

Tokyo Percutaneous cardiovascular Intervention Conference  
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# **Tips and Tricks of IVUS Guided Reverse CART**

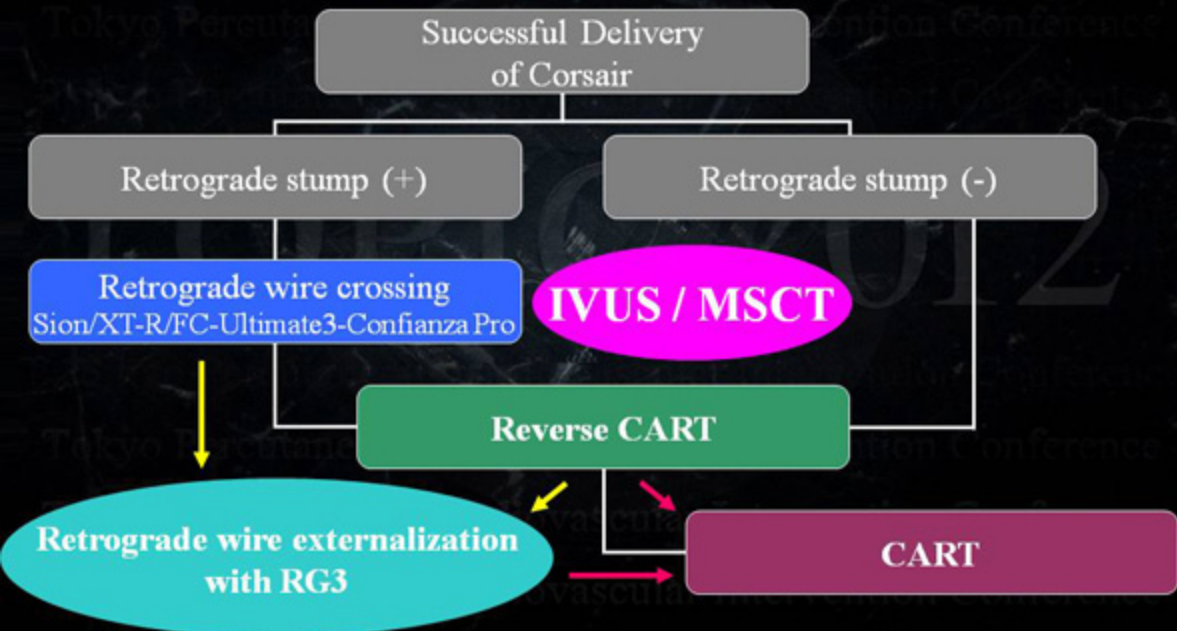
*Masahiko Ochiai MD, FACC, FESC, FSCAI*

Division of Cardiology

Showa University Northern Yokohama Hospital, Kanagawa, JAPAN

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# Standardized Retrograde Procedure with Corsair



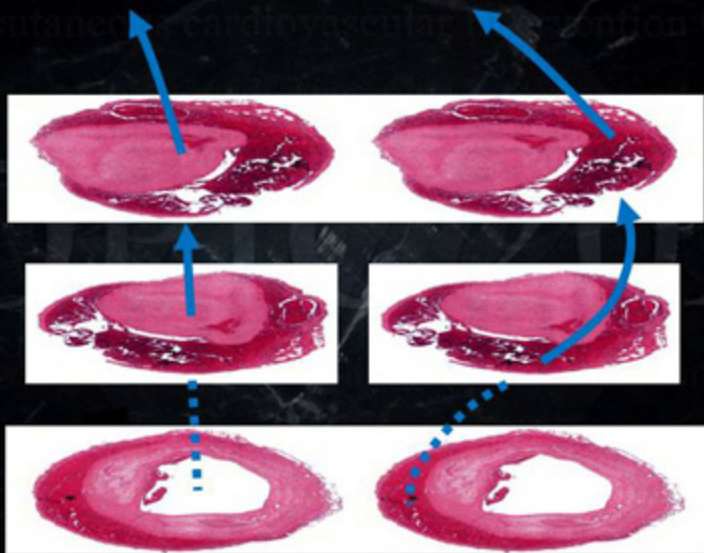
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# TOPIC 2012

**Reverse CART**

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# Subintimal Space is Expandable (transverse & longitudinal)

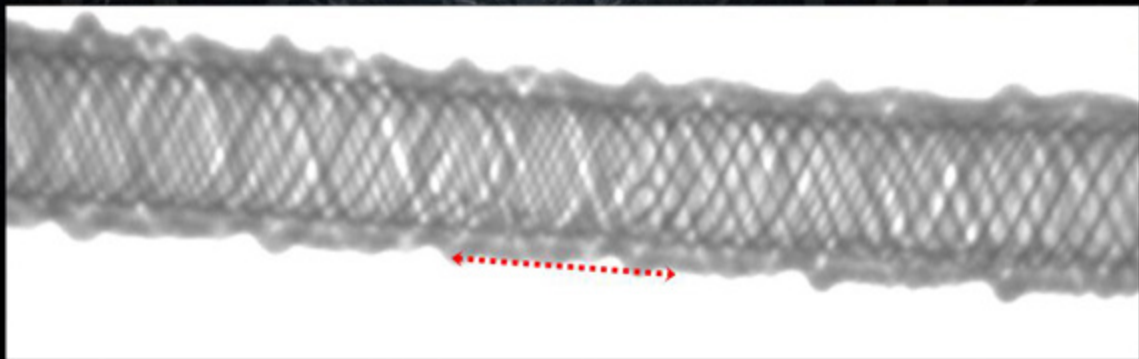
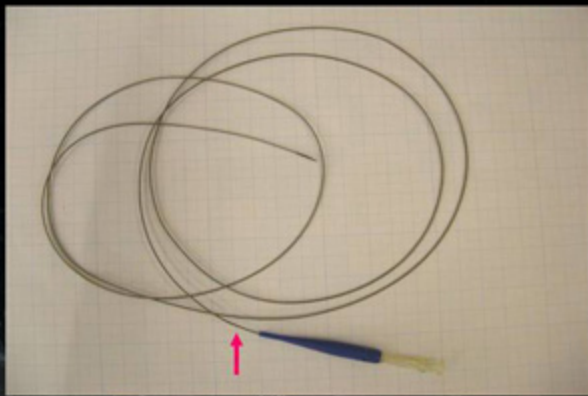


## IVUS Guided Reverse CART

- Advance antegrade and retrograde wire alternatively, **using each other as a landmark** and paying attention to **the “synchronized motion”** with the heart beat.
- Retrograde wire
  - 1) Sion / XT-R / Fiedler FC → Ultimate 3.0 → Confianza Pro
  - 2) **Knuckled Fielder FC** or **XT** (with active rotation)
- Antegrade wire
  - 1) Fielder XT → Ultimate 3.0 → Confianza Pro → Confianza Pro 12
  - 2) **Knuckled Fielder FC** or XT (with active rotation)

## IVUS Guided Reverse CART

- Antegrade and retrograde wire should be followed by the support or dilatation device.
  - 1) Antegrade dilatation device should be exchanged due to the coronary anatomy with trapping technique.
  - 2) Retrograde dilatation device is usually Corsair.
- If you start to feel some resistance in rotating retrograde stiff wires, the retrograde Corsair should be exchanged into a new one with 300cm Fielder FC and trapping technique.



## IVUS Guided Reverse CART

- Once 20-25mm overlap of both wires are achieved, **Volcano Eagle Eye** should be put into the CTO body after pre-dilatation.
- Detect the point where both wires are located in the same intimal or sub-intimal space.



## IVUS Guided Reverse CART

- Once 20-25mm overlap of both wires are achieved, **Volcano Eagle Eye** should be put into the CTO body after pre-dilatation.
- Detect the point where both wires are located in the same intimal or sub-intimal space.
- Precisely place the tip of the retrograde Corsair at the point. After antegrade dilatation with a large balloon whose size is suggested by the IVUS, retrograde **Sion or Fiedler FC** will be advanced into the space created by the antegrade balloon.

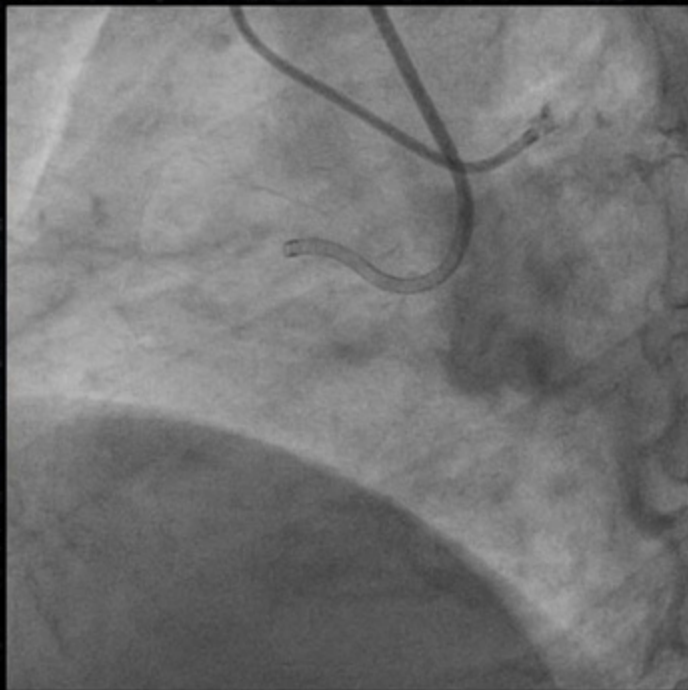
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# TOPIC 2012

**Case 1**

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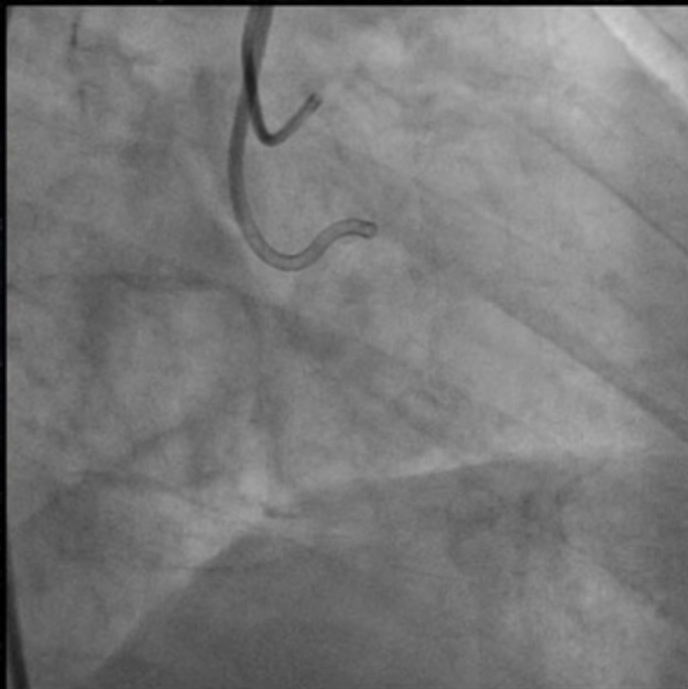
**Effort AP, 49 years, male: Proximal RCA CTO (3<sup>rd</sup> try)**



TC

12

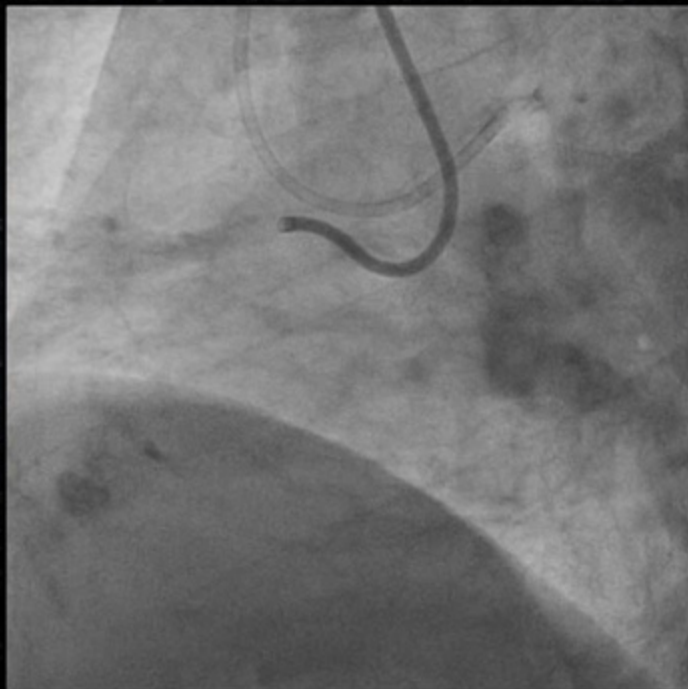
**Effort AP, 49 years, male: Proximal RCA CTO (3<sup>rd</sup> try)**



TC

12

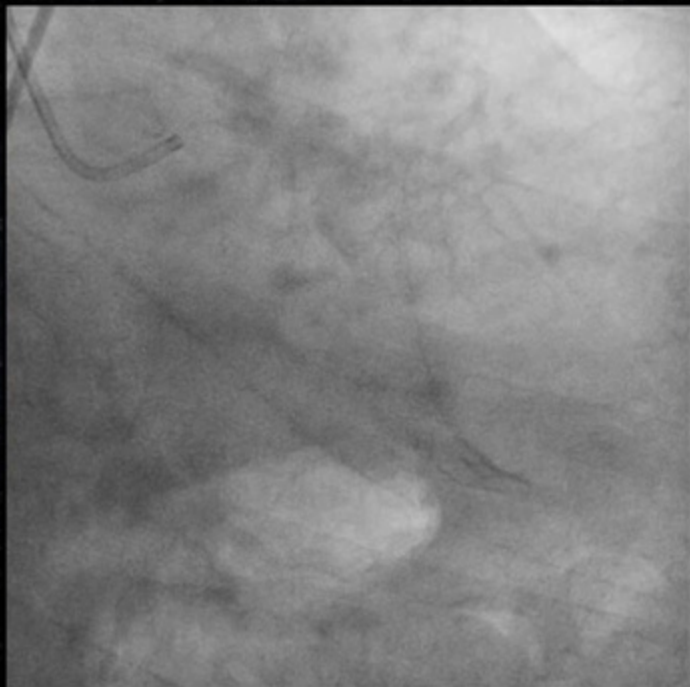
**Effort AP, 49 years, male: Proximal RCA CTO (3<sup>rd</sup> try)**



