Role of Drug Eluting Balloons in Coronary Intervention

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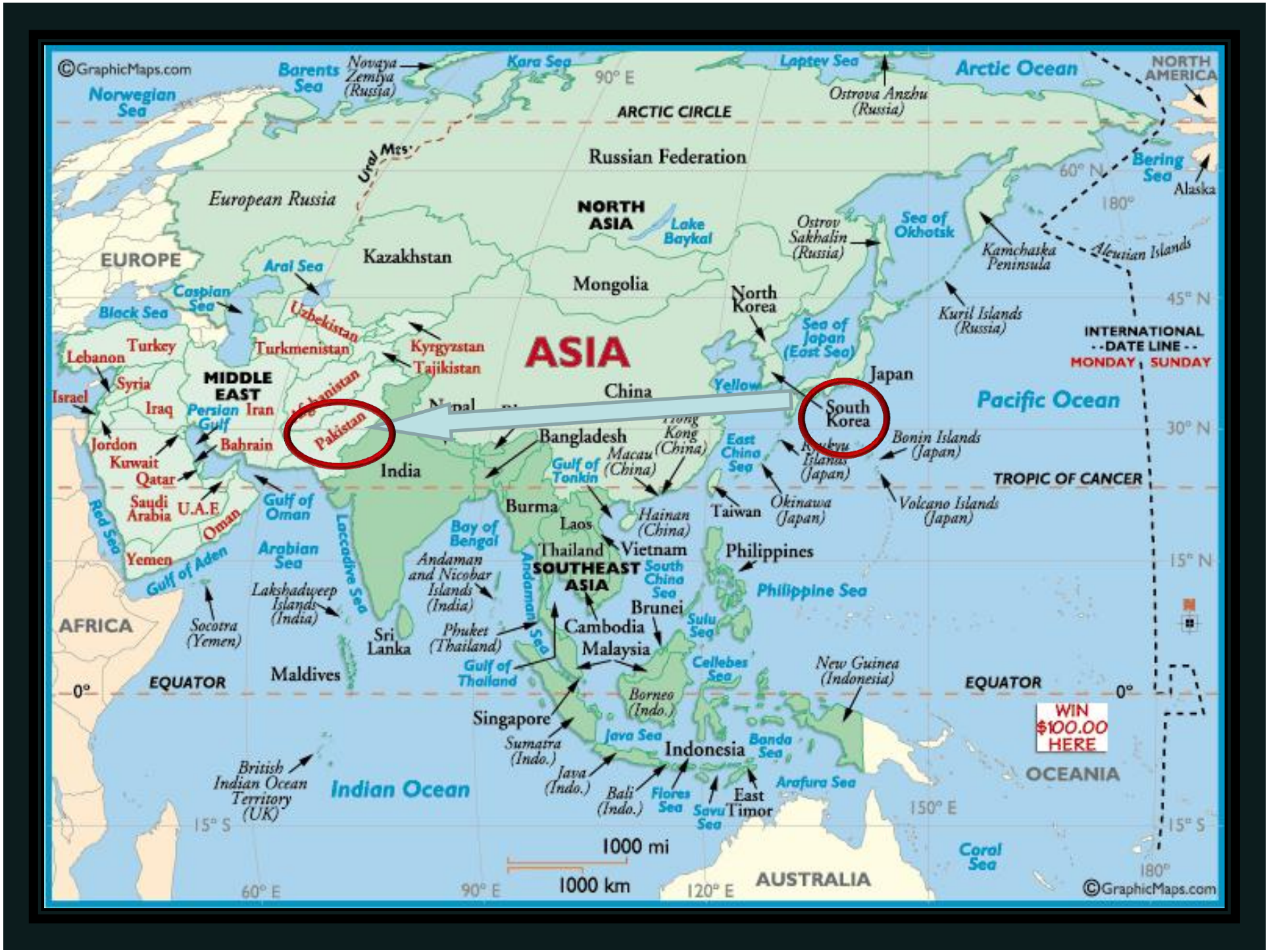
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Barents Sea
Novaya Zemlya (Russia)
Kara Sea
Laptev Sea
Arctic Ocean
NORTH AMERICA
Norwegian Sea
90° E
ARCTIC CIRCLE
Ostrova Anzhu (Russia)
Ural Mts
Russian Federation
Bering Sea
Alaska
60° N
180°
European Russia
NORTH ASIA
Lake Baykal
Ostrov Sakhalin (Russia)
Sea of Okhotsk
Kamchatka Peninsula
Aleutian Islands
EUROPE
Aral Sea
Kazakhstan
Mongolia
Caspian Sea
Black Sea
Uzbekistan
North Korea
Kuril Islands (Russia)
45° N
Sea of Japan (East Sea)
INTERNATIONAL
--DATE LINE--
MONDAY
SUNDAY
Turkey
Turkmenistan
Kyrgyzstan
Tajikistan
ASIA
Lebanon
Syria
MIDDLE EAST
China
Japan
Yellow
Israel
Iraq
Persian Gulf
Iran
Nepal
South Korea
Pacific Ocean
Pakistan
Bangladesh
Hong Kong (China)
East China Sea
Bonin Islands (Japan)
30° N
Jordon
Kuwait
Bahrain
Qatar
India
Gulf of Tonkin
Macau (China)
Ryukyu Islands (Japan)
TROPIC OF CANCER
Saudi Arabia
U.A.E.
Oman
Gulf of Oman
Red Sea
Laccadive Sea
Burma
Laos
Hainan (China)
Taiwan
Okinawa (Japan)
Volcano Islands (Japan)
Bay of Bengal
Arabian Sea
Andaman and Nicobar Islands (India)
Andaman Sea
Thailand
Vietnam
Philippines
Yemen
Gulf of Aden
SOUTHEAST ASIA
South China Sea
15° N
Philippine Sea
Lakshadweep Islands (India)
Brunei
Sulu Sea
AFRICA
Socotra (Yemen)
Sri Lanka
Phuket (Thailand)
Cambodia
Malaysia
Celebes Sea
New Guinea (Indonesia)
Maldives
Gulf of Thailand
EQUATOR
0°
Borneo (Indo.)
Singapore
Java Sea
Banda Sea
Sumatra (Indo.)
Indonesia
OCEANIA
WIN $100.00 HERE
British Indian Ocean Territory (UK)
Indian Ocean
Java (Indo.)
Bali (Indo.)
Flores Sea
Savu Sea
East Timor
Arafura Sea
150° E
15° S
1000 mi
1000 km
Coral Sea
60° E
90° E
120° E
AUSTRALIA
180°
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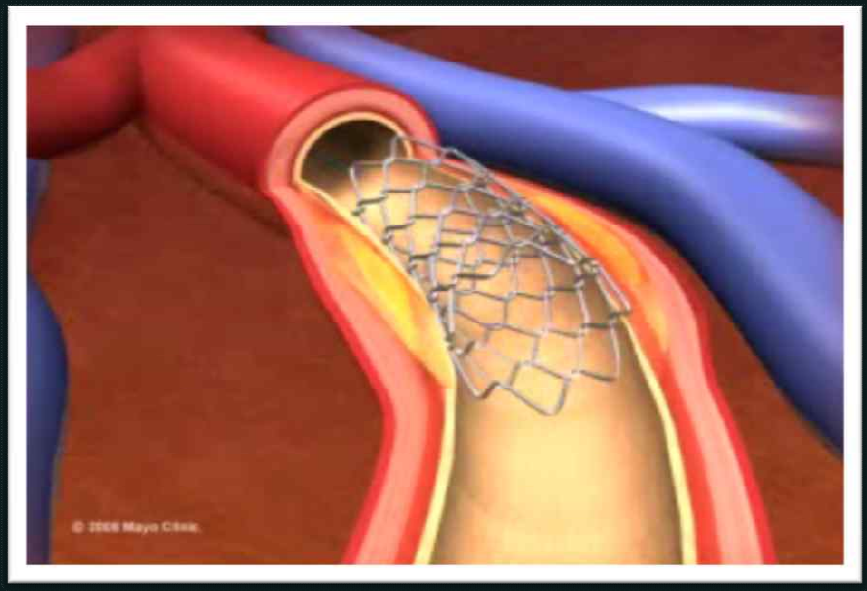
Karachi: Seaport and Financial Capital

Population: 20 million, One of the most populated city in the world


The Aga Khan University
Hospital

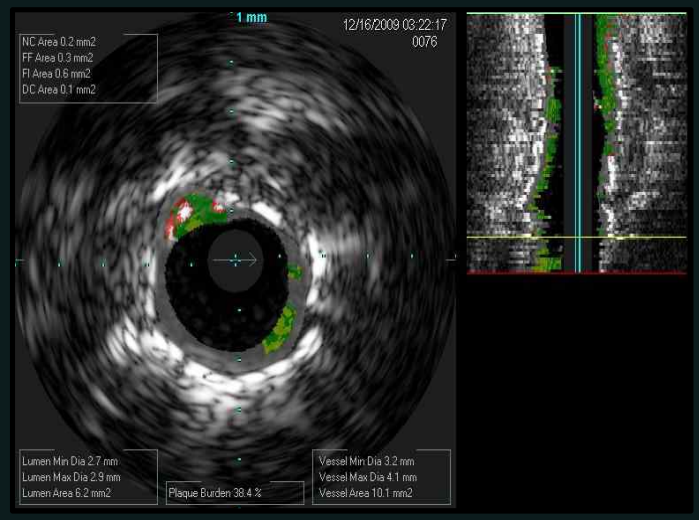
Almost 650 coronary interventions/ year
Modest growth/year

DEB: A relatively new device
On the way to prove itself



Case in Point

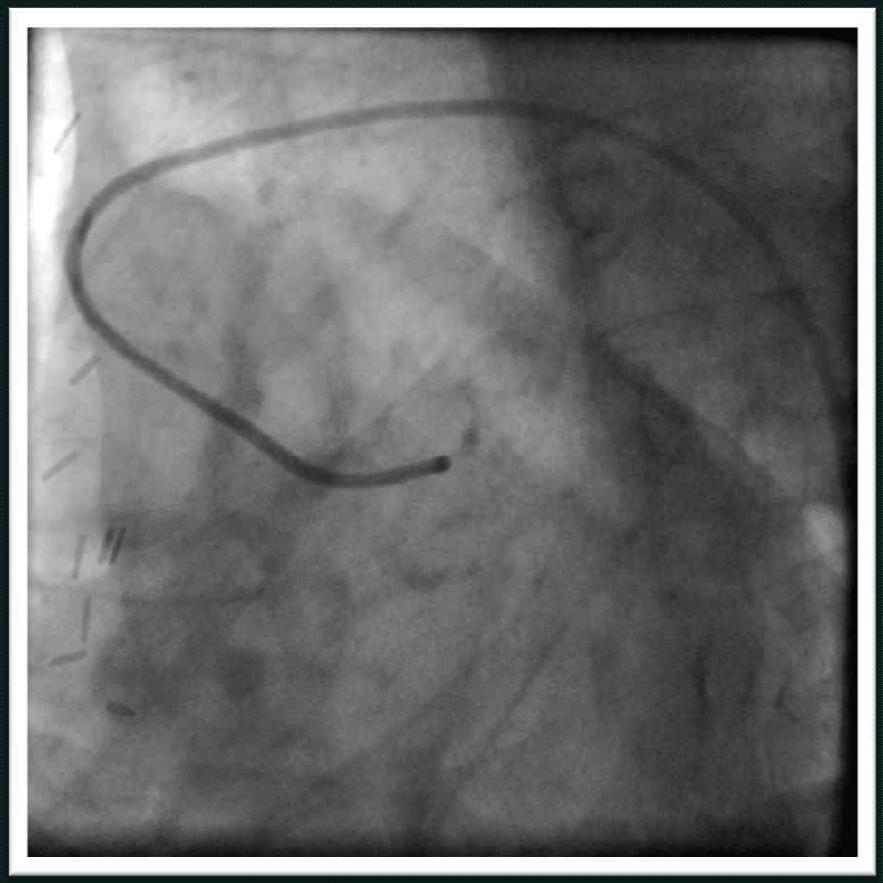
“A complex case of CTO, perforation and recurrent in-stent re-stenosis”

