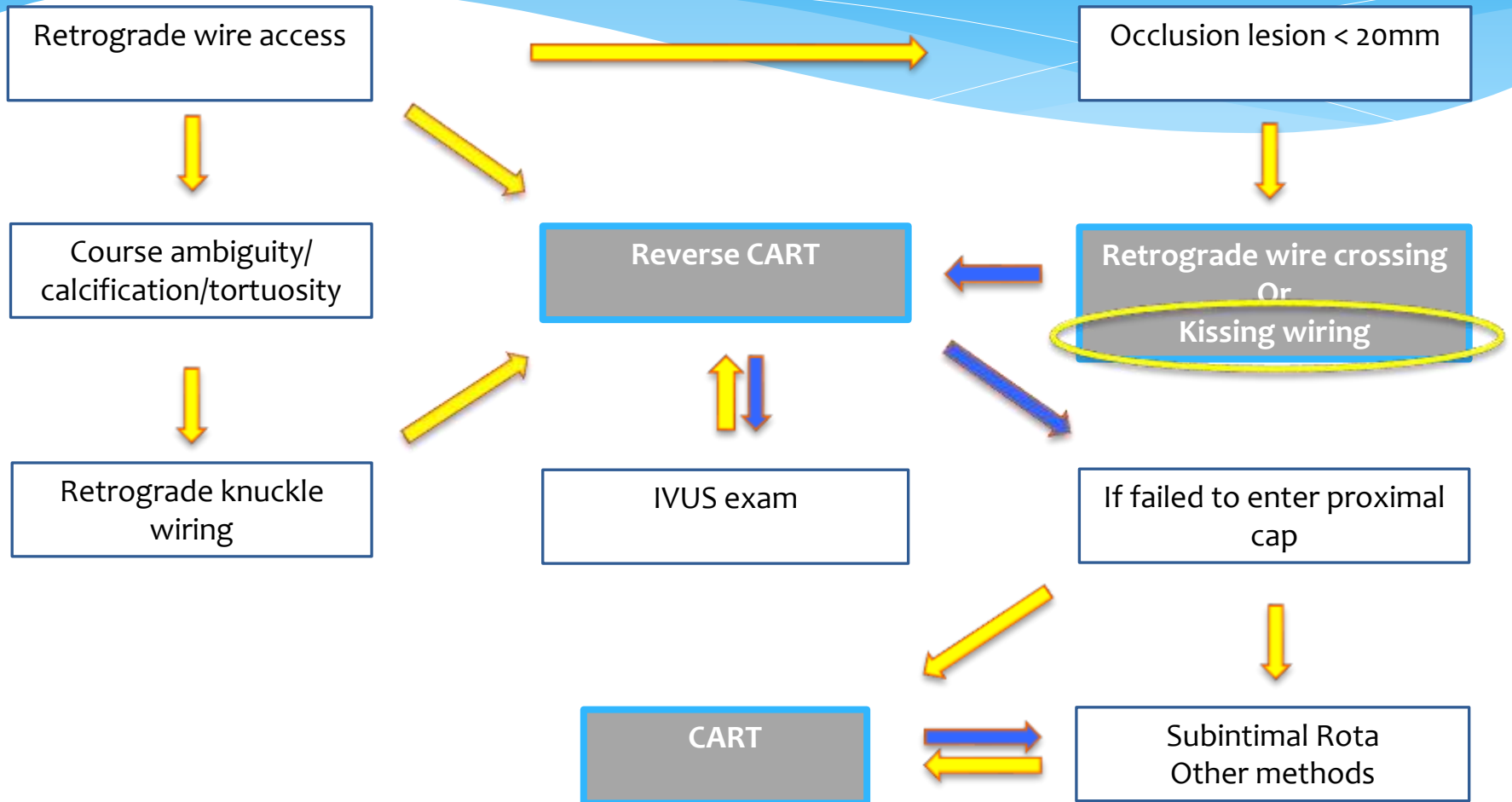
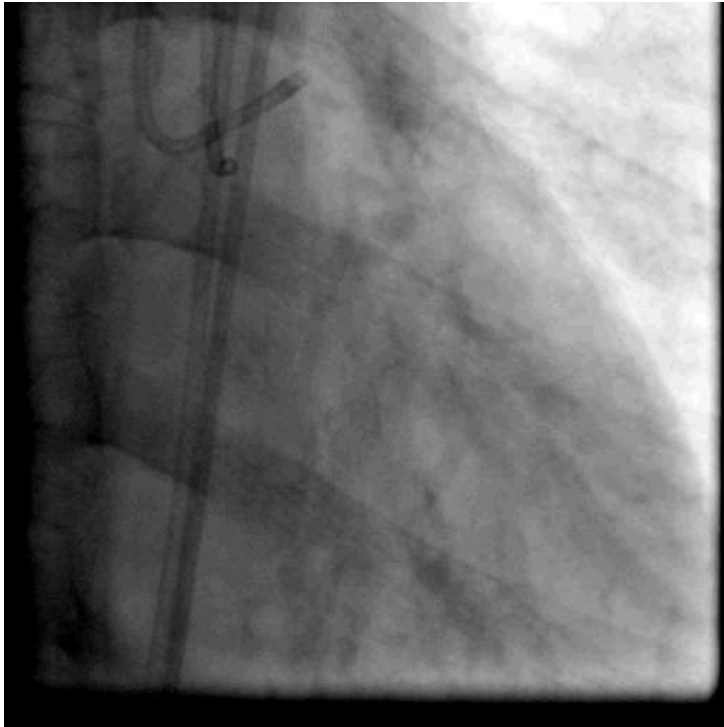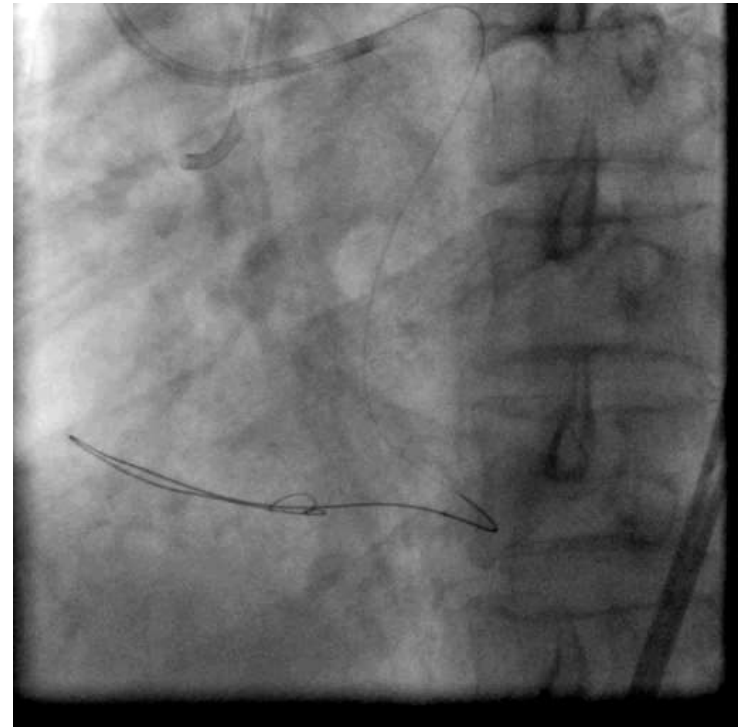# Bilateral injection