TC

12

## Diagnostic Angiogram of LCA



*October, 2011*  
*Singapore*

## Diagnostic Angiogram of LCA

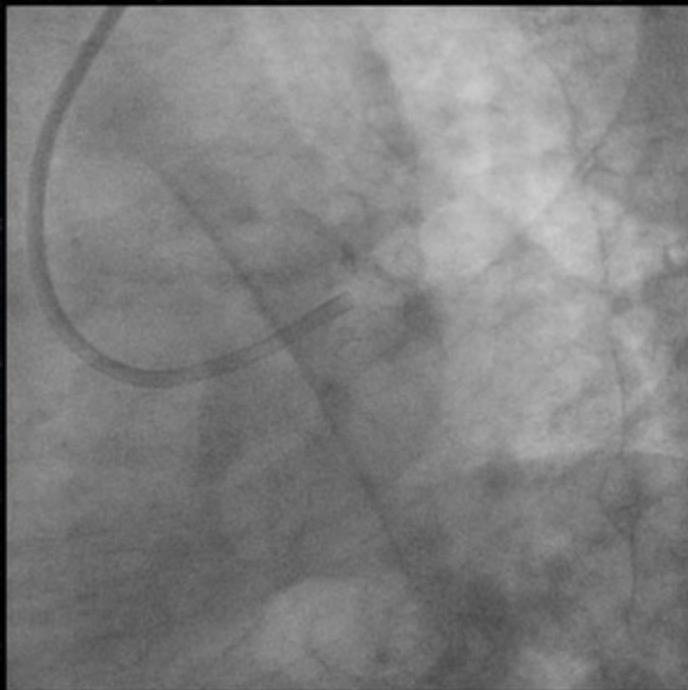


October, 2011  
Singapore

# We should Treat LMT Bifurcation First!

7Fr Mach1  
CLS3.5-SH

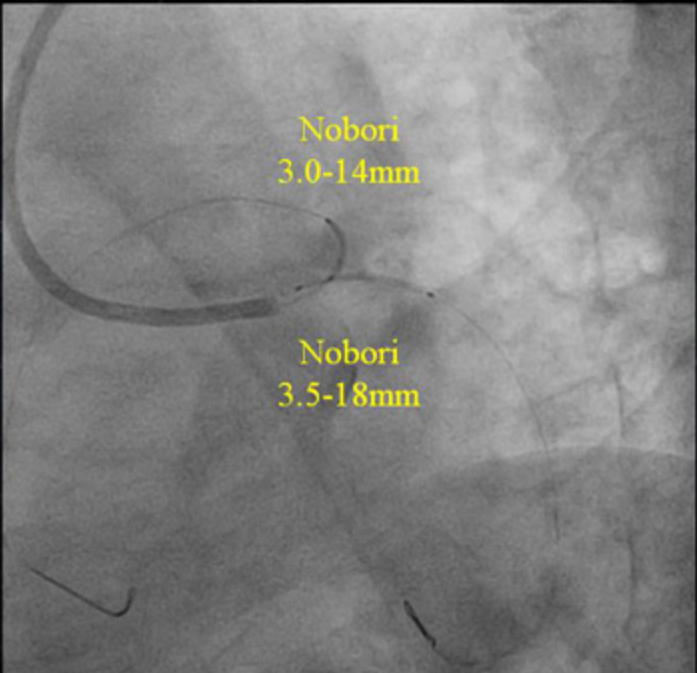
IABP



12



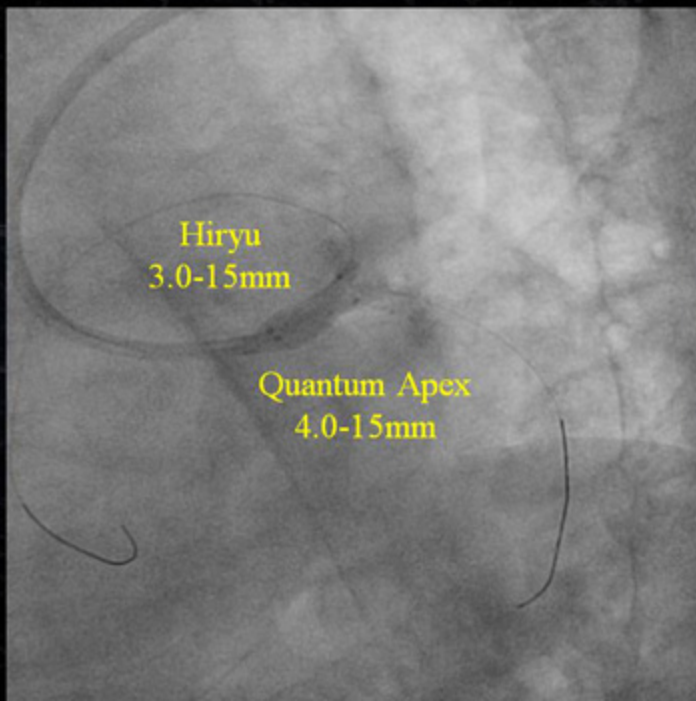
# Modified T Stenting for LMT Bifurcation



Nobori  
3.0-14mm

Nobori  
3.5-18mm

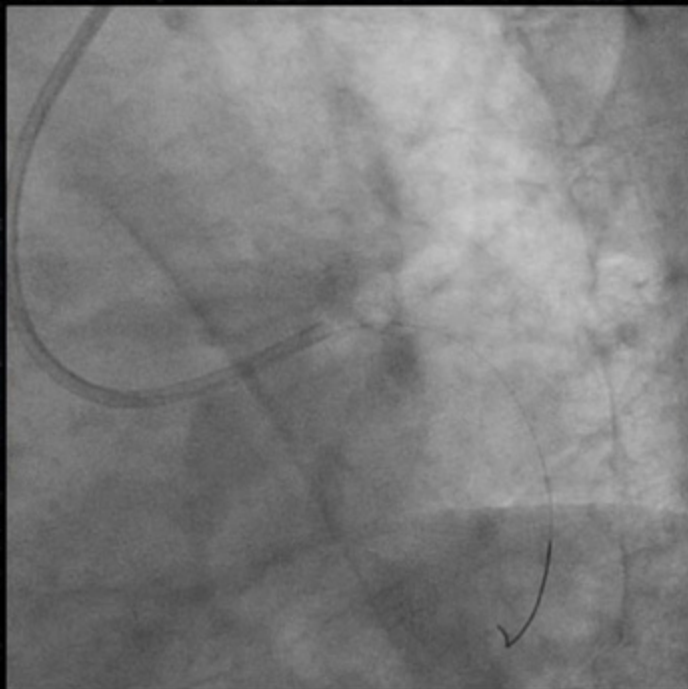
## Modified T Stenting for LMT Bifurcation



# Final Results of Modified T Stenting to LMT

7Fr Mach1  
CLS3.5-SH

IABP



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# IABP was Replaced by 8Fr AL1.0-SH

7Fr Mach1  
CLS3.5-SH

8Fr Brite-tip  
AL1.0-SH

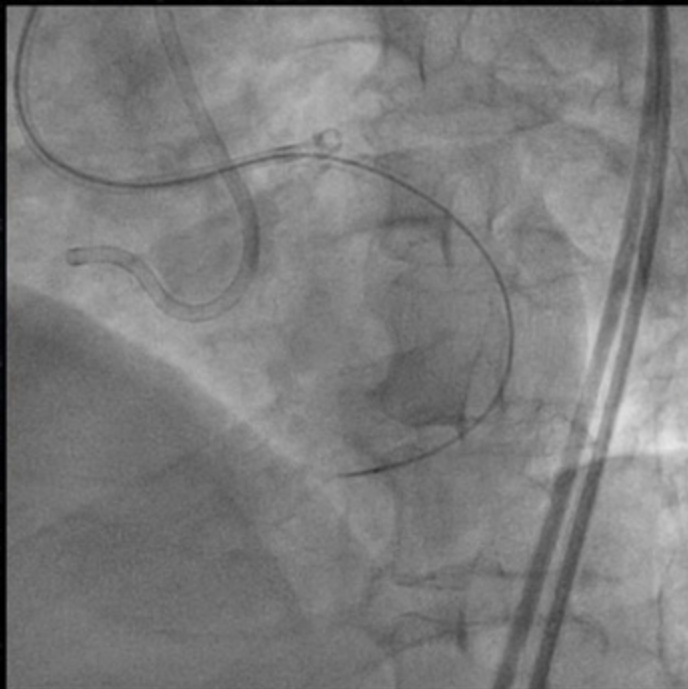


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## Tip Injection from Corsair

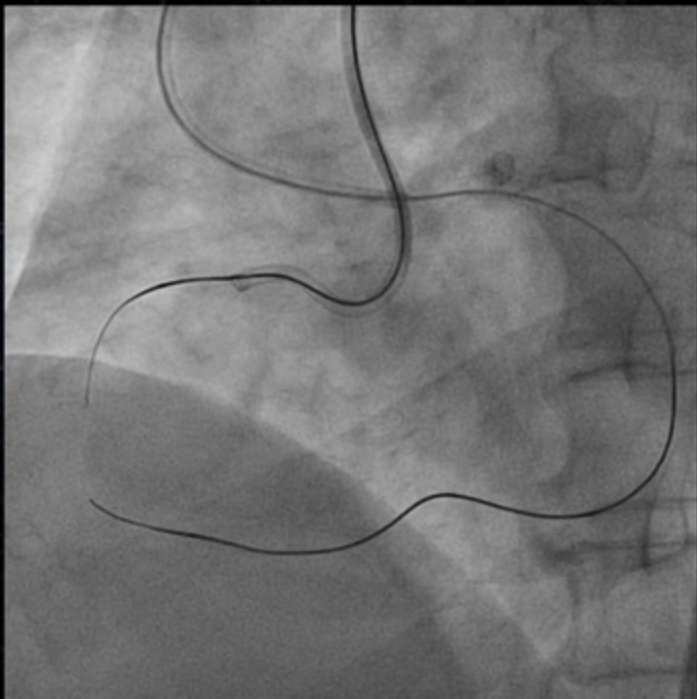
7Fr Mach1  
CLS3.5-SH

8Fr Brite-tip  
AL1.0-SH

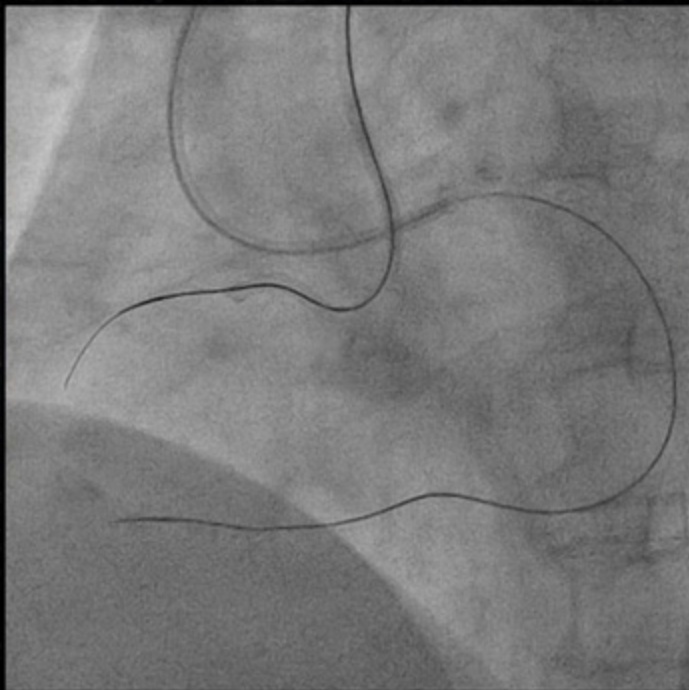


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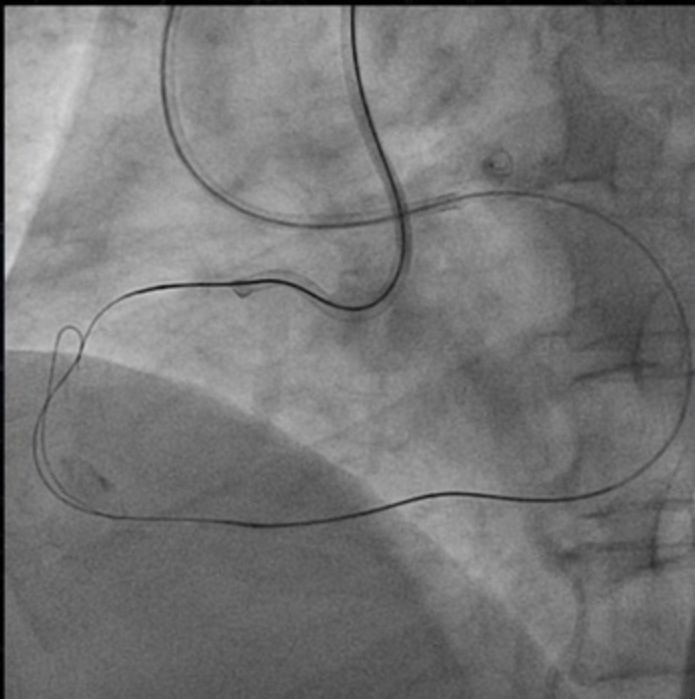
# Antegrade Confianza Pro and Retrograde Ultimate 3.0