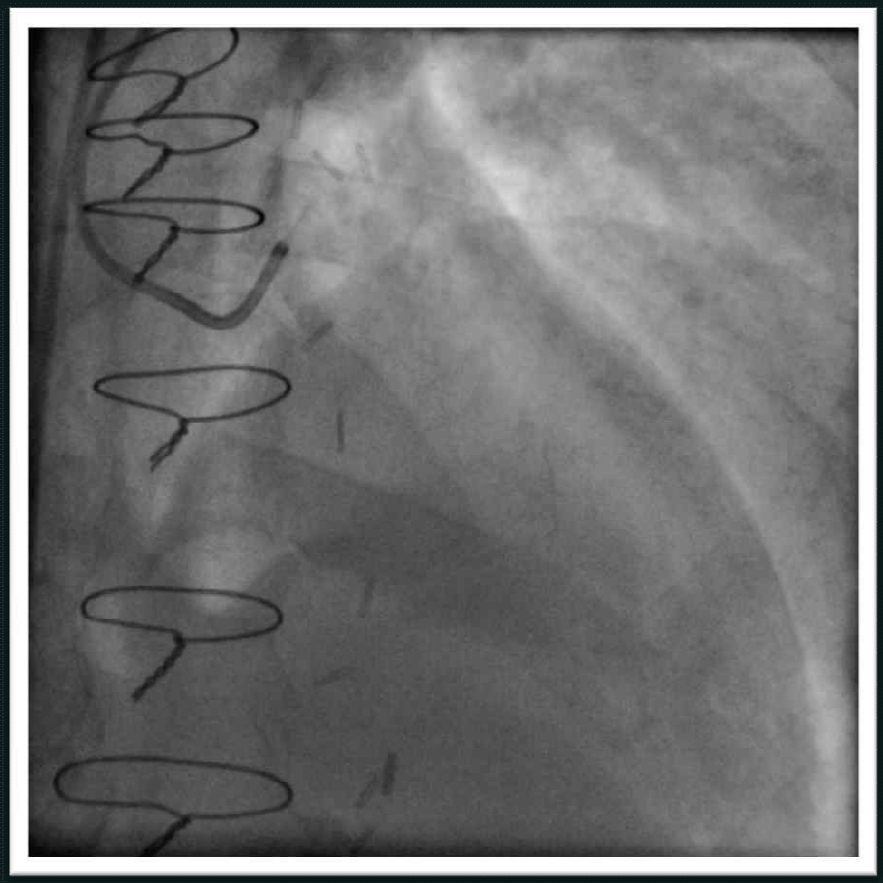


Case Summary

- A 65 years old man.
  - Very poor socioeconomic status.
  - HTN.
  - Dyslipidemia.
- CABG 1994 with:
  - SVG to RCA, Ramus and OM2.
  - No graft to LAD
- New CCS 111-1V angina, 15 years after CABG
- Coronary angiogram revealed
  - Patent SVG to RCA, Ramus and OM2.
- And-------

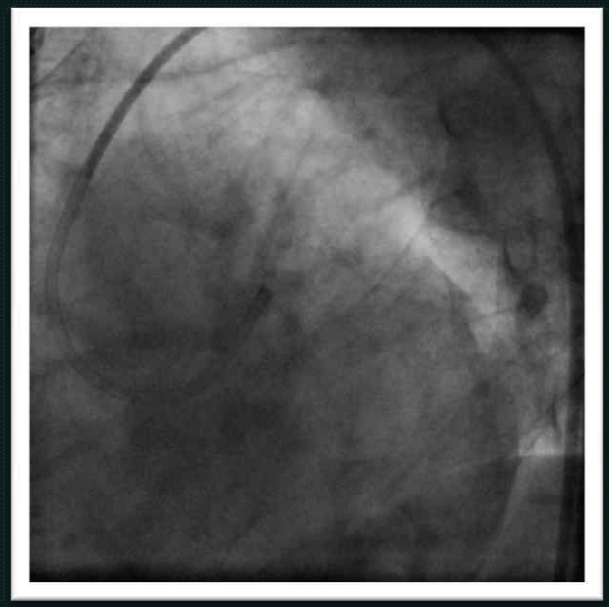
Severe Ostial and Proximal LM and Proximal LAD stenosis

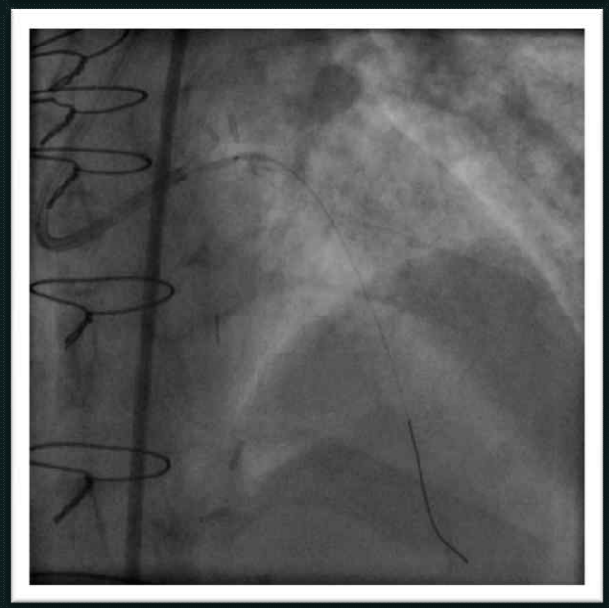




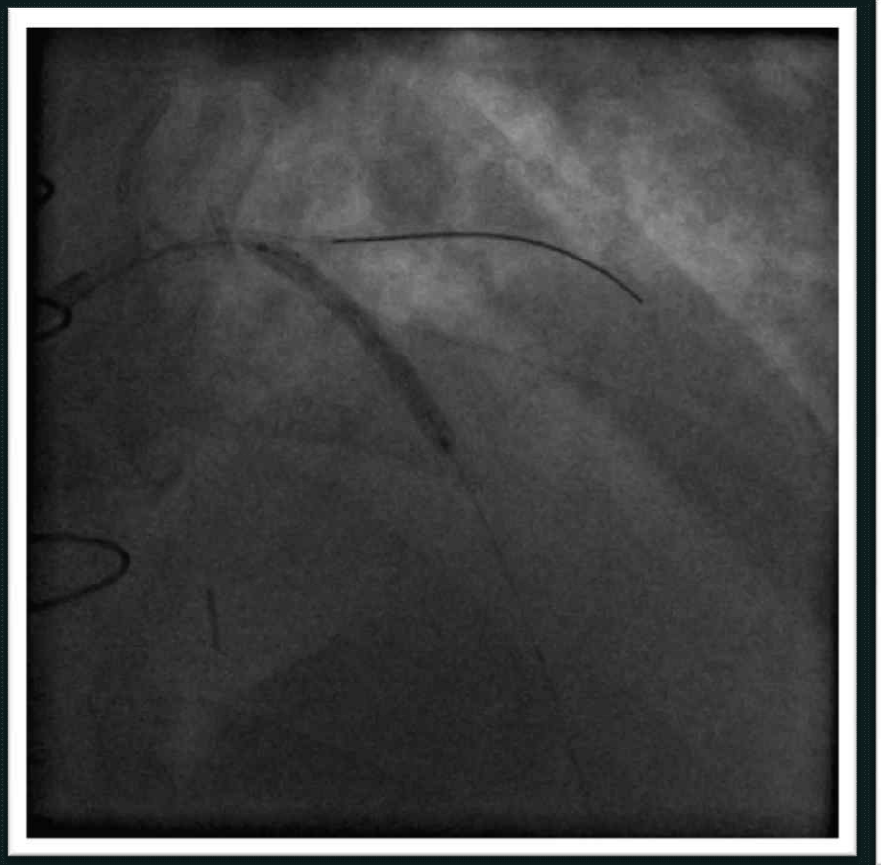
PCI of Left Main done in September 2008

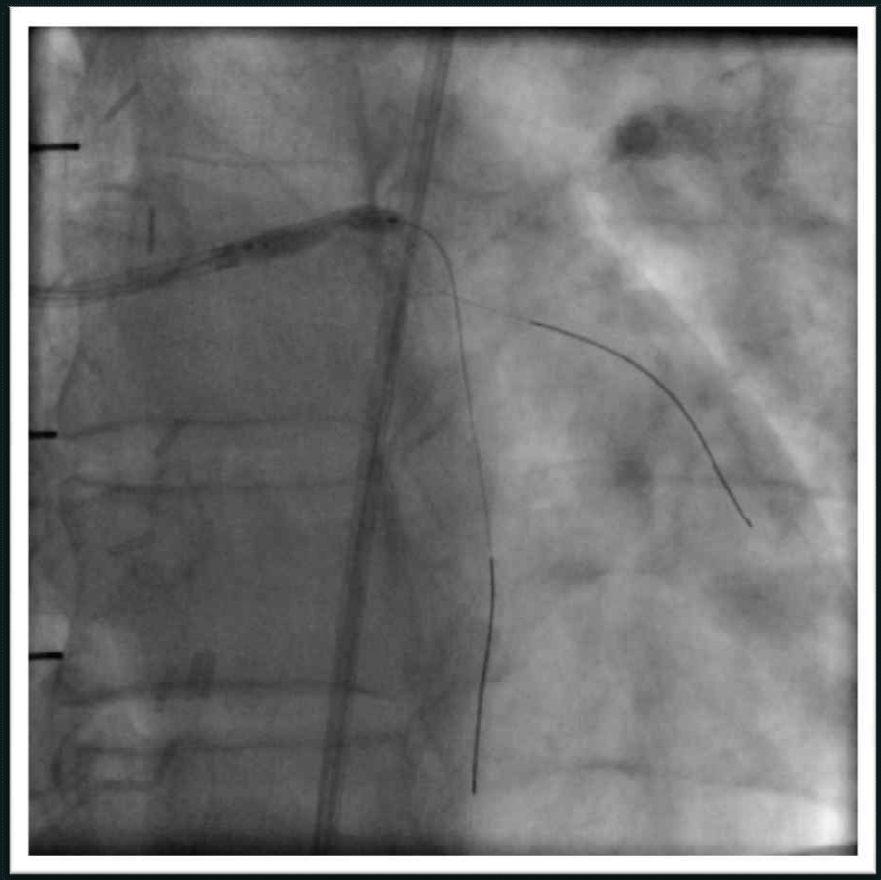
- XB (Cordis) 3.0 7F guiding catheter.
- LAD and CX wired with Cougar XT (Medtronic) wire.
- Predilated with Sprinter Legend (Medtronic)1.5 x 10 at 4-20 atm.



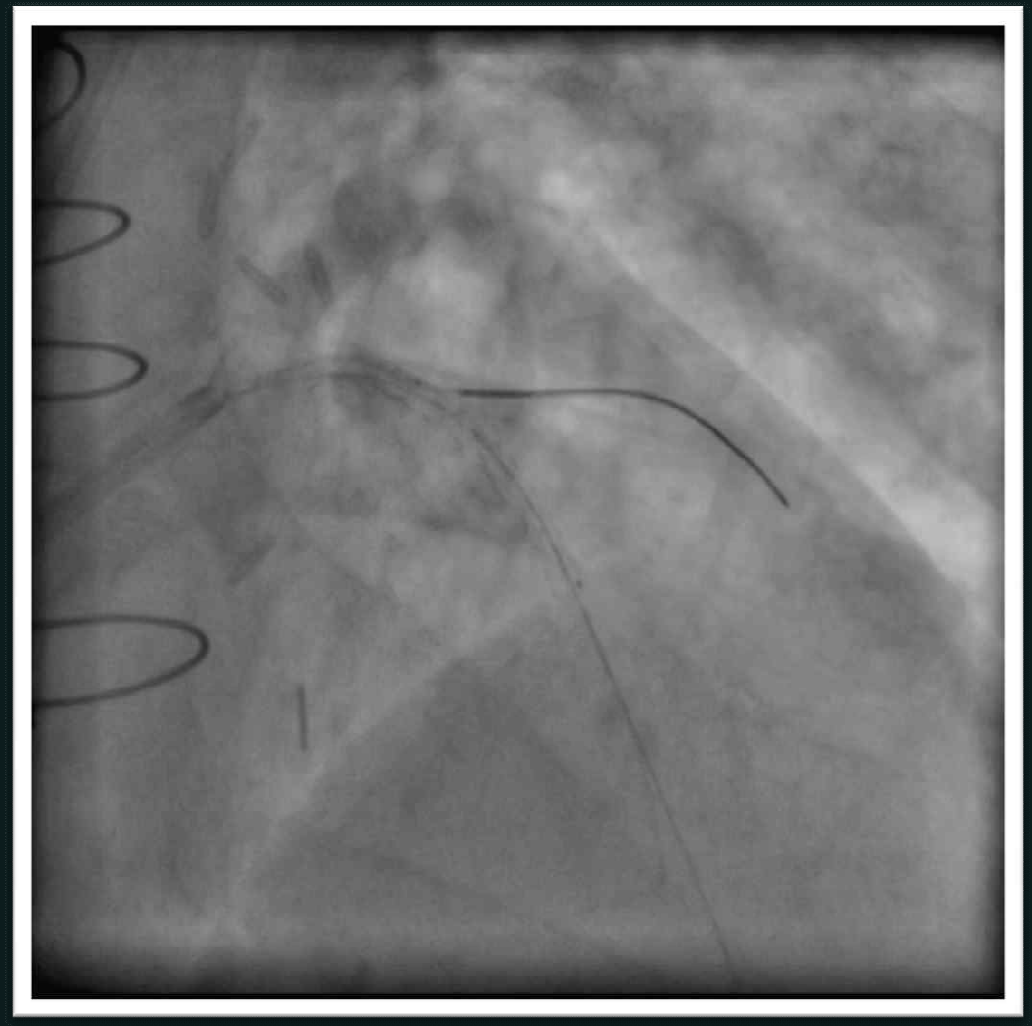


A Bare Metal Stent, Chrono (Sorin) 3.0 x 16 mm deployed from ostial LM into LAD and another Chrono stent 2.5 x 25 mm deployed in proximal LAD overlapping the first stent

