How to Do the Contemporary Reverse CART

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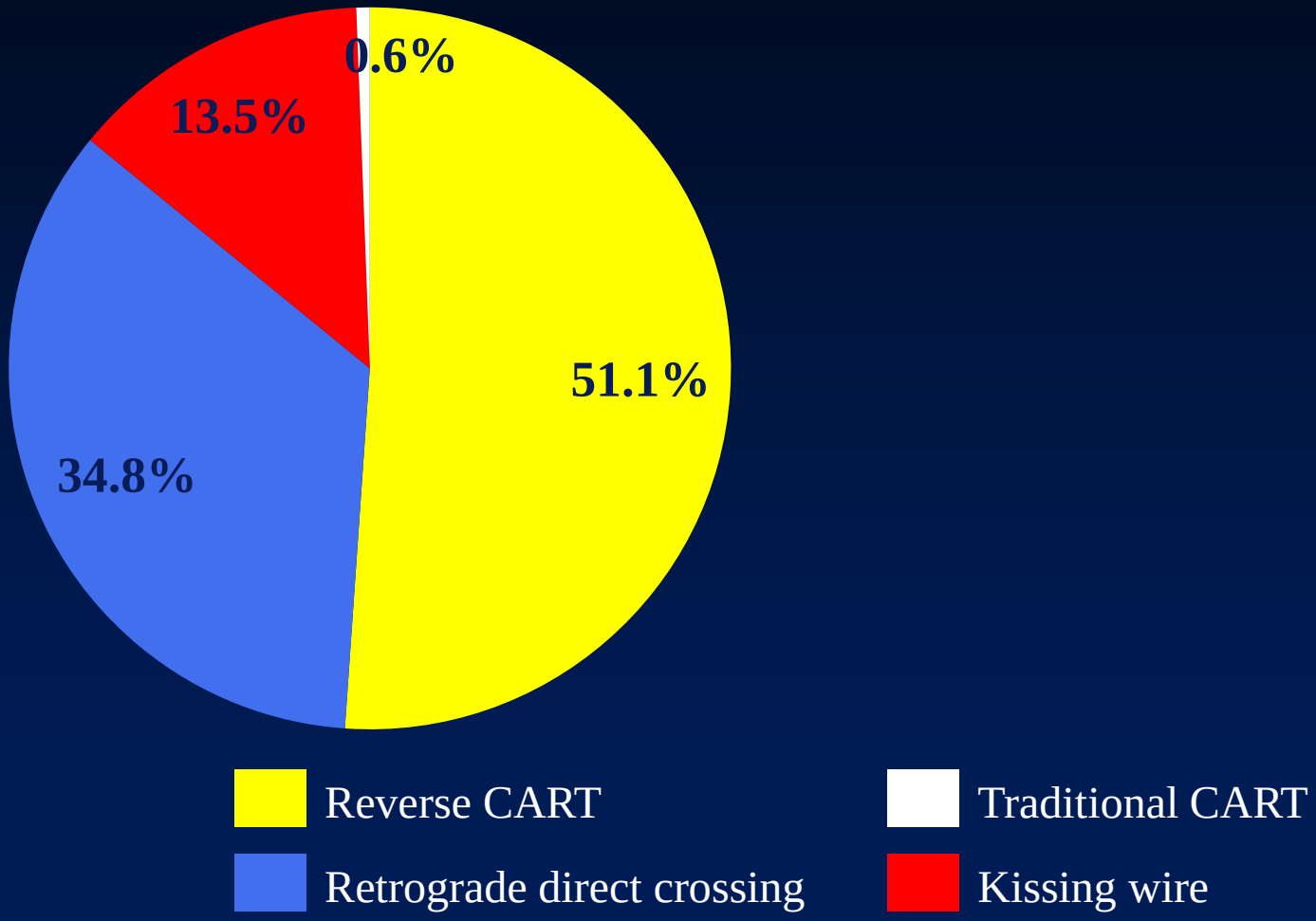
Toyohashi Heart Center, Japan

Change in CTO crossing strategy

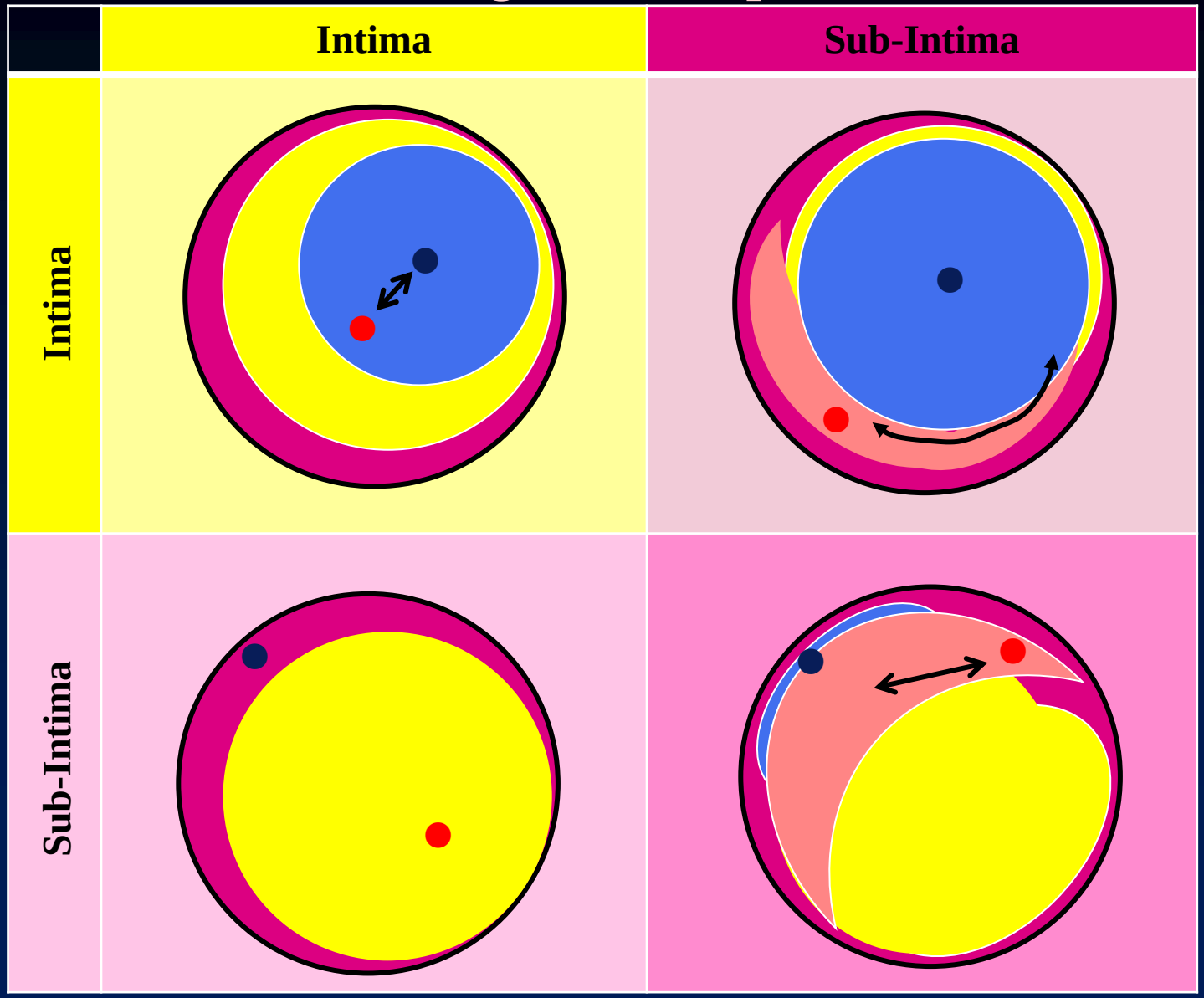
Retrograde Summit Registry 2012



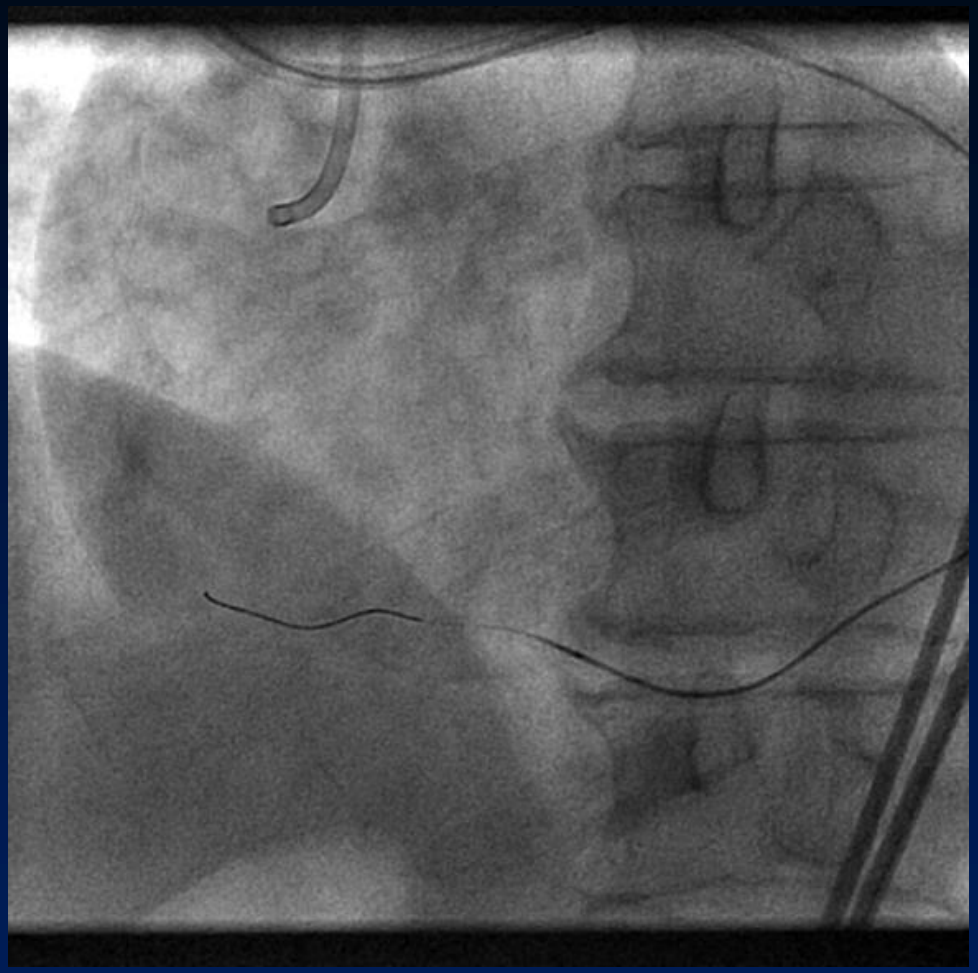
Limitations of Classic Reverse CART

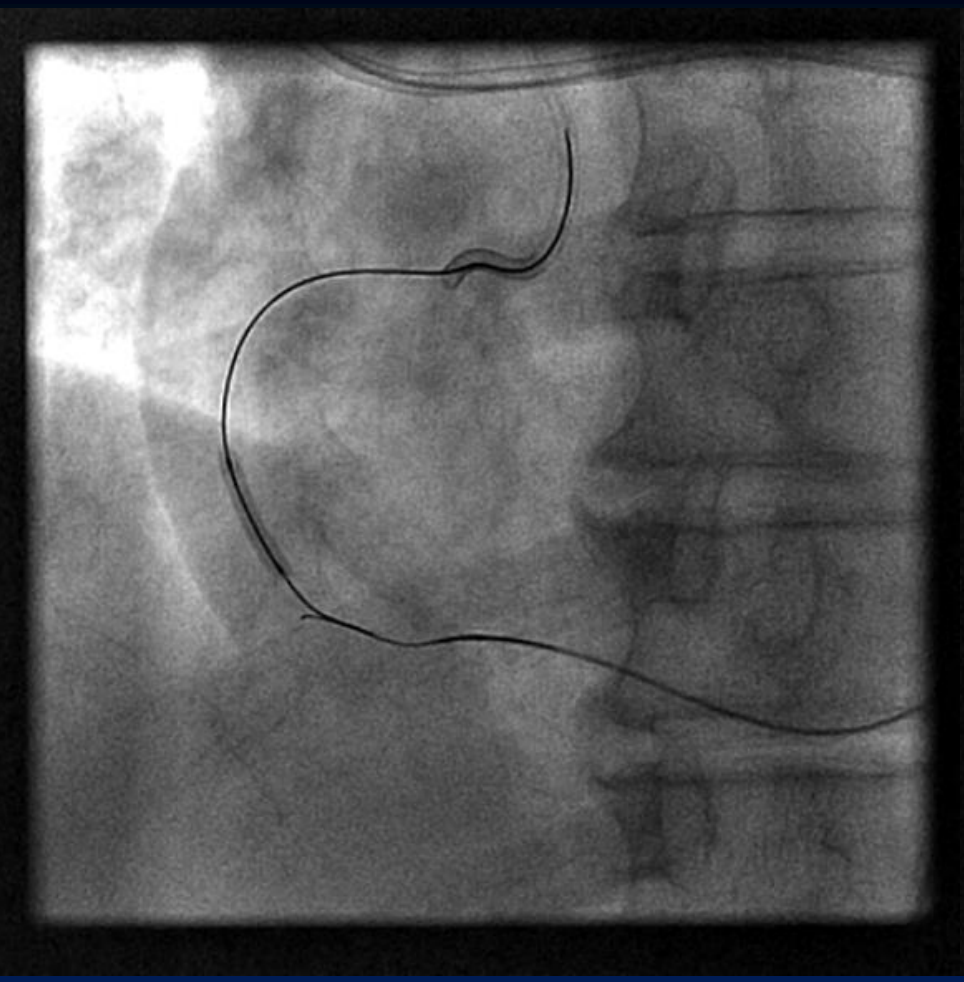
- In the classic reverse CART, a retrograde wire was advanced first (including attempt at the retrograde direct crossing).
- Connection was made at the position where bilateral wires was overlapped.