## Knuckled Fielder XT Technique

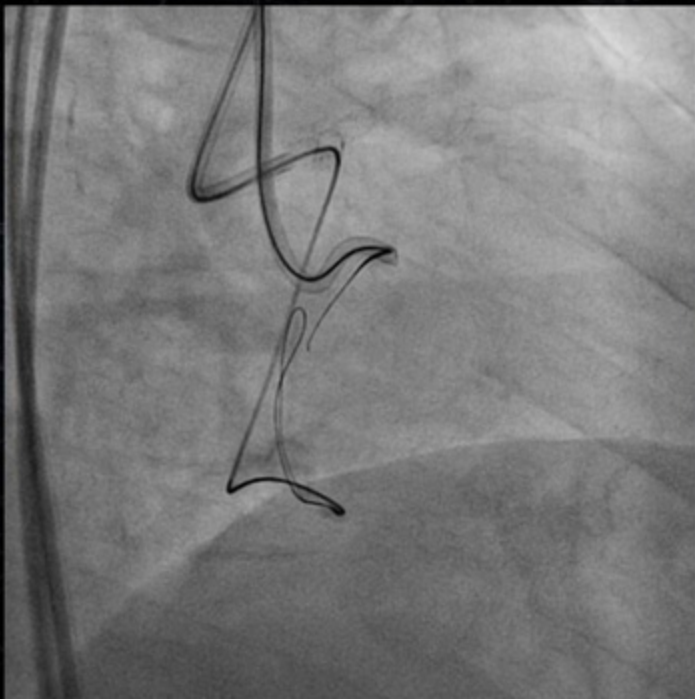


## Knuckled Fielder XT Technique

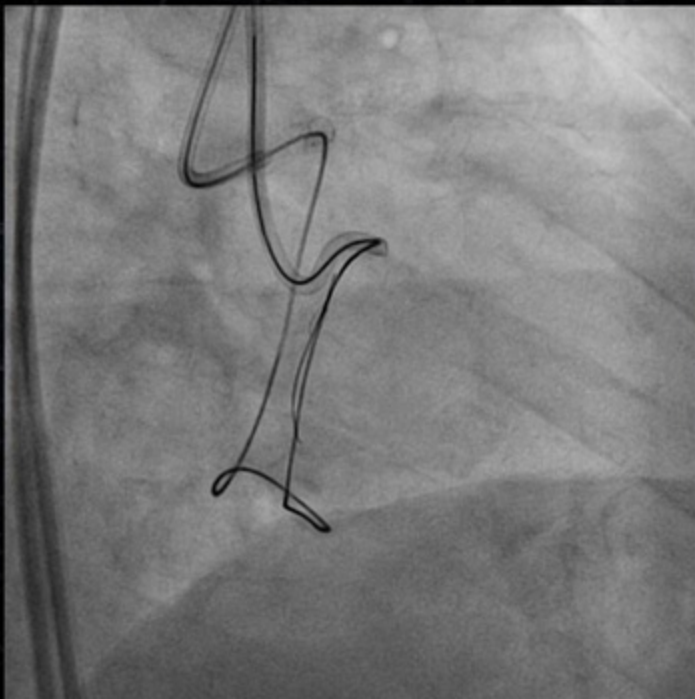




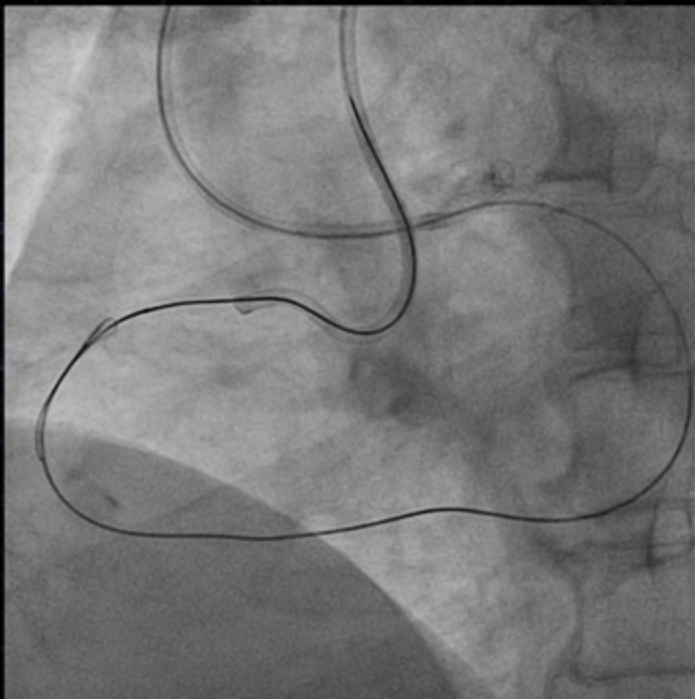
## Knuckled Fielder XT Technique



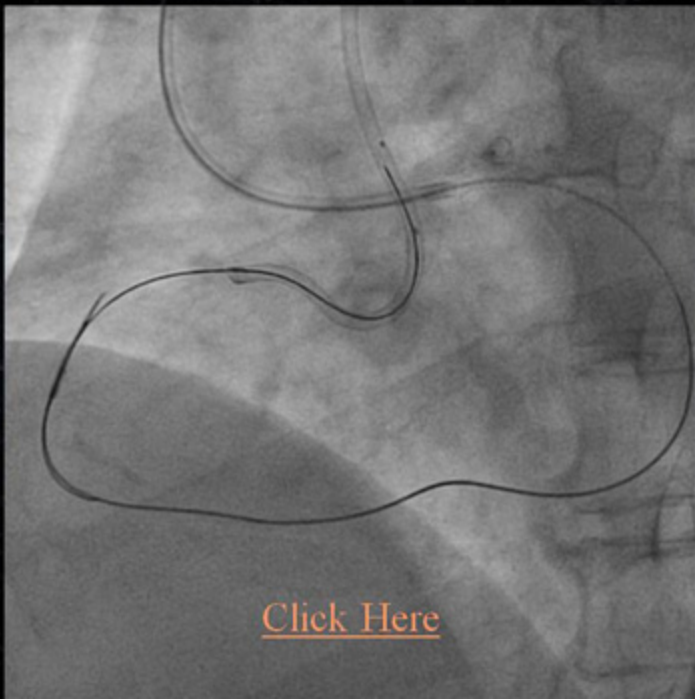
## Re-positioning of the Antegrade Confianza Pro



## Re-positioning of the Antegrade Confianza Pro

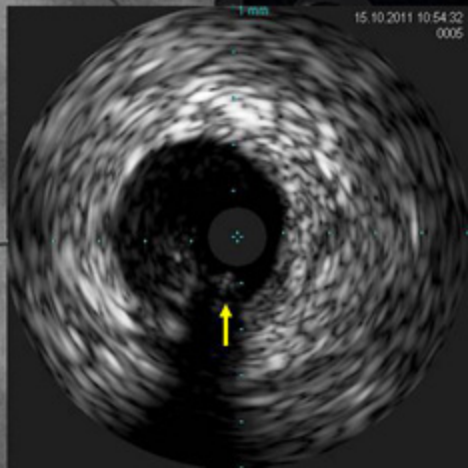
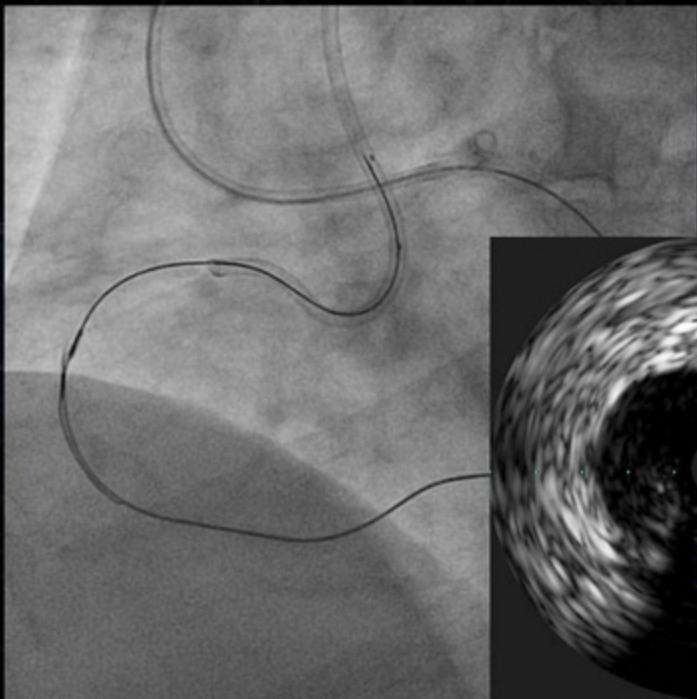


## Pre-dilatation and IVUS Examination

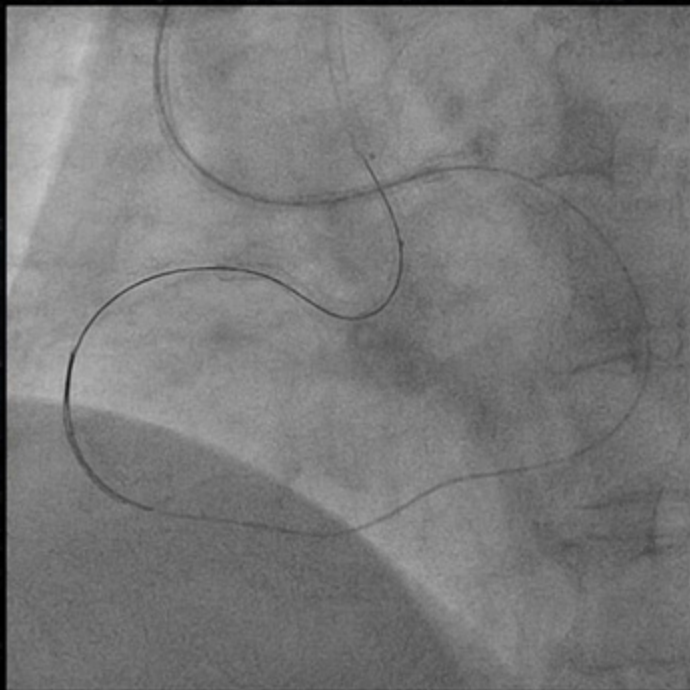


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# IVUS Guided Reverser CART with Sion



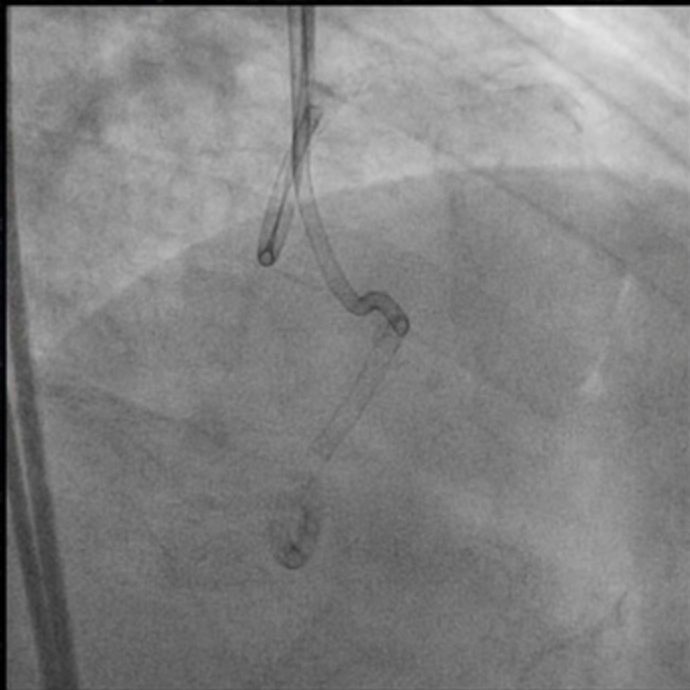
## IVUS Guided Reverser CART with Sion



## Final Results after Implantation of 3 Nobori Stents



## Final Results after Implantation of 3 Nobori Stents



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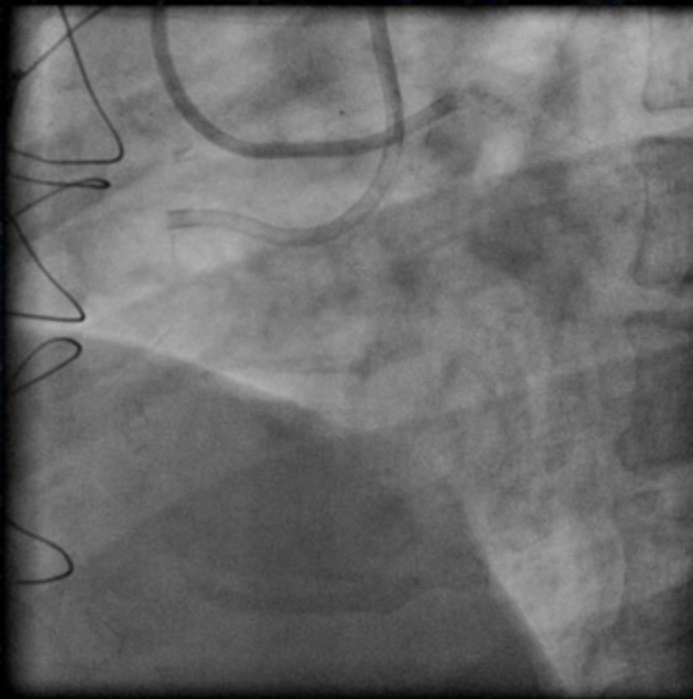
# TOPIC 2012

## Case 2

# Effort AP with Previous CABG, 54 years, male Proximal RCA CTO, Re-try

8Fr Mach1  
AL1.5-SH

7Fr Mach1  
CLS4.0-SH

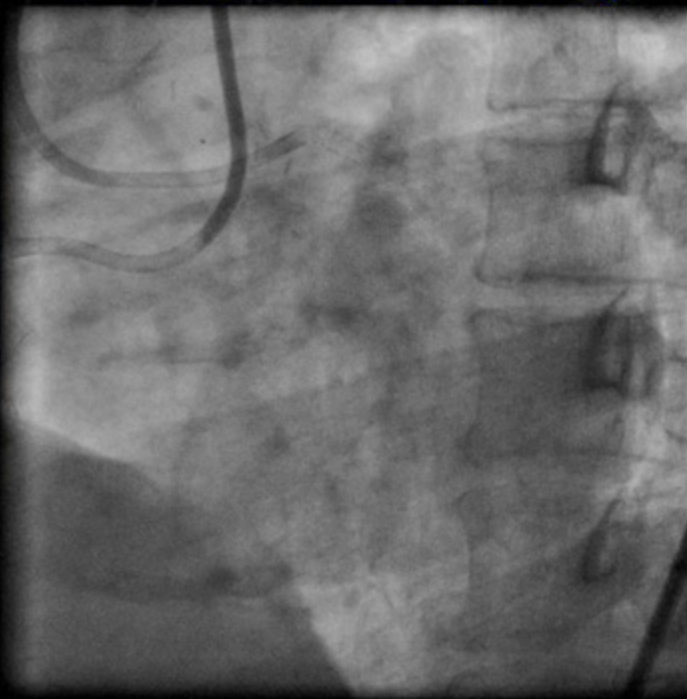


January, 2010  
Taiwan Live

**Effort AP with Previous CABG, 54 years, male**  
**Proximal RCA CTO, Re-try**

8Fr Mach1  
AL1.5-SH

7Fr Mach1  
CLS4.0-SH

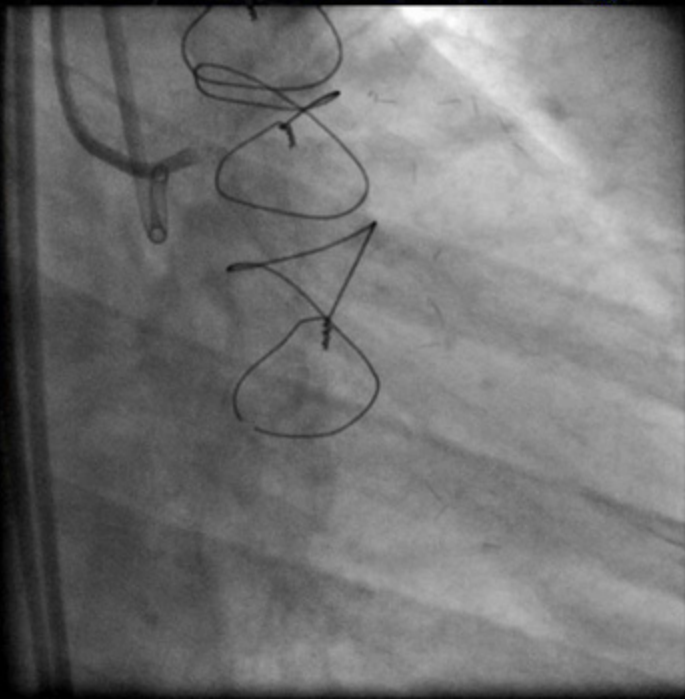


January, 2010  
Taiwan Live

# Effort AP with Previous CABG, 54 years, male Proximal RCA CTO, Re-try

8Fr Mach1  
AL1.5-SH

7Fr Mach1  
CLS4.0-SH



January, 2010  
Taiwan Live

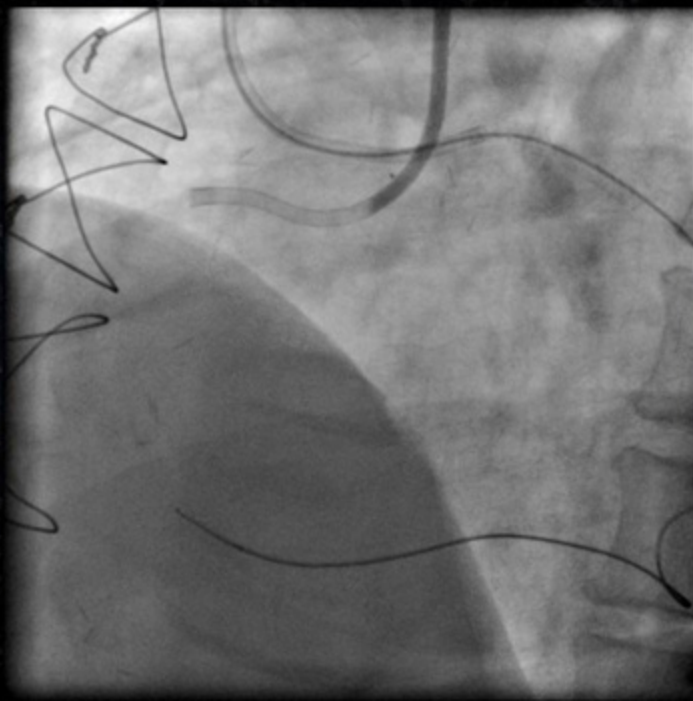
# Retrograde Wiring through PL Channel with Fielder FC and Corsair



