

How could we overcome the diffuse calcified lesions?

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Cardiology**

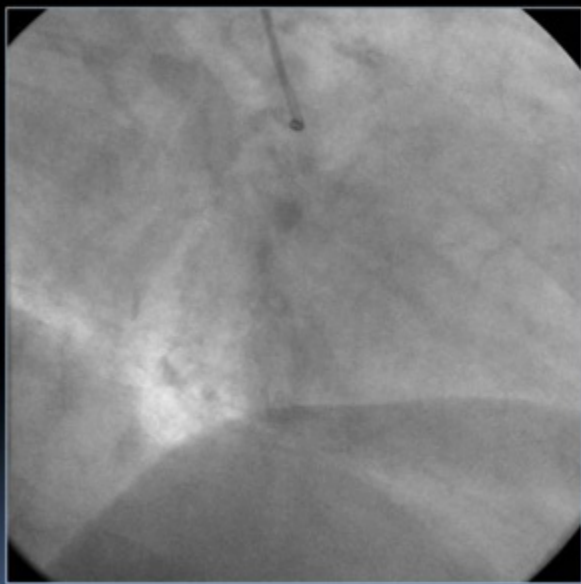
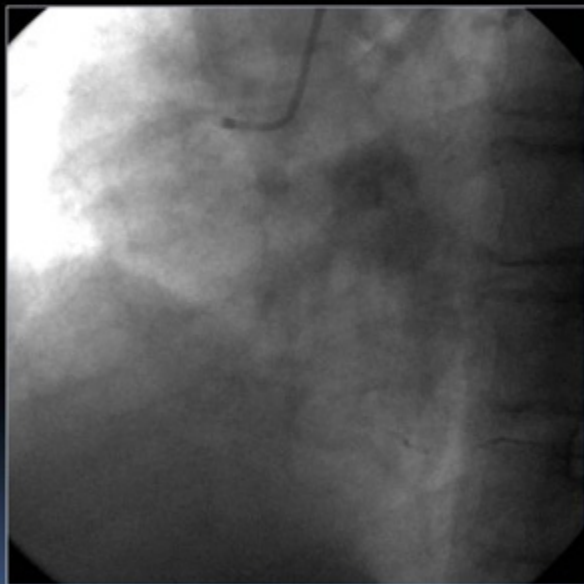
65/M, Stable angina

- ♣ HTN, DM under medications
- ♣ old CVA

- ♣ EKG; ST-T changes
- ♣ No cardiac enzyme changes

- ♣ Ant.septal, Basal inf. wall hypokinesia (LVEF=54%)

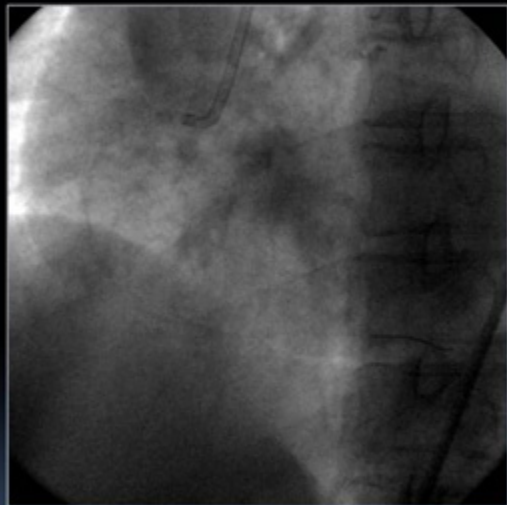
Baseline CAG



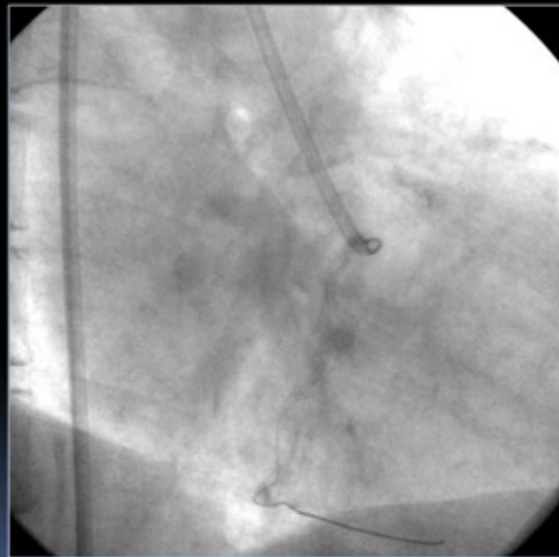
Predilatation

- 8-Fr. JR 3.5, SH guiding catheter
- Filder-FC wire
- Ryujin balloon 1.25 x 10 mm, 1.5 x 12 mm

Suddenly, Hemodynamic unstable



Atropine IV
Verapamil IC
Abciximab IV

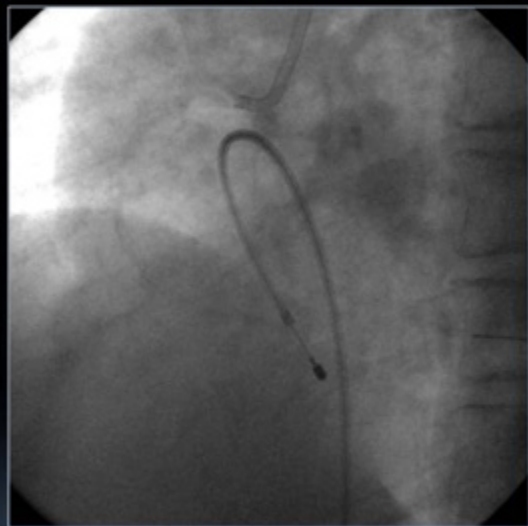
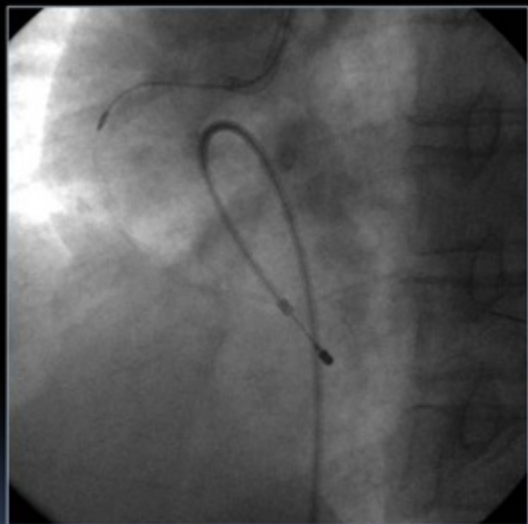


Despite predilatation, it seemed to be no difference of lesion morphology compared with pre-CAG due to complex diffuse calcification.

What shall we do?

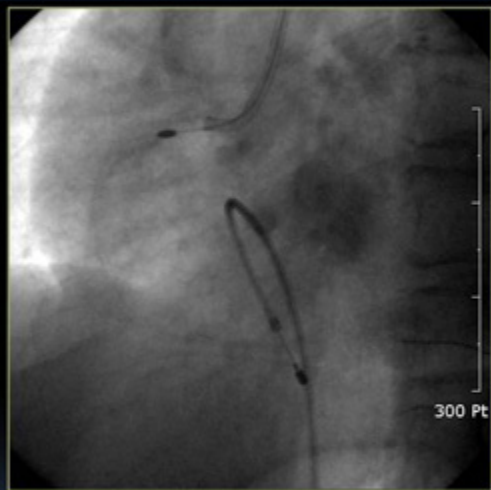
Over-sized balloon dilatation?