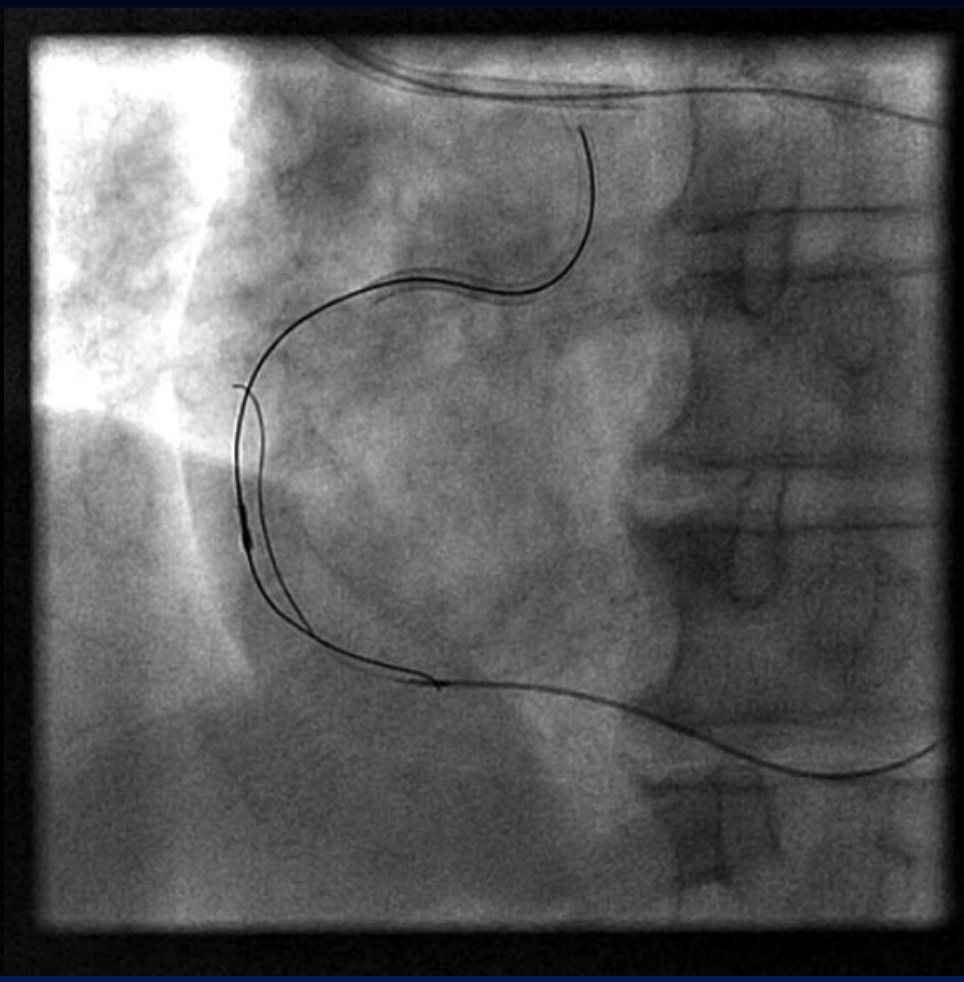
Retrograde wire position



Mid RCA CTO, 2nd Attempt







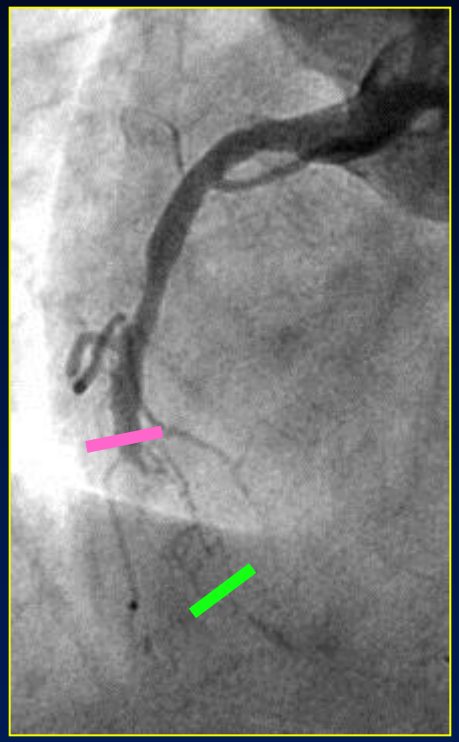
2.5mm ballooning

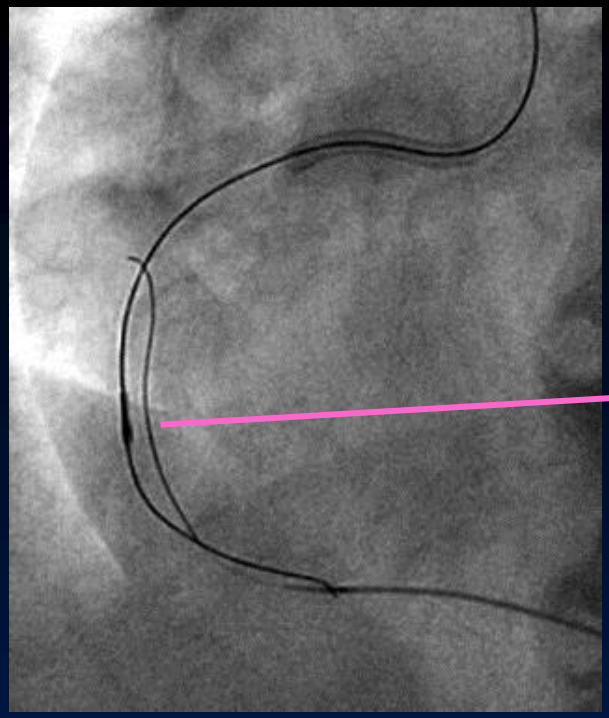
Unsuccessful reverse CART

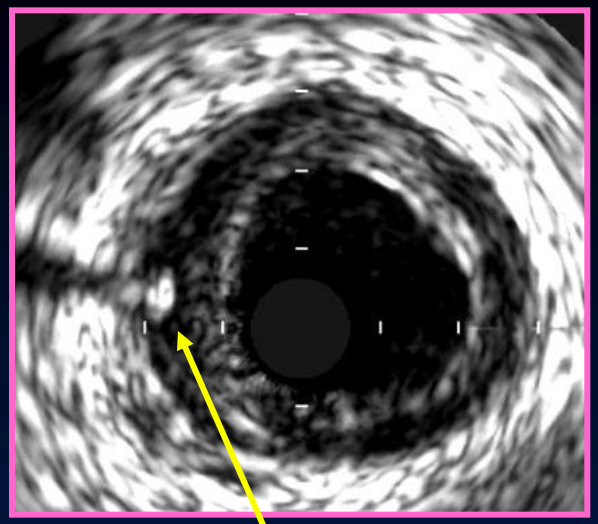
→ *IVUS examination*

CTO

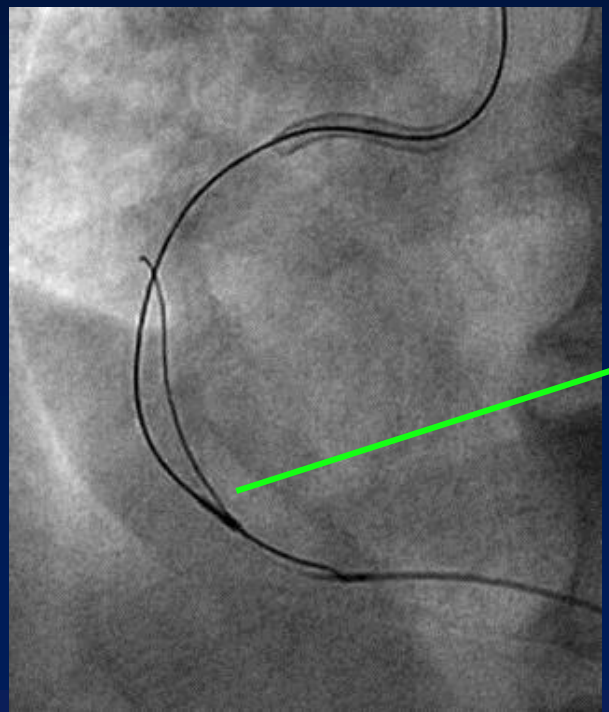
Toyohashi Heart Center

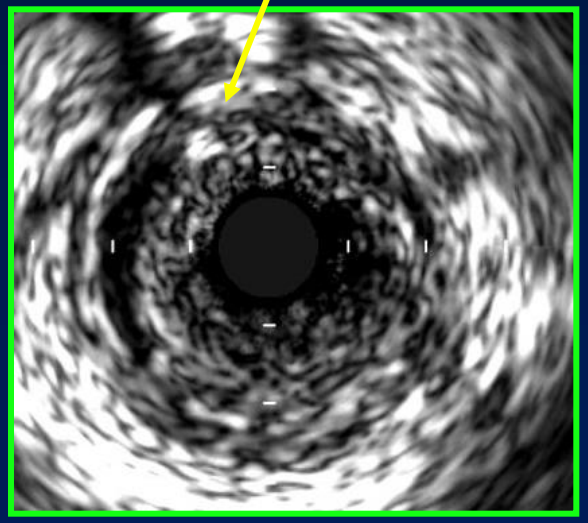




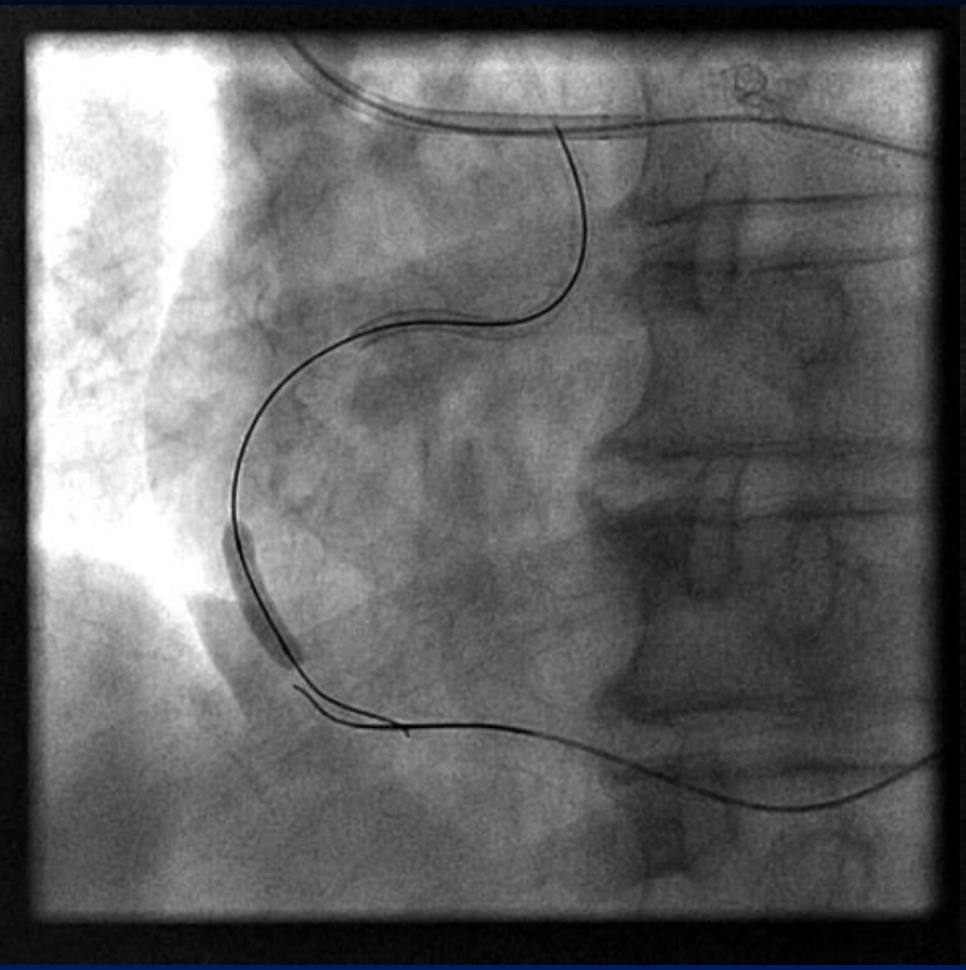


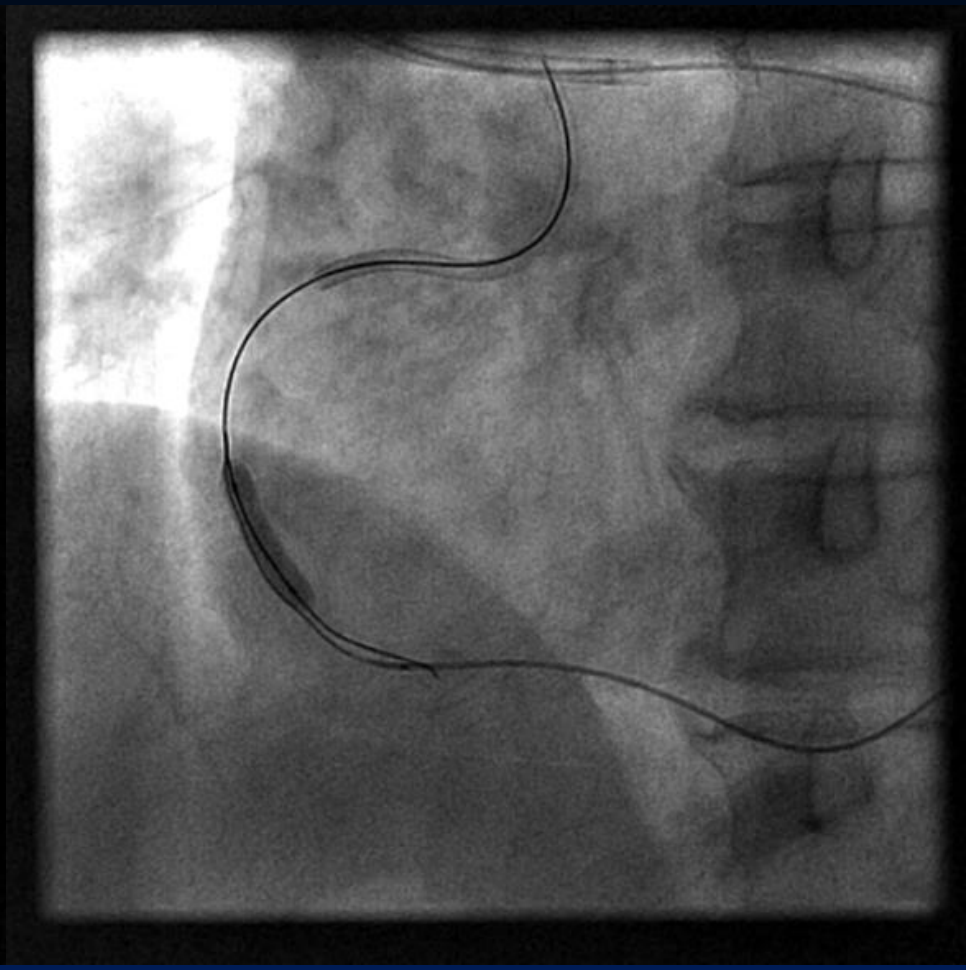
Retrograde wire





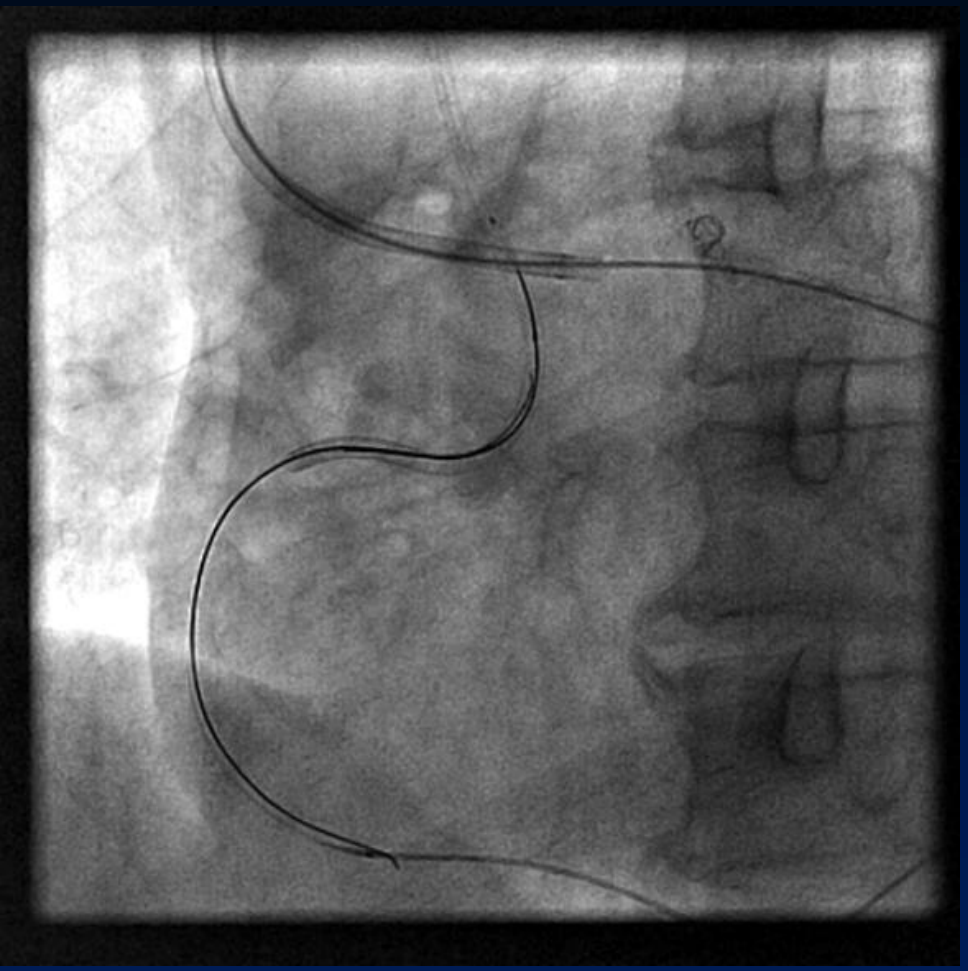
1mm

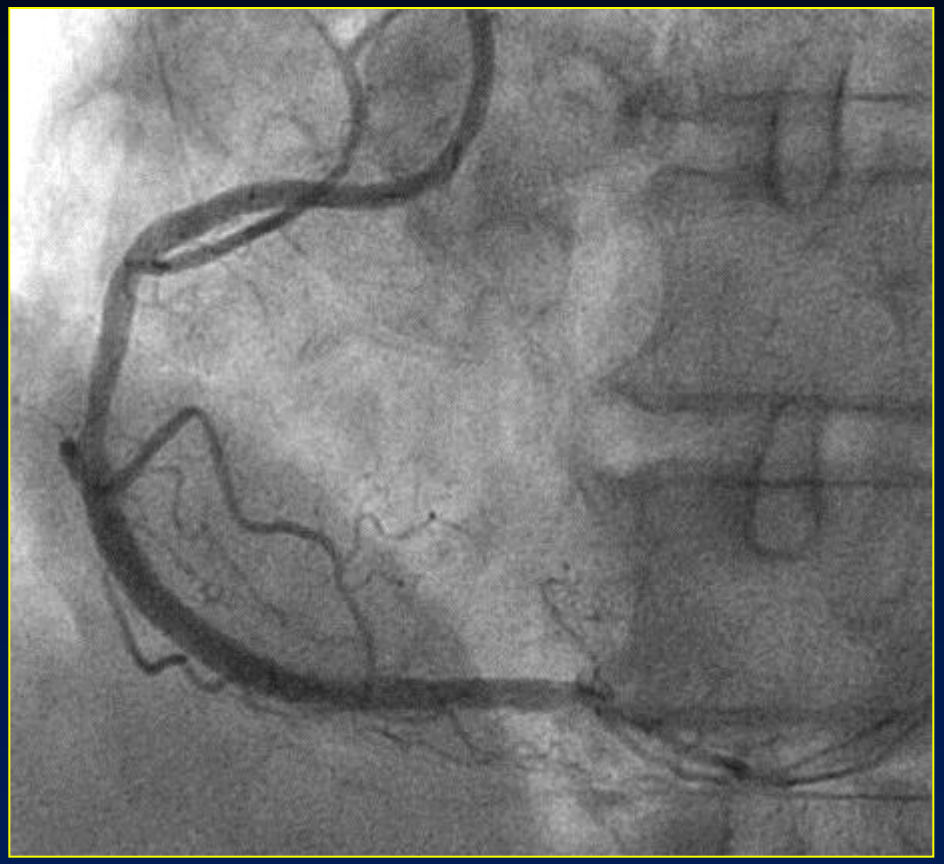




3.5mm ballooning

Wire touched balloon!

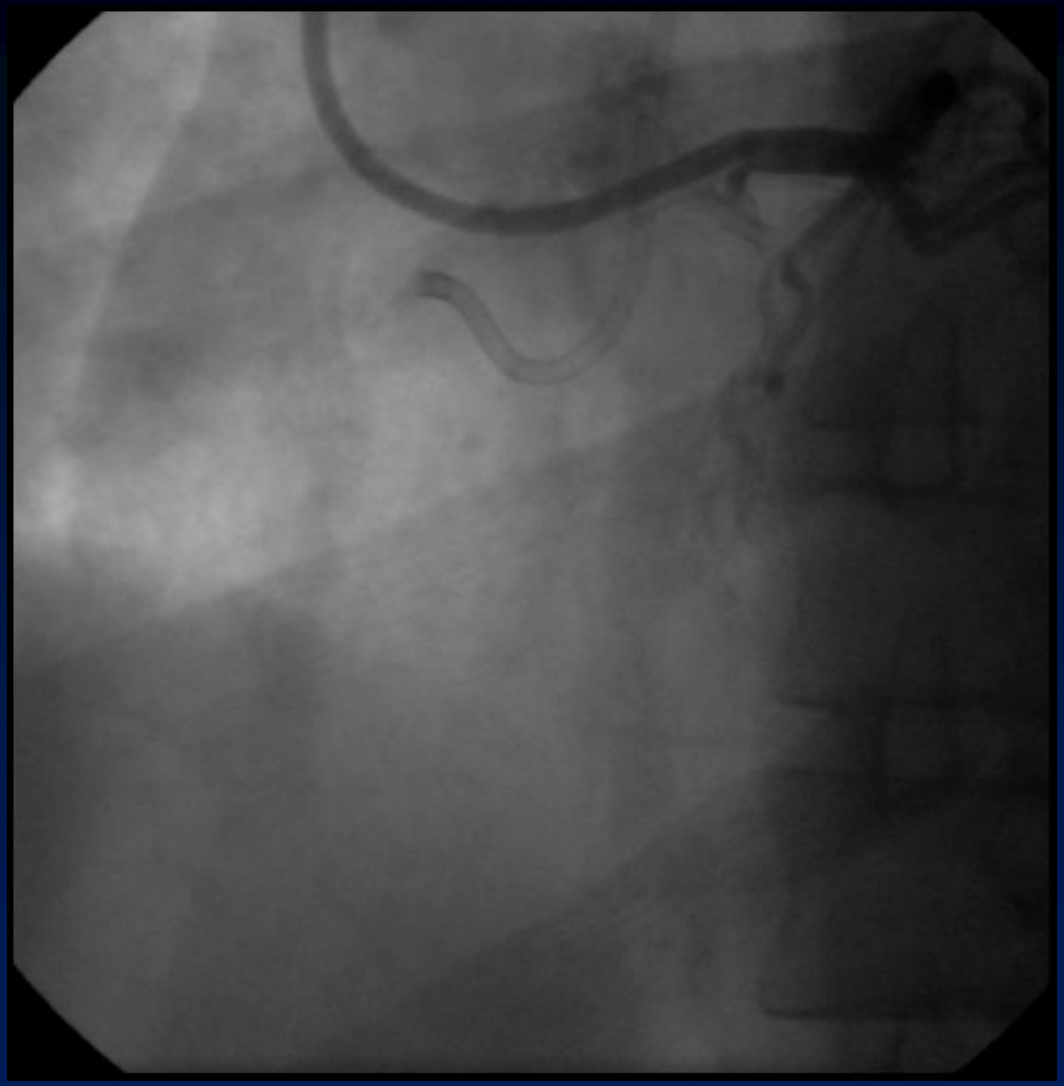


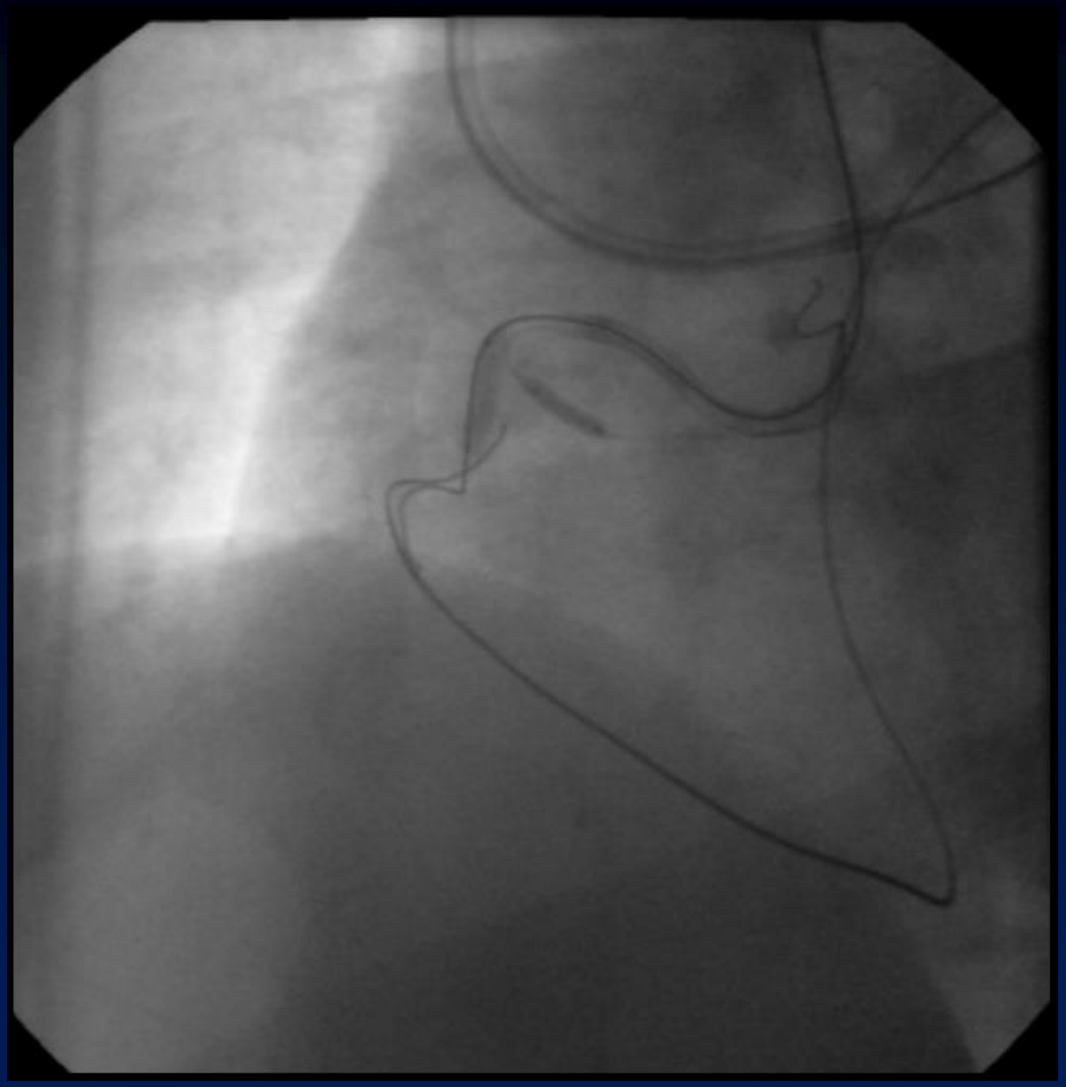


Successful reverse CART

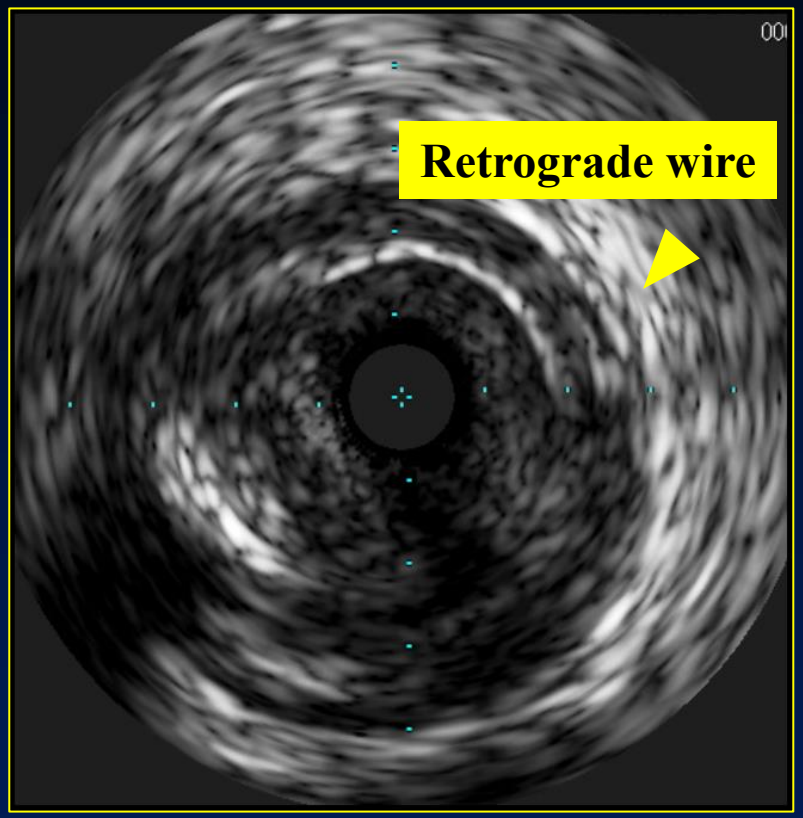
Limitations of Classic Reverse CART

- In the classic reverse CART, a retrograde wire was advanced first (including attempt at the retrograde direct crossing).
- Connection was made at the position where bilateral wires was overlapped.
- Once the retrograde dissection was created by retrograde wiring, the further retrograde direction control became almost impossible.

