

# Best Navigation of Retrograde Journey



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# Clinical Results of Retrograde Approach in Japan

Japanese Registry Data from  
Retrograde Summit

< Comparison between 2009-2011 >

# Enrollment

January 2009 -  
December 2011

**Enrolling Centers: 28**

**Elective PCI cases  
42,292**

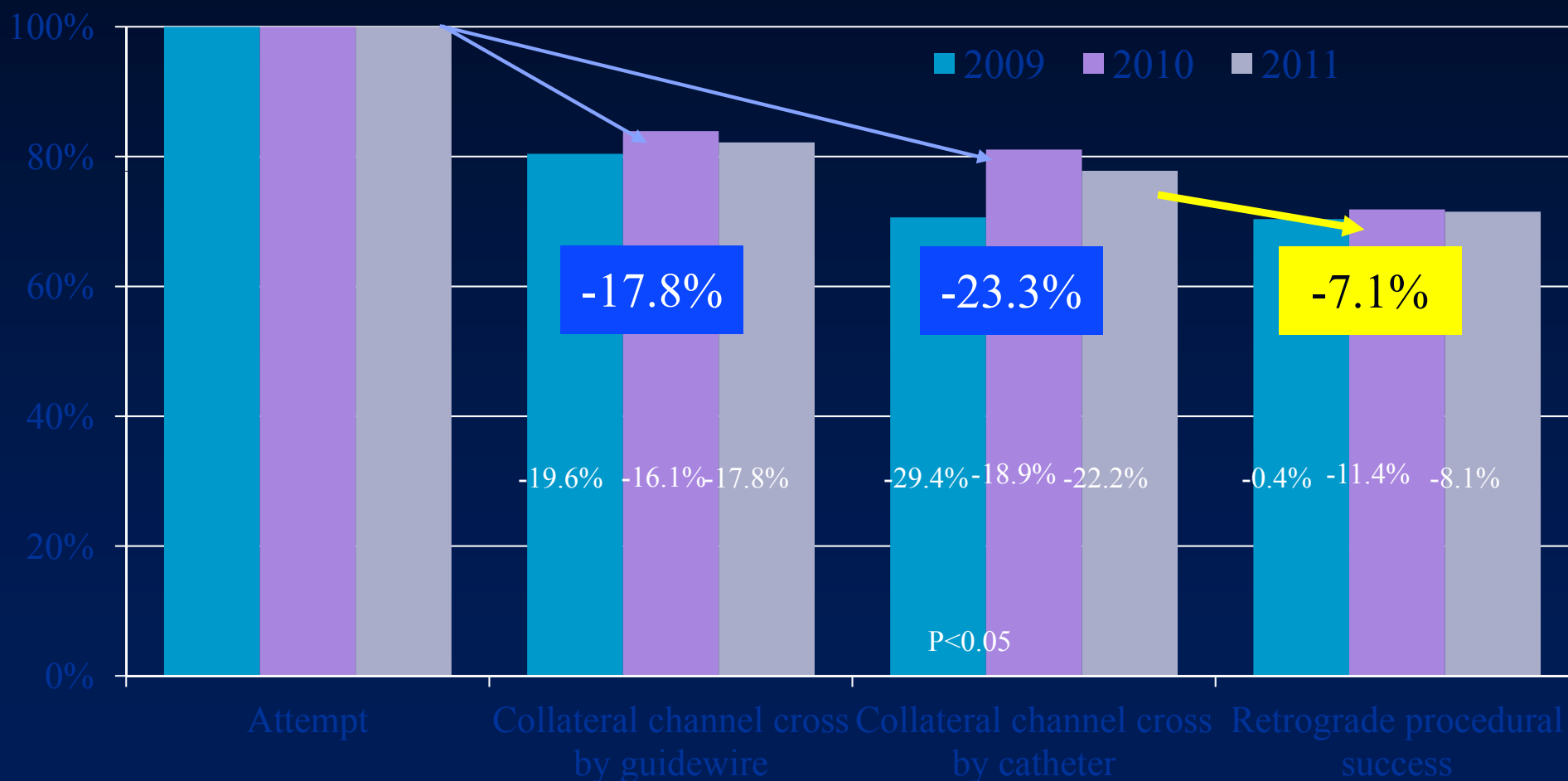
**CTO cases  
4,431 (10.5%)**

**Retrograde  
Approach cases  
1,166 (26.3%)**

2011 data

# Clinical Results

## Collateral crossing and retrograde success

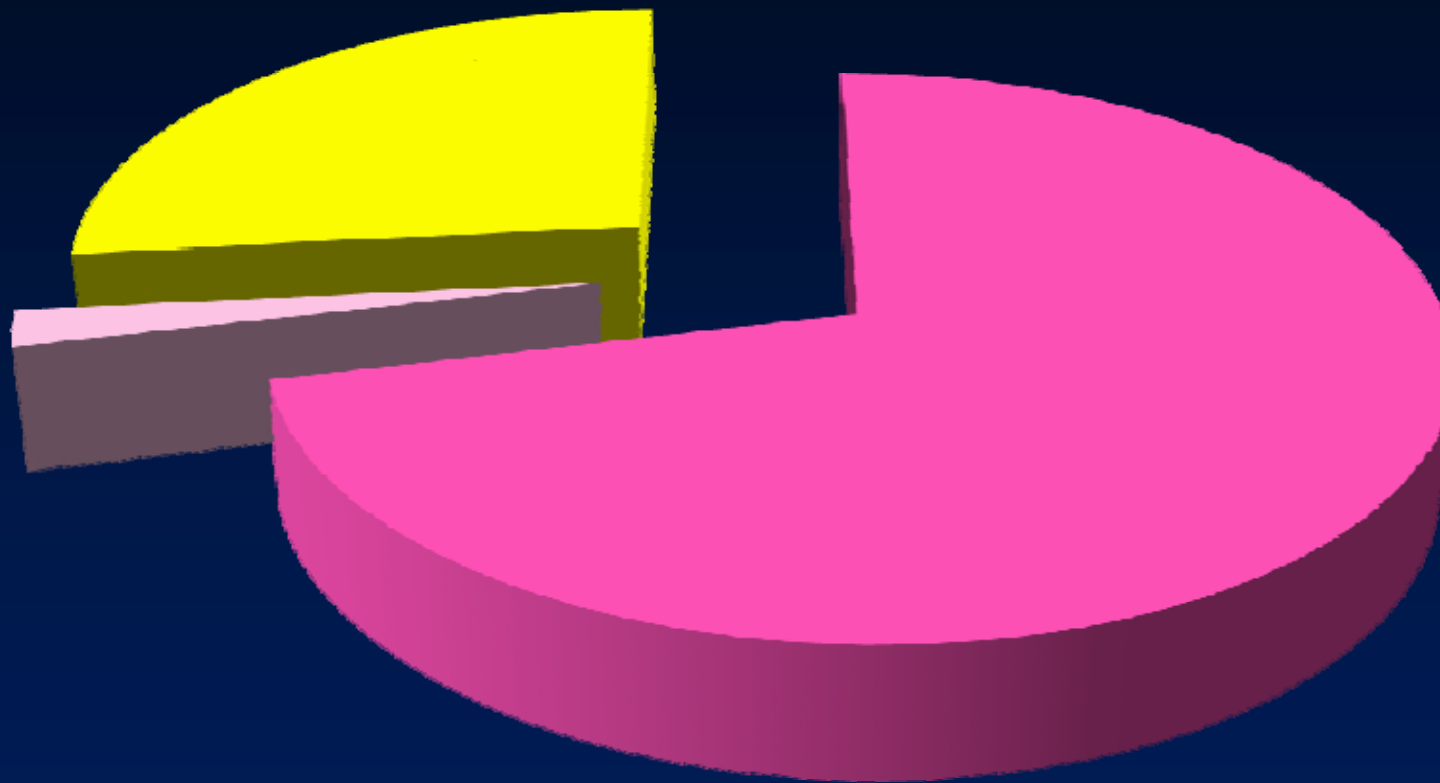




## **My Wire Selection for Collateral Channel Tracking**

- 1<sup>st</sup> choice is **SION** (not SION blue)
- Tiny or acute angulated channel, **Fielder XT-R**
- Attempt at an invisible septal channel, **Fielder XT-R**

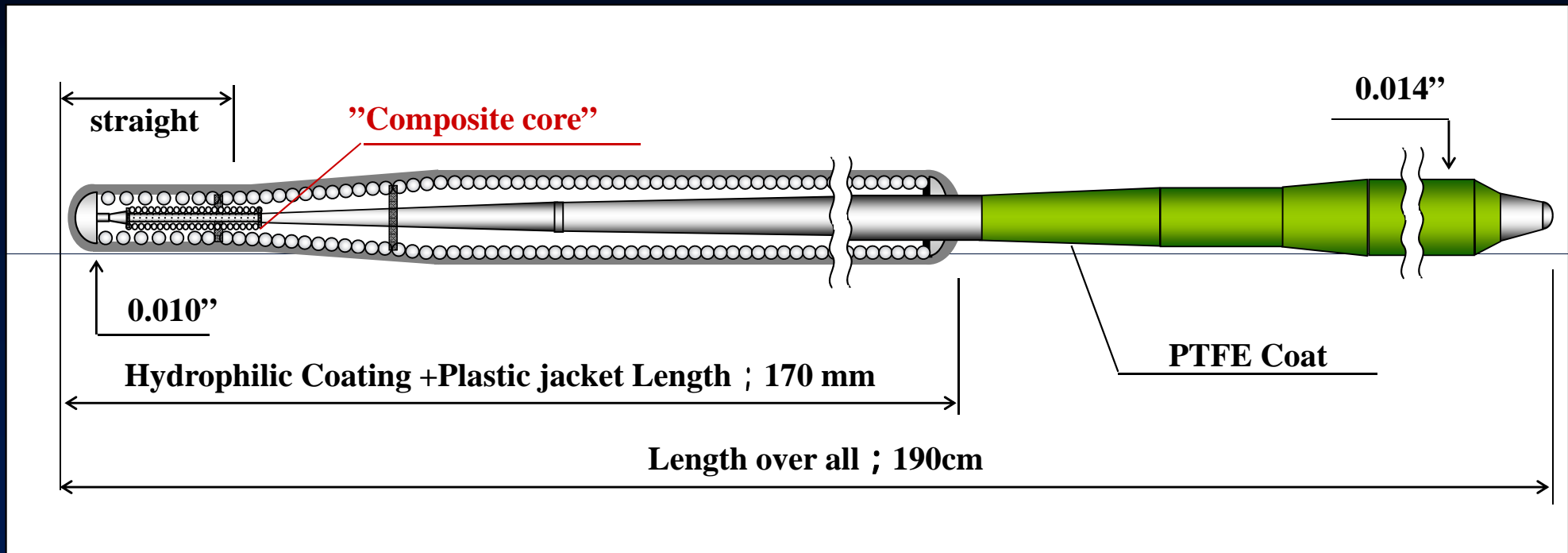
# Wire used for channel crossing in 2012



■ SION ■ SION blue ■ XTR

New X-treme **XT-R** <Revolution>

ASAHI intecc; Japan



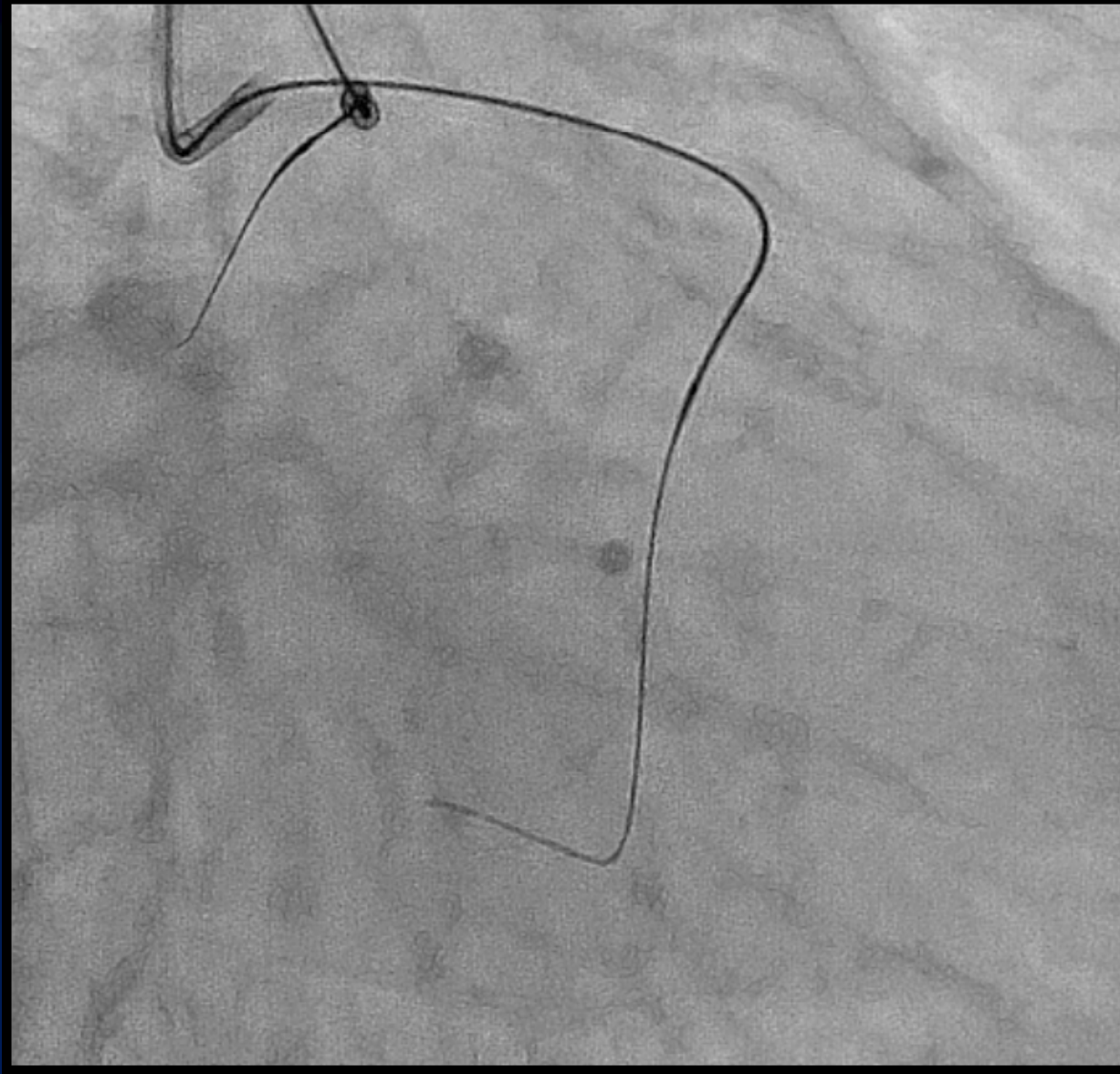
- ✓ New Fielder XT with “ composite core” design
- ✓ Durable & Flexible 0.010” tip – Tip load = 0.6gf
- ✓ High torque performance for retro/antegrade approach

## *Invisible Septal Channel*





## *Invisible Septal Channel*



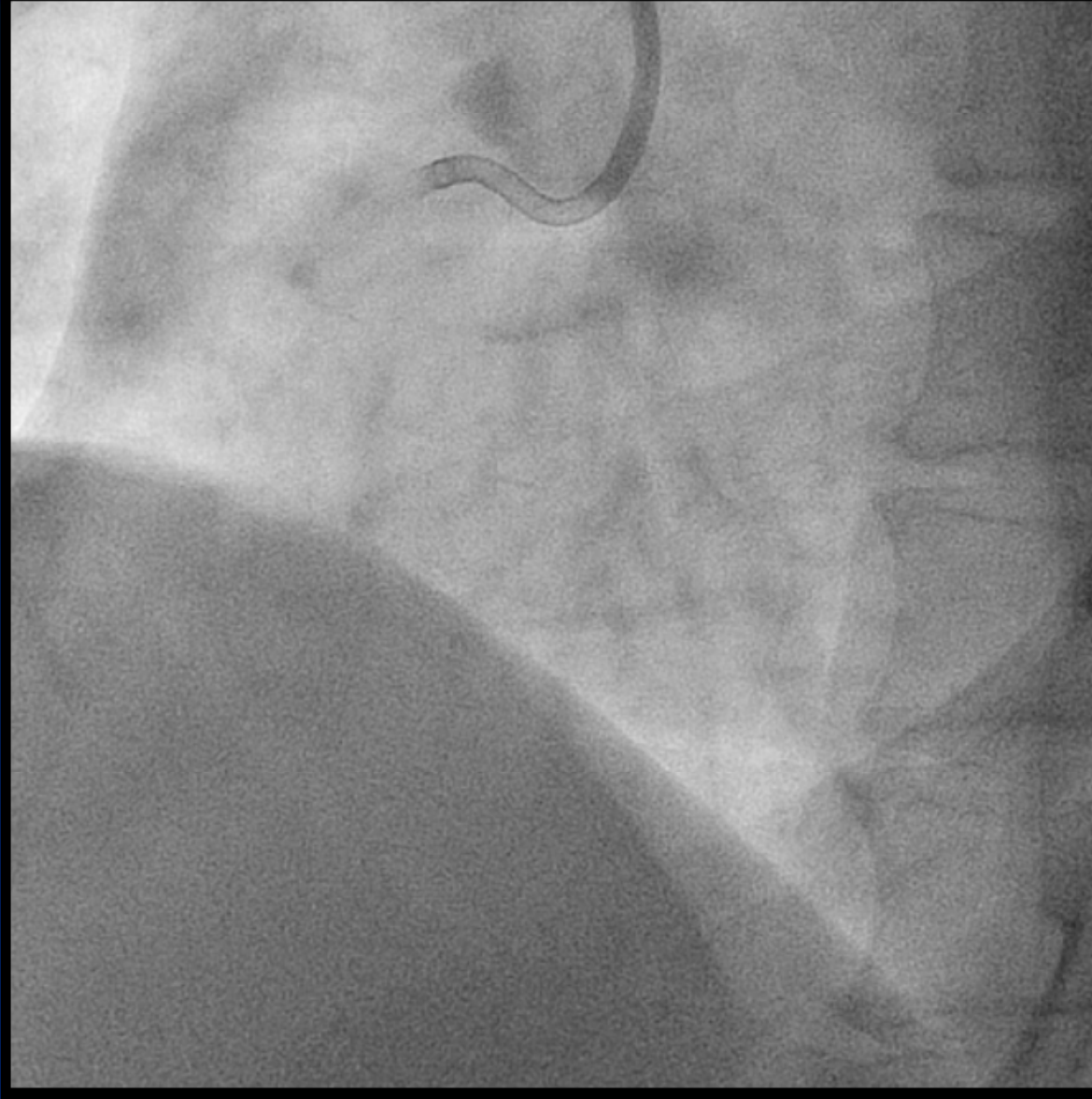
***XT-R***

# Best Navigation of Septal Channel Tracking

- **Isolation** by repeated tip injection
- Careful **Isolation** possibly makes an “invisible channel” visible!