Rotational atherectomy

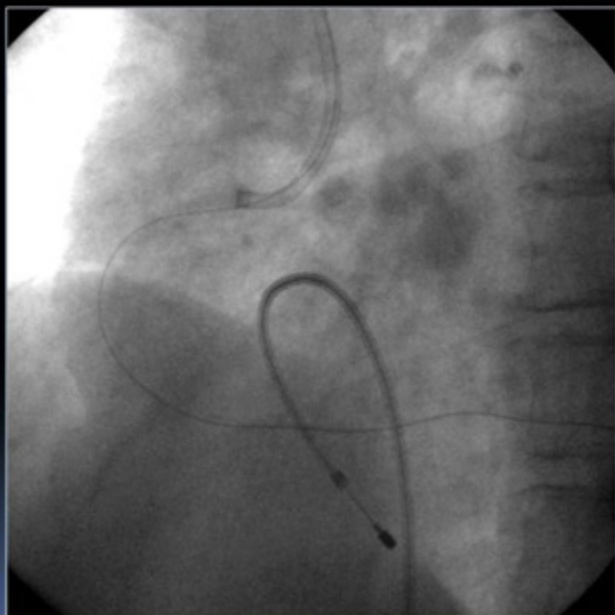


Using **Finecross 1.8 Fr** microcatheter, the wire in RCA was changed to the **325 cm 0.014 inch Rota wire**. Rotational atherectomy was performed using **1.25 mm burr**

Rotational atherectomy



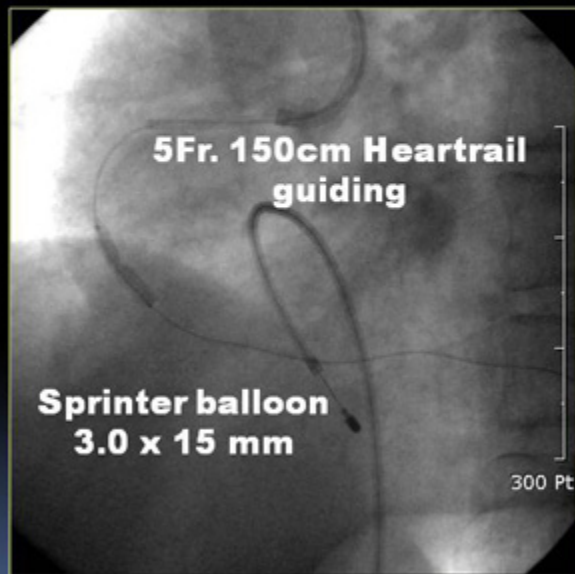
Rotational atherectomy was performed 10 times using 1.75 mm burr



Despite my effort, it seemed to be more complex due to my harmful procedure.

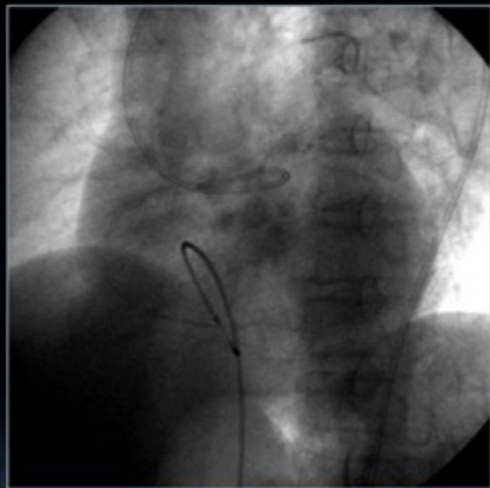
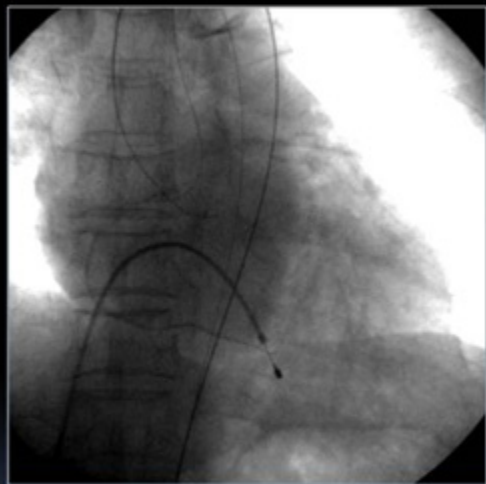
What shall we do?

'Child' in 'Mother' Catheter

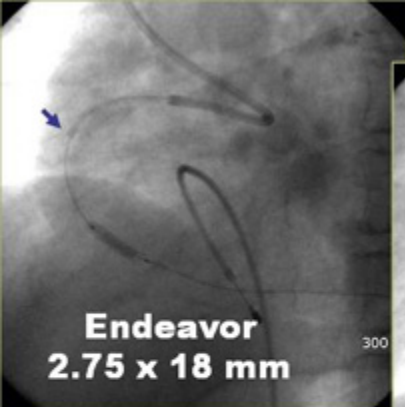


Despite rotational atherectomy, optimal predilatation and stent placement were impossible due to the inability to cross the lesions. A 5F child (Heartrail ST01, Terumo, Japan) in 8F mother catheter was advanced distal to the calcified segment with assistance of anchor balloon technique

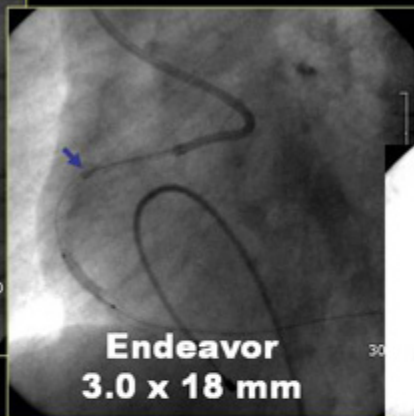
Exchange the guide catheter



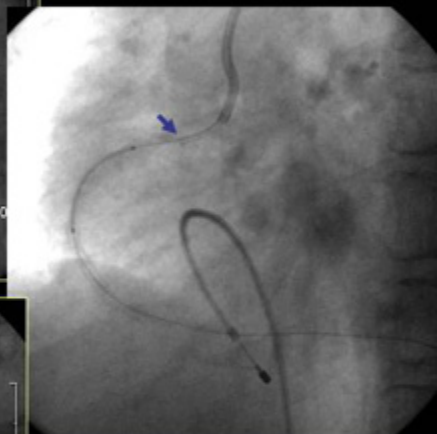
The guiding catheter was changed to a 7 Fr AL-1 guiding catheter with the support of a **Choice PT-extra support wire** for strong back-up support



