



Complex Situations in Bifurcation Interventions

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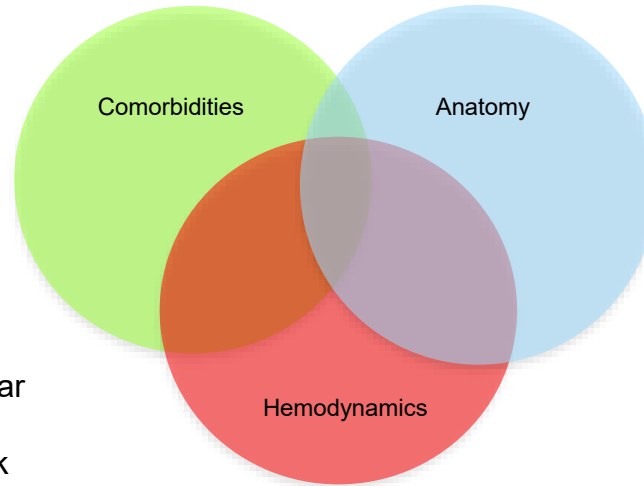
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Introduction

- Bifurcation lesions are among the most frequently approached and challenging coronary lesions for percutaneous coronary intervention
- Rewiring and Kissing-balloon (KB) inflation is mandatory in any two-stent strategy to optimize stent apposition, correct stent deformation or distortion, reduce angiographic side-branch (SB) (re) stenosis, and improve outcomes

Complex Situations in Bifurcation Interventions

1. Acute coronary syndrome
2. Prior CABG
3. Heart failure
4. Atrial fibrillation
5. Advanced age
6. Diabetes
7. Renal failure
8. COPD
9. Peripheral vascular disease
10. High bleeding risk
11. Frailty



1. CTO
2. Left Main
3. SVG
4. Thrombus
5. Calcification
6. Ostial lesions
7. Multi-vessel disease
8. Small vessel
9. Diffuse disease

1. Low ejection fraction
2. High filling pressures

Procedure-Related Difficulties

.Rewiring, Recrossing and Kissing Issues

.Calcifications

.CTO

.Ostial lesions

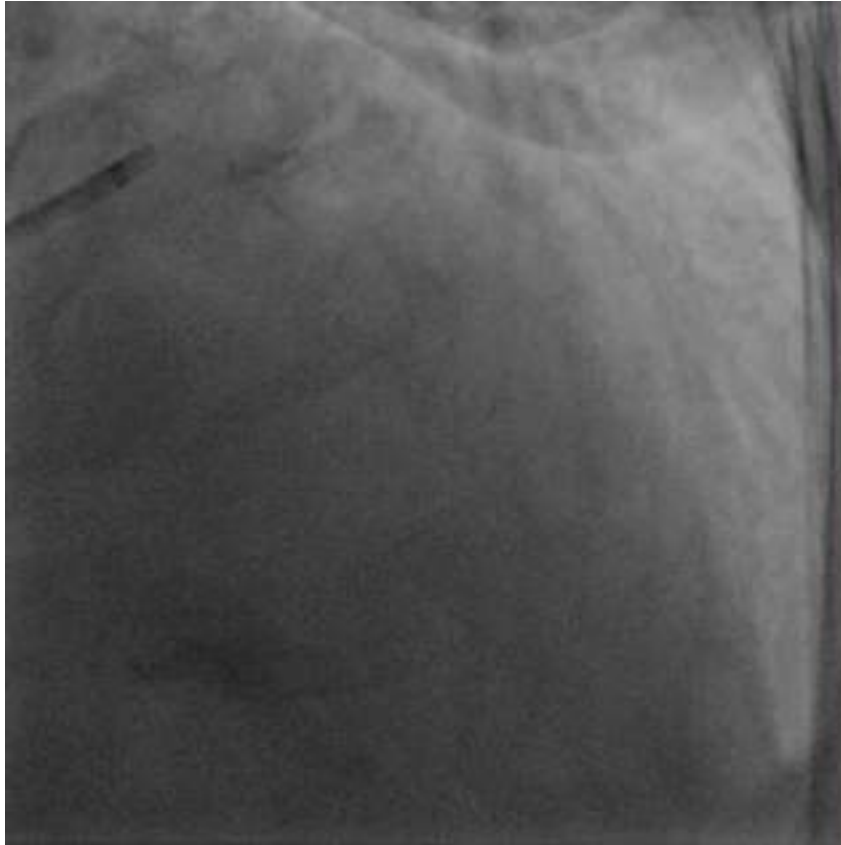
.Thrombus

.High angle

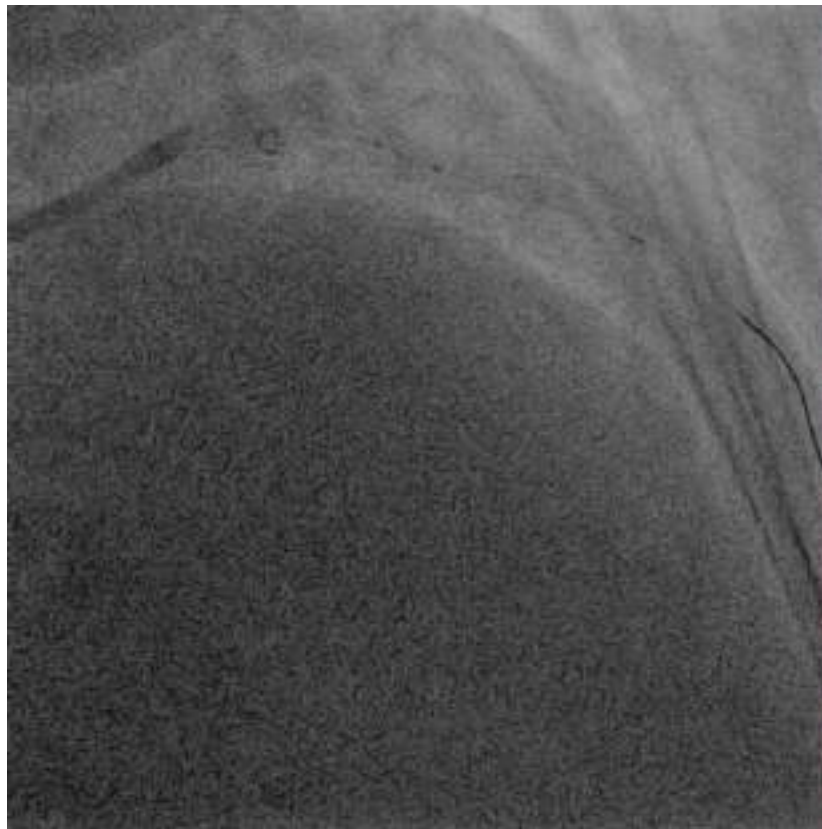
Steps to cross balloon into side branch

- Proximal Optimisation Technique (POT)
- Using low-crossing profile balloon (1.2 or 1.25 mm)
- Use of Extra support wire in the side branch
- Rewire sidebranch (SB) and access through a different stent strut
- Use of angled microcatheter
- In-Stent Anchoring (ISA)
- Buddy Balloon Technique

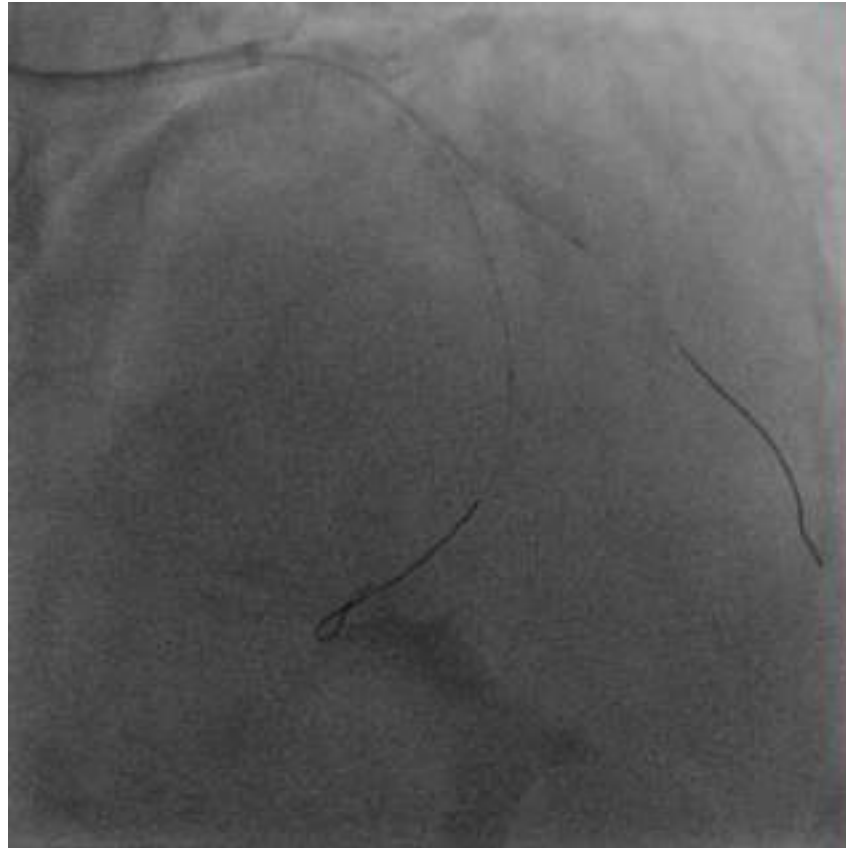
LAD-Diagonal bifurcation lesion



POT after side branch stenting (short balloon)