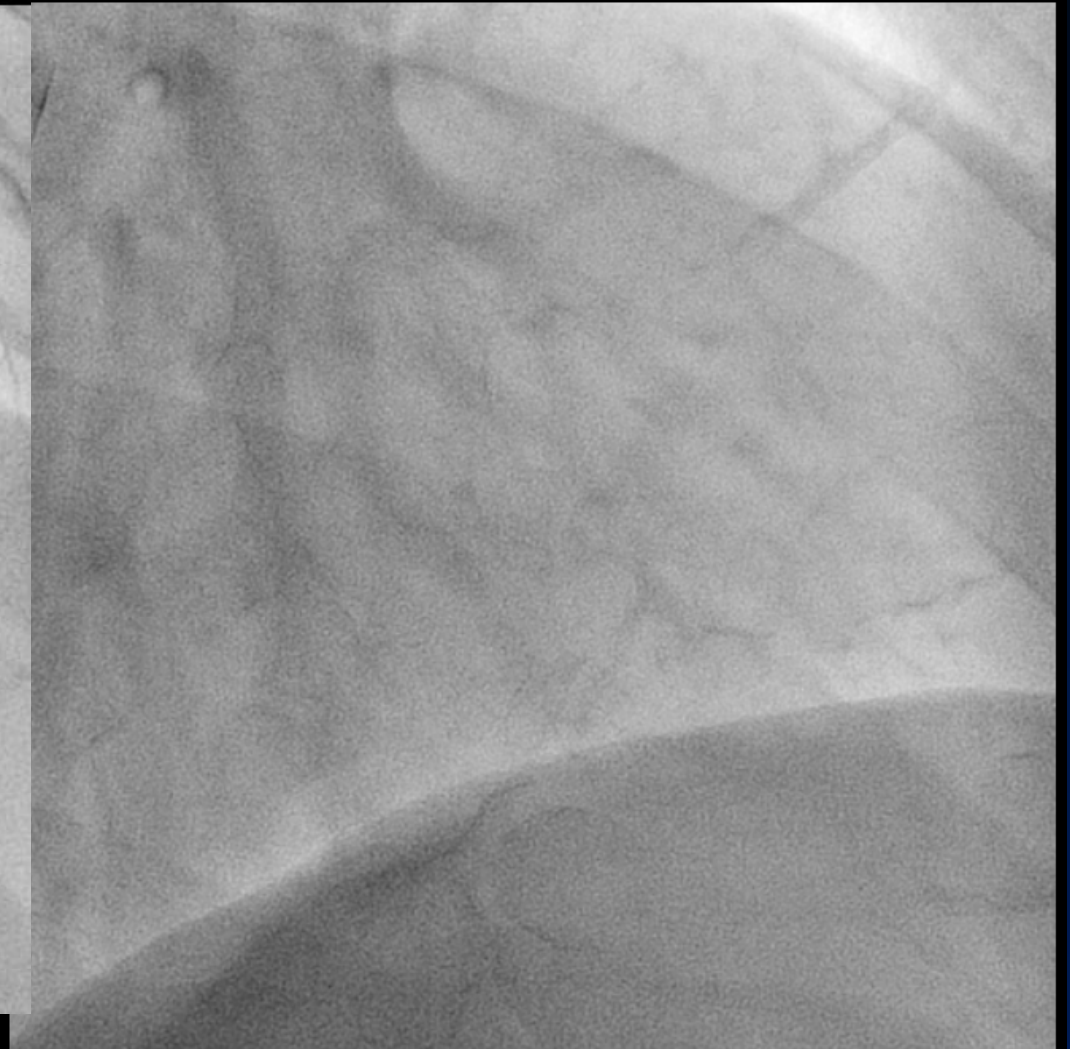
## **RCA CTO, 1<sup>st</sup> Attempt**



## Angiograms for septal selection



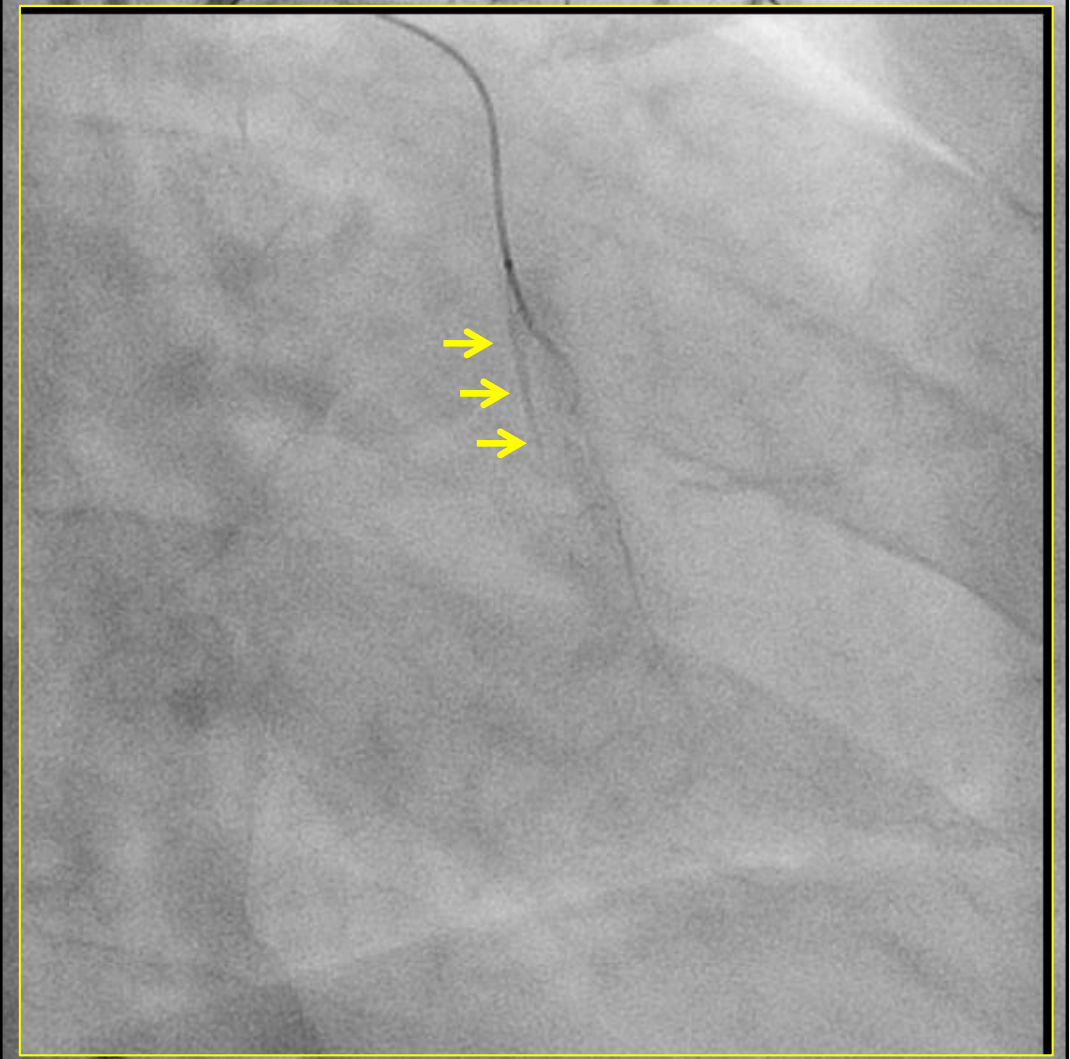
*6Fr*



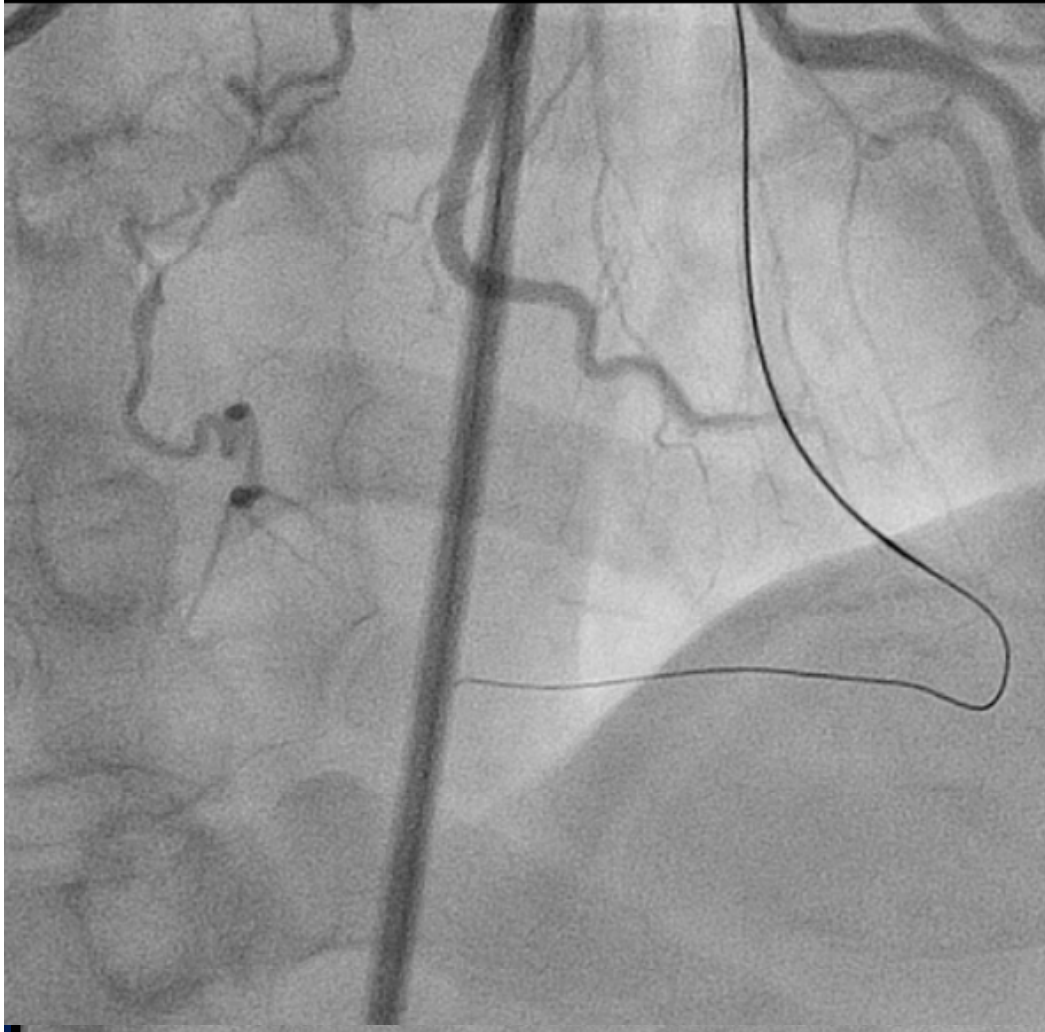
*8Fr, magnified image*



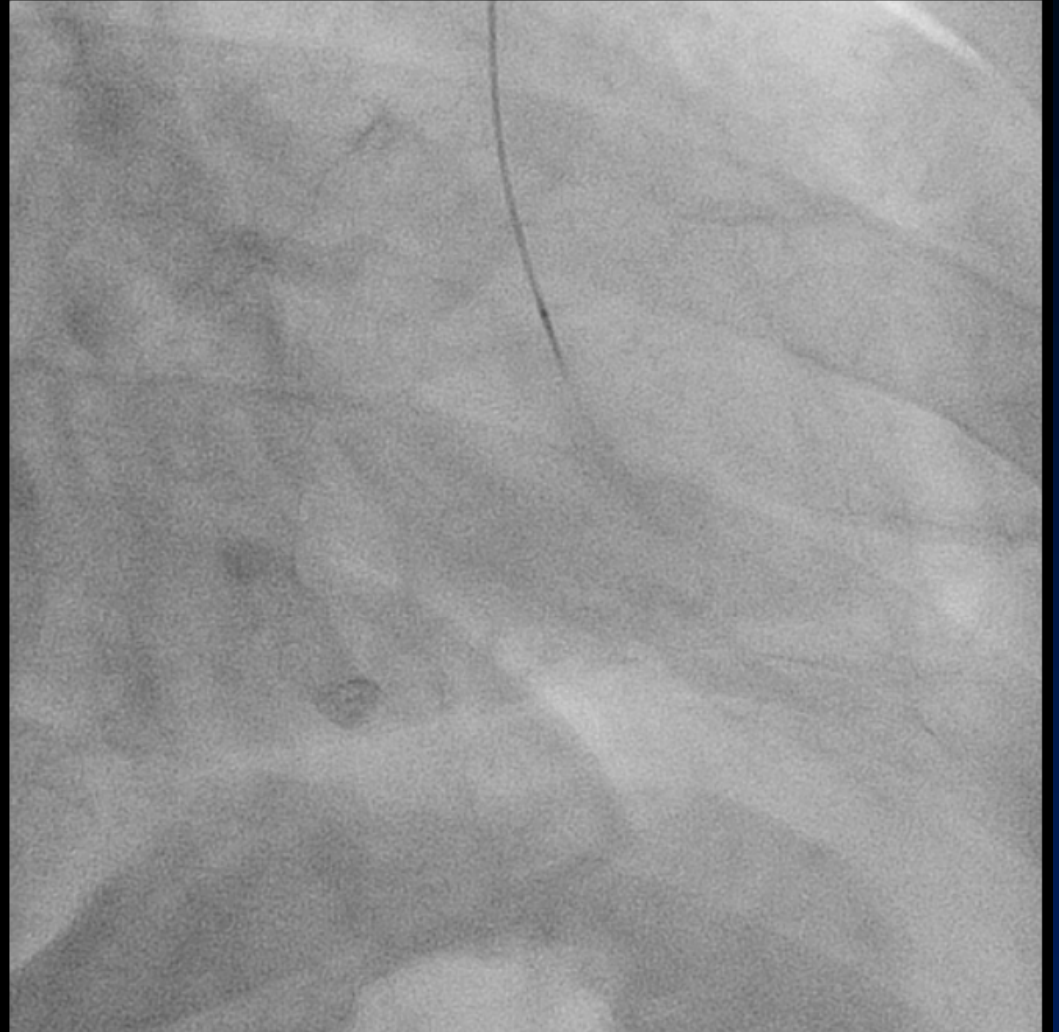
*Tip injection*



*XTR Rignafilled...*

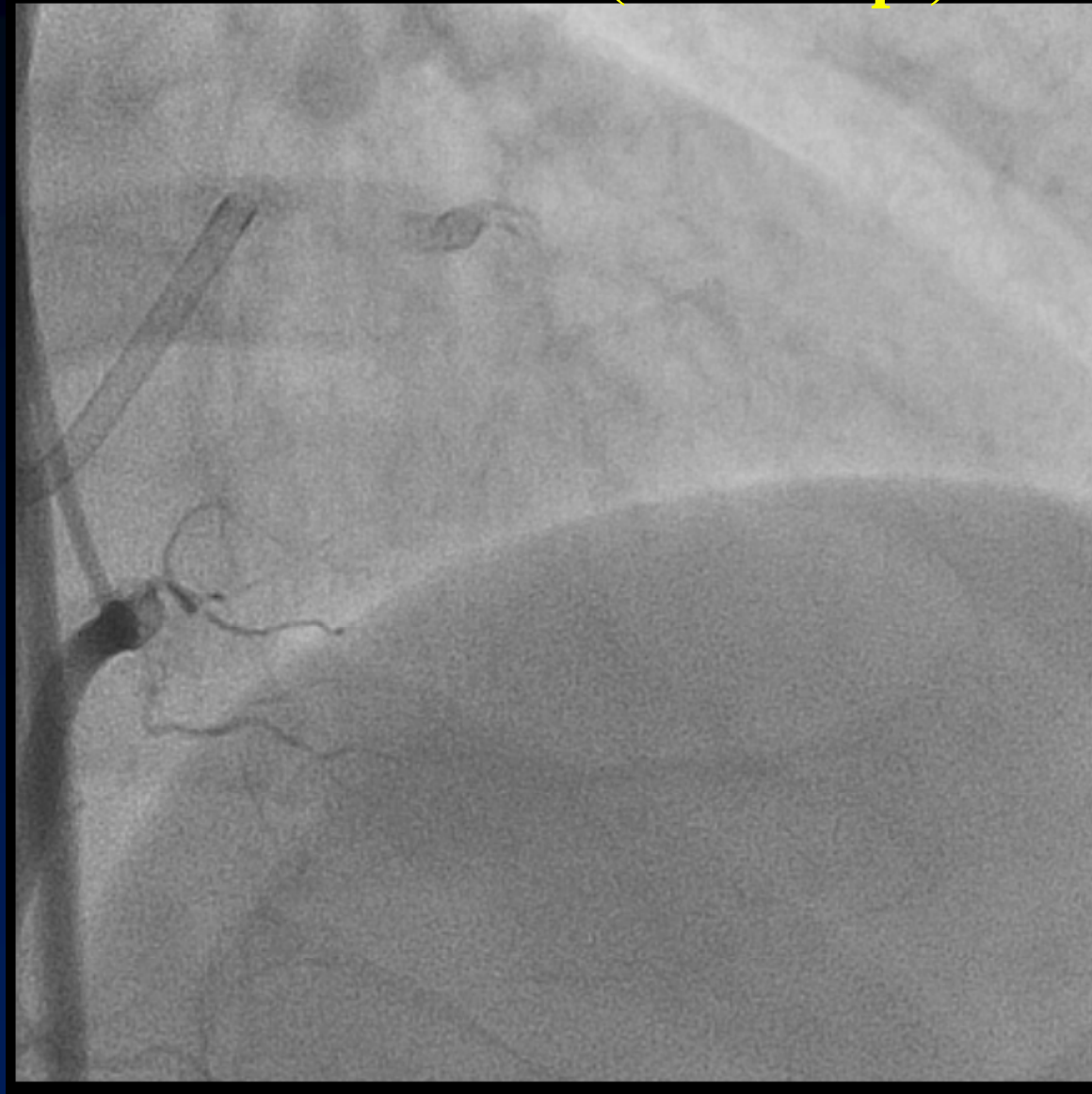


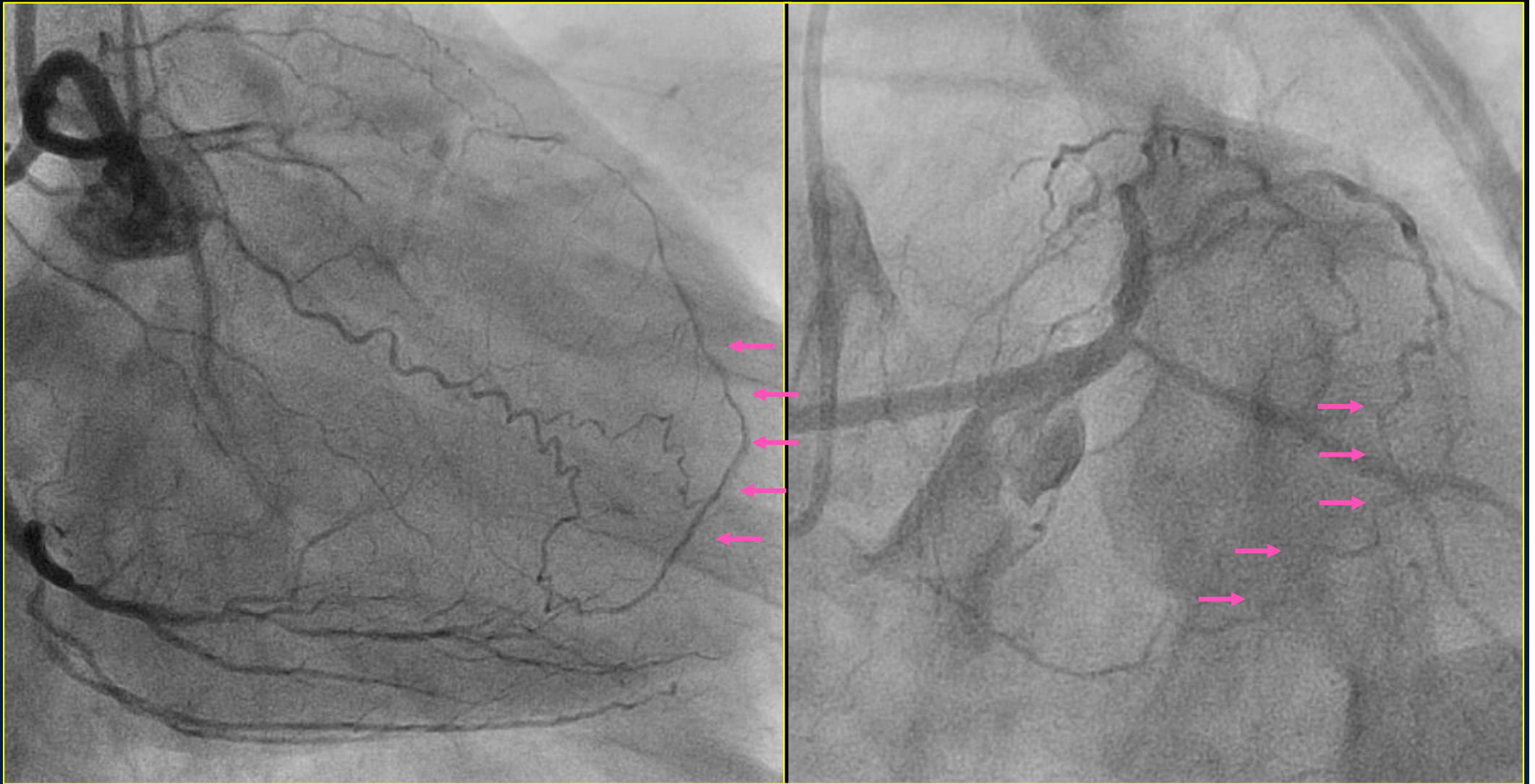
*XTR crossed!*



*a visible channel!*

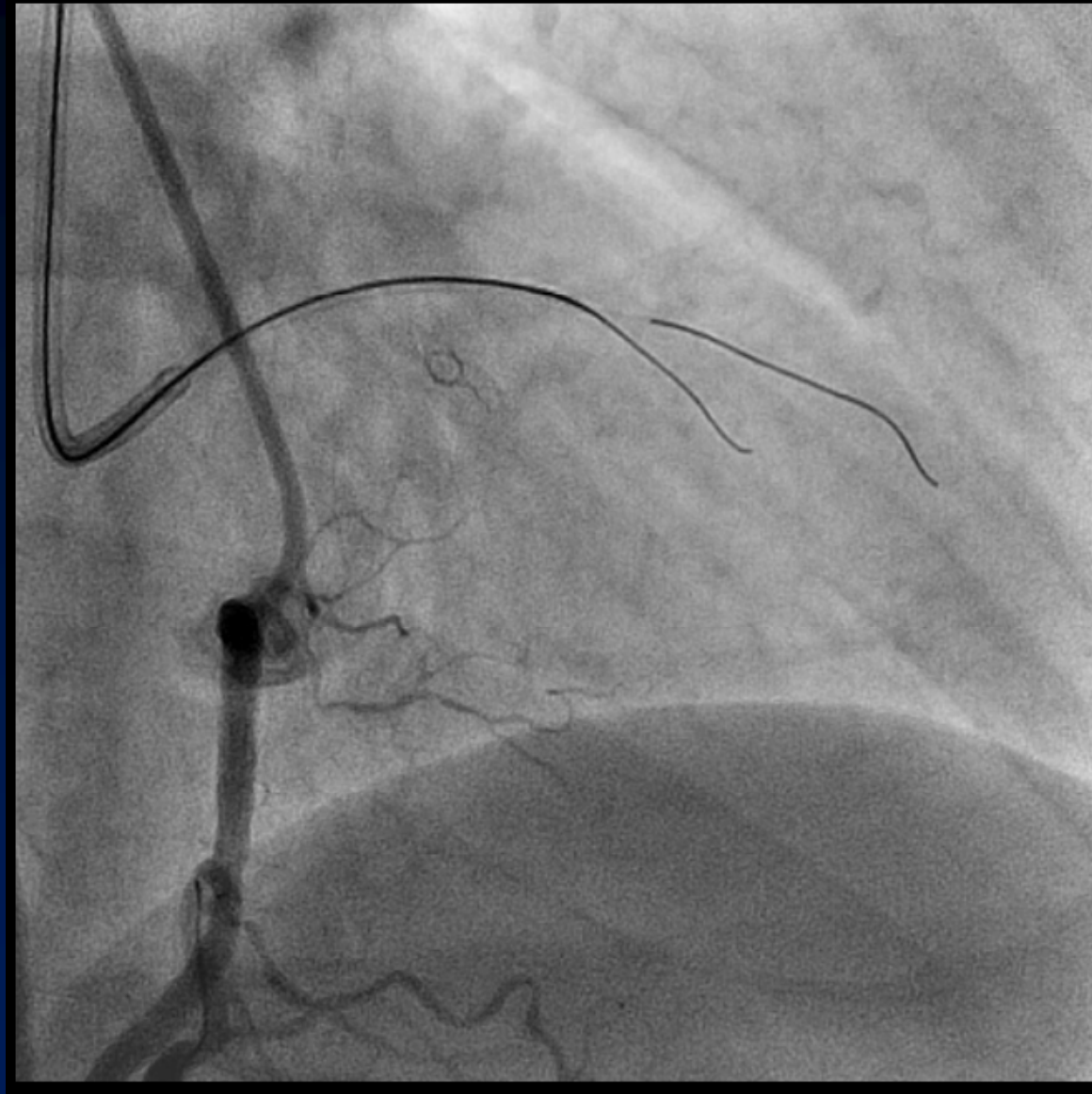
**Mid LAD CTO (1<sup>st</sup> attempt)**