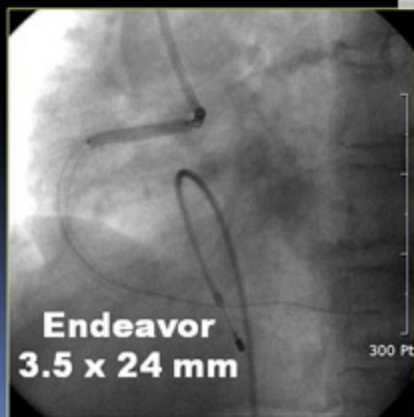
Endeavor
2.75 x 18 mm



Endeavor
3.0 x 18 mm

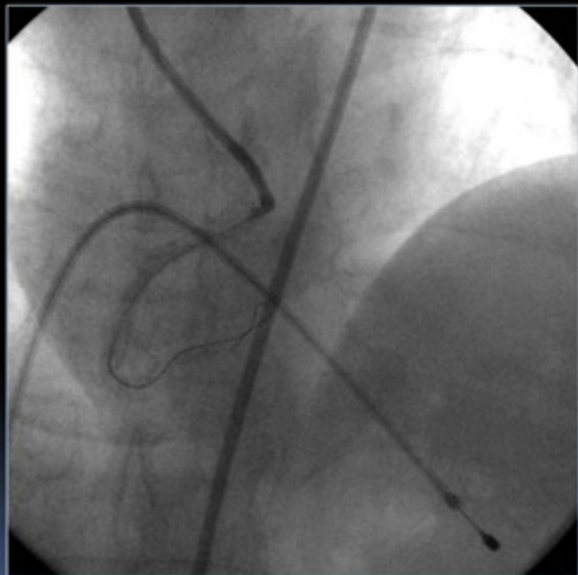
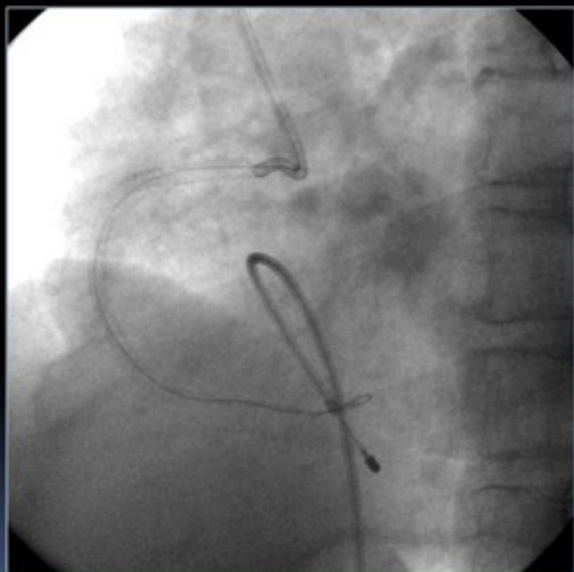


Endeavor
3.0 x 24 mm

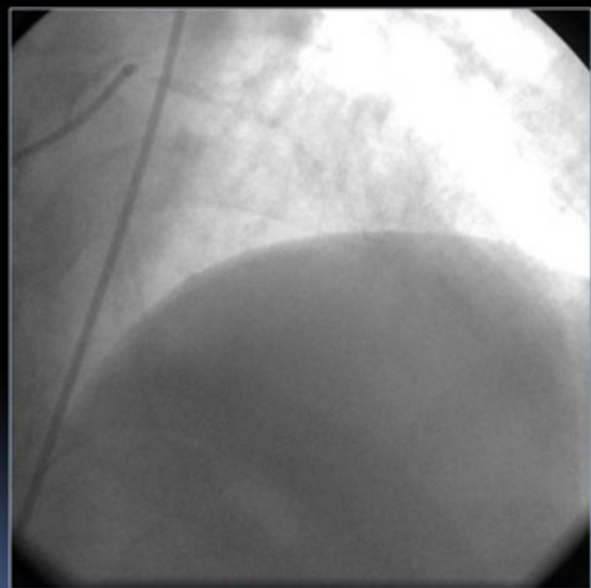
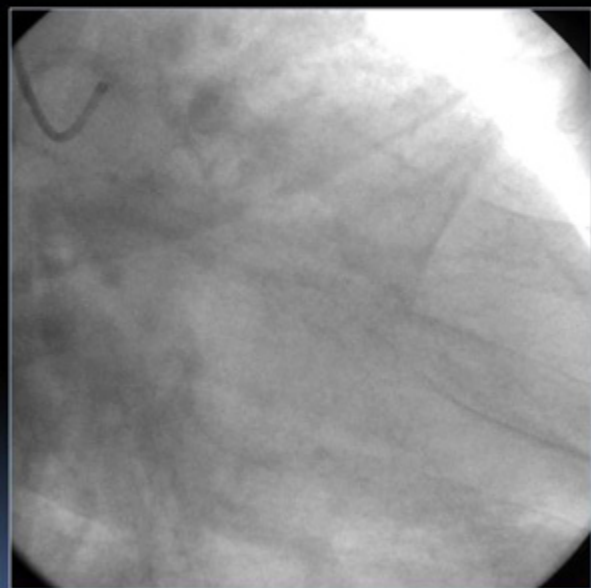