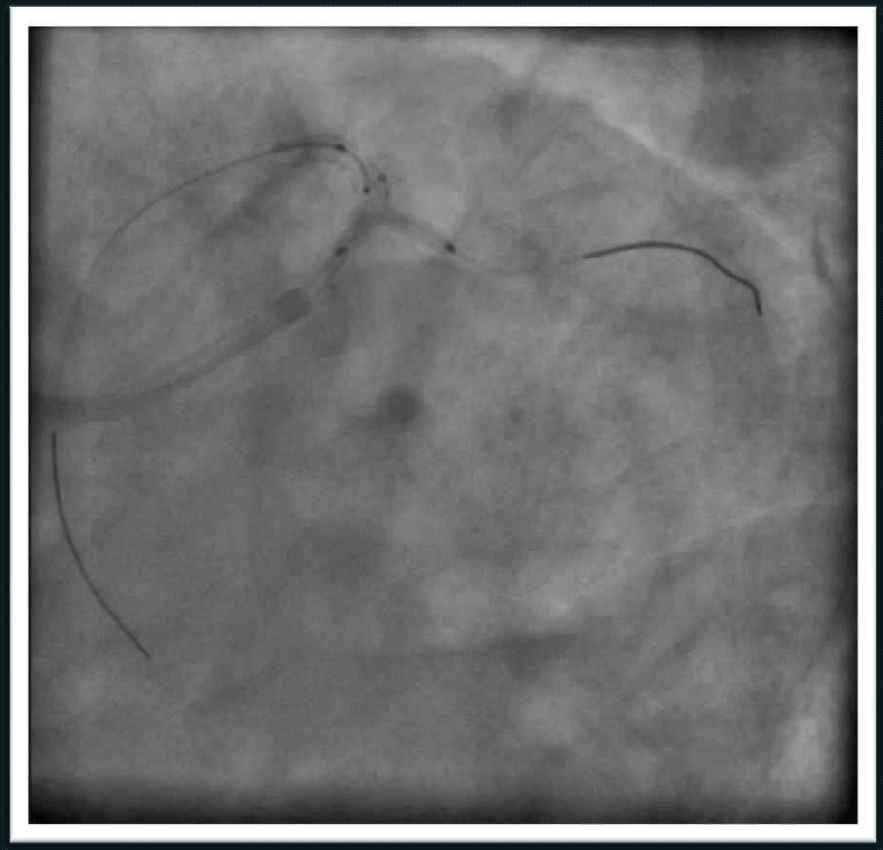


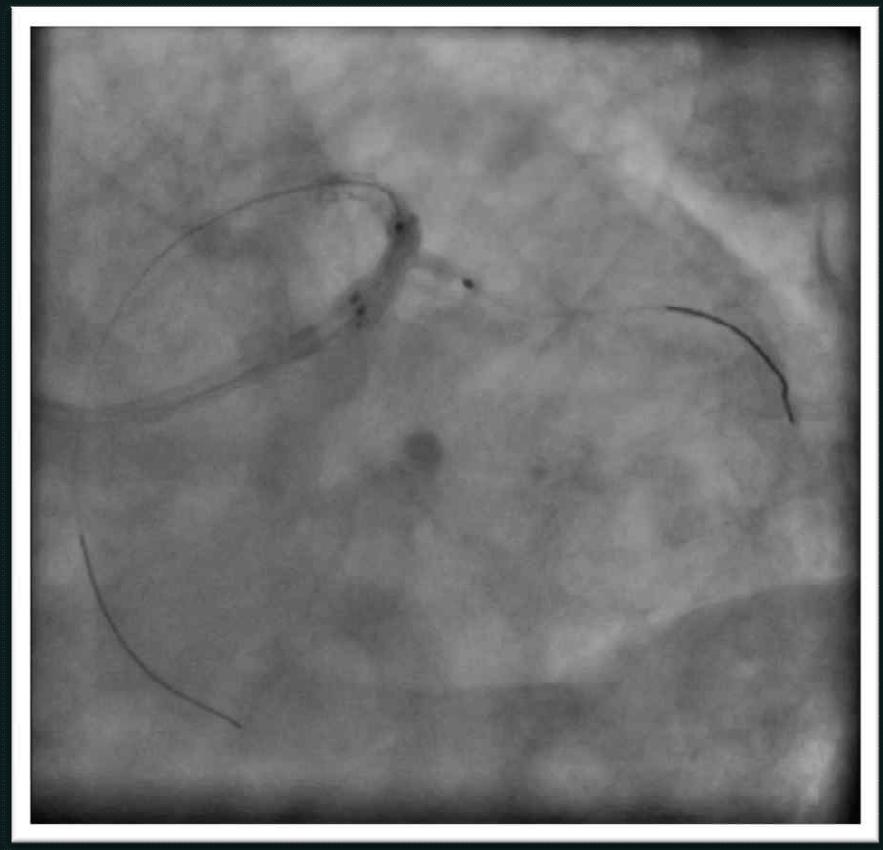


Both stents were post dilated with 3.0 x 13 mm Power Sail (NC Balloon) at high pressure

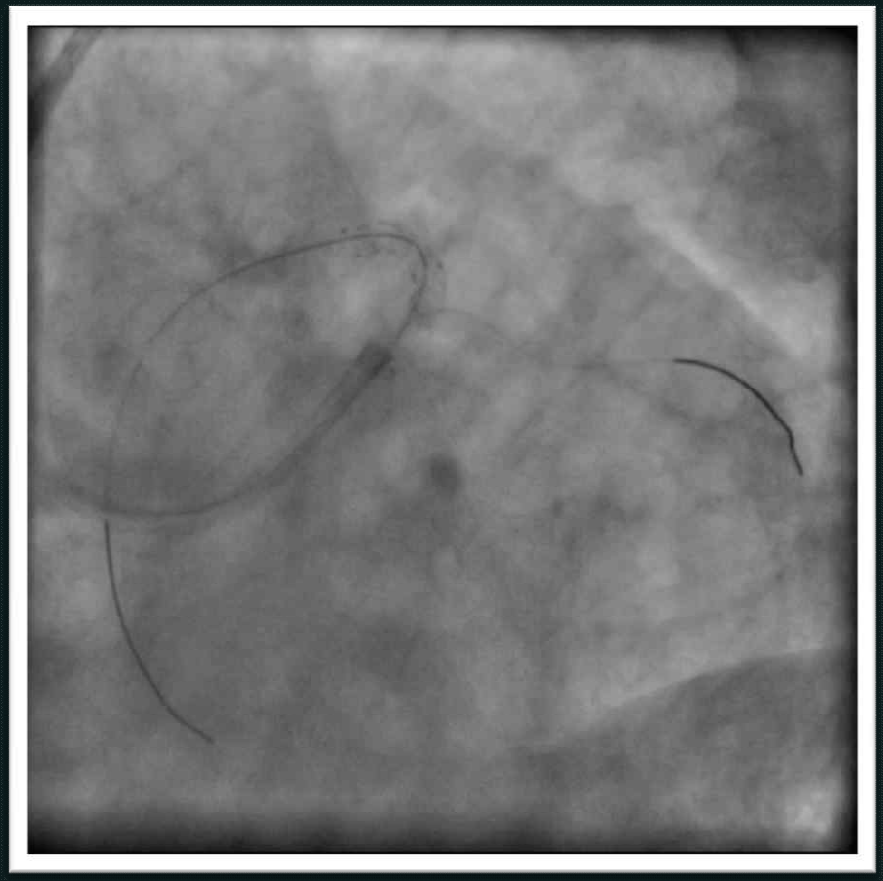


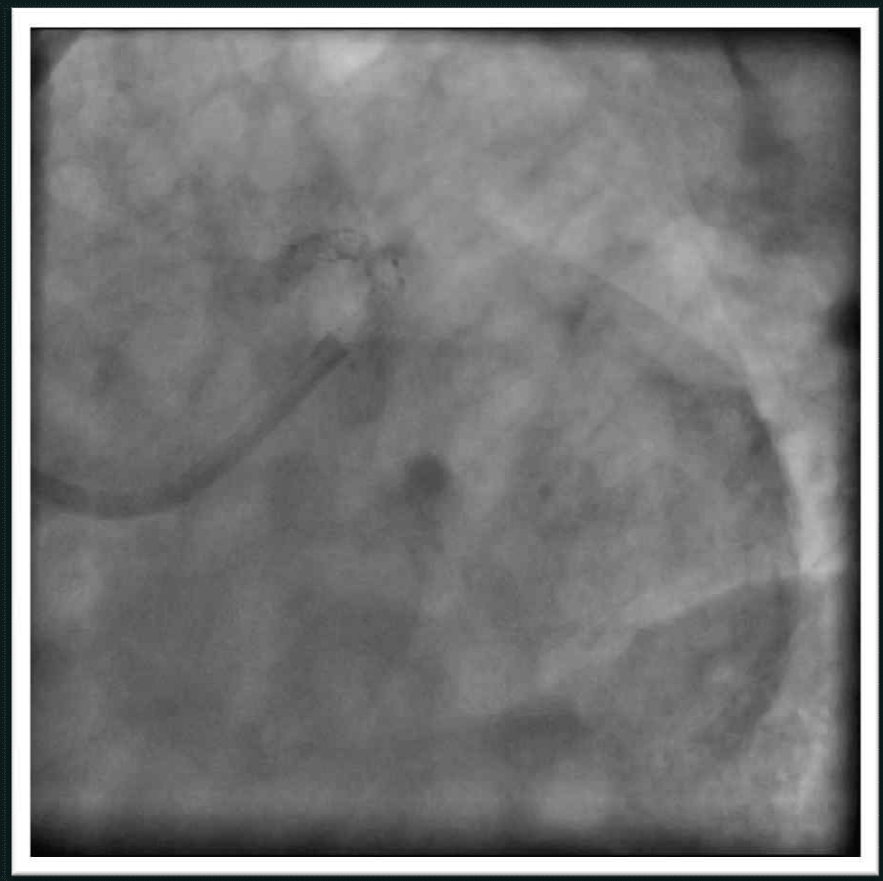
POBA LCX with Mercury (Abbott) 2.0 x 14 mm
AND
Final Kissing balloon in LAD with Power sail and LCX with Mercury at 12 atm.