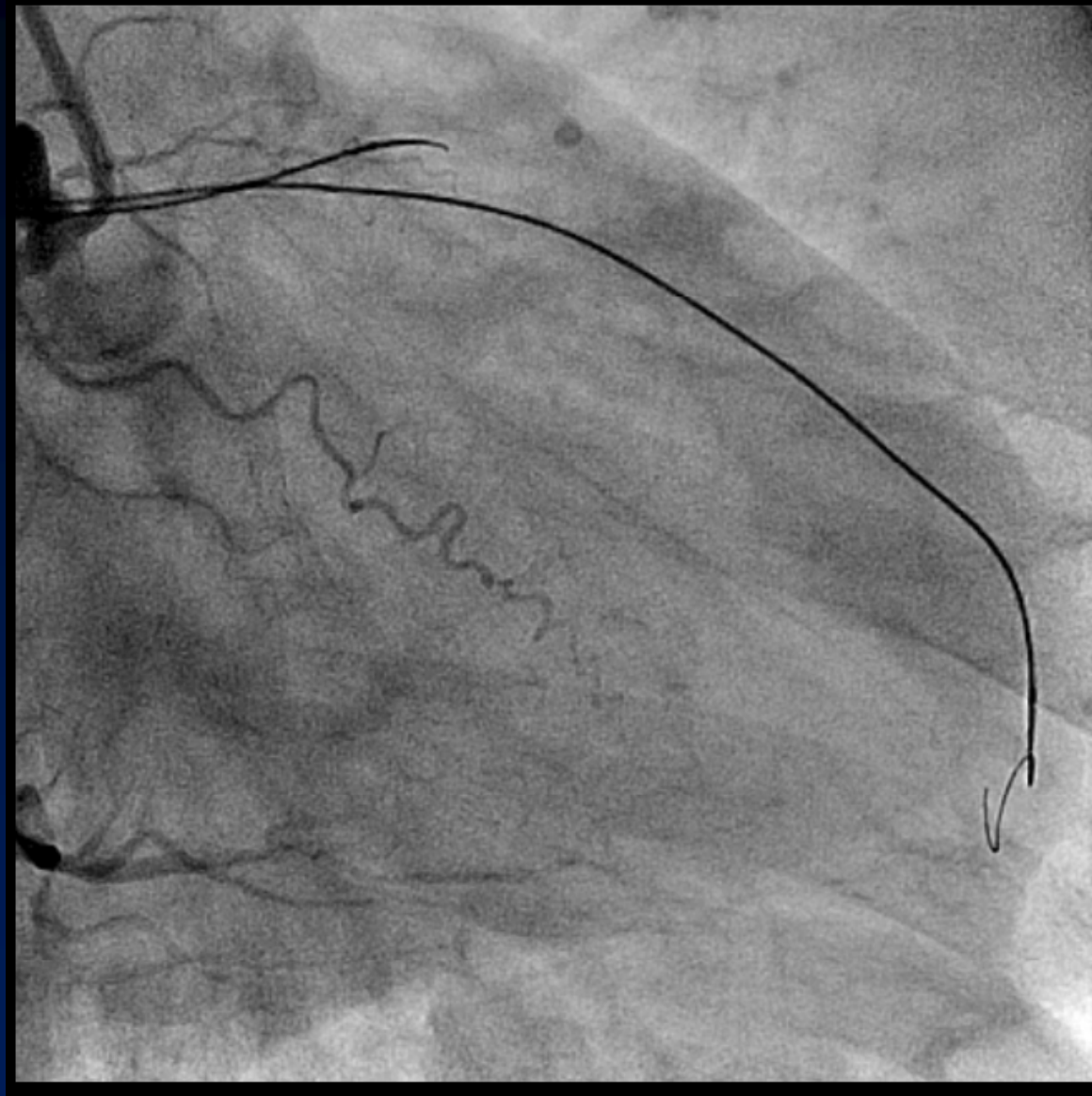


## Epicardial channels

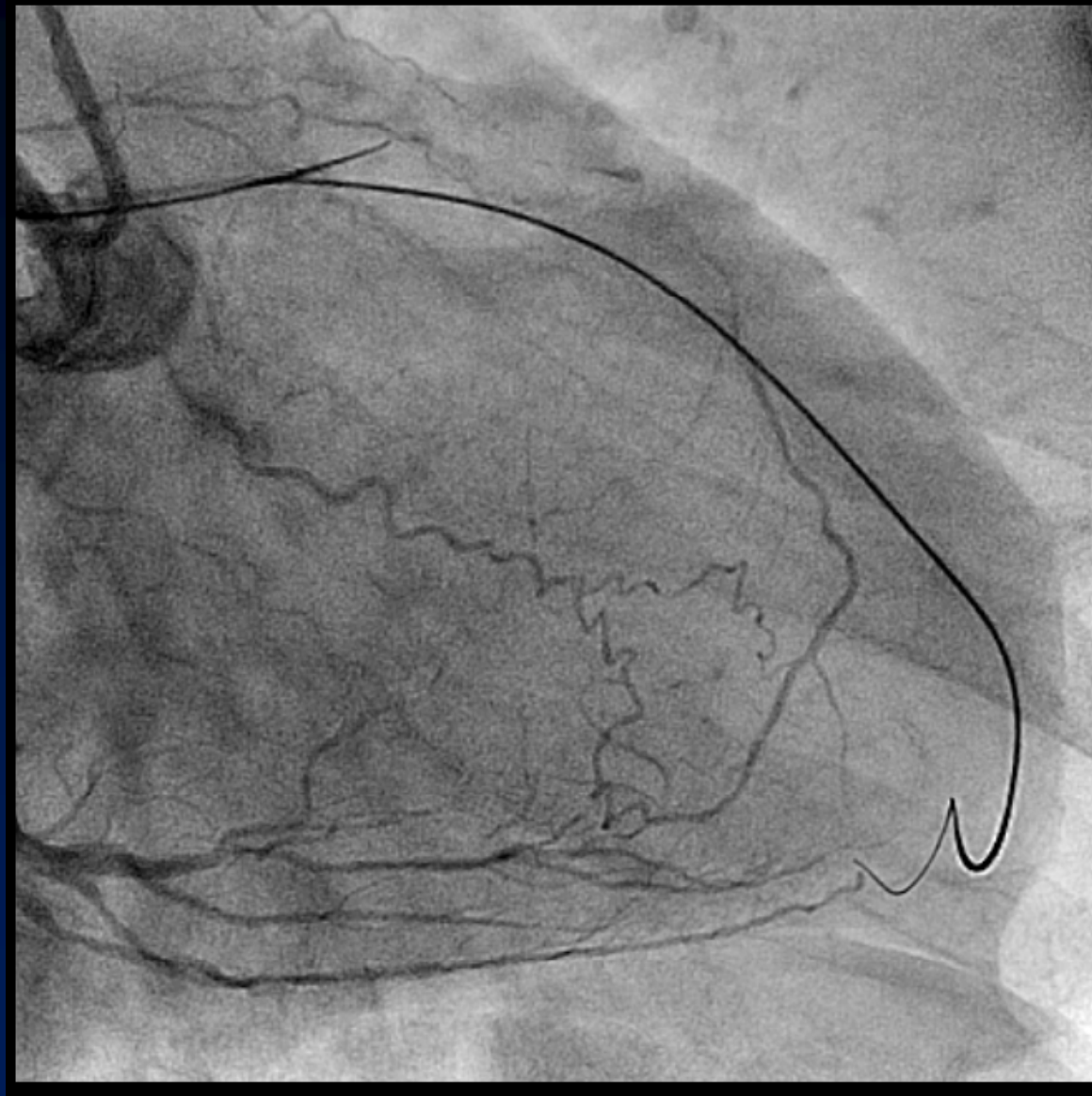




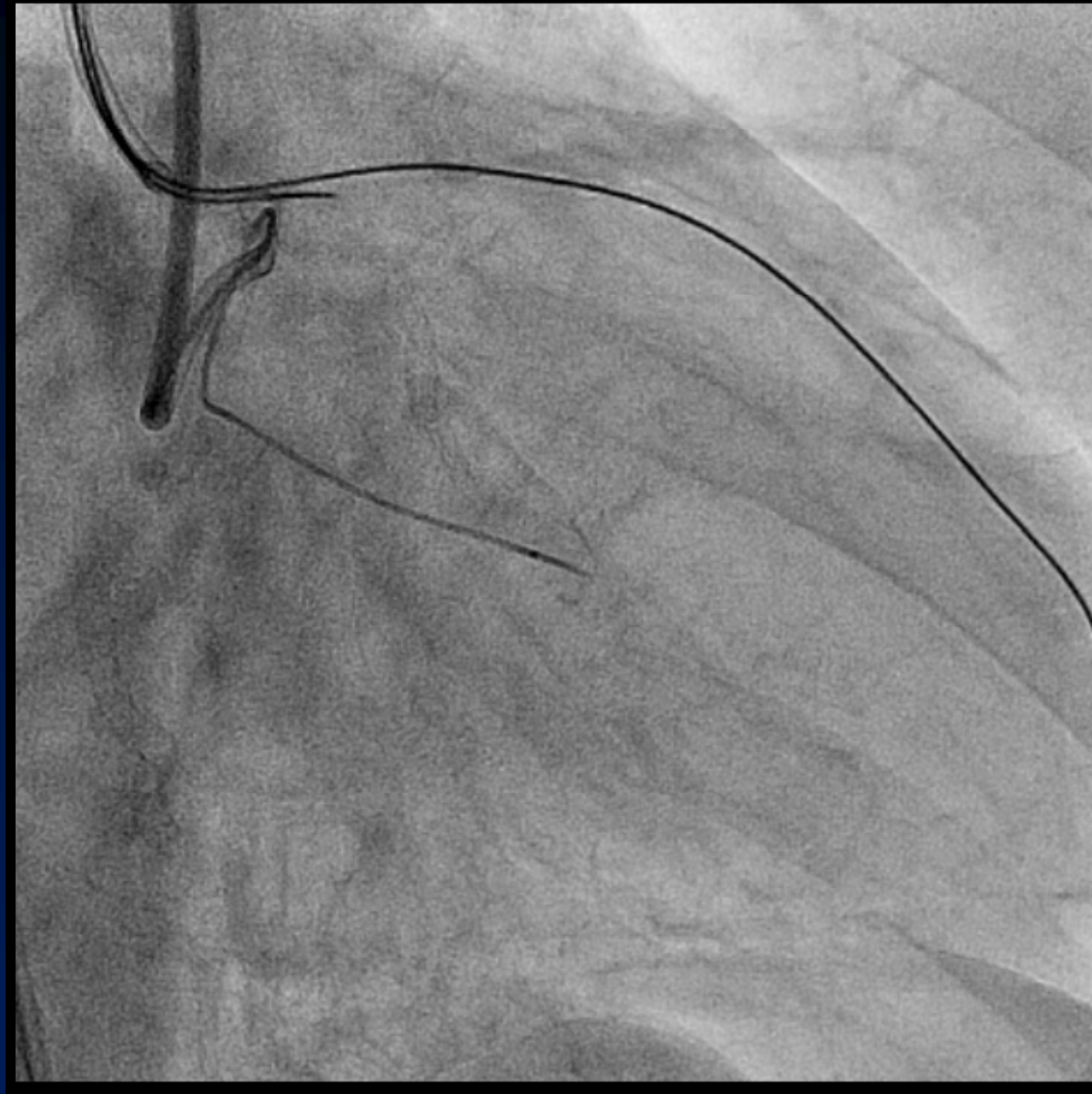
**Failed antegrade approach**



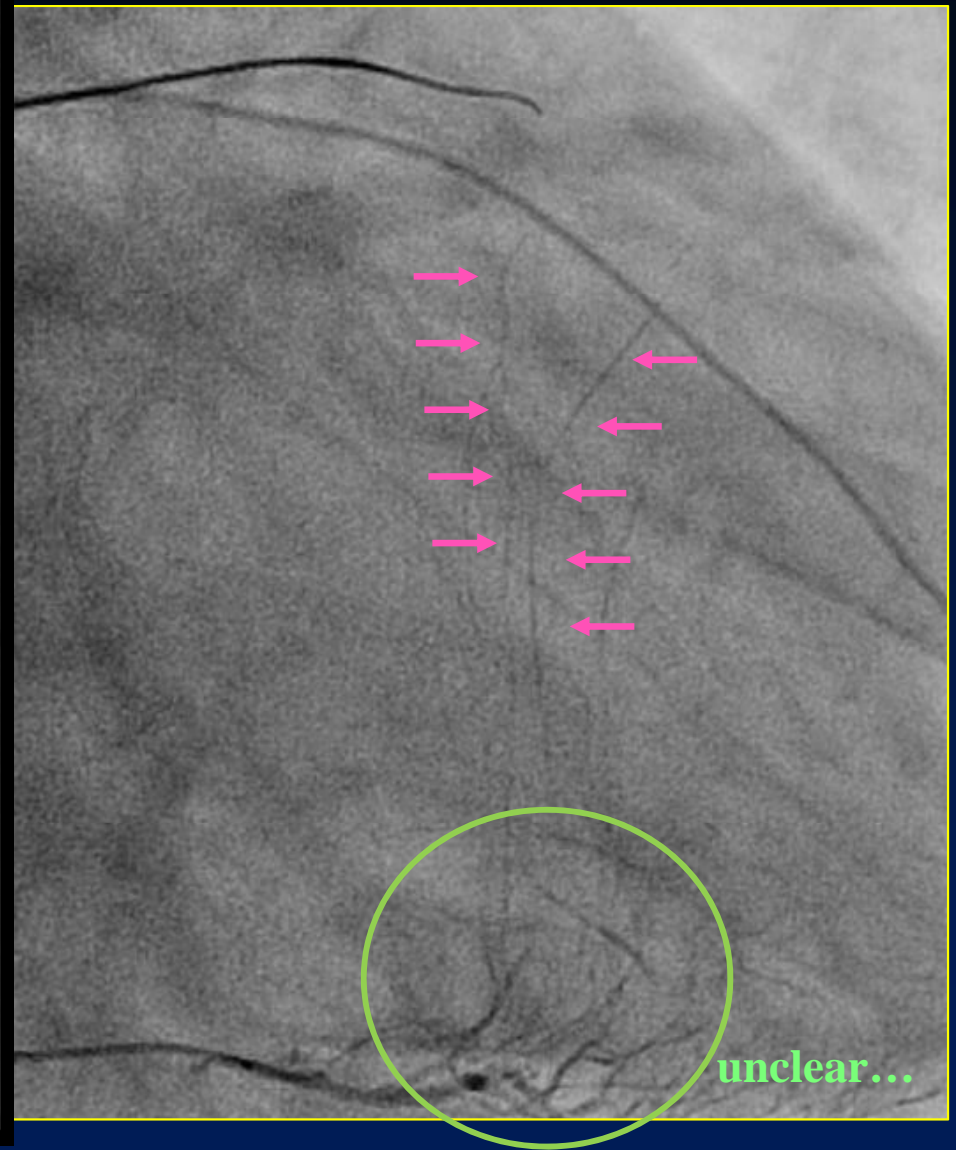
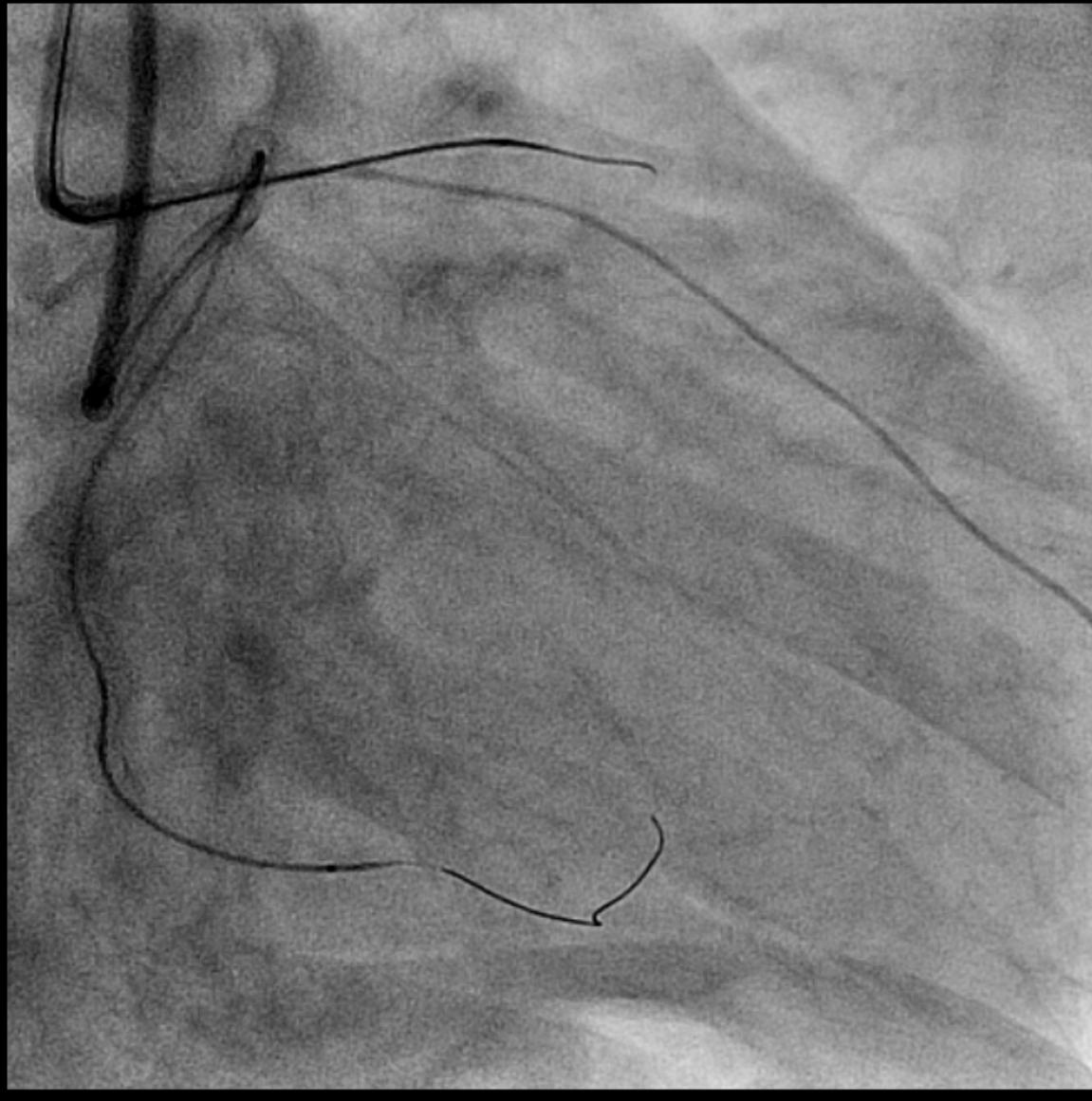
**Dx epicardial channel tracking**



**Channel injury**



**RV epicardial channel tracking**



## Septal channel tracking

**Mid LAD CTO (2<sup>nd</sup> attempt)**



**Primary retrograde approach**



## Septal channel tracking

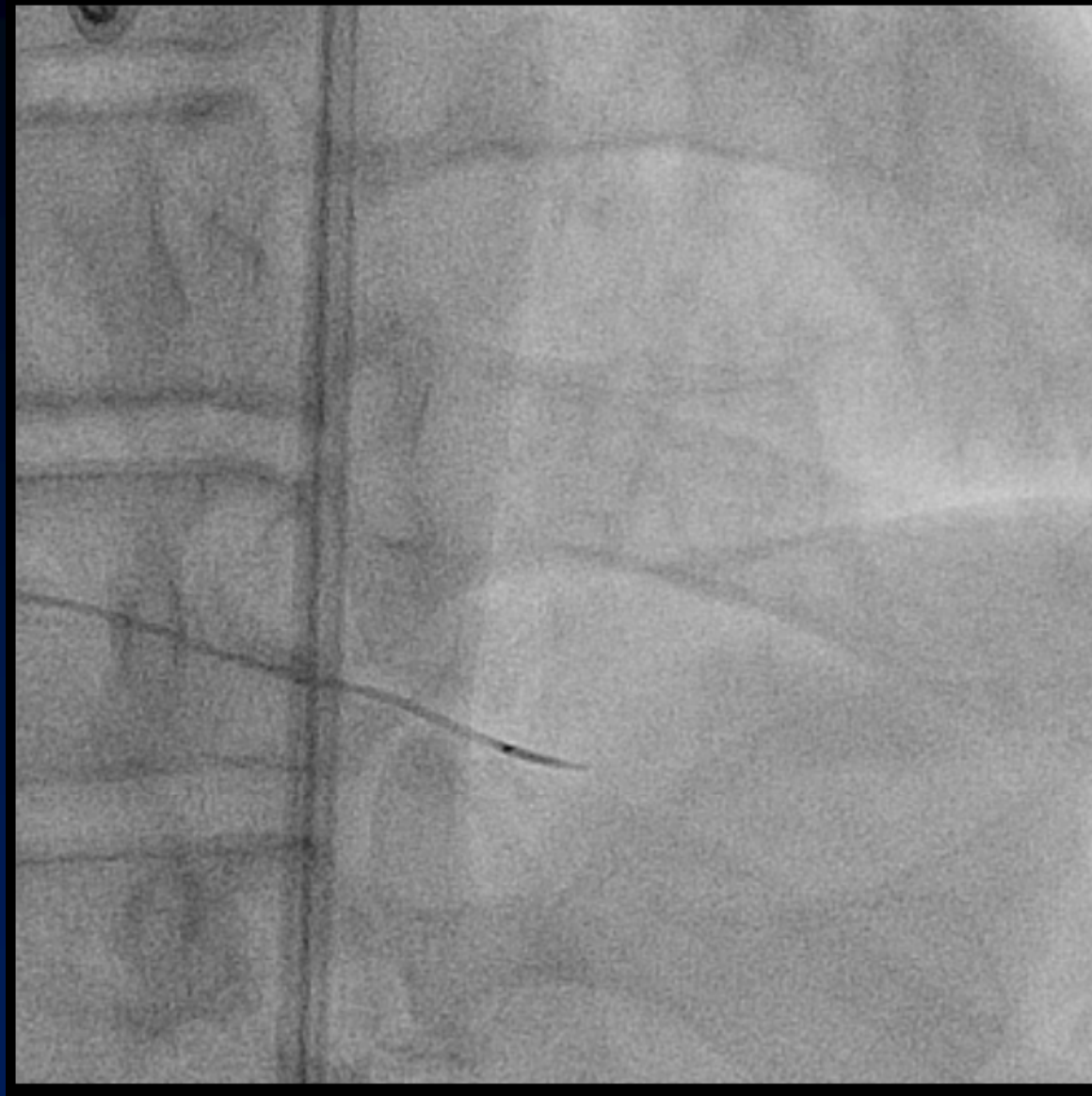


**Attempt at isolation of septal channel@RAO caudal**





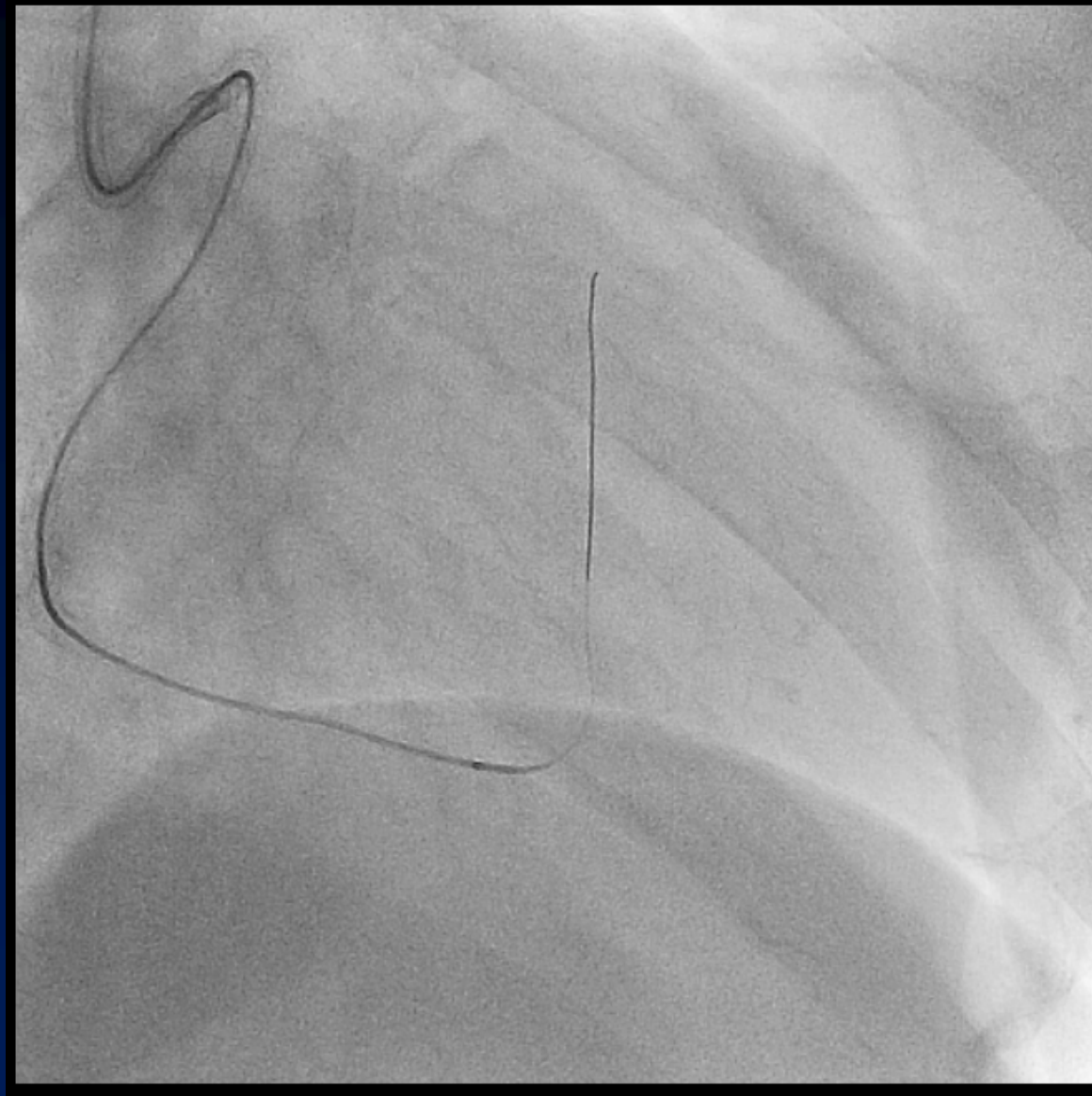
**Attempt at isolation of septal channel@RAO caudal**



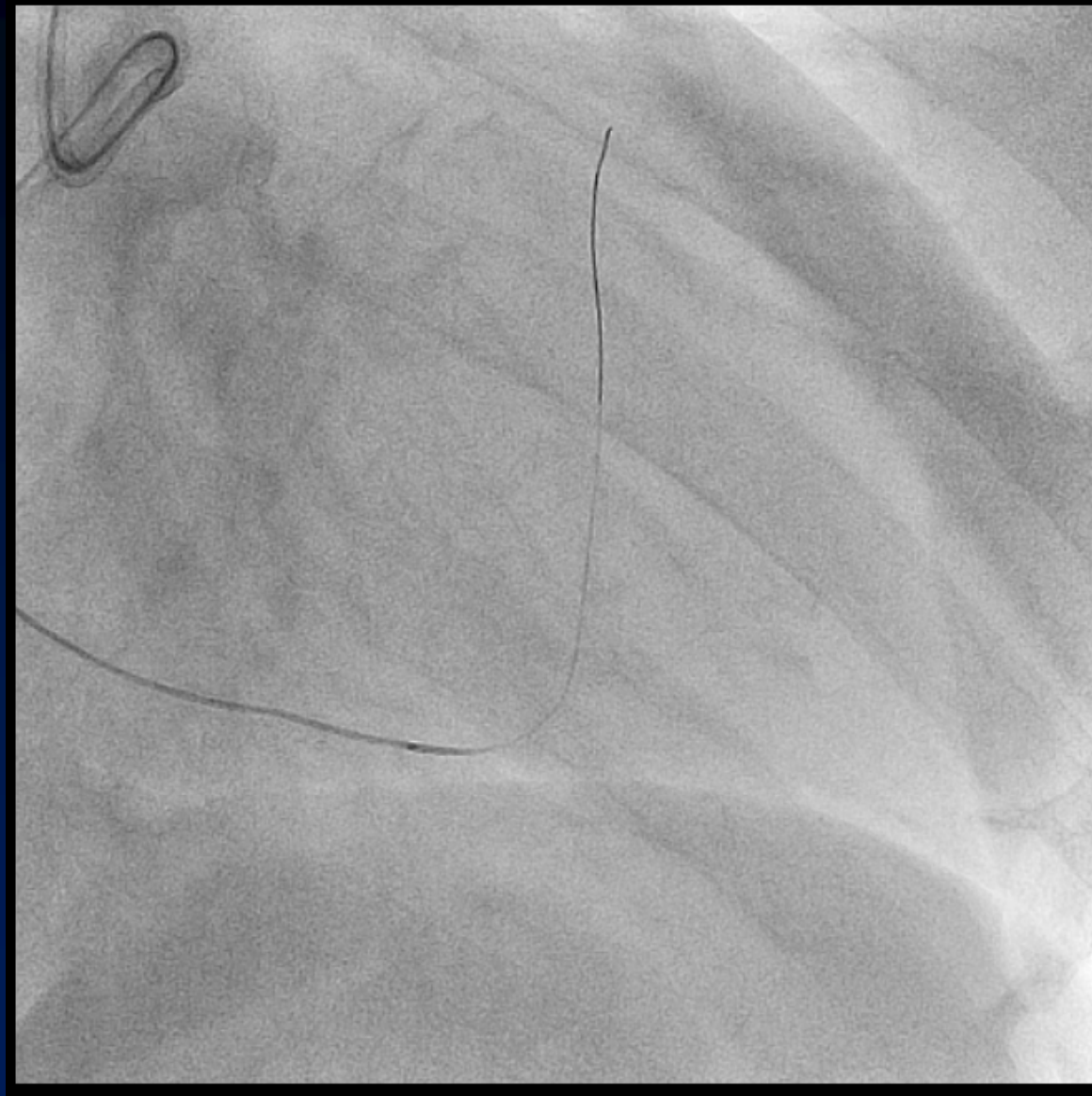
**Attempt at isolation of septal channel@AP caudal**



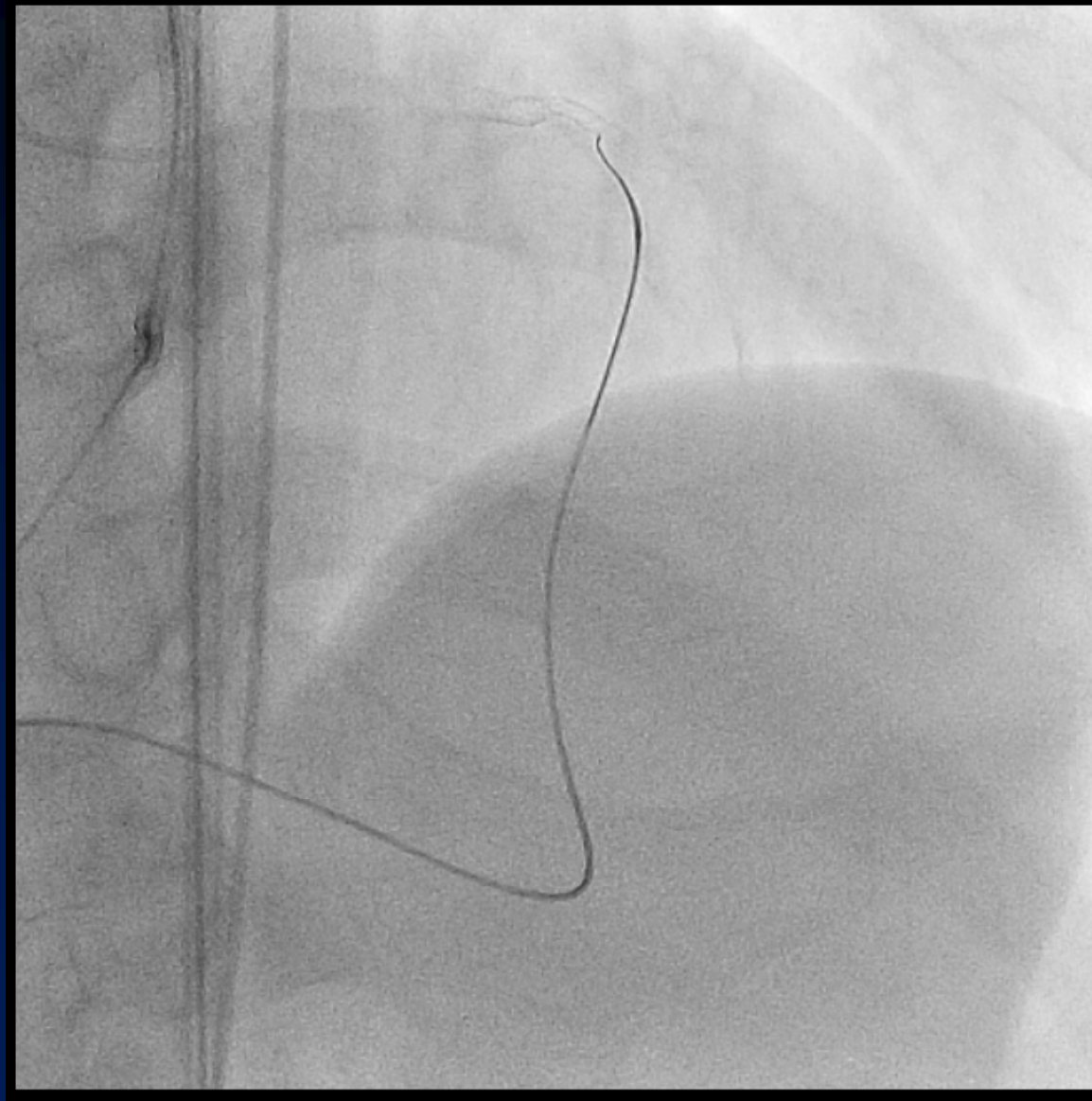
**Successful isolation of septal channel**