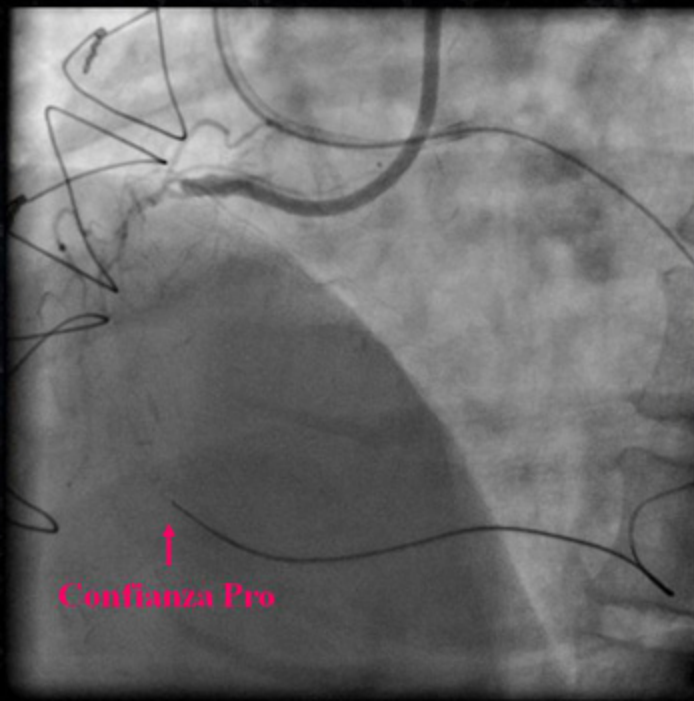
## Bilateral Injection with Corsair



## Retrograde Wiring with Miracle 3.0 and Corsair

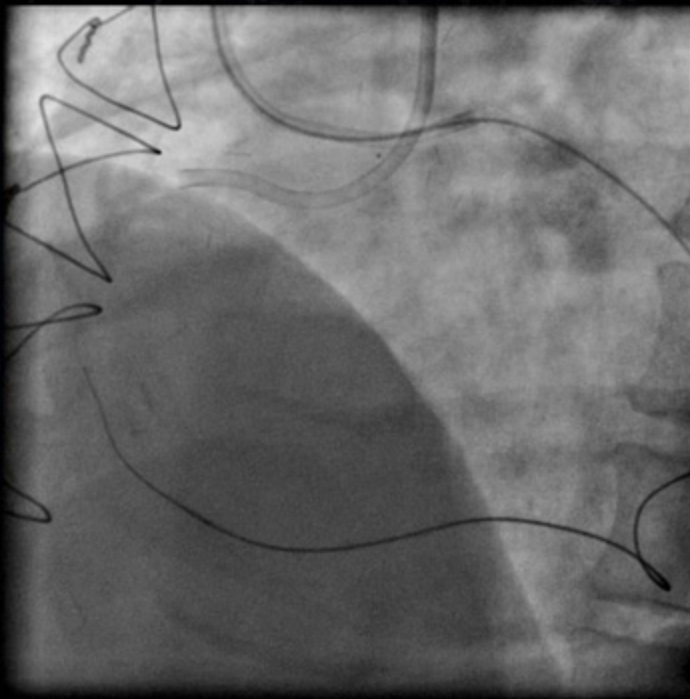


## Retrograde Wiring with Confianza Pro and Corsair

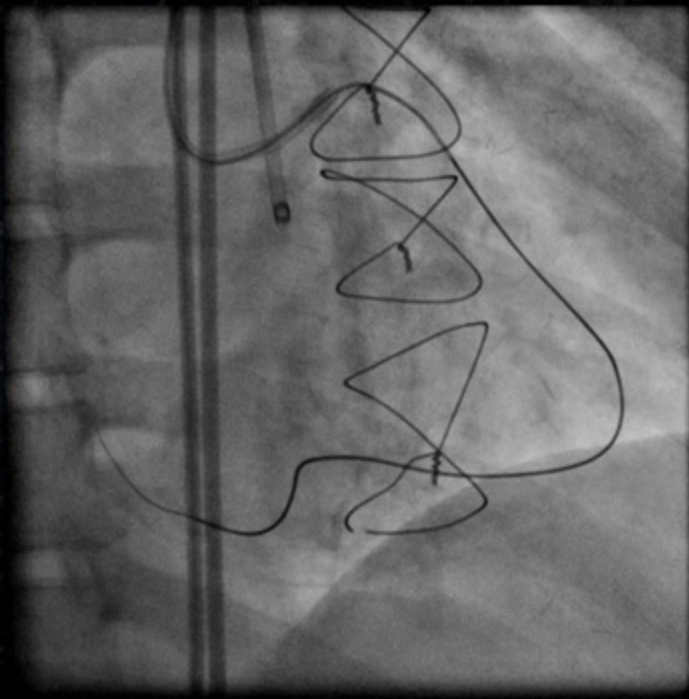




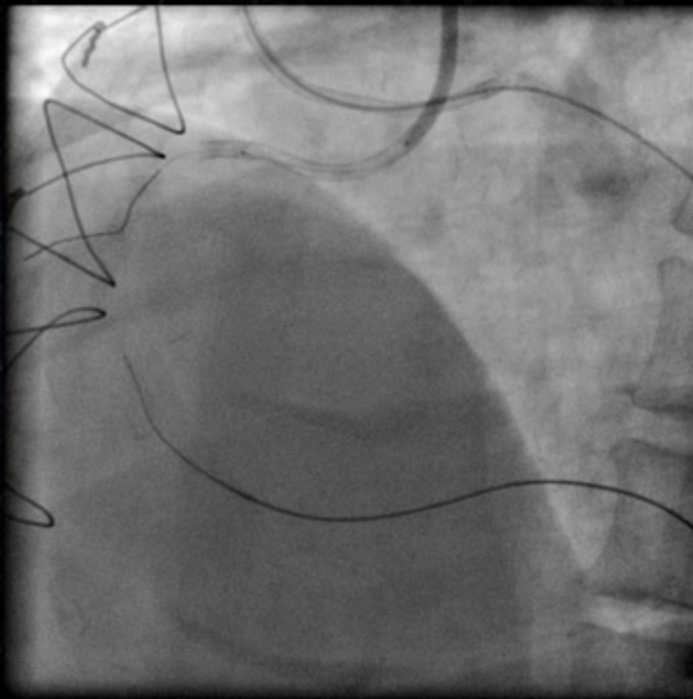
# Retrograde Wiring with Confiianza Pro and Corsair



# Retrograde Wiring with Confiianza Pro and Corsair



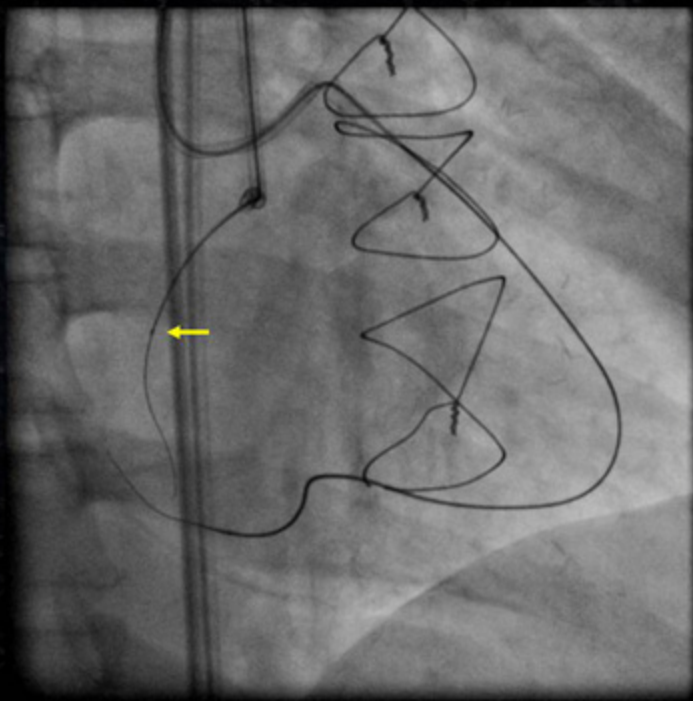
## Antegrade Wiring with Fielder FC and Finecross



# Antegrade Wiring with Confianza Pro and Finecross



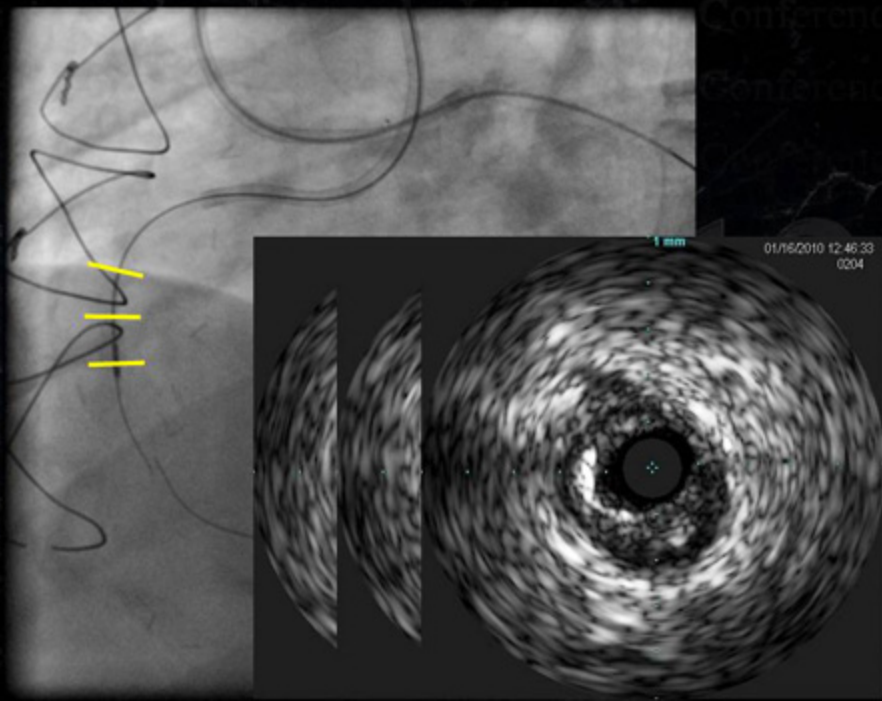
## Penetration of the Resistant Point with Tornus 2.6Fr



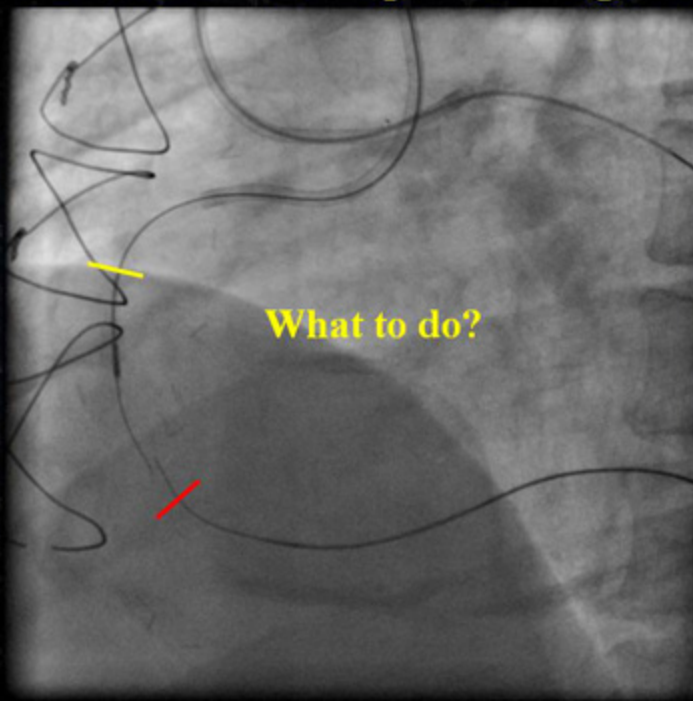
TC

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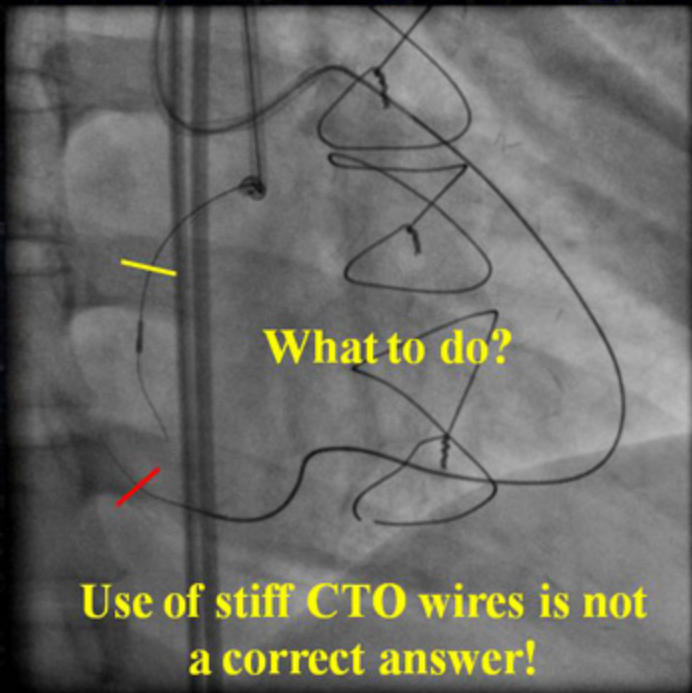
# IVUS Examination after Pre-dilatation with Apex 2.0mm