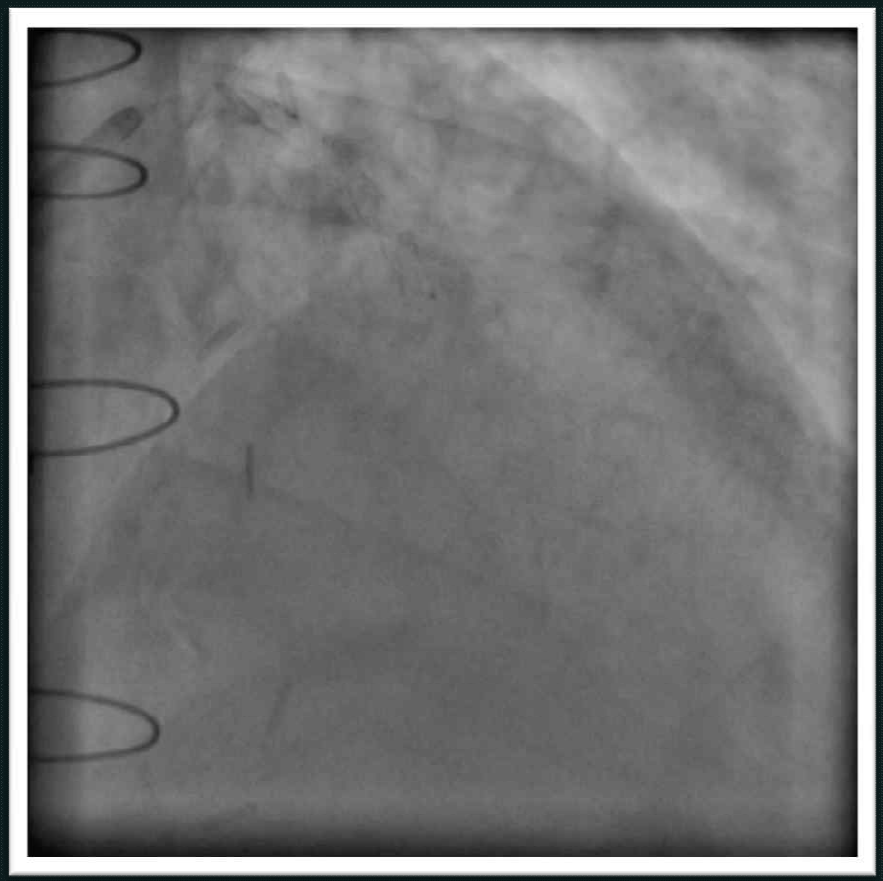


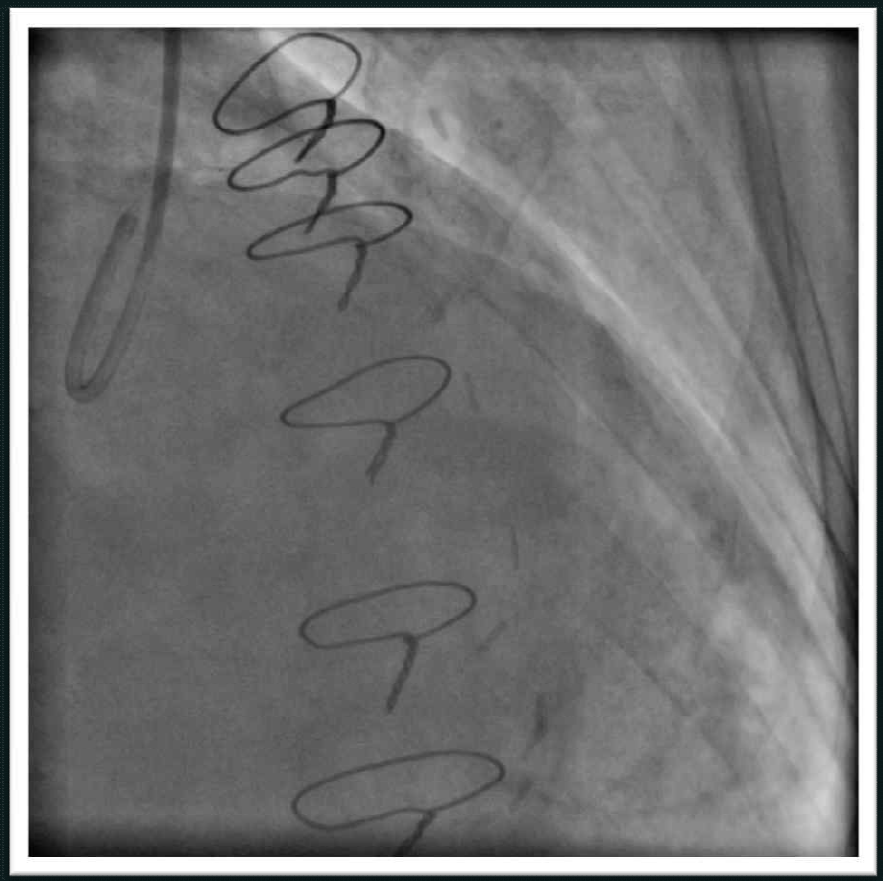
Final Result





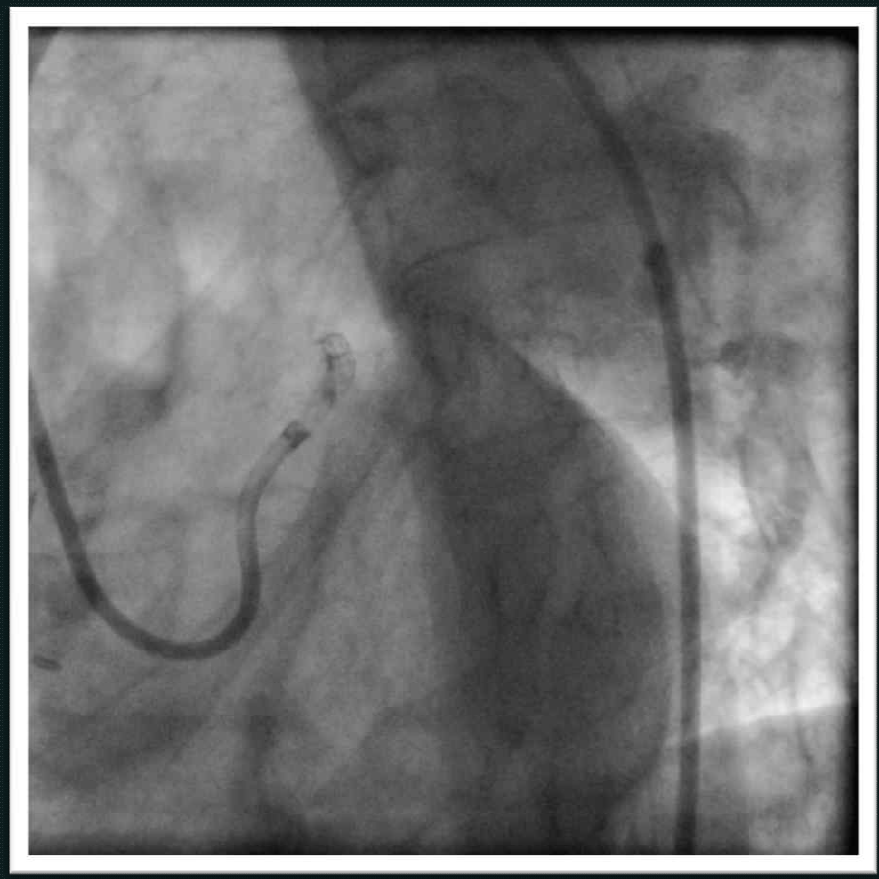
Final Result



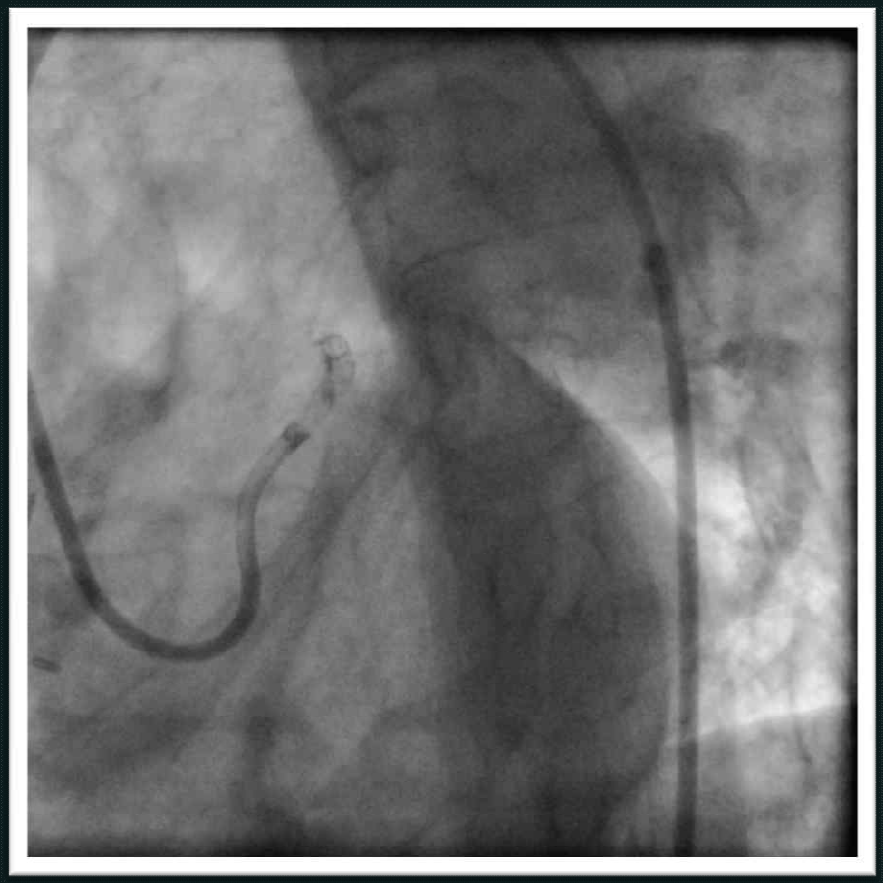


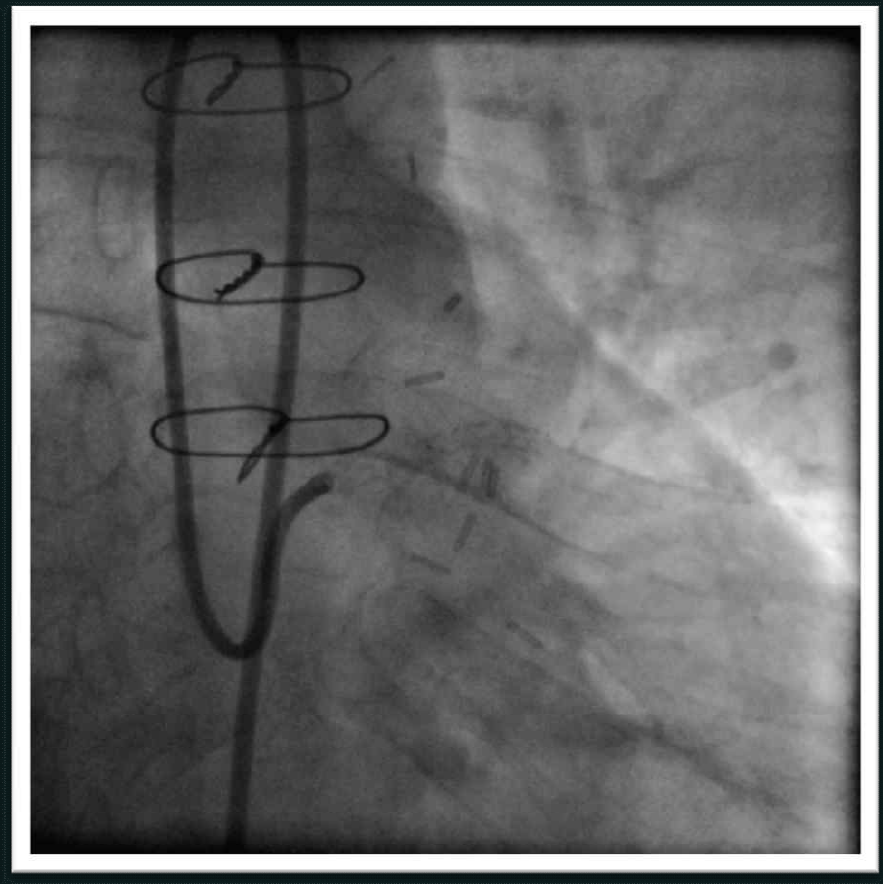
Recurrence of Symptoms

- Developed CCS IV angina 4 months later.
- Angiogram done showed.
  - Severe Type IV ISR of LM and LAD STENT.
- Decided to proceed with PCI once again.