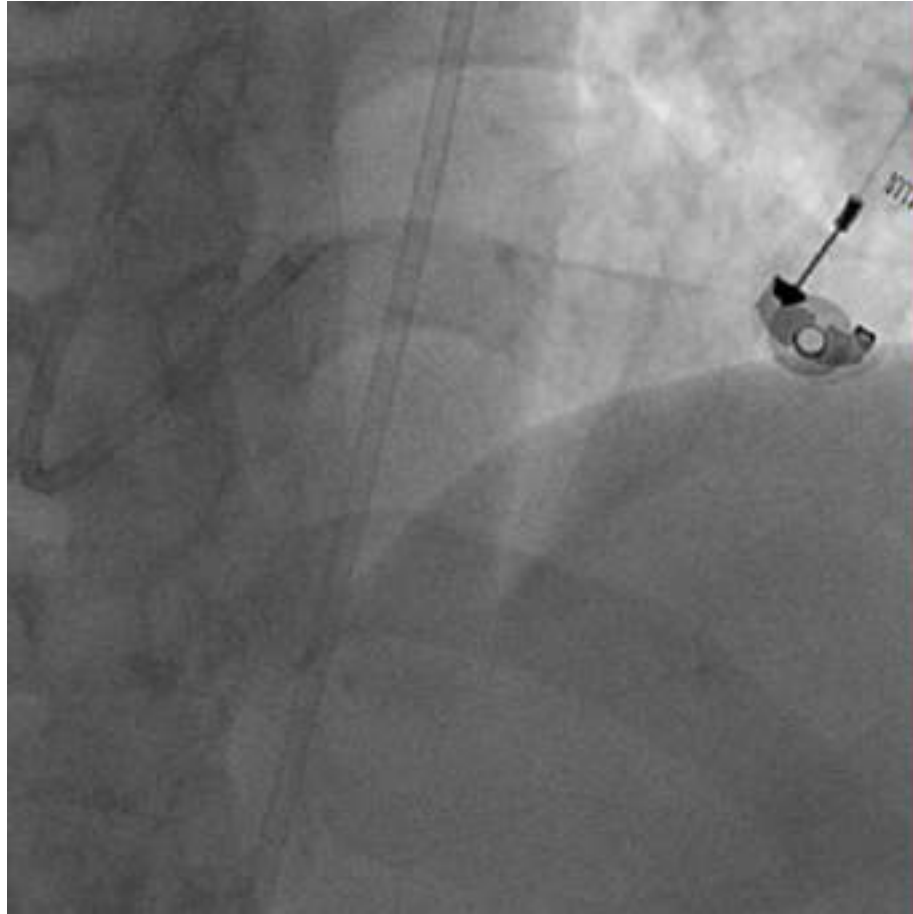


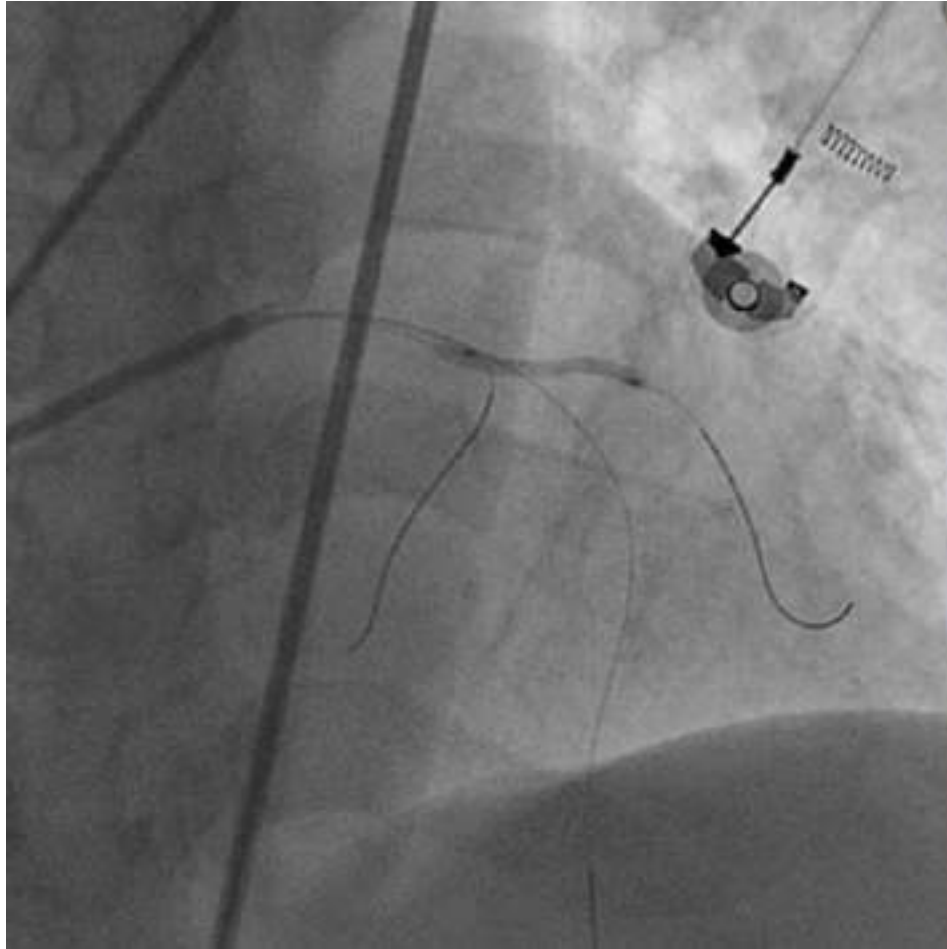
After POT

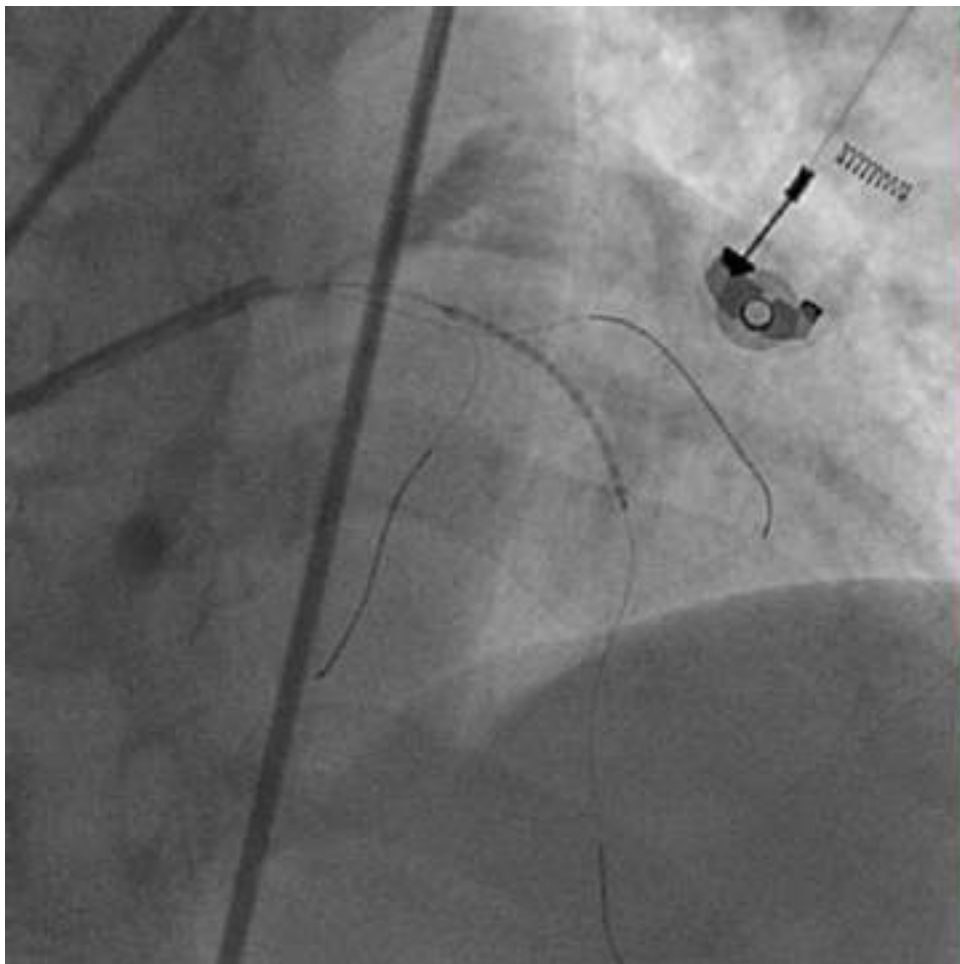


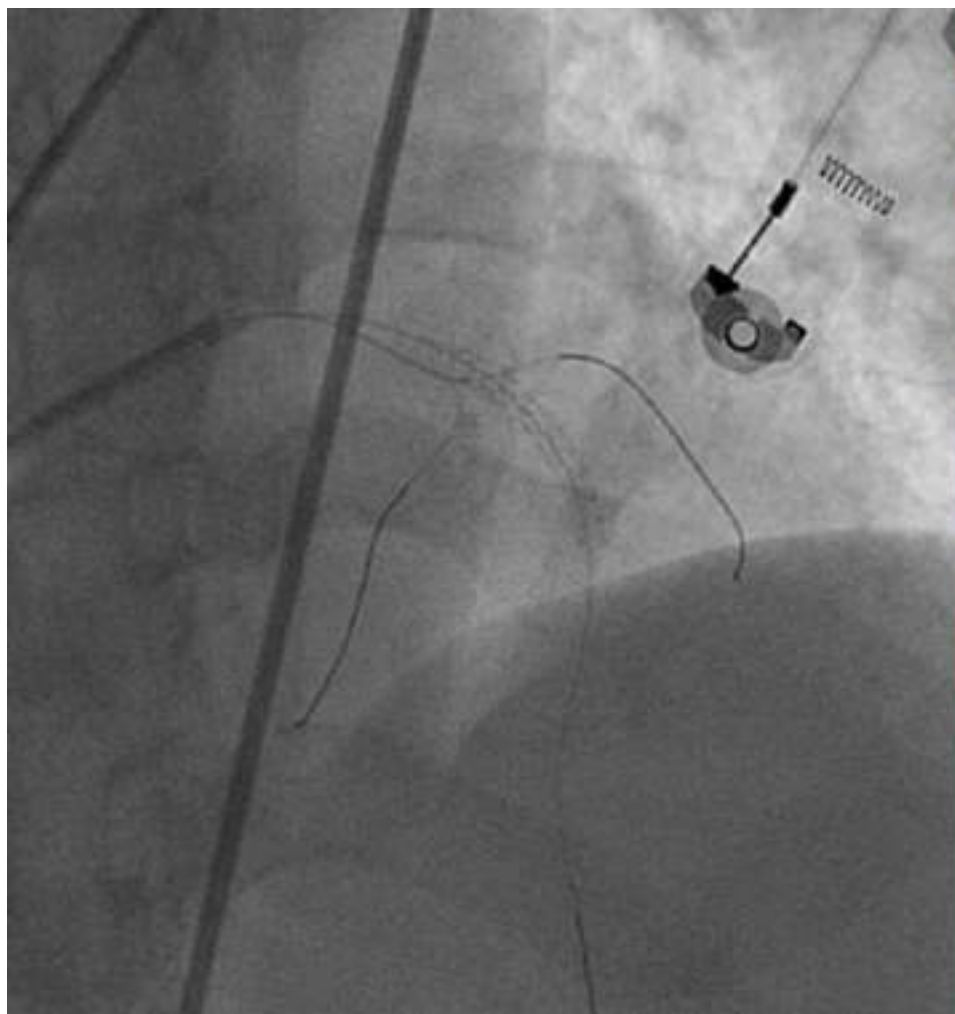
***Predilation of side branch should be avoided if rewire is needed

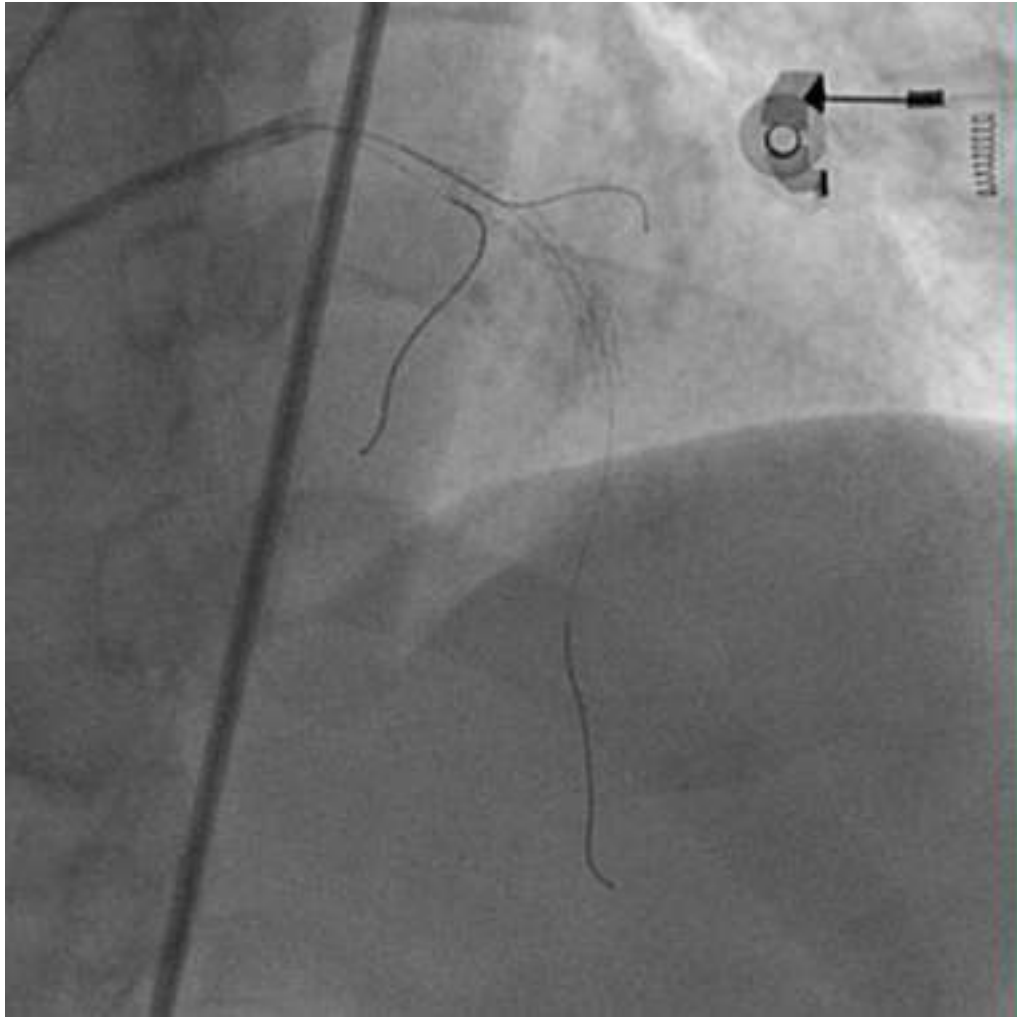
Side branch predilatation ?