# IVUS Examination after Pre-dilatation with Sprinter Legend 2.0mm

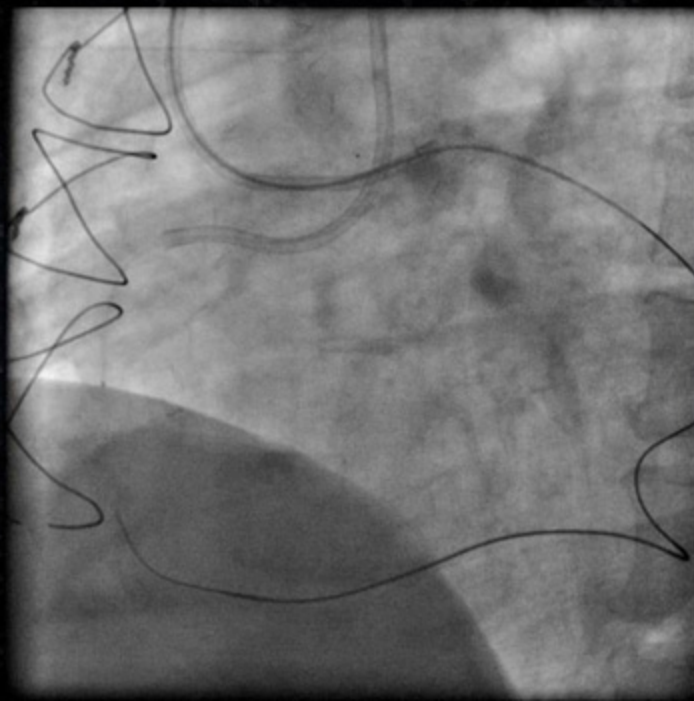


# **IVUS Examination after Pre-dilatation with Sprinter Legend 2.0mm**



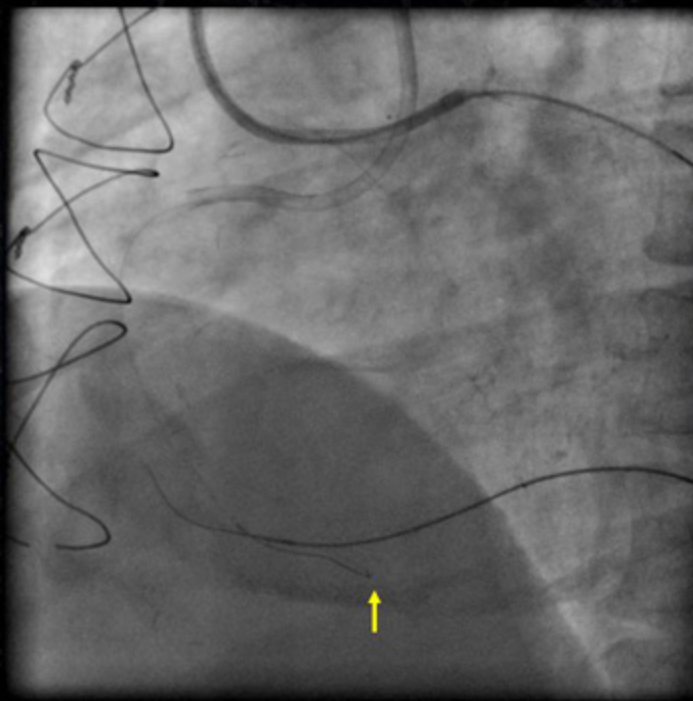


## Tip Injection of Contrast to Create Antegrade Dissection



# Knuckled Fielder FC to Create Antegrade Dissection

8Fr Mach1  
AL1.5-SH



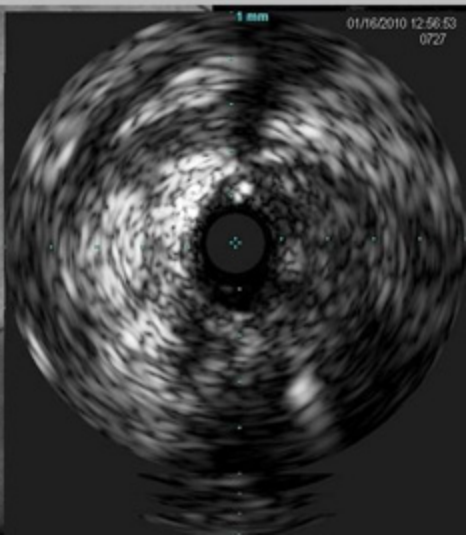
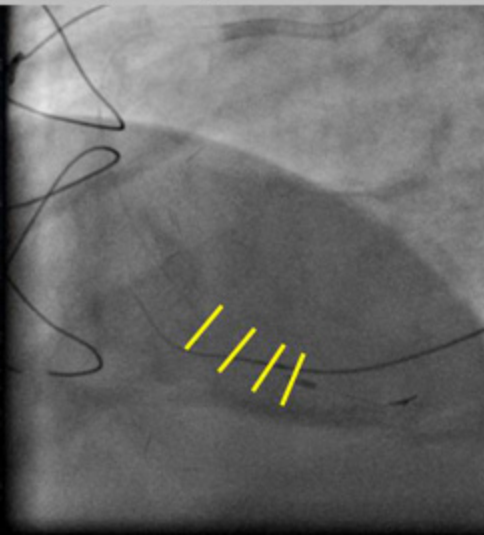
# IVUS Examination after Pre-dilatation with Sprinter Legend 2.5 mm



[Click Here!](#)

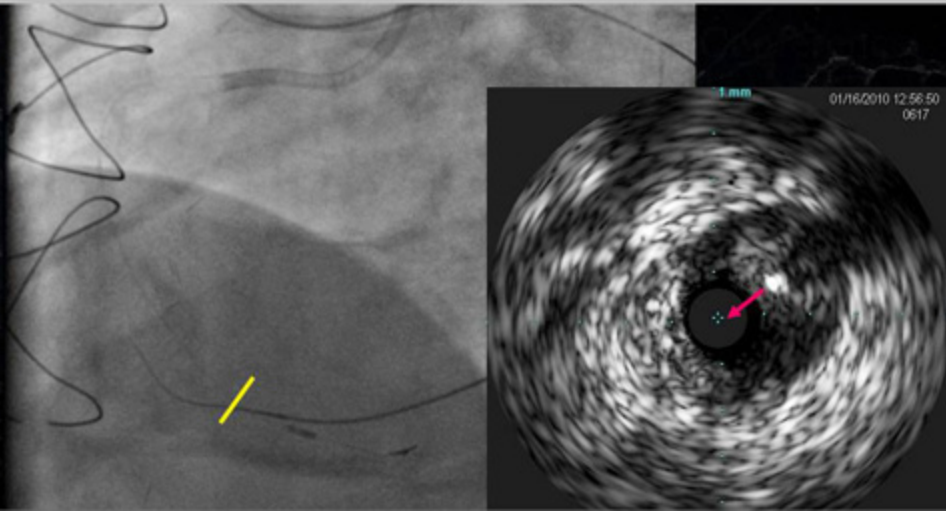
## IVUS Examination after Pre-dilatation with Sprinter Legend 2.5 mm

Retrograde Confianza Pro was advanced towards the SVG without passing through the sub-intimal space created by antegrade knuckled wire and balloon.



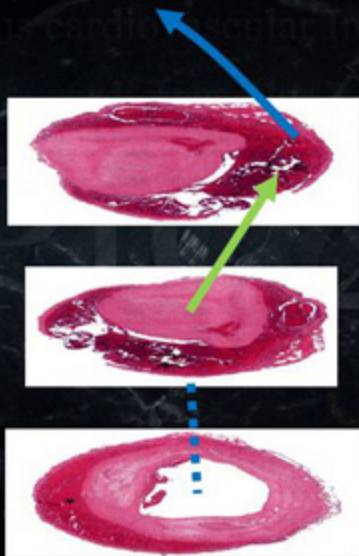
# IVUS Examination after Pre-dilatation with Sprinter Legend 2.5 mm

Retrograde wire should puncture the “external elastic membrane”  
into the sub-intimal space created by antegrade dilatation!

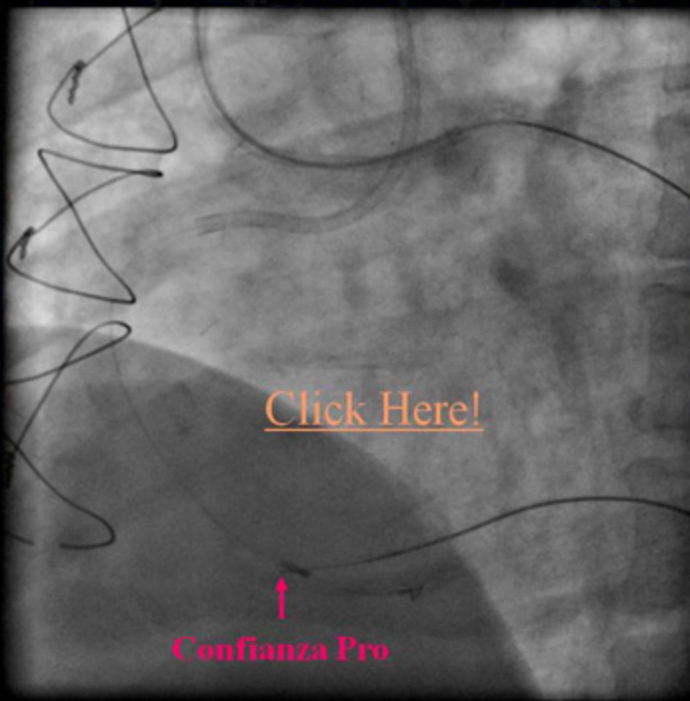


Stiff CTO wire (Confianza Pro) should be used!

# Subintimal Space is Expandable (transverse & longitudinal)



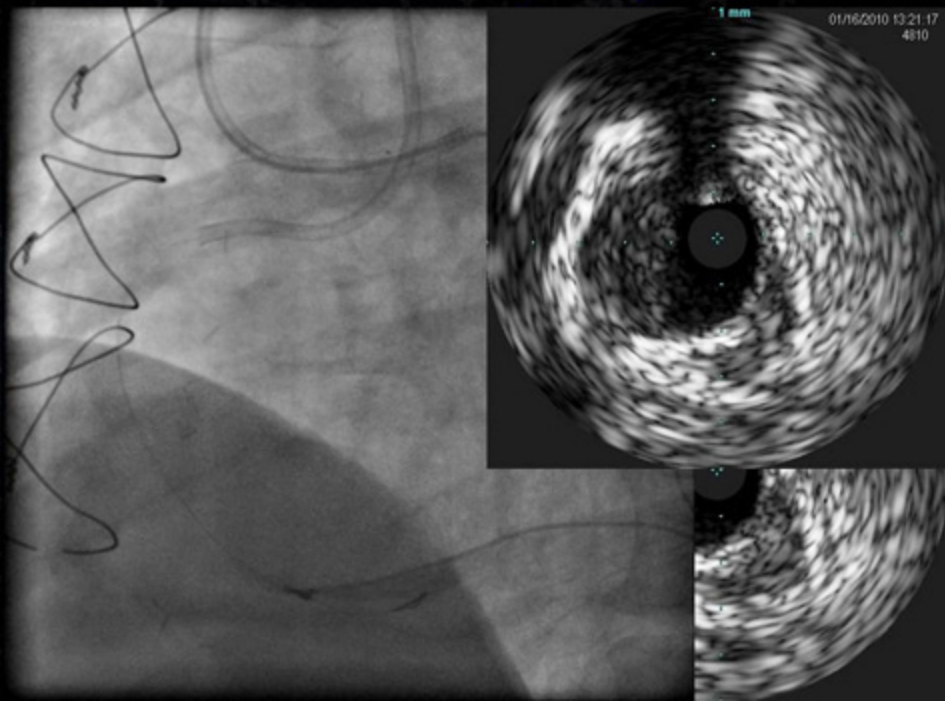
# Retrograde Puncture of External Elastic Membrane with Confianza Pro under IVUS Guidance



[Click Here!](#)

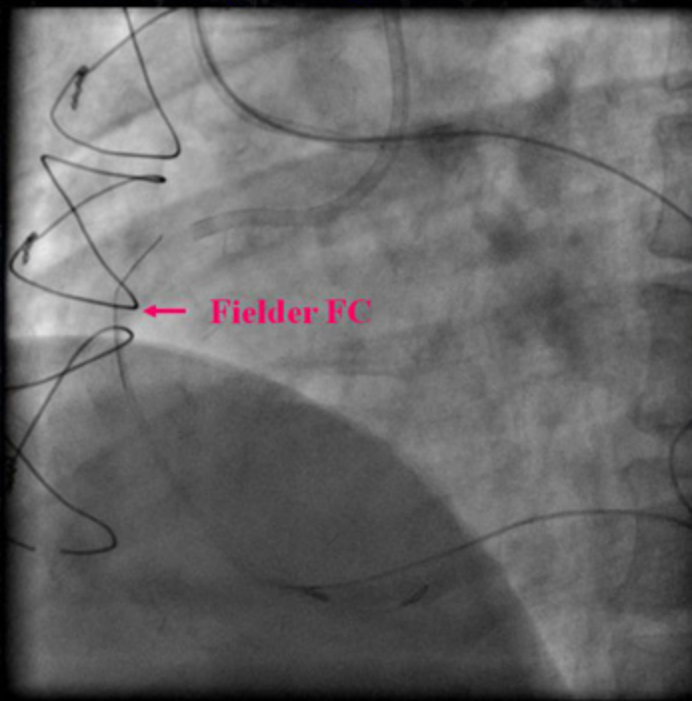
↑  
Confianza Pro

# Retrograde Wire Exchange from Confianza Pro into Fielder FC to "Climb Up" the False Lumen Created by Antegrade Dilatation