Endeavor
3.5 x 24 mm

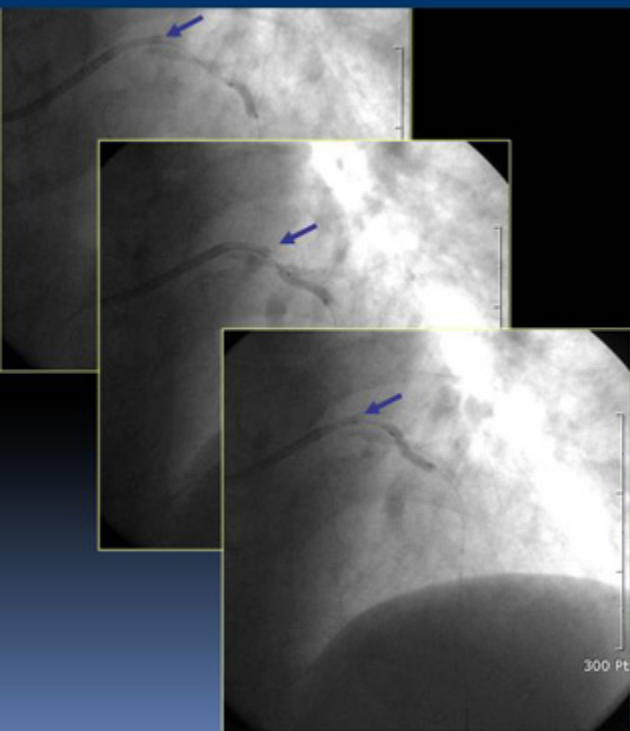
Final angiogram



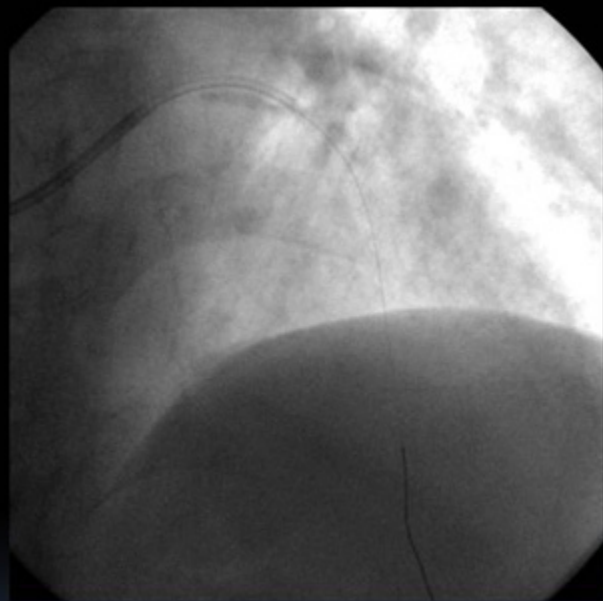
Baseline CAG



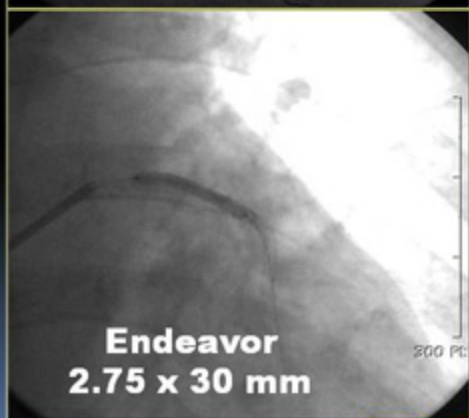
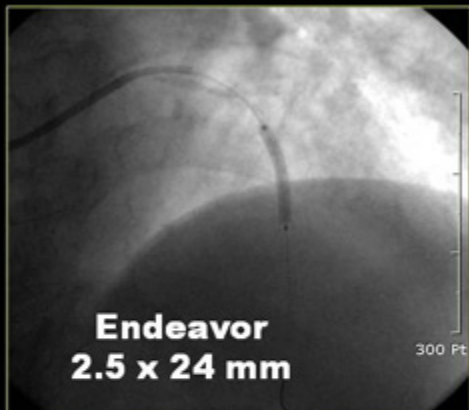
'Child' in 'Mother' Catheter



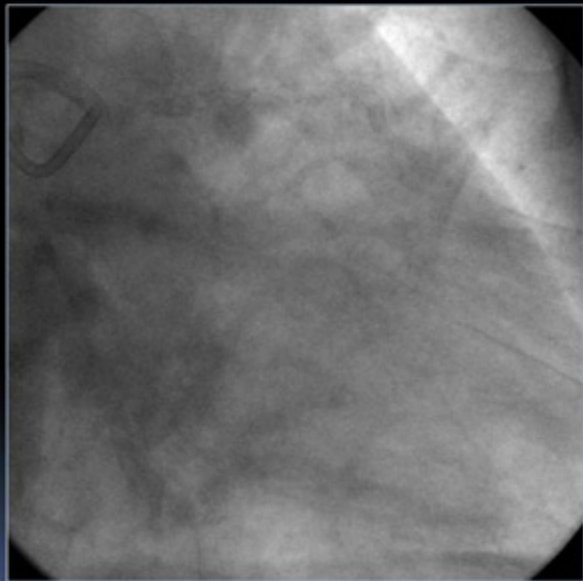
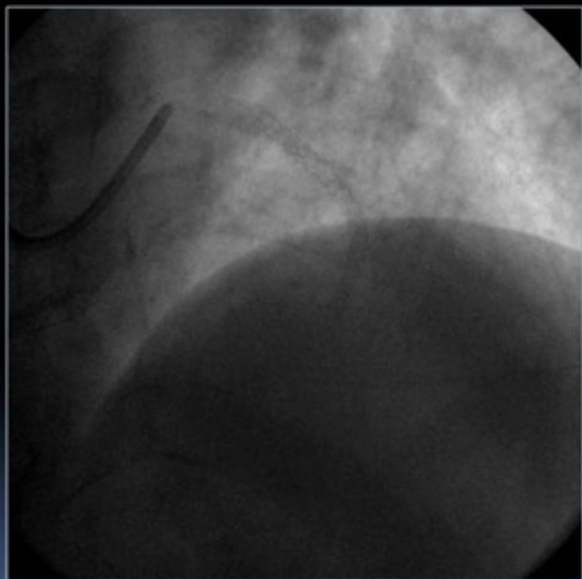
- 7-Fr. EBU 3.5 guiding catheter
- 5-Fr. 150cm Heartrail guiding catheter
- Filder-FC wire
- Fire-Star balloon 2.5 x 15 mm



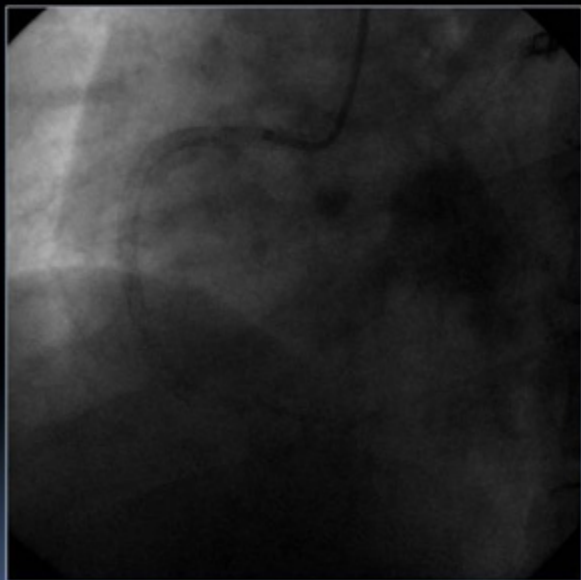
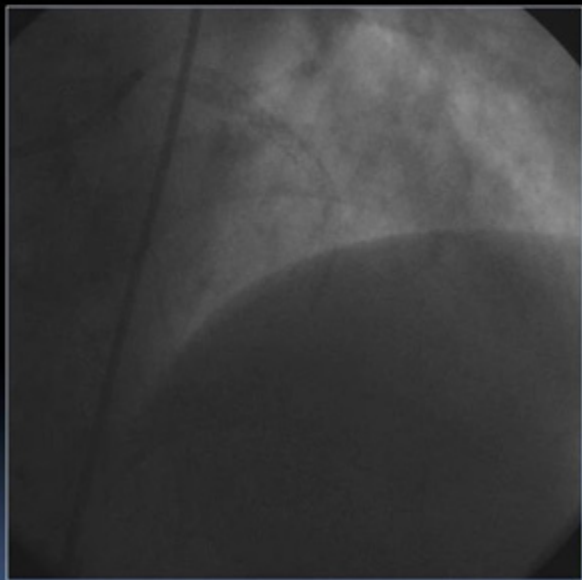
Even though severe dissection happened after predilatation, Stents could cross the lesion **through the child guide catheter.**