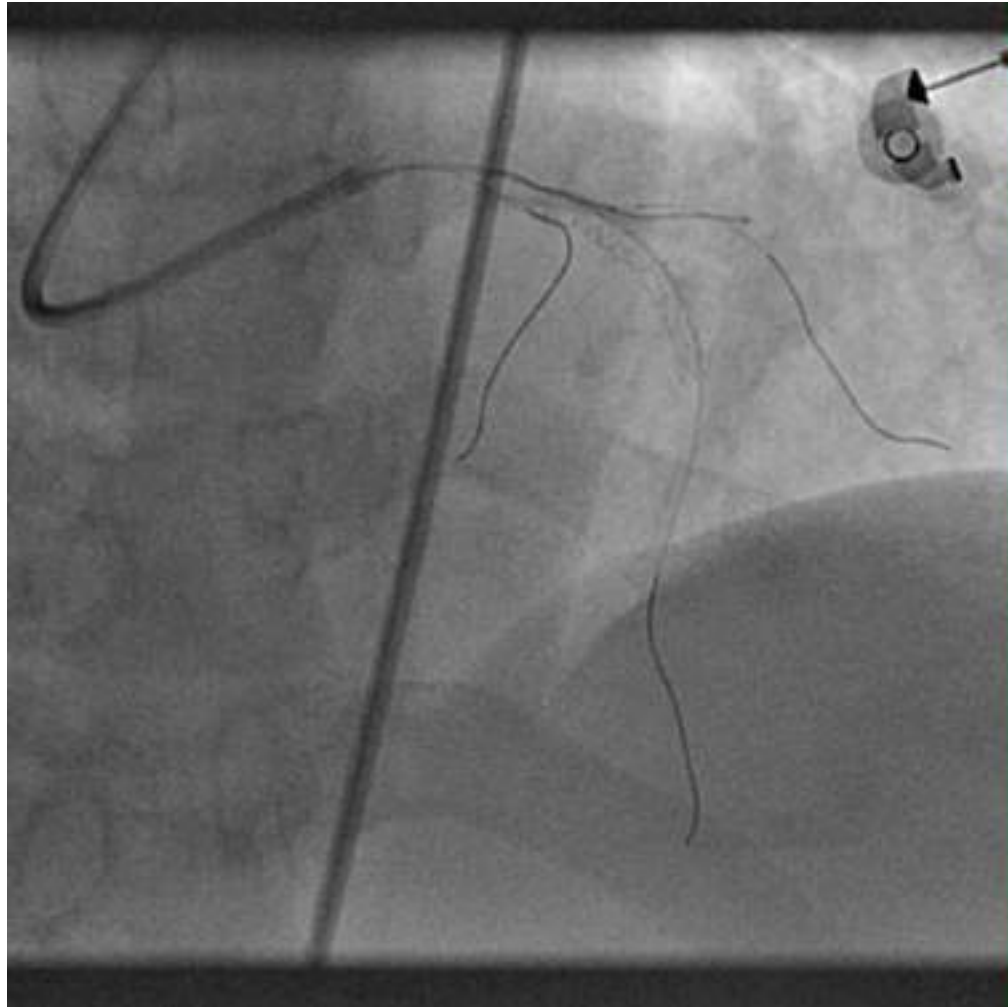


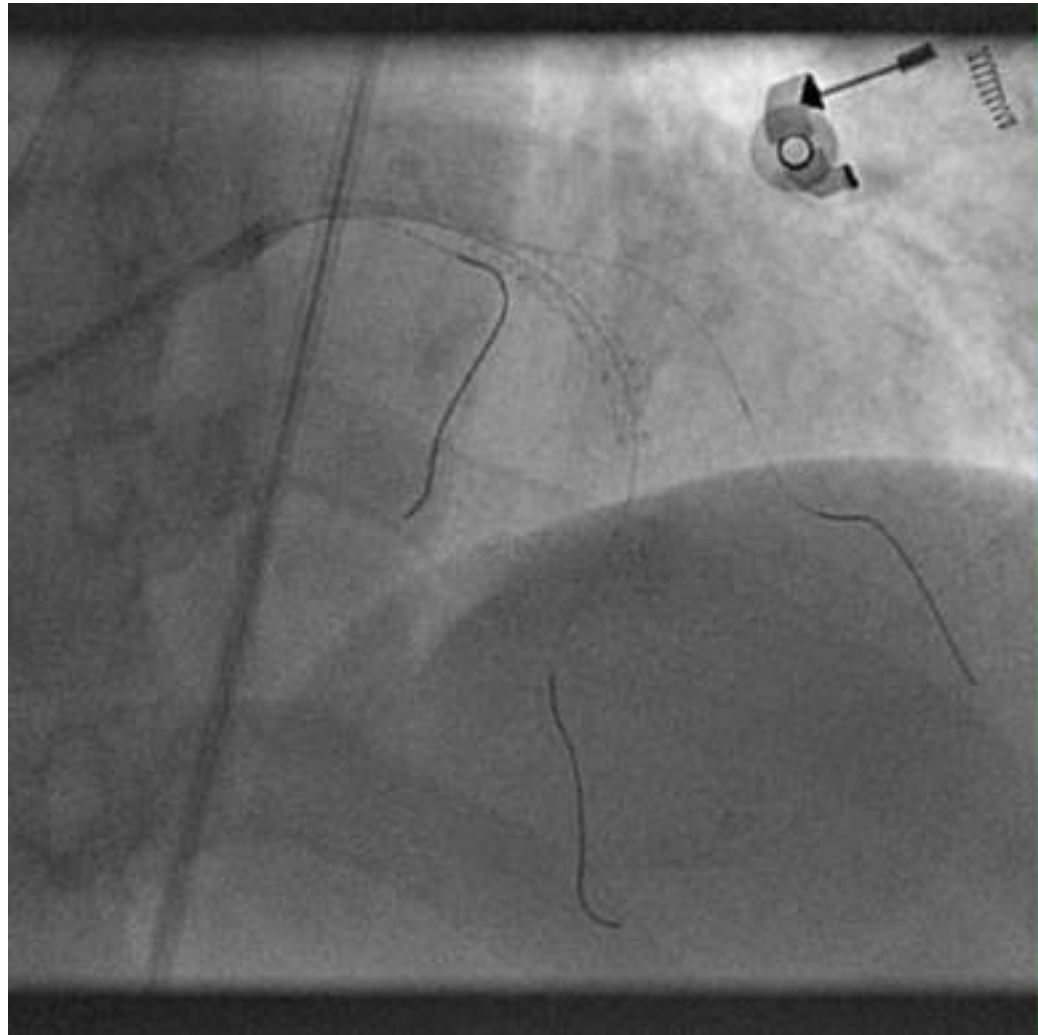


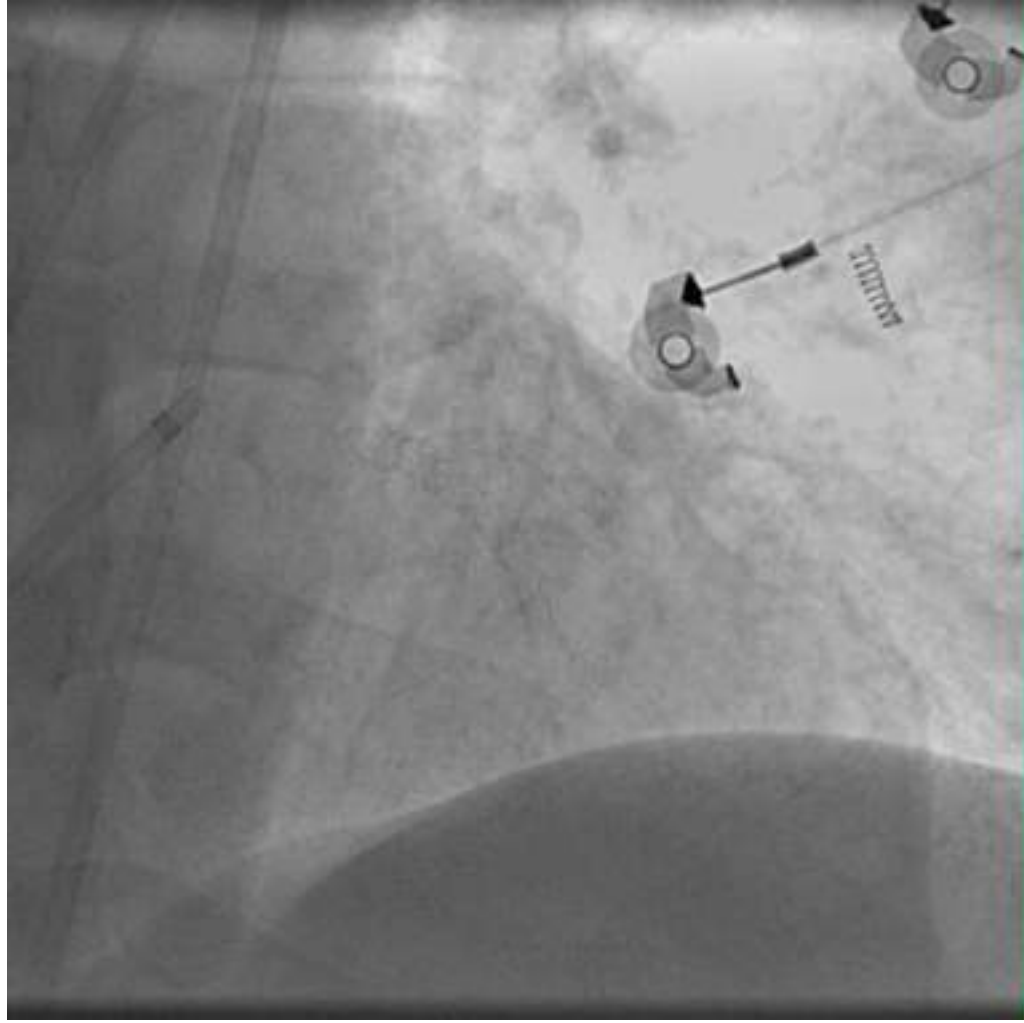












***Balloon support or angled MC catheter can be used for difficult rewiring

Image size: 512x512
New size: 655x655
WL: 100 WW: 133

51728211 50 y, 50 y
Cervary Diagnostic Cervary Catheterization
Cerv

Zoom: 1.269 Angle: 0
mm: 7.38
Uncompressed
Position: HFS

NOT FOR MEDICAL USAGE

05.09.2014 14:05:08
Made in China

Image: 512x512
View size: 555x555
WL: 109 wv: 151

5175821 (56 y, 56 y)
Coronary/Diagnost: Coronary Catheterization
Cord
2

Zoom: 128% Angle: 0
Im: 1/43
Uncompressed
Position: HFS

NOT FOR MEDICAL USAGE

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Made in OshX

Image size: 512 x 512
View size: 655 x 655
WL: 110 WW: 131

5173821 (56 y, 56 y)
Coronary Diagnostic Coronary Catheterization
Cord
3/

Zoom: 128% Angle: 0
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Uncompressed
Position: HFS

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Made in OshK

Image size: 512 x 512
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WL: 115 WW: 139

5173621 (56 y, 56 y)
Coronary Diagnostic, Coronary Catheterization
Cord
31

Zoom: 120% Angle: 0
Fr: 1/25
Uncompressed
Position: RLS

NOT FOR MEDICAL USAGE

06.03.2019: 15:04:21

Made in Oshik

image size: 512 / 512
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5173821 (56 y, 56 y)
Coronary Diagnostic Coronary Catheterization
Coro
33

Zoom: (2015, 4x) 0.0
Im: 1/37
Uncompressed
Position: NPS

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Made in Germany

Image 329: 512 x 512
View Size: 655 x 655
WB: 114.98 37

5173821 (56 y., 56 y.)
Coronary Diagnostic, Coronary Catheterization
Core
38

Zoom: 128% angle: 0
mm: 1.71 /
Lumen Diameter
Position: HFS

NOT FOR MEDICAL USAGE

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Made In Oshkosh

Image size: 512 x 512
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WL: 114 WW: 133

5173321 (56 y, 56 y)
Coronary Diagnostik: Coronary Catheterization
Coro
37

Zoom: 288, Angle: 0
In: 1/21
Uncompressed
Position: RPS

NOT FOR MEDICAL USAGE

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Made in Ostfria

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WL: 169 Wk: 113

5173821 (56 y, 56 y)
Coronary Diagnostic Coronary Catheteriza Mor
FL Card
40

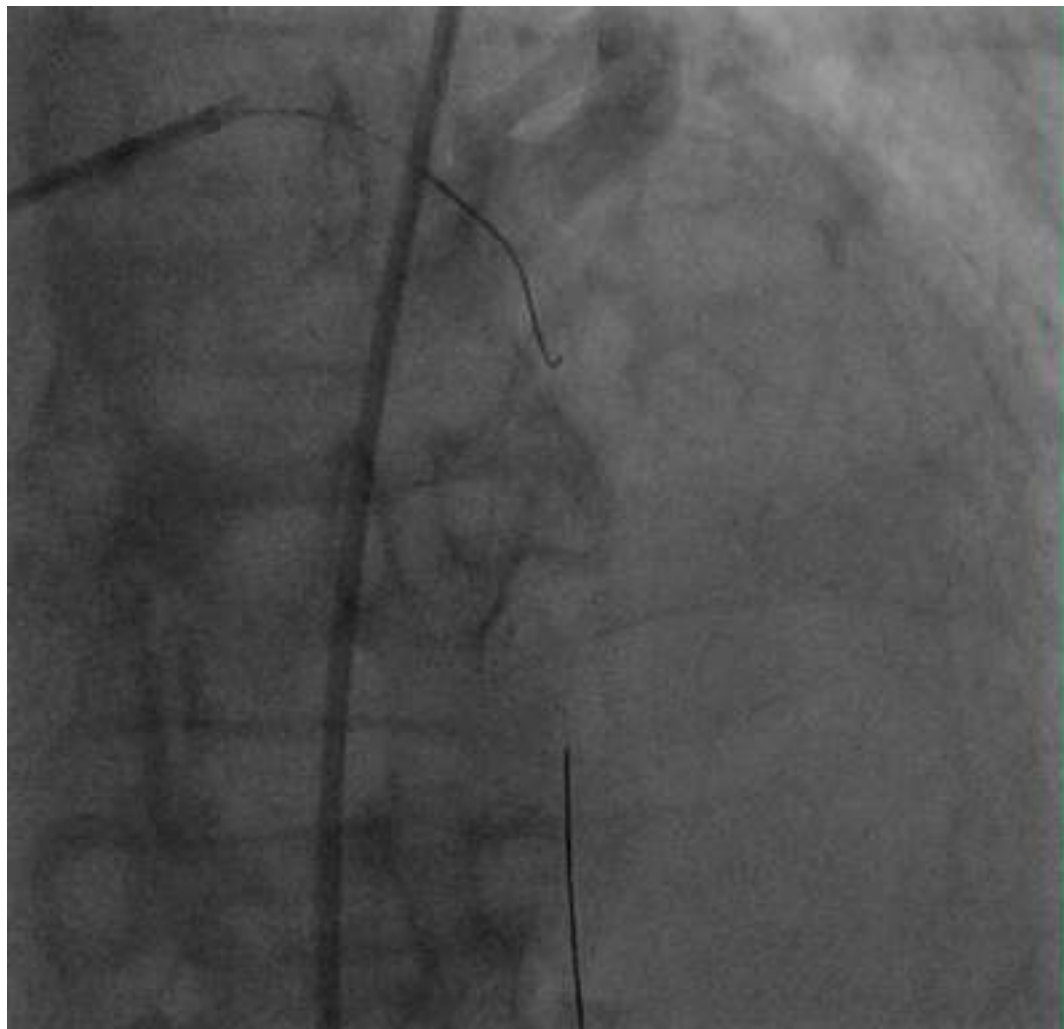
Zoom: 128% Page: 0
In: 250/250
Uncompressed
Position: RFS

NOT FOR MEDICAL USAGE

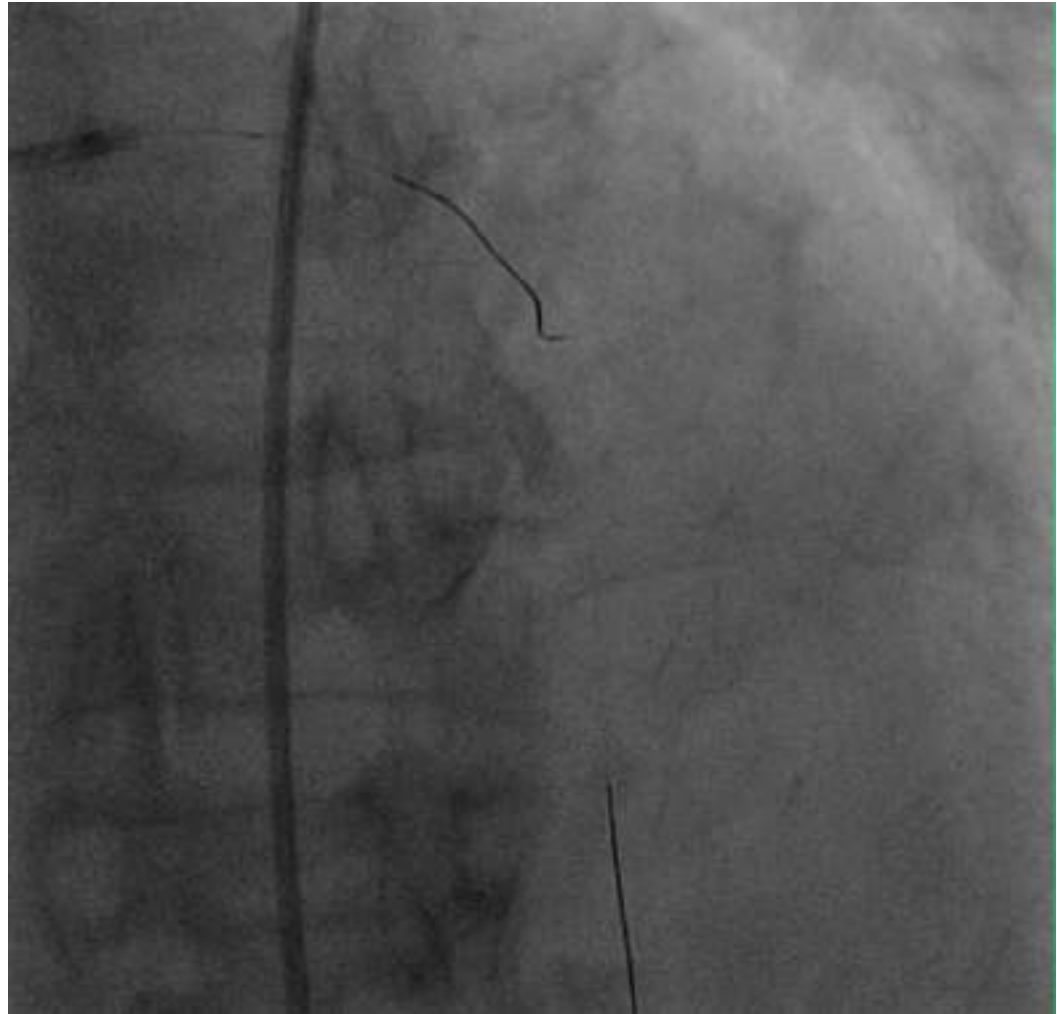
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Venture may help