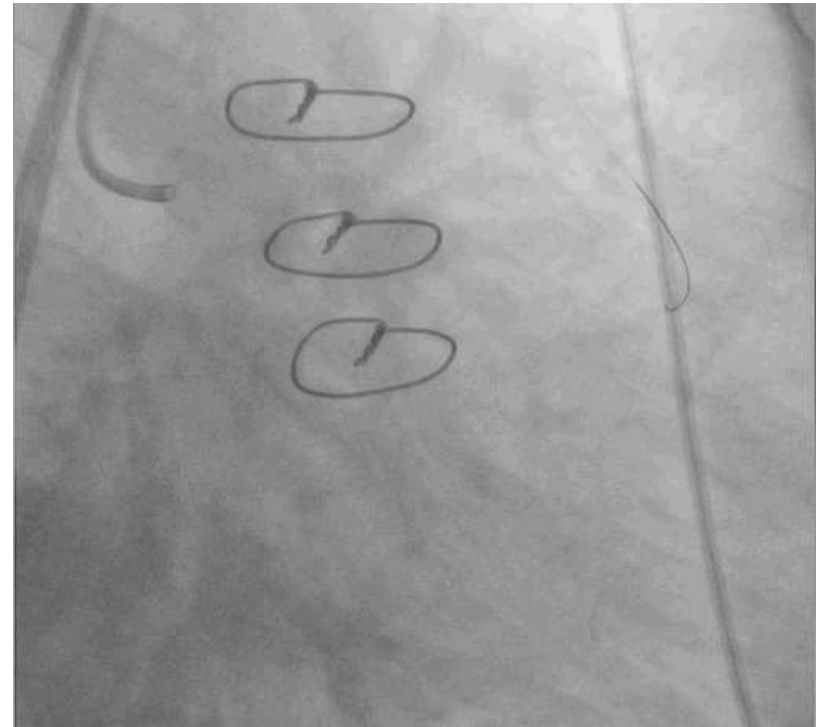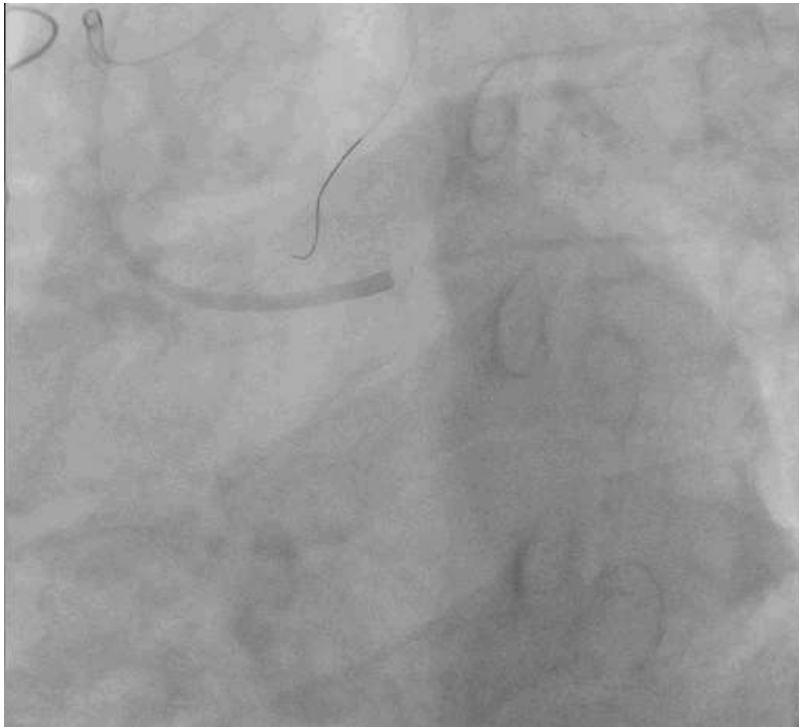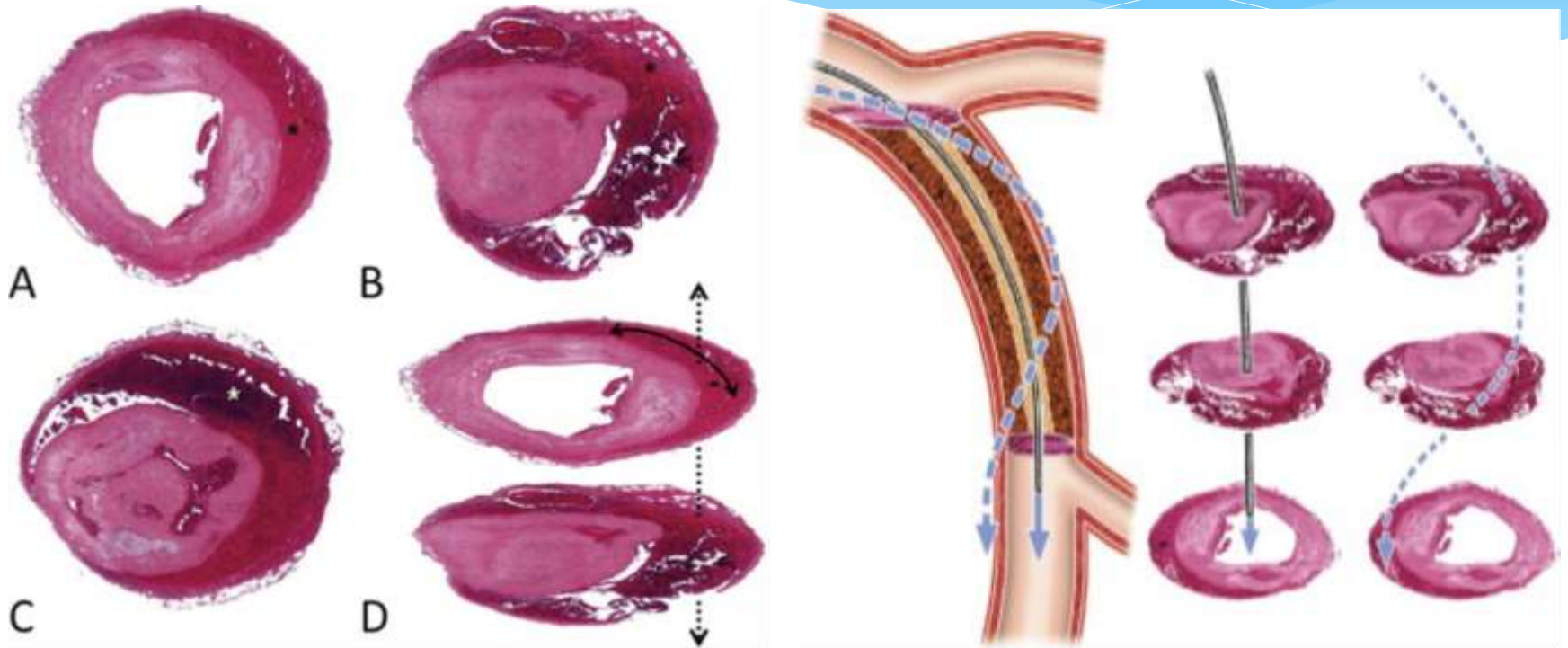
RWC wire was stuck