Final angiogram



9-month FU angiogram



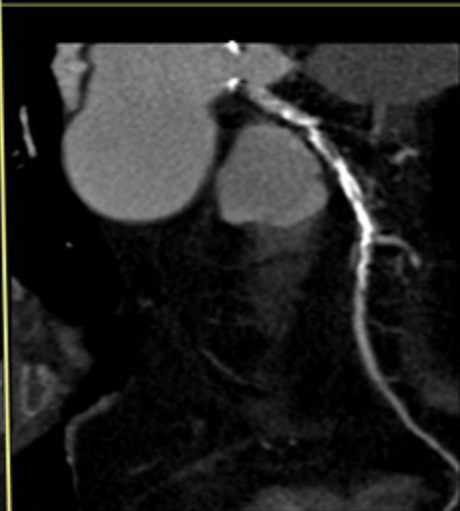
81/F, Unstable angina

- ♠ HTN, DM under medications
- ♠ Hypothyroidism, AAA

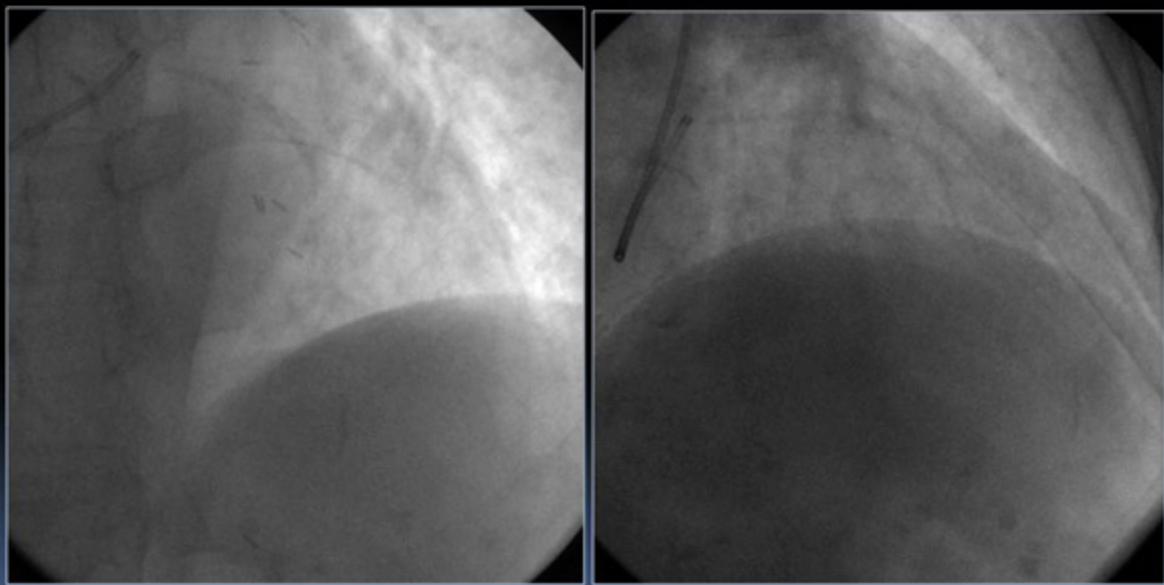
- ♠ EKG; ST-T changes
- ♠ No cardiac enzyme changes

- ♠ No RWMA (LVEF=64%, E/E' 16.7)

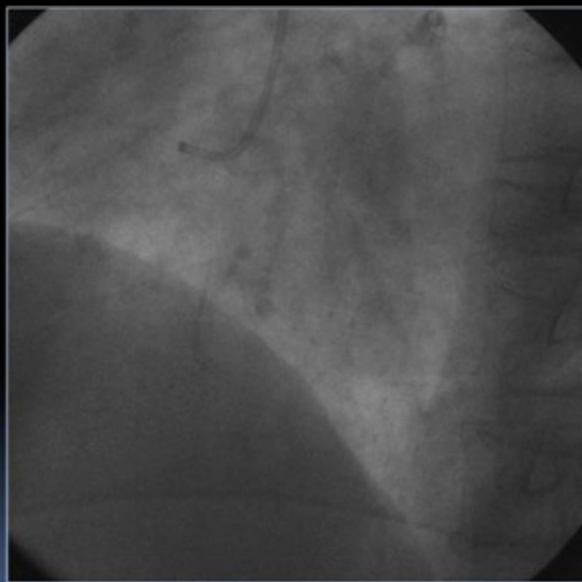
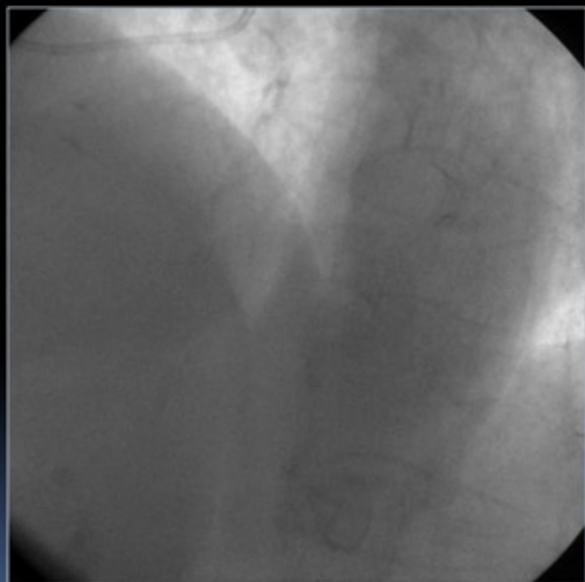
Cardiac CT Angiography



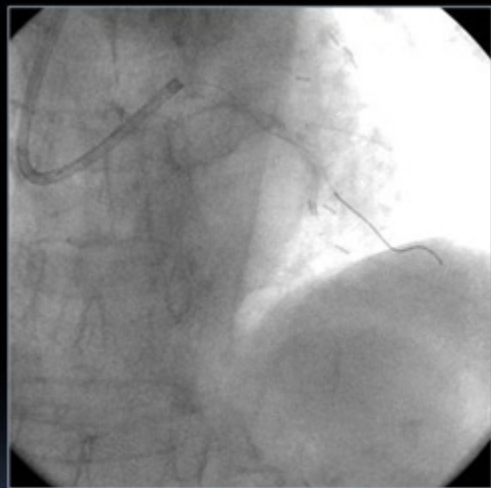
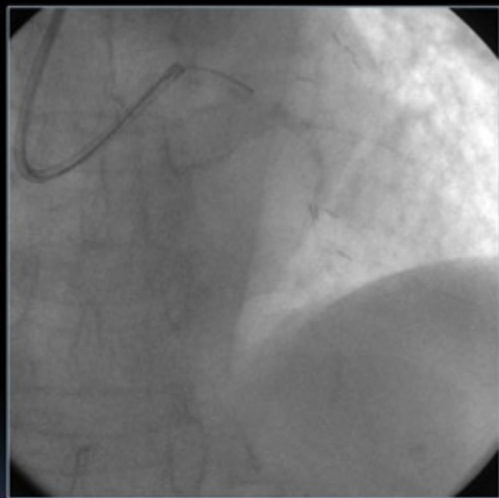
Baseline CAG



Baseline CAG



Difficult wiring d/t angulated calcified lesion

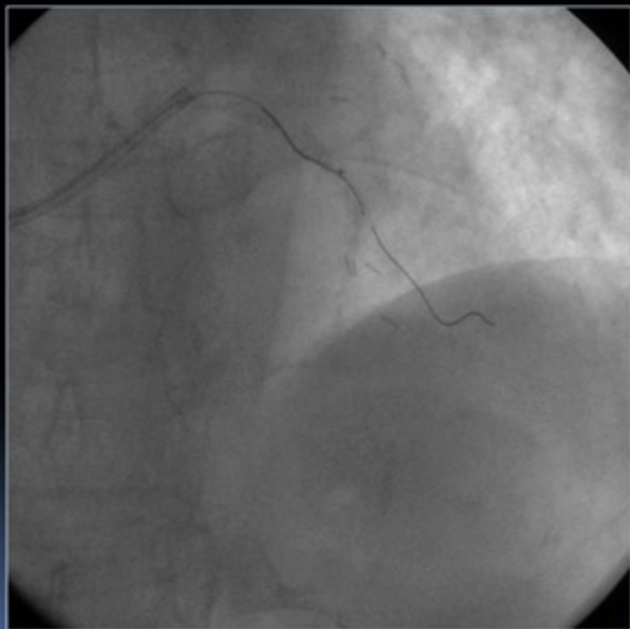


- 7-Fr. XB 3.5, SH guiding catheter through a Rt.radial a.
- Filder-FC wire

In particular, wiring may be difficult due to the resistance of angulated, heavily calcified plaque at the lesion site. Guide-wire could not be inserted to the LAD.