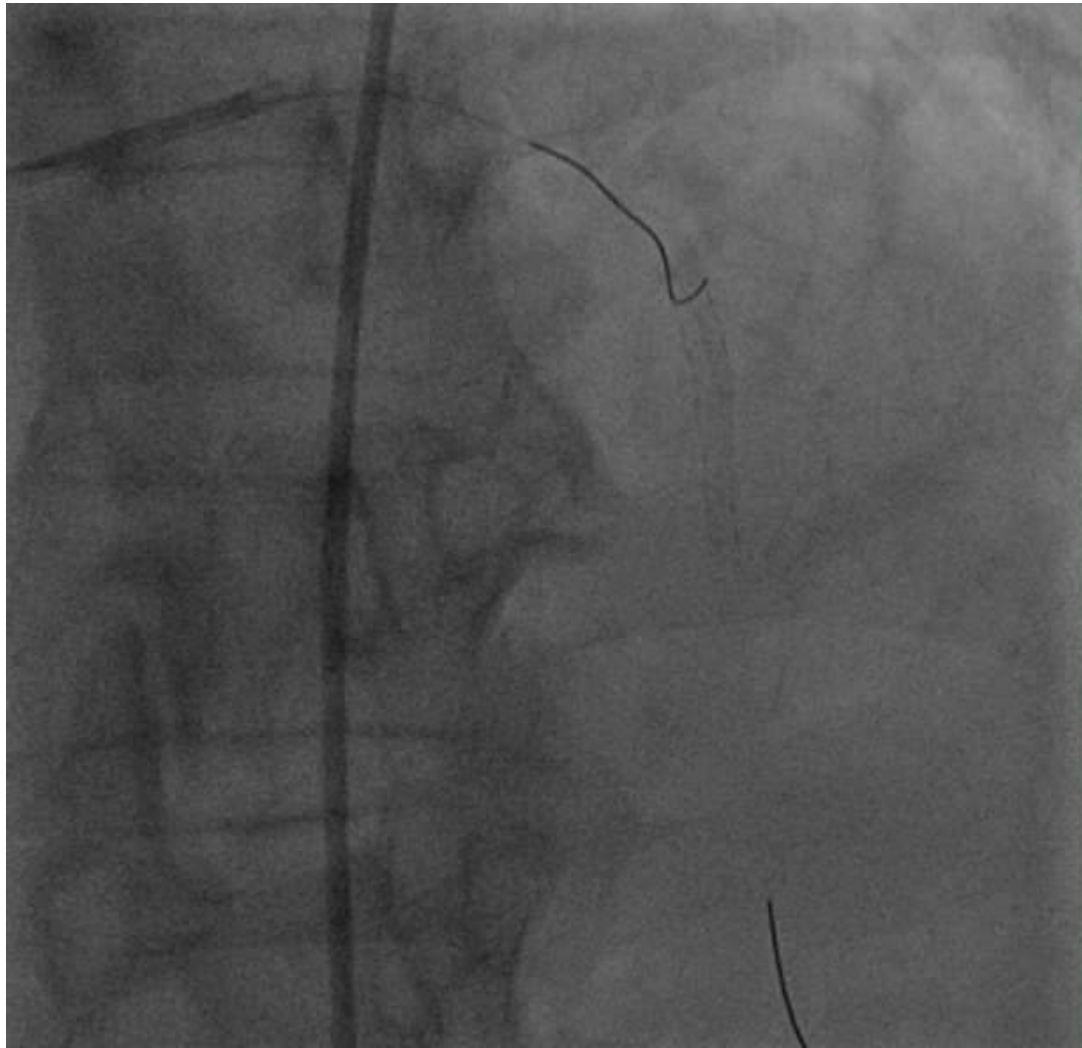


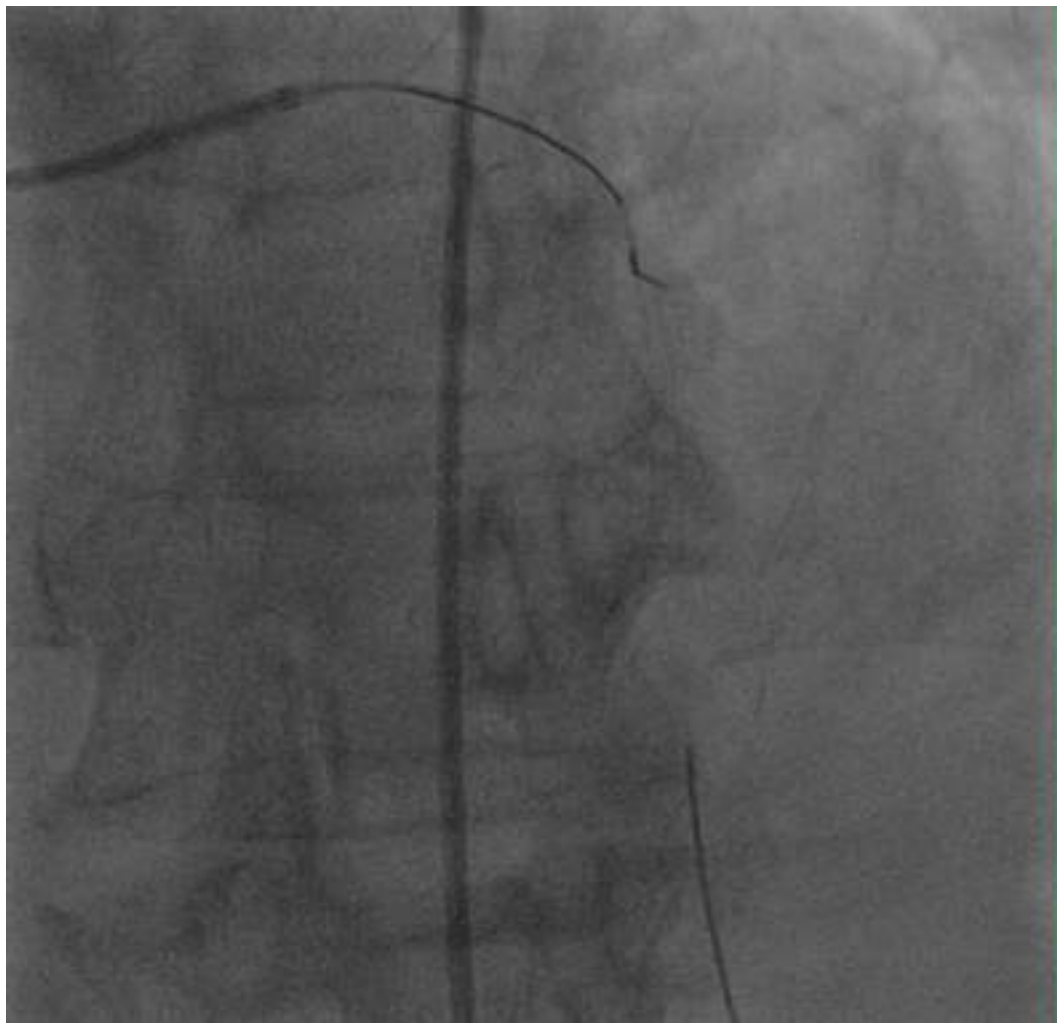






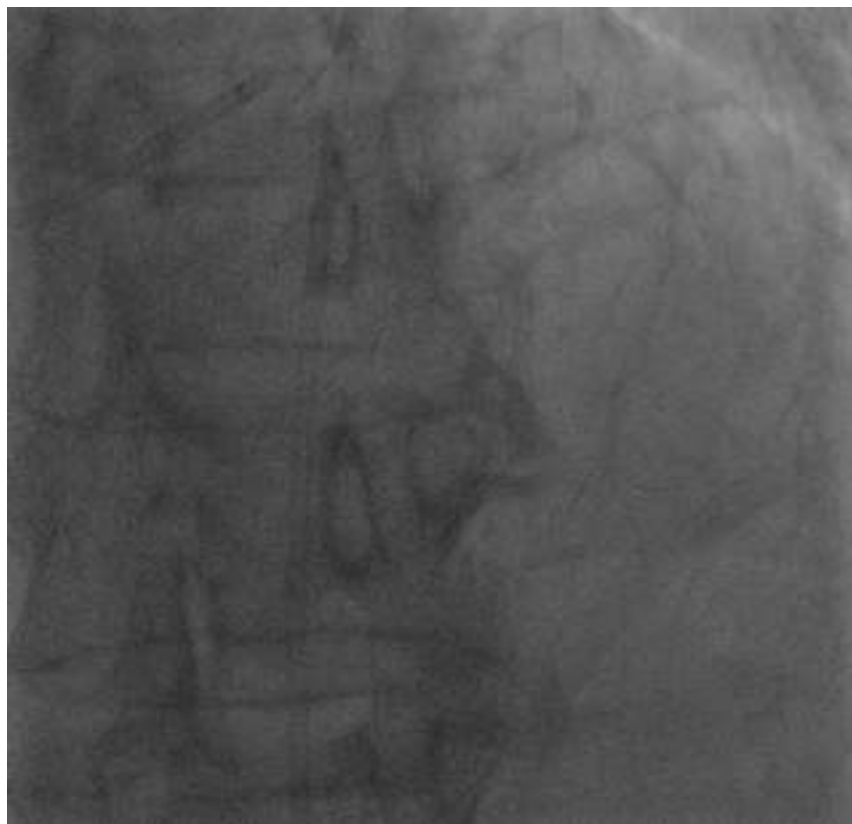












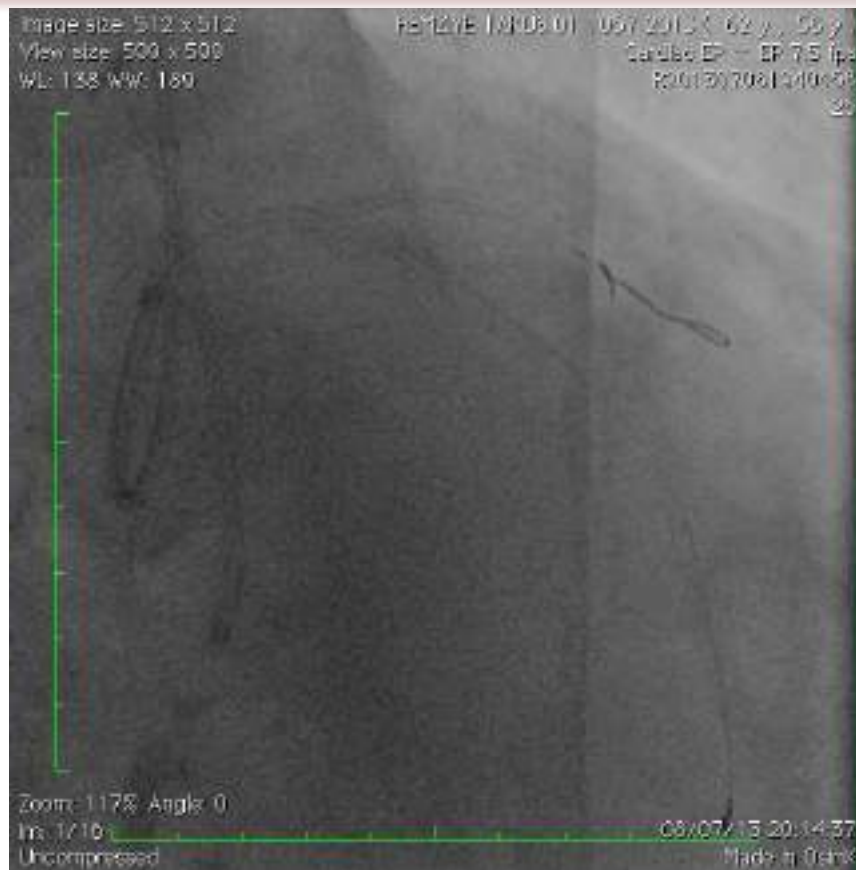
***Rewire should be done through the distal stent strut in provisional and culotte technique

***Rewiring should be done through mid stent strut in minicrush or DK crush technique and distal strut should be avoided.

LAD-Daigonal Bifurcation



After crushed wire in place during crush



Wire in place



Rewire should be done through mid of the ostium



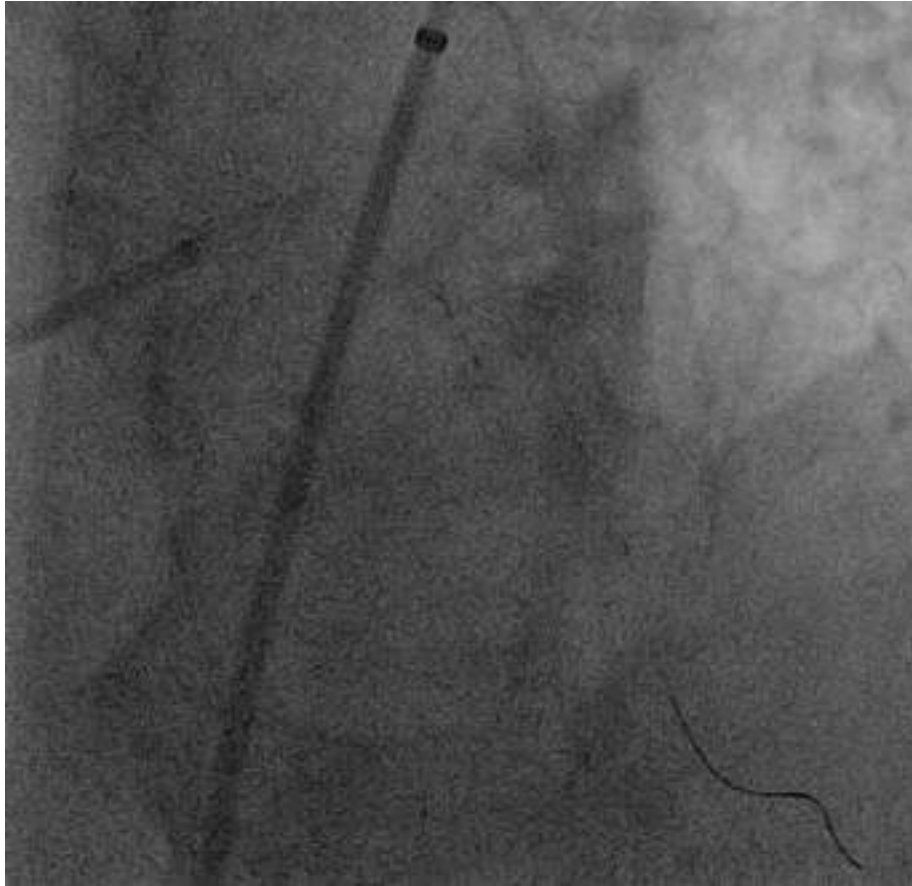
Difficult Recross with Balloon

- In stent anchoring can be done
- Never do anchoring for 1.25 mm or 1.5 mm low profile balloon since there is risk of sub strut course
- If low profile balloon does not cross the side branch then a second wire should be used to cross different strut
- Buddy balloon technique can be used
- Mother and child technique for better support may be needed

LAD-Diagonal provisional Stenting



Kissing after LAD stenting



After kissing, dissection of the side branch



Rewiring after reverse mini crush (crossing mid struts)