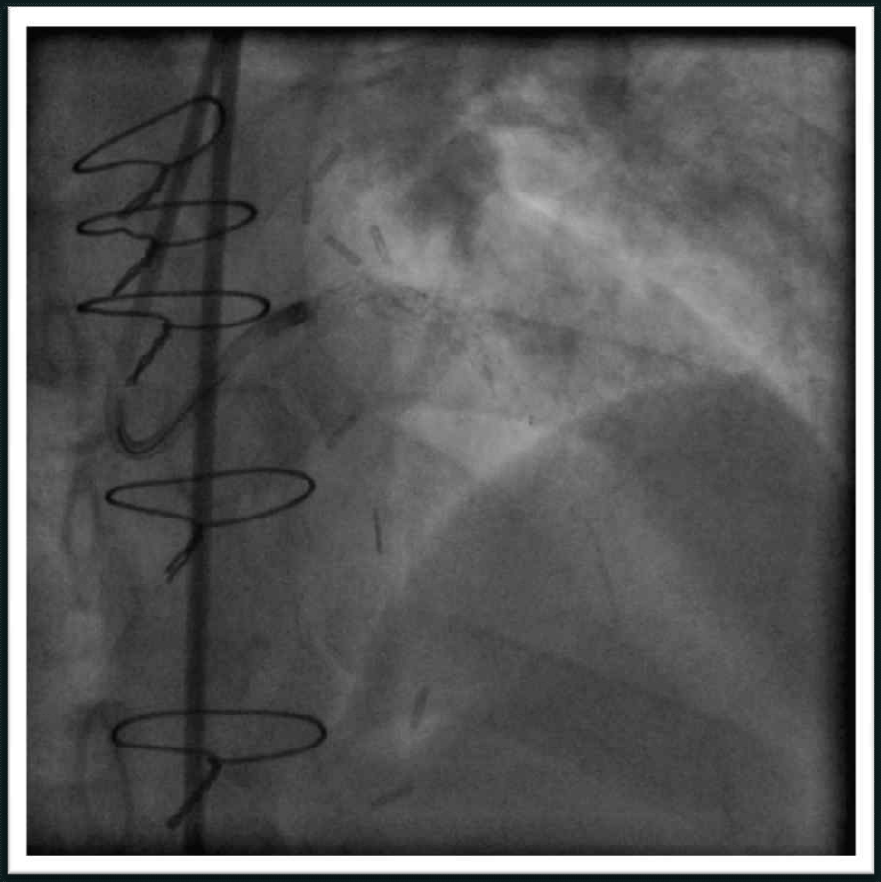


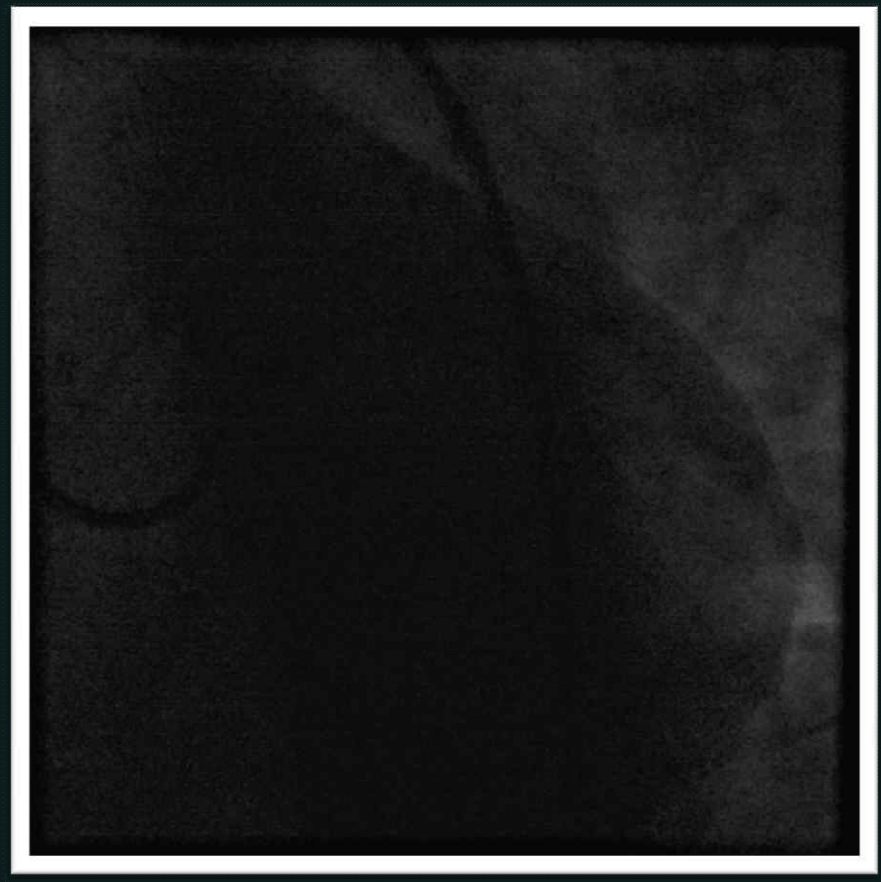
LM was engaged with 7F AL 1.5 guide.



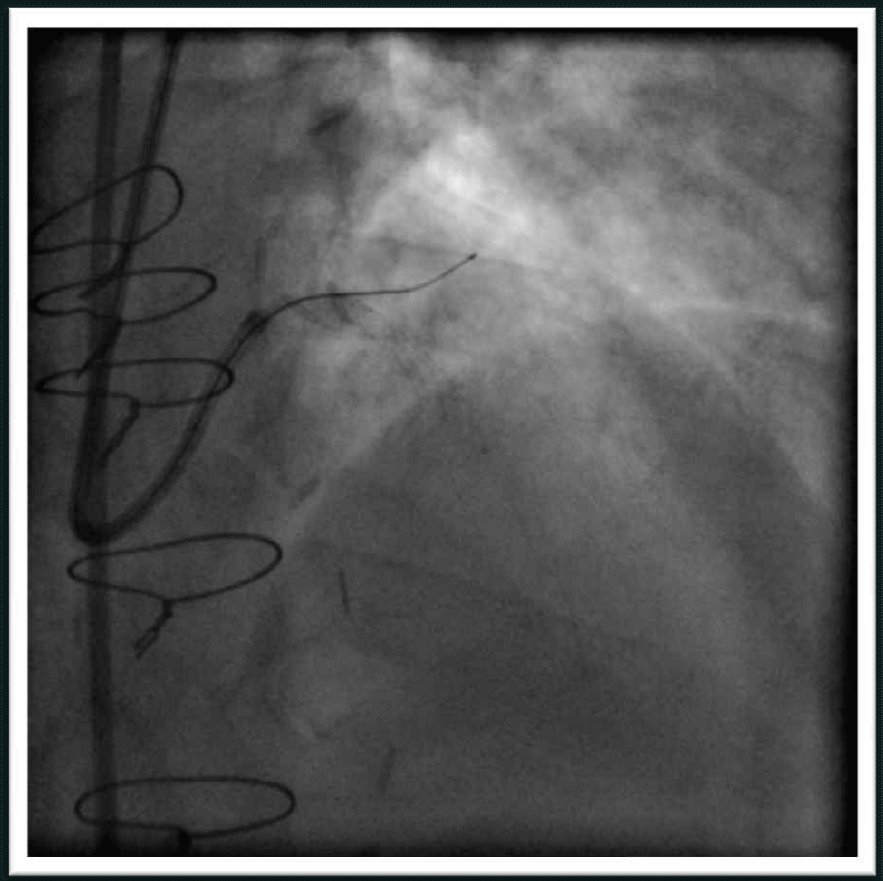


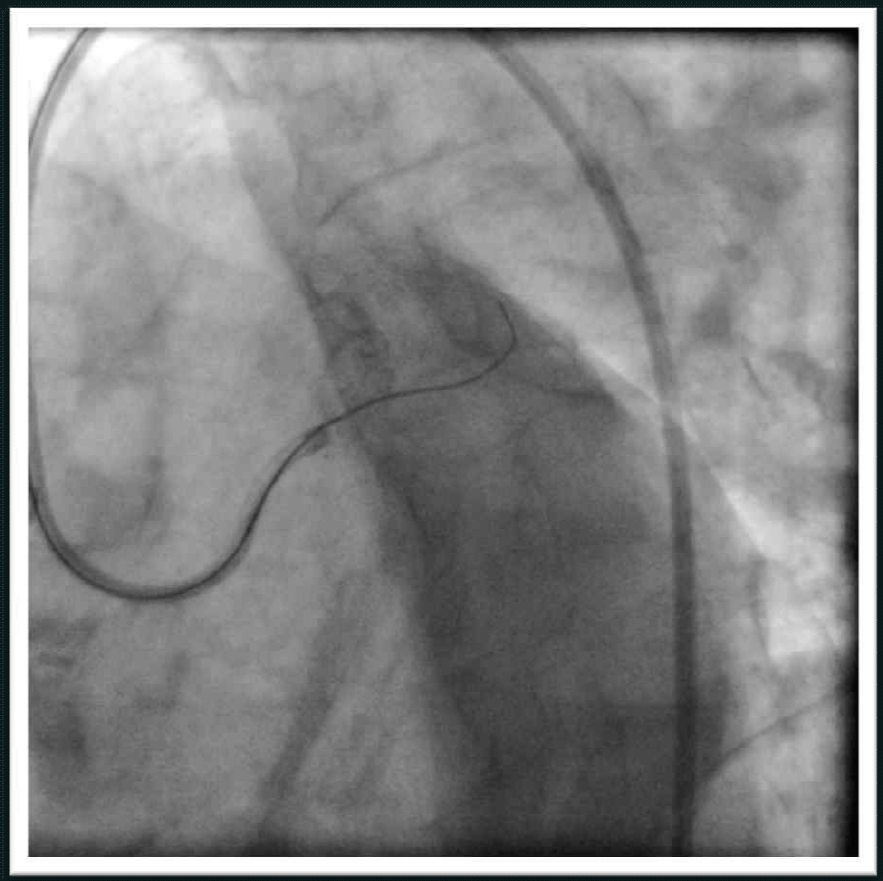
Tried to wire LM with Shinobi (Cordis) , Miracle 12 (NEO'S Asahi) and Fielder FC (NEO'S Asahi) wires but could not cross the lesion.
Finally LM wired with Conquest Pro (NEO'S Asahi) wire with great difficulty.



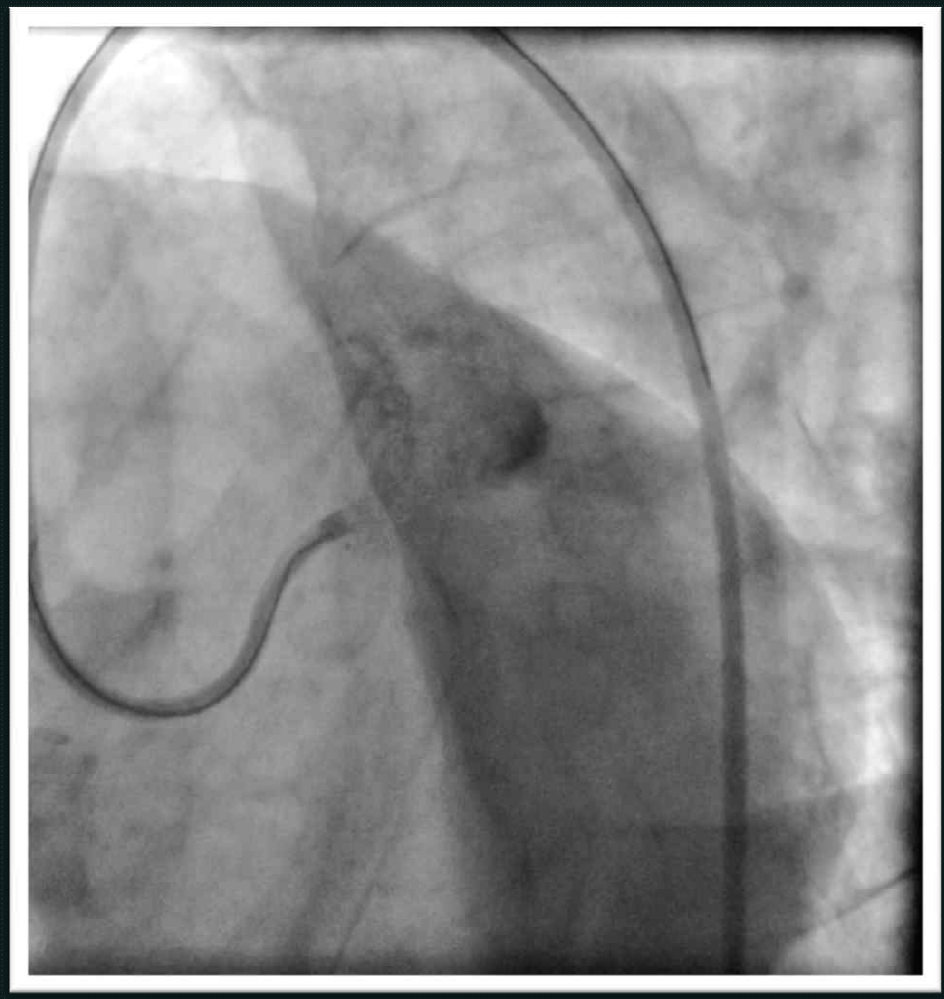


Wire noted in a some small branch with trickle of flow in LAD and LCX, therefore decided to pull back and redirect wire.