What shall we do?

'Double layer lumen' Catheter



- Crusade micro-guide catheter
- Filder-FC wire

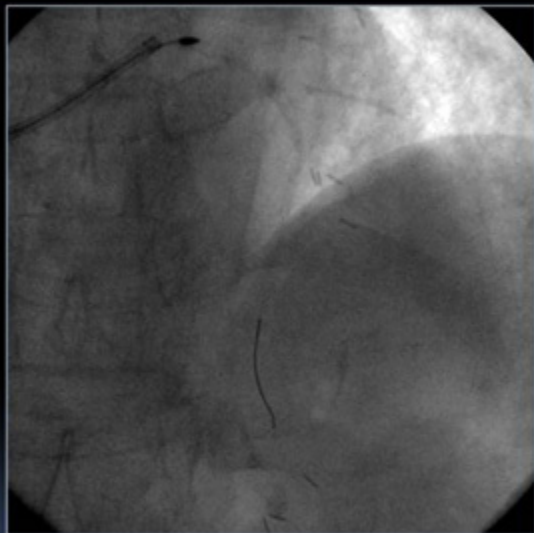
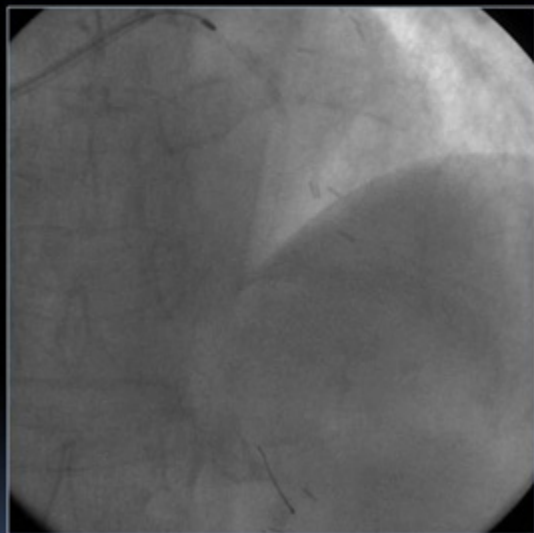
Ryujin
1.25 X
10mm

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1.25 X
10mm

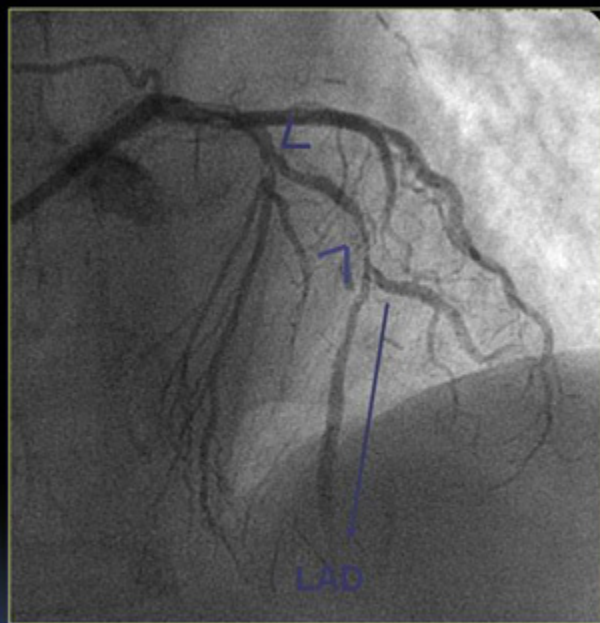
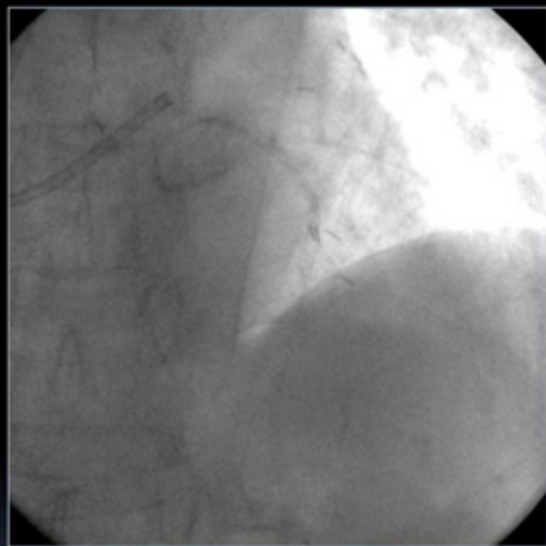
Kaneka
1.5 X 9mm

Kaneka
1.5 X 9mm

Rotational atherectomy



Rotational atherectomy was performed using 1.25 mm burr and 1.5 mm burr

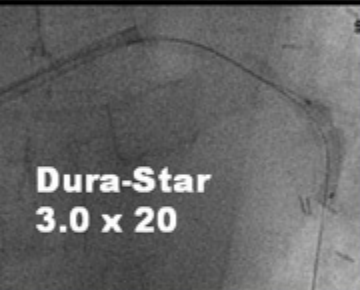


The angiogram after Rota-procedure showed slightly improvement of plaque morphology and LAD flow.

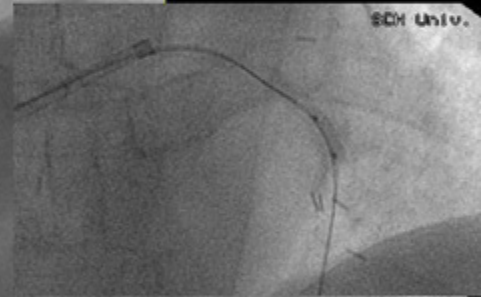




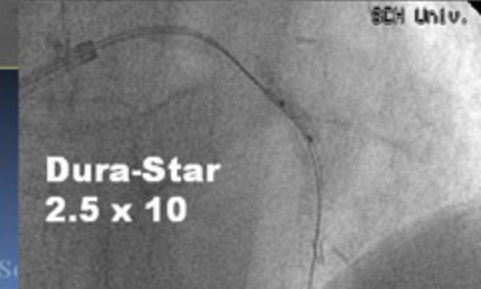
***Additional Choice PT-
extra support wire***



**Dura-Star
3.0 x 20**

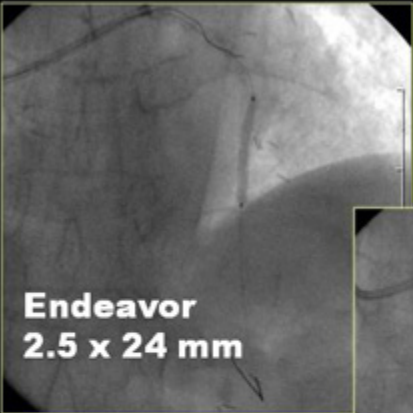


SCH Univ.