# Fielder FC could Easily "Climb Up" the False Lumen Created by Antegrade Dilatation

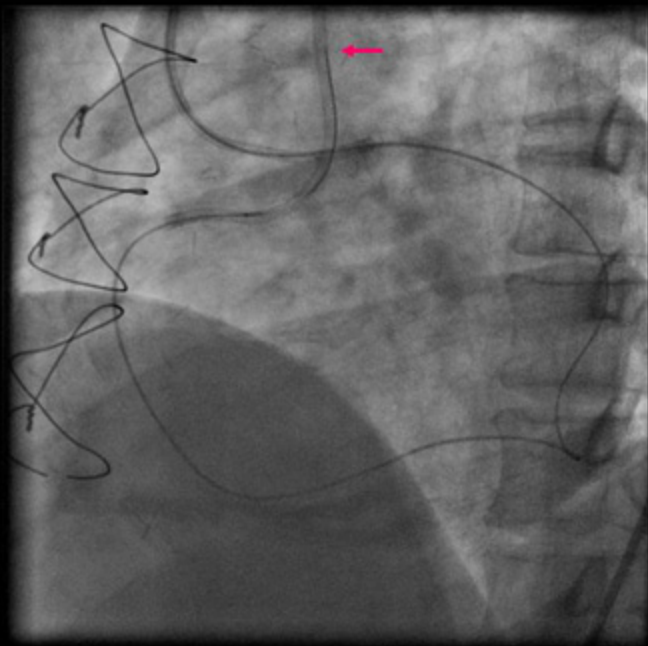


# IVUS Examination to Detect the Position of the Retrograde Fielder FC



[Click Here!](#)

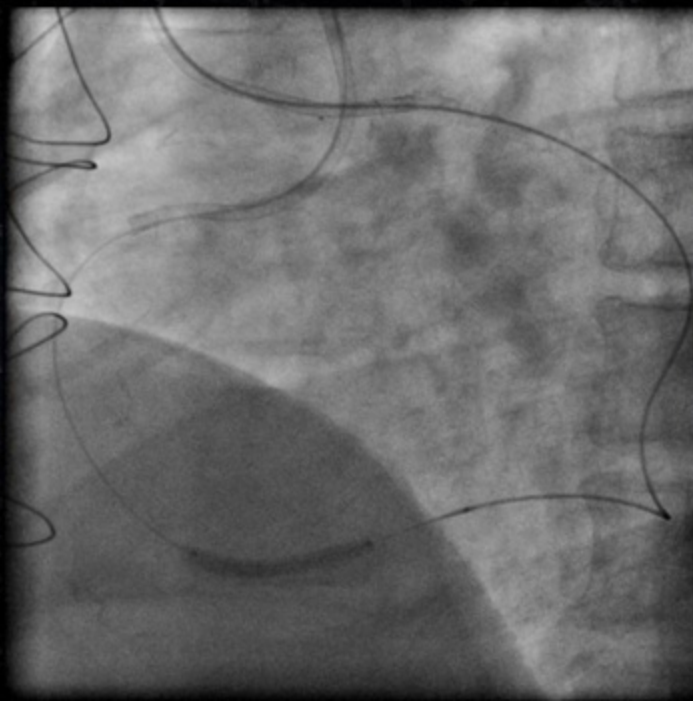
# Retrograde Wire Externalization with 300cm Fiedler FC



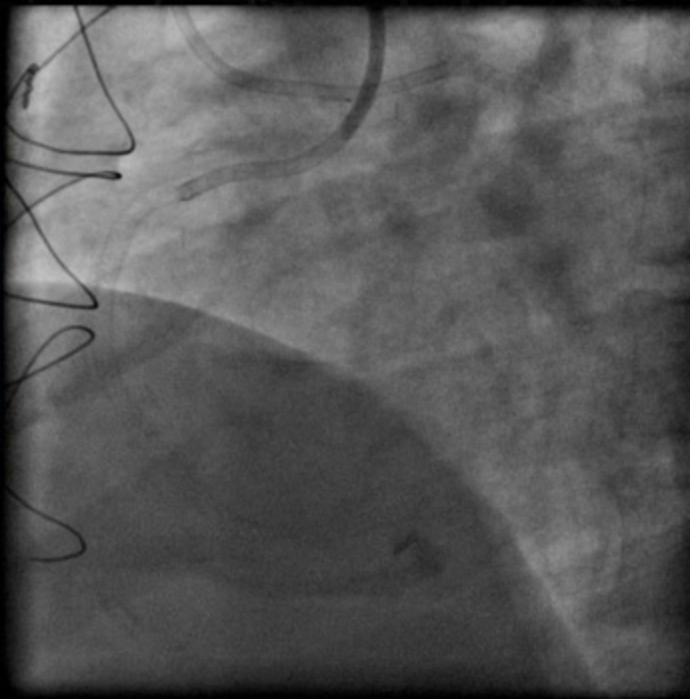
TC

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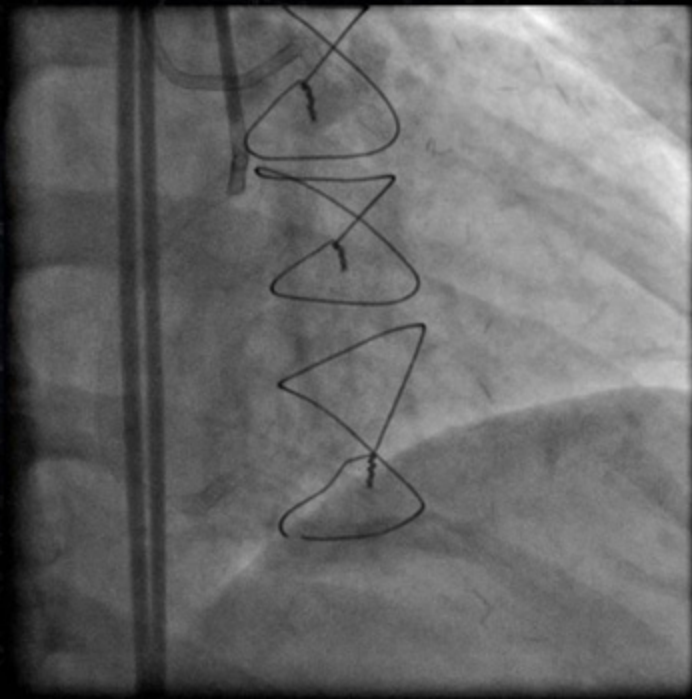
# Antegrade Dilatation with Hiryu 3.0mm @ 16atm



## Final Results after Implantation of 4 Promus Stents



## Final Results after Implantation of 4 Promus Stents



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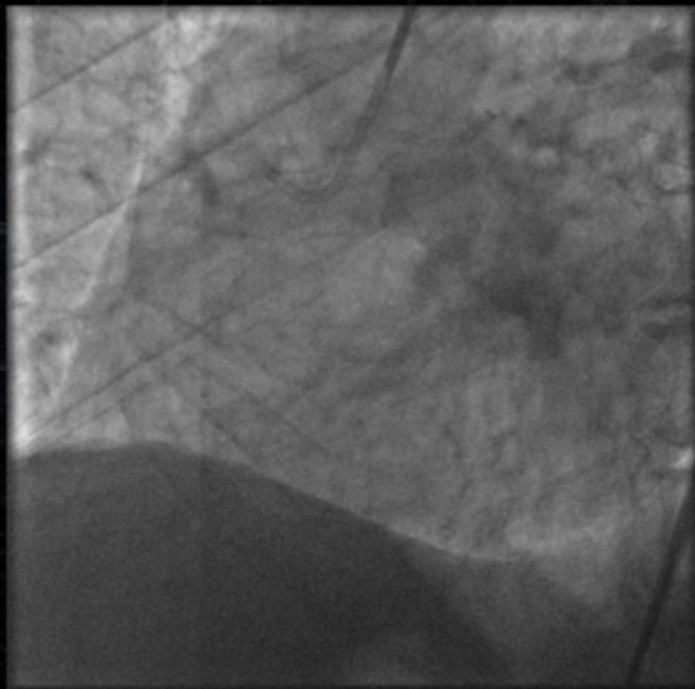
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# TOPIC 2012

## Case 3

# Effort AP, 54 years, male: Mid RCA CTO



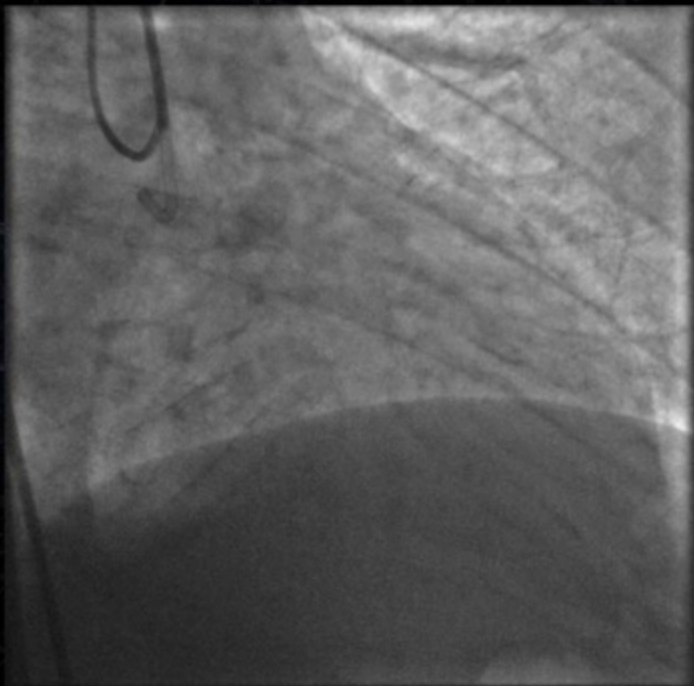
8Fr Brite-tip  
IM-SH

6Fr JL4.0  
(diagnostic)

July, 2011  
Sidney



# Effort AP, 54 years, male: Mid RCA CTO



8Fr Brite-tip  
IM-SH

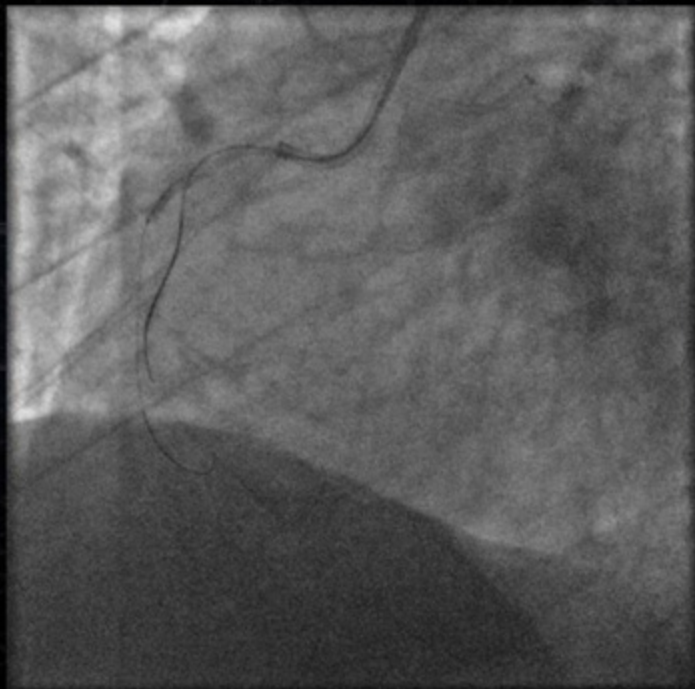
6Fr JL4.0  
(diagnostic)

July, 2011  
Sidney

# Failed "Brief" Antegrade Approach with Fielder XT

8Fr Brite-tip  
IM-SH

6Fr JL4.0  
(diagnostic)