**SION wiring**



**SION wiring**



**SION wiring through the occlusion**



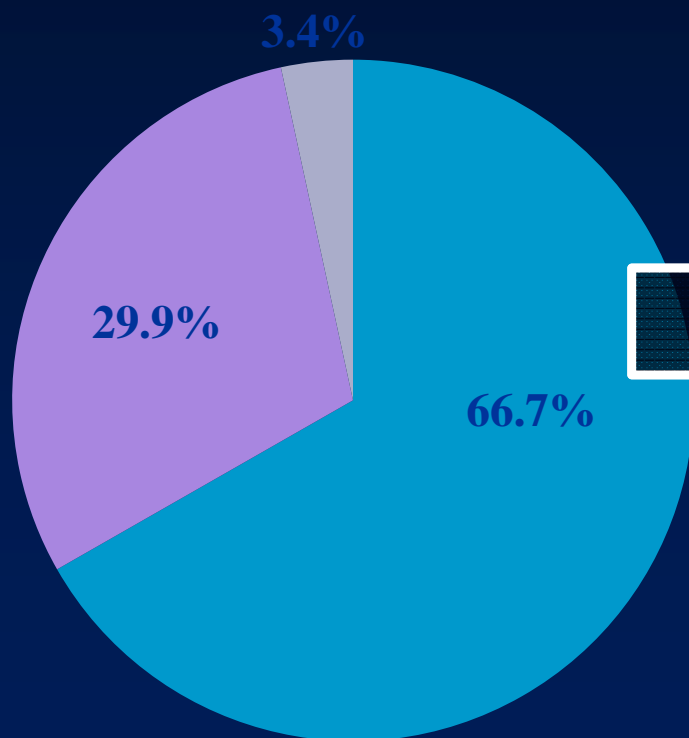
**Final angiogram**

# Collateral Crossing

## Attempted Collateral Channel and Corsair usage

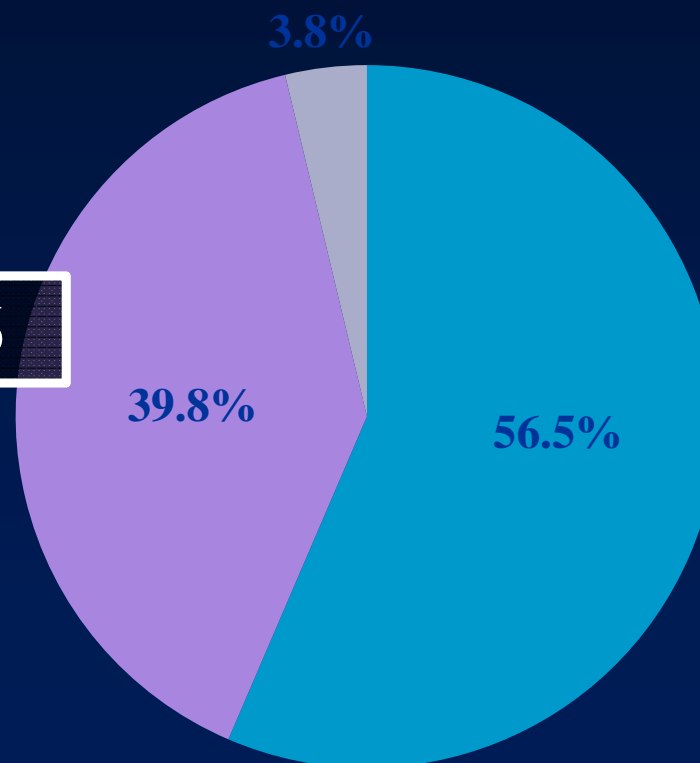
2009

Corsair usage  
36.0%



2010

Corsair usage  
95.3%



$P < 0.0001$

$P = 0.006$

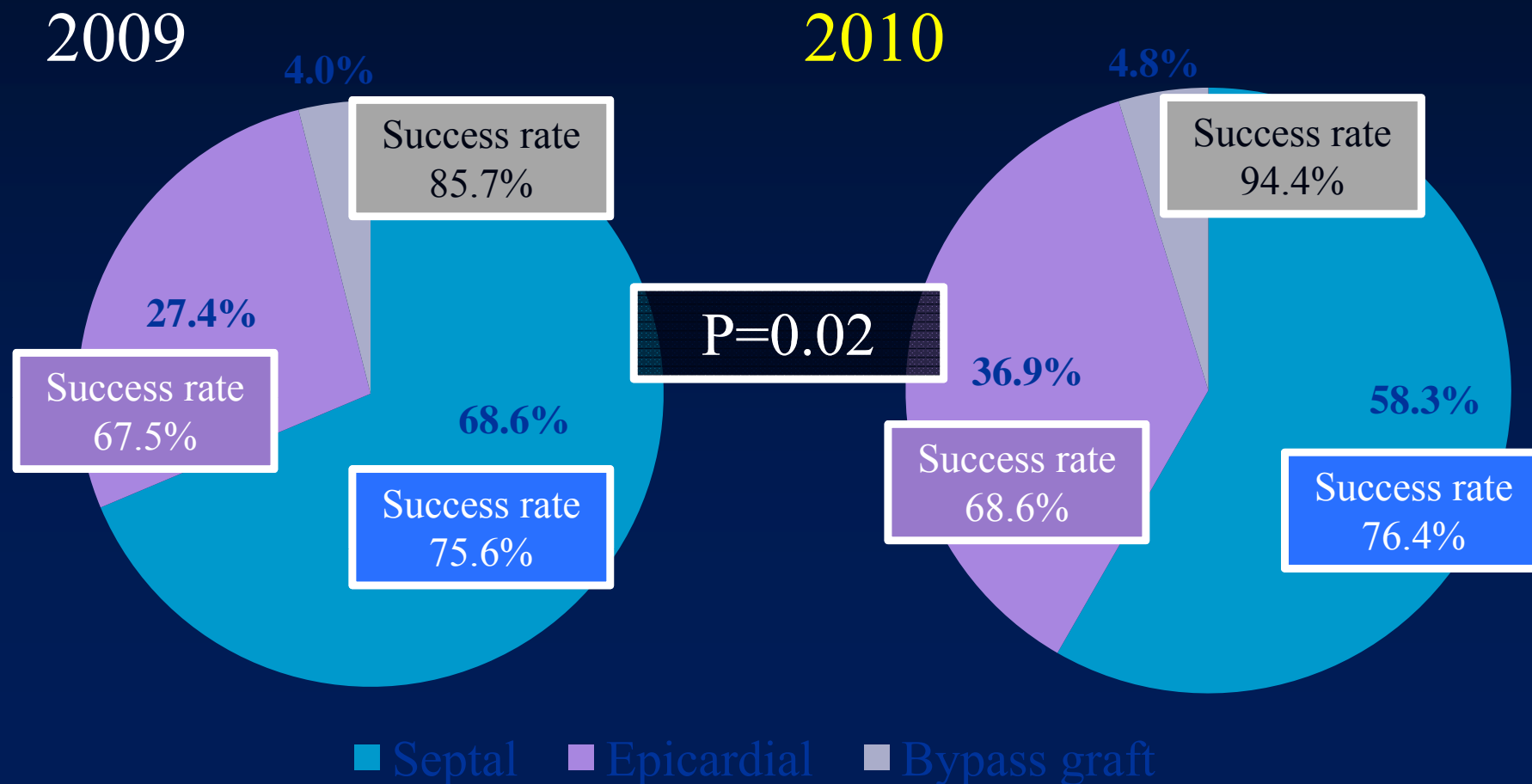
■ Septal ■ Epicardial ■ Bypass graft



# Collateral Crossing

## Successfully Crossed Collateral Channel

**More success via epicardial channel in 2010**

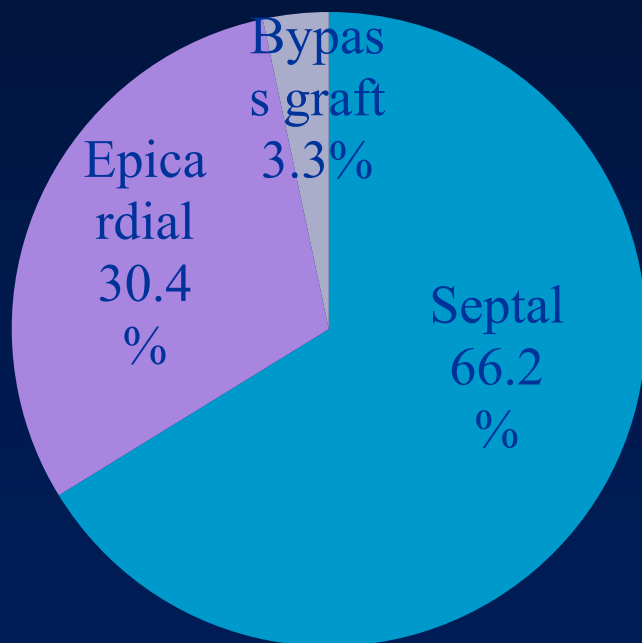


2011 data

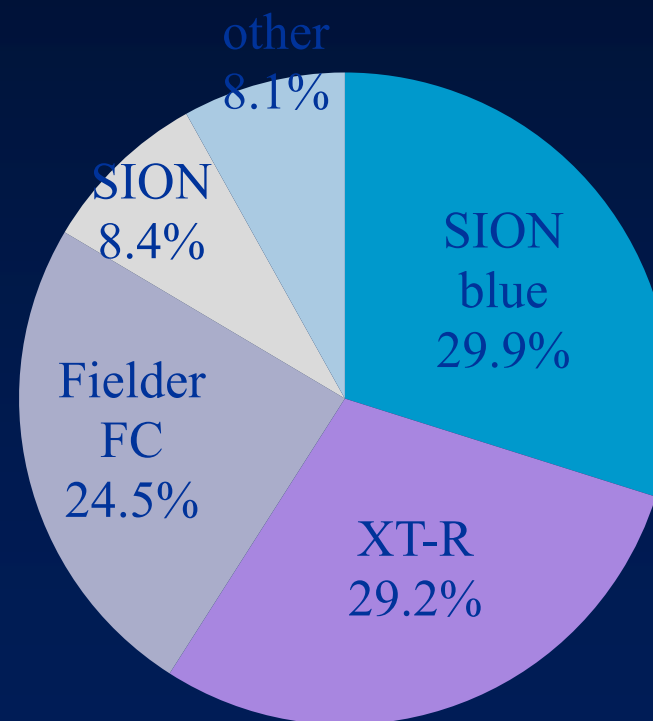
# Collateral Crossing

Successfully crossed in 300 (82.2%) cases

## Collateral Channel



## Guide Wires

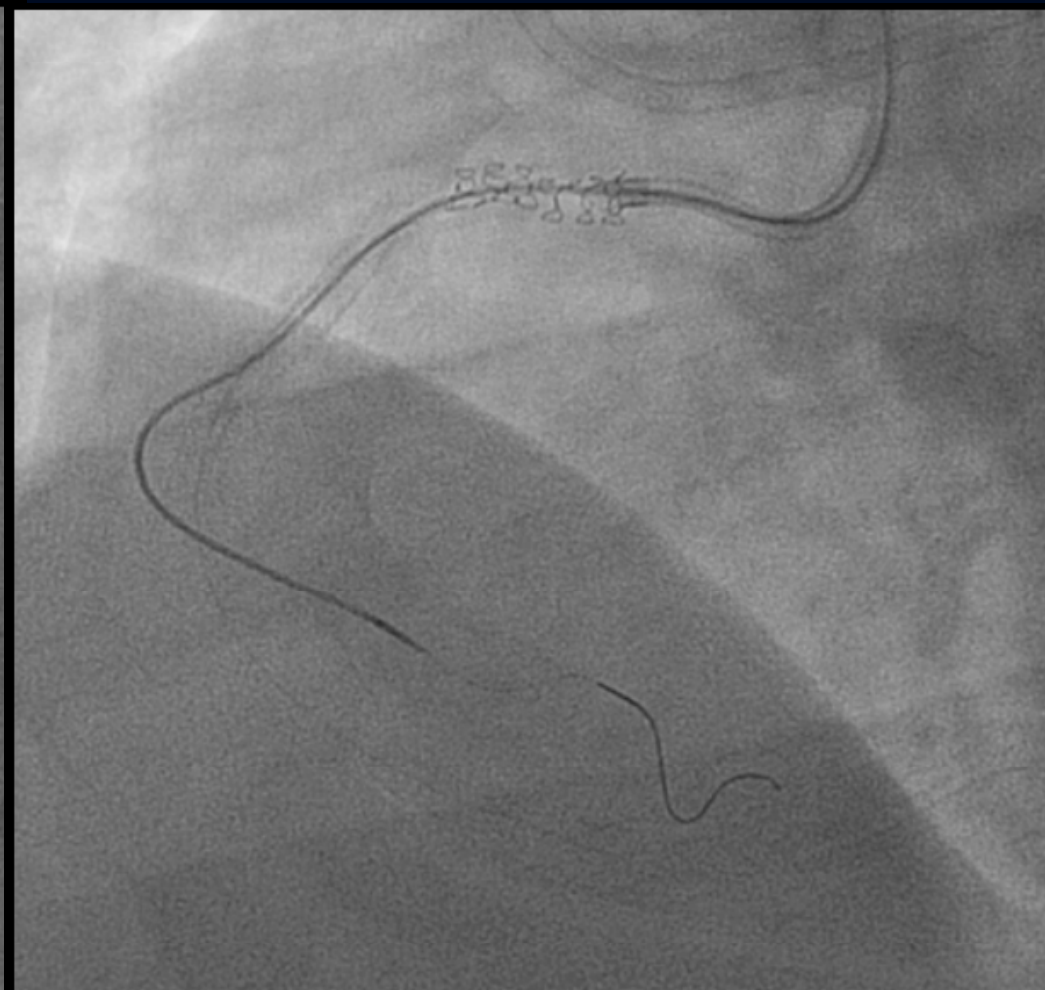
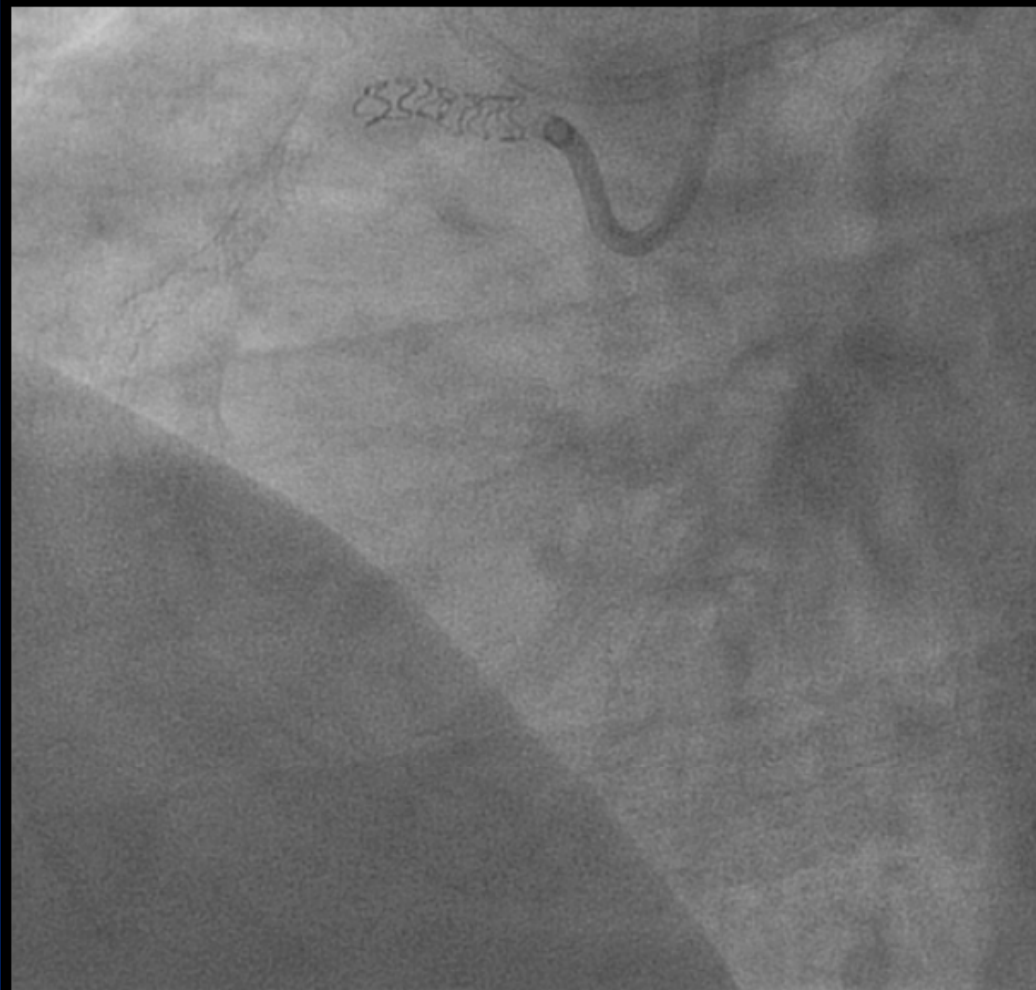


Number of GW : 1.9



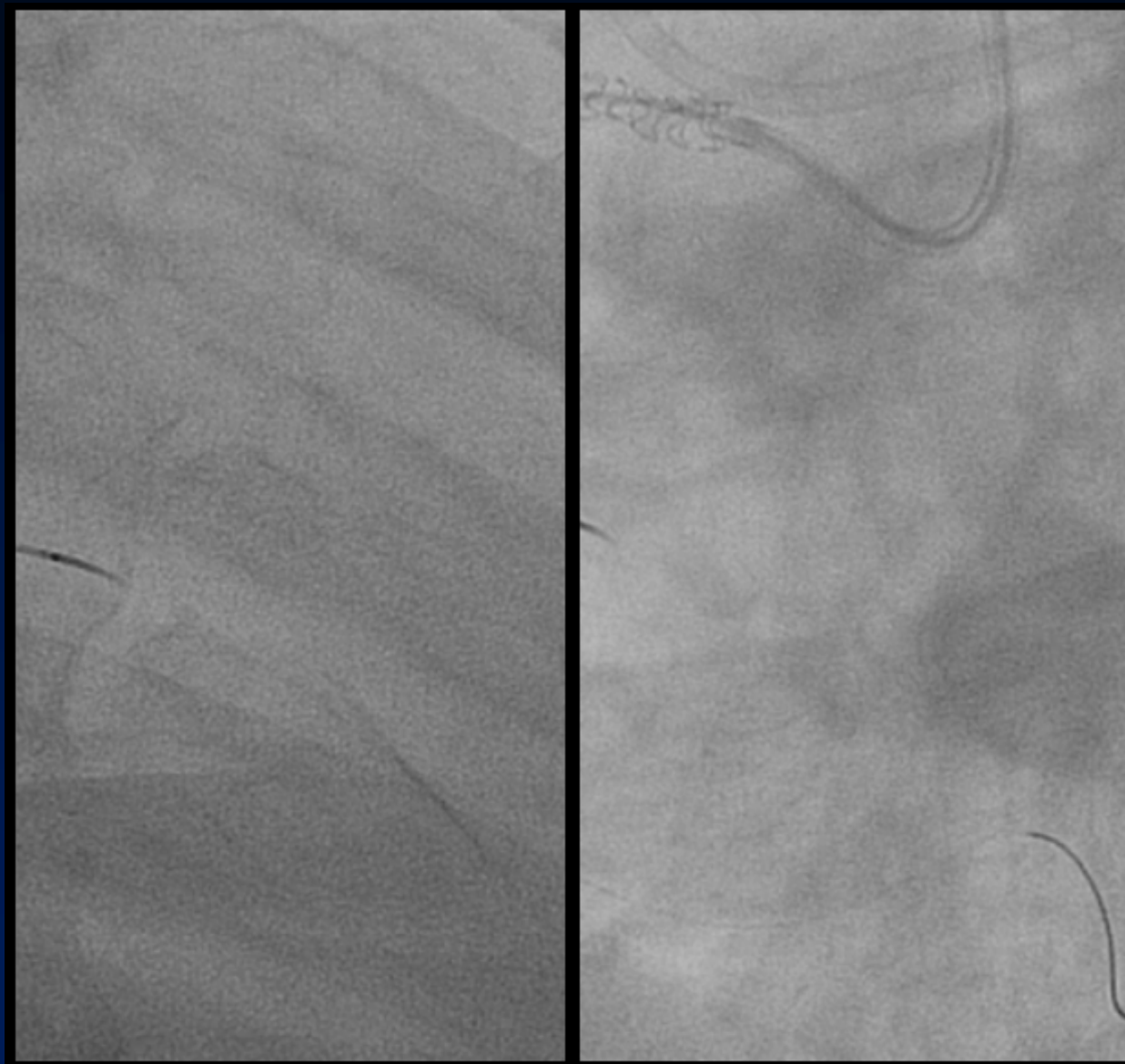
Retrograde  
Summit

# LAD-CTO, RV Channel



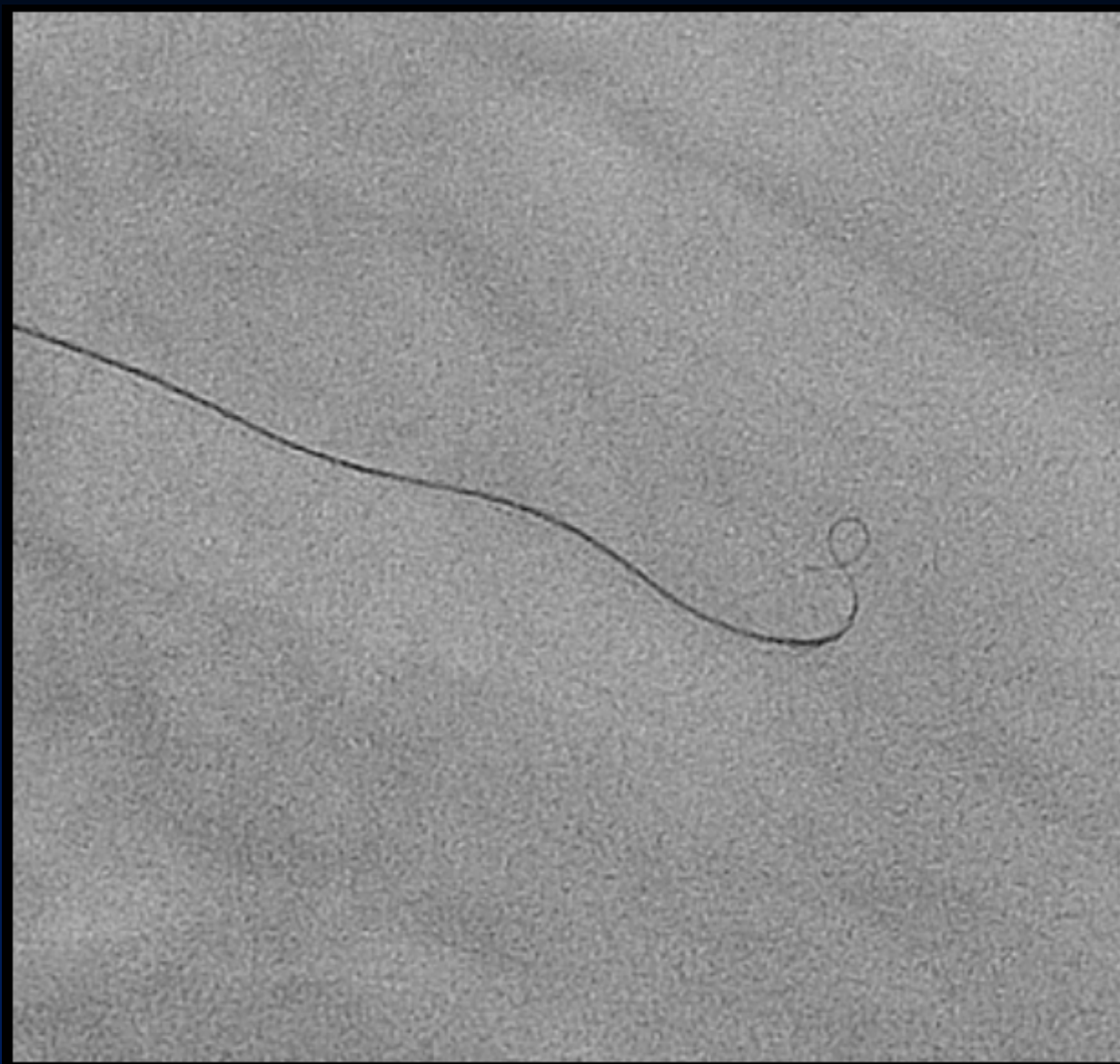


Retrograde  
Summit





Retrograde  
Summit

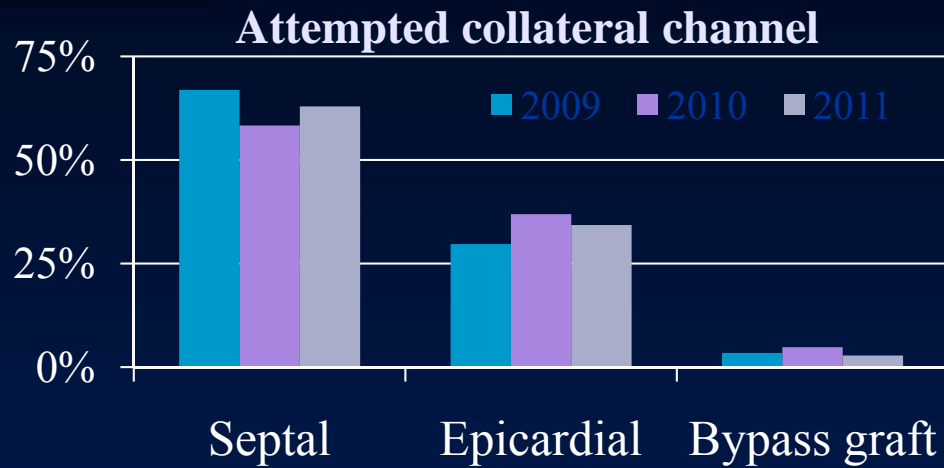
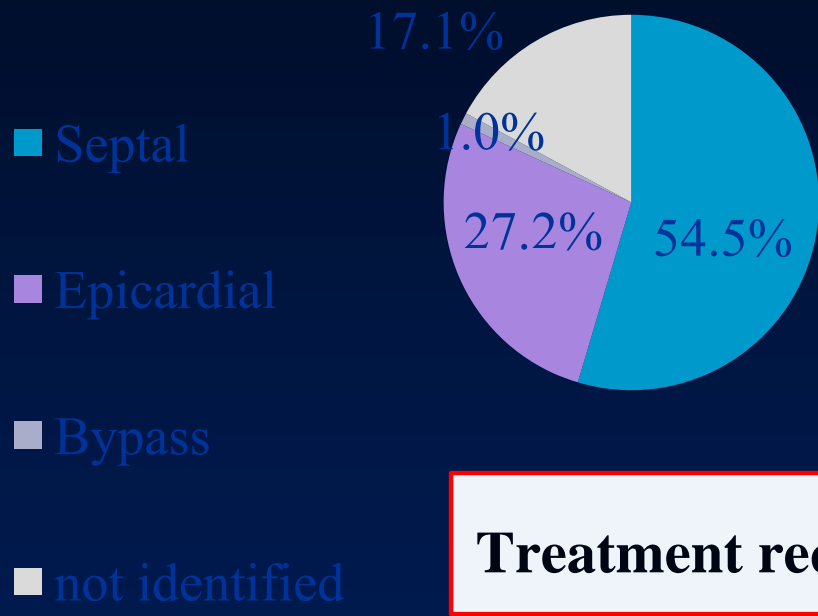


**XT-R**

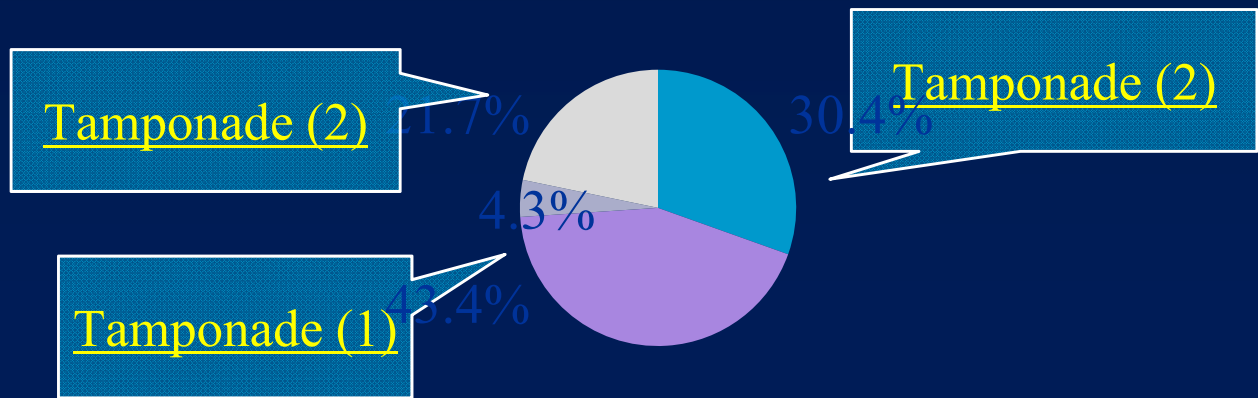
# Retrograde approach relevant

**8.4% (99/1166)**

## Channel injury



**Treatment required 2.0% (23/1166)**



**Channel injury relevant tamponade: 0.4% (5/1166)**

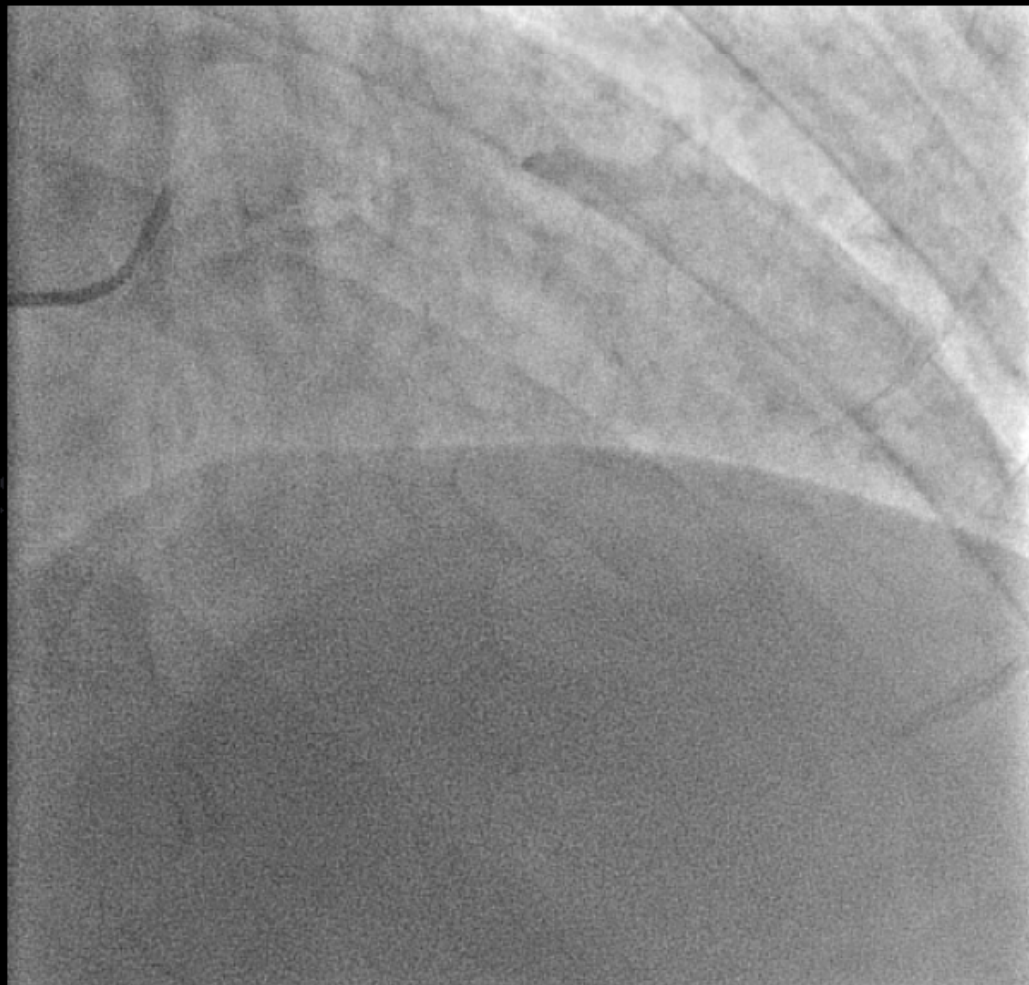
# Best Navigation of Epicardial Channel Tracking

- Avoidance of channel injury
- Repeated tip injection possibly minimizes a channel perforation