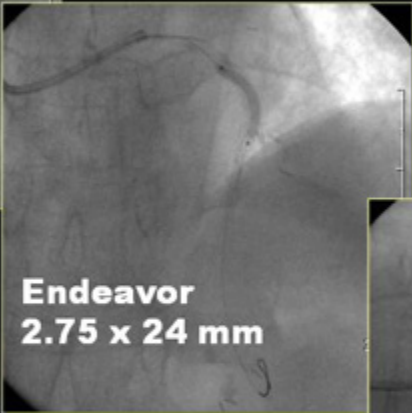
SCH Univ.

**Dura-Star
2.5 x 10**



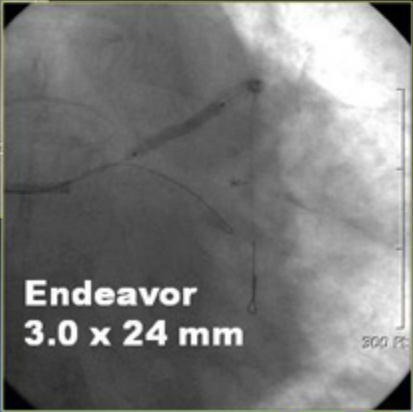
Endeavor
2.5 x 24 mm

This micrograph shows a biological specimen, likely a nematode, with a segmented body and a distinct head region. The image is in grayscale and shows fine details of the body structure.



Endeavor
2.75 x 24 mm

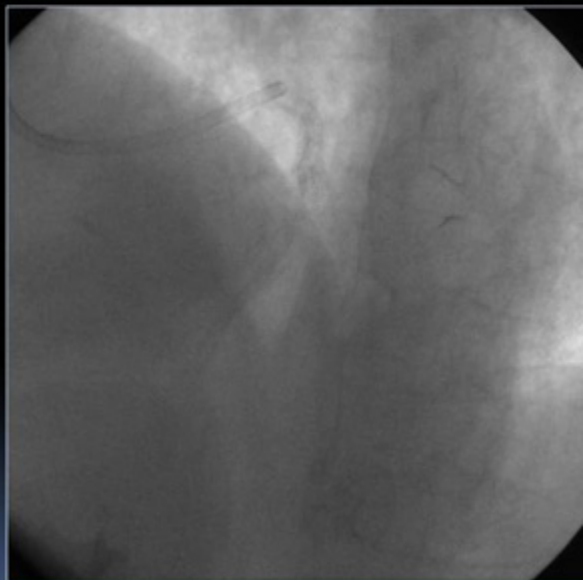
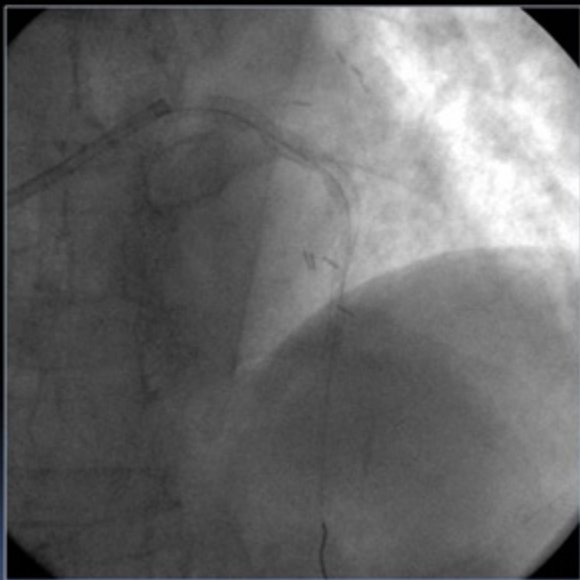
This micrograph provides a slightly higher magnification of the same specimen, showing more detail of the body segments and the head. A vertical scale bar is visible on the right side of the image.



Endeavor
3.0 x 24 mm

This micrograph shows the specimen at the highest magnification, with very clear details of the body segments and the head. A vertical scale bar is visible on the right side of the image, with the text "800 μm" at the bottom right corner.

Final angiogram



9-month FU CTA

3D
Cr: 15489
Sp: 351 no
Volume Rendering: No cut

SFOV 19.5 cm
STD: Pro308 (No Fill.)



Heart_2
No: 001
W: 300
H: 300
Rot: 0.25a/0h 2.0a/rot
0.0mm 0.221170.0ap
T1141 0.0
02:11:14 PM
W = 1534 L = -256

3D

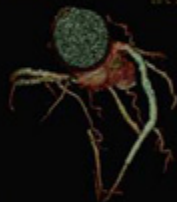
SOONCHUNHYANG 1



W = 1280 L = 288

SFOV 19.5 cm
STD: Pro308 (No Fill.)

15 L 22 440 50 000



No: 001

Cr: 0.221170.0ap

W = 1534 L = -256

Rot: 0.25a/0h

0.0mm 0.221170.0ap

SFOV 19.5 cm

STD: Pro308 (No Fill.)

Cr: 0.221170.0ap

W = 1534 L = -256

Rot: 0.25a/0h

0.0mm 0.221170.0ap

SFOV 19.5 cm

STD: Pro308 (No Fill.)

Cr: 0.221170.0ap

W = 1534 L = -256

Rot: 0.25a/0h

0.0mm 0.221170.0ap

SFOV 19.5 cm

STD: Pro308 (No Fill.)

Cr: 0.221170.0ap

W = 1534 L = -256

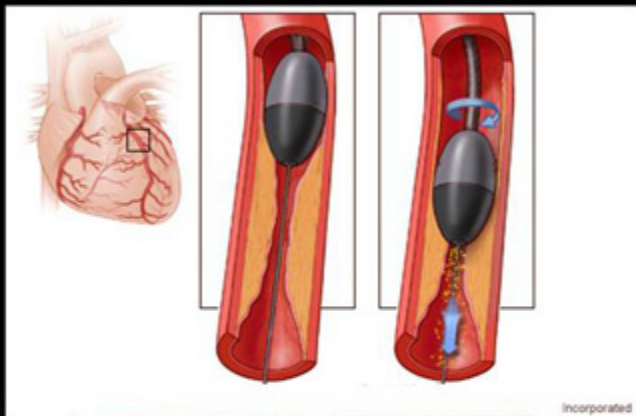
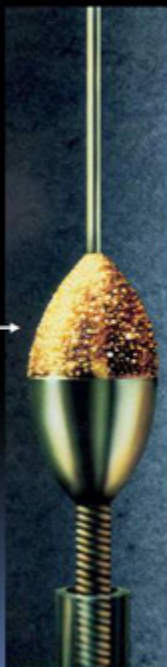
Rot: 0.25a/0h