Antegrade kissing wiring

APCTO retro sub-algorithm

Retrograde wire access → Occlusion lesion < 20mm

Course ambiguity/ calcification/tortuosity

Reverse CART

Retrograde wire crossing Or Kissing wiring

Retrograde knuckle wiring

IVUS exam

If failed to enter proximal cap
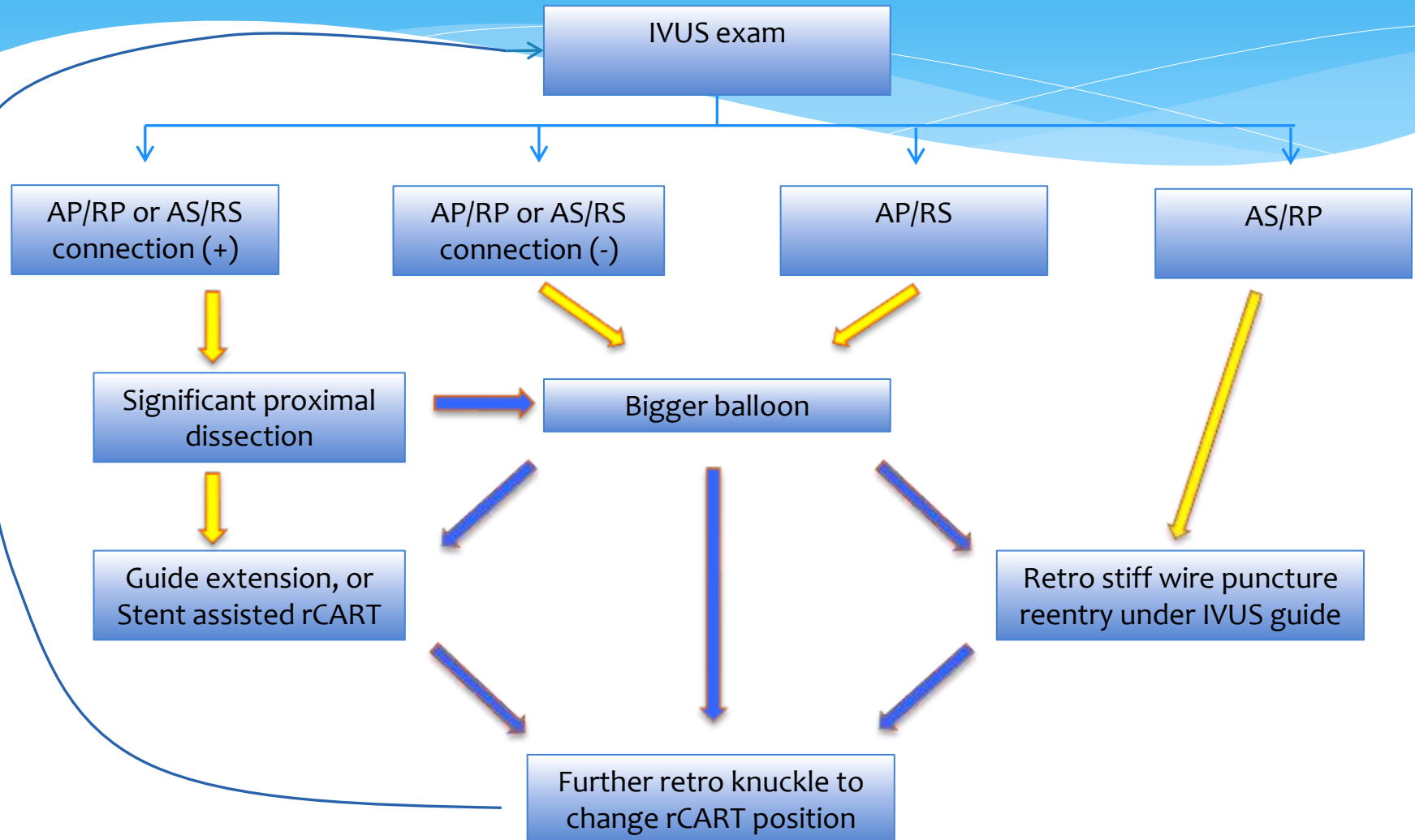
CART

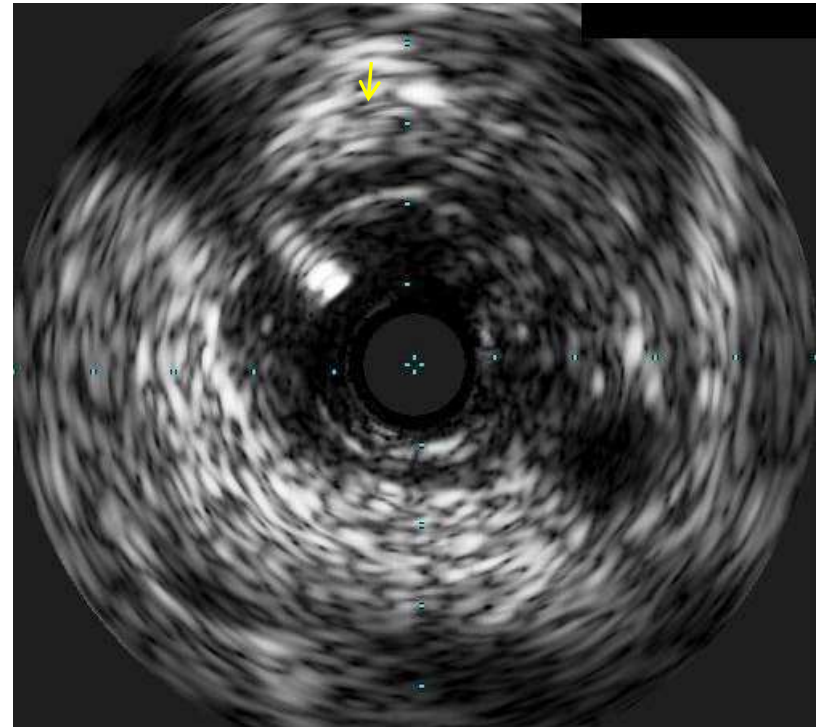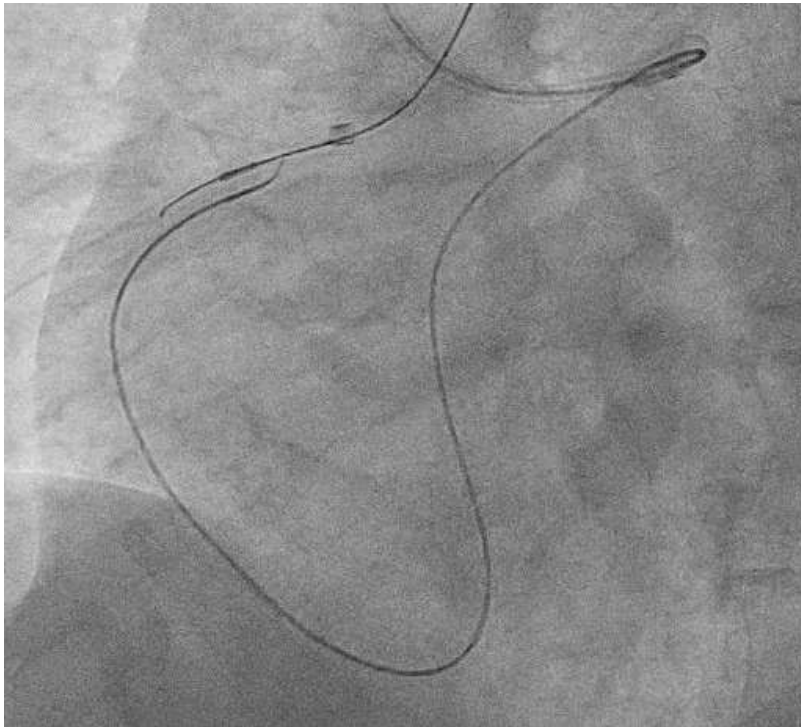Subintimal Rota Other methods