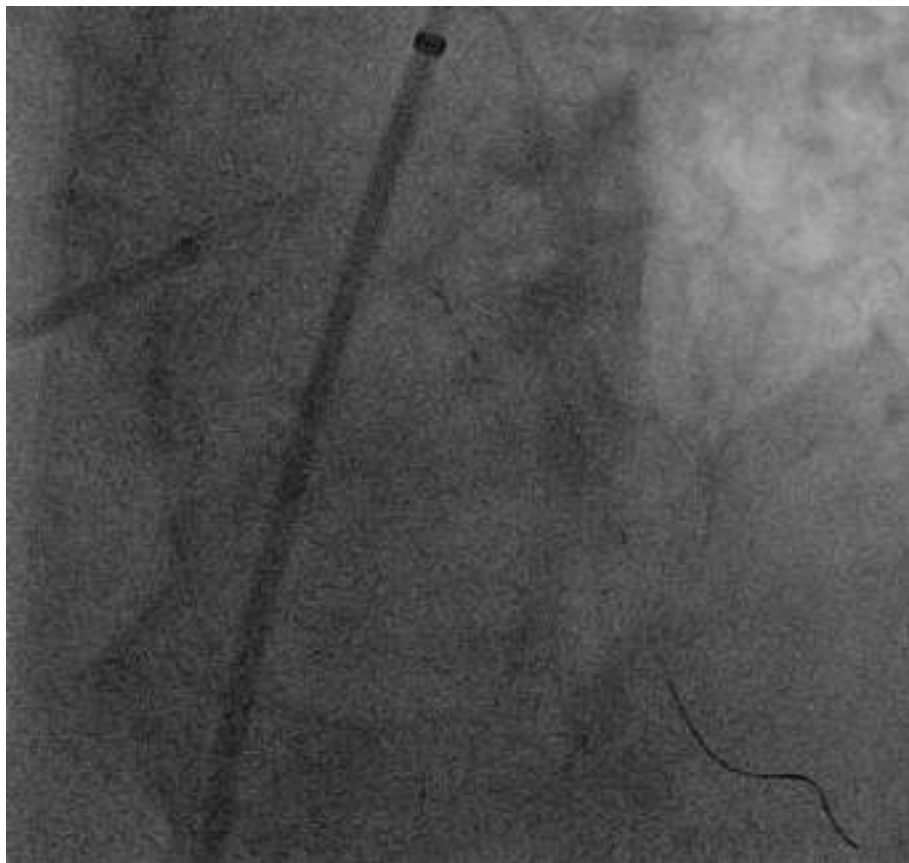
Balloon does not cross into side branch



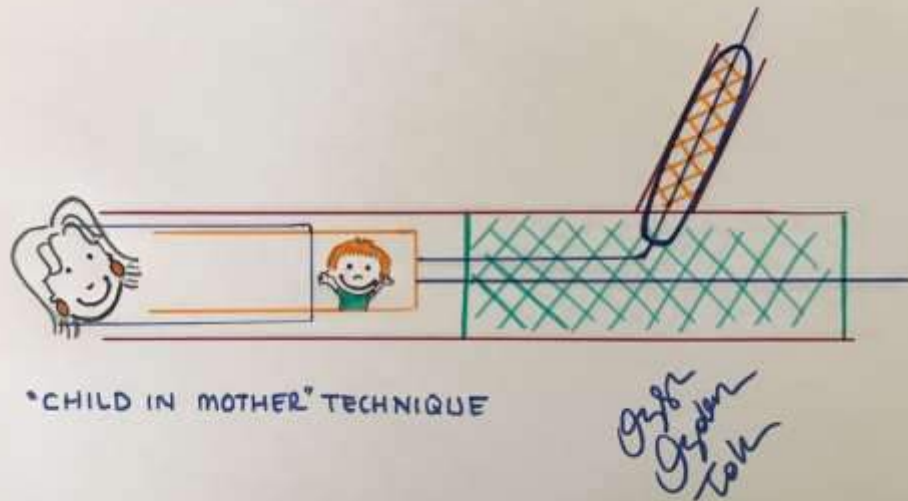
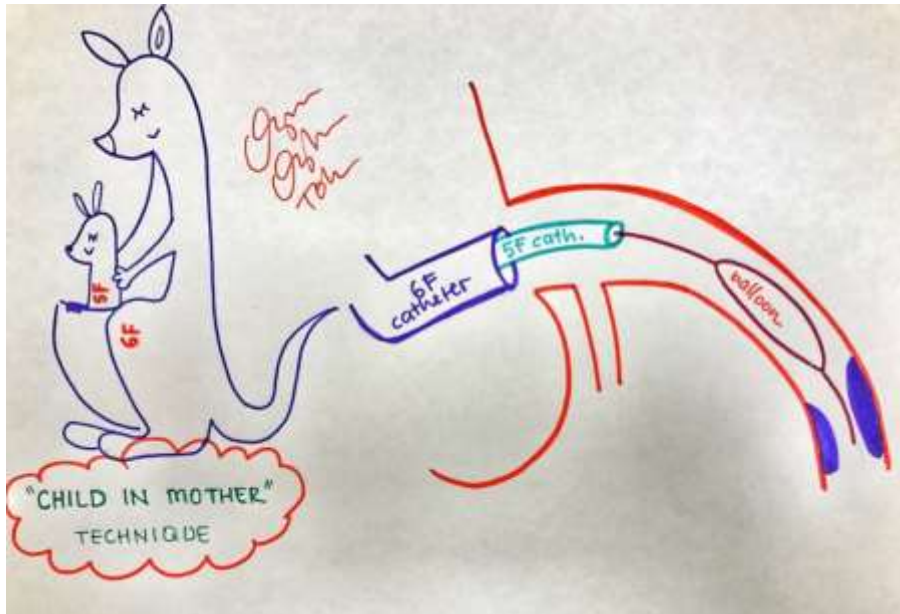
Ancoring with short balloon helps the crossing of the side balloon