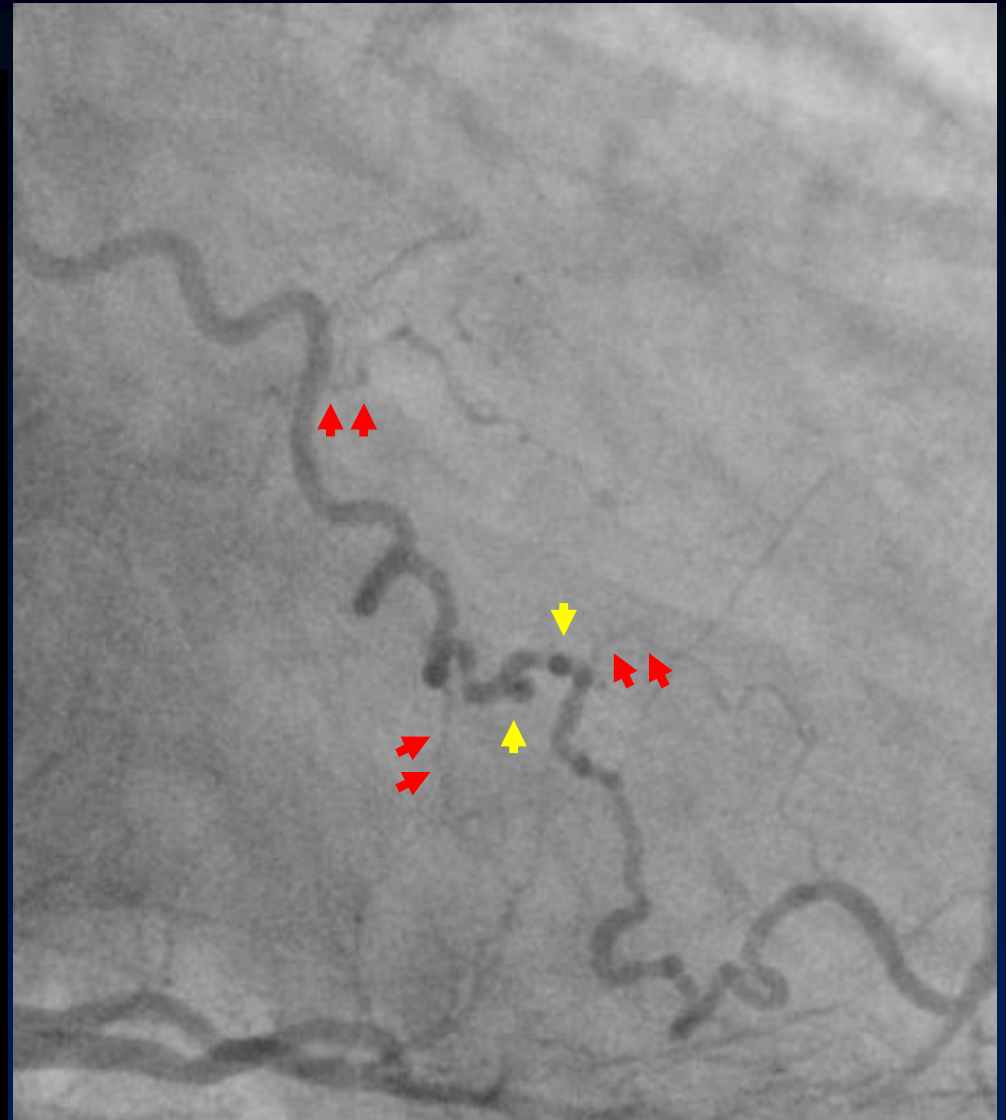
**Reattempt for LAD-CTO**







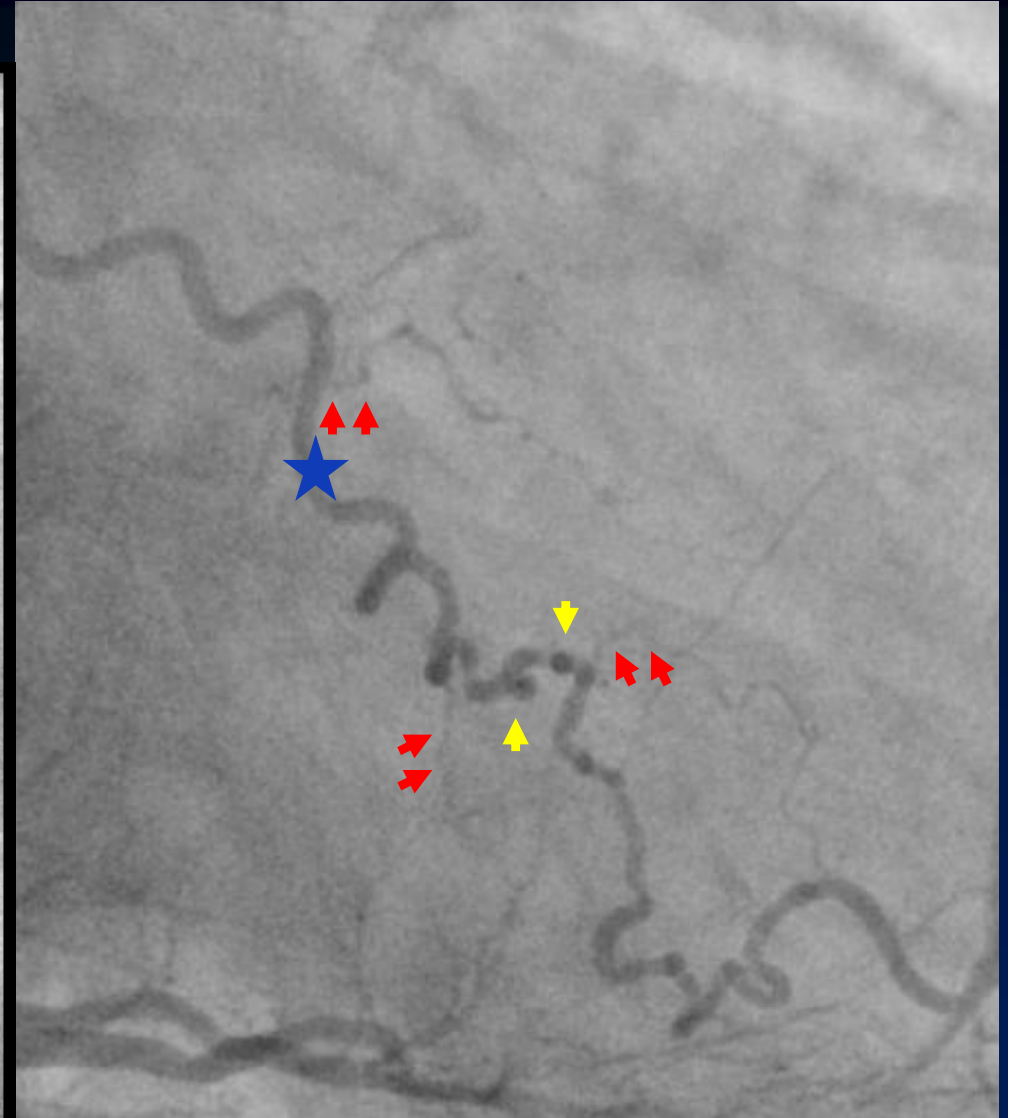
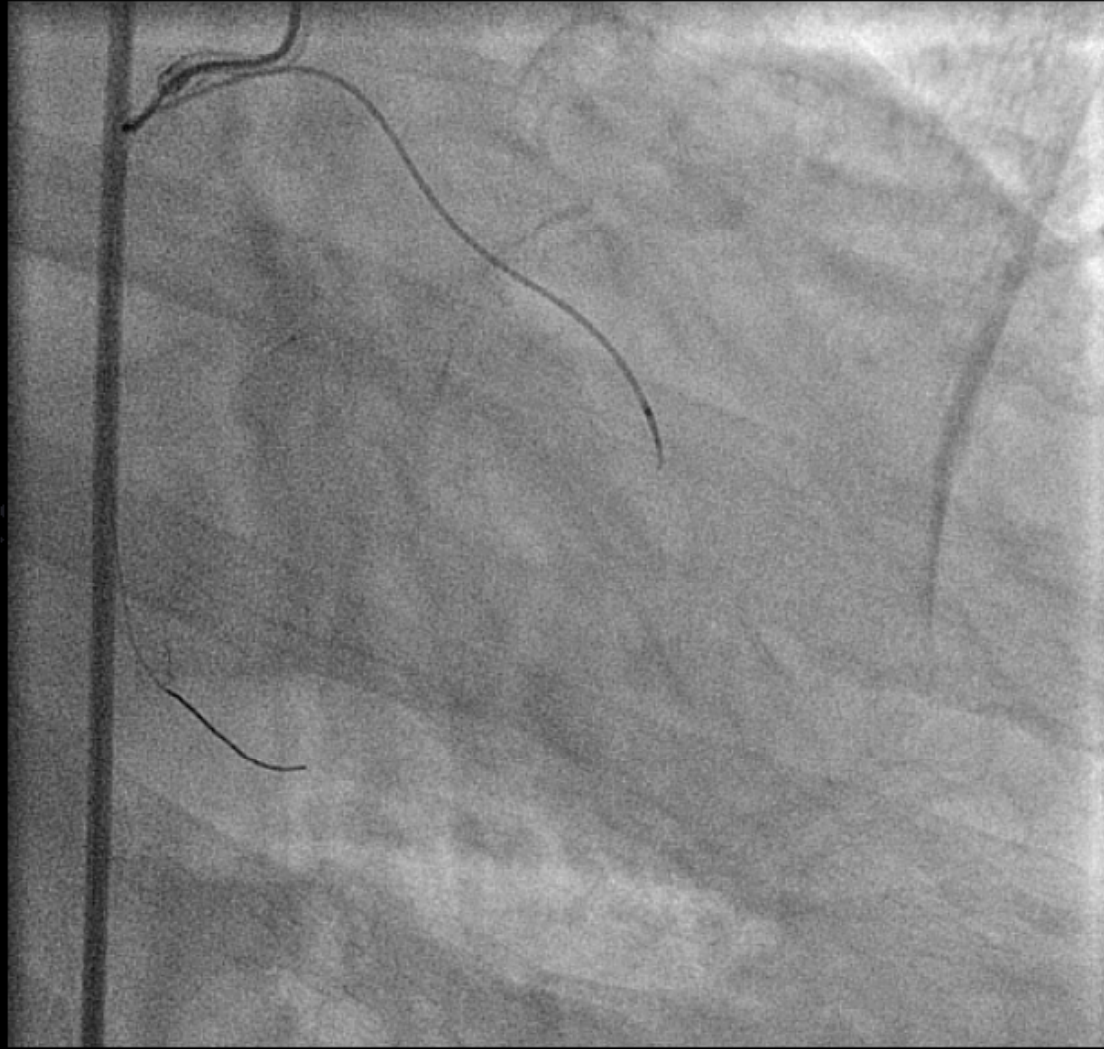
**Tip injection in PD branch**



**RV channel**

**↑ critical bends**

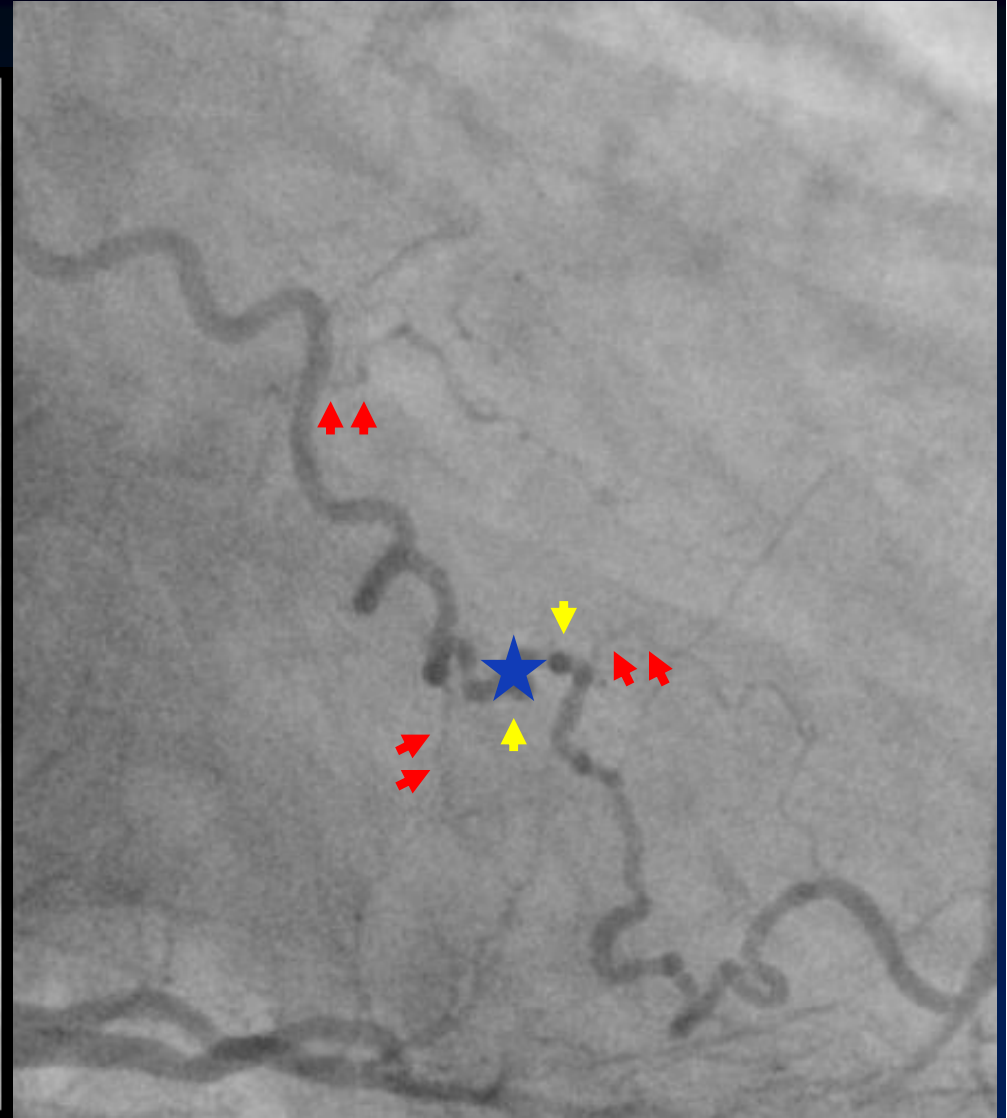
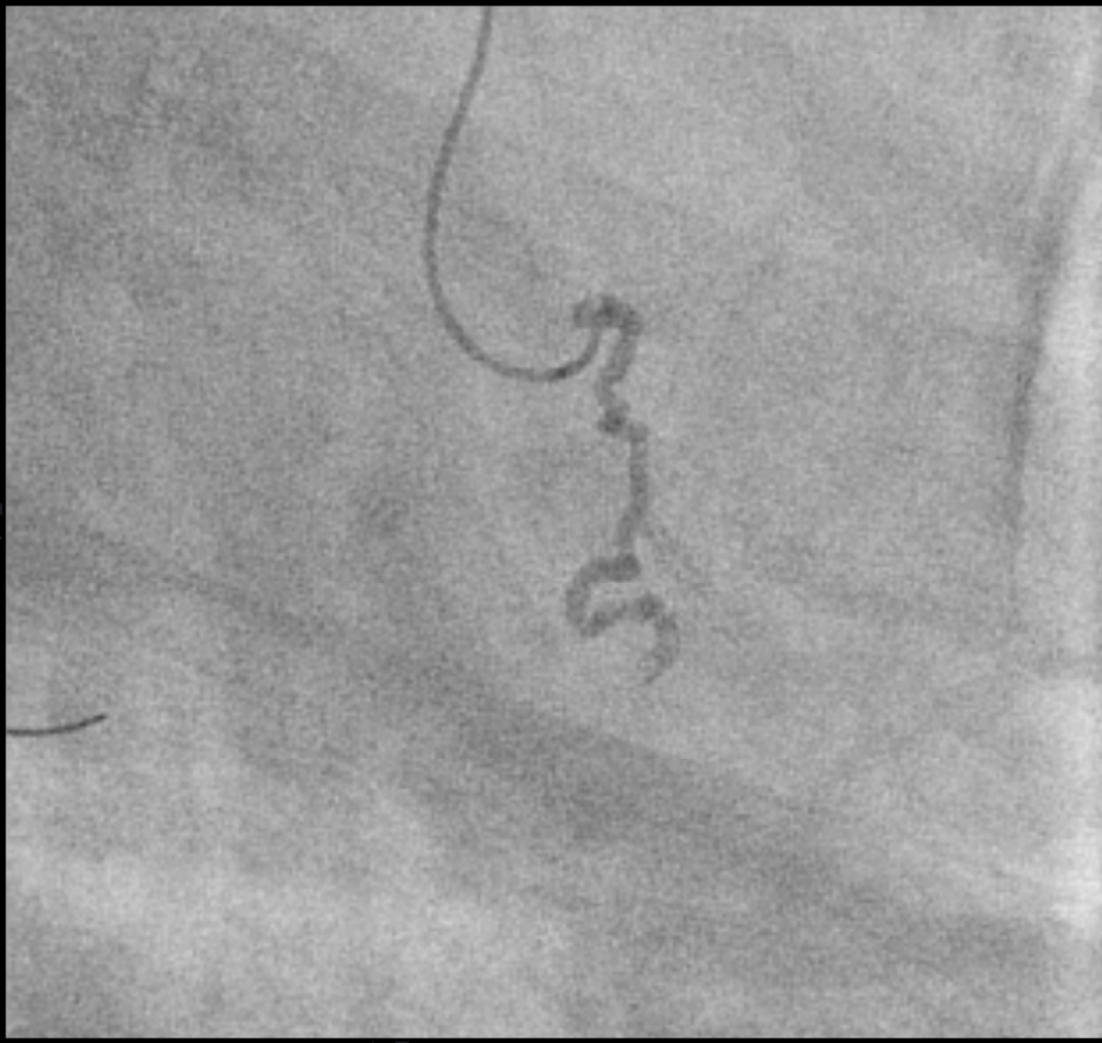
**↑ risk of perforation**



**Tip injection**

 **critical bends**

 **risk of perforation**



**Repeated tip injection**

**↑ critical bends**

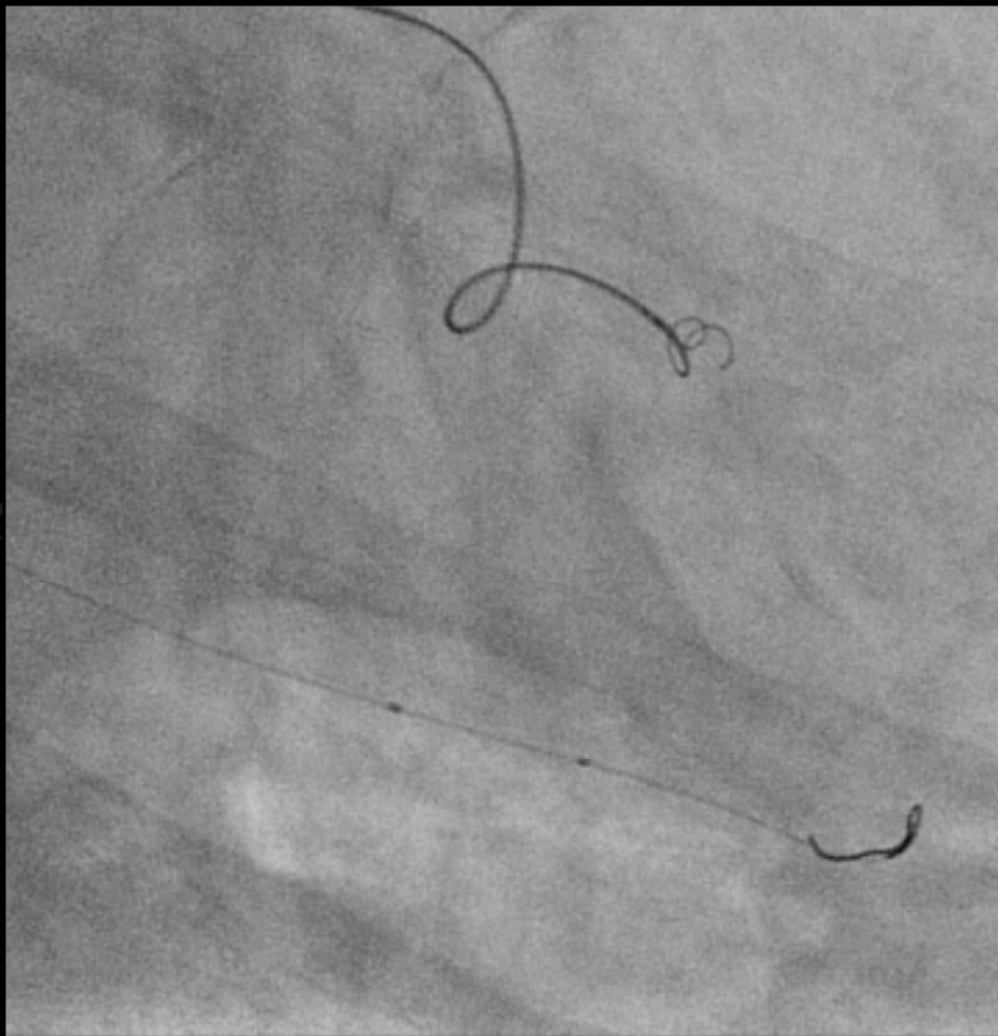
**↑ risk of perforation**



**XTR**

**↑ critical bends**

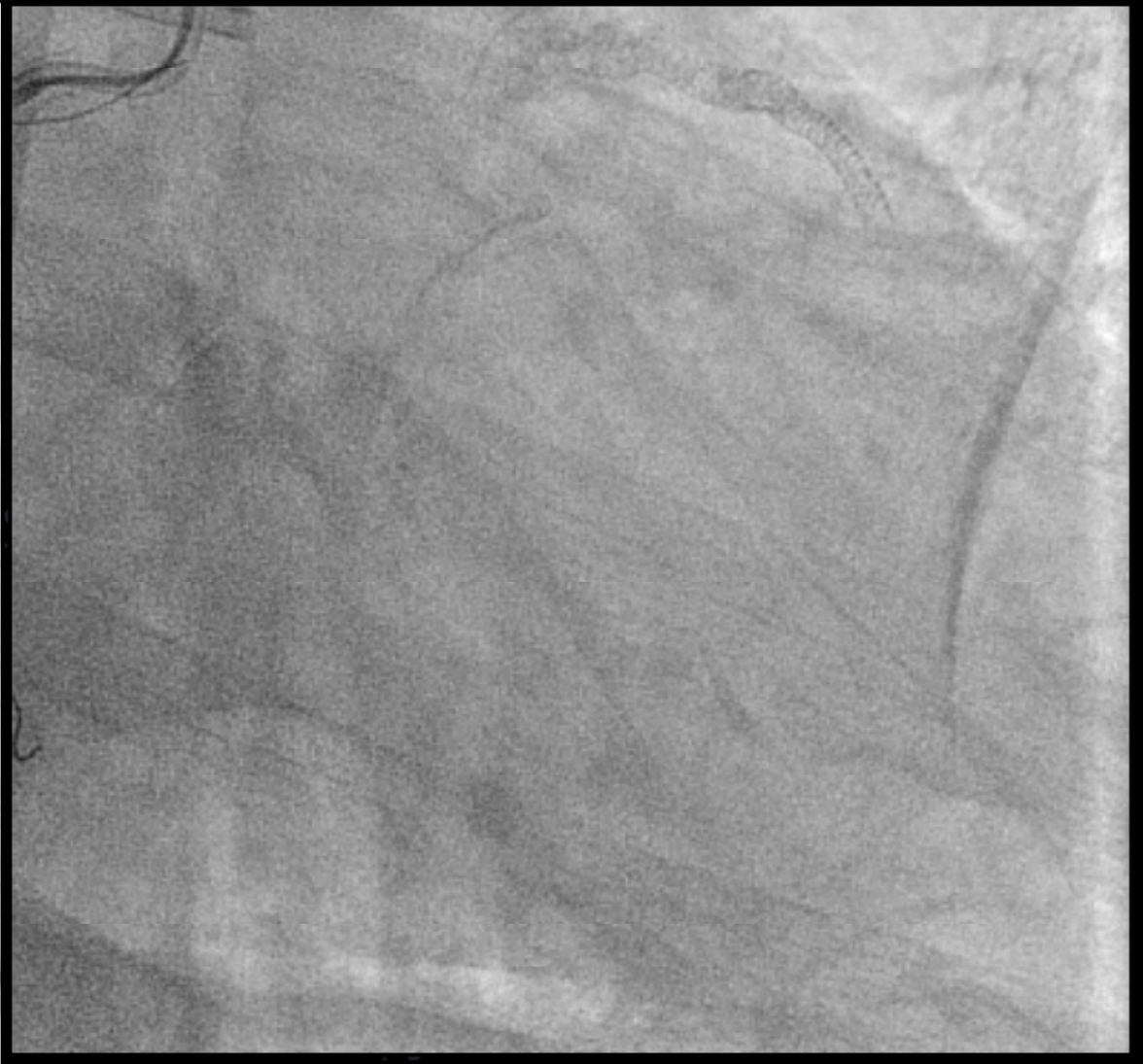
**↑ risk of perforation**



**XTR** under anchoring

**↑** critical bends

**↑** risk of perforation

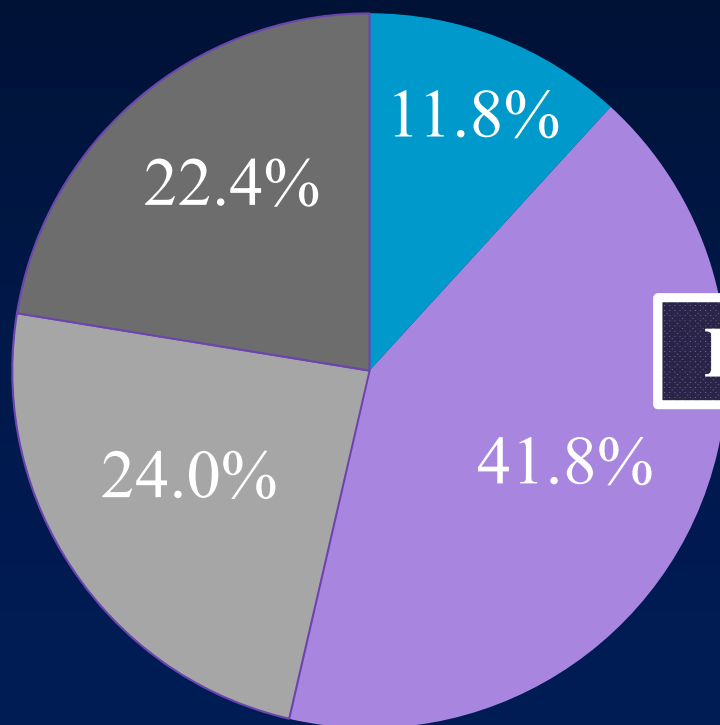


**No injury in RV channel**

# CTO Crossing Successful Strategy

2009

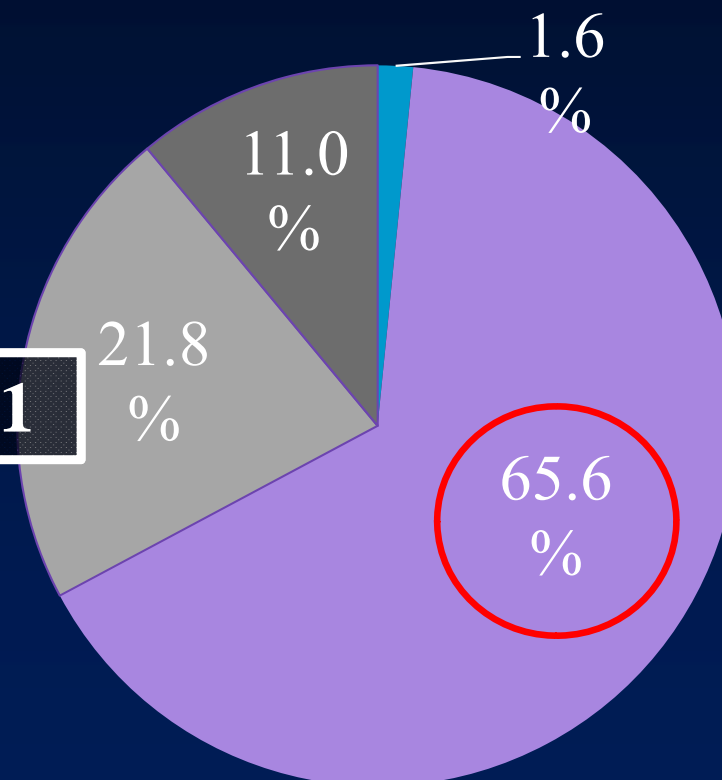
Corsair usage  
36.0%



2010

Corsair usage  
95.3%

P<0.0001



P<0.0001

■ CART   ■ Reverse CART   ■ Retrograde wire cross   ■ Kissing wire cross

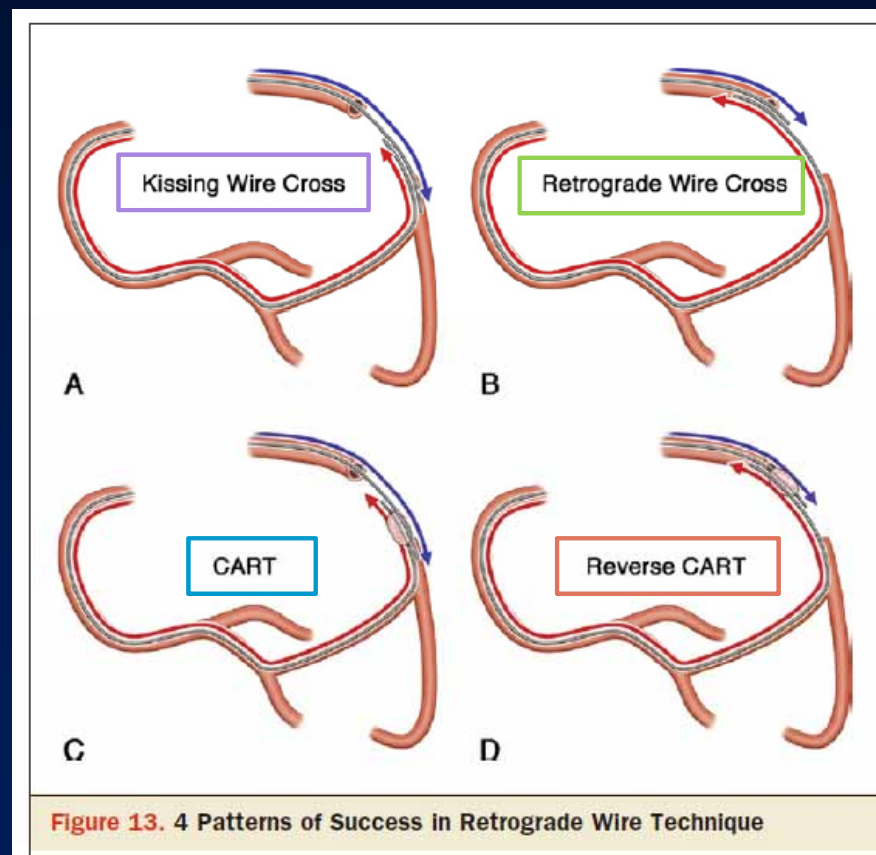
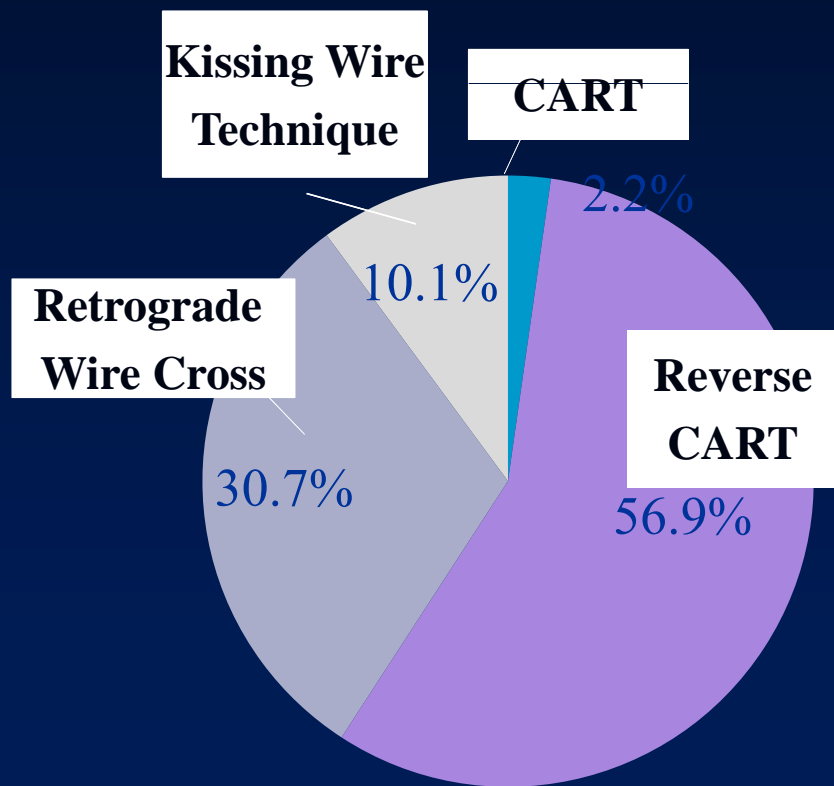


2011 data

# CTO Crossing

## Successful strategy

### Patterns of Success in Retrograde Approach



JACC Cardiovasc Interv 2011

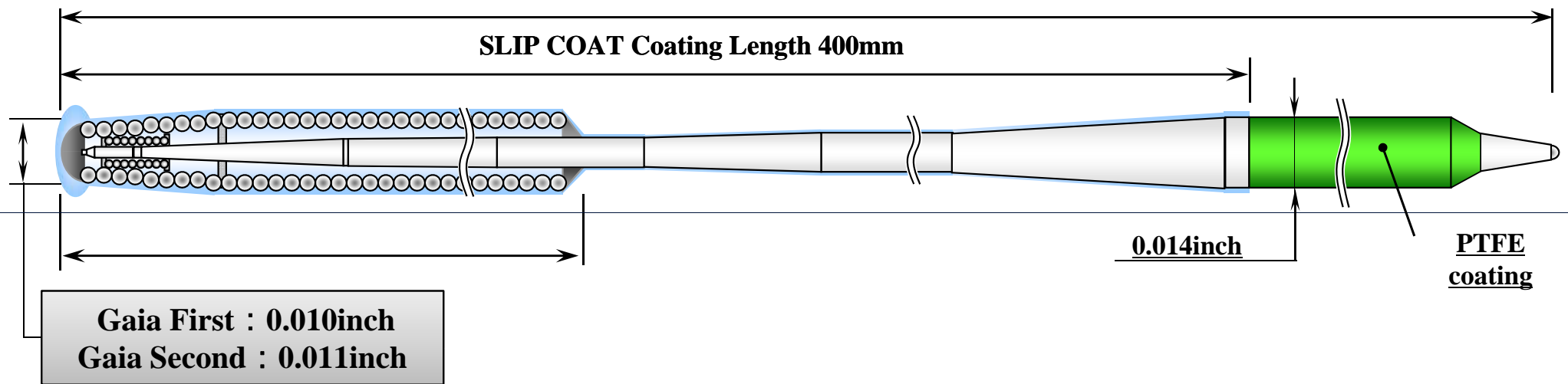
## **Best Navigation of CTO Crossing**

- Retrograde direct wire crossing or reverse CART using Corsair
- **New CTO wire technology** may change and facilitate CTO crossing strategies.