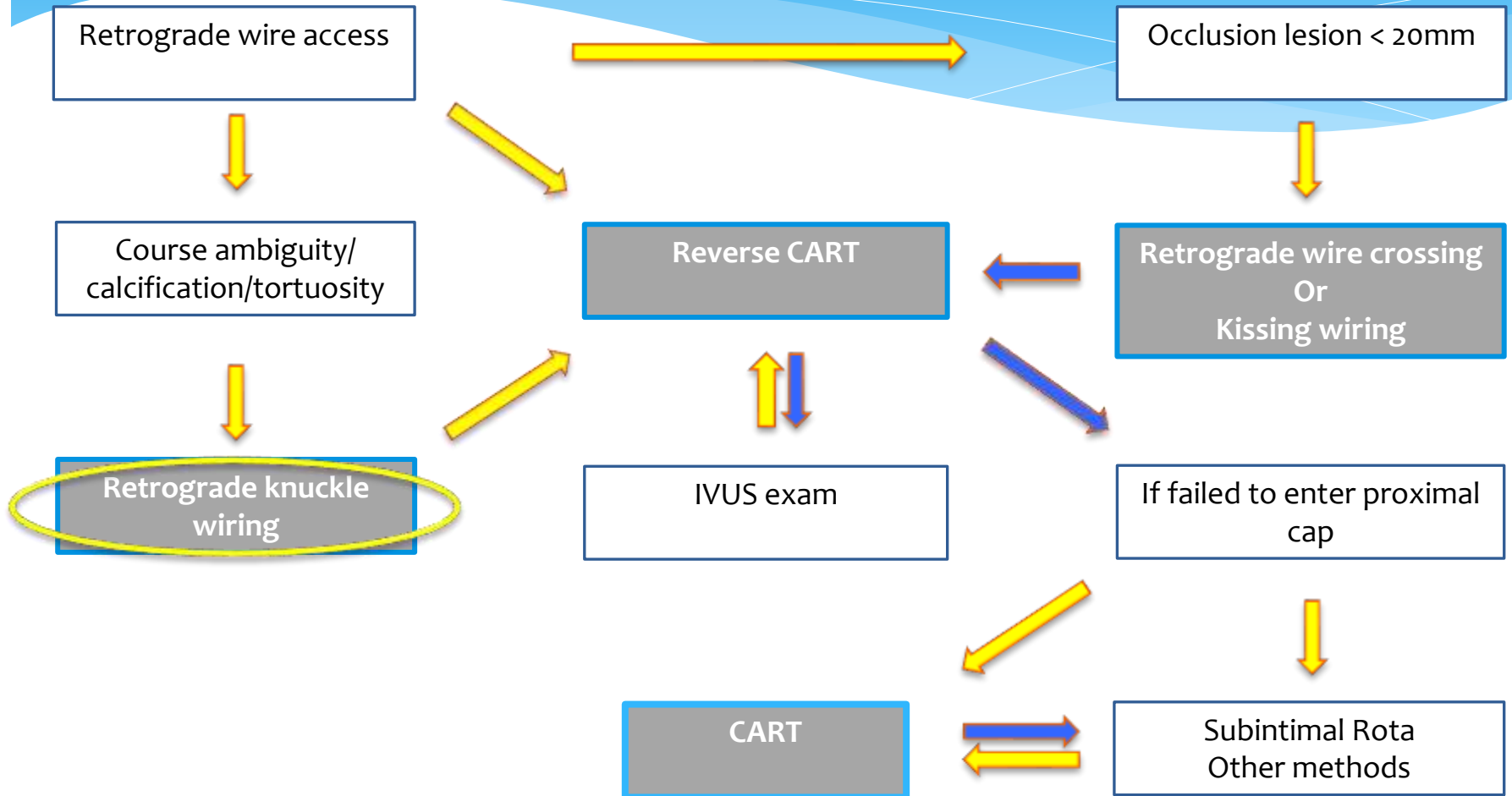
Bilateral injection
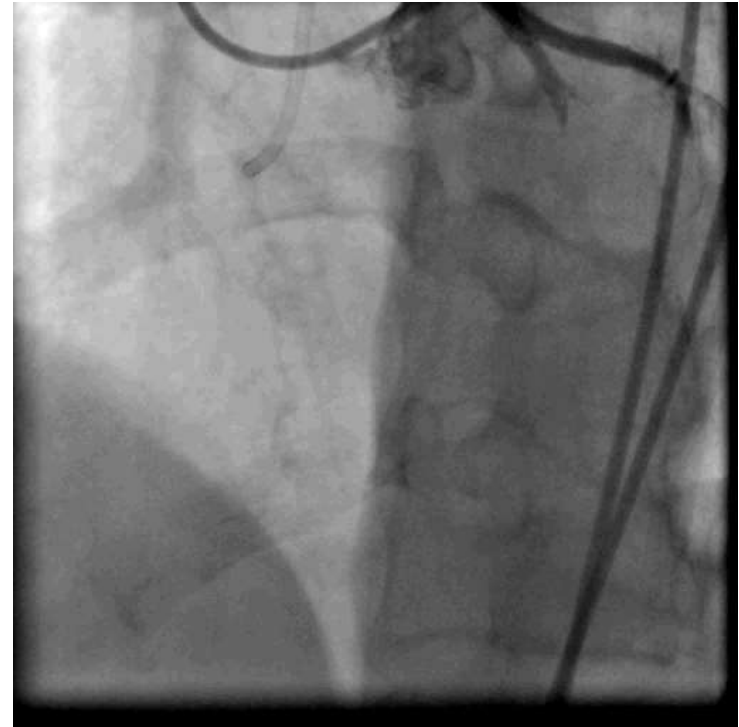
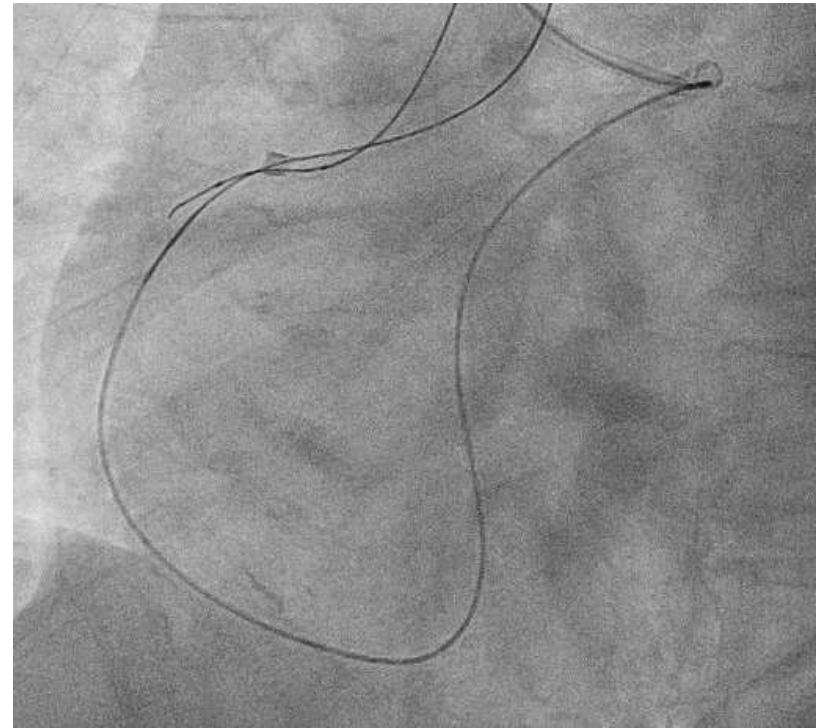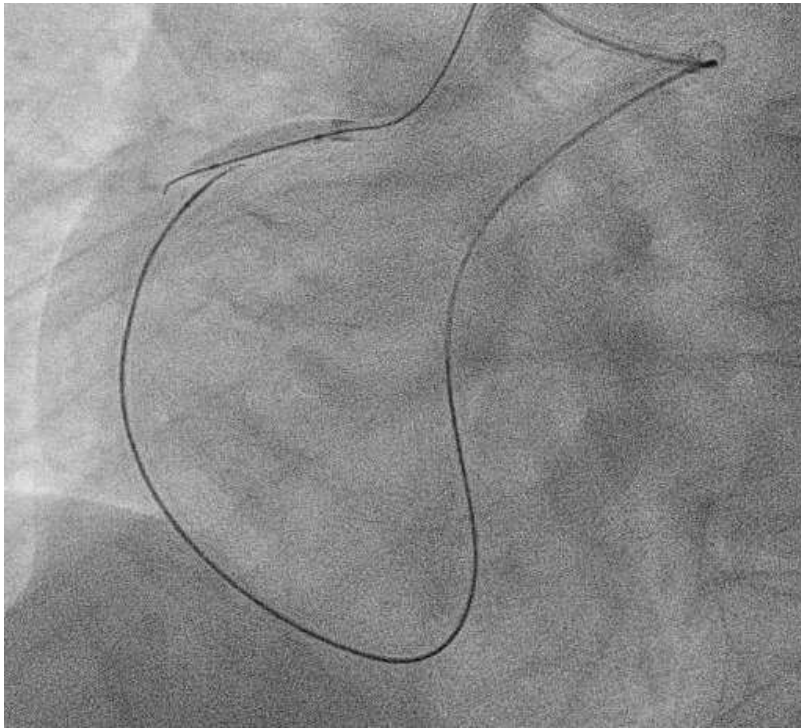# Retro knuckling