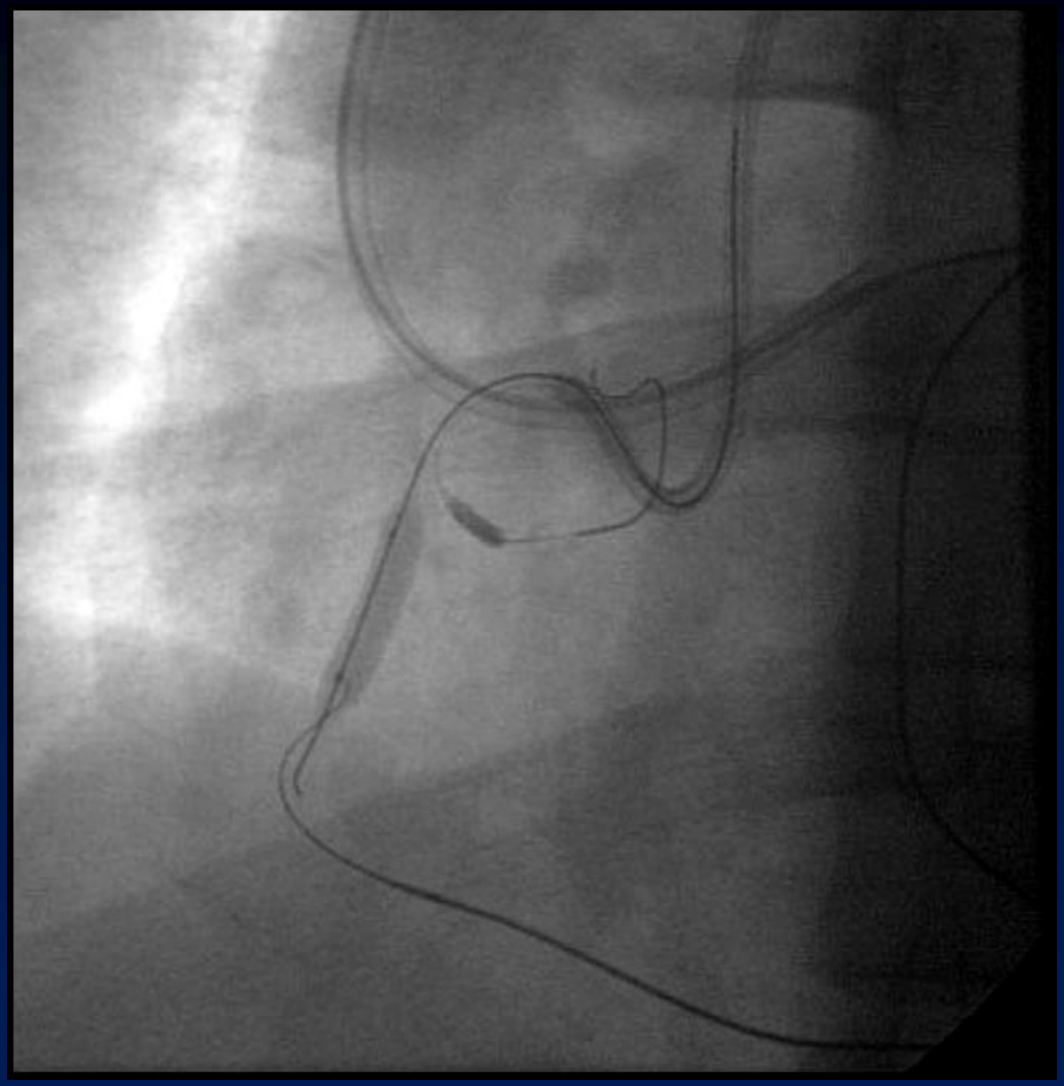




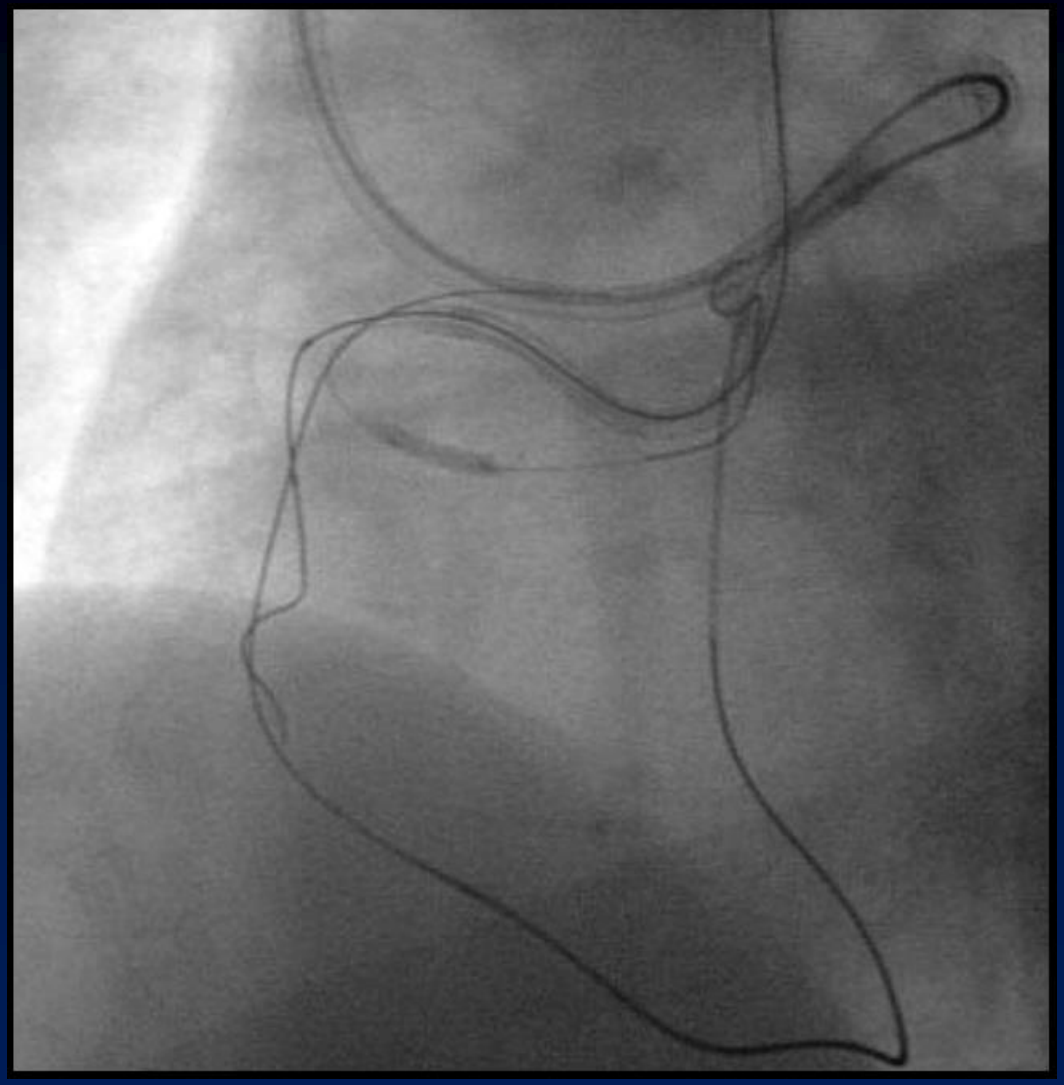
3.0 mm balloon



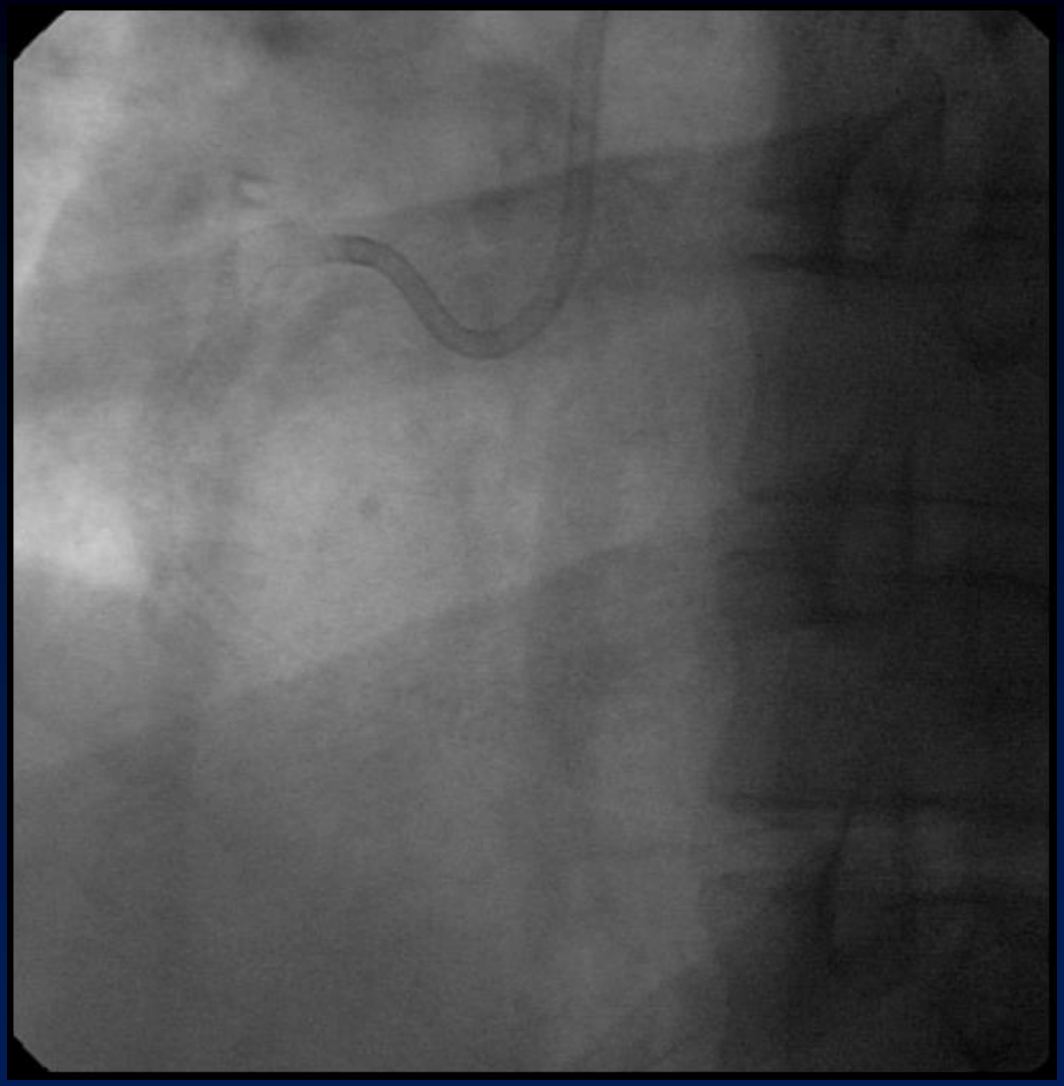
Too big vessel (6 mm) !



4.5 mm balloon and retrograde Conquest for penetration



Successful reverse CART



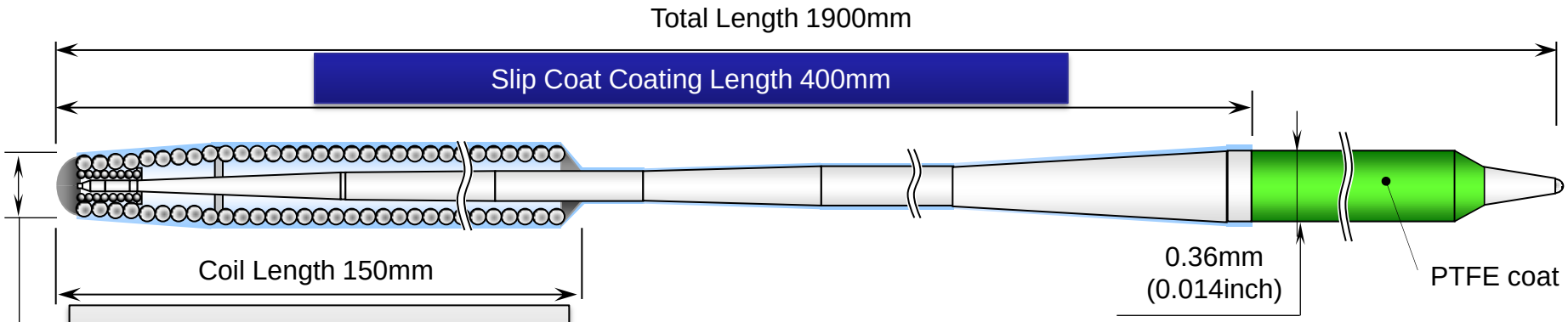
Final angiogram

Limitations of Classic Reverse CART

- In the classic reverse CART, a retrograde wire was advanced first (including attempt at the retrograde direct crossing).
- Connection was made at the position where bilateral wires was overlapped.
- Once the retrograde dissection was created by retrograde wiring, the further retrograde direction control became almost impossible.
- In those situations even if we used IVUS guidance, sometimes it took a very long time to make a connection (with many kinds of wire).

GAIA Basic structure

ASAHI intecc; Japan



First:	**0.26mm (0.010inch)**
Second:	**0.28mm (0.011inch)**
Third:	**0.30mm (0.012inch)**

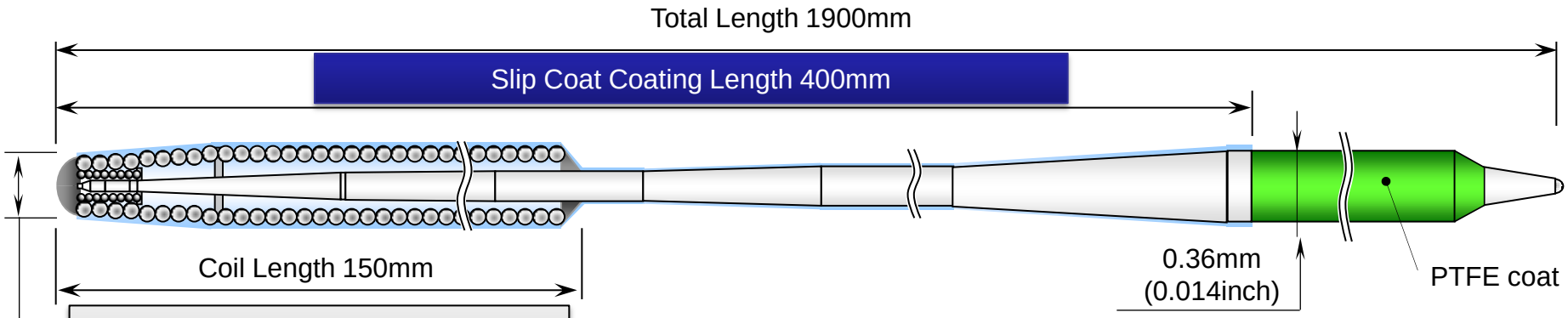
Various lineups for the different situation or lesion

ASAHI Gaia First	Diameter : 0.26mm (0.010”) - 0.36mm (0.014”) **Tip load : 1.7gf**
ASAHI Gaia Second	Diameter : 0.28mm (0.011”) - 0.36mm (0.014”) **Tip load : 3.5gf**
ASAHI Gaia Third	Diameter : 0.30mm (0.012”) - 0.36mm (0.014”) **Tip load : 4.5gf**

Long hydrophilic coating that enhance the smooth controllability in micro catheter.

GAIA Basic structure

ASAHI intecc; Japan



First:	0.26mm (0.010inch)
Second:	0.28mm (0.011inch)
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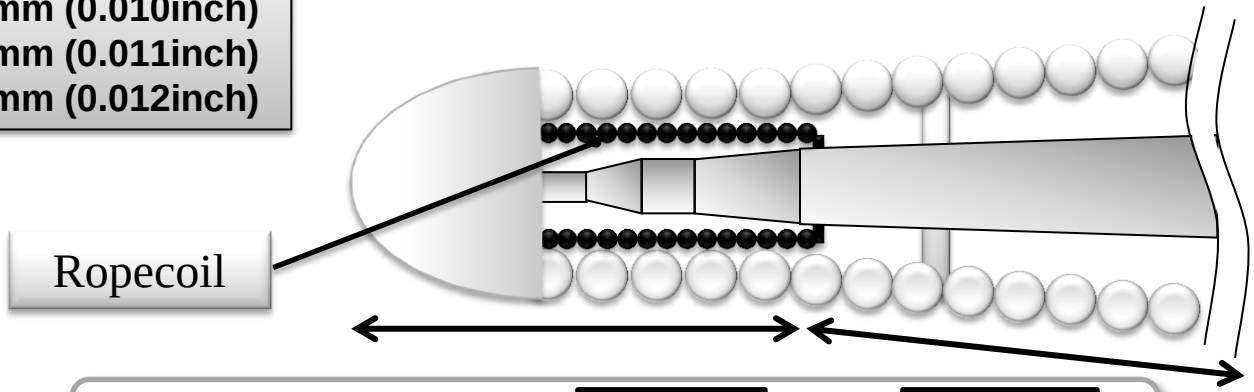
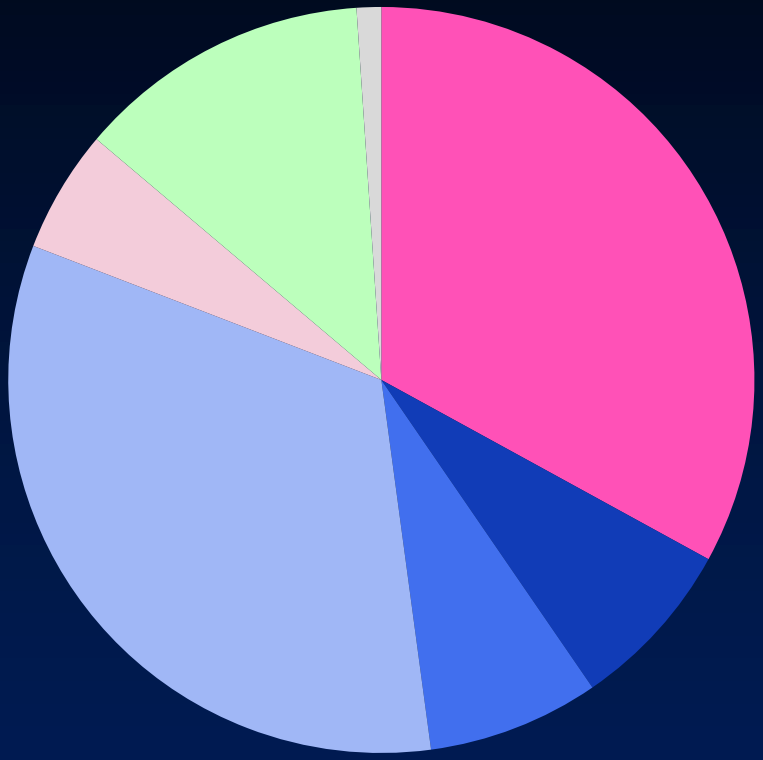


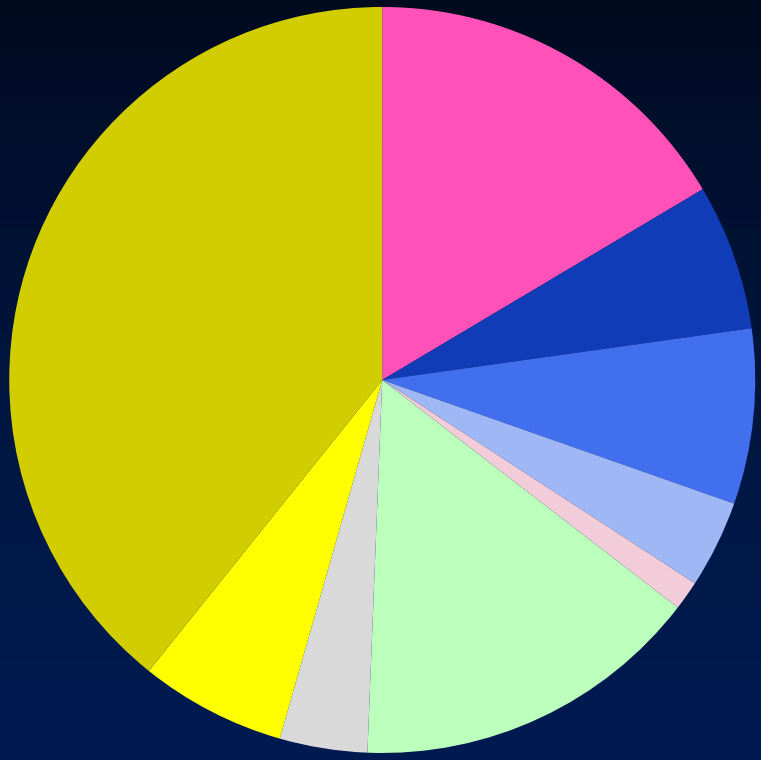
	Straight	Tapered
ASAHI Gaia First	15mm	30mm
ASAHI Gaia Second	6mm	30mm
ASAHI Gaia Third	7mm	30mm

Wire used for CTO crossing in both approaches

Before June 2012



After June 2012



Conquest family

Ultimate 3

others

Miracle 12

Pilot 200

GAIA 1st

Progress 120

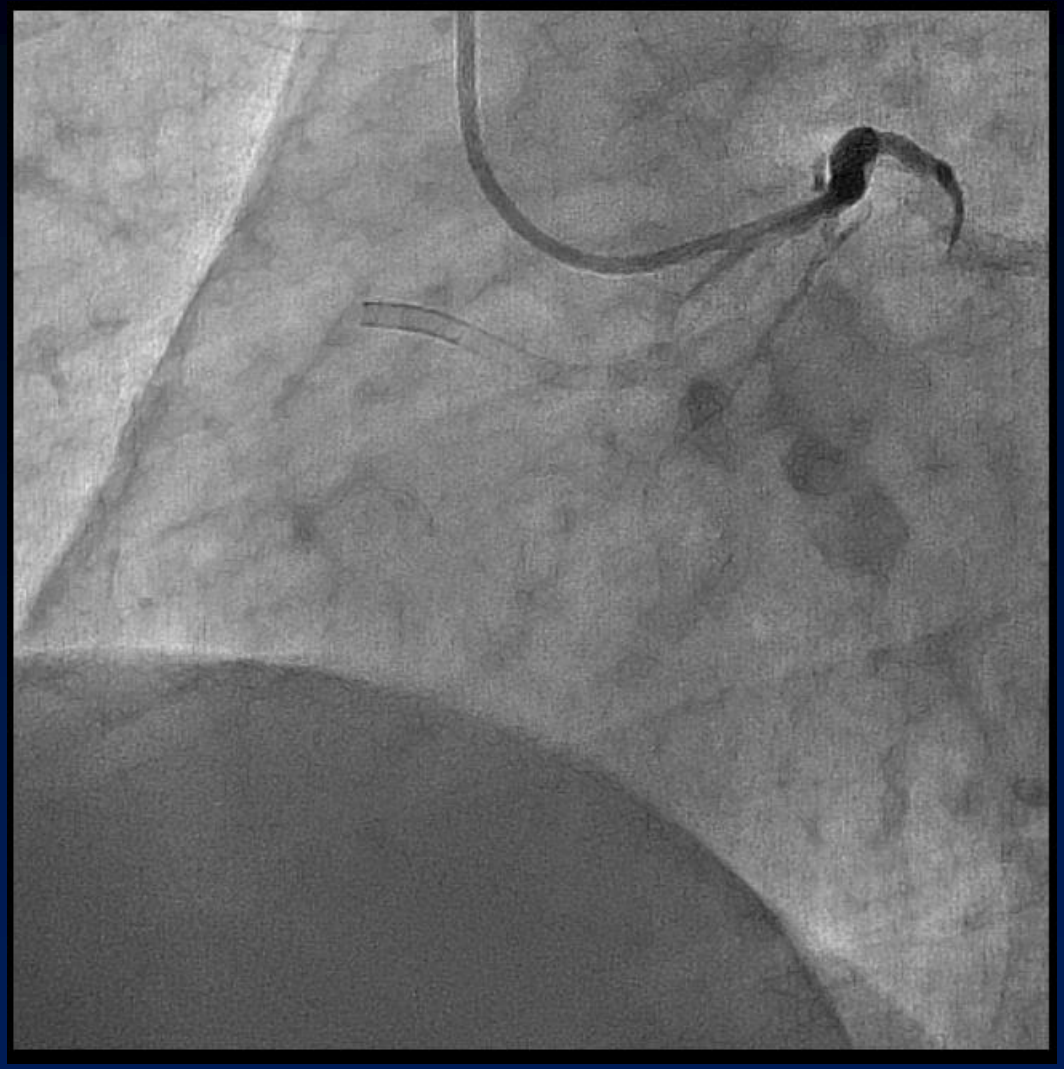
XTA

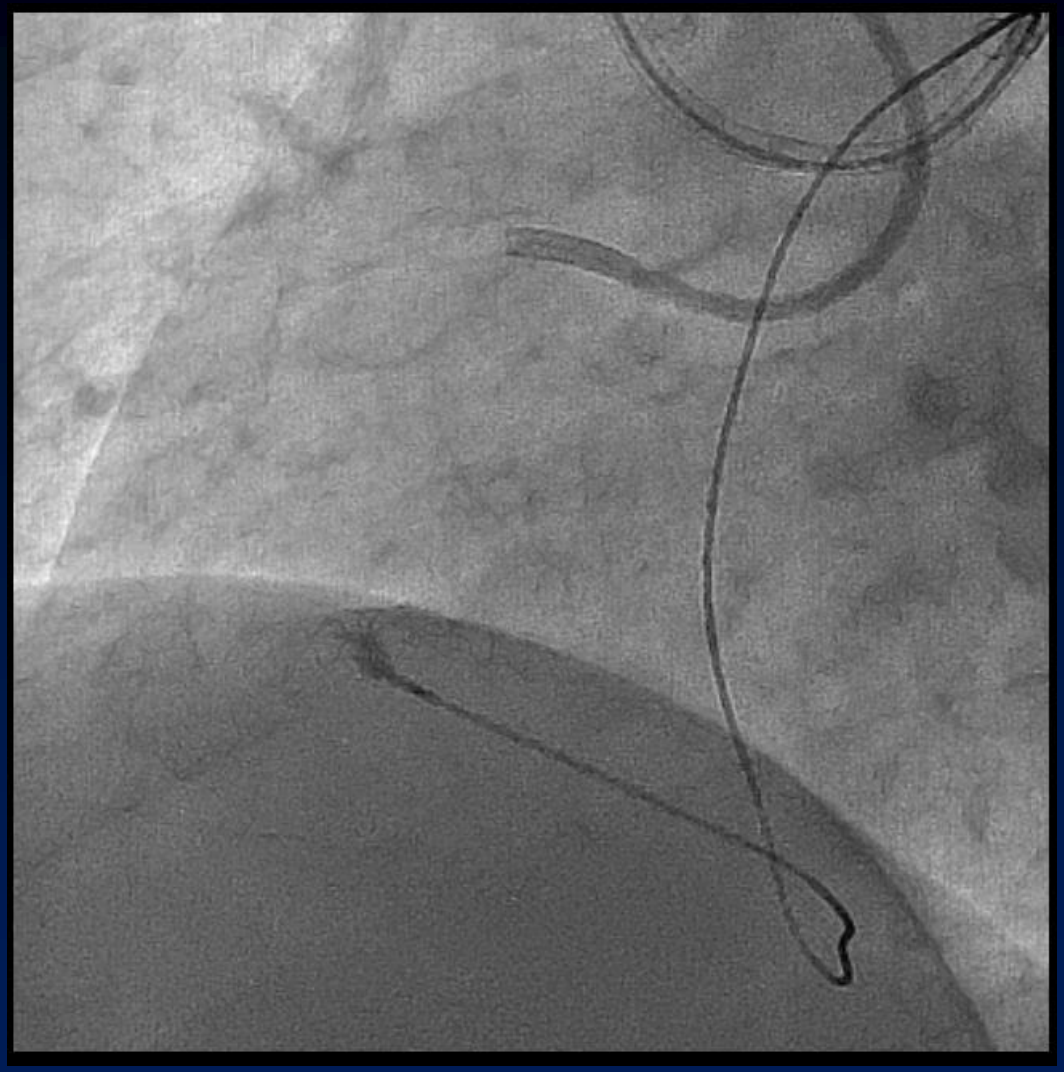
GAIA 2nd

Contemporary Reverse CART with GAIA

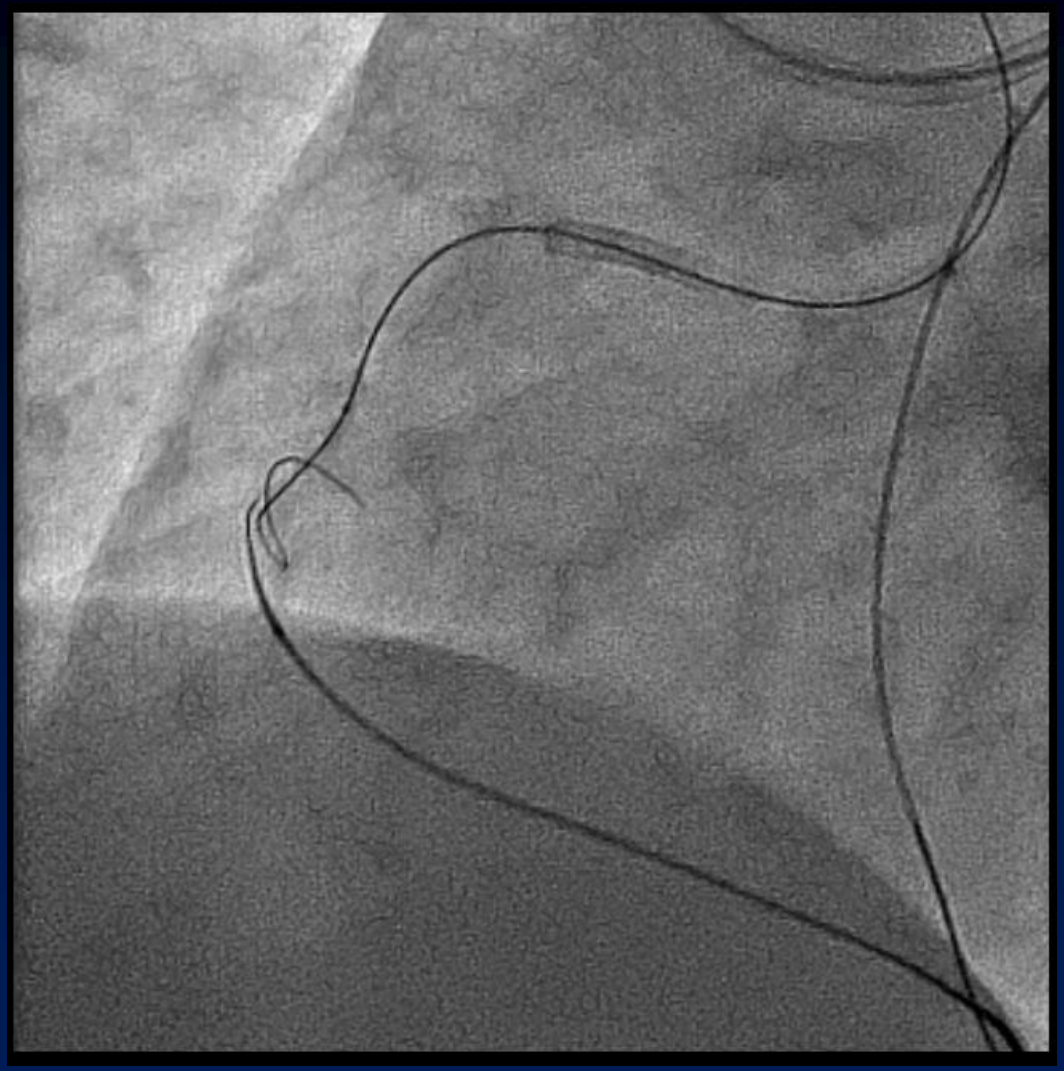
- GAIA enables the intentional retrograde wire direction control.
- However once the retrograde dissection is created, the precise control become difficult even if GAIA is used.
- Before retrograde wiring with GAIA, antegrade preparation should be recommended to facilitate reverse CART.