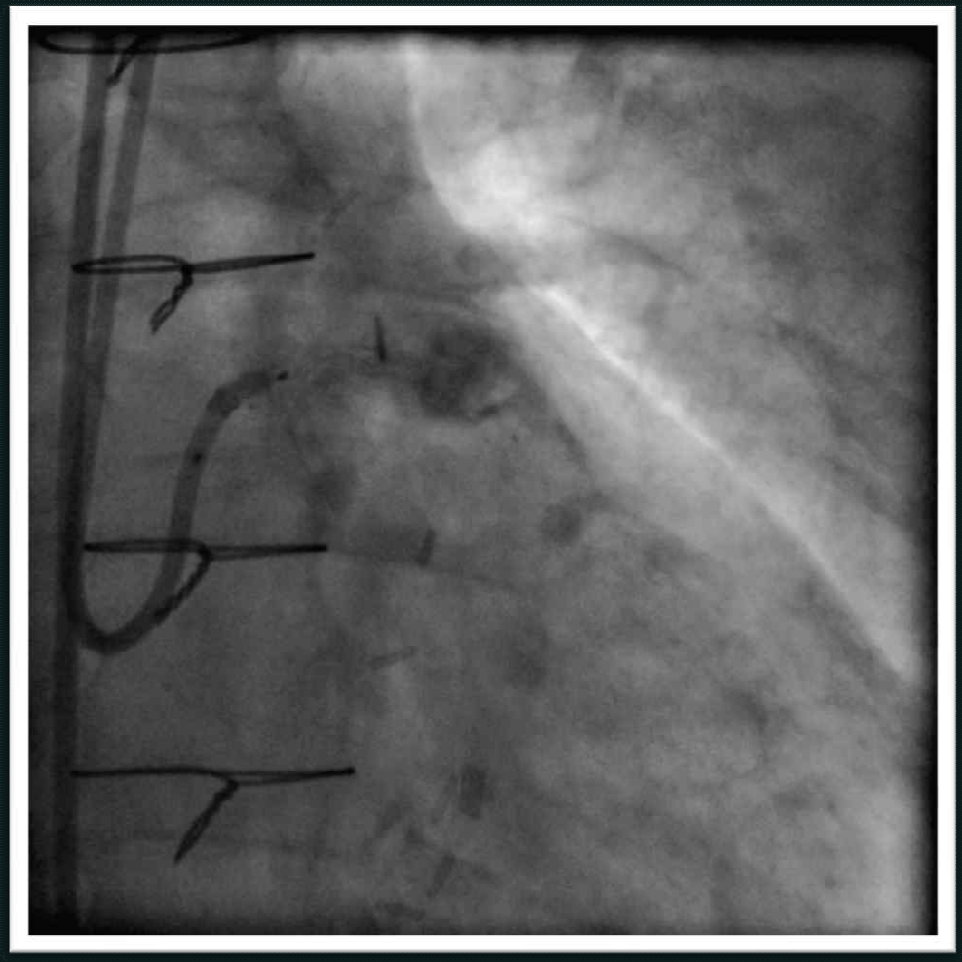


Complication



Patient started having severe chest pain but remained hemodynamically stable.

Management

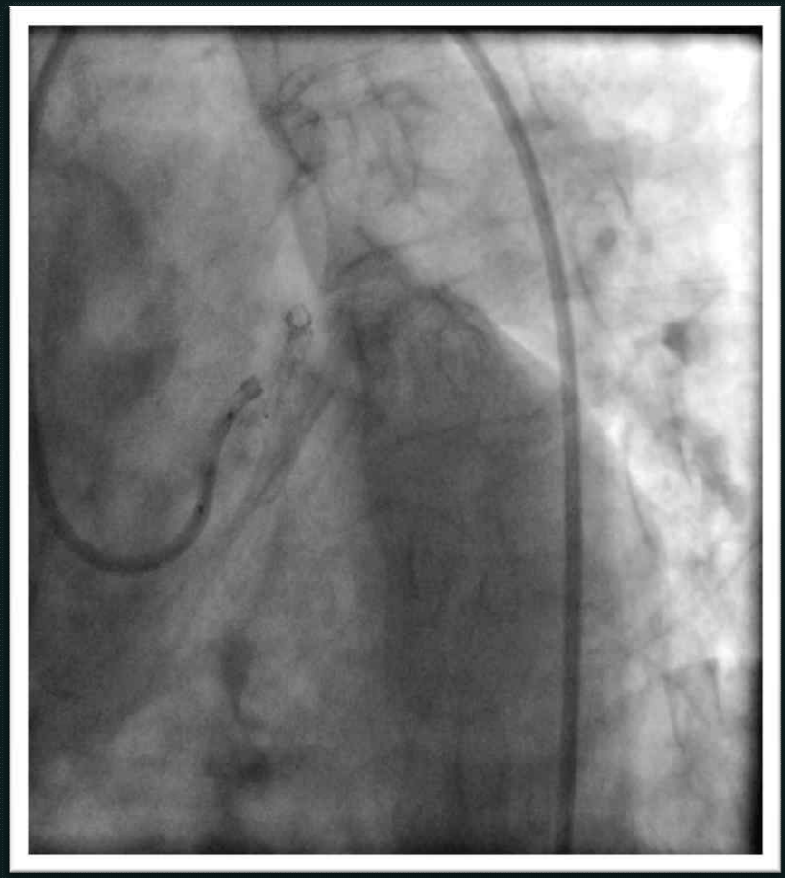


A 2.5 x 14mm balloon was inflated inside the guide at 8 atm.

Emergent Transthoracic echocardiogram did not show any significant pericardial effusion or tamponade.

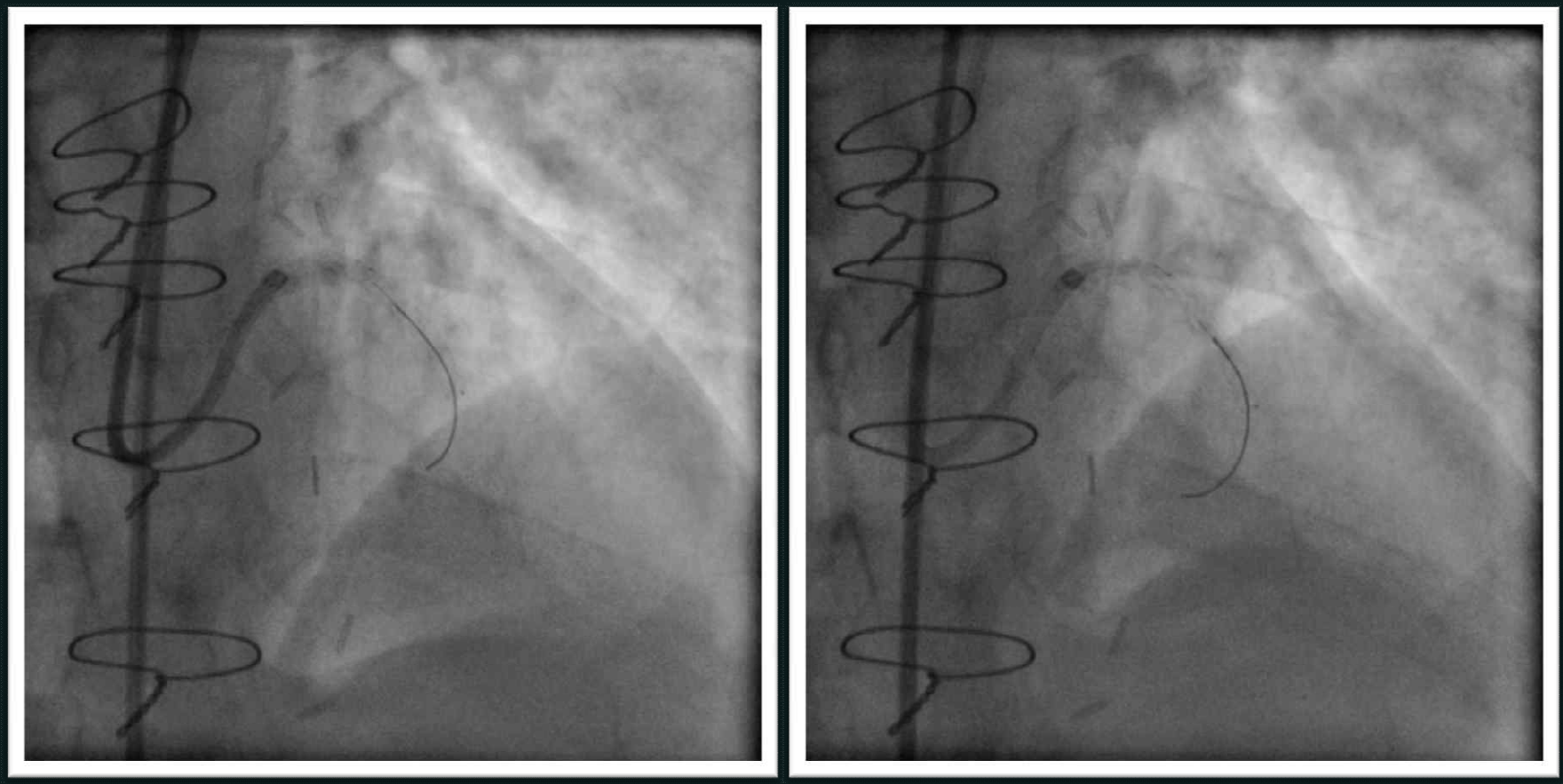
CTS team consulted and decided to take him to the OR.

Balloon intermittently deflated for 30 minutes and patient remained stable without symptoms

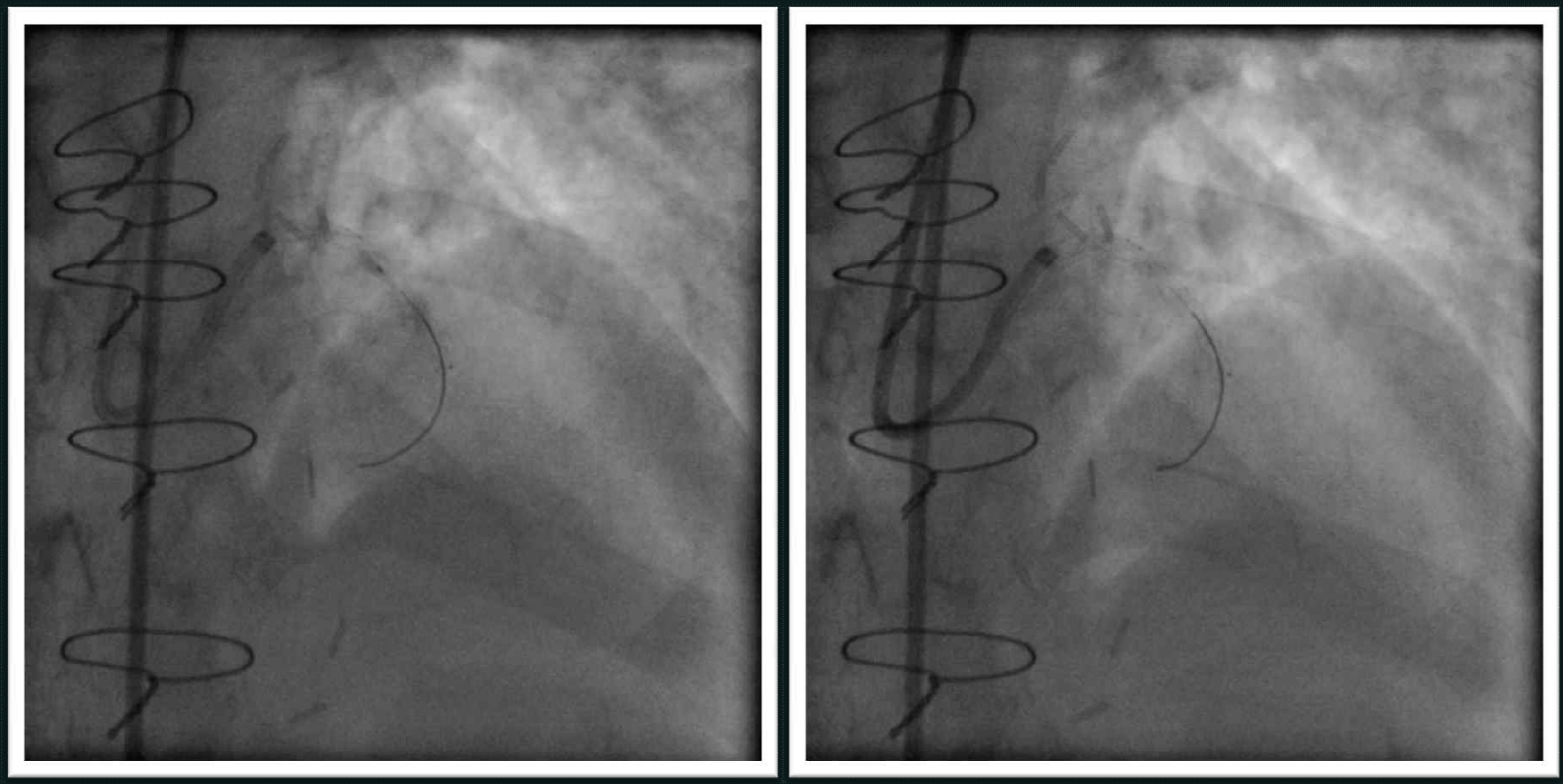


Next Step: Reattempt PCI Vs CABG ?