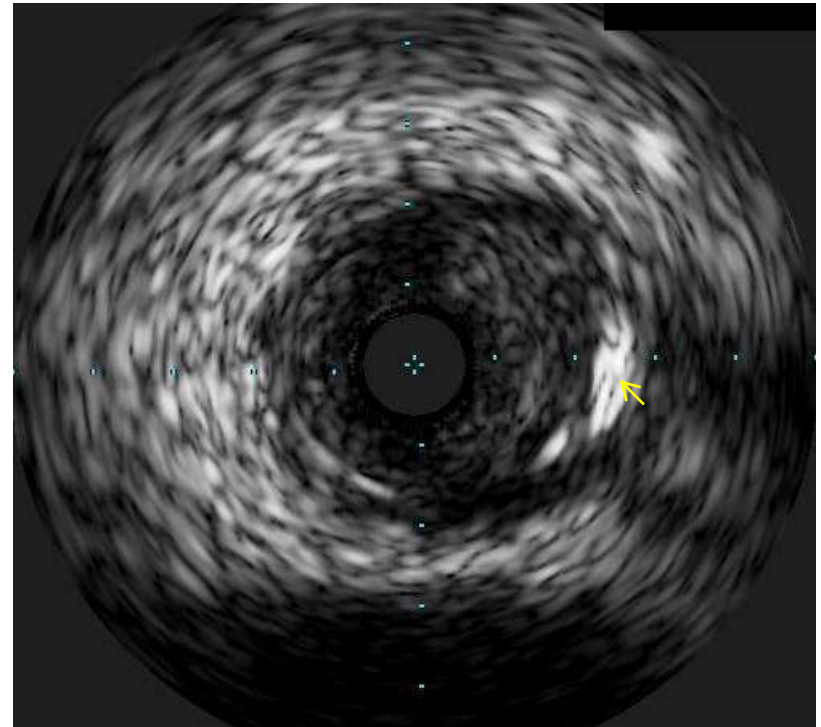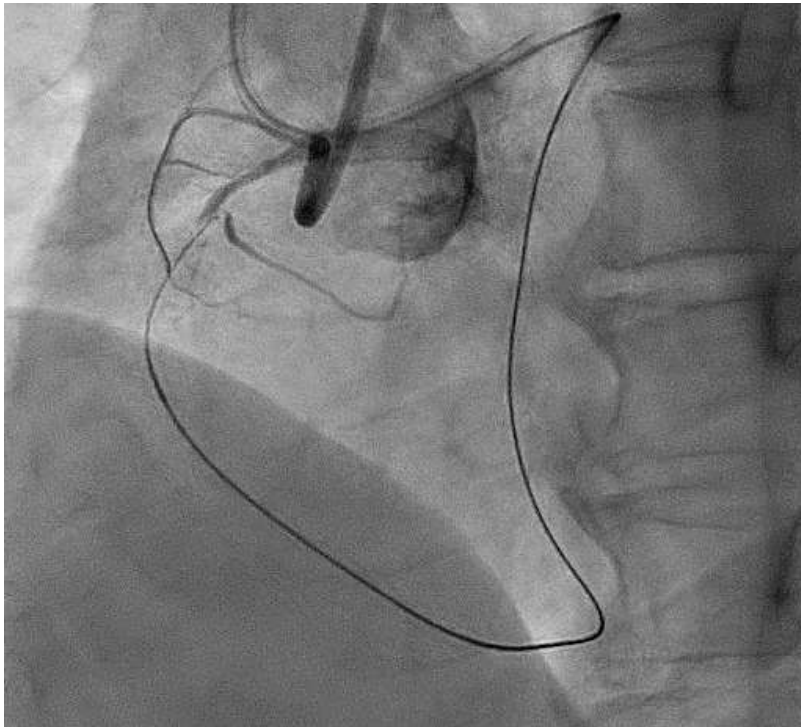# Wire positions in reverse CART

APCTO Algorithm when rCART failed

IVUS exam

AP/RP or AS/RS connection (+)

AP/RP or AS/RS connection (-)