# GAIA Basic structure

ASAHI intecc; Japan



Gaia First

Diameter : 0.010 - 0.014"

Tip load : 1.5gf

Gaia Second

Diameter : 0.011 - 0.014"

Tip load : 3.5gf

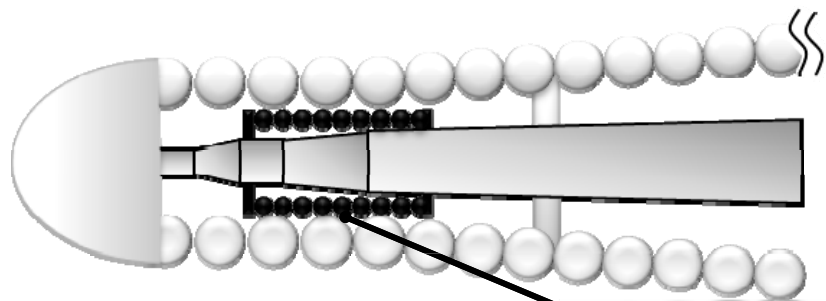
## GAIA Tip structure ~ Composite core

ASAHI intecc; Japan

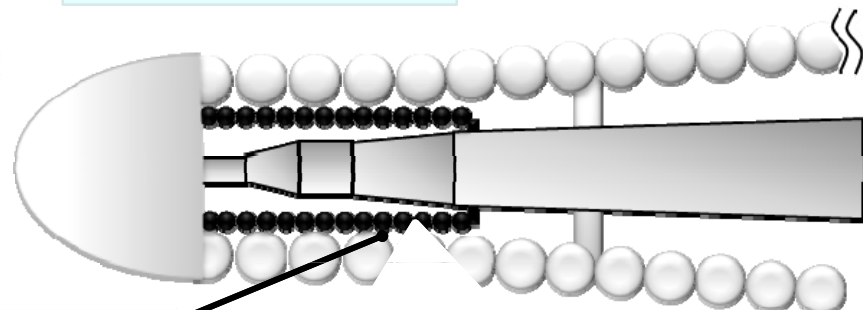
### Composite core

- Double coil structure  
Transfer torque force to the distal with keeping flexible tip
- Round core design to the distal end eliminates the “Whip Motion” phenomenon

### Gaia First



### Gaia Second



Ropecoil

Extend rope coil through tip

- Enhance joint strength
- Improve torque force

## GAIA Tip structure ~ Micro cone tip

ASAHI intecc; Japan

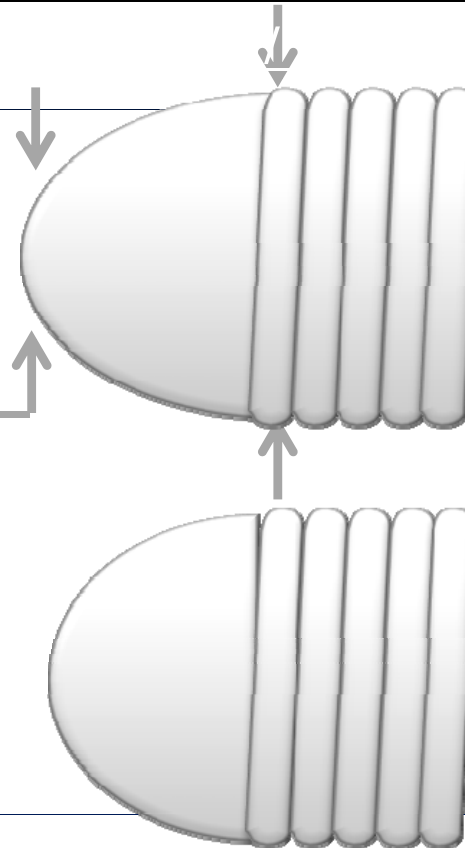
### Gaia micro-cone tip

Lower the ball tip's profile to provide better penetration, allowing the wire to more easily enter hard lesions while keeping a flexible tip.

### Gaia micro-cone tip

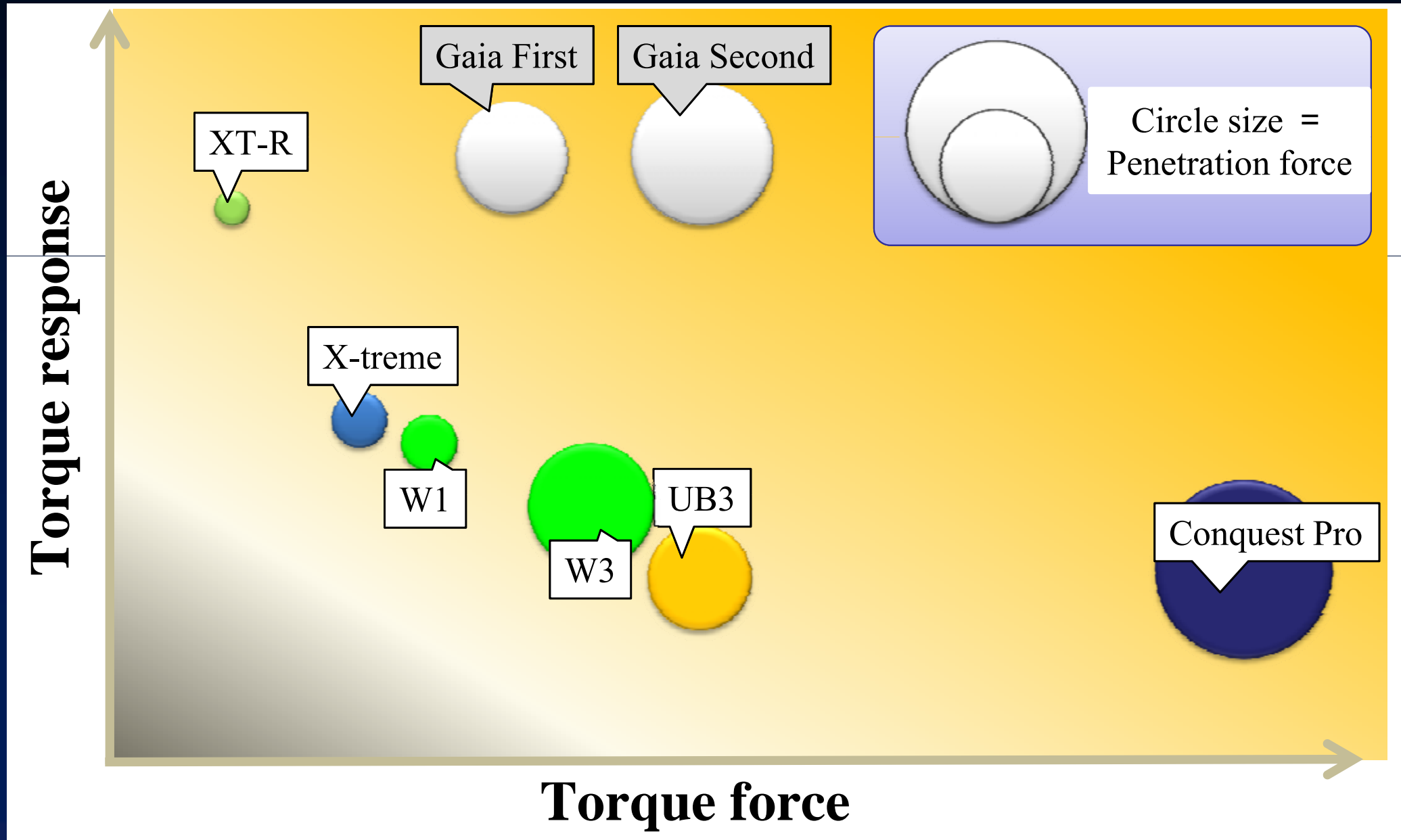
$\Phi 0.16\text{mm}$  (0.006Inch)