July, 2011  
Sidney

## Tip Injection from Corsair

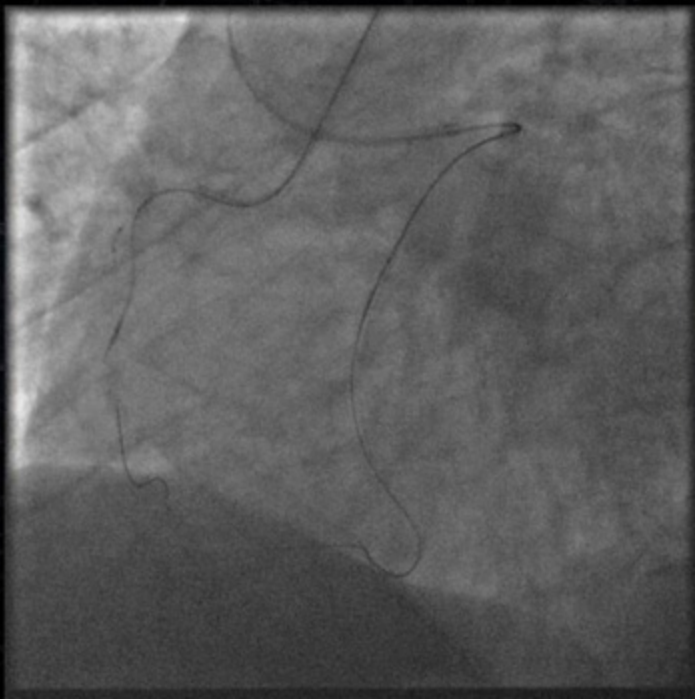
8Fr Brite-tip  
IM-SH

7Fr Brite-tip  
XB3.5-SH

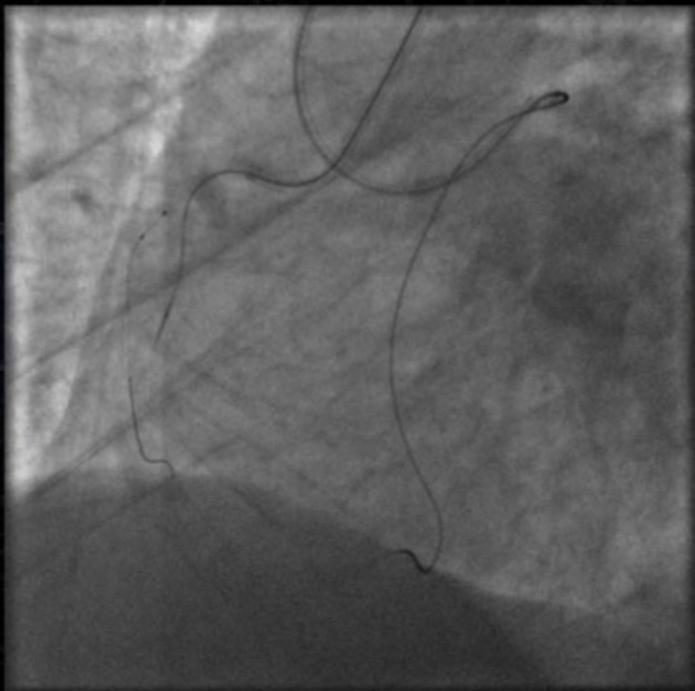


July, 2011  
Sidney

## **XT-R could be Advanced into R-PLA**



## Tip Injection from Corsair



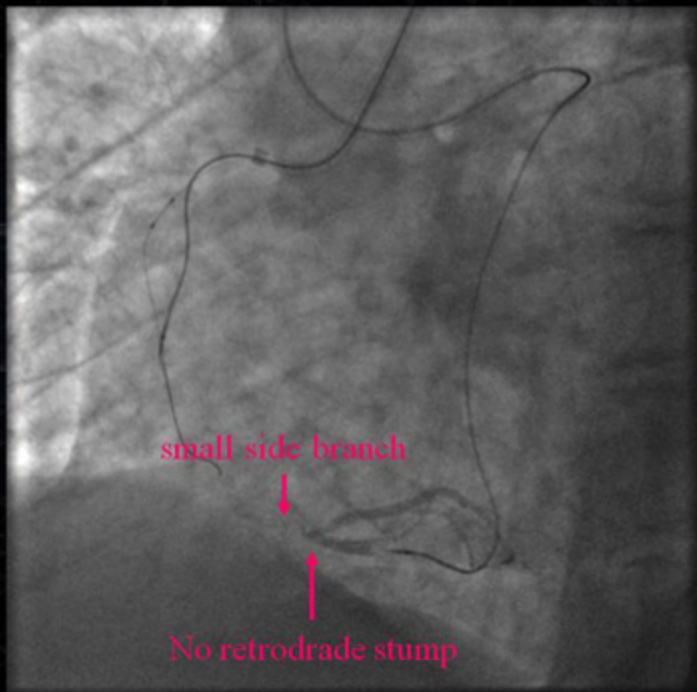
## Retrograde Fielder XT-R with Corsair



## Repeated Tip Injection from Corsair

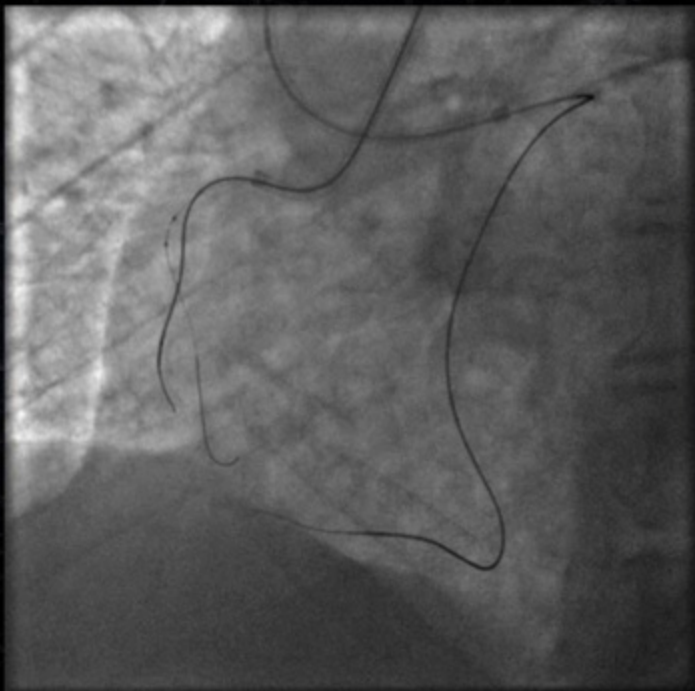


## Repeated Tip Injection from Corsair

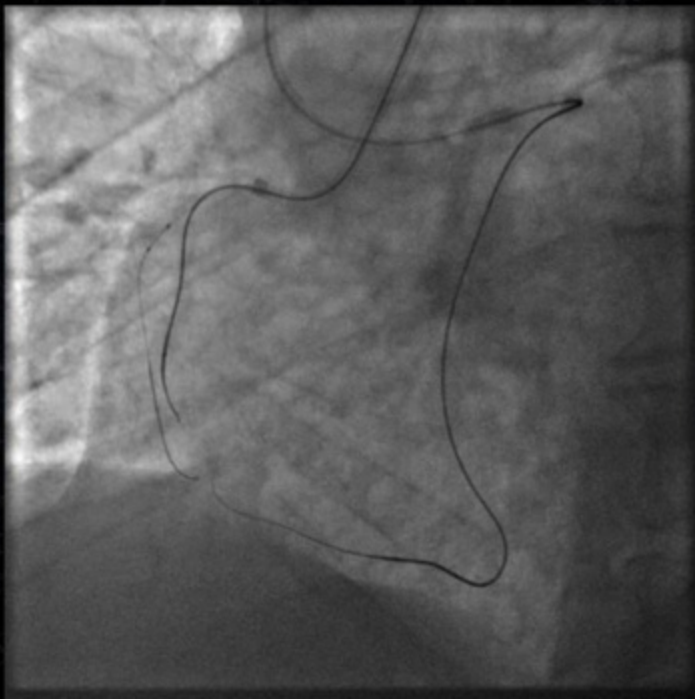




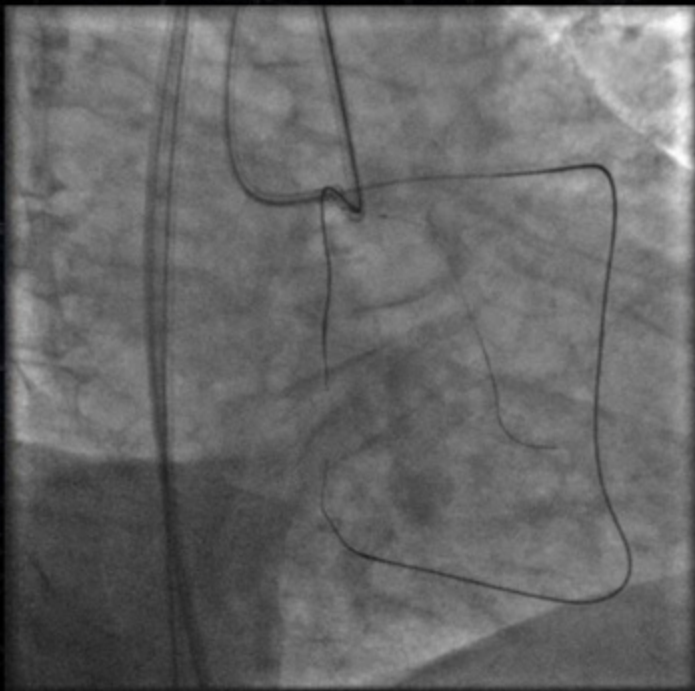
# Retrograde Confianza Pro Punctured the Distal Cap!



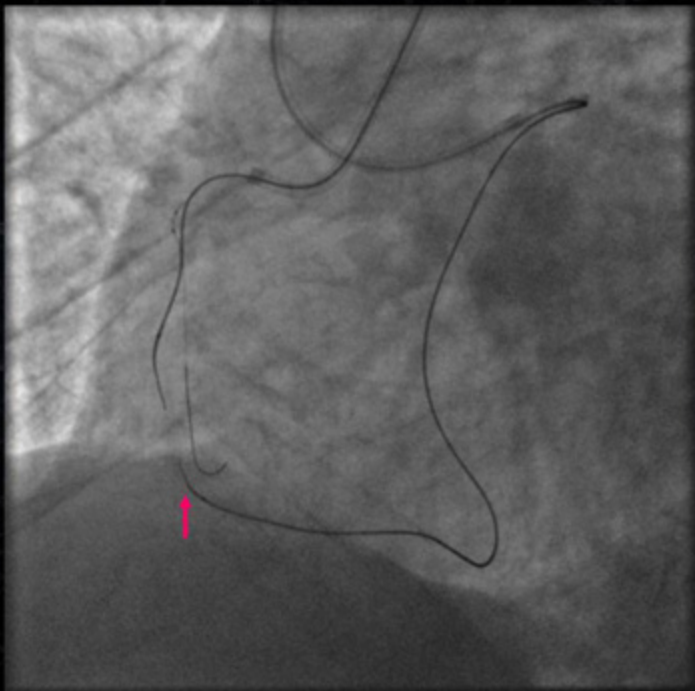
## Retrograde Confianza Pro was Advanced Furthermore



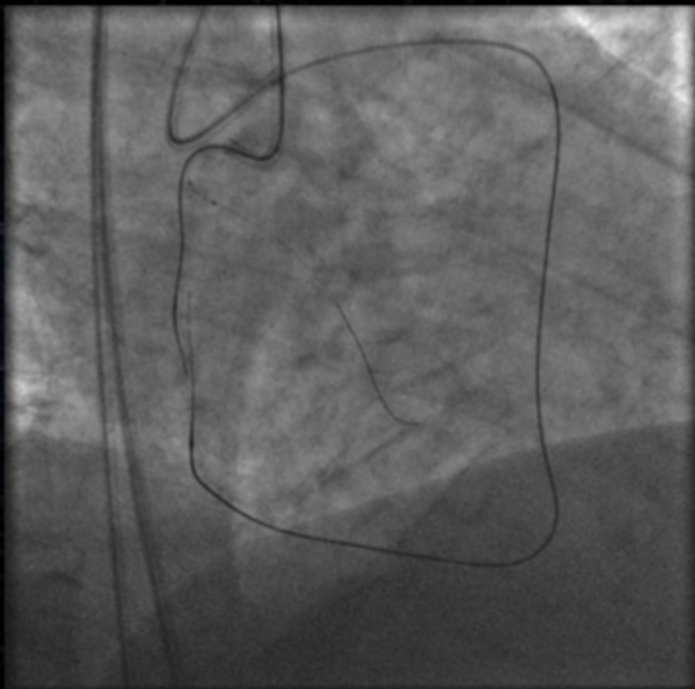
## Retrograde Confianza Pro was Advanced Furthermore



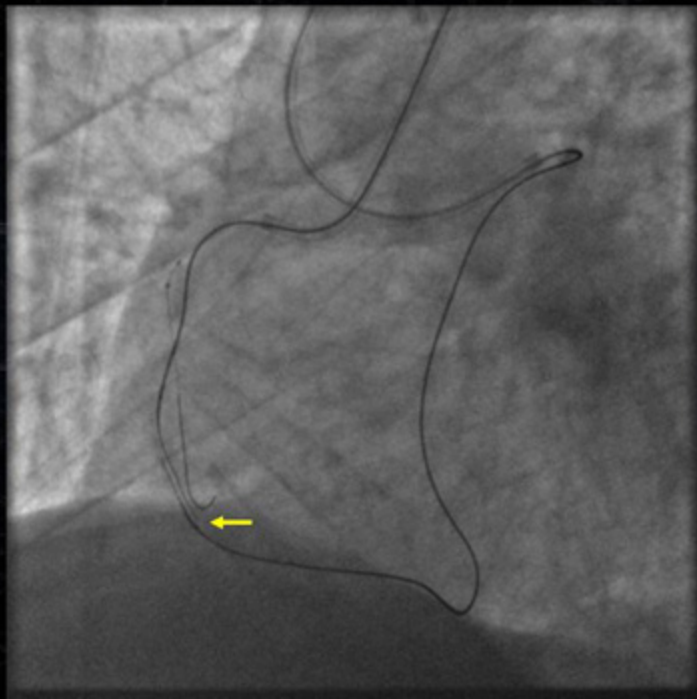
# Retrograde Corsair was Pushed into the CTO Body



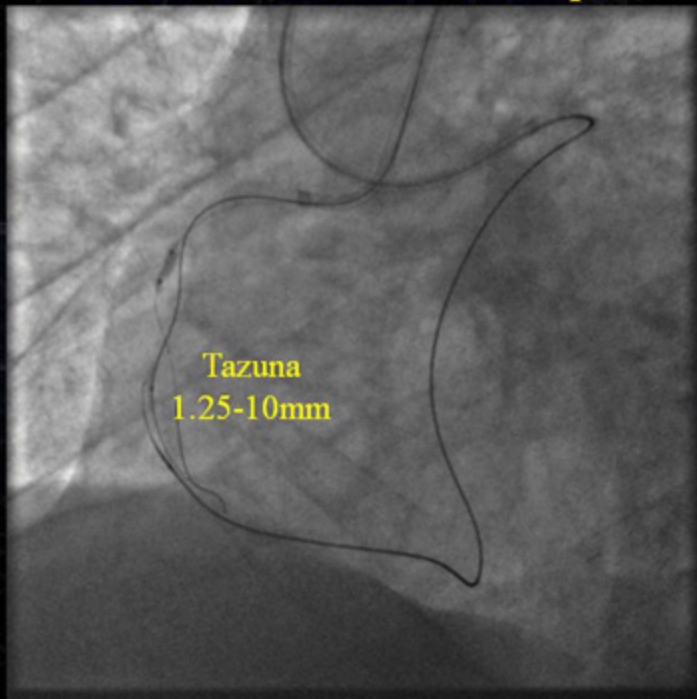
## Unsuccessful Retrograde Wire Crossing with Confianza Pro



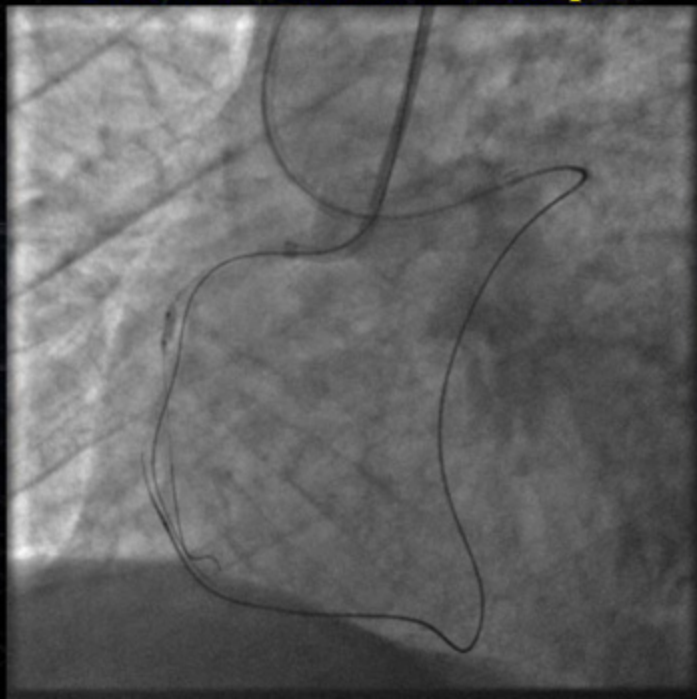
## Antegrade Confianza Pro was Advanced into the CTO Body