AP/RS

AS/RP

Significant proximal dissection

Bigger balloon

Guide extension, or Stent assisted rCART

Retro stiff wire puncture reentry under IVUS guide

Further retro knuckle to change rCART position

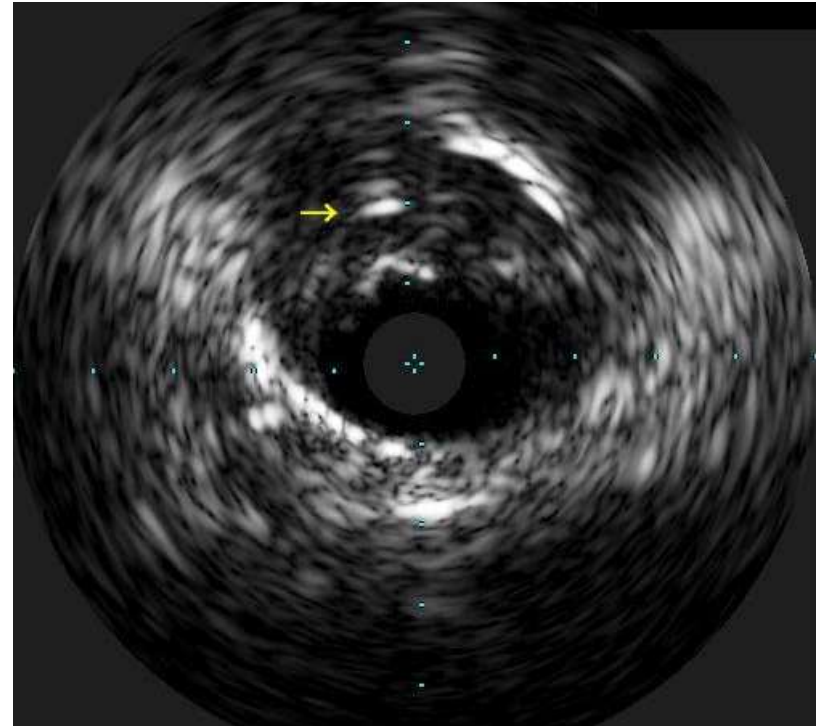HLK 2018

AP/RP

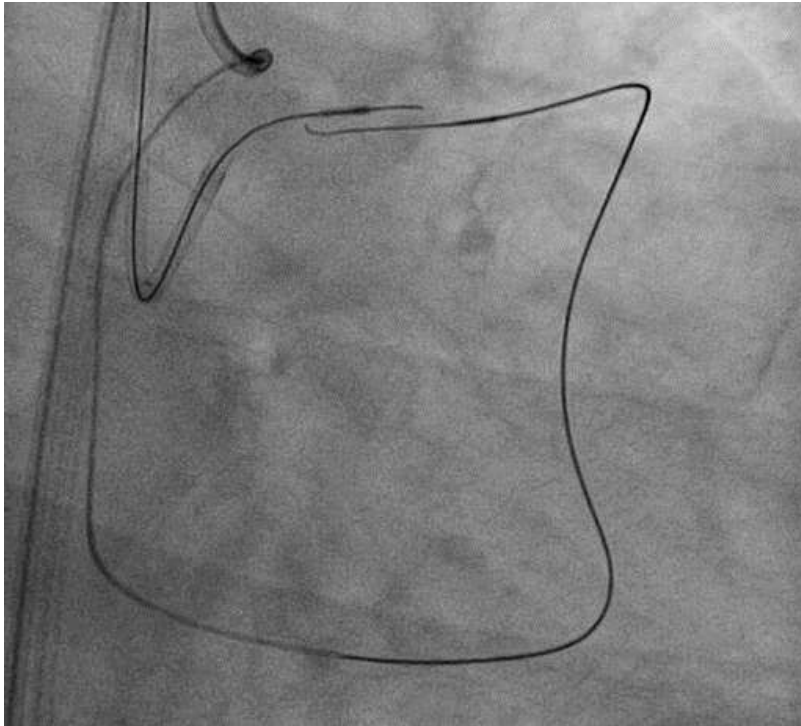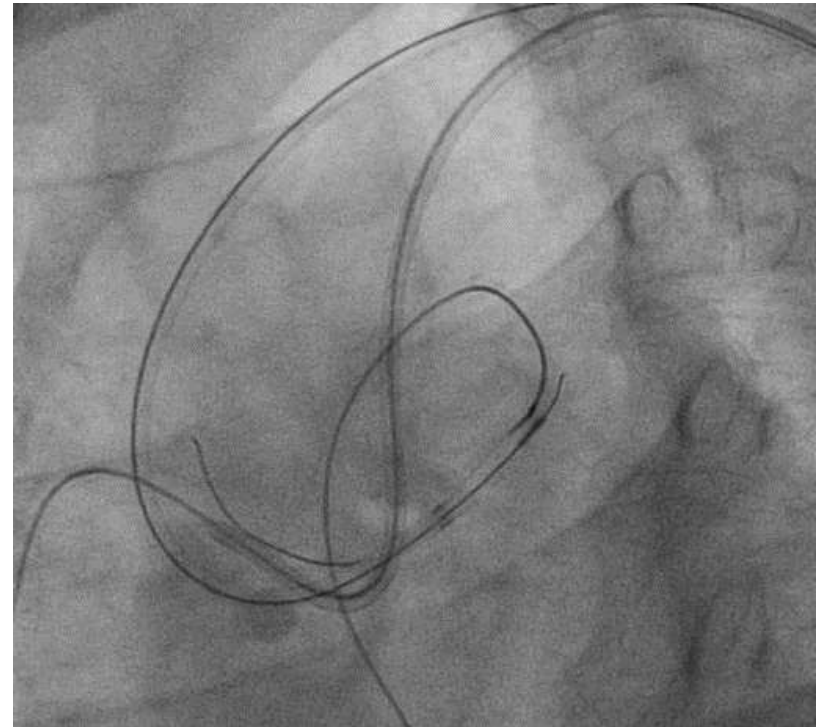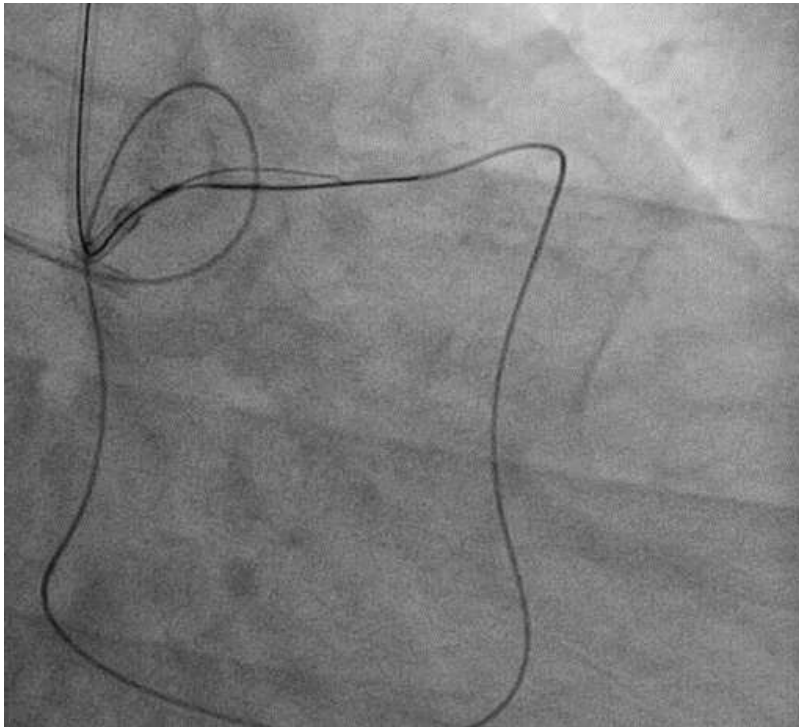# Success after larger balloon rCART