### Ball tip of general Guide Wire

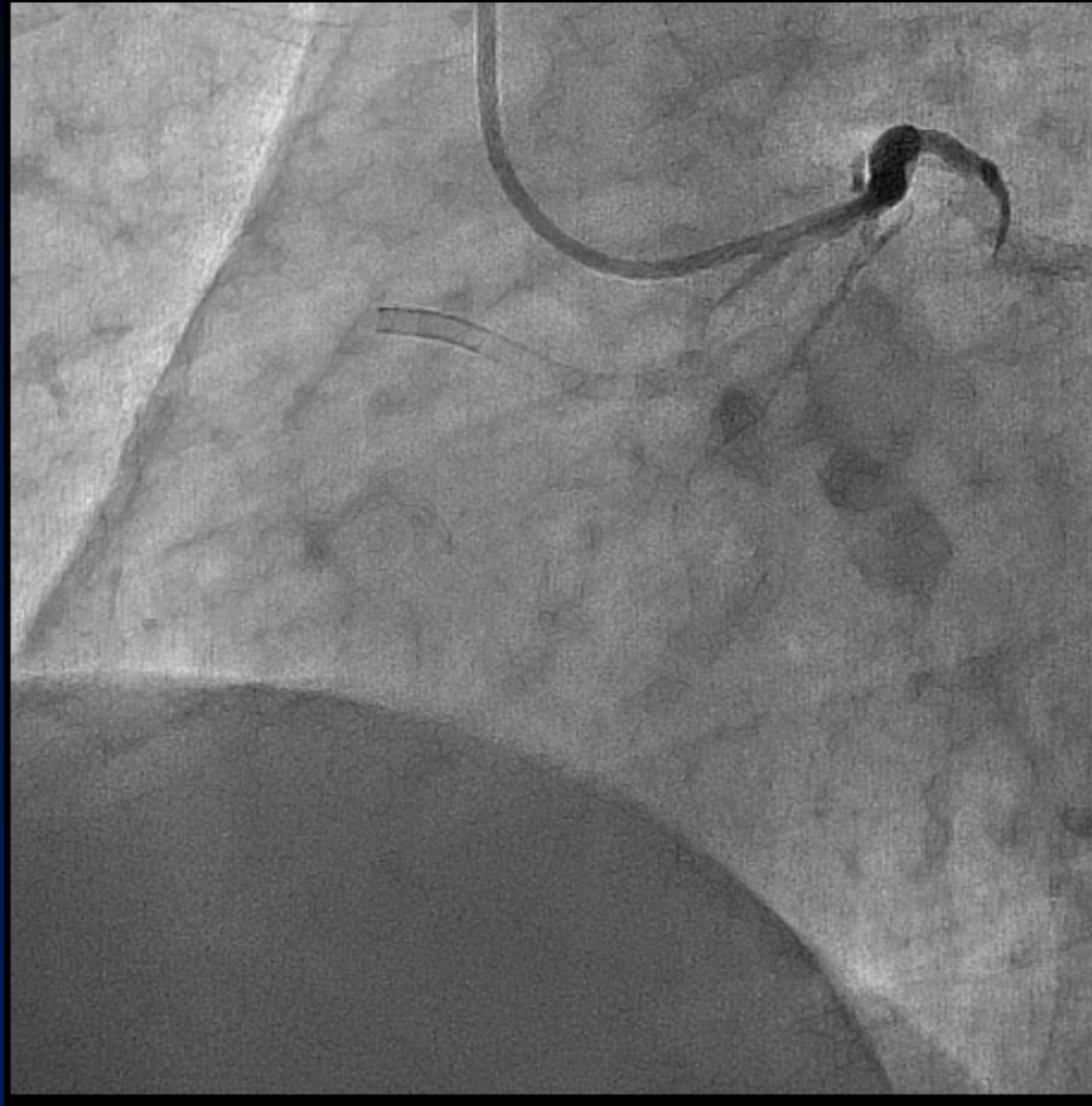


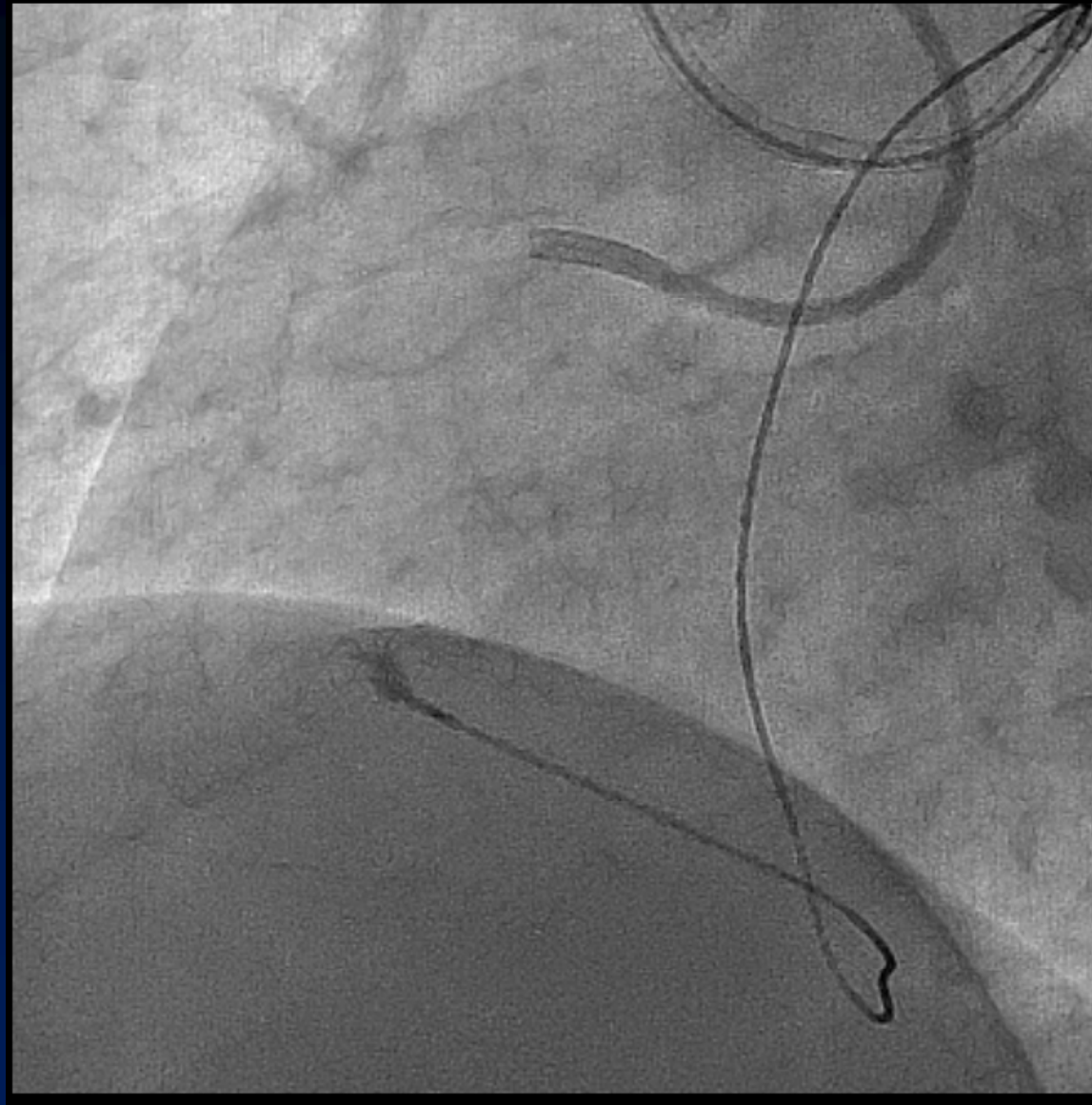
# GAIA Comparison with other products

ASAHI intecc; Japan



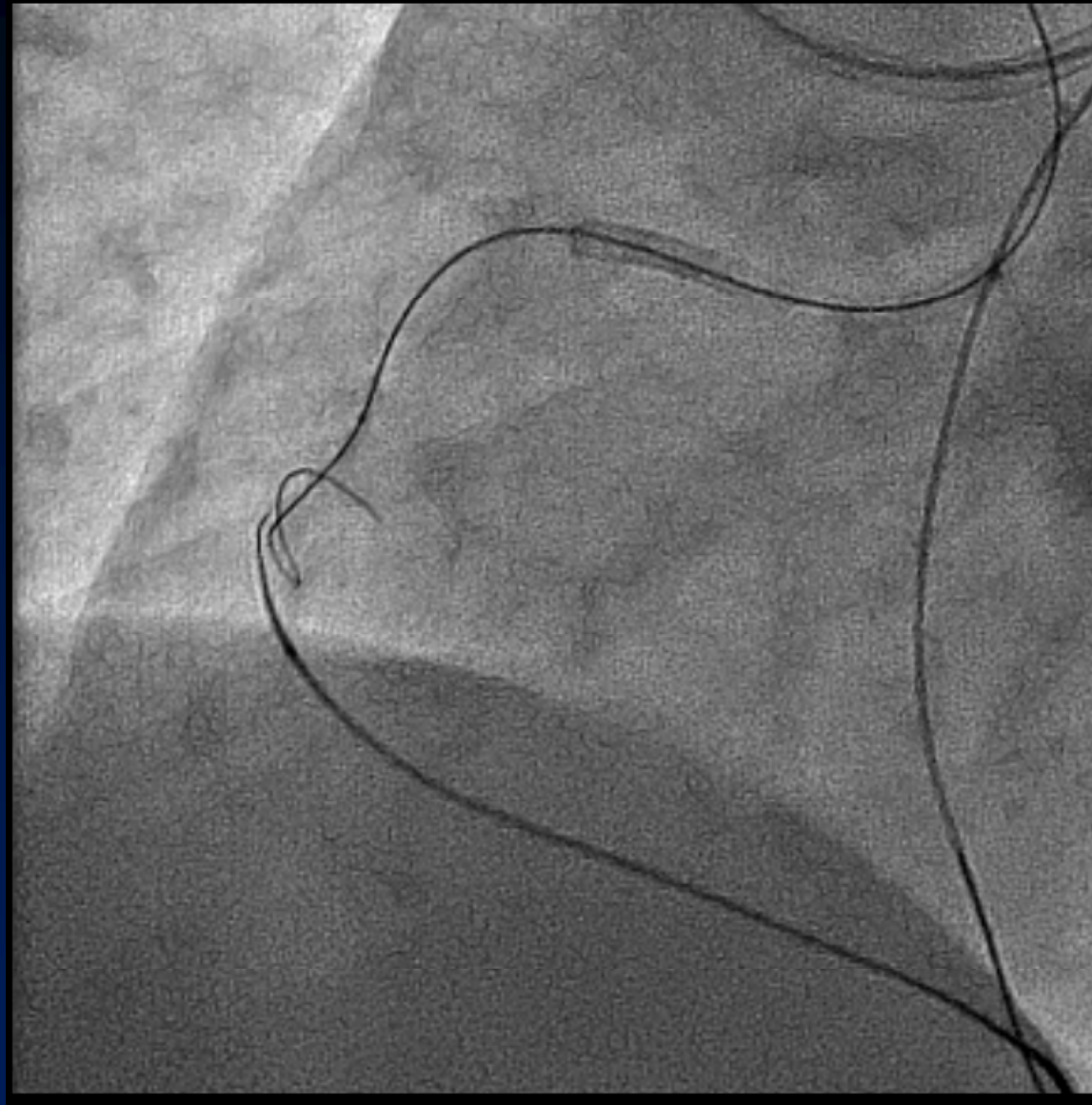
## RCA CTO



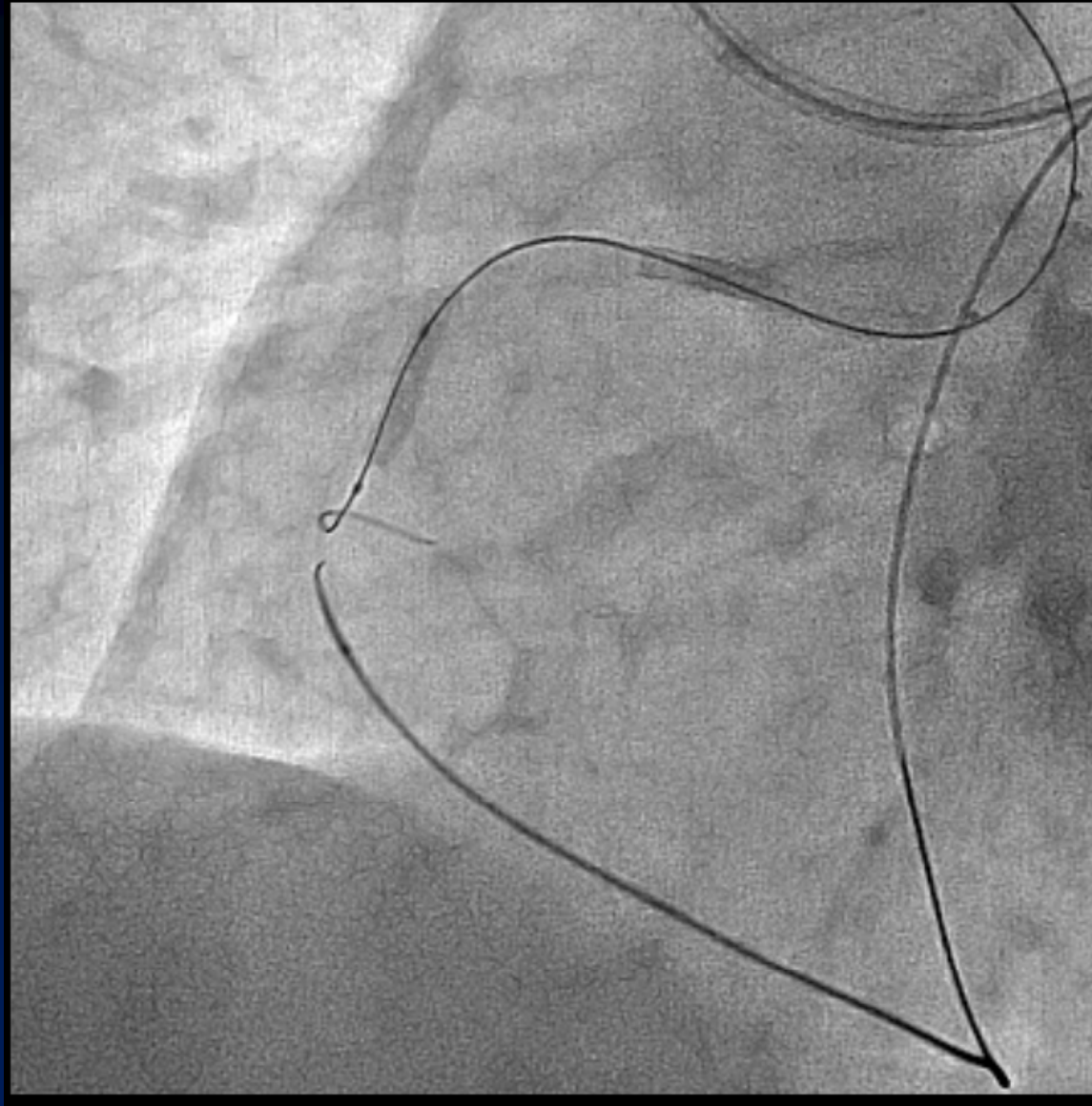


**CTO with diffuse narrowing**

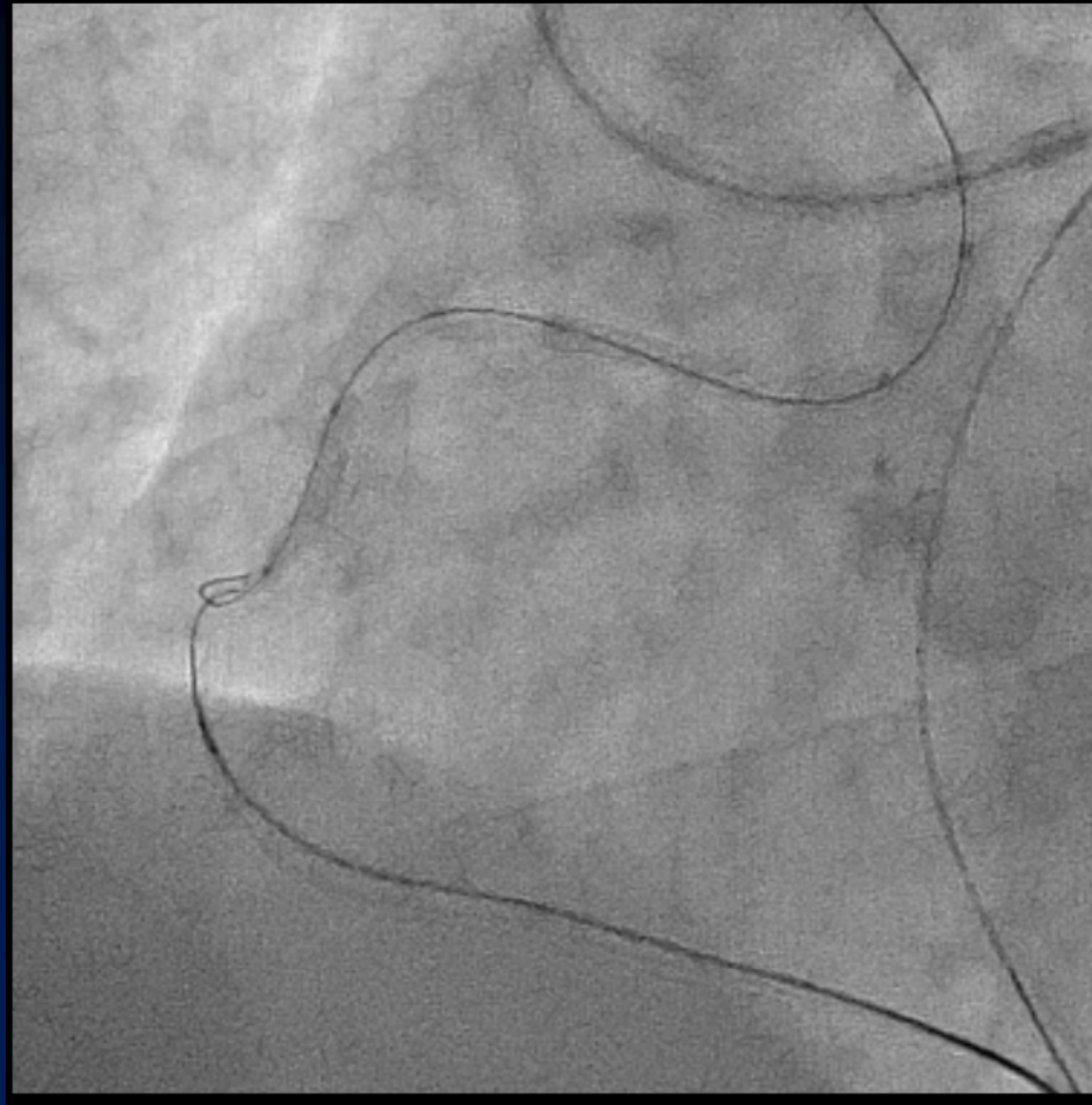




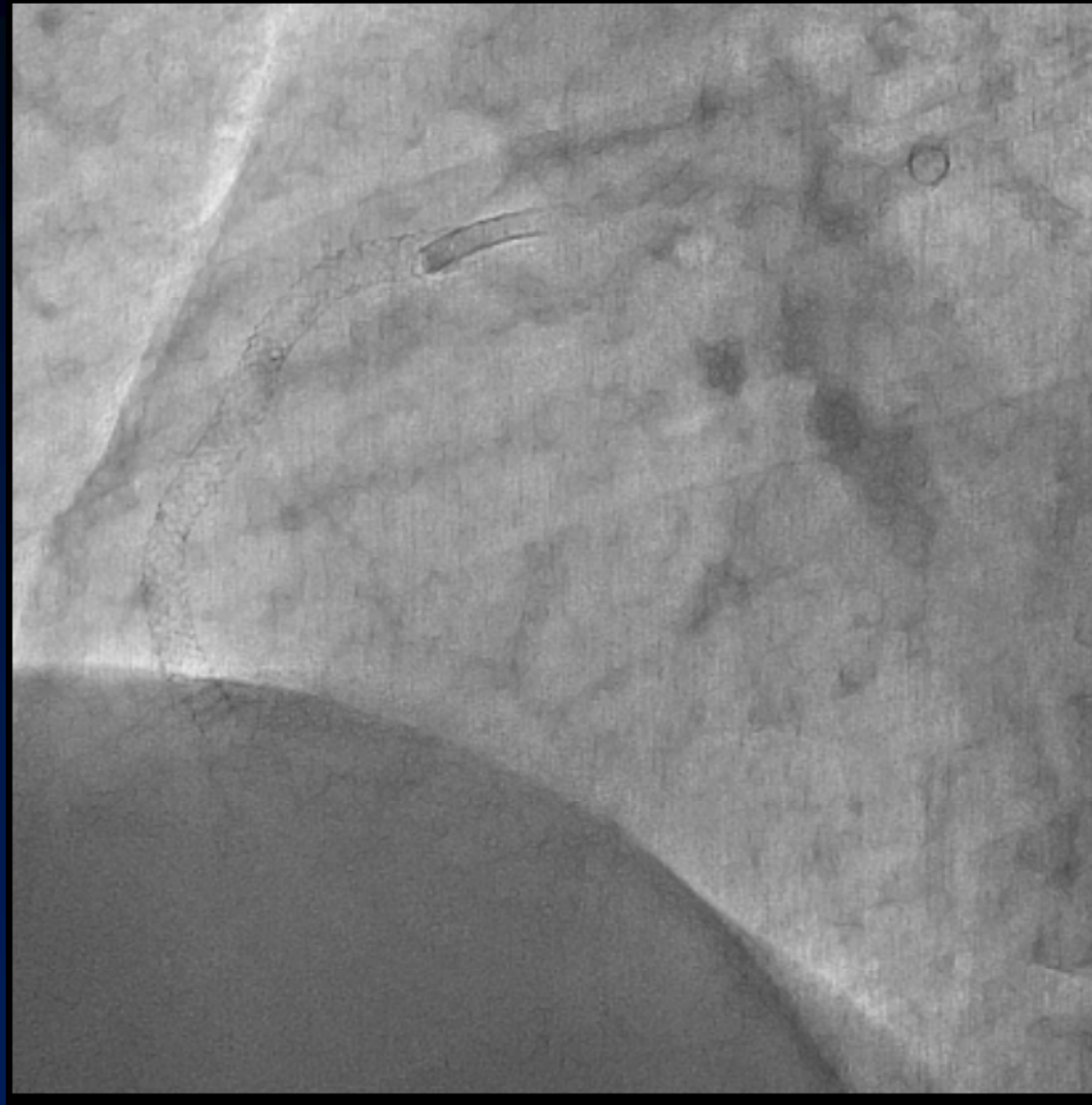
**Antegrade preparation for reverse CART**



**Antegrade preparation for reverse CART**

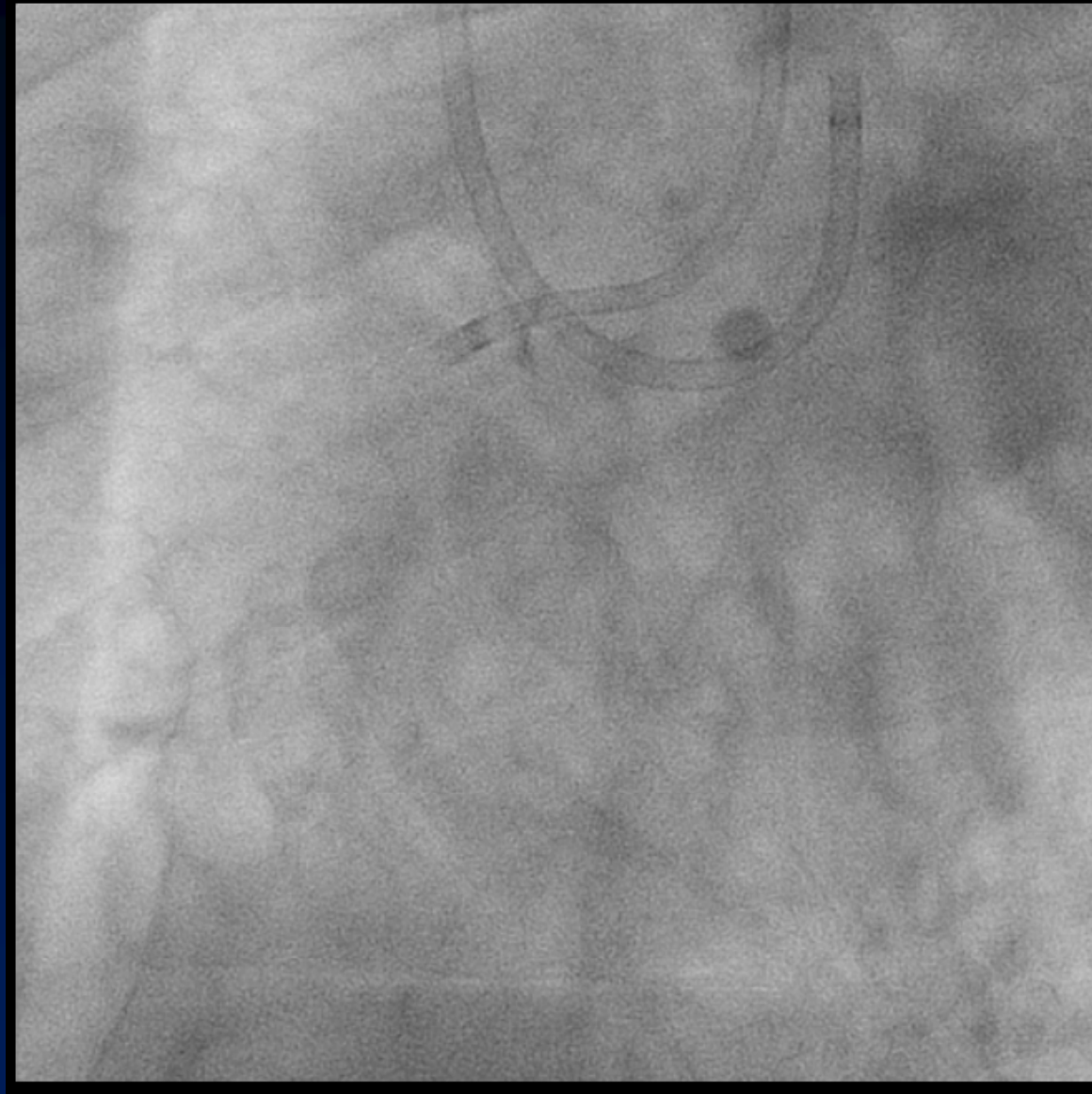


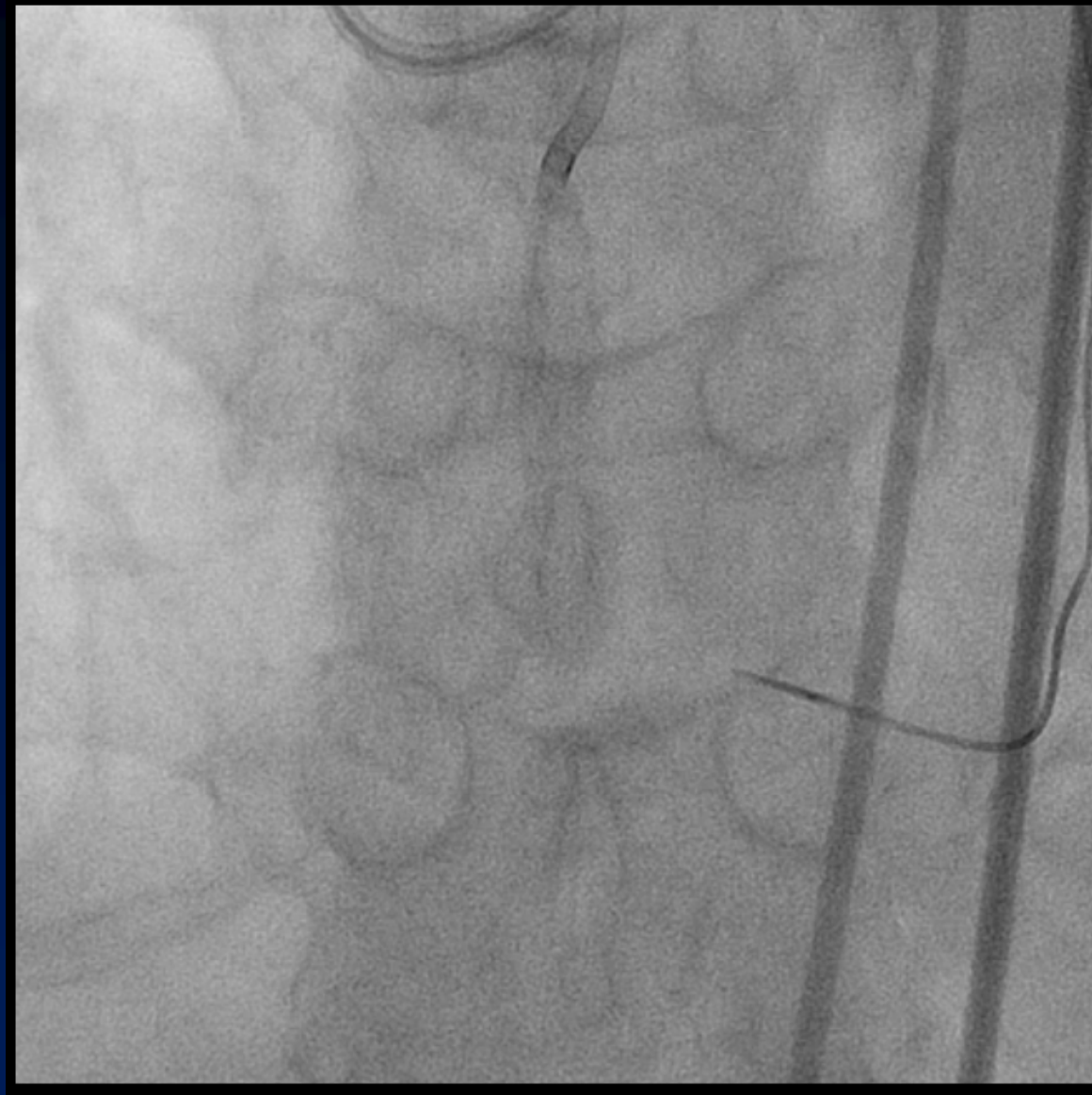
**Retrograde wiring with GAIA 2<sup>nd</sup>**



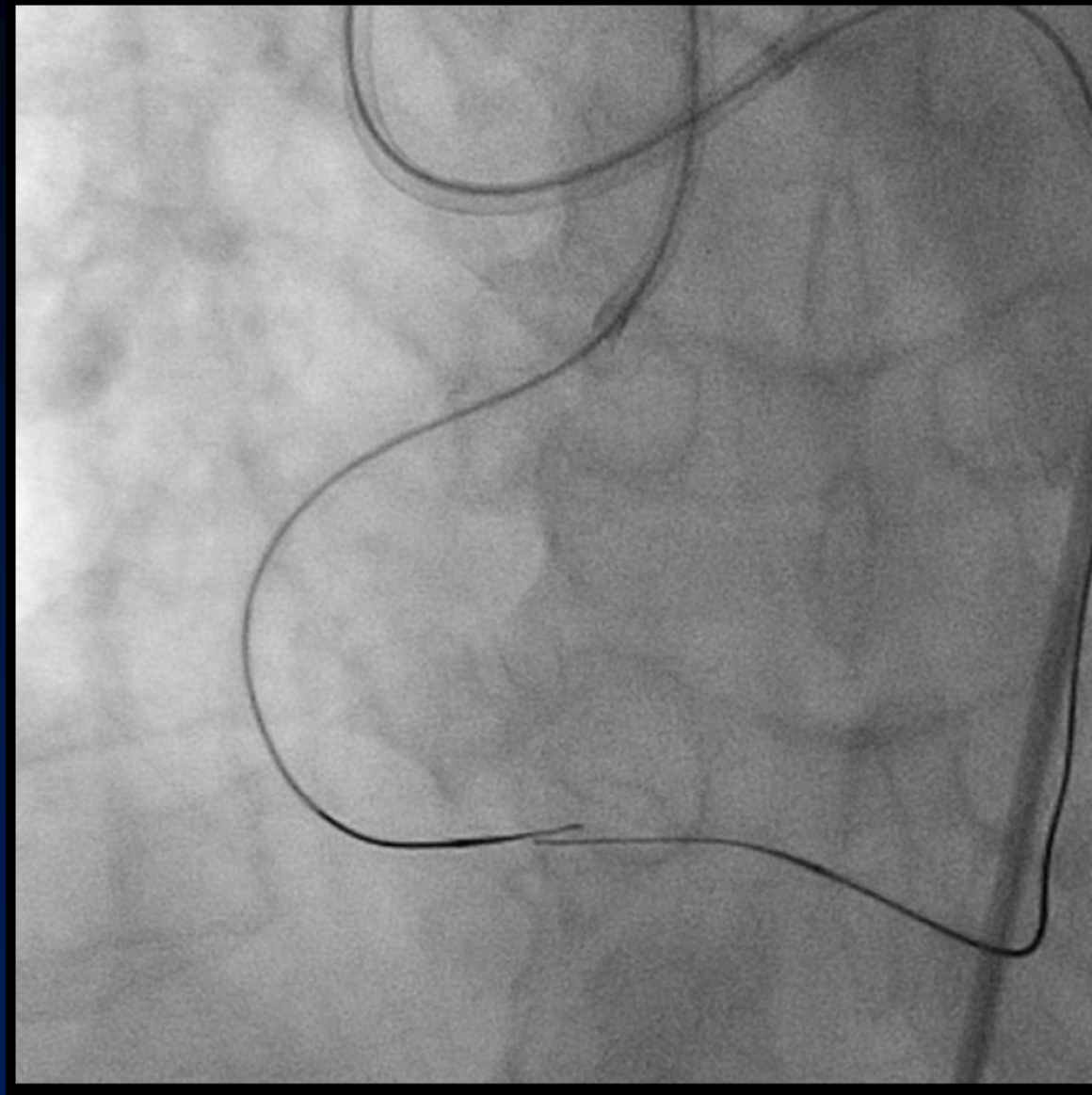
**Final angiogram**

## **Reattempted RCA CTO**

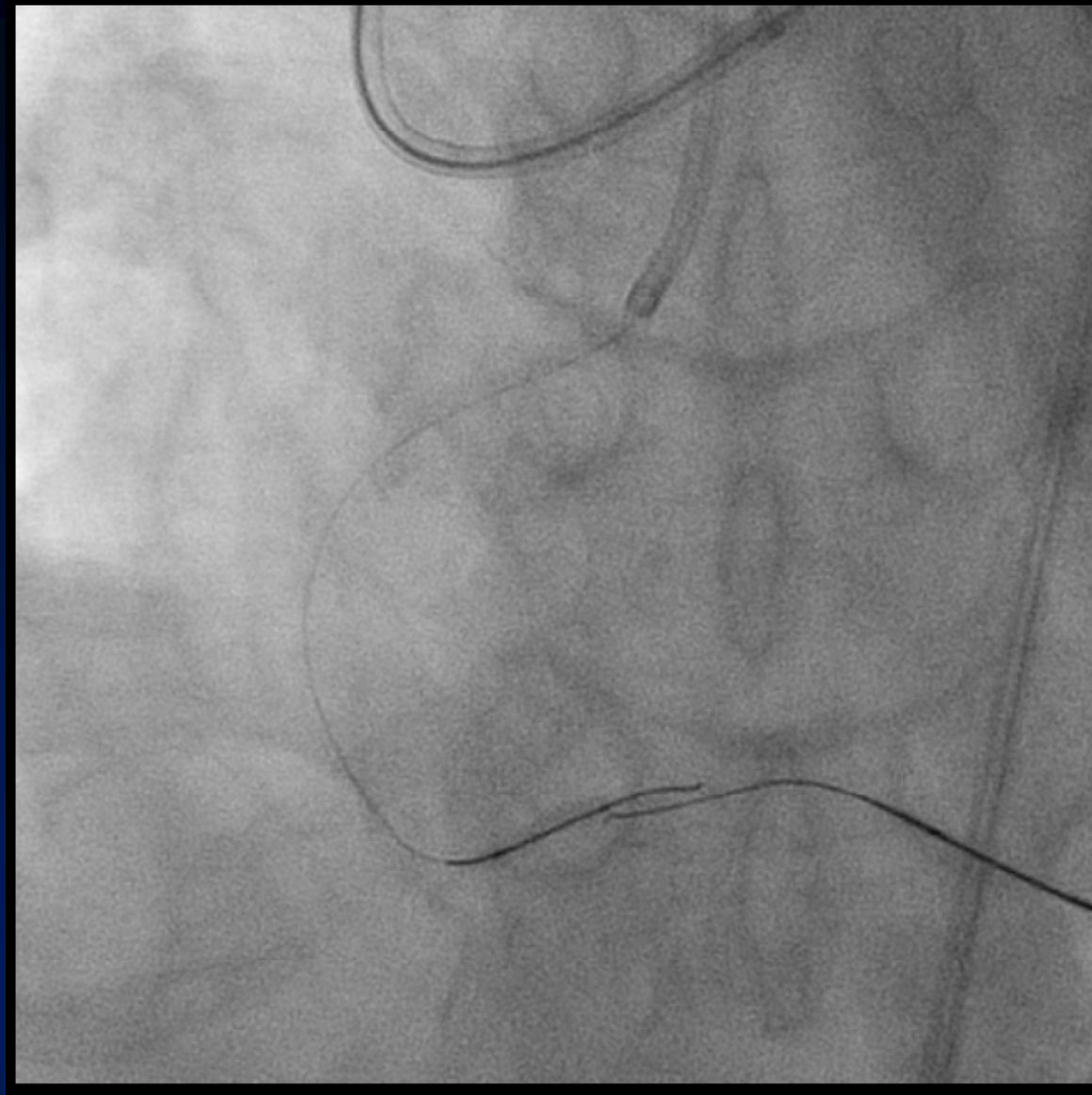




**Retrograde tip injection**

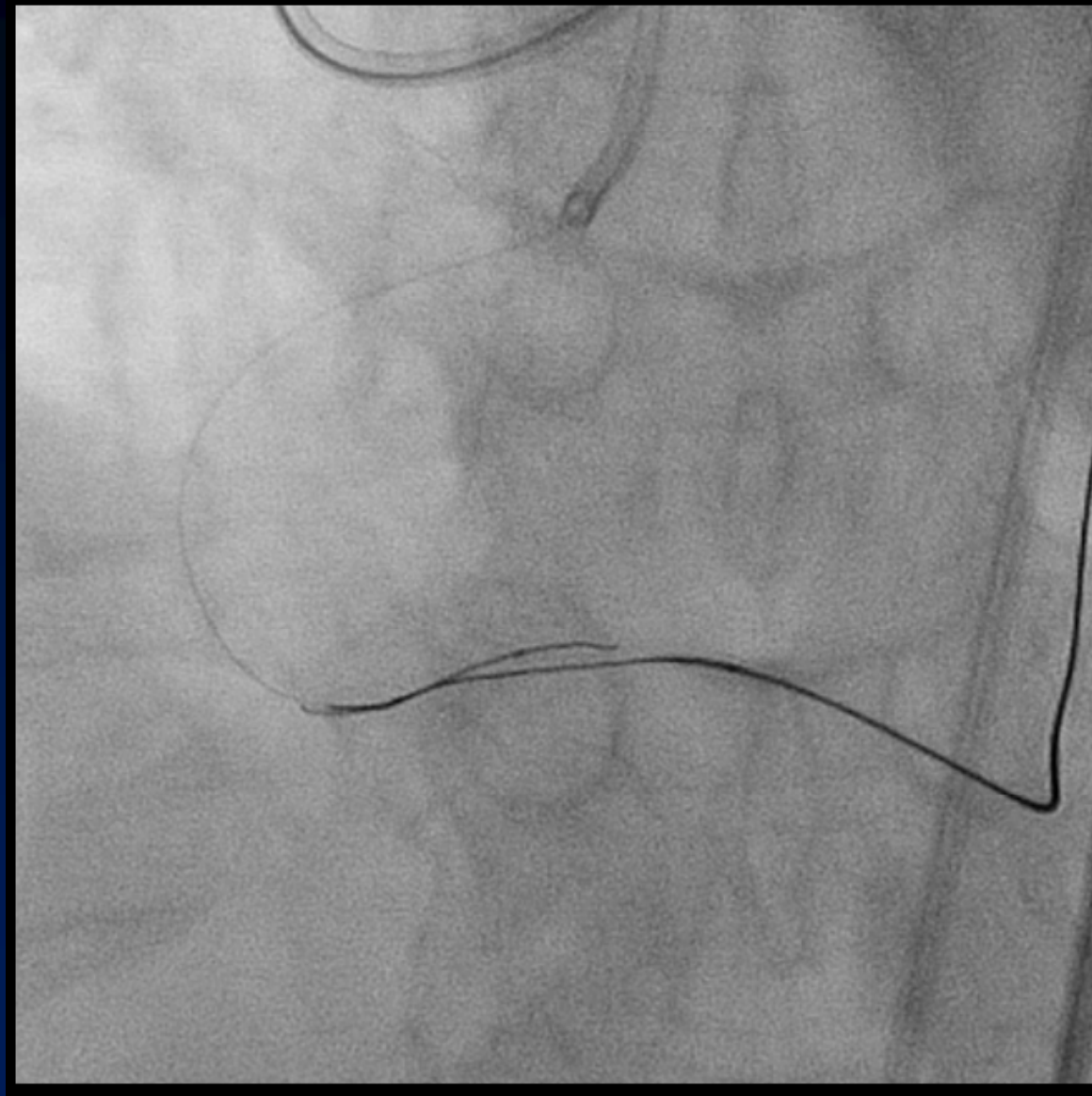


**Overlapped bilateral wiring**



**Antegrade 2.0mm ballooning**



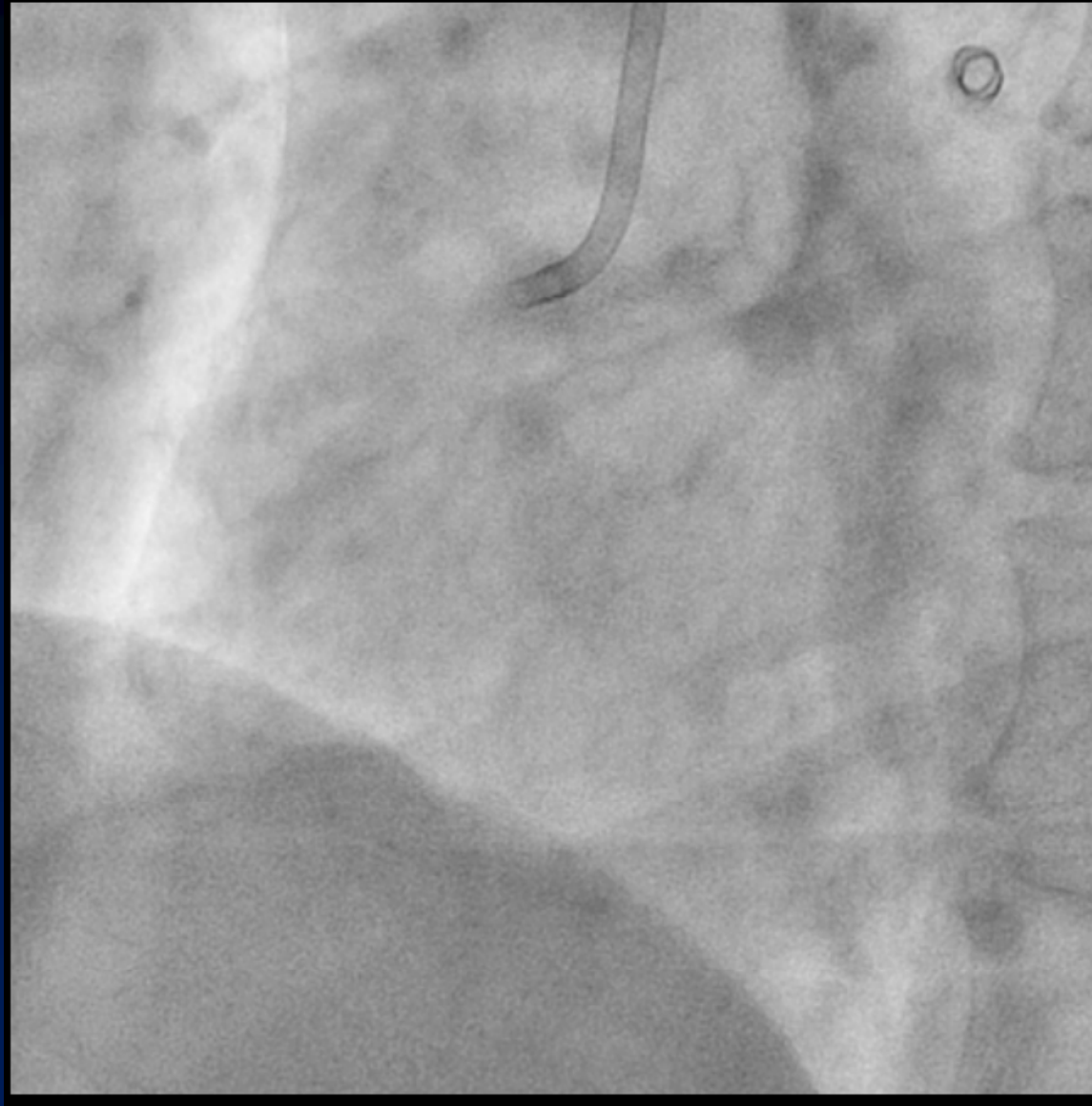


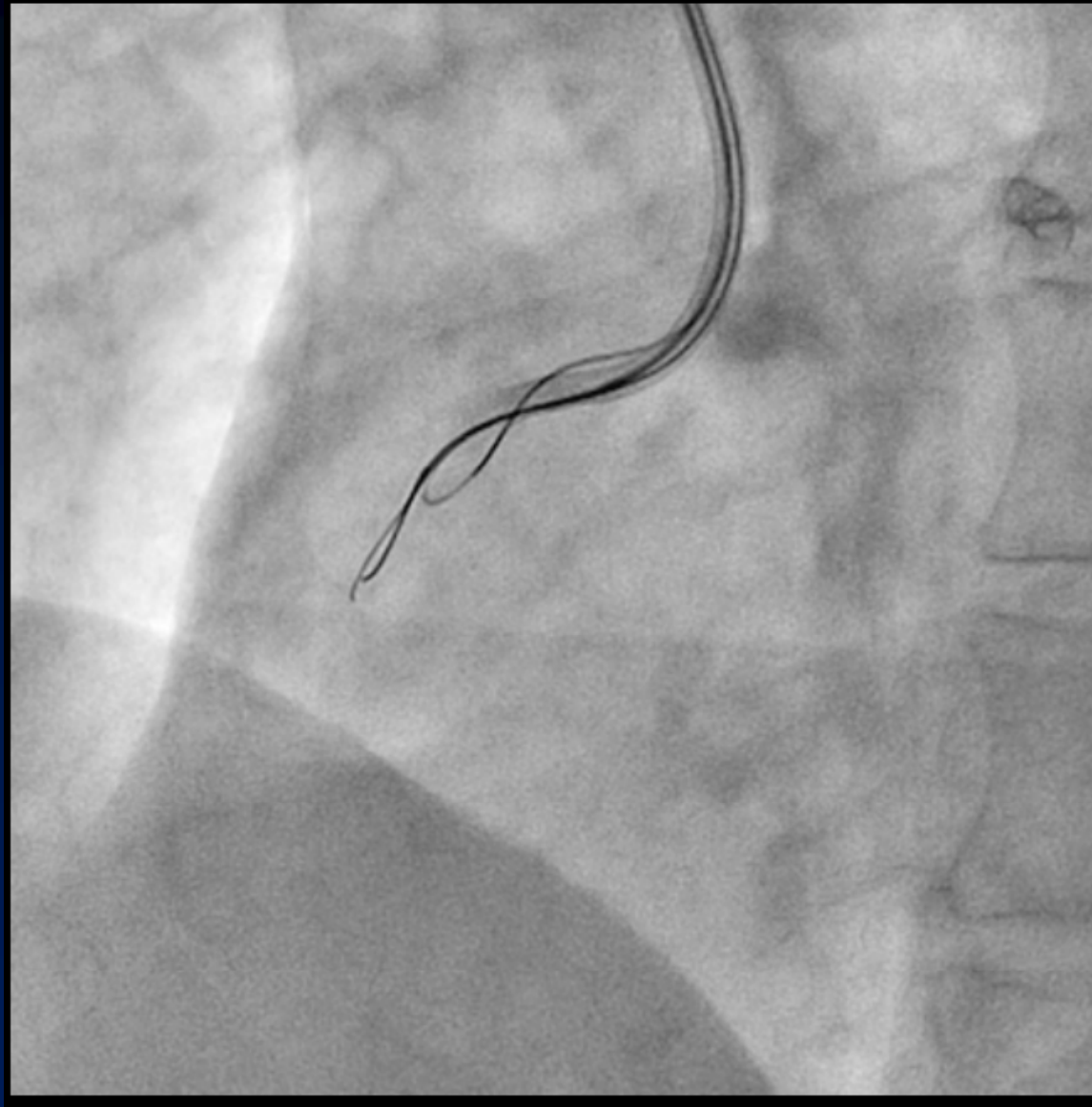
**Successful rCART by retrograde GAIA 2<sup>nd</sup>**