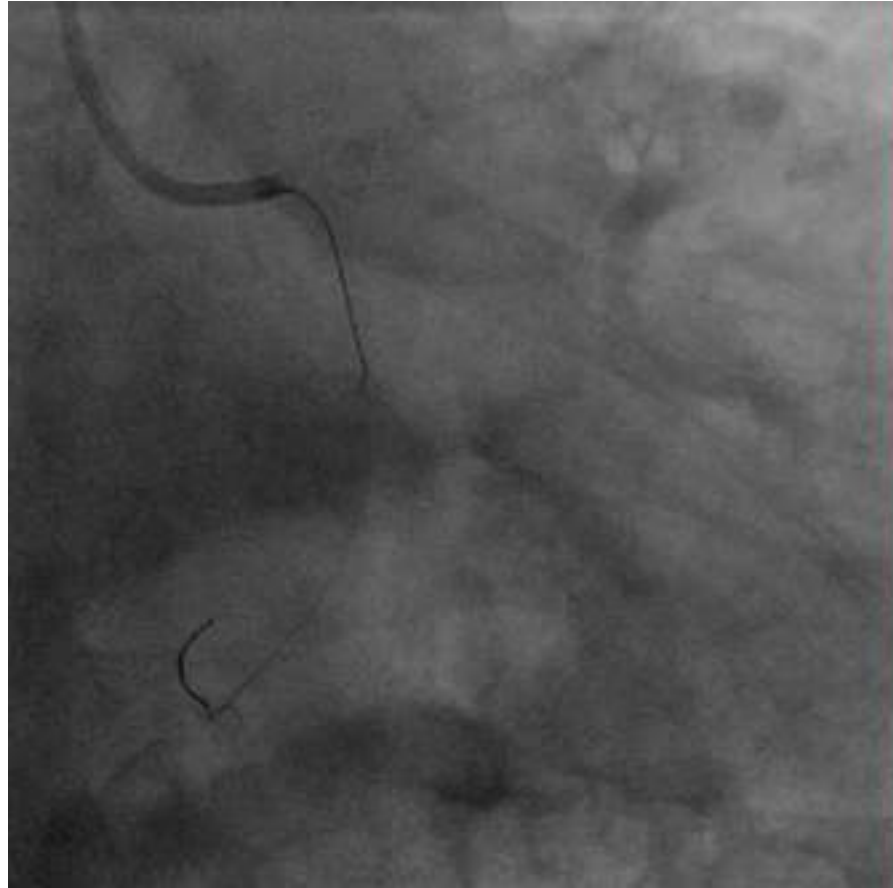
Kissing with using anchoring balloon



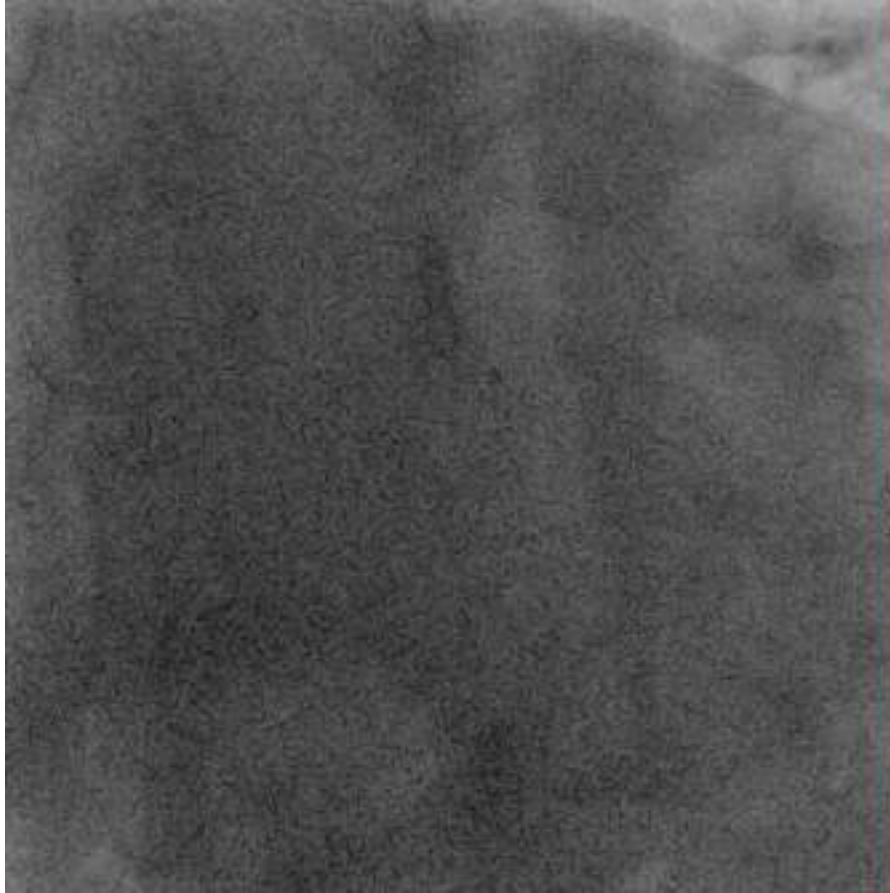




Calcified CX-Om bifurcation

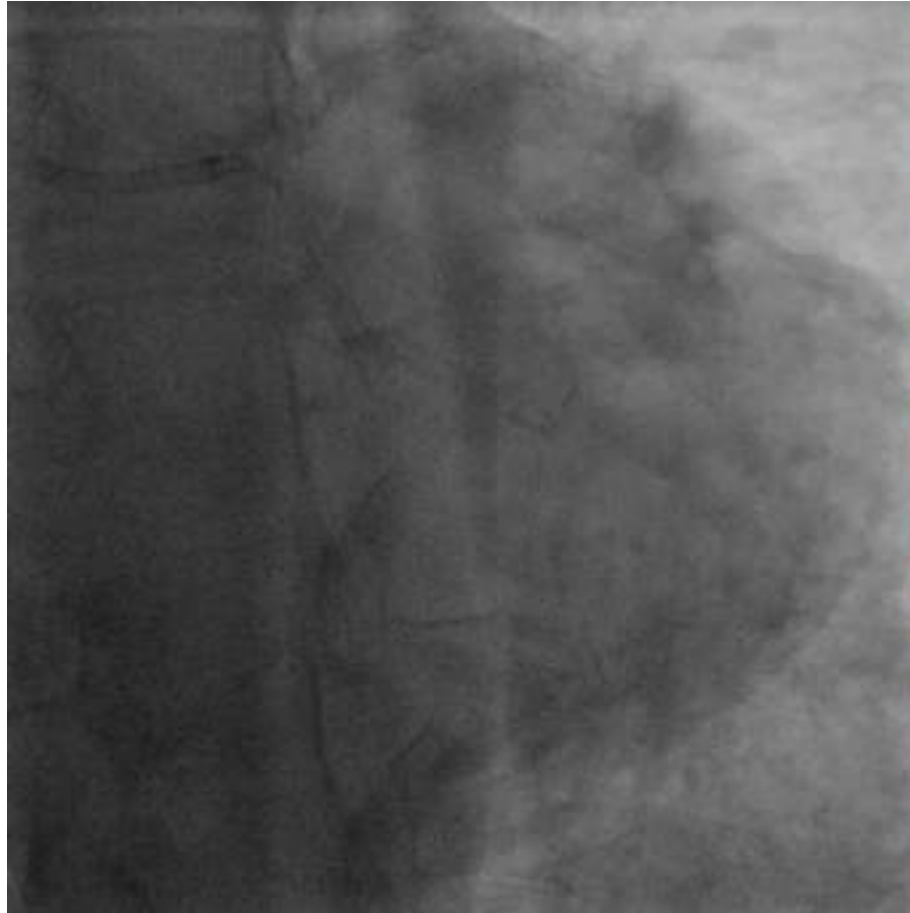


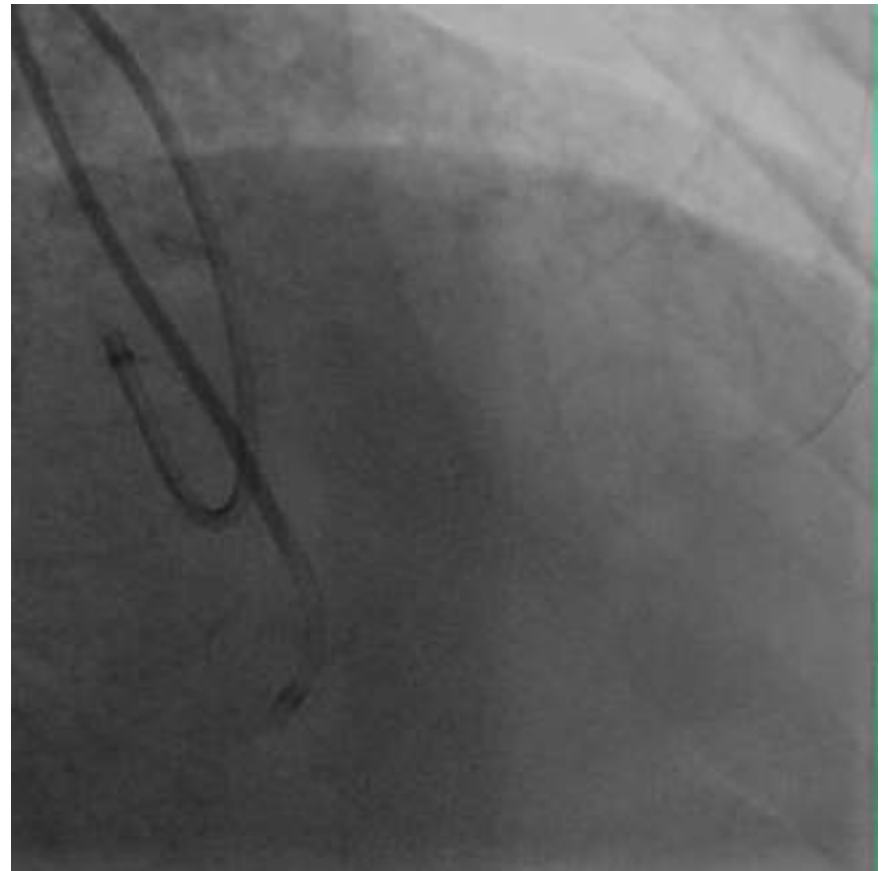
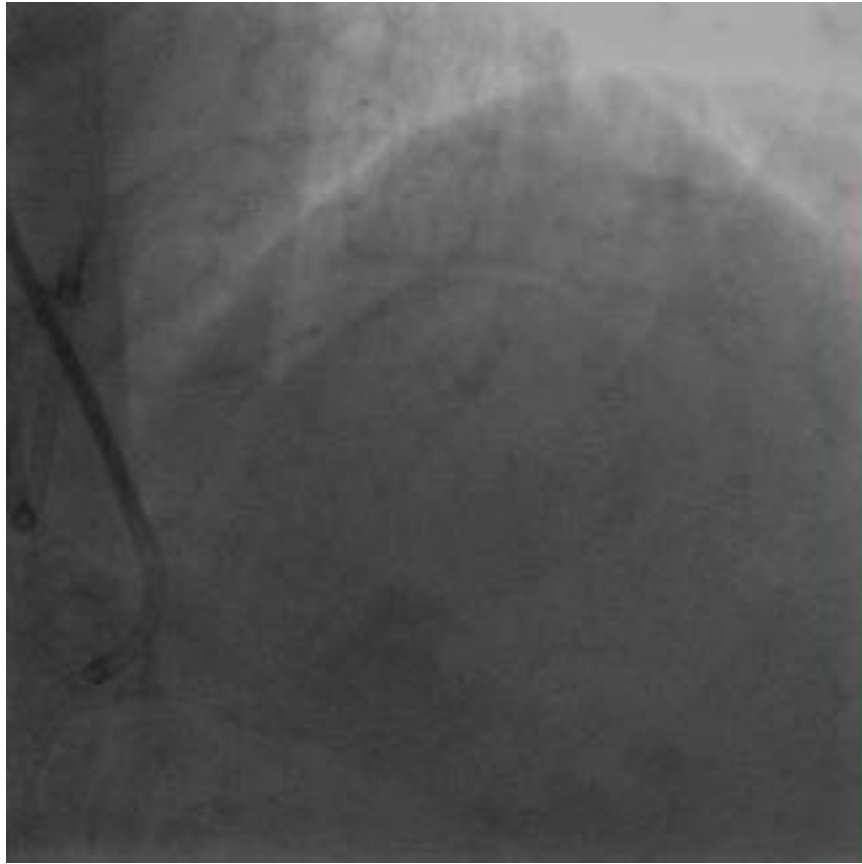
Guideliner was needed for inserting the stent



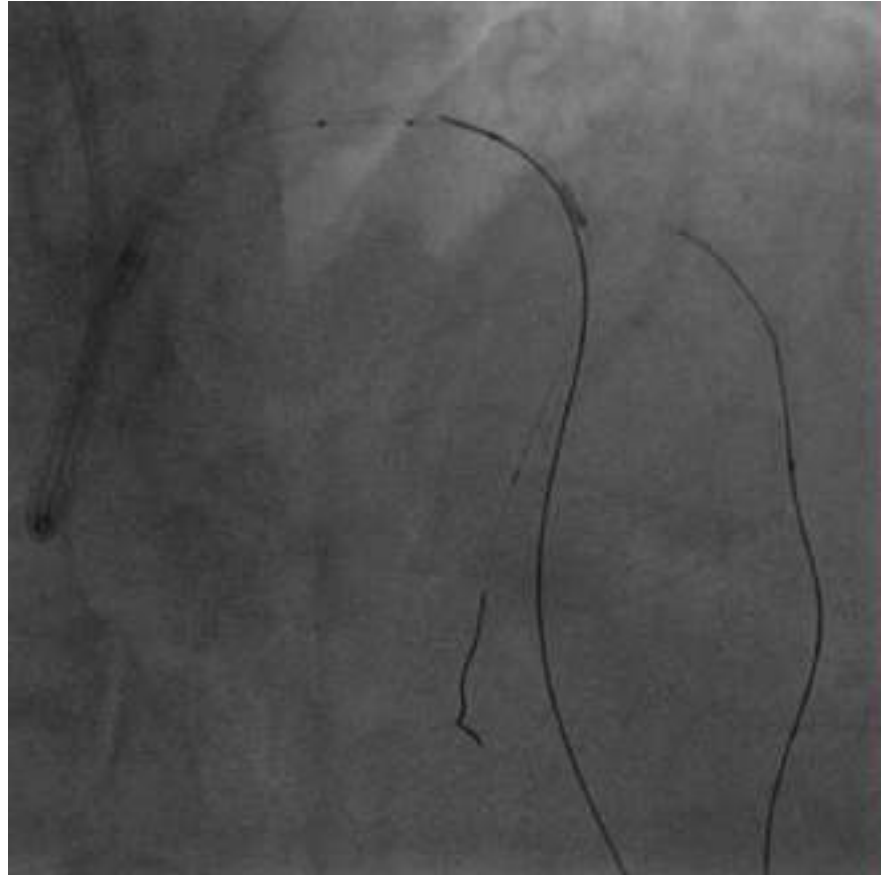
Same guideliner was used for crossing balloon



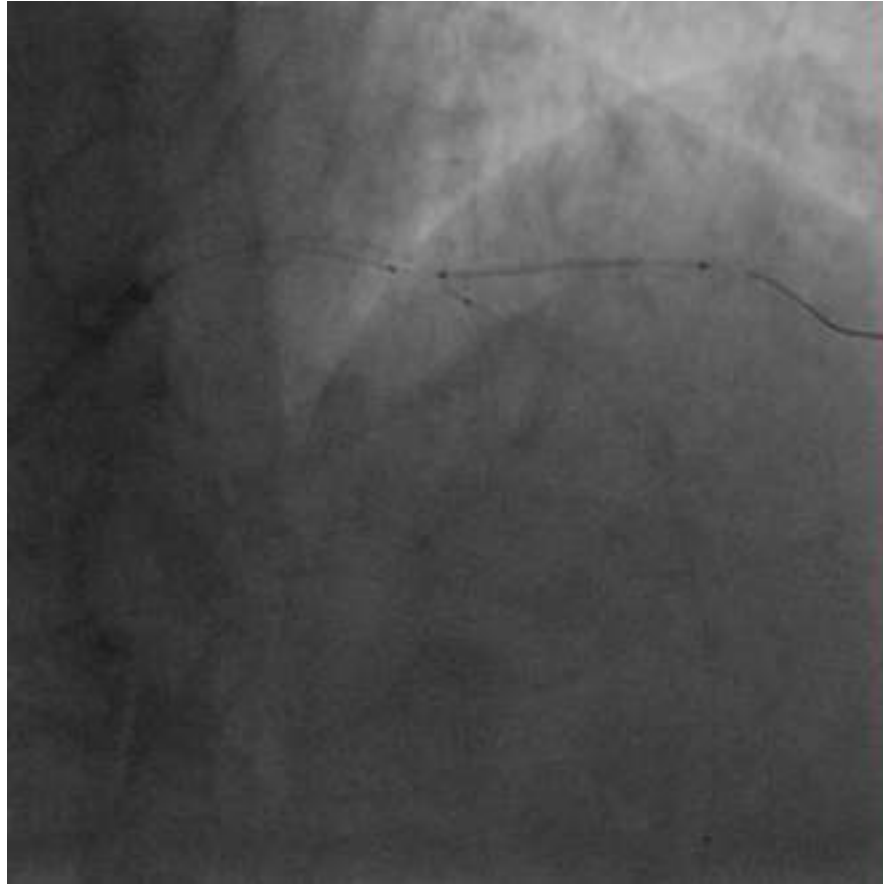


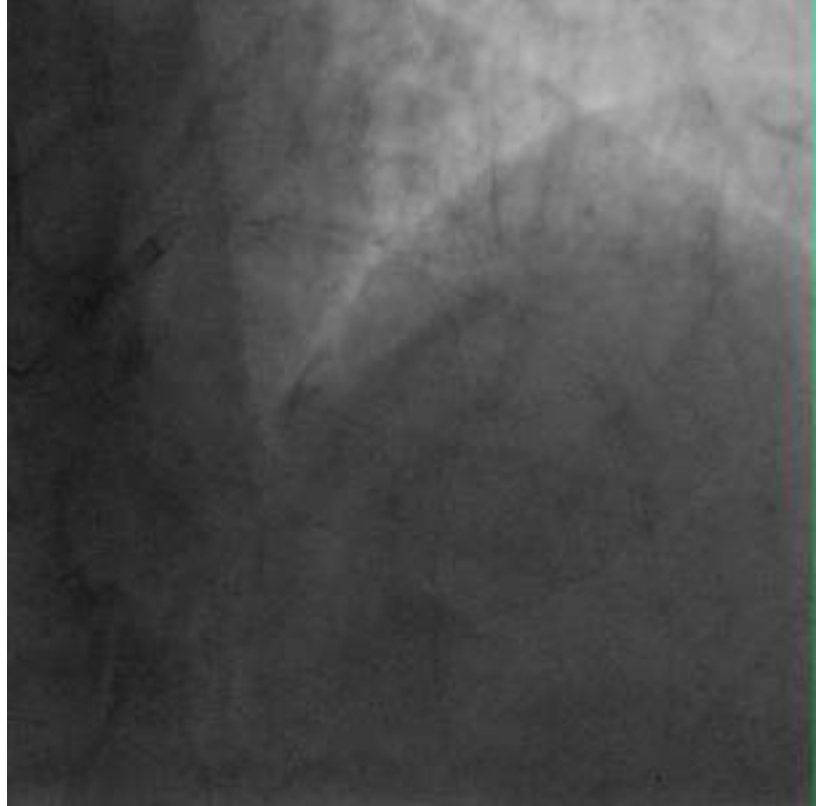
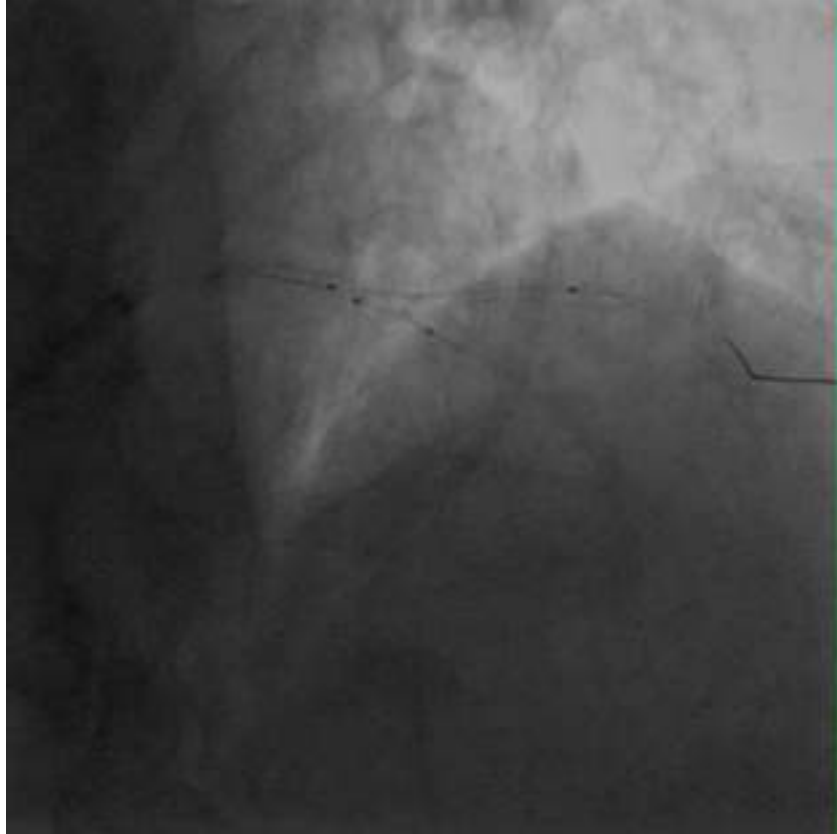


Retrograde wiring of CTO with guidance of IVUS



Minicrush technique was used

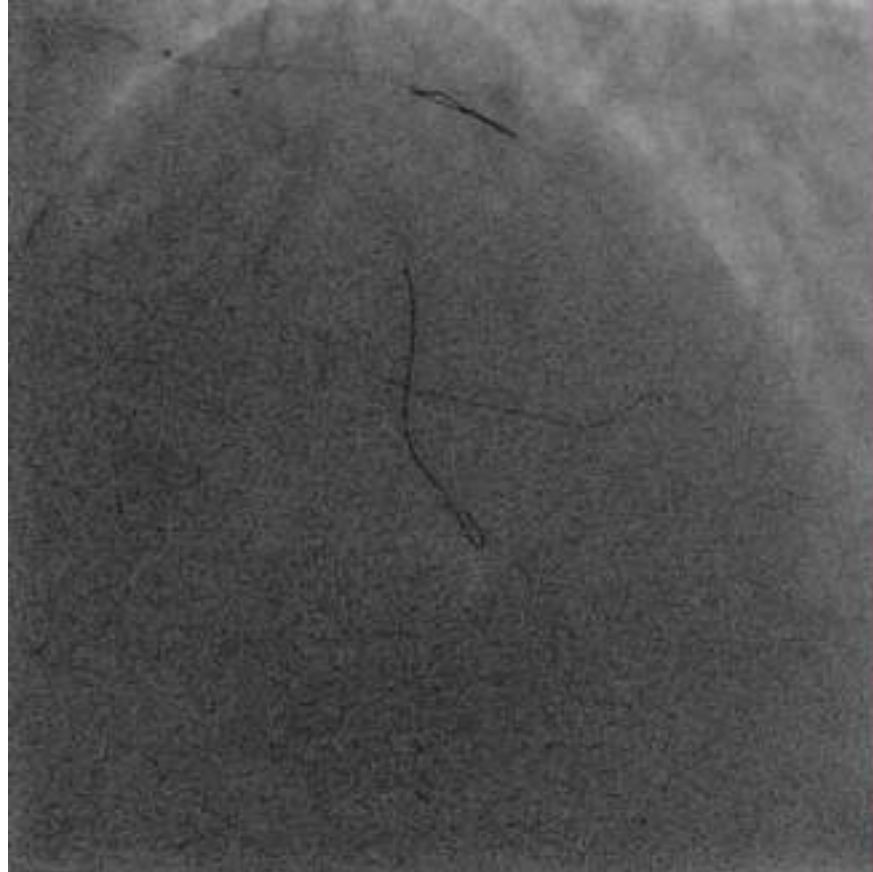




Rewiring with help of Balloon



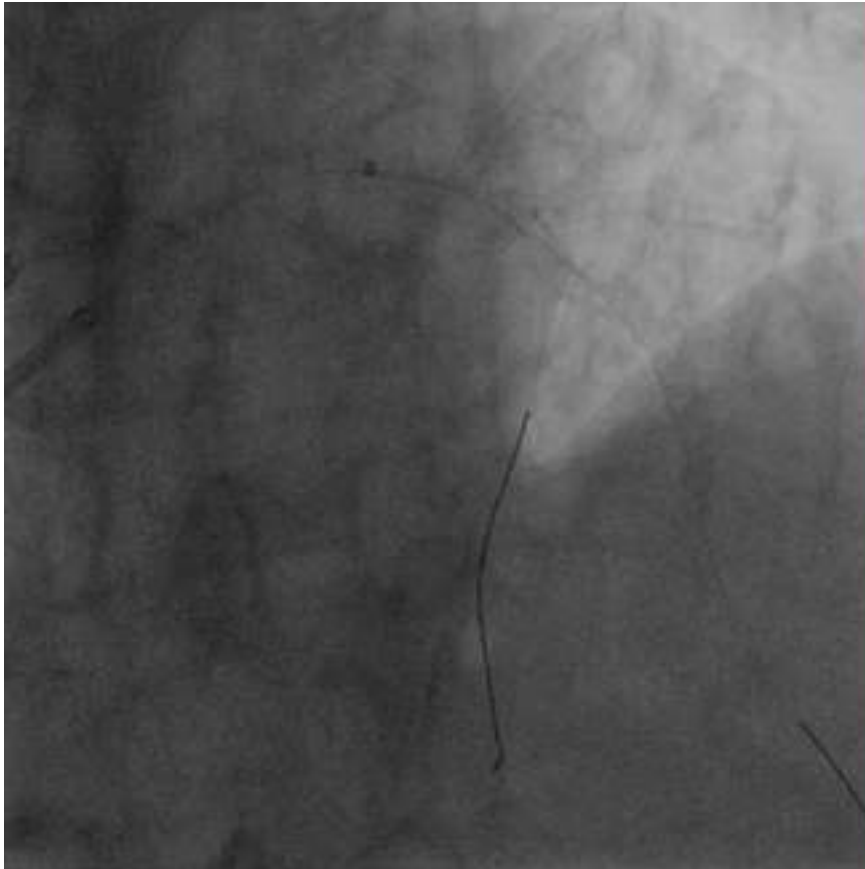
Deep wiring to have extreme support of the wire