RCA CTO

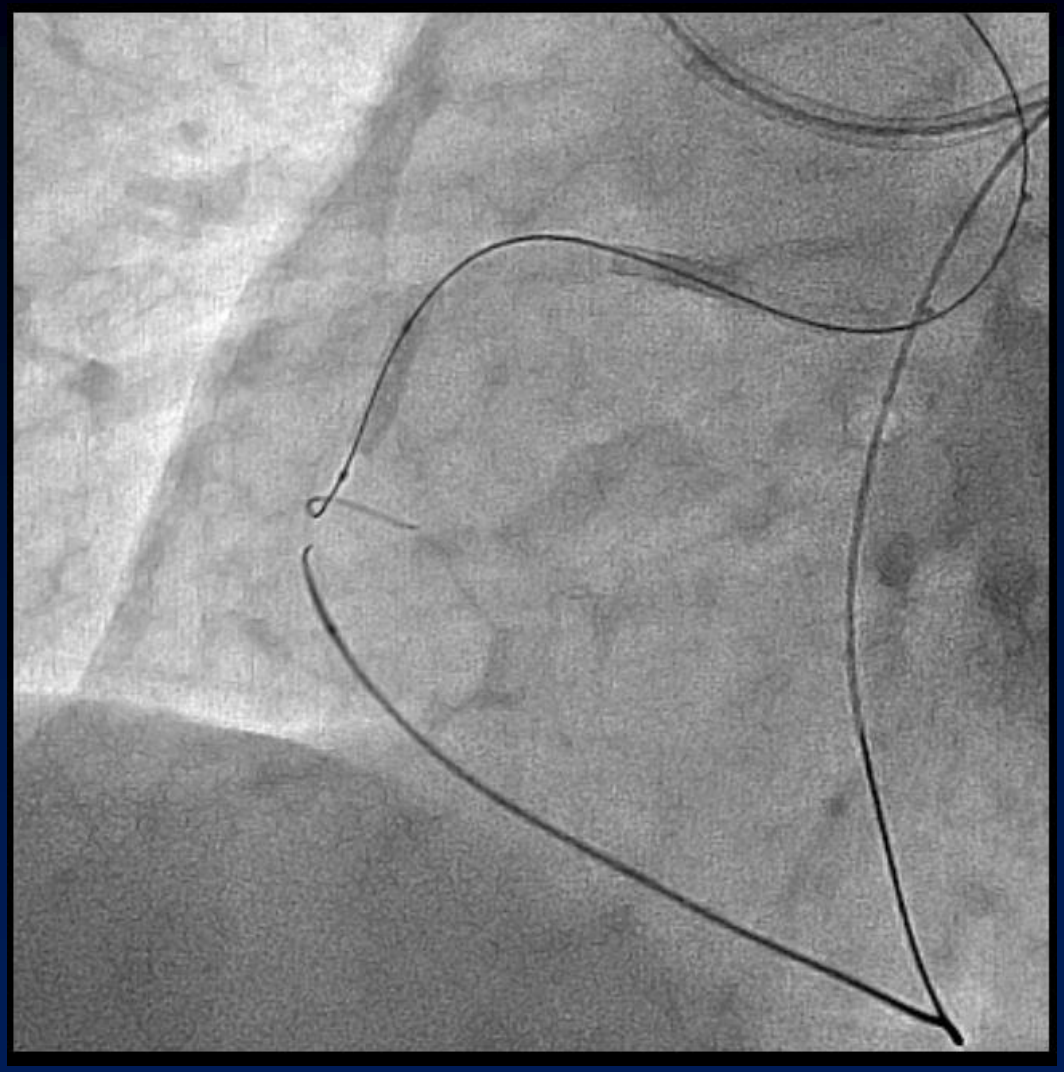




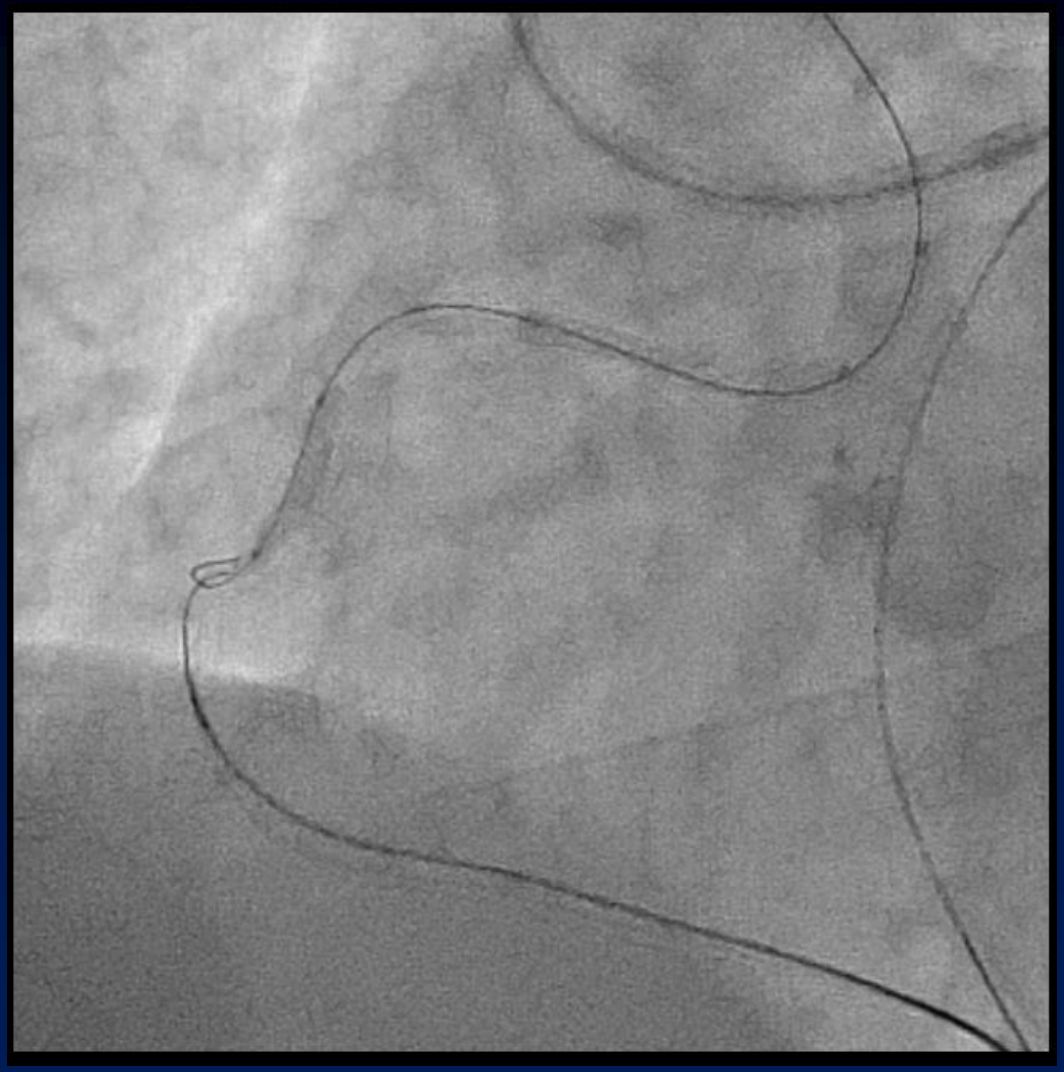
CTO with diffuse narrowing



Antegrade preparation for reverse CART



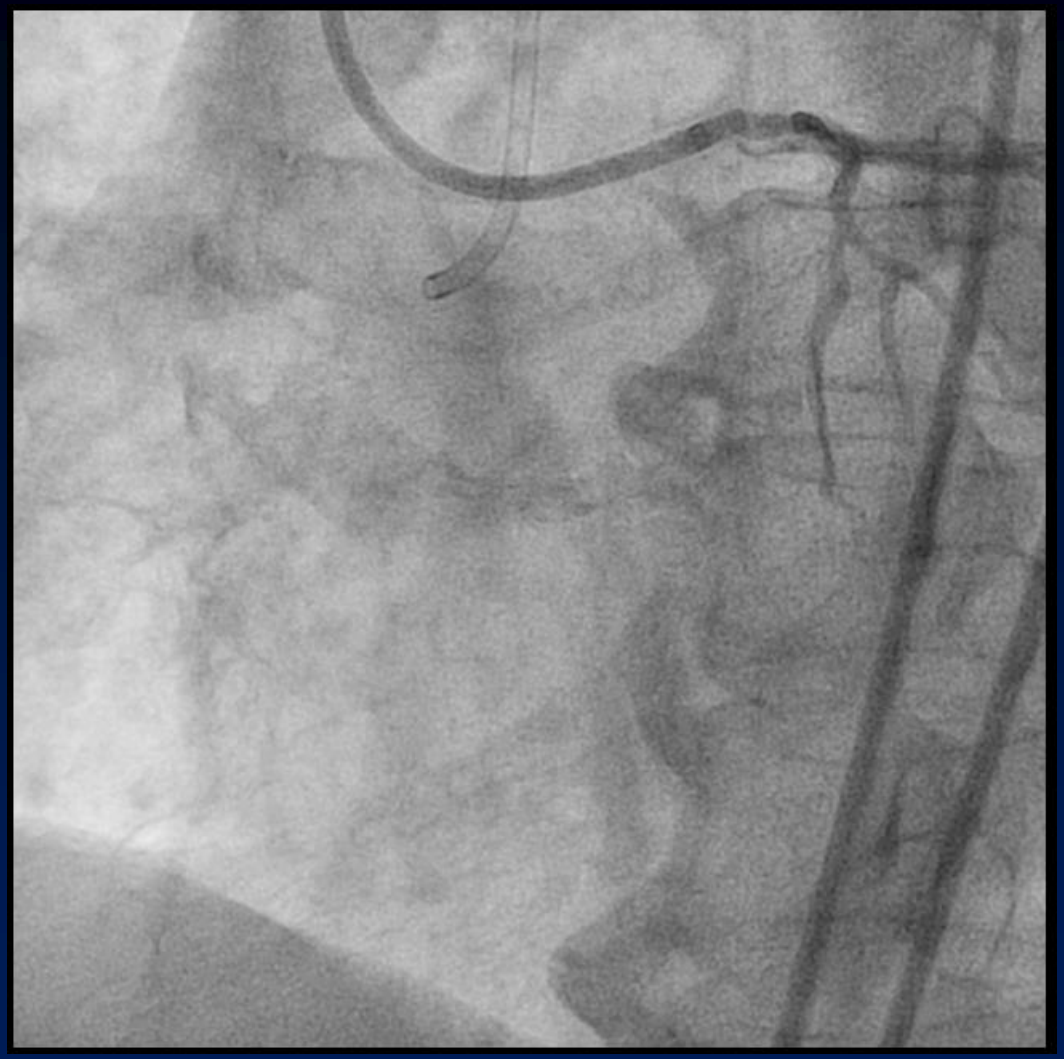
Antegrade preparation for reverse CART

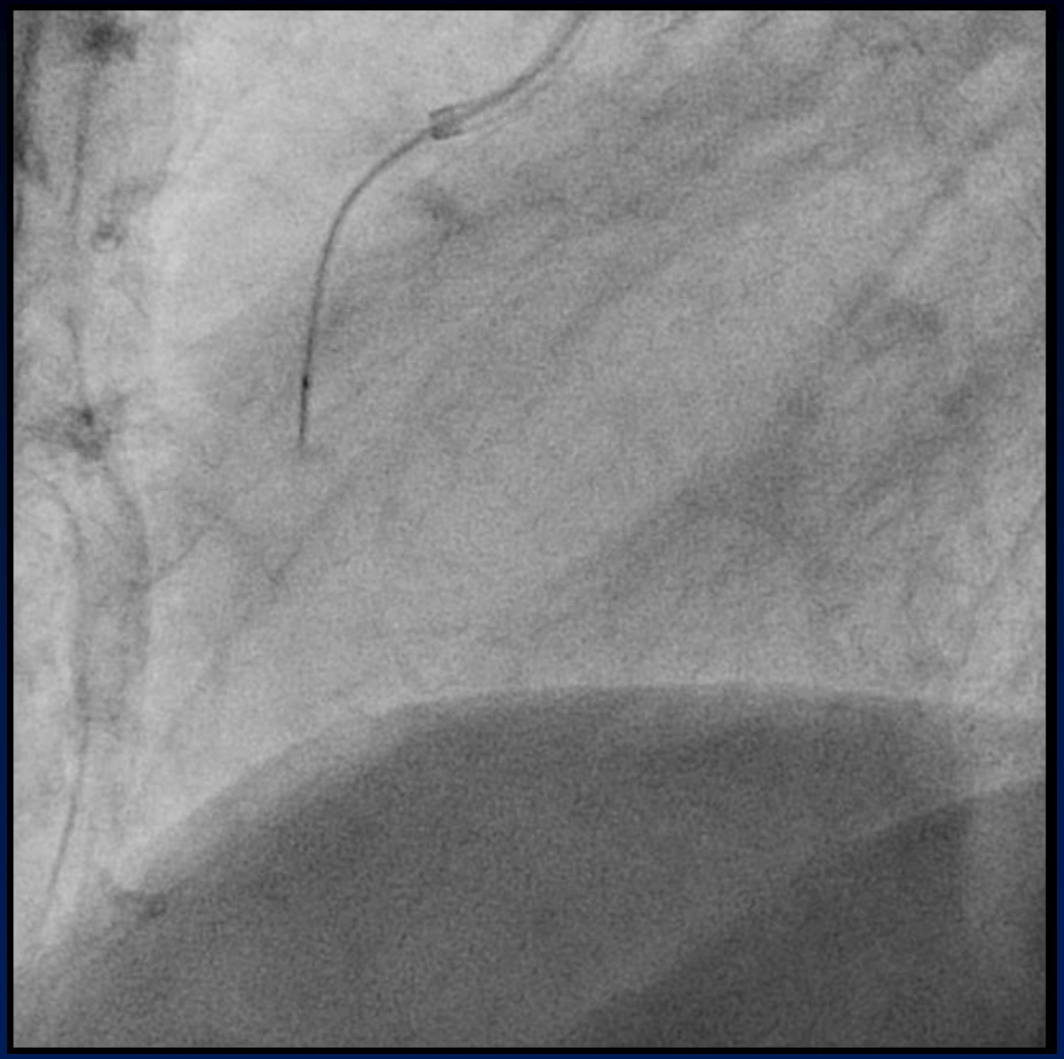


Retrograde wiring with GAIA 2nd

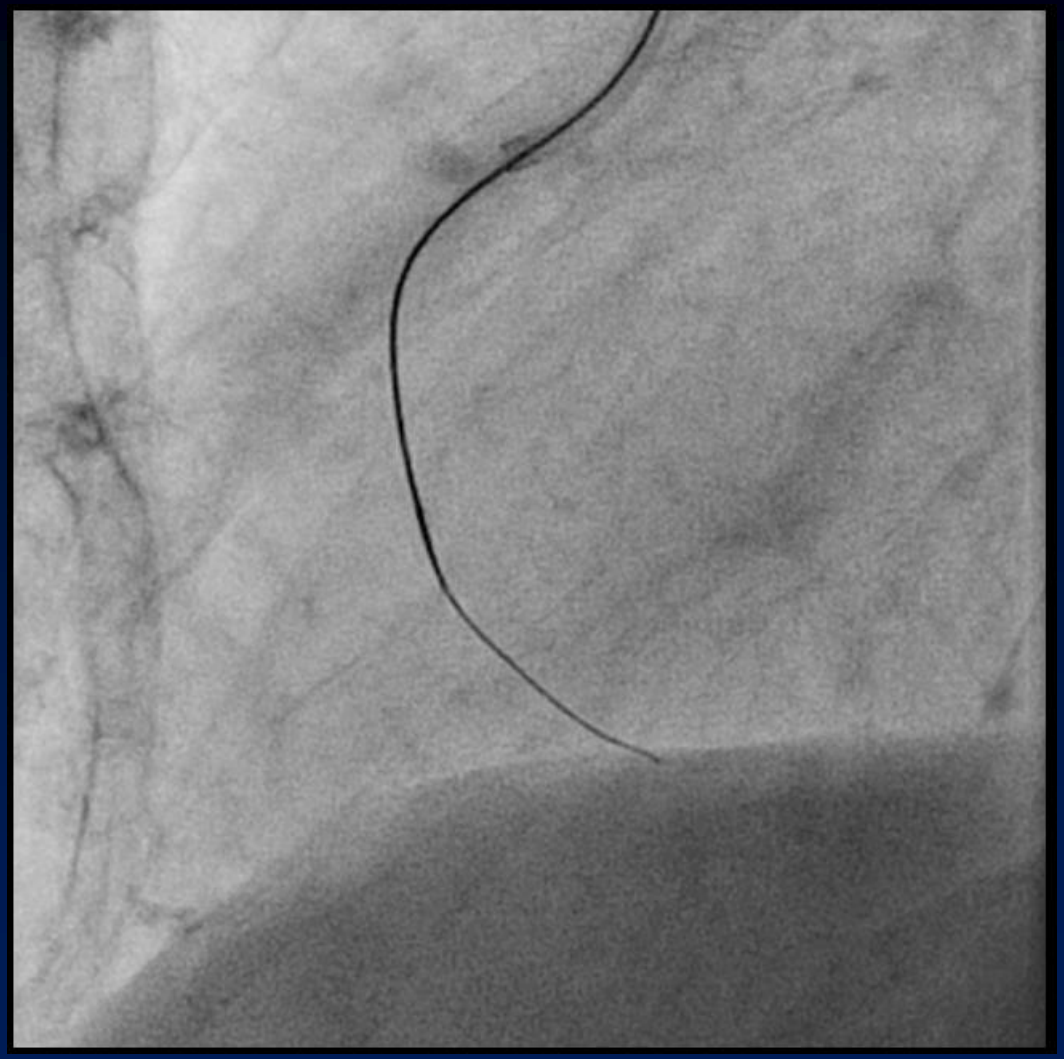
Final angiogram

RCA CTO

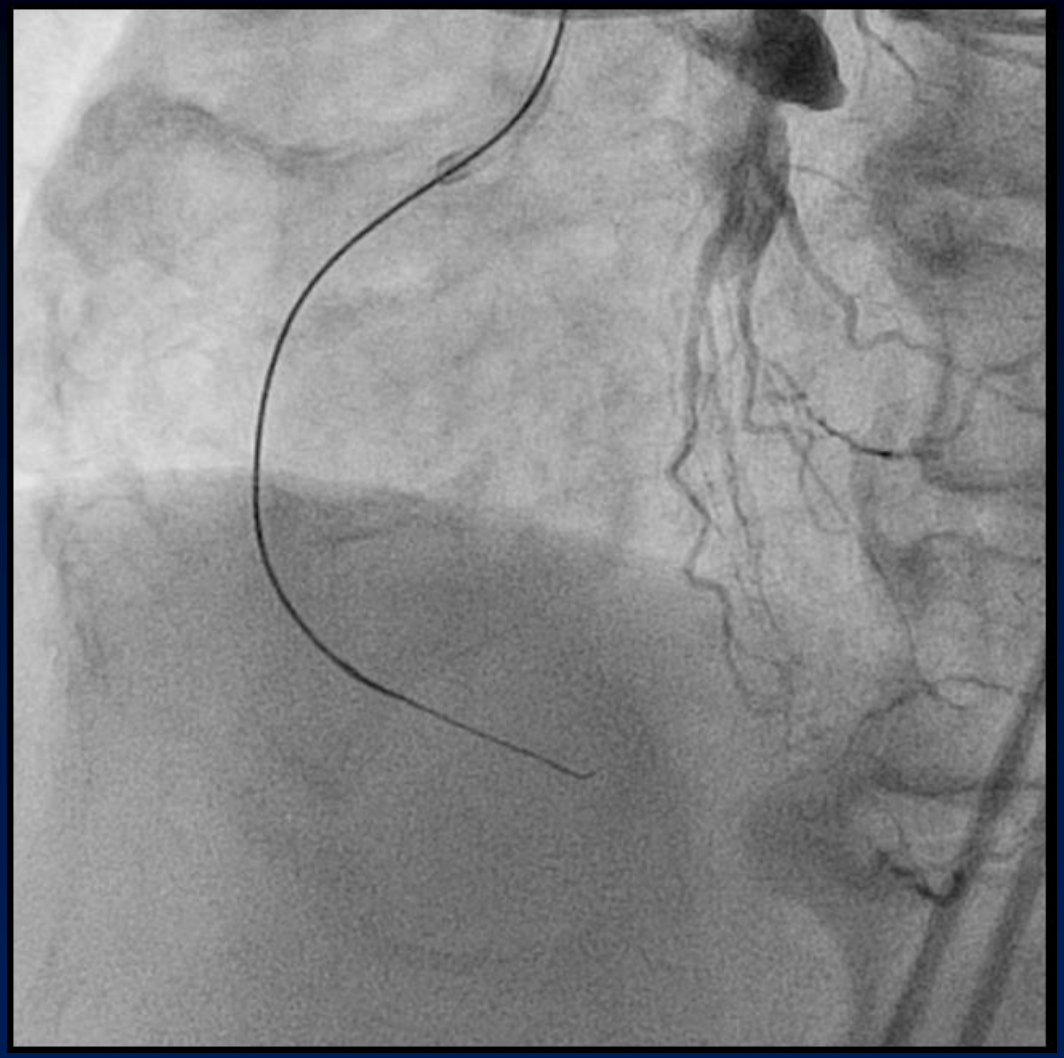




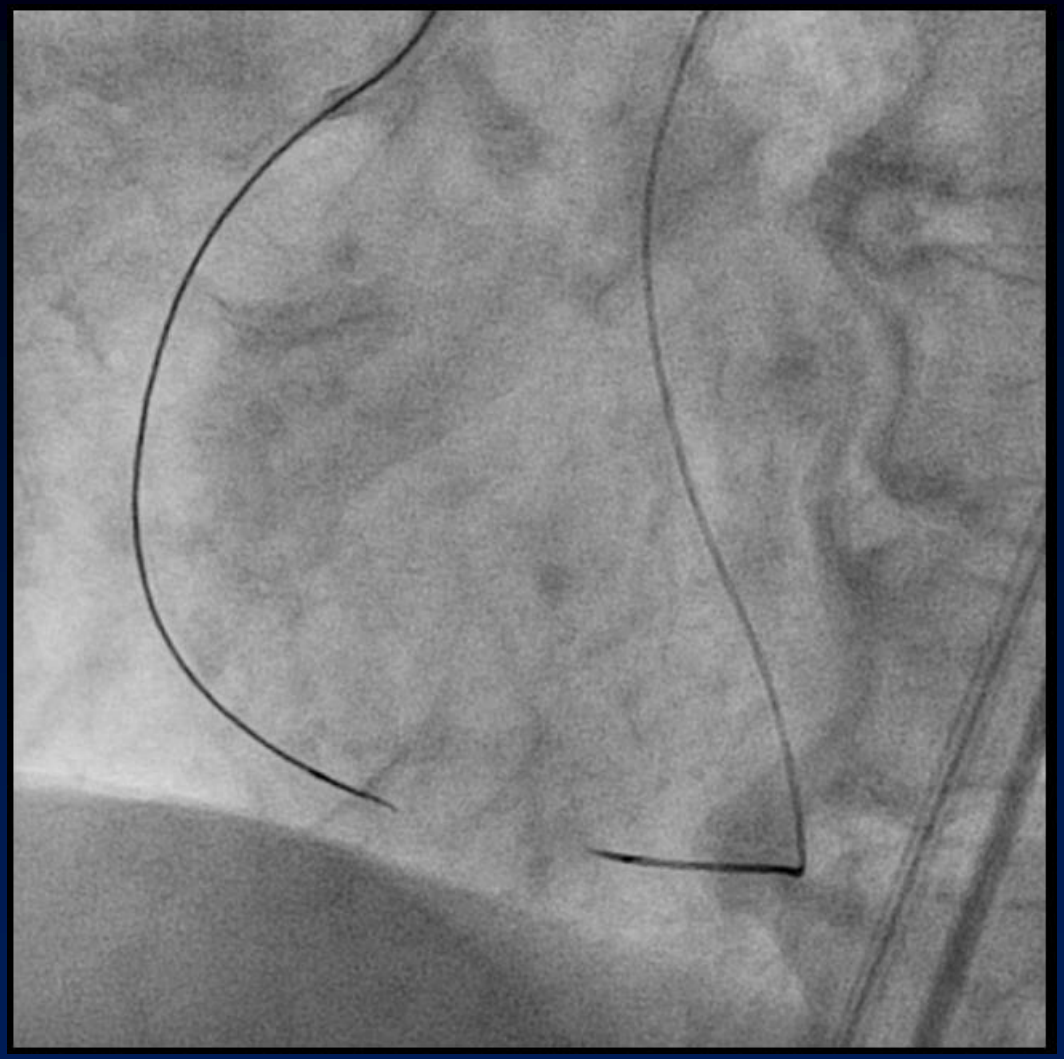
Antegrade tip injection



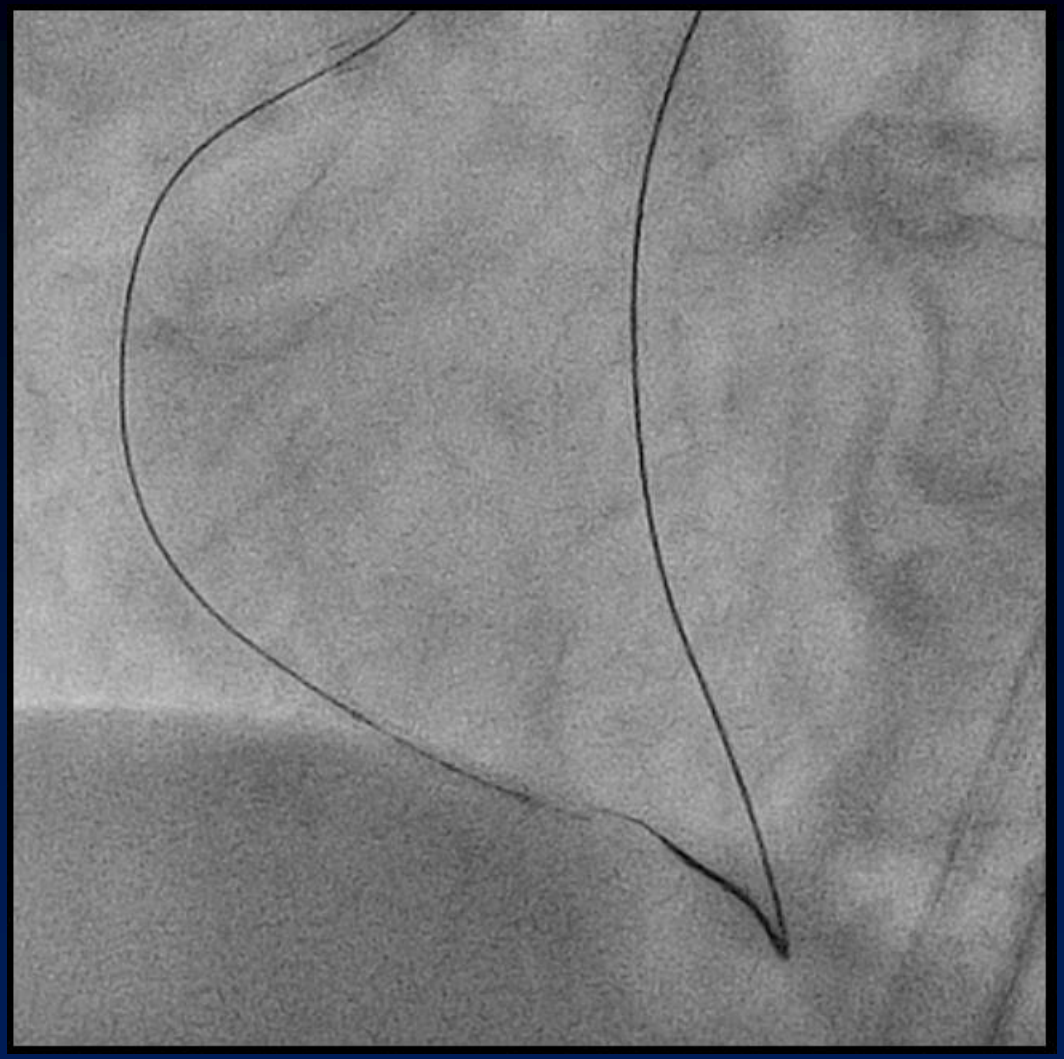
Antegrade wiring using GAIA 2nd



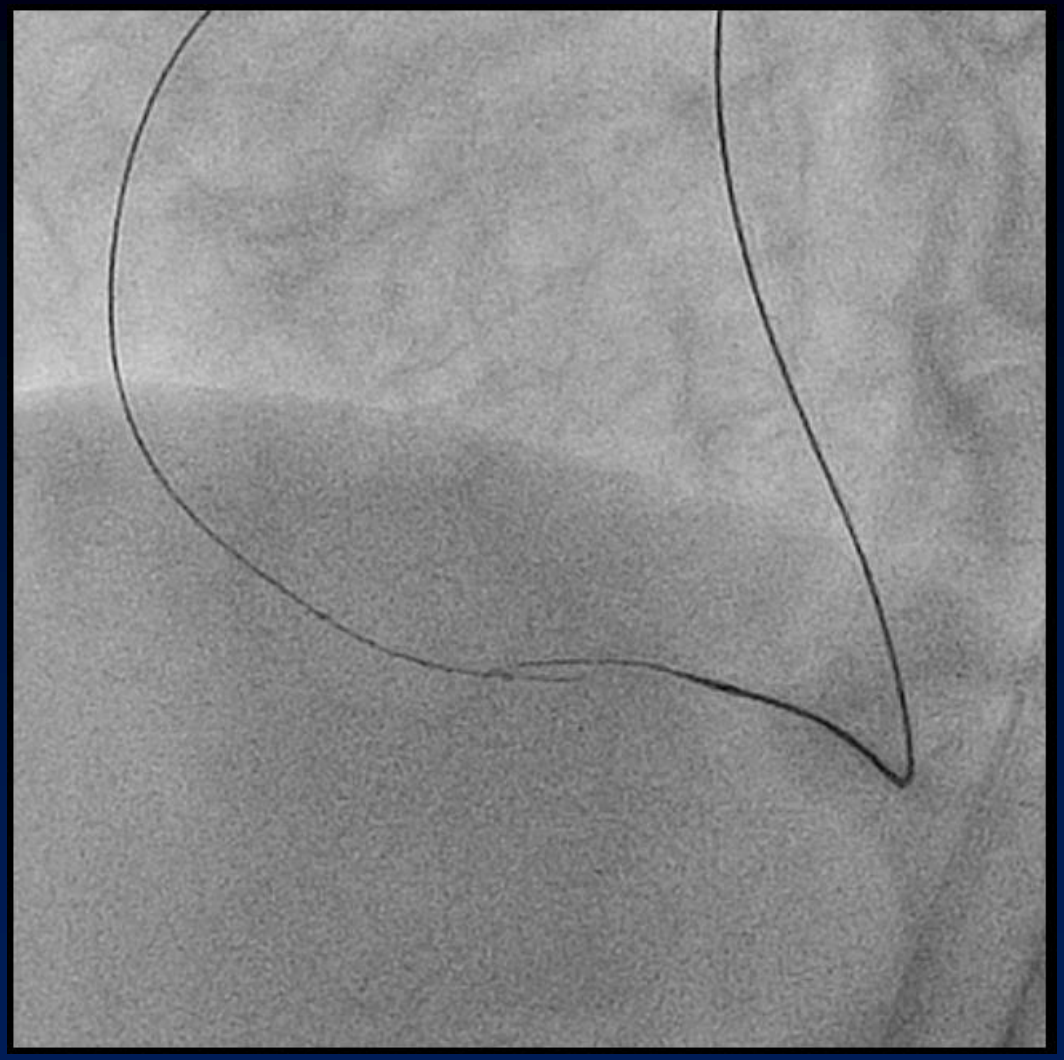
Antegrade preparation was completed



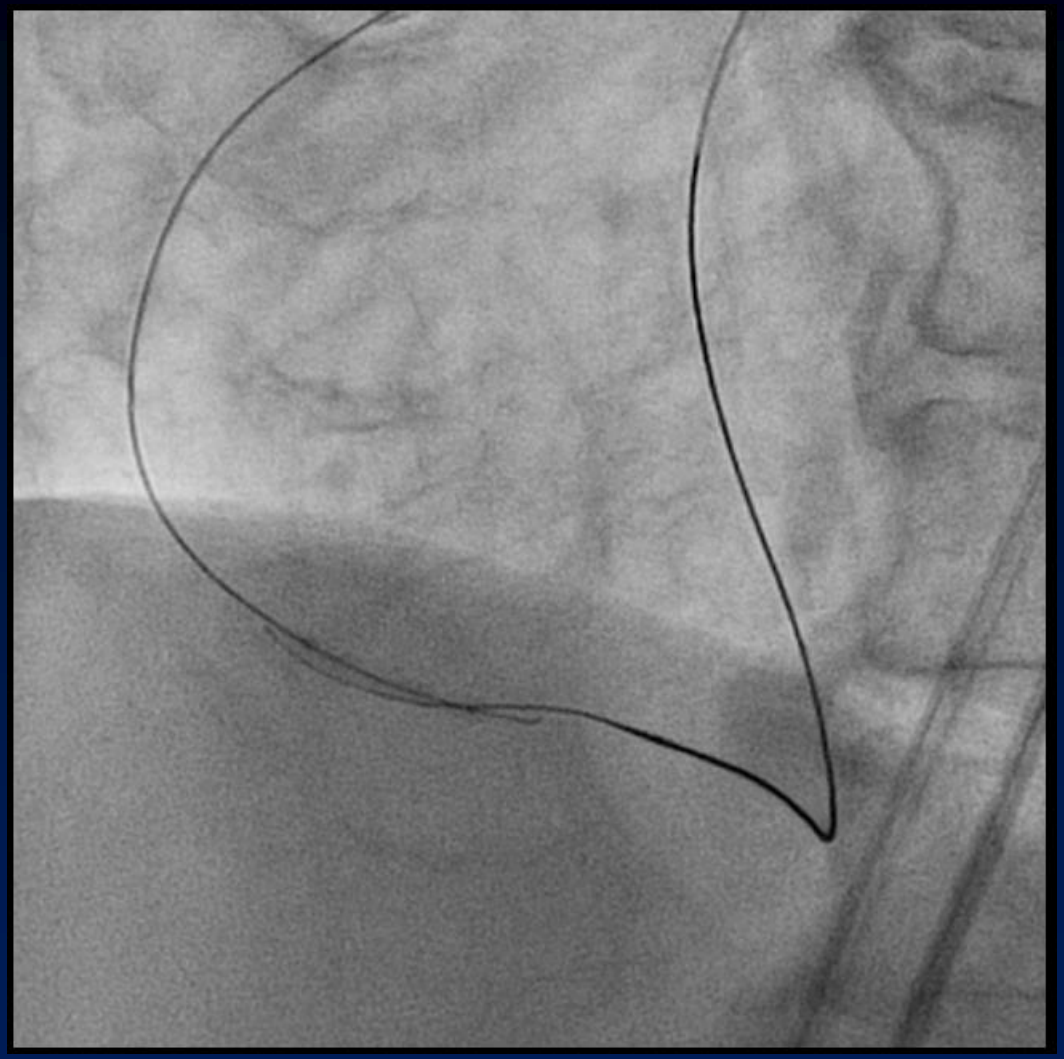
Retrograde tip injection



Retrograde wiring using GAIA 2nd toward balloon



Retrograde wiring using GAIA 2nd toward balloon



Successful reverse CART

Final angiogram

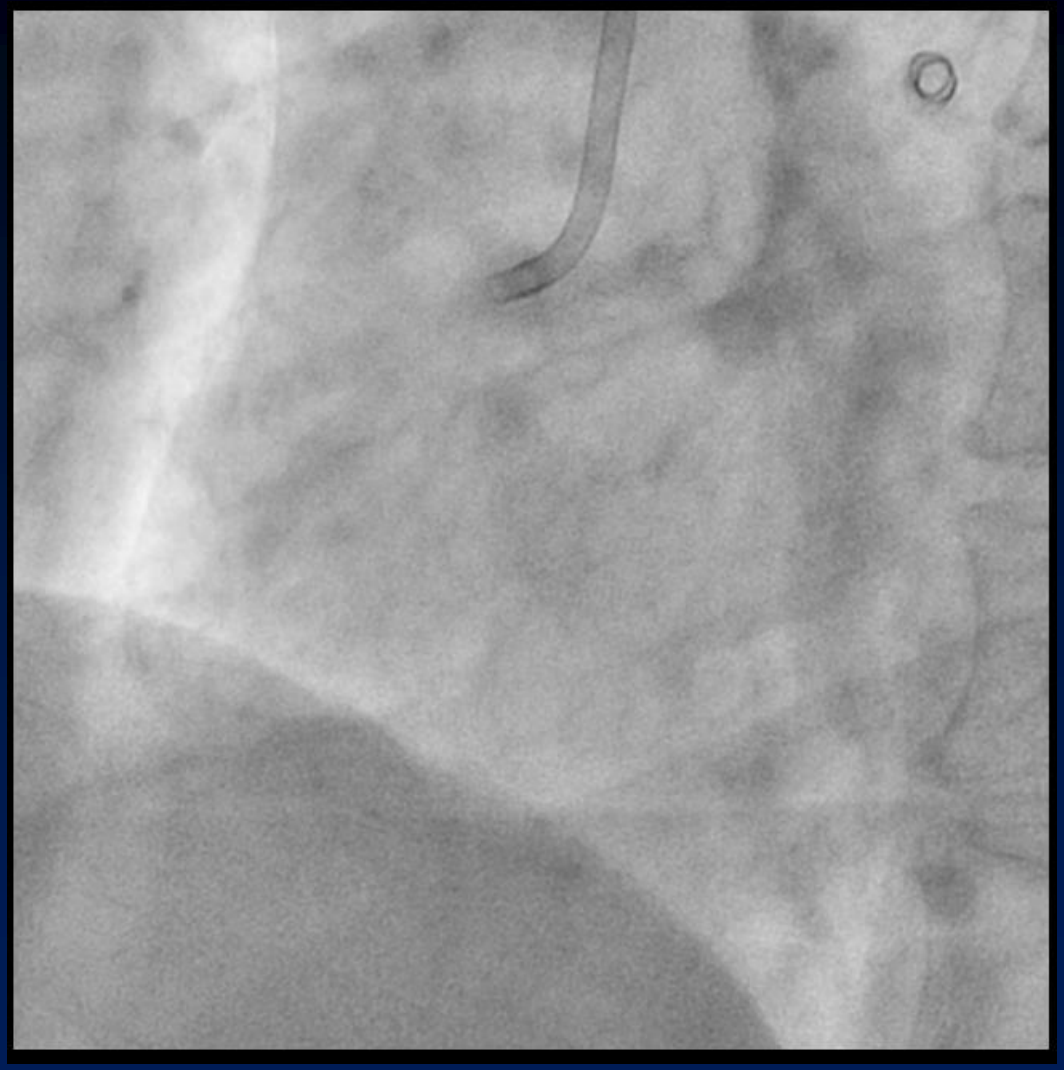
Contemporary Reverse CART with GAIA

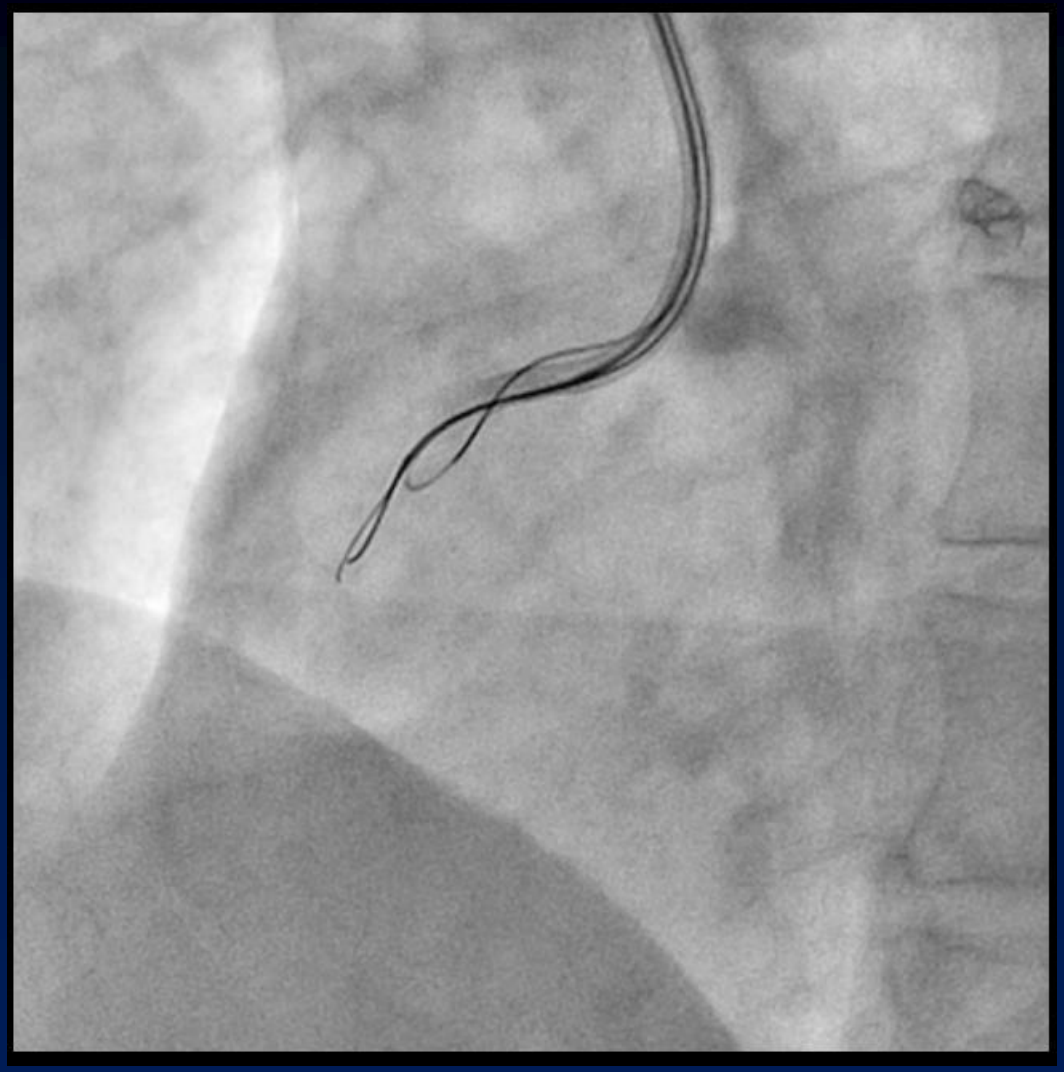
- GAIA enables the intentional retrograde wire direction control.
- However once the retrograde dissection is created, the precise control become difficult even if GAIA is used.
- Before retrograde wiring with GAIA, antegrade preparation should be recommended to facilitate reverse CART.