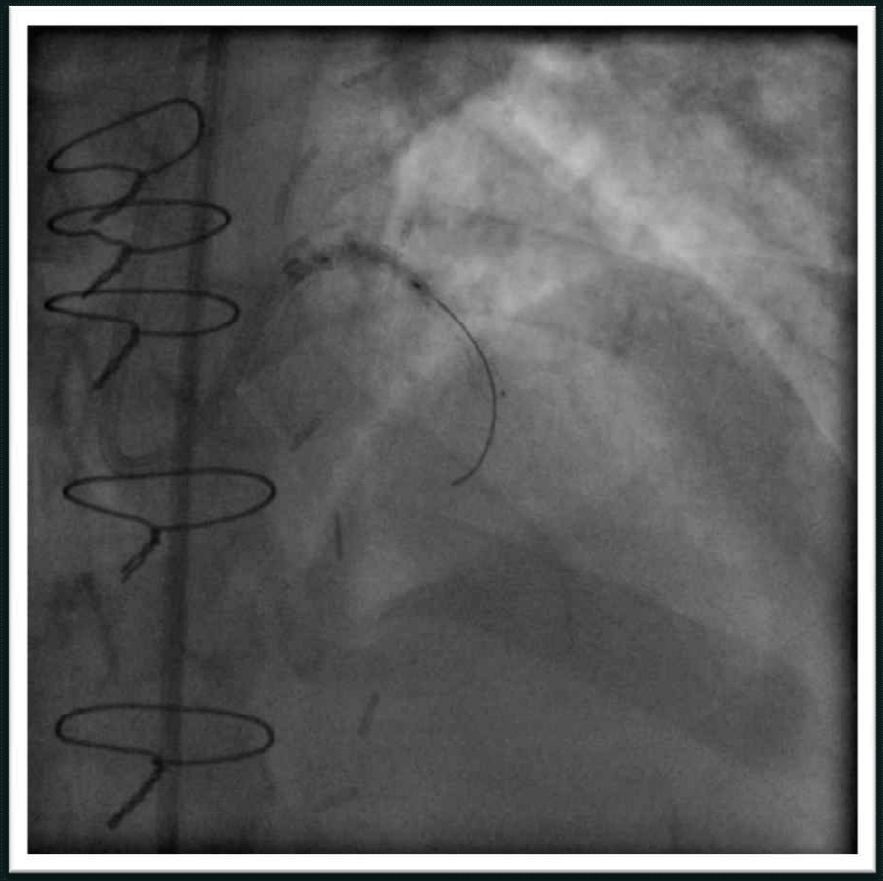
While waiting for OR decided to re-attempt PCI and LAD Rewired with Fielder FC (Asahi) wire

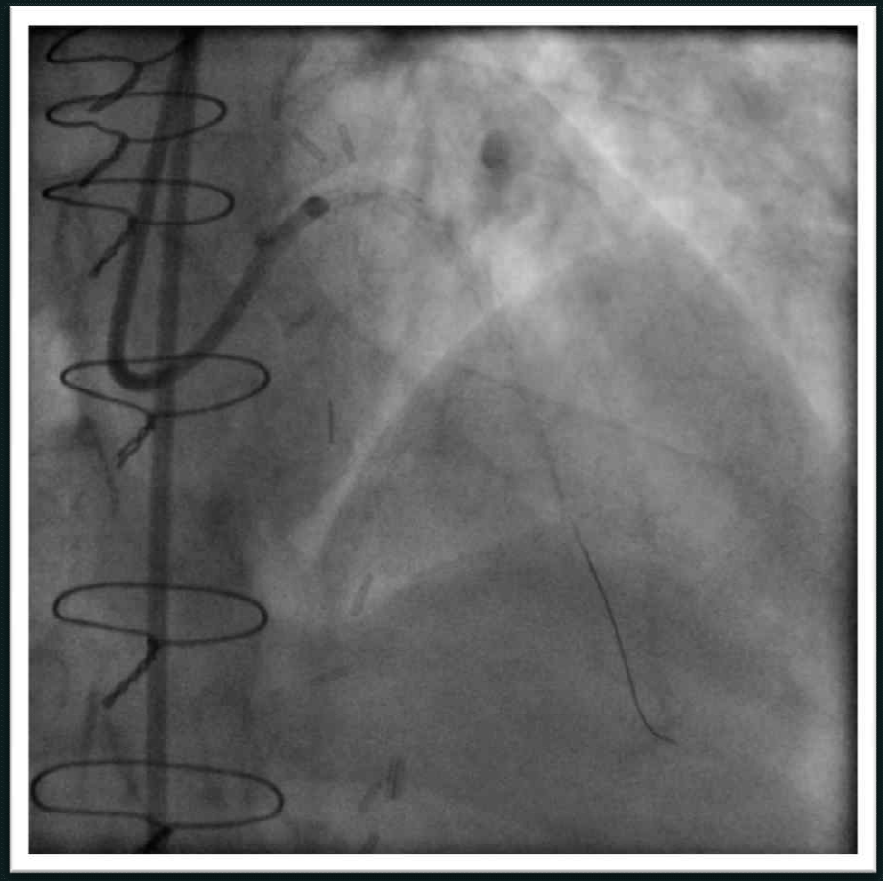


LAD and LM POBA with sprinter legend (Medtronic) 1.25 x 6 mm at 20 atm.

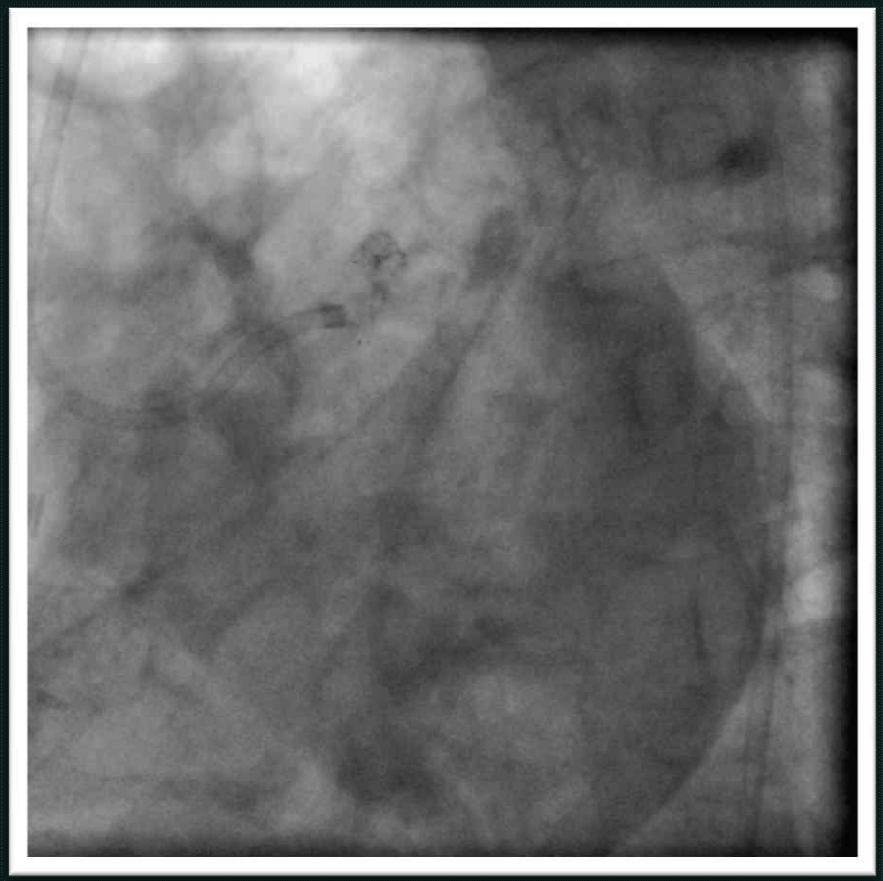


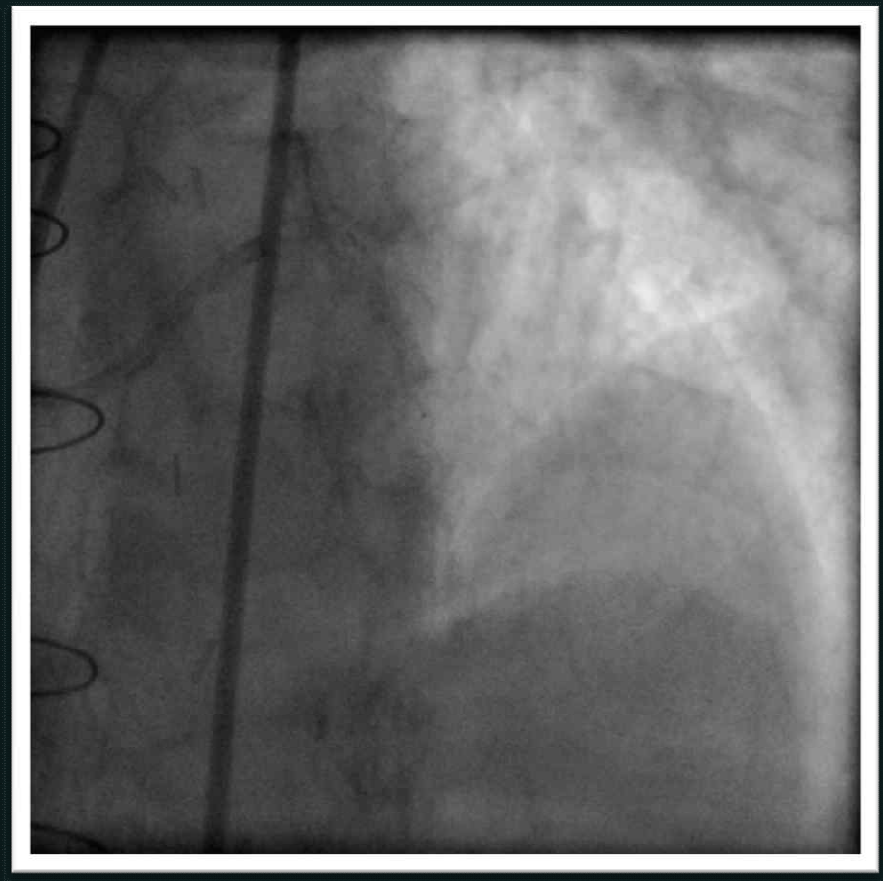
POBA with 2.0x15 Balloon





Result after POBA





Stent Now or Wait

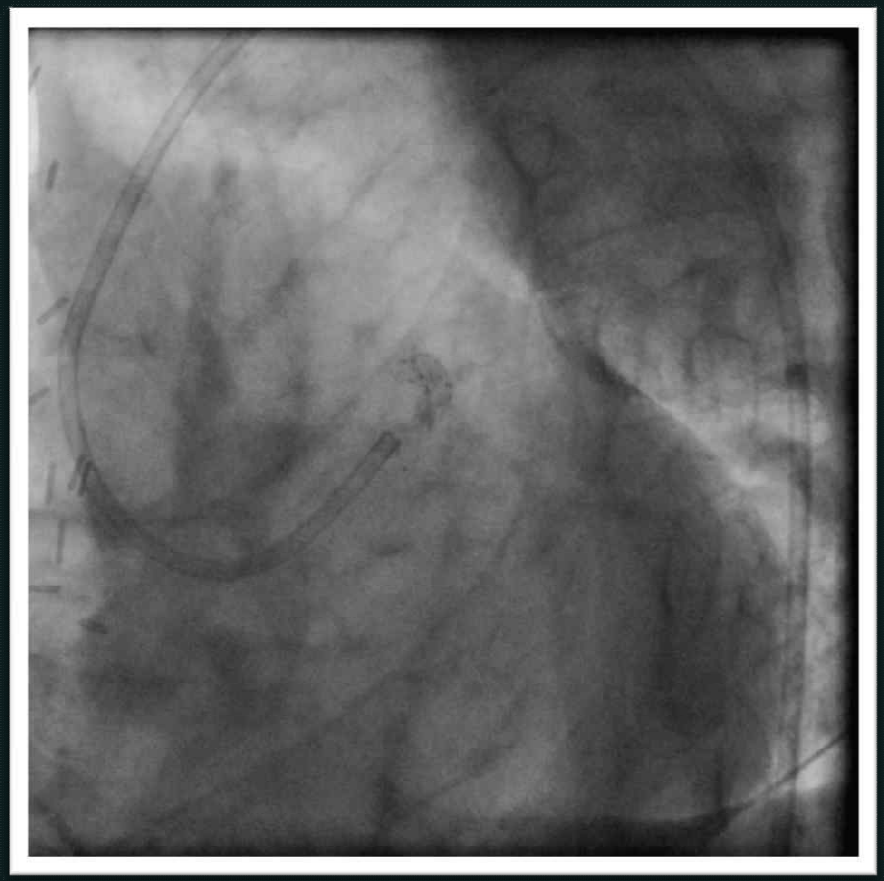
- Two options:
  - Do it immediately ? Avoid chances of abrupt closure but theoretical issues regarding use of anticoagulation with sealed perforation.