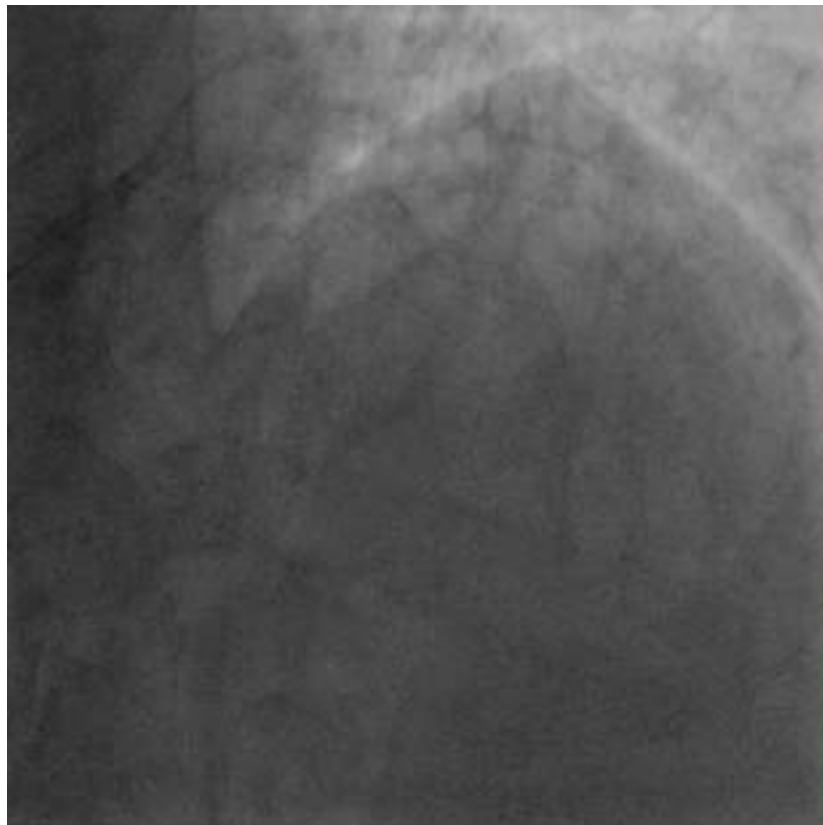
Anchoring and good support of the wire is not enough for inserting the balloon



Guideliner did not help



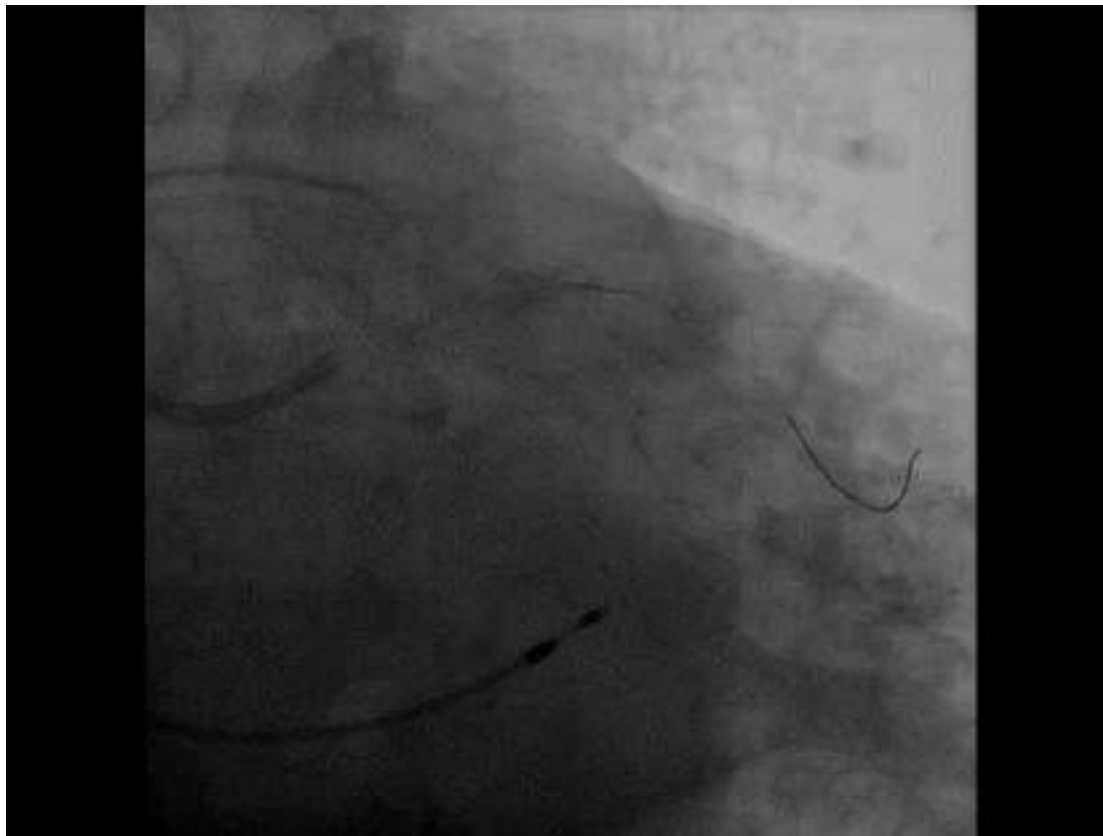
Final result



Calsified bifurcation lesion

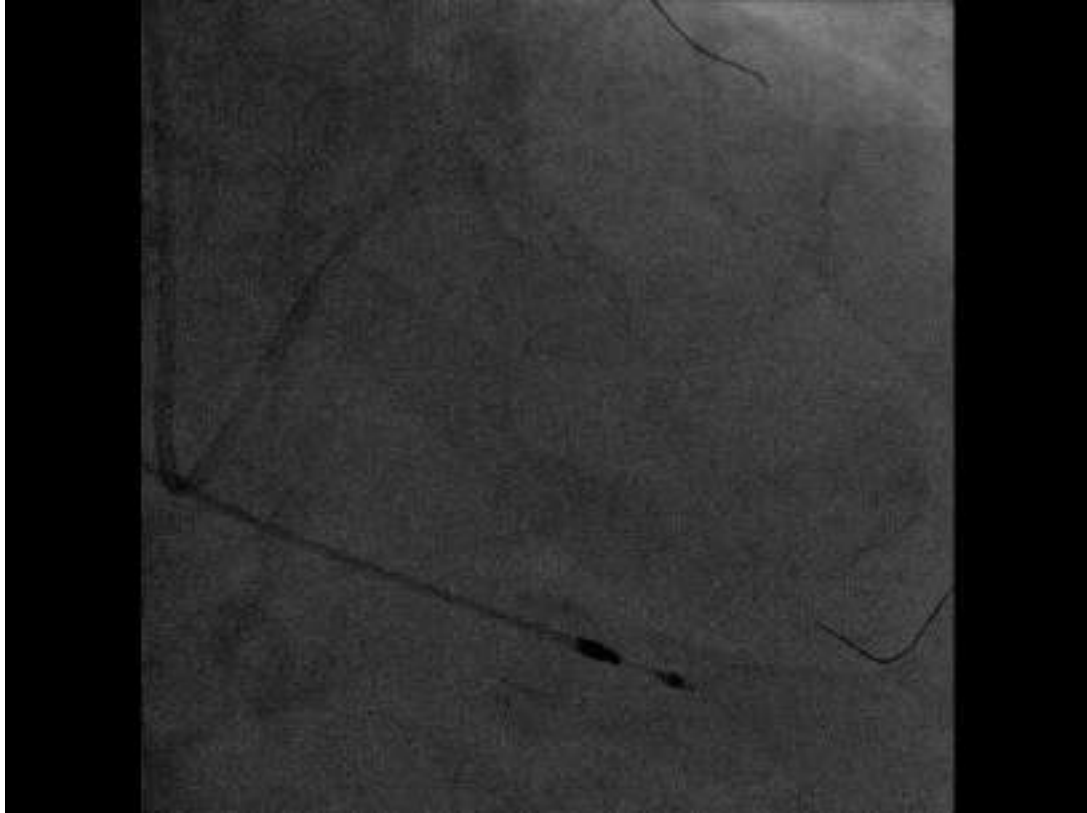


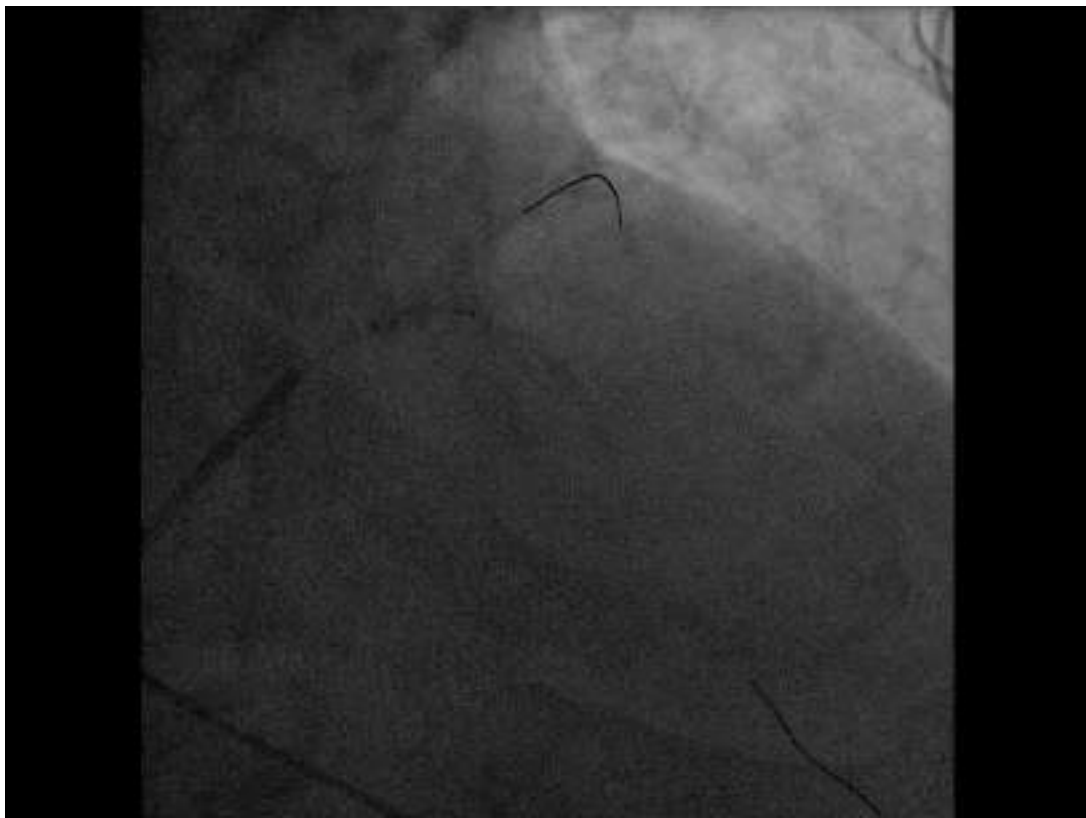
What should be the plan?