- In short CTOs

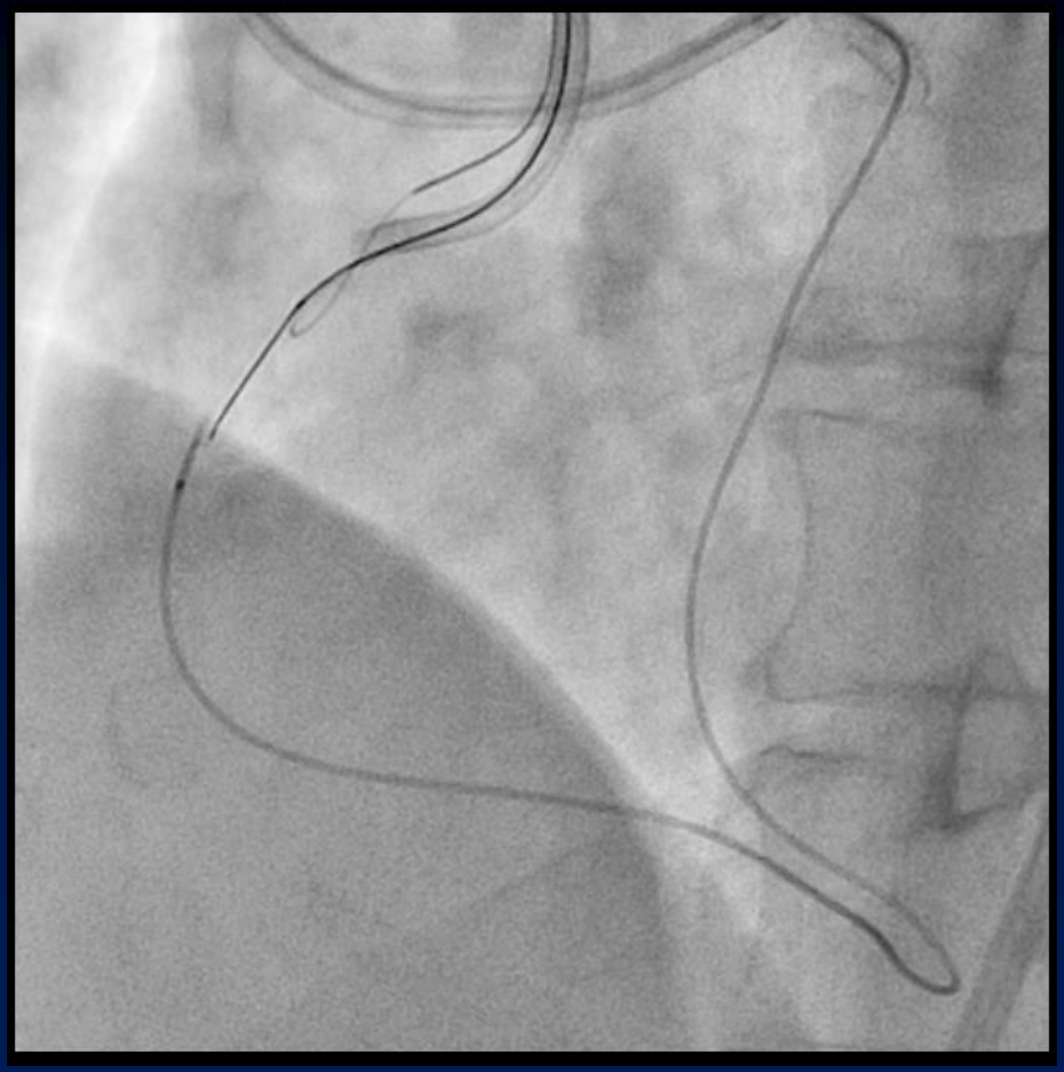
- In long CTOs

RCA CTO

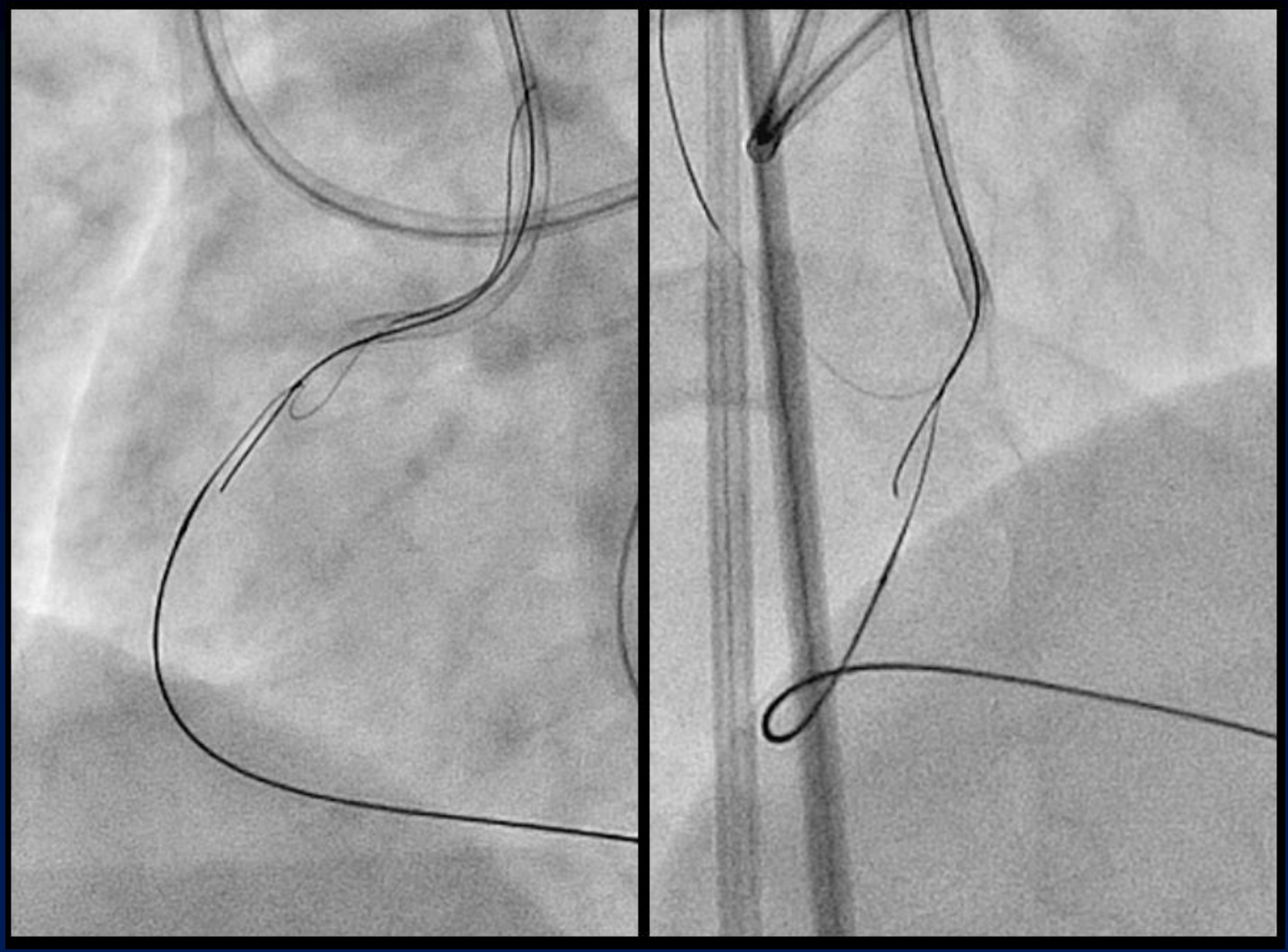




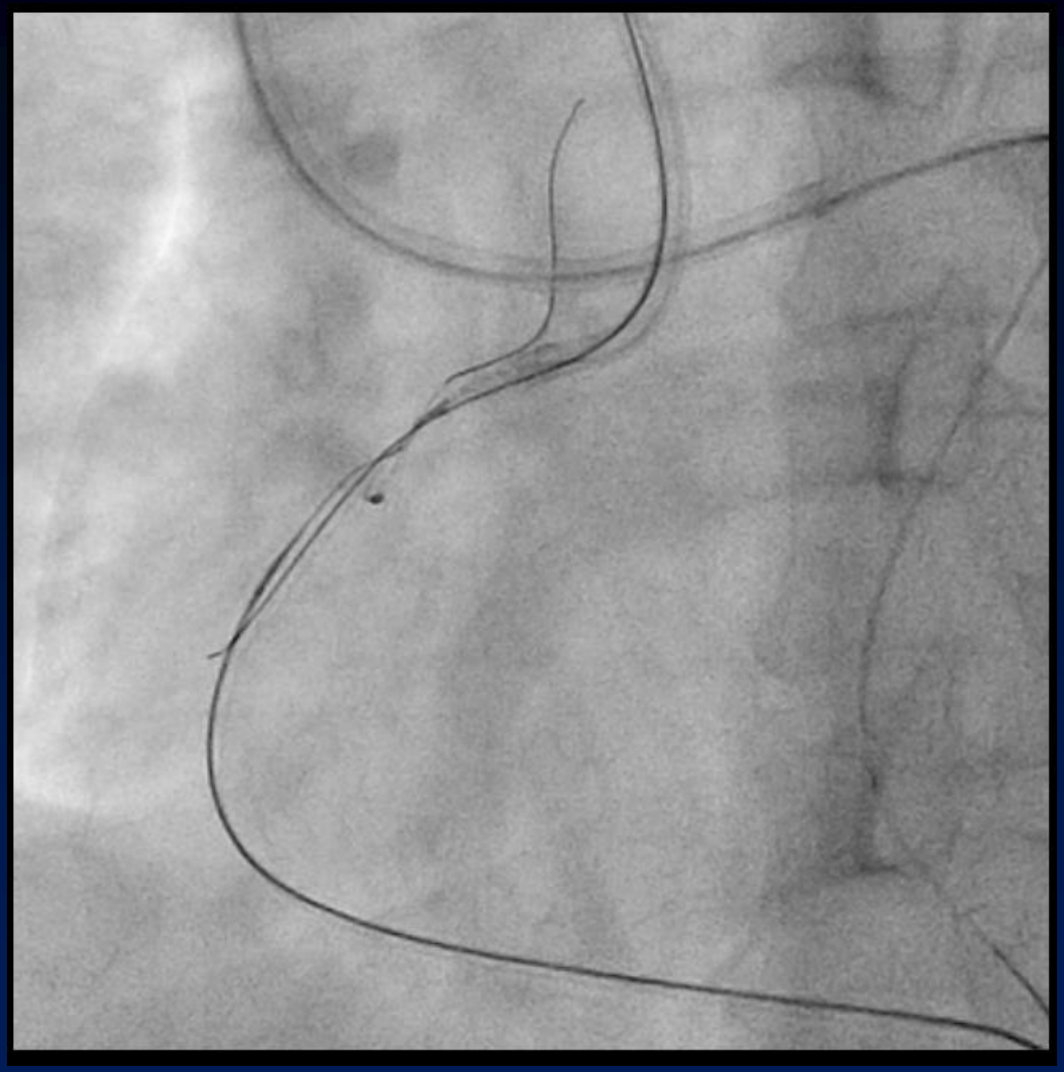
Failed parallel wiring



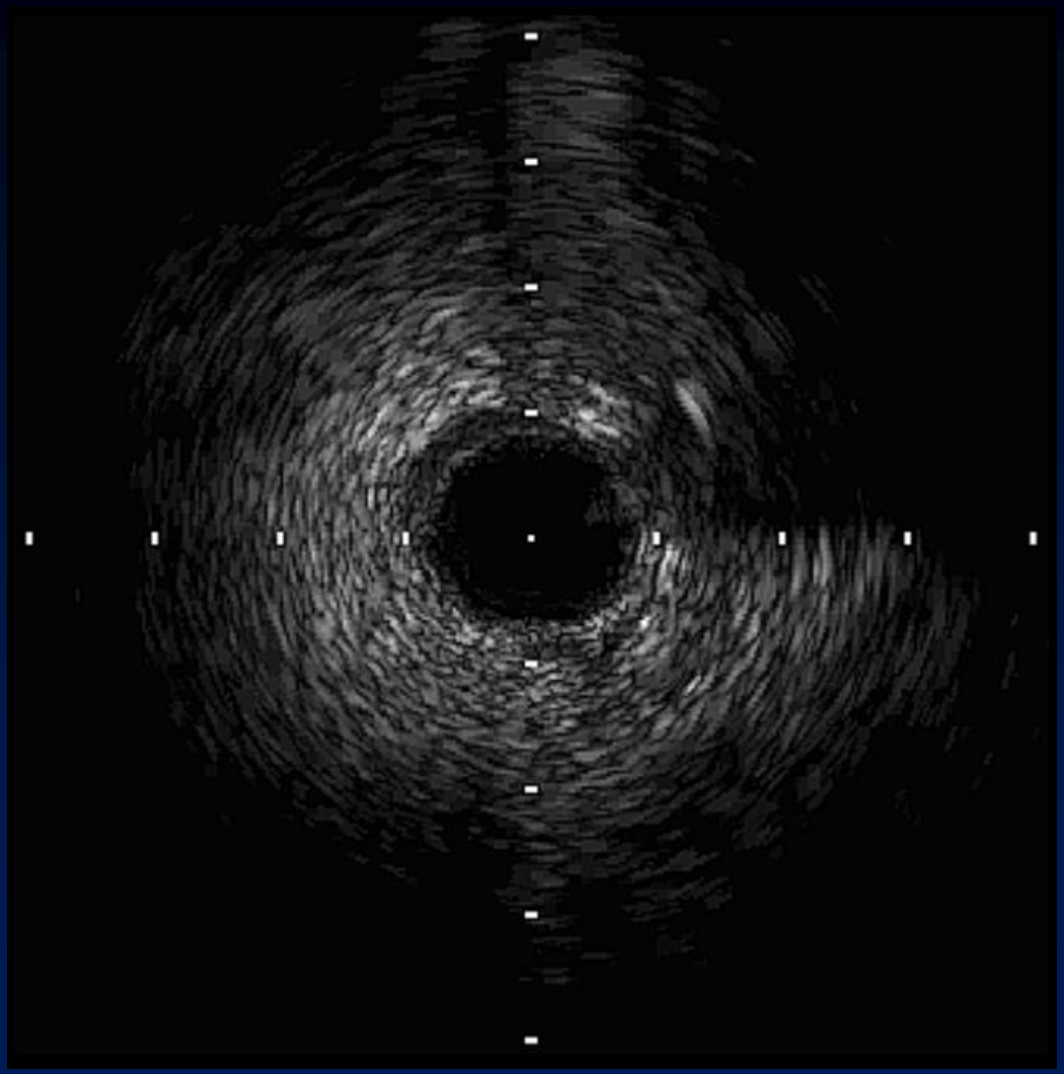
Difficult for reverse CART because of short occlusion



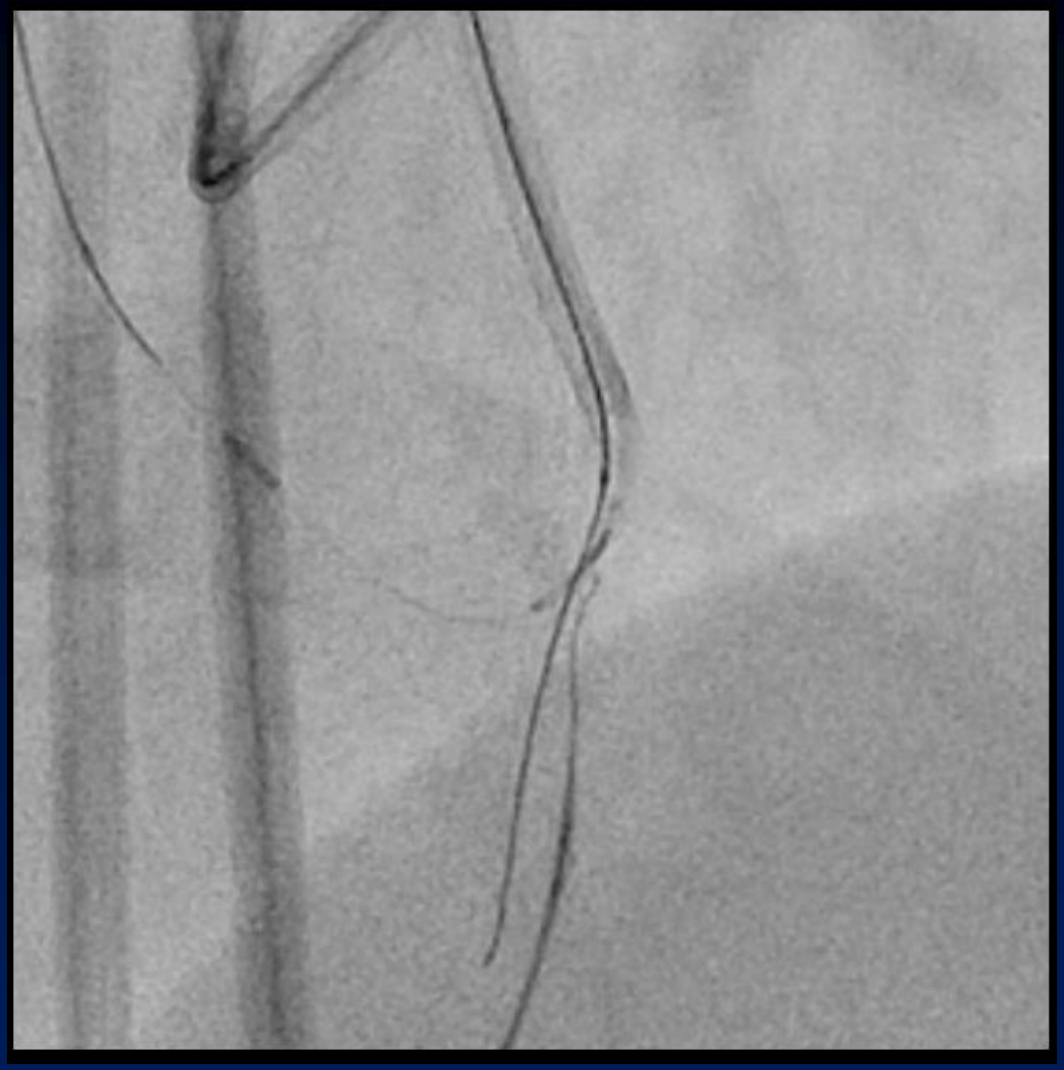
Attempt at retrograde direct wire crossing by GAIA 2nd



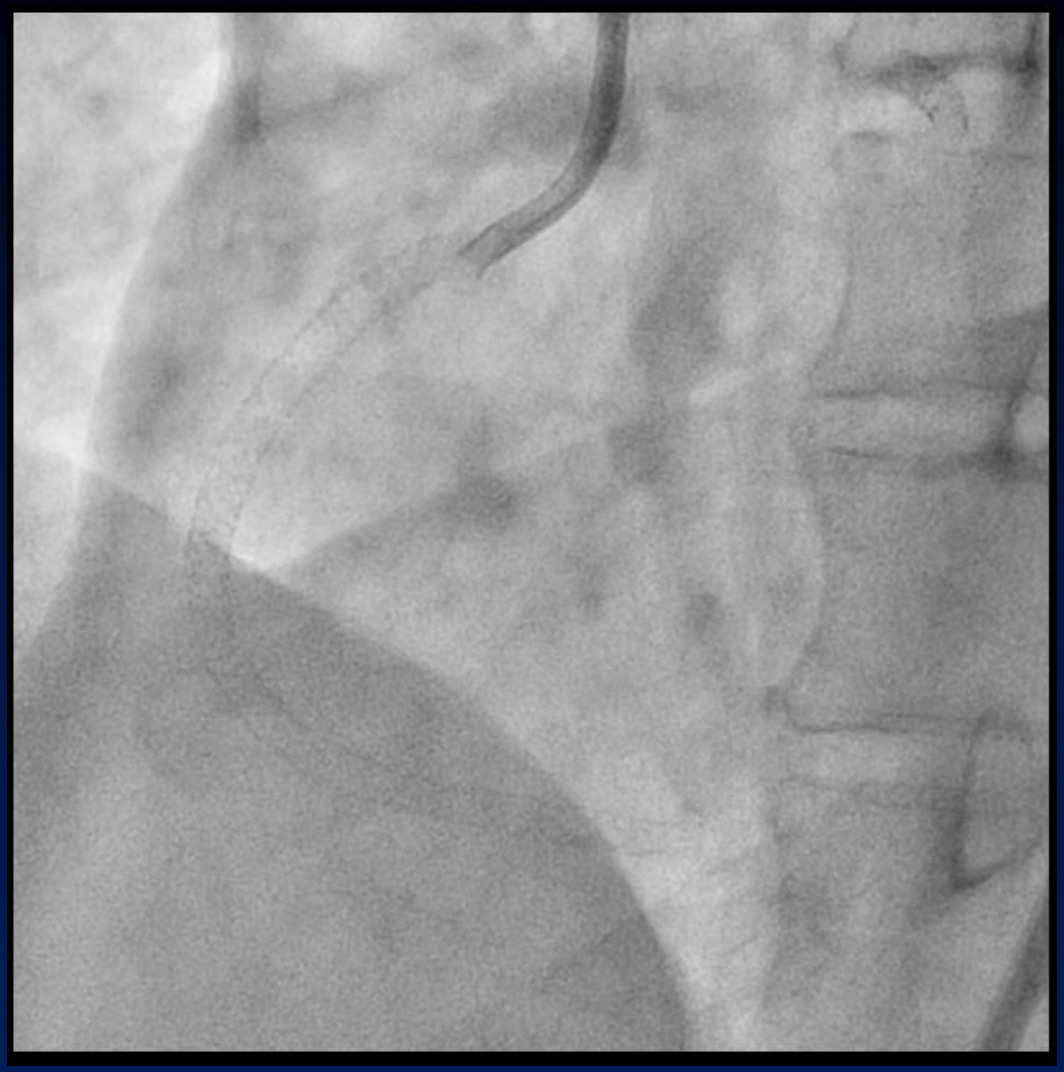
IVUS examination



IVUS examination



Successful retrograde wire crossing by GAIA 2nd



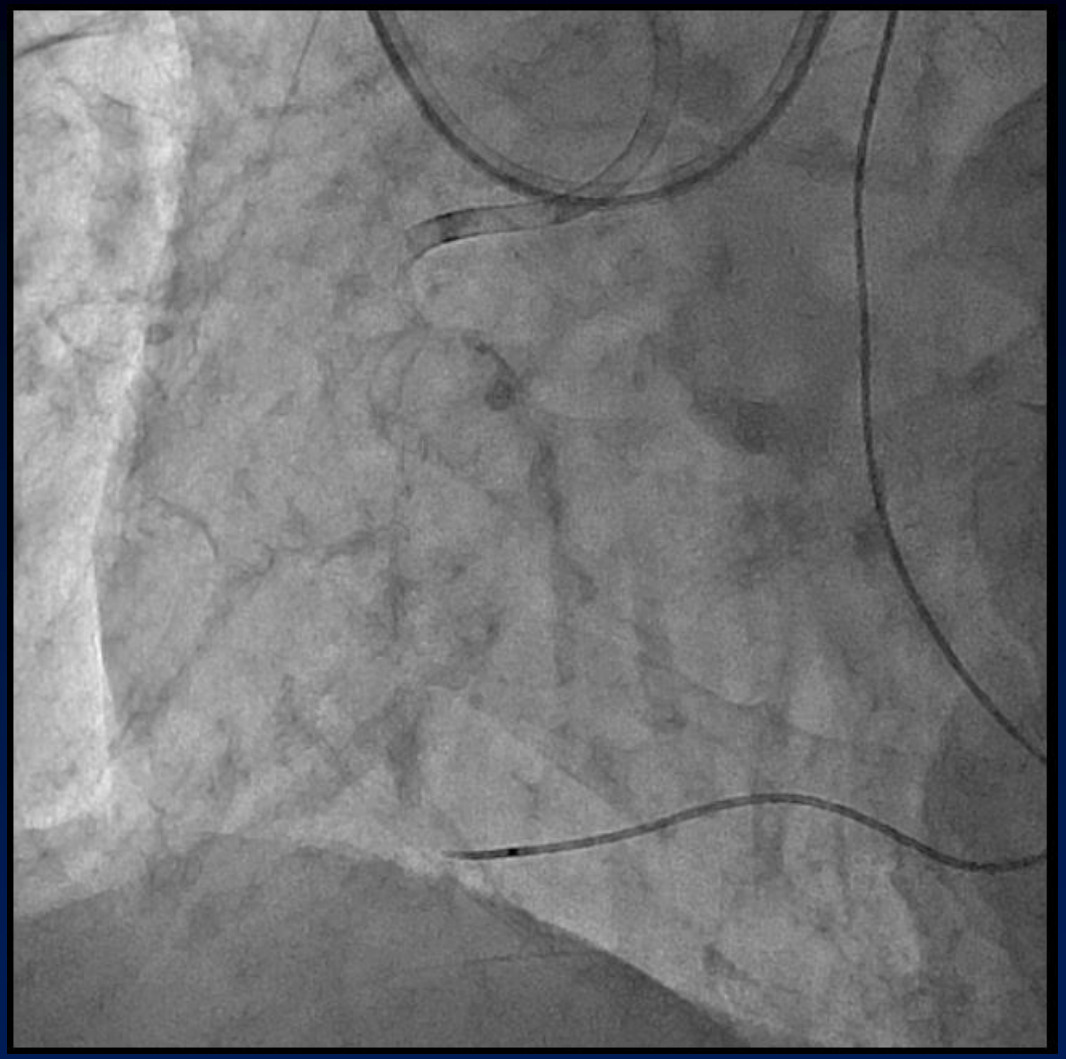
Final angiogram

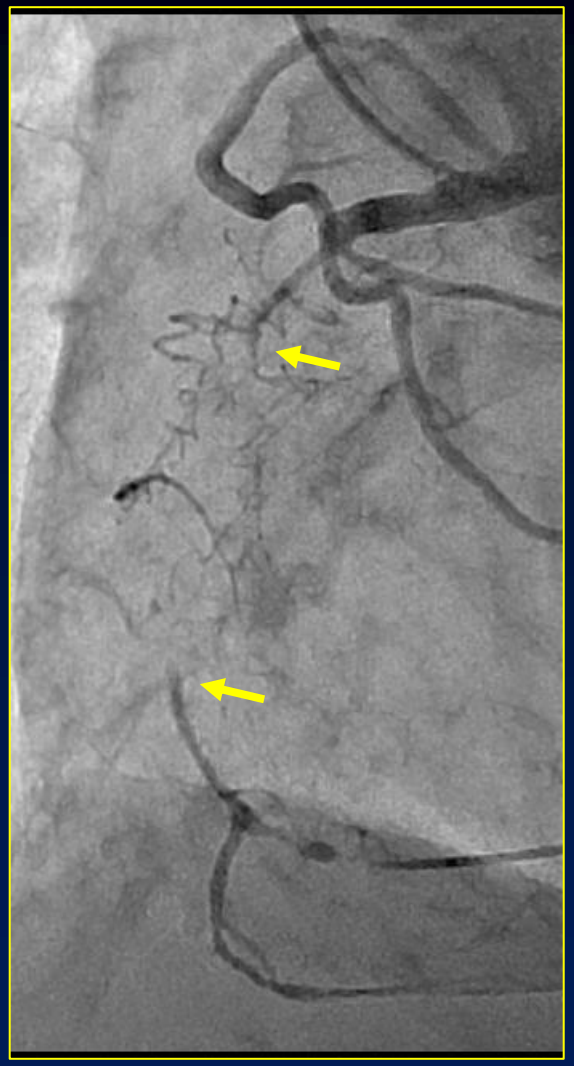
Contemporary Reverse CART with GAIA

- GAIA enables the intentional retrograde wire direction control.
- However once the retrograde dissection is created, the precise control become difficult even if GAIA is used.
- Before retrograde wiring with GAIA, antegrade preparation should be recommended to facilitate reverse CART.