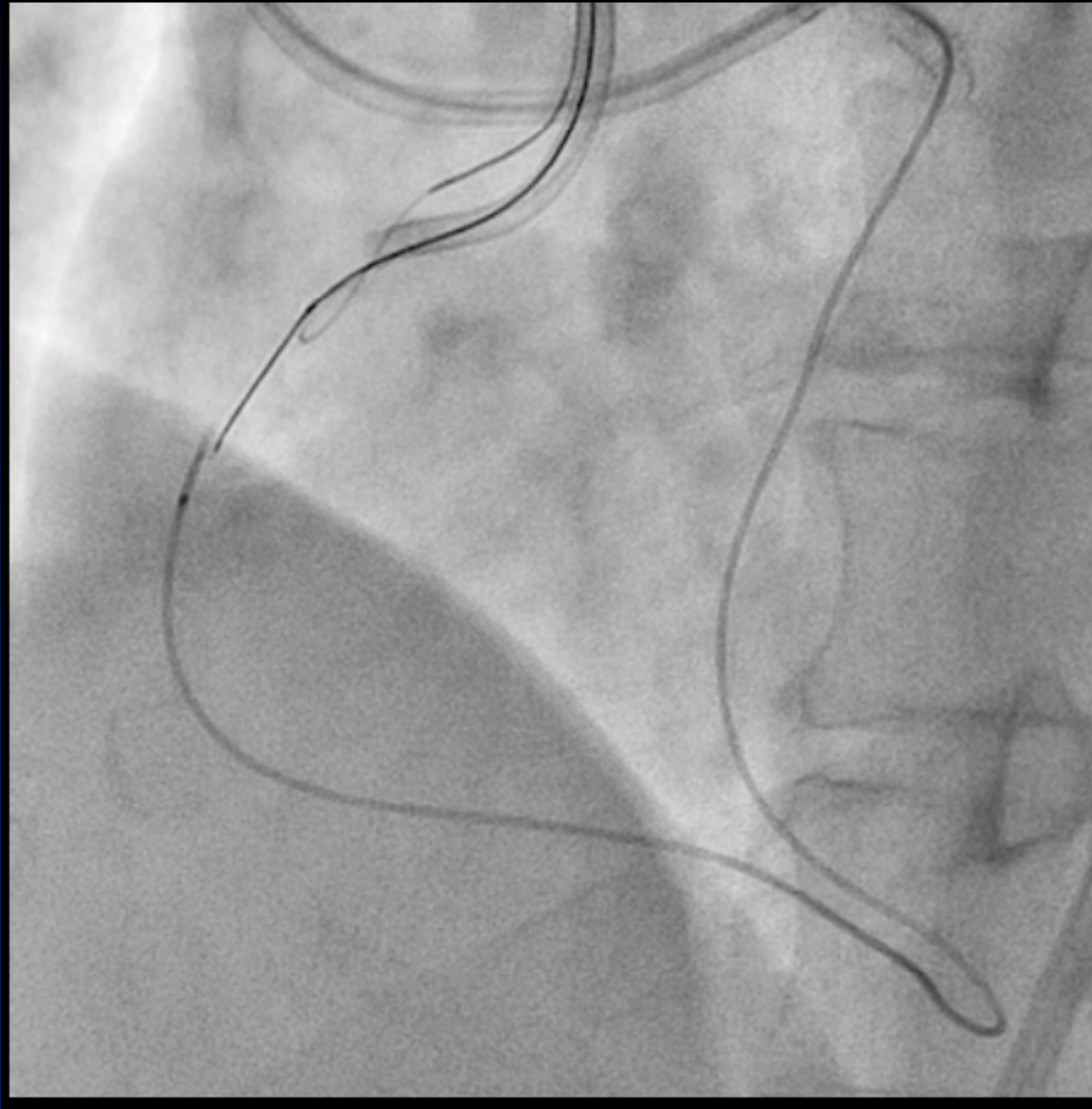
**Final angiogram**

## **RCA CTO**

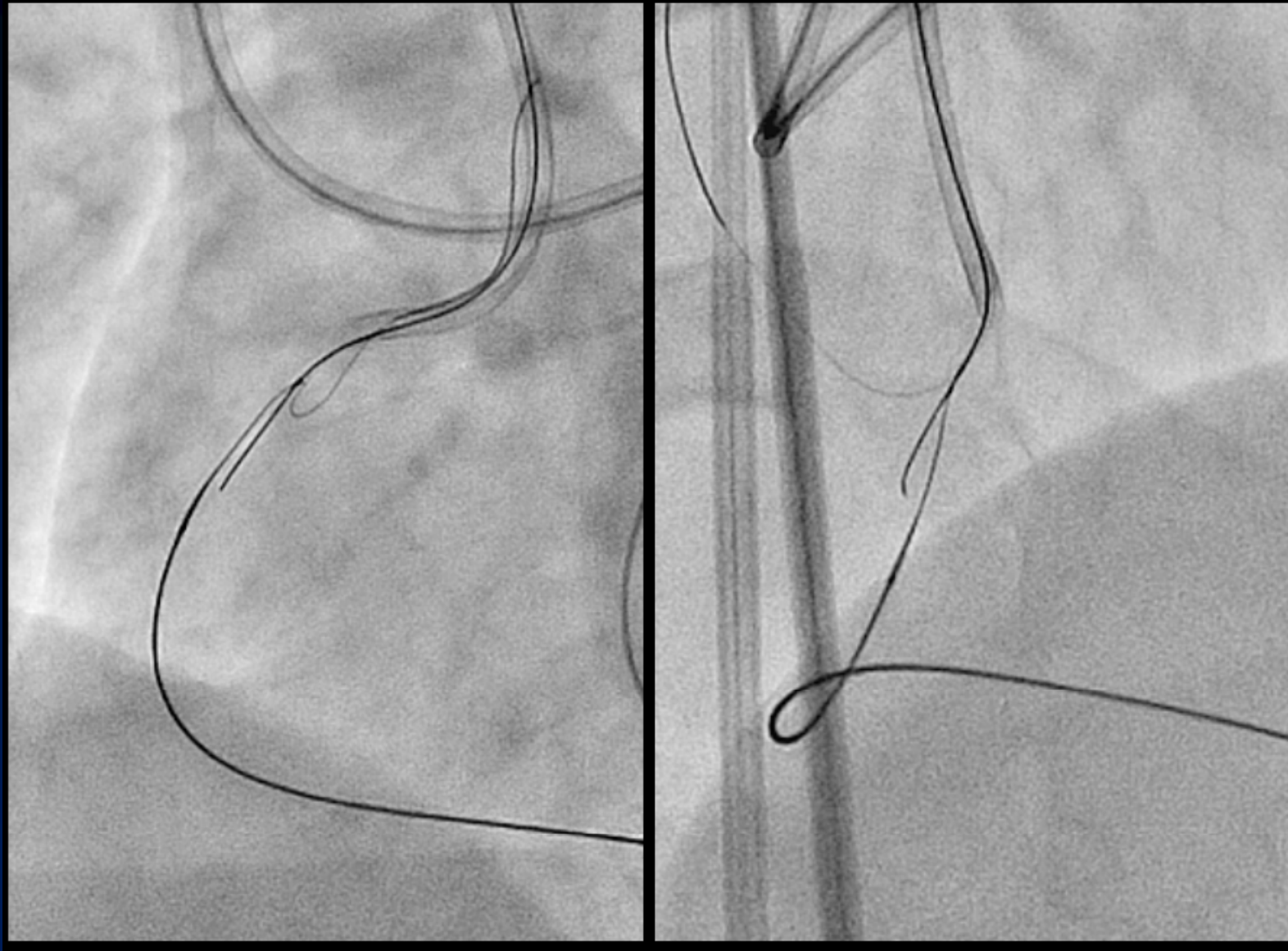




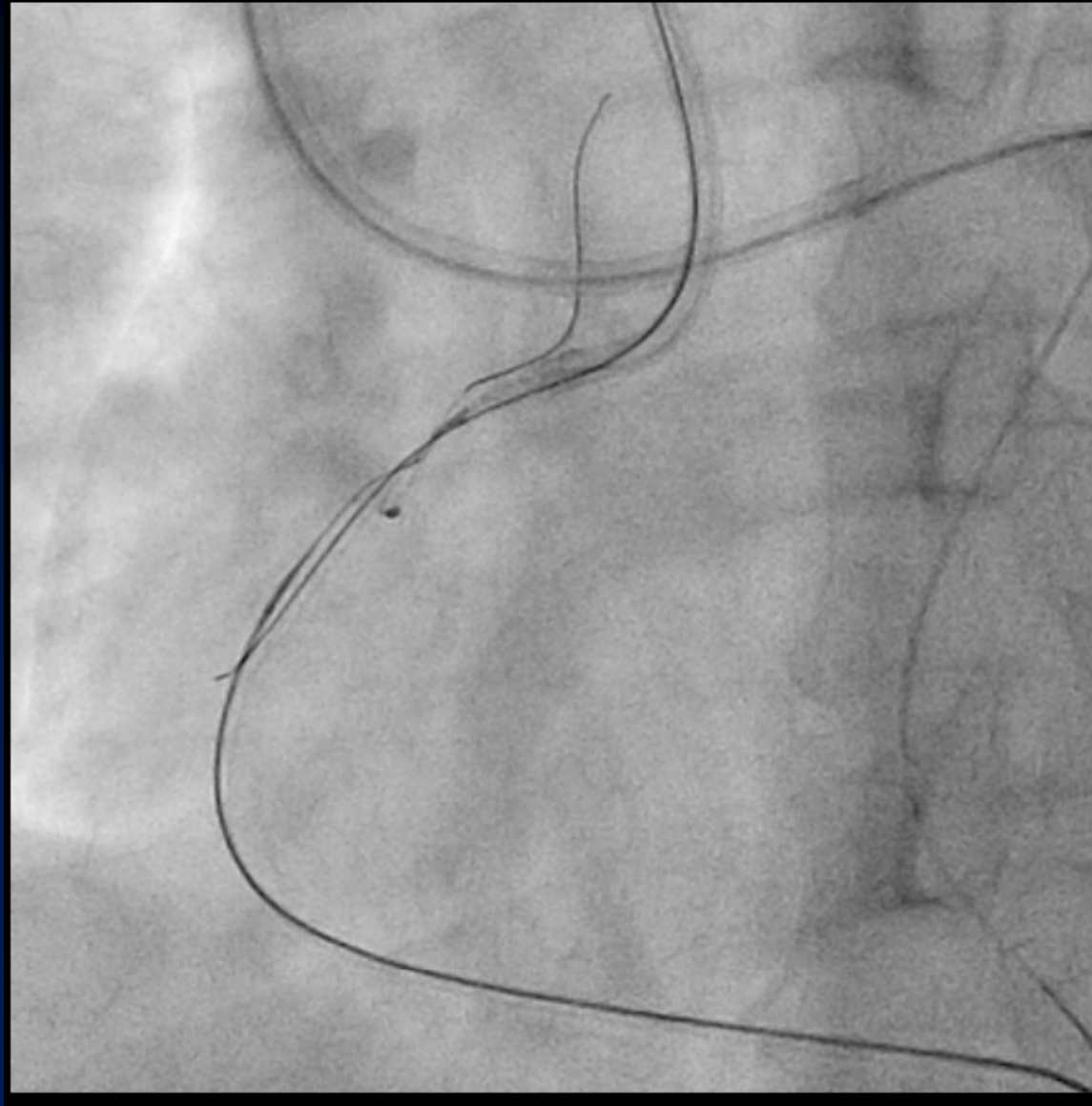
**Failed parallel wiring**



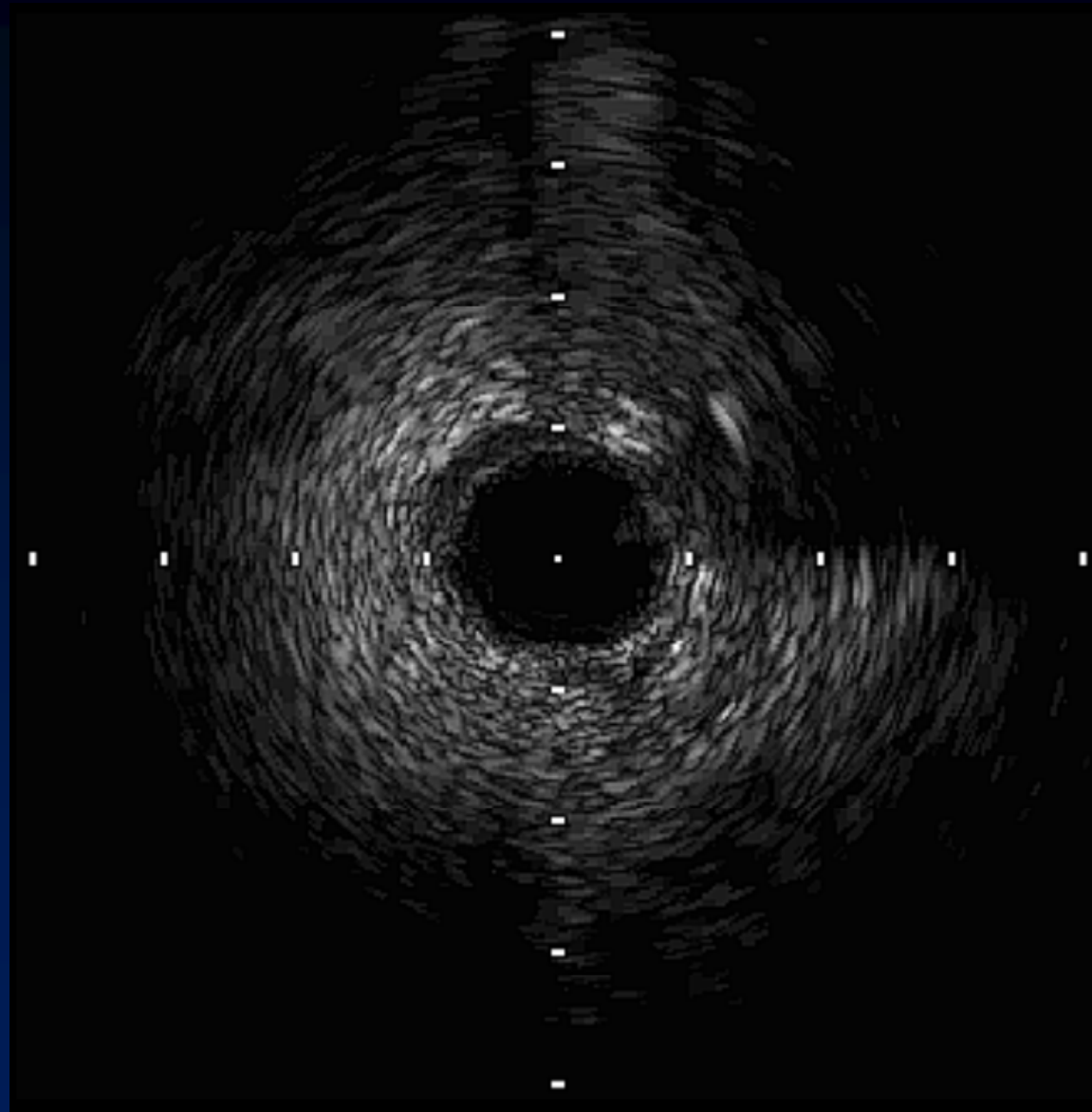
**Difficult for reverse CART because of short occlusion**



**Attempt at retrograde direct wire crossing by GAIA 2<sup>nd</sup>**

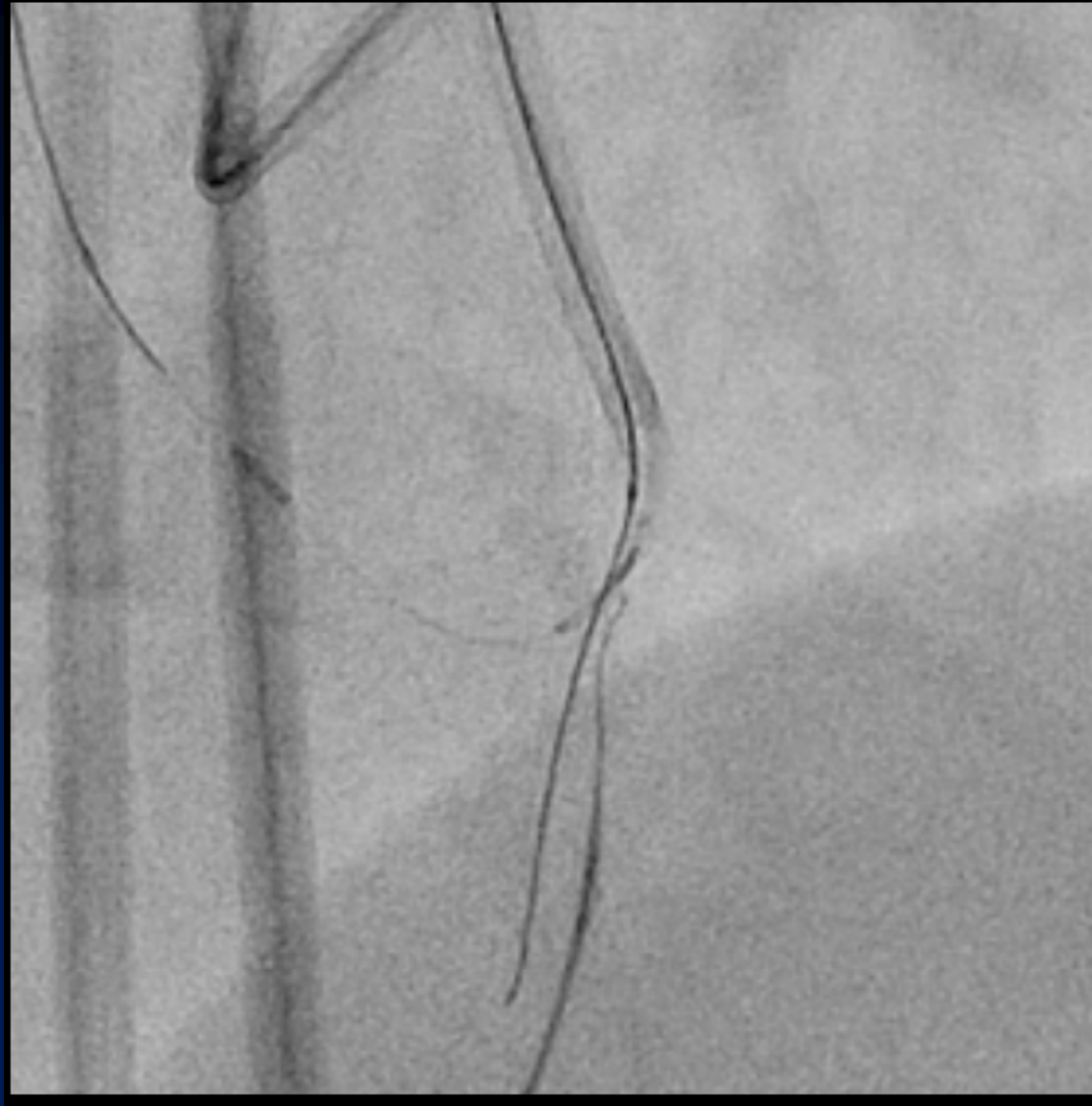


**IVUS examination**



**IVUS examination**





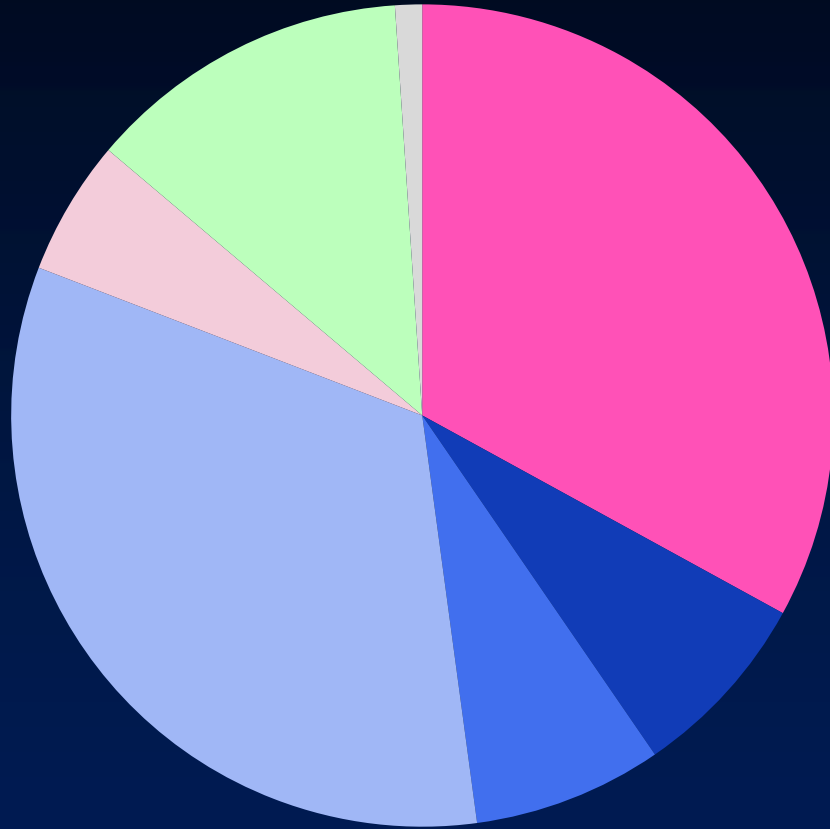
Successful Manipulation of Gossling 2<sup>nd</sup> by GAIA 2<sup>nd</sup>



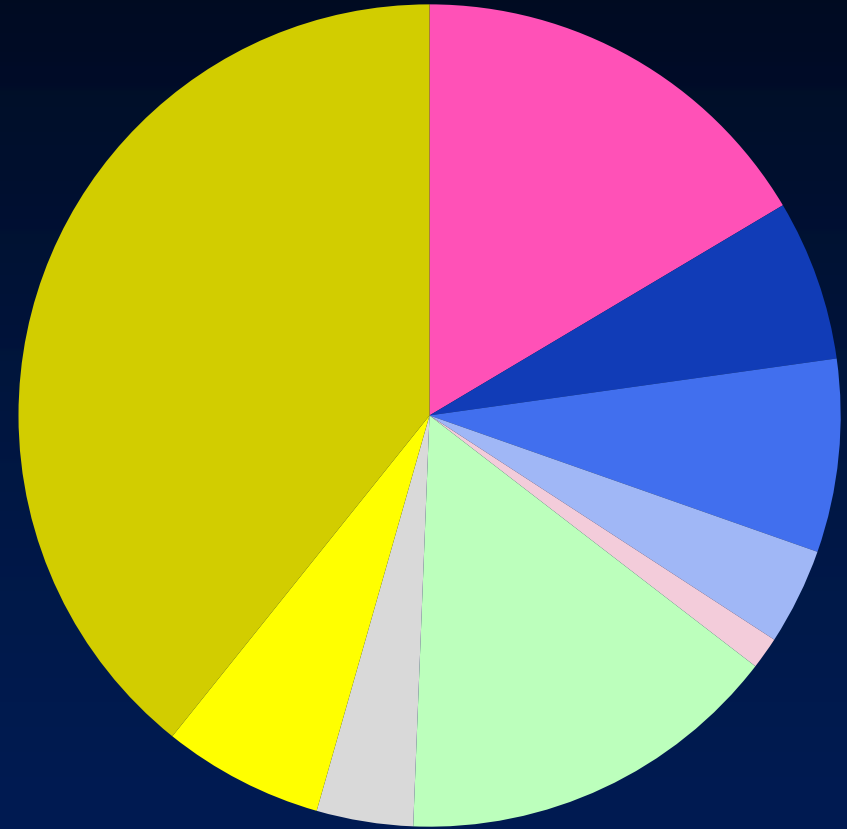
**Final angiogram**

# Wire used for CTO crossing

Before June 2012



After June 2012



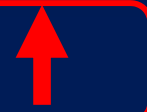
Conquest family  
 Ultimate 3  
 others

↓

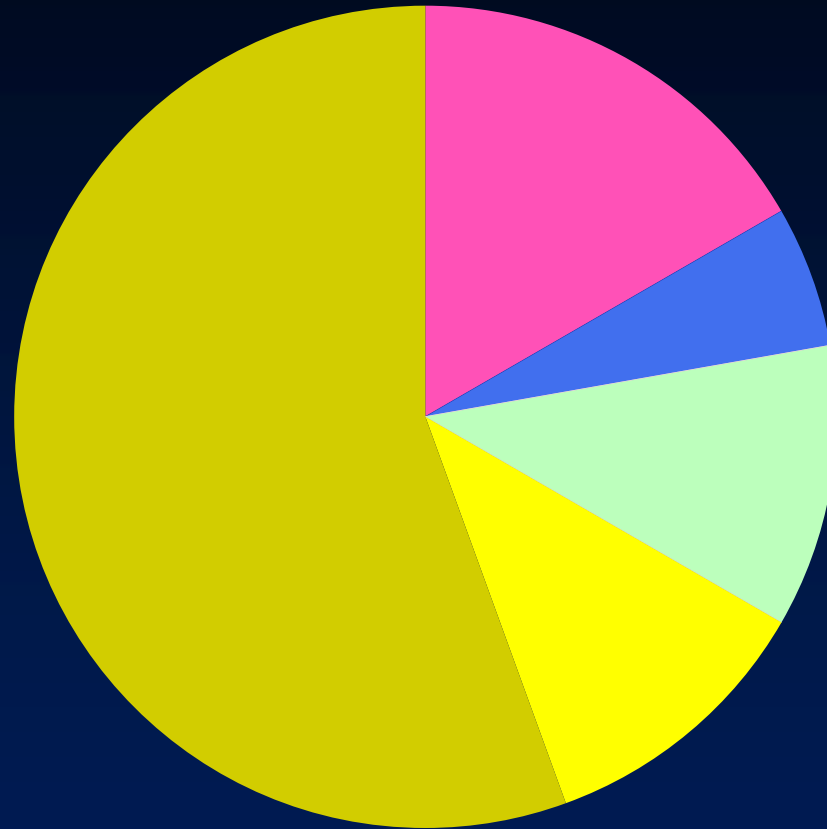
Miracle 12  
 Pilot 200

Progress 120  
 XTA

GAIA 1<sup>st</sup>  
 GAIA 2<sup>nd</sup>



# Wire used for CTO crossing in 2013



Conquest family ↓  
Ultimate 3

Miracle 12

Progress 120

Pilot 200

XTA

others

GAIA 1<sup>st</sup>

GAIA 2<sup>nd</sup> ↑