0.0mm 0.221170.0ap

**How could we
overcome the diffuse
calcified lesions?**

1. Rotational atherectomy

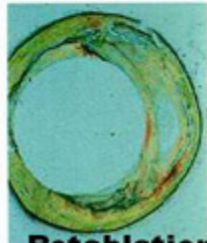
Diamond microchips →



Incorporated



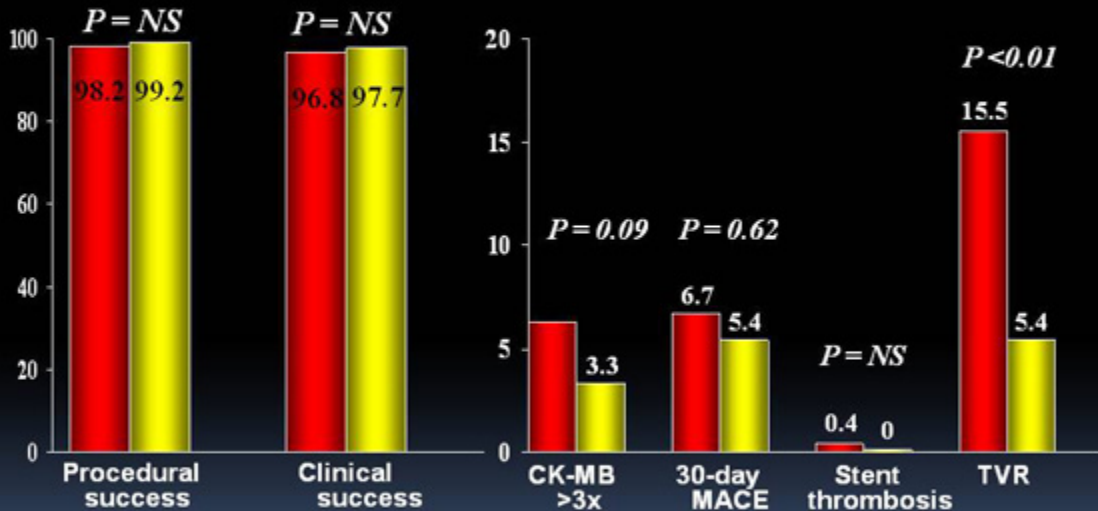
Balloon



Rotablation

Rota+BMS vs Rota+DES

Procedural & Clinical Results



Sharma et al, ACC 2008

2. 'Child' in 'Mother' Catheter

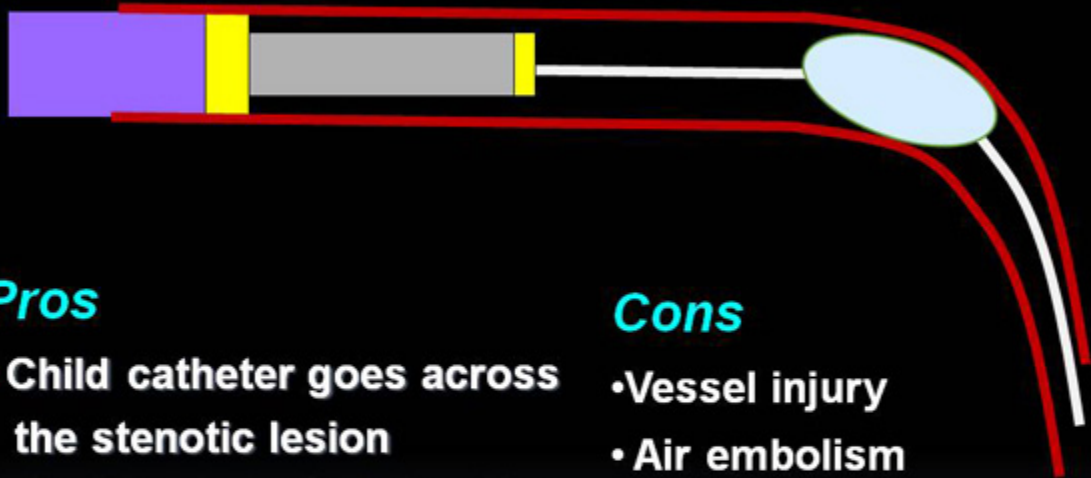


The Heartrail (Terumo, Japan) "mother-and-child" catheter comprises a flexible-tipped long 5 Fr catheter advanced through a standard 6 Fr guiding catheter to deeply intubate the target vessel.

It provides enough back-up support and enhances stent delivery by reducing the frictional forces encountered within calcified and diseased arteries

≥ 6Fr. mom

5Fr. child



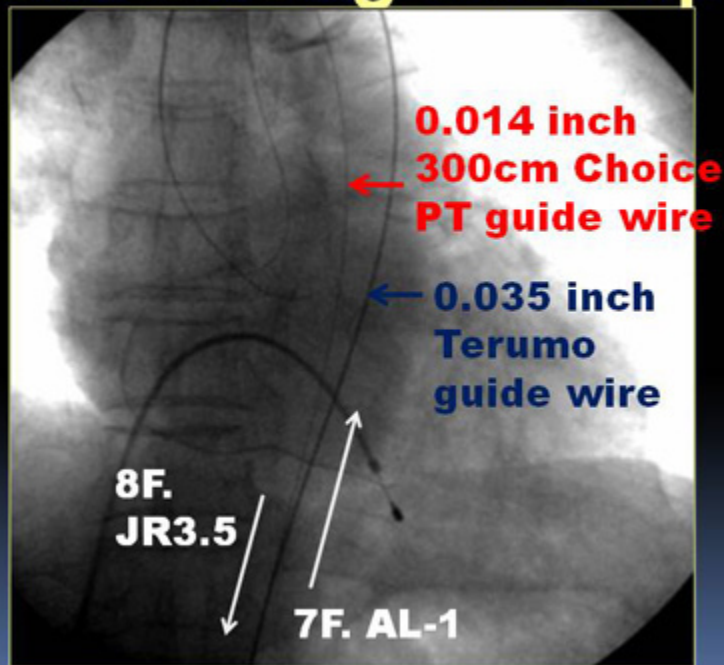
Pros

- Child catheter goes across the stenotic lesion
- No risk of stent dislocation
- No risk of DES polymer peeling off

Cons

- Vessel injury
- Air embolism
- Careful monitoring distal coronary pressure

3. Exchange the guide catheter with strong back up support



***We need a additional support
for the safe DES delivery.***

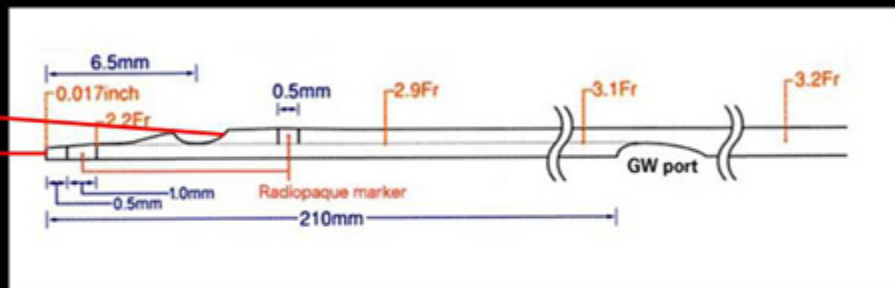
Catheter selection

RCA; Amplatz, Hockey...

LCA; XB, EBU, Amplatz

***“Double wire technique”
to exchange the guide catheter***

4. 'Double layer lumen' Catheter



- Good shaft maneuverability
distal shaft with slender flexible tip
flexible and strong proximal shaft
- Good GW movement through the “double layer lumen”

Think Creative - Breakthrough

Stop Stereotyping