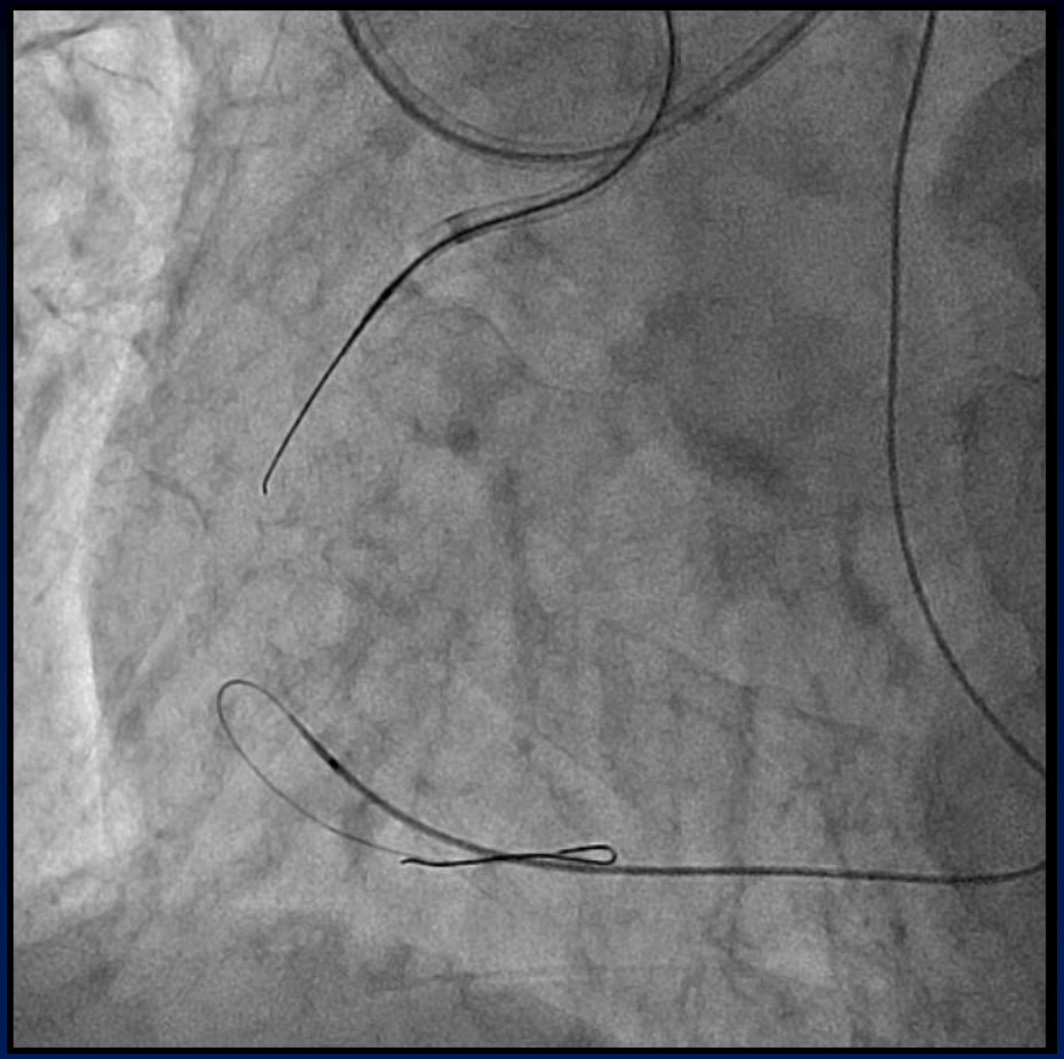
- In short CTOs, the direct retrograde wire crossing still works well with GAIA w/wo IVUS.
- In long CTOs