NC balloons and Cutting balloon

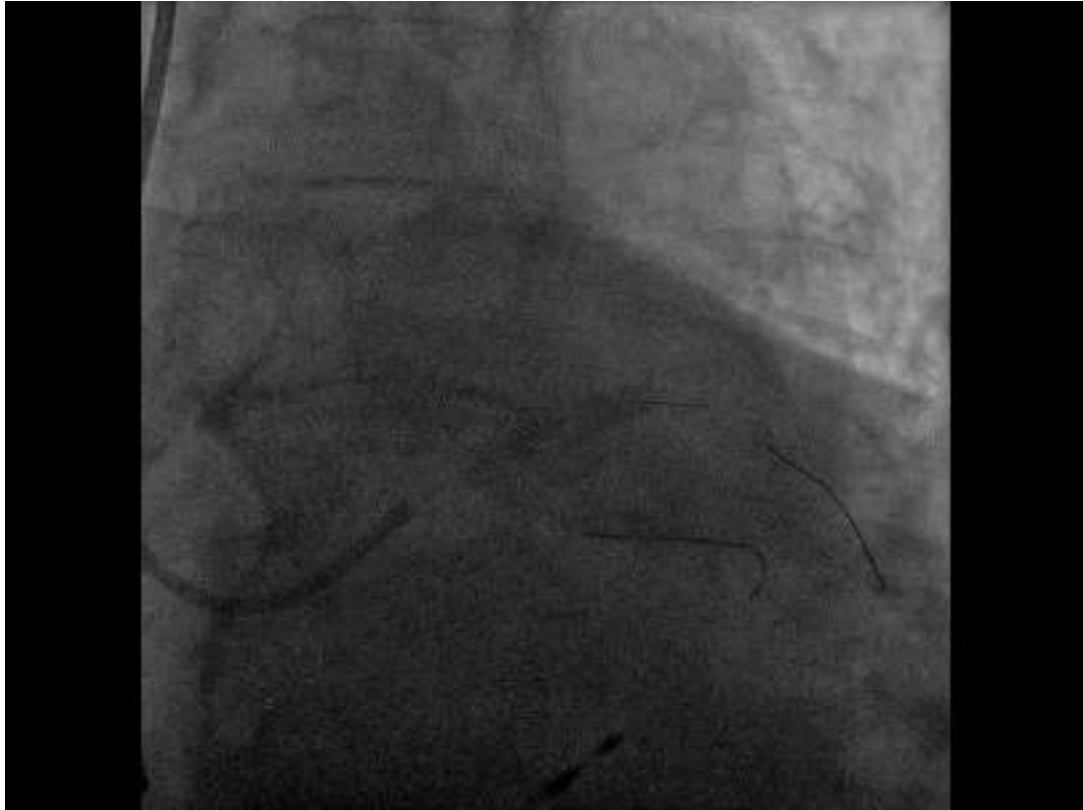






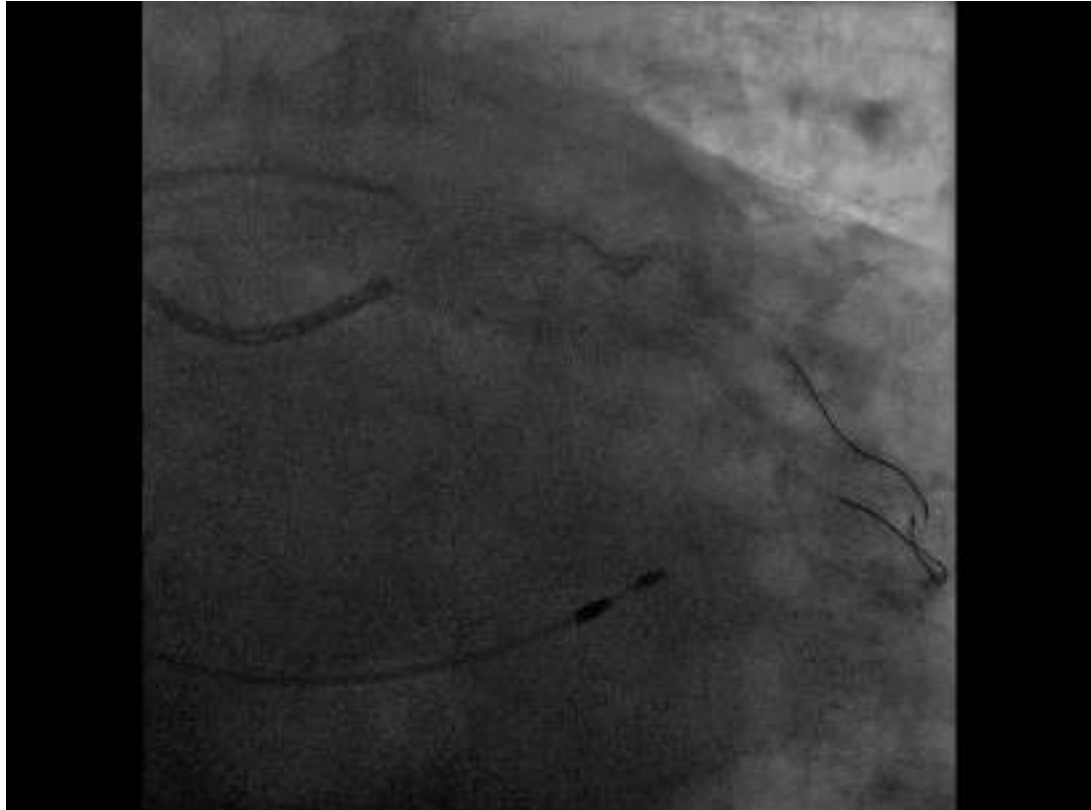
Shockwave (Litotripsi)



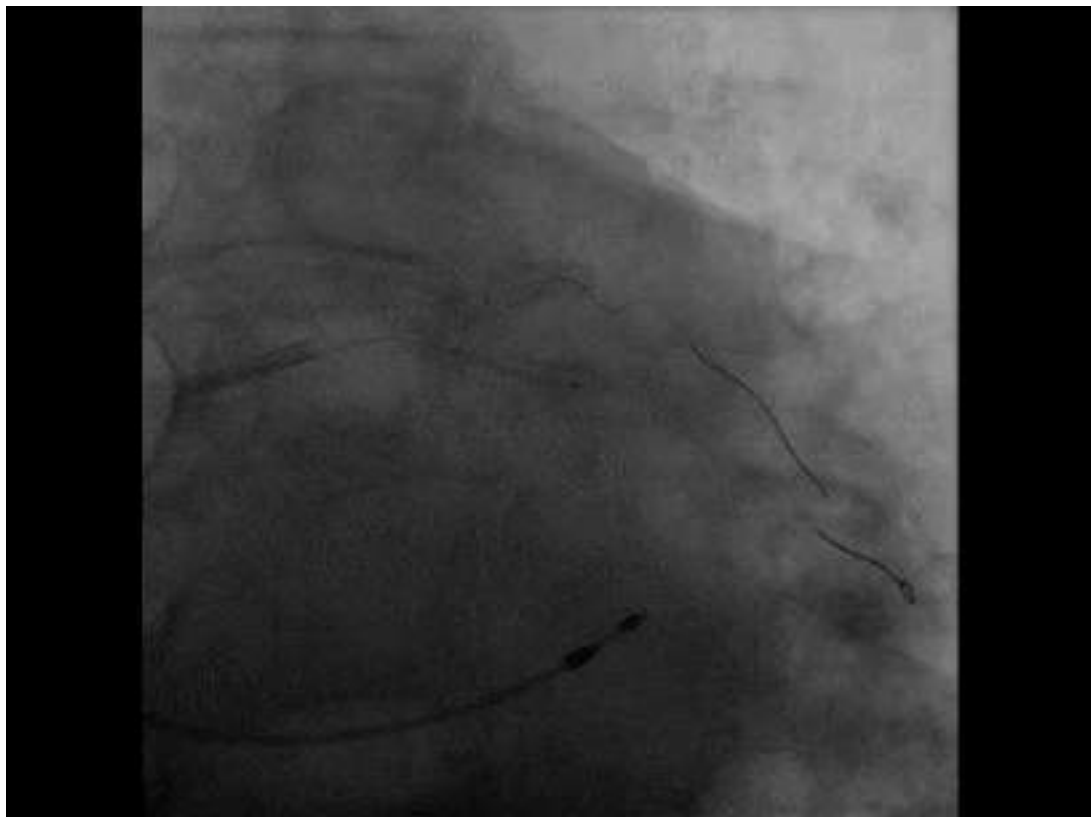












Minicrush technique



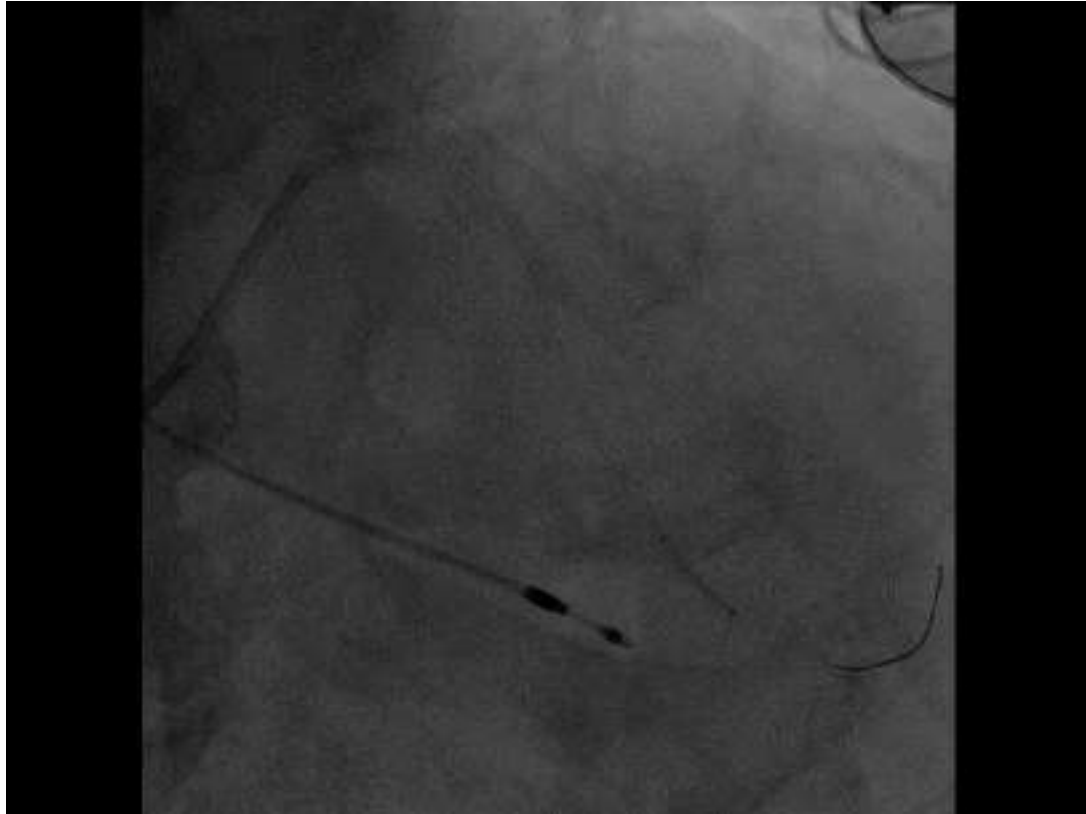


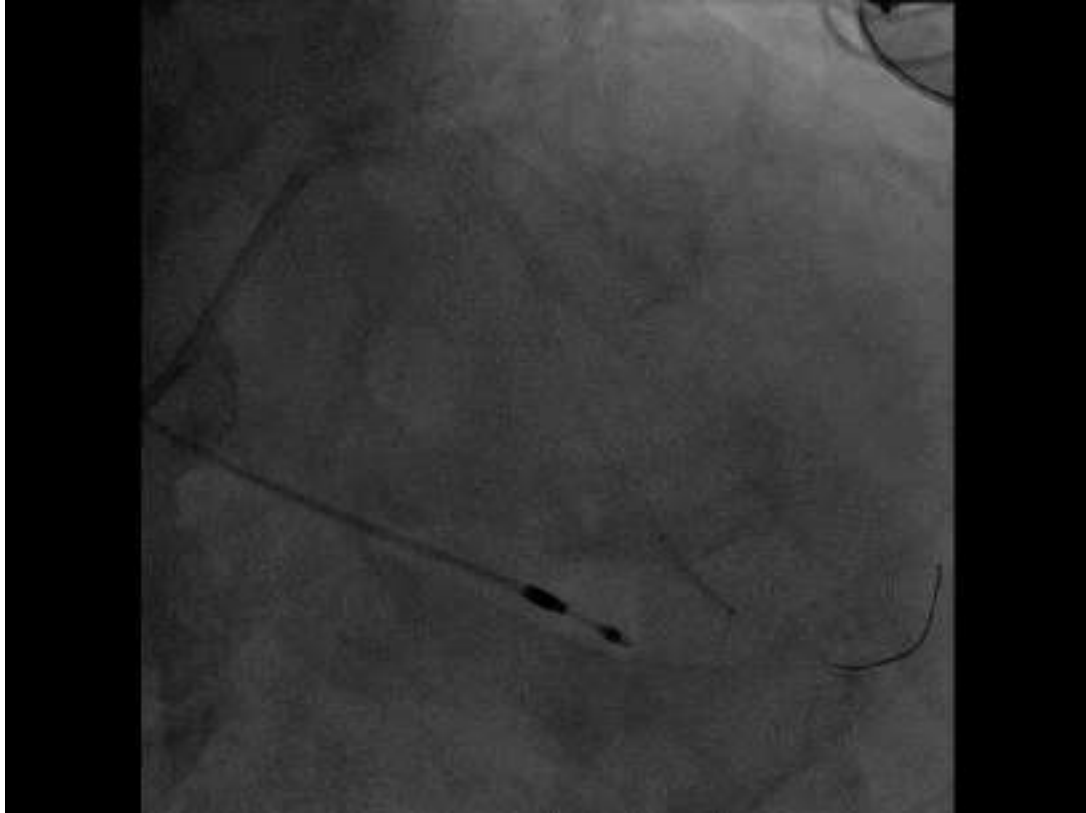


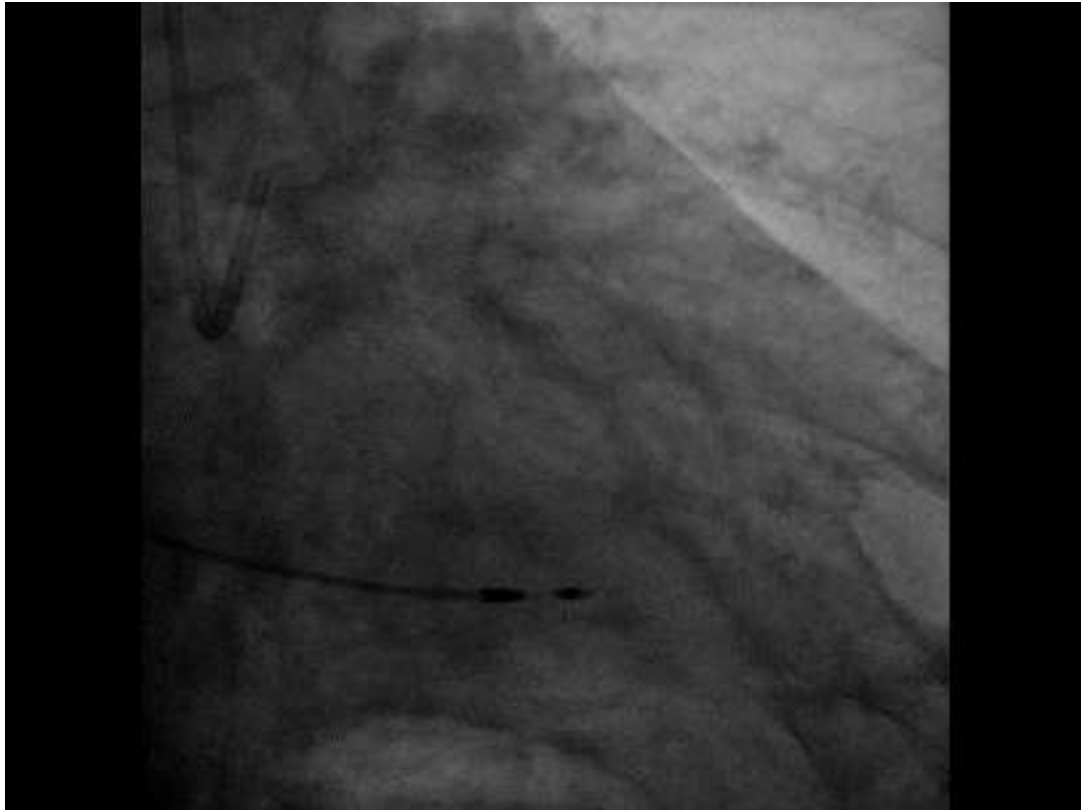












Thank you for your attention.