# No Dilatation Devices could be Advanced into the CTO Body even with Balloon Technique

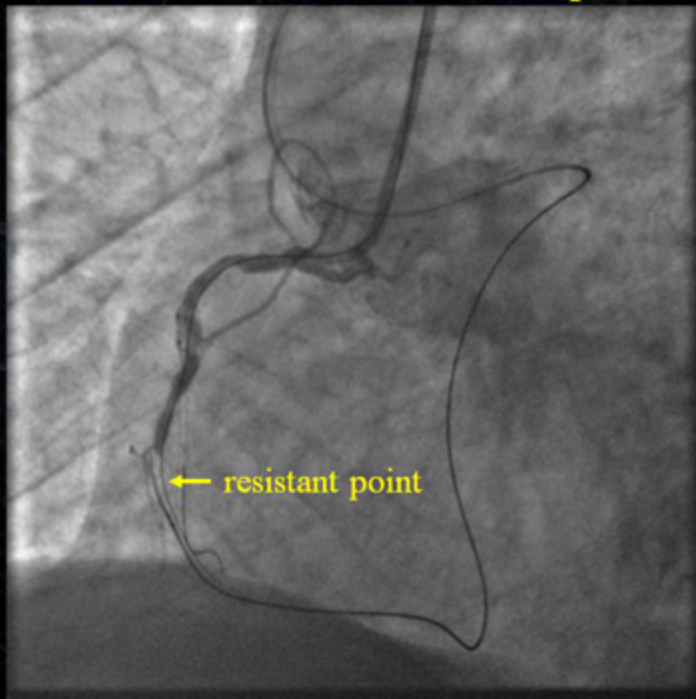


# No Dilatation Devices could be Advanced into the CTO Body even with Balloon Technique





# No Dilatation Devices could be Advanced into the CTO Body even with Balloon Technique



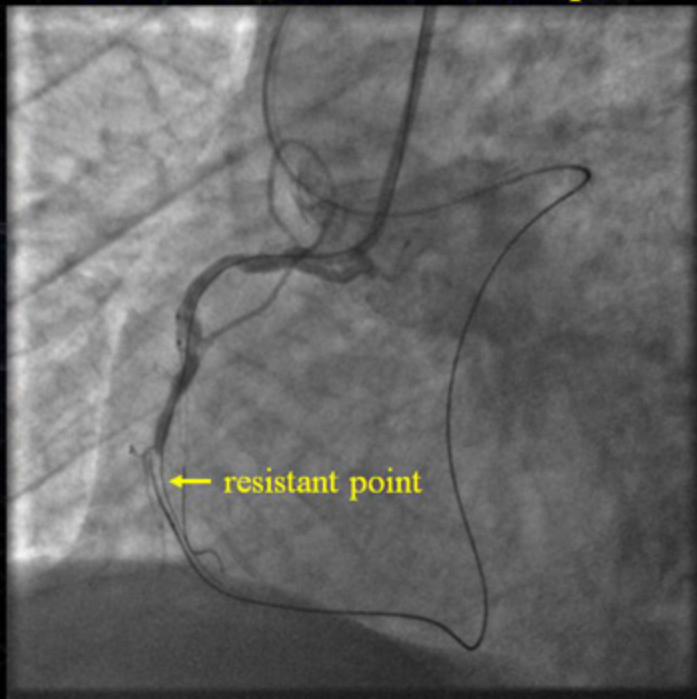
Tokyo Percutaneous cardiovascular Intervention Conference  
Tokyo Percutaneous cardiovascular Intervention Conference  
Tokyo Percutaneous cardiovascular Intervention Conference

# TOPIC 2012

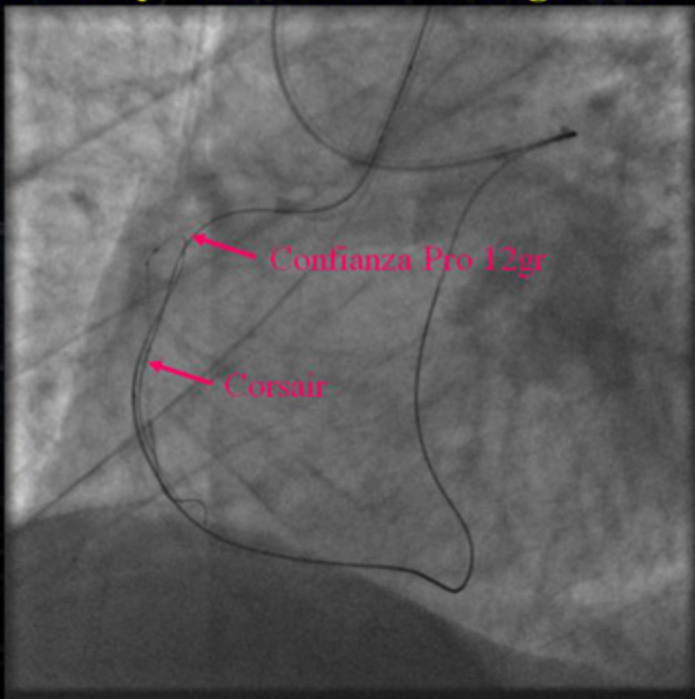
**What we should do?**

Tokyo Percutaneous cardiovascular Intervention Conference  
Tokyo Percutaneous cardiovascular Intervention Conference  
Tokyo Percutaneous cardiovascular Intervention Conference  
Tokyo Percutaneous cardiovascular Intervention Conference

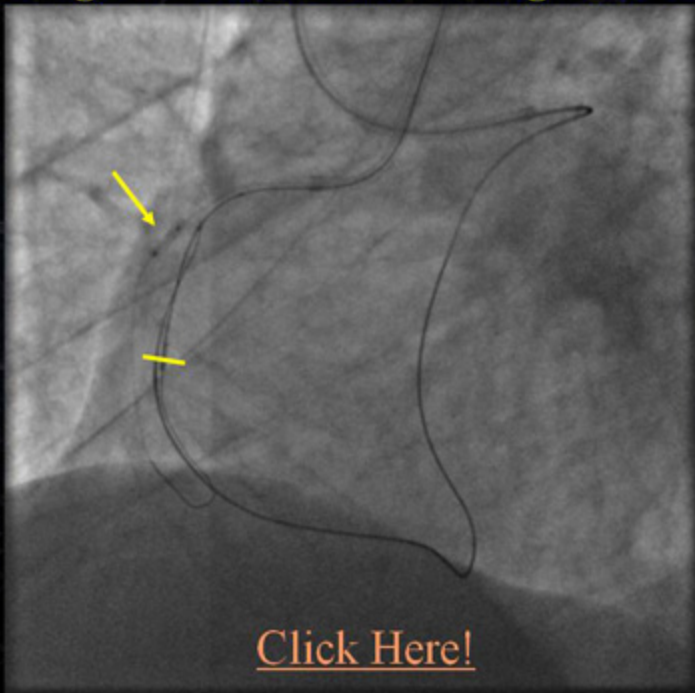
# No Dilatation Devices could be Advanced into the CTO Body even with Balloon Technique



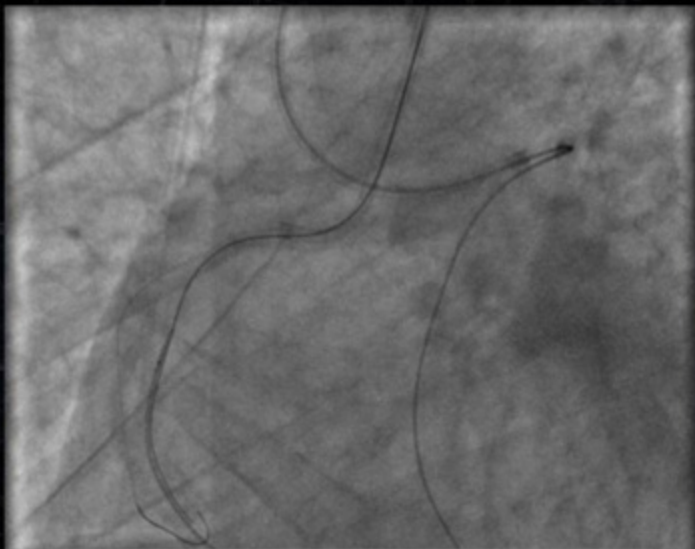
# Reverse CART Technique with Confianza Pro 12gr Bypassing the Heavy Calcification through Sub-intimal Space



## IVUS Examination to Confirm Position of the Retrograde Confianza Pro 12gr and Corsair



## Retrograde Confianza Pro 12gr was Replaced by Sion



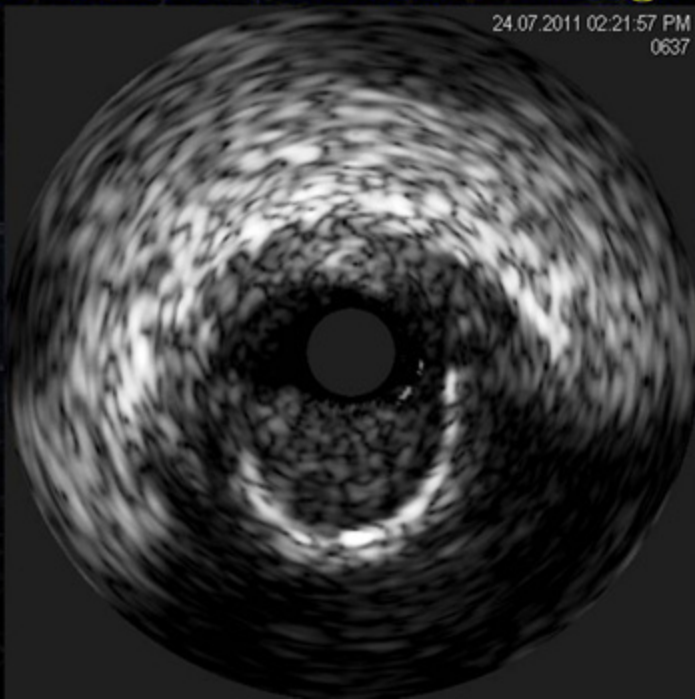
After clockwise rotation of IM-SH  
Sion could be advanced into it.

# IVUS Examination after Retrograde Wire Externalization and Pre-dilatation with Tazuna 2.5mm@8-14atm



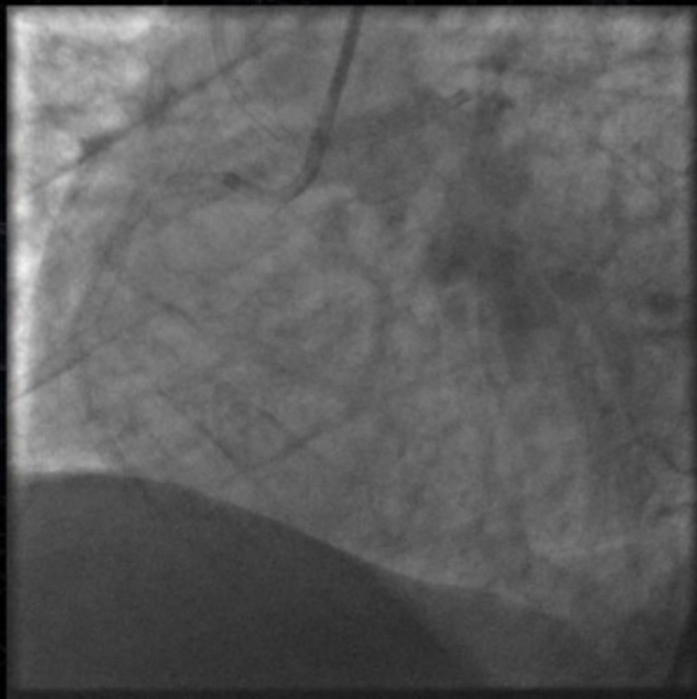
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# IVUS Examination after Retrograde Wire Externalization and Pre-dilatation with Tazuna 2.5mm@8-14atm

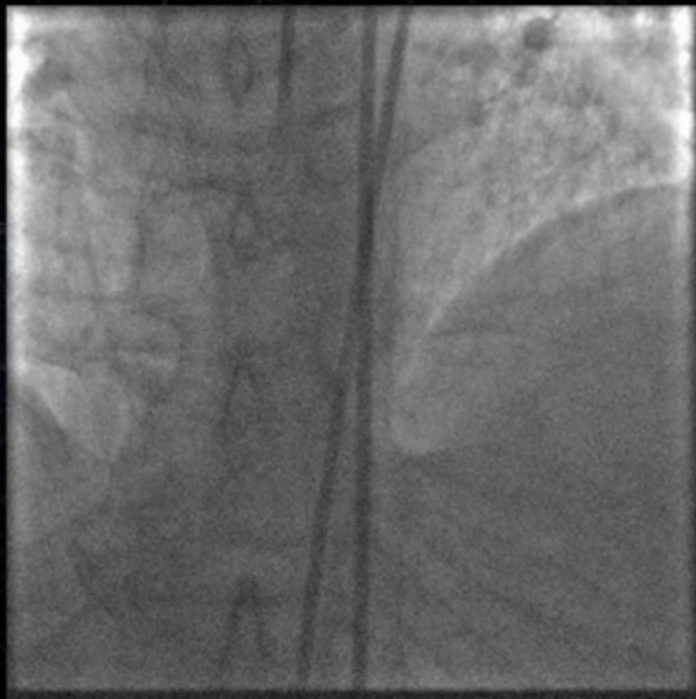




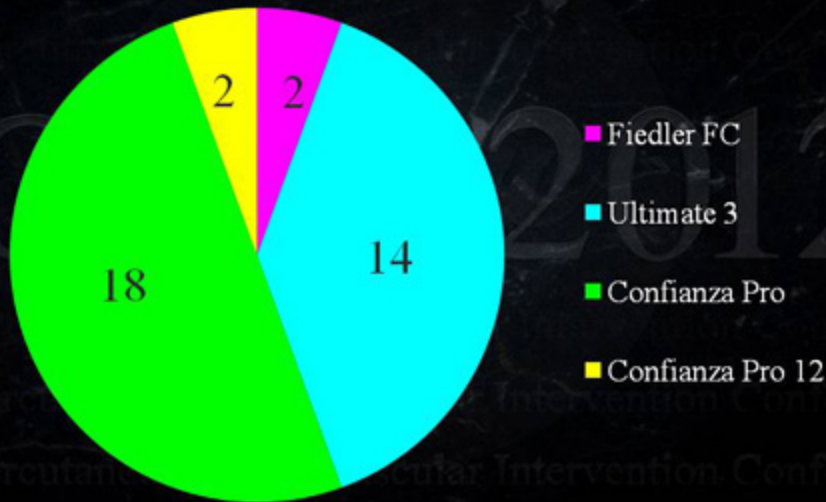
## Final Results after Implantation of 3 Xience Prime Stents



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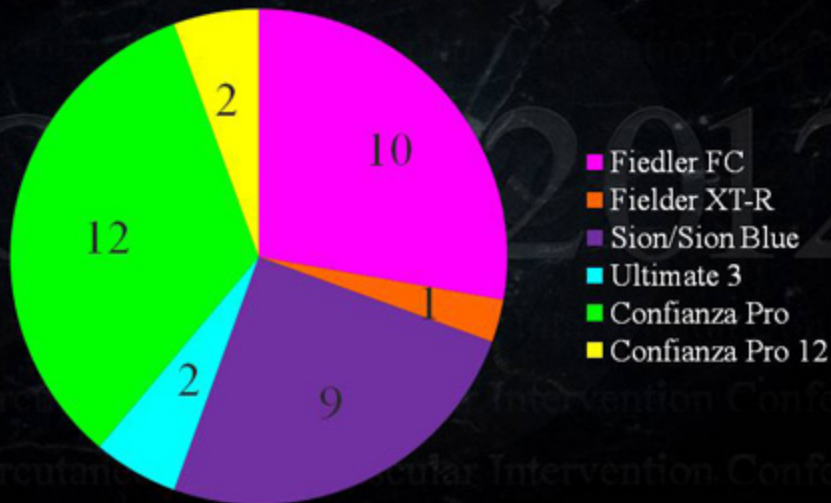


# Final Antegrade Wire Just before Successful Reverse CART in 2011



n=36

# Final Retrograde Wire for Successful Reverse CART in 2011



n=36