RCA CTO

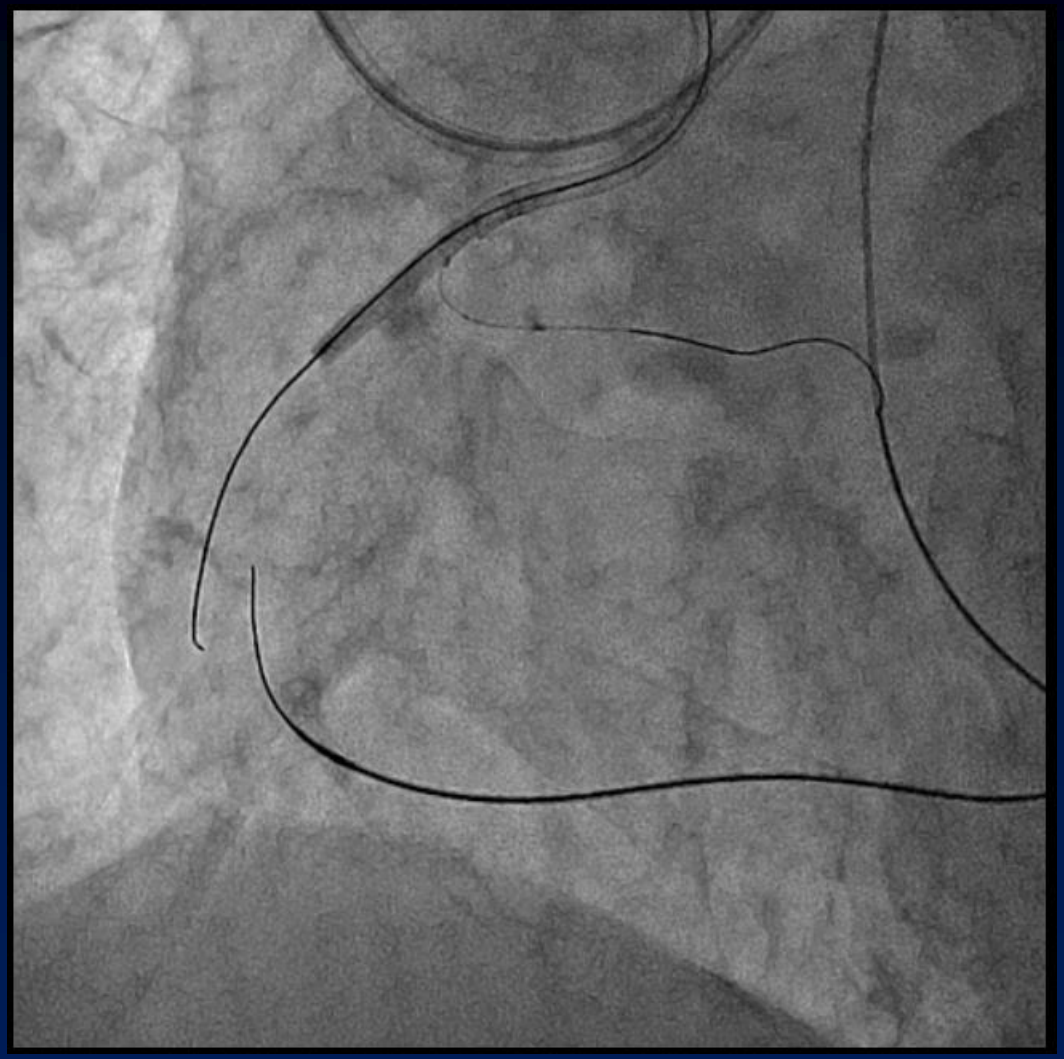




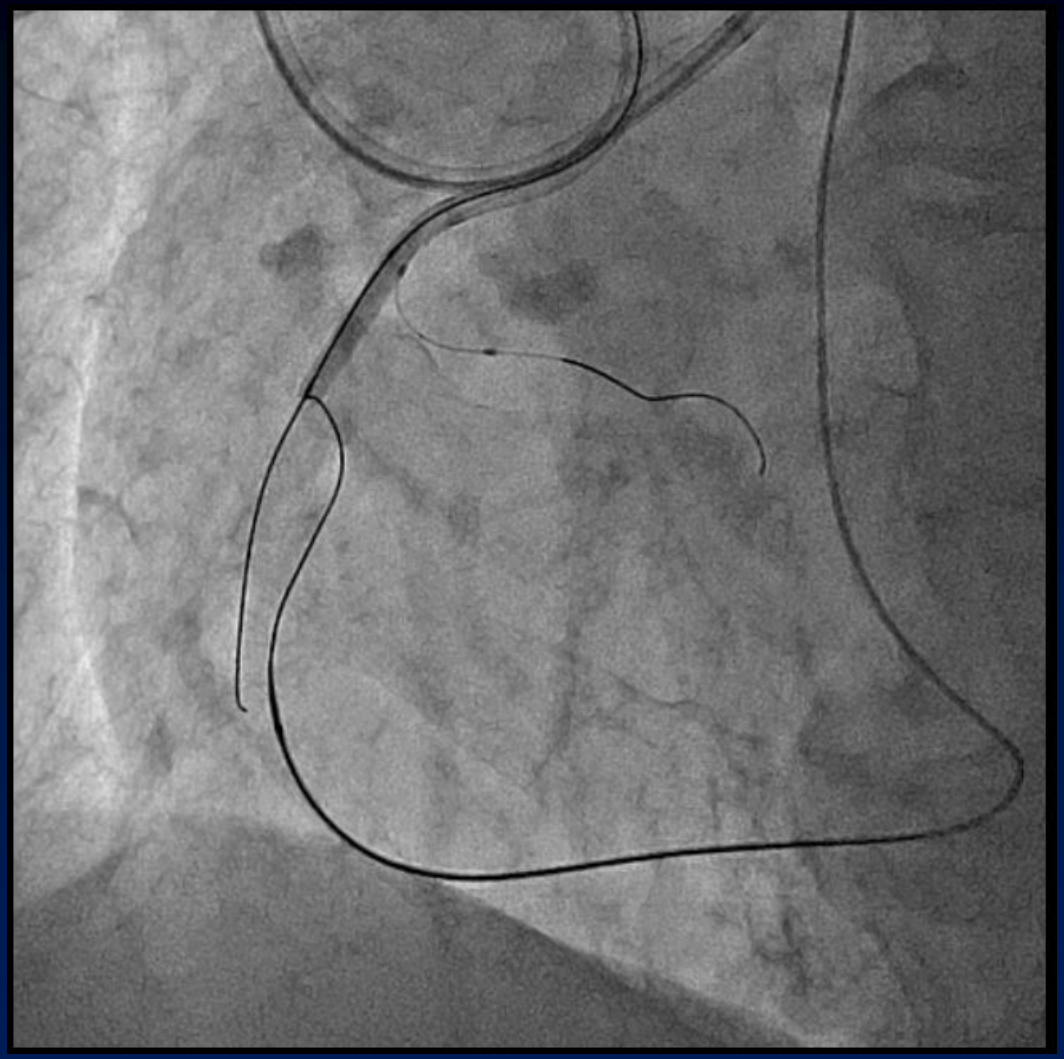
Simultaneous injection



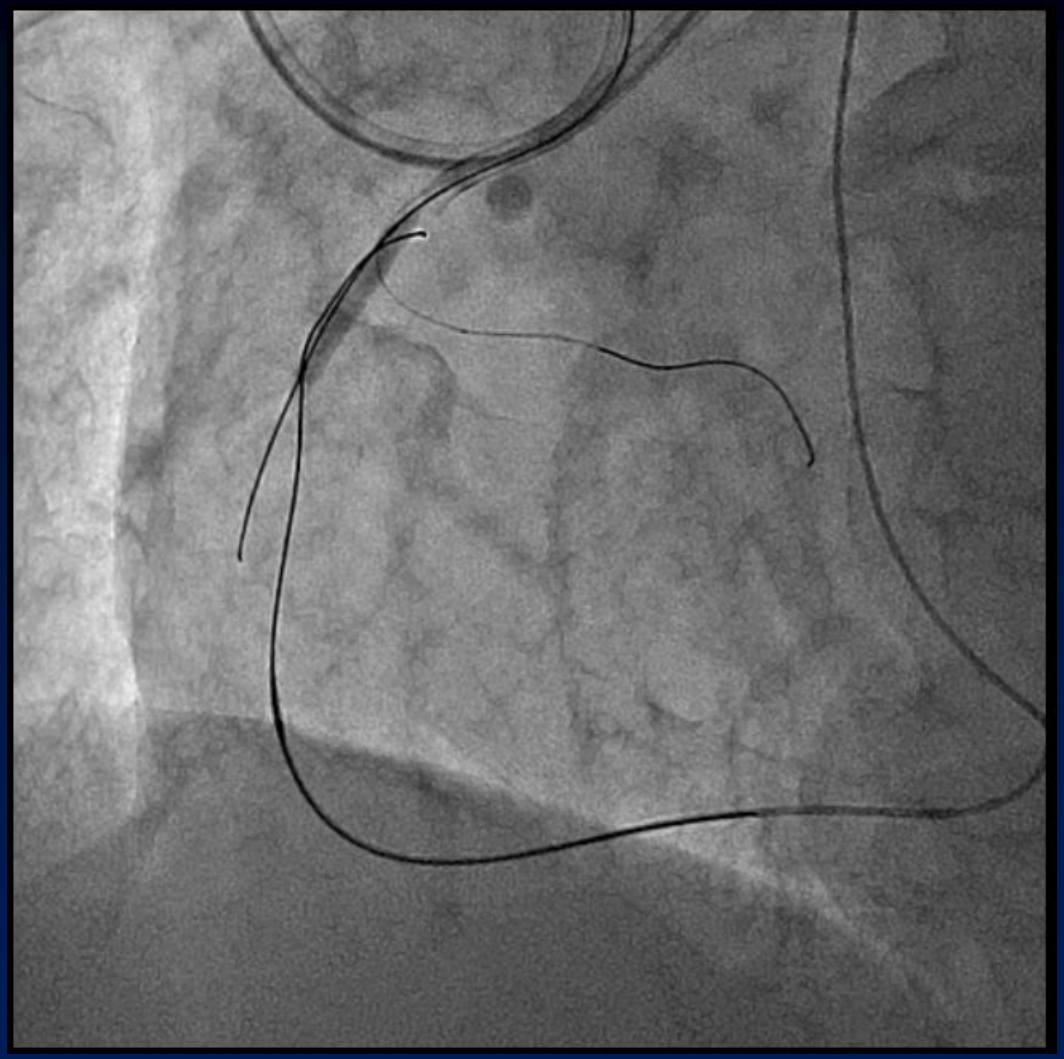
Antegrade wiring using GAIA 2nd



Antegrade GAIA looks outside the vessel…



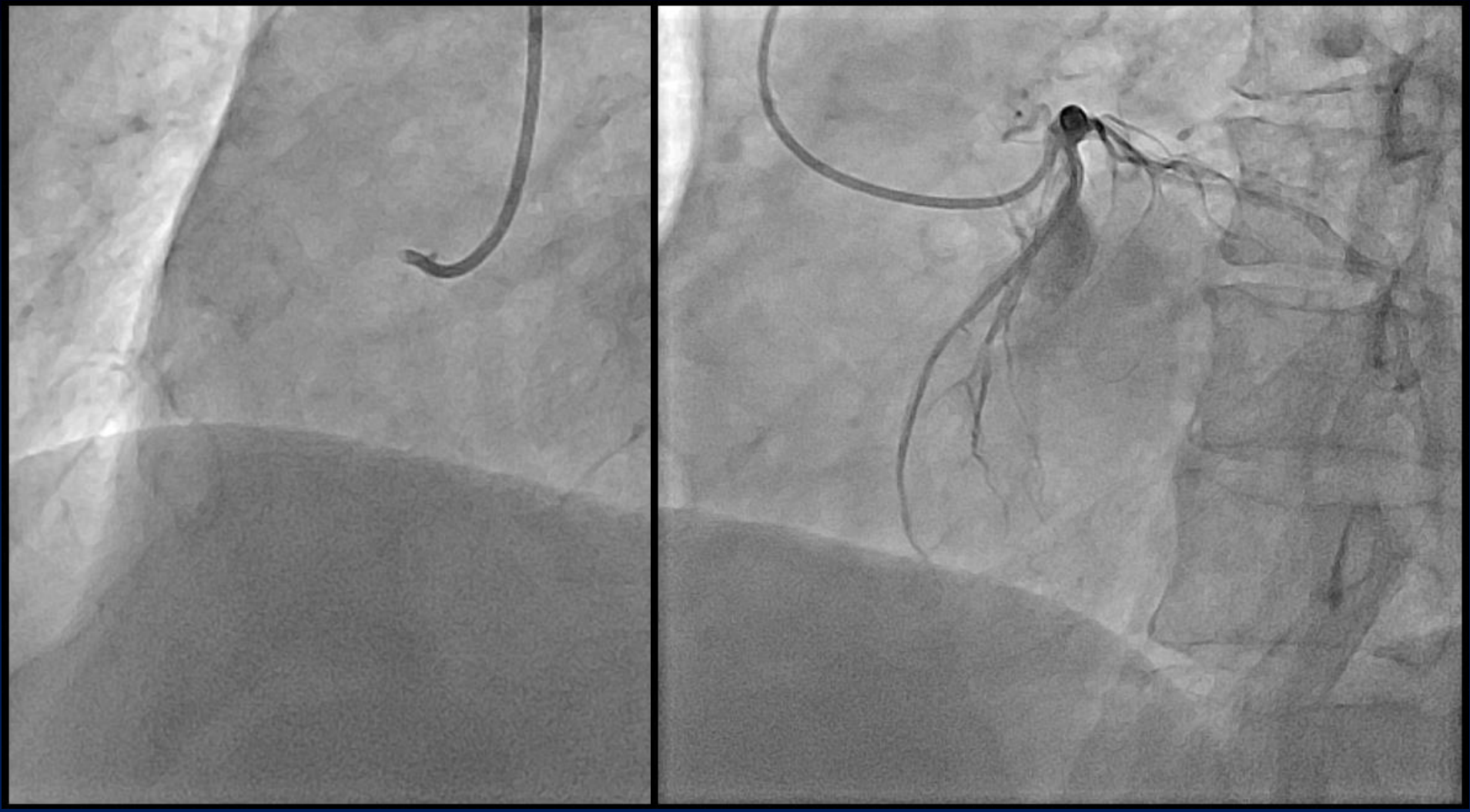
Retrograde wiring using Ultimate 3

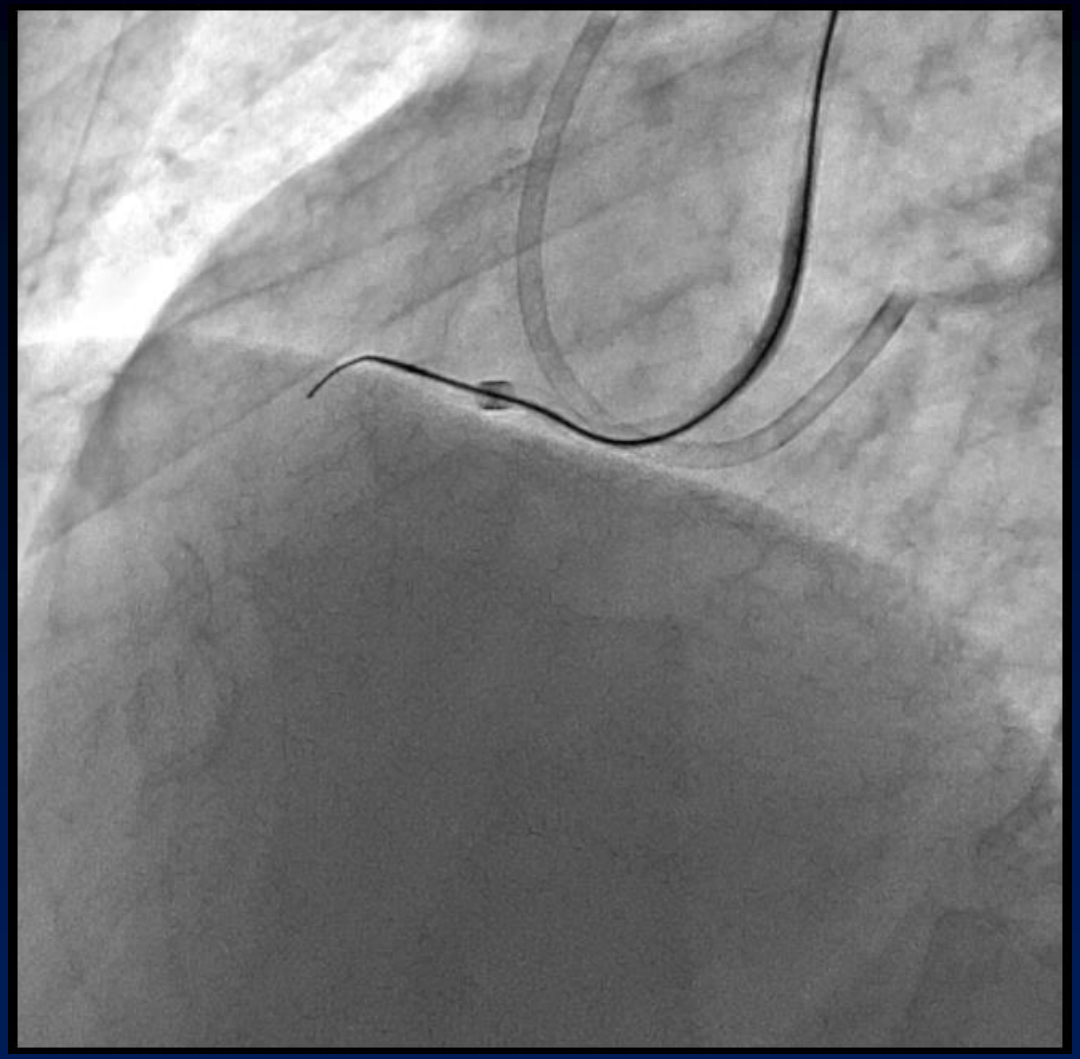


Successful reverse CART

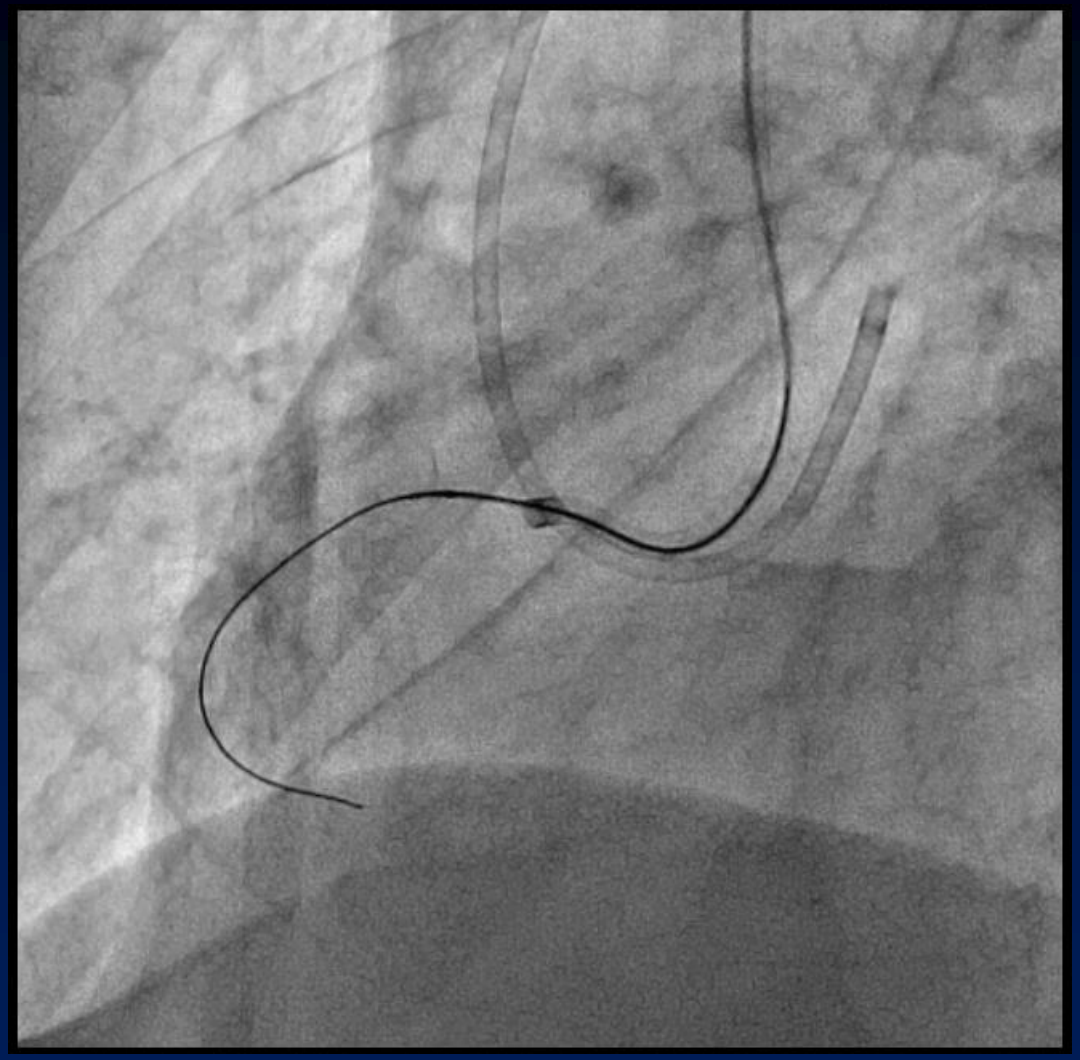
Type 1 perforation

RCA Otial CTO

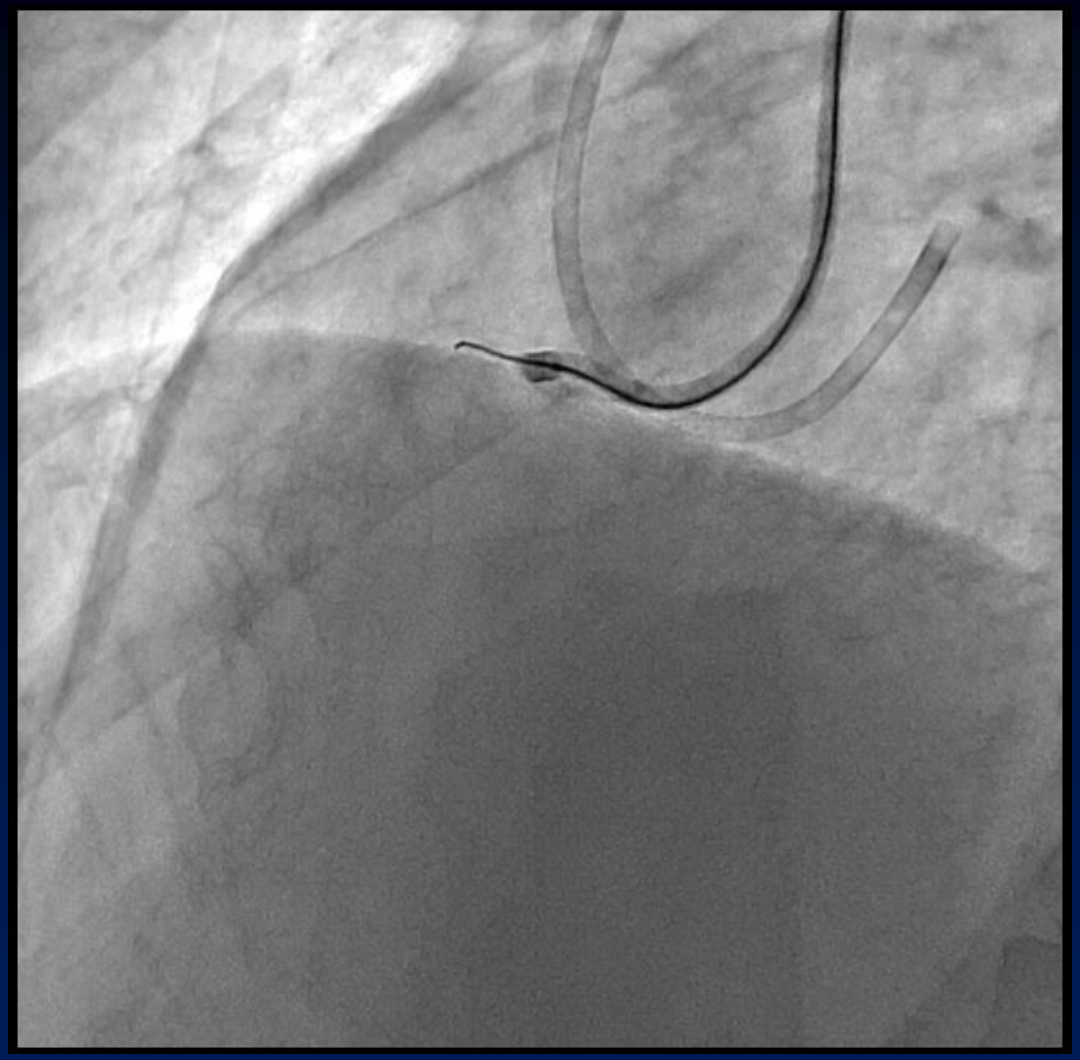




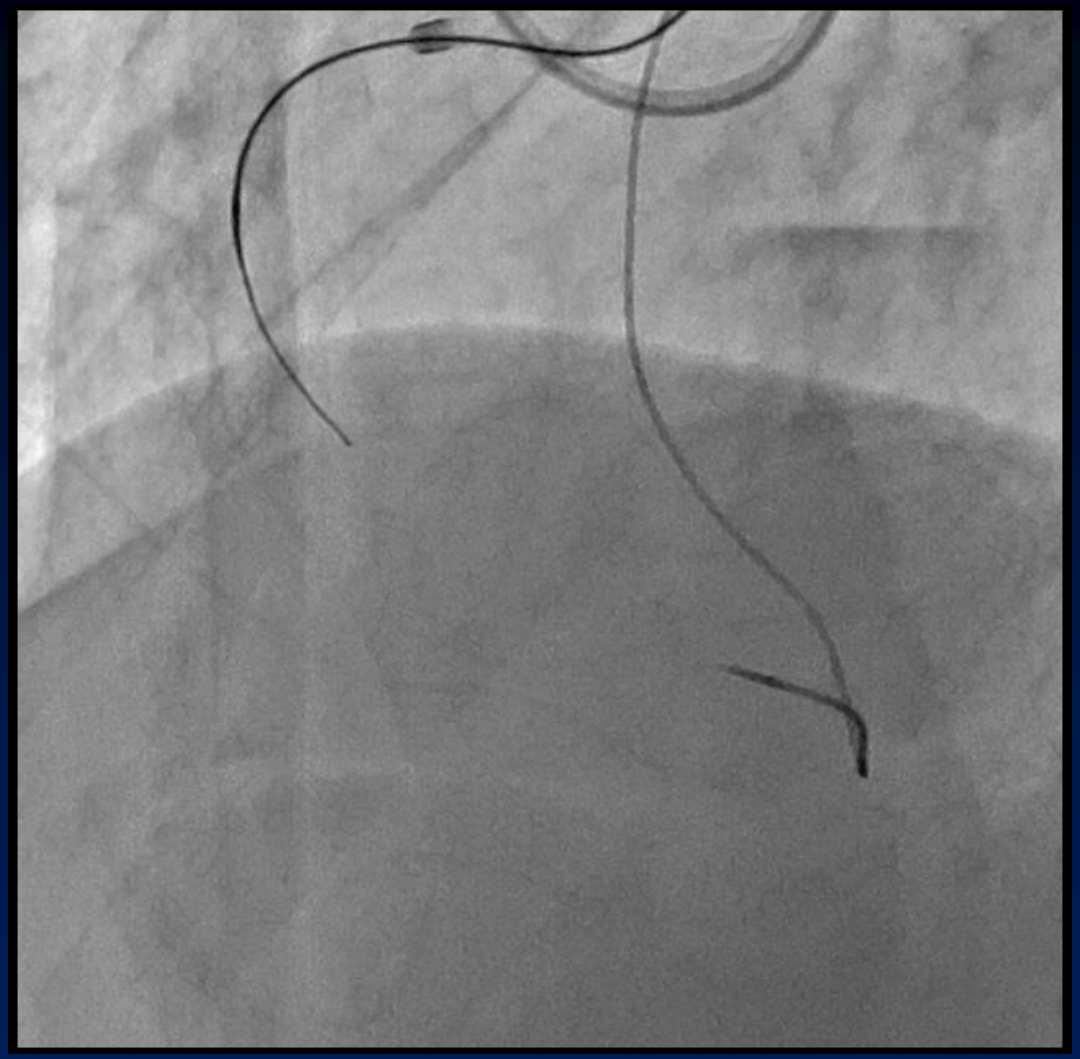
Antegrade wiring using GAIA 2nd



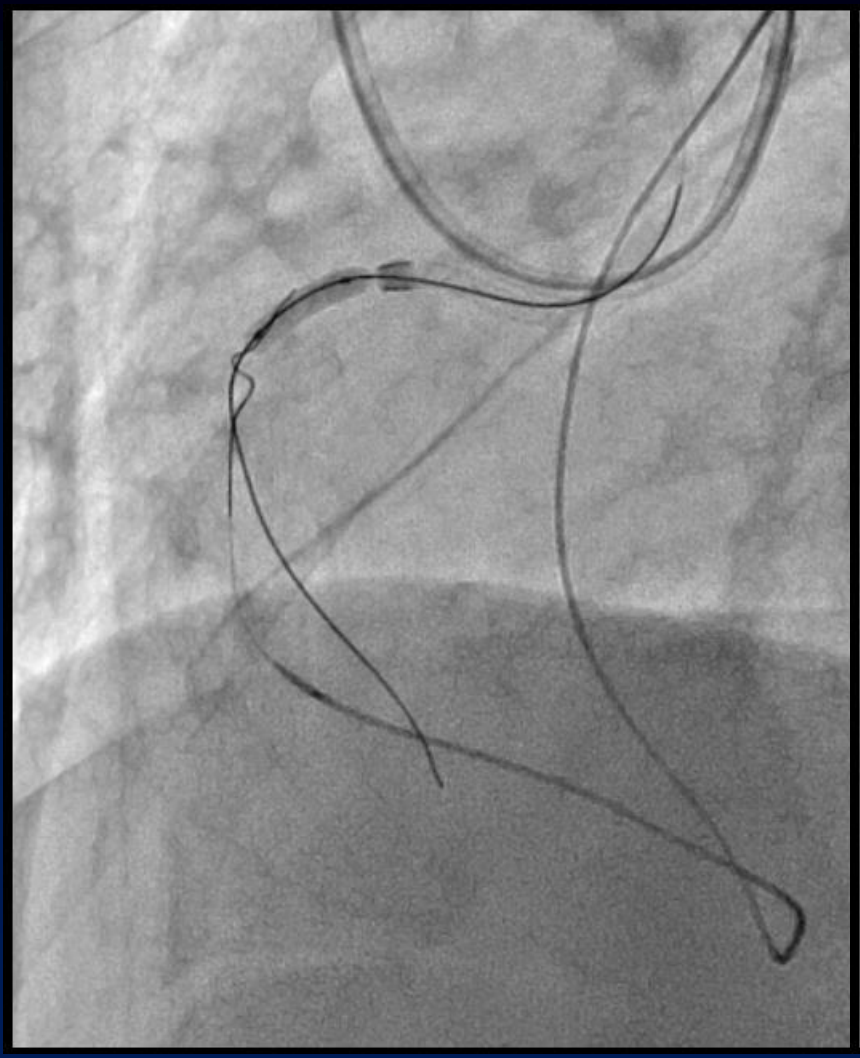
Antegrade wiring using GAIA 2nd

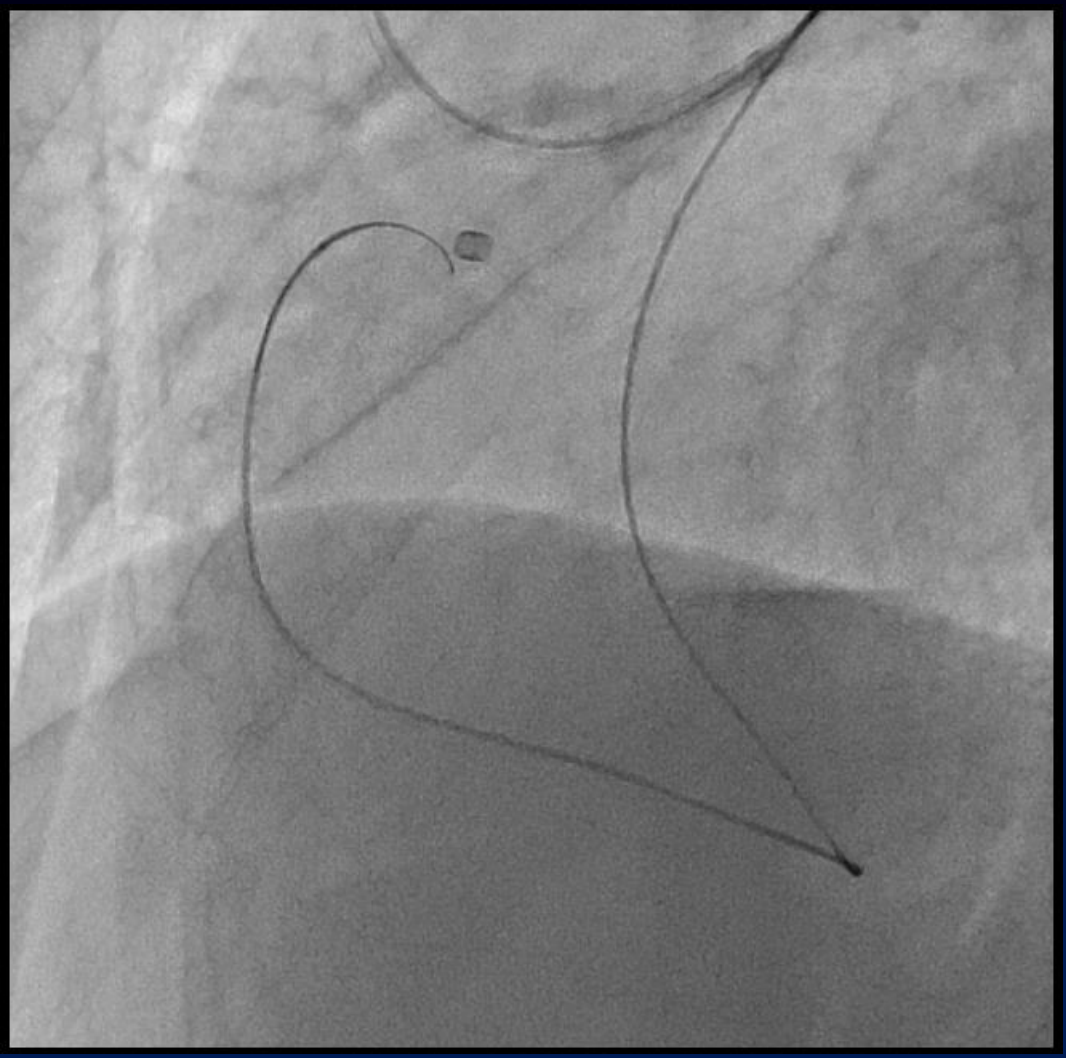


Type 1 perforation

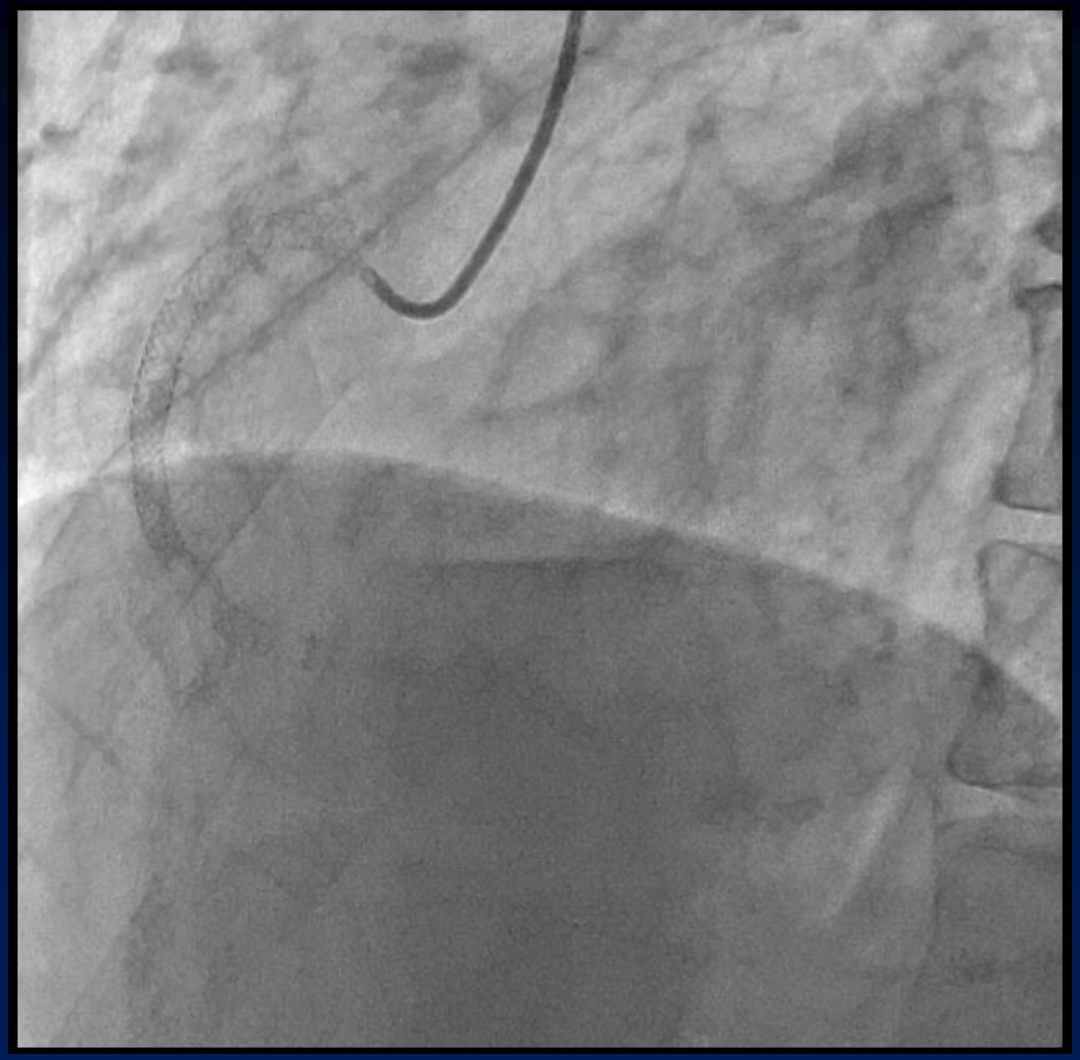


Antegrade wiring was stopped and retrograde wiring was started.





Retrograde wiring using SION black



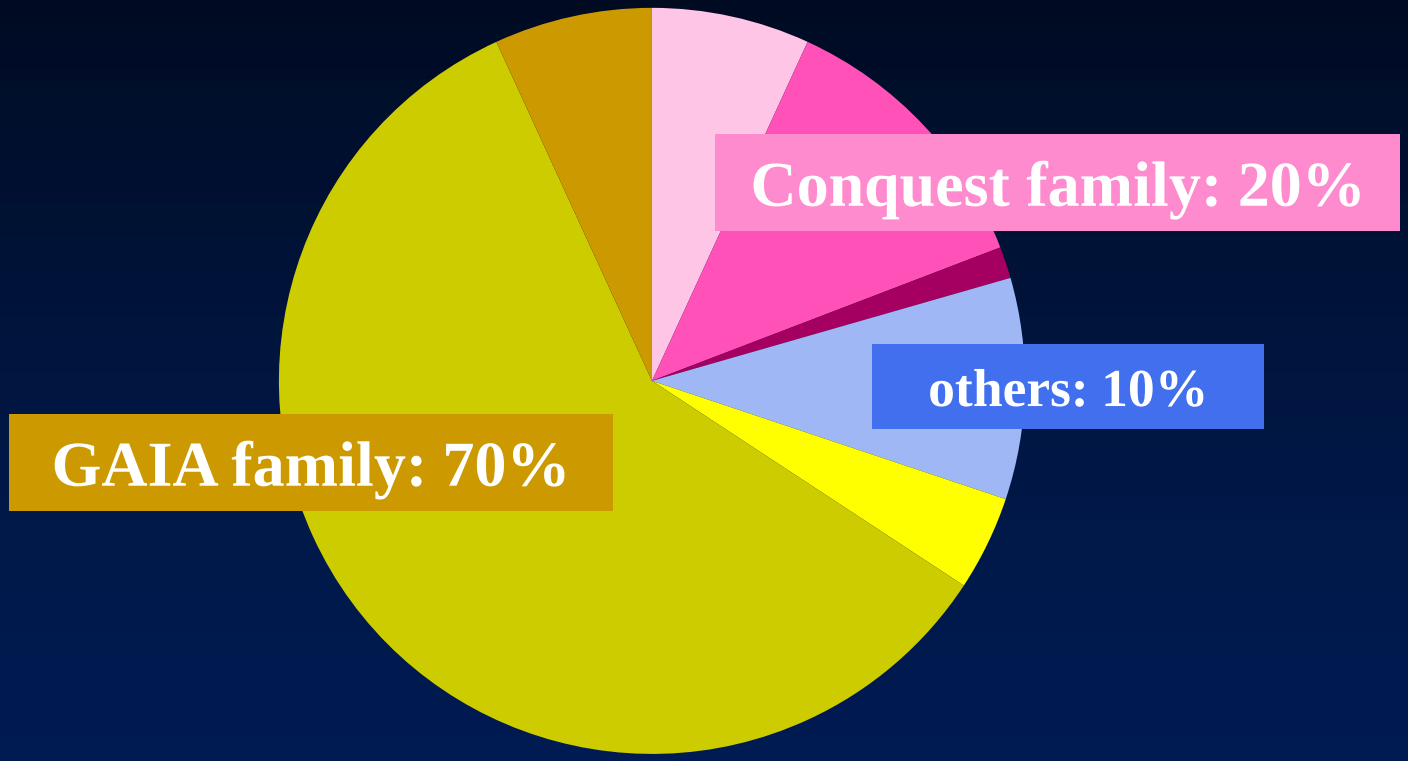
Final angiogram

Contemporary Reverse CART with GAIA

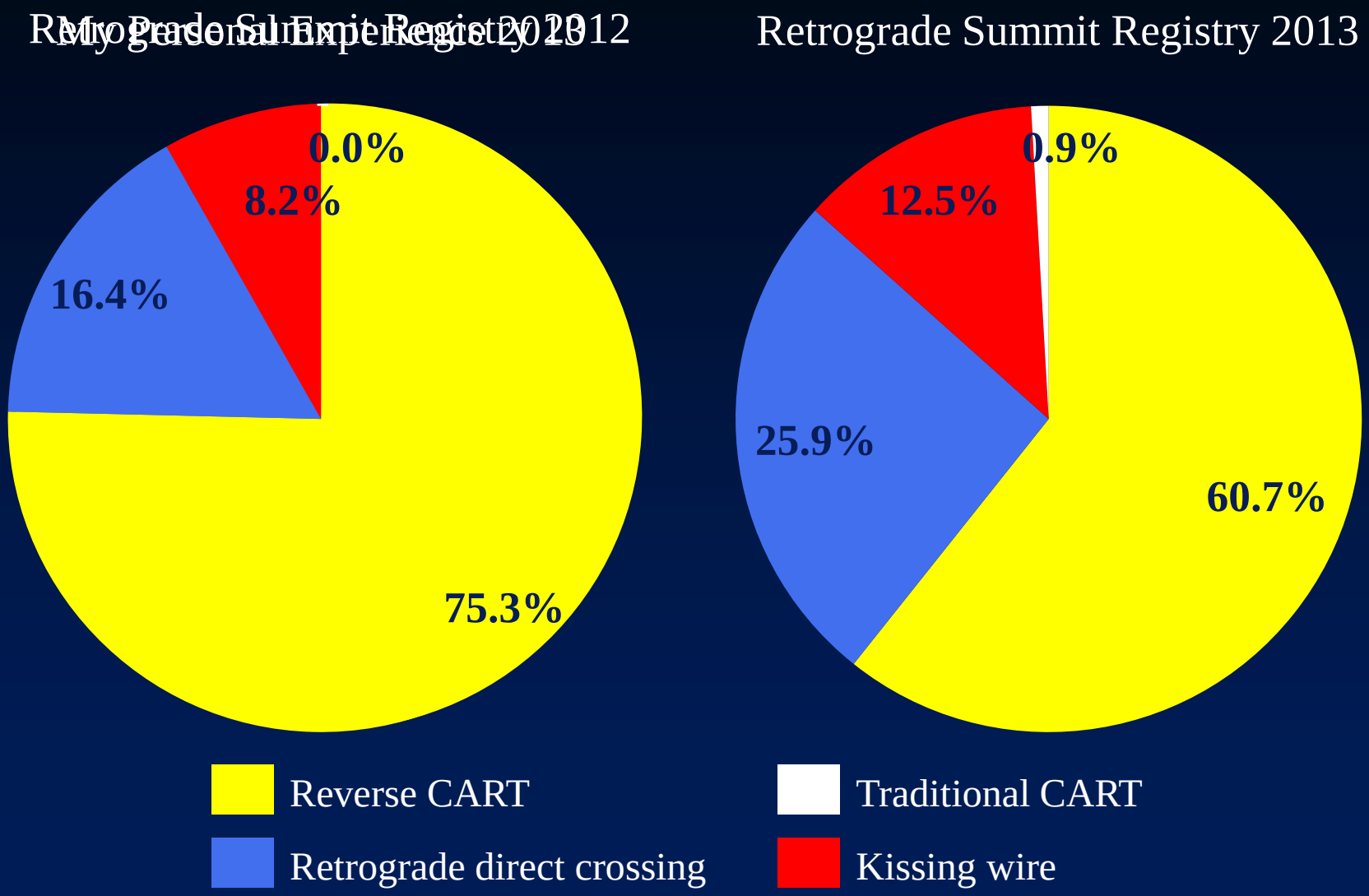
- GAIA enables the intentional retrograde wire direction control.
- However once the retrograde dissection is created, the precise control become difficult even if GAIA is used.