AP/RS

Success after rCART
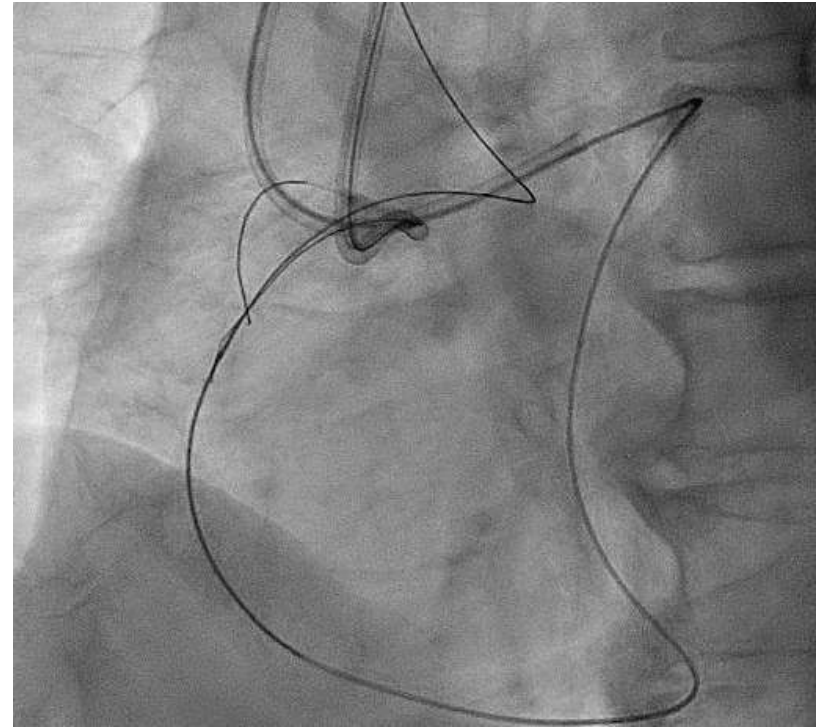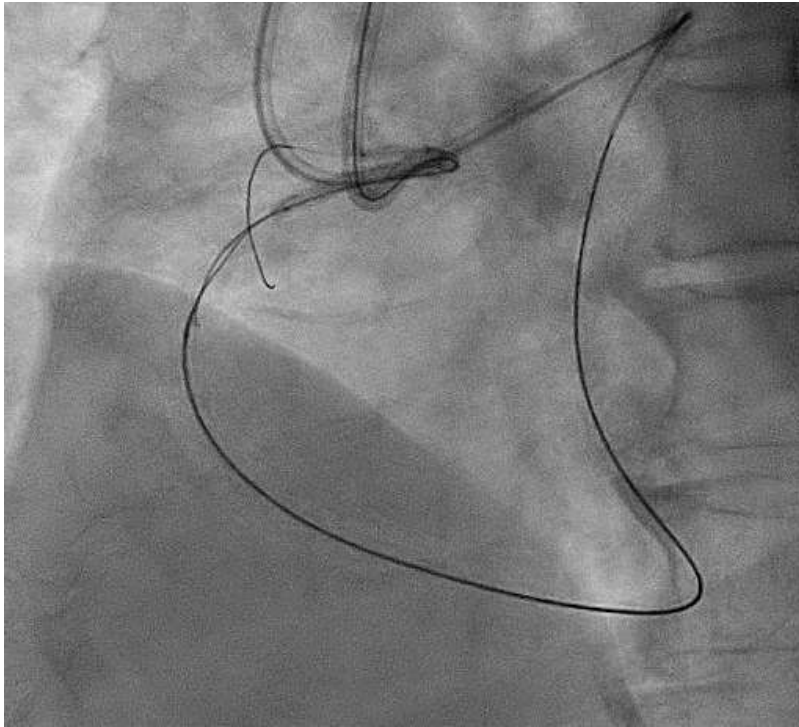
AS/RP

Retro puncture under IVUS

APCTO retrograde algorithm

* Encourages a structu_____y when proximal _____ target is poor, an _____

* Knu_____served for long and a_____ CTO

* Em_____uation, especially in failed rCART

* Effo_____ made to minimize subintimal tract length_____loss of distal side branches

Thank You For Your Attention