- Before retrograde wiring with GAIA, antegrade preparation should be recommended to facilitate reverse CART.

- In short CTOs, the direct retrograde wire crossing still works well with GAIA w/wo IVUS.
- In long CTOs with unknown vessel trajectory, antegrade preparation must be done carefully to avoid vessel perforation.
- Also the use of other non-tapered (hydrophilic) wires than GAIA should be considered to stay inside the vessel.

Wire used for CTO crossing
in Retrograde Approach 2013



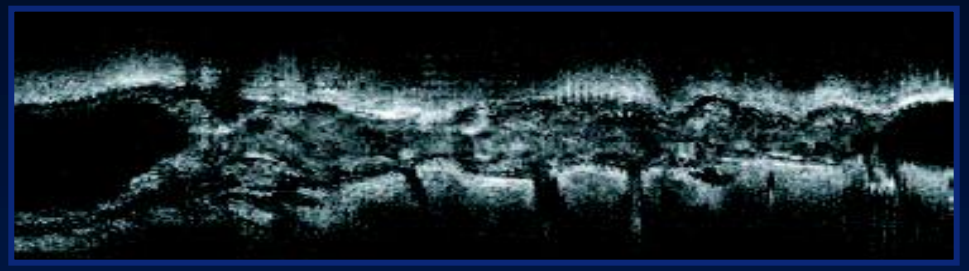
Change in CTO crossing strategy



Summary of Contemporary Reverse CART

- If you have GAIA family, start antegrade preparation before retrograde GAIA wiring in general.
- Antegrade ballooning position should be close to distal end of CTO, however be careful antegrade wire position not to make damage beyond the occlusion.
- In short CTOs, still the direct retrograde wire crossing may be attempted w/wo IVUS.
- In long CTOs, antegrade preparation must be done carefully to avoid vessel perforation by using non-tapered (hydrophilic) wires. Also retrograde GAIA should not be used if a long distance (>20mm) remains to antegrade balloon.

16th CTO Club



June 19-20, 2015, Nagoya, Japan

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