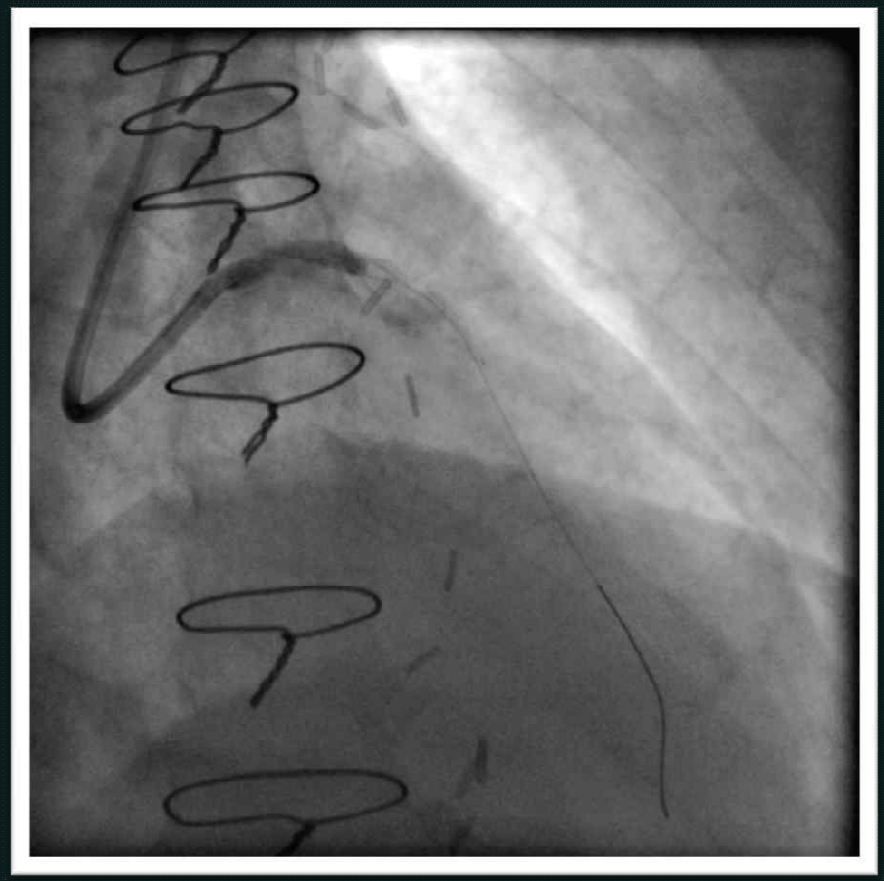
OR

  - Delay stenting for 24-48 hours and avoid any complications related to perforation and take risk of abrupt closure

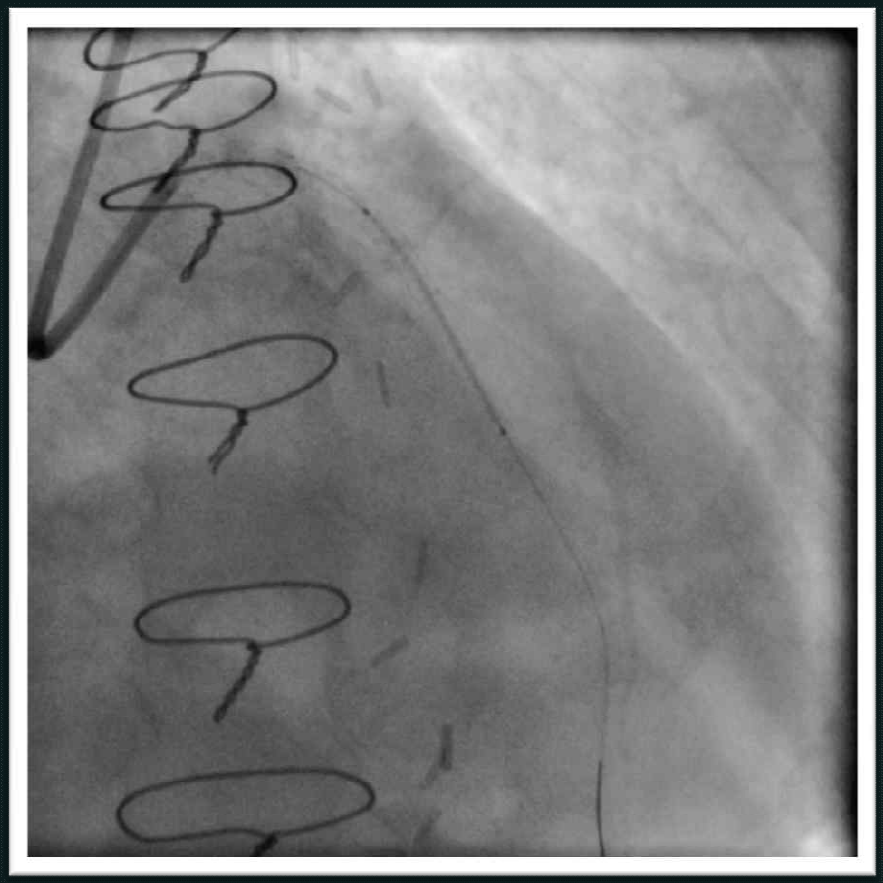
- Decided to postpone stenting for 24 hours.

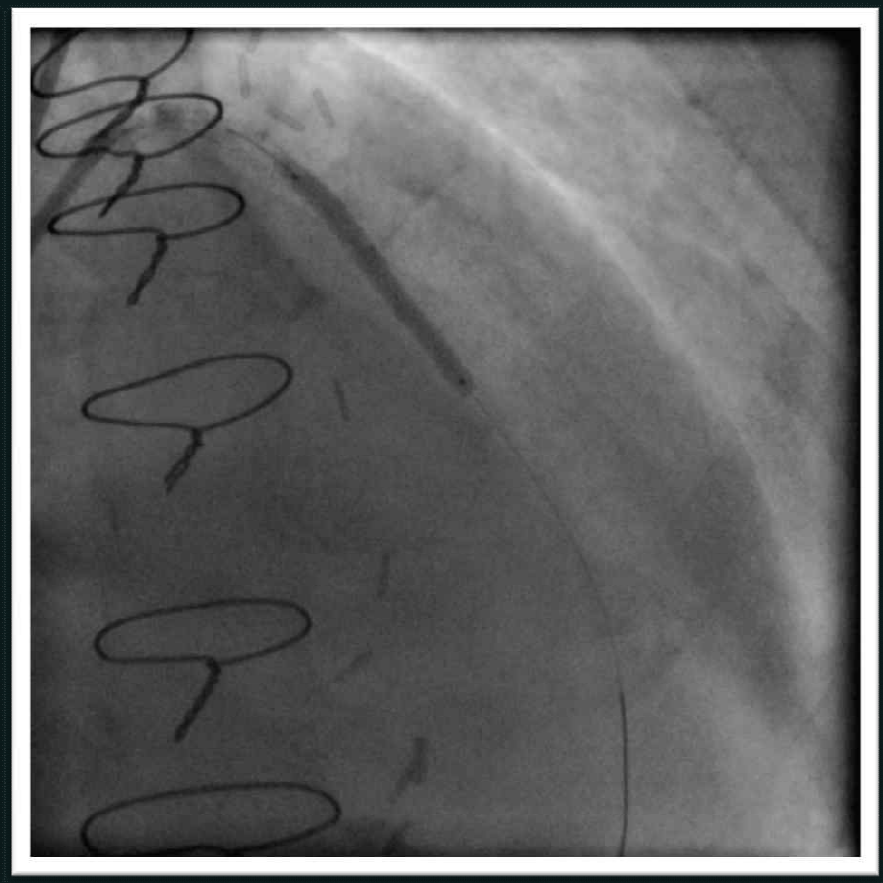
After 24 Hours LM was engaged with XB 3.0 7F guide.
No extravasations noted.
LAD wired with Fielder FC wire and Predilated with Score flex (Orbus Neich) 3.0 x 15 mm at 14- 18 atm.



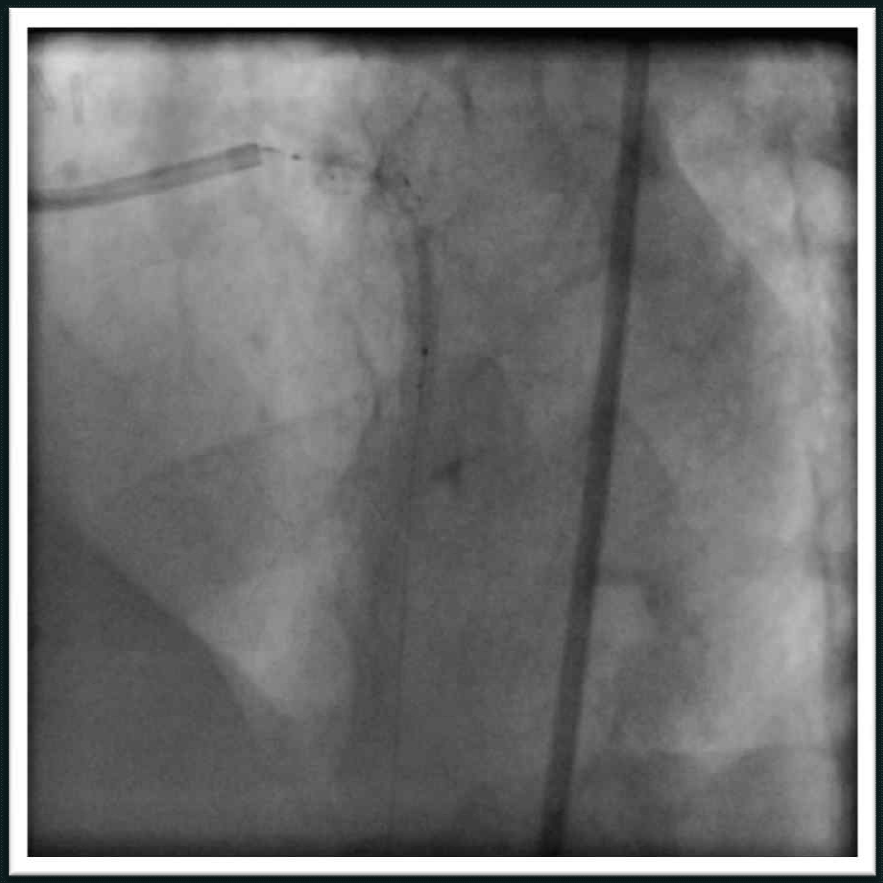


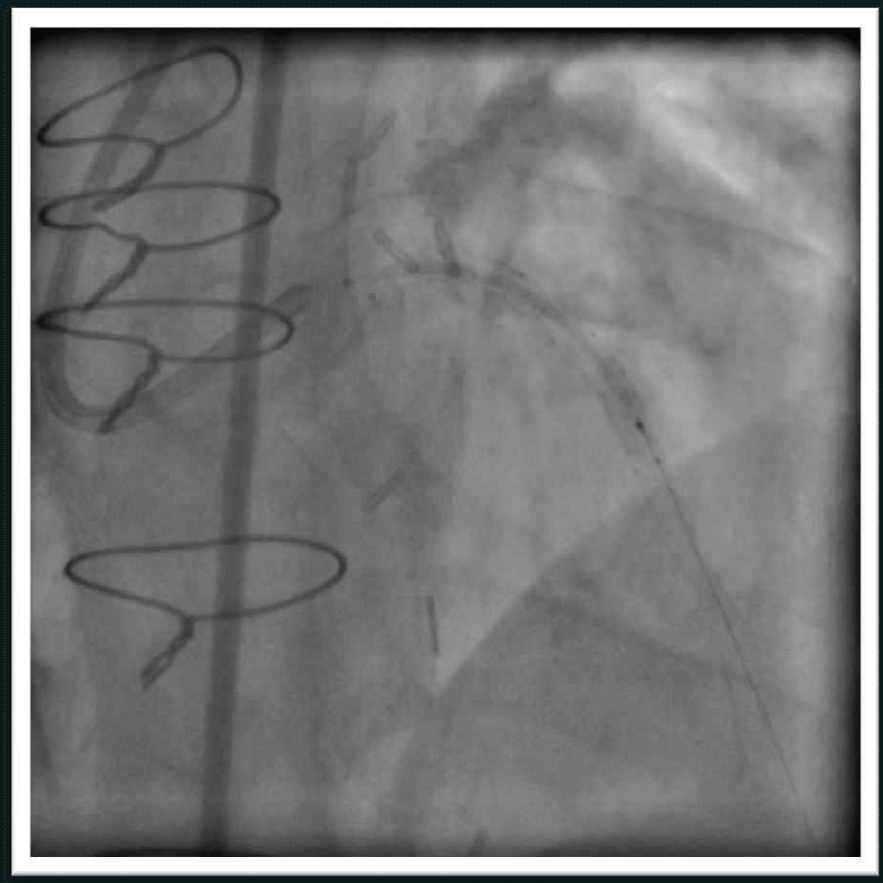
A 3.0x28mm Drug Eluting Stent, Intrepide (Clear Stream Tech.) was deployed at 12 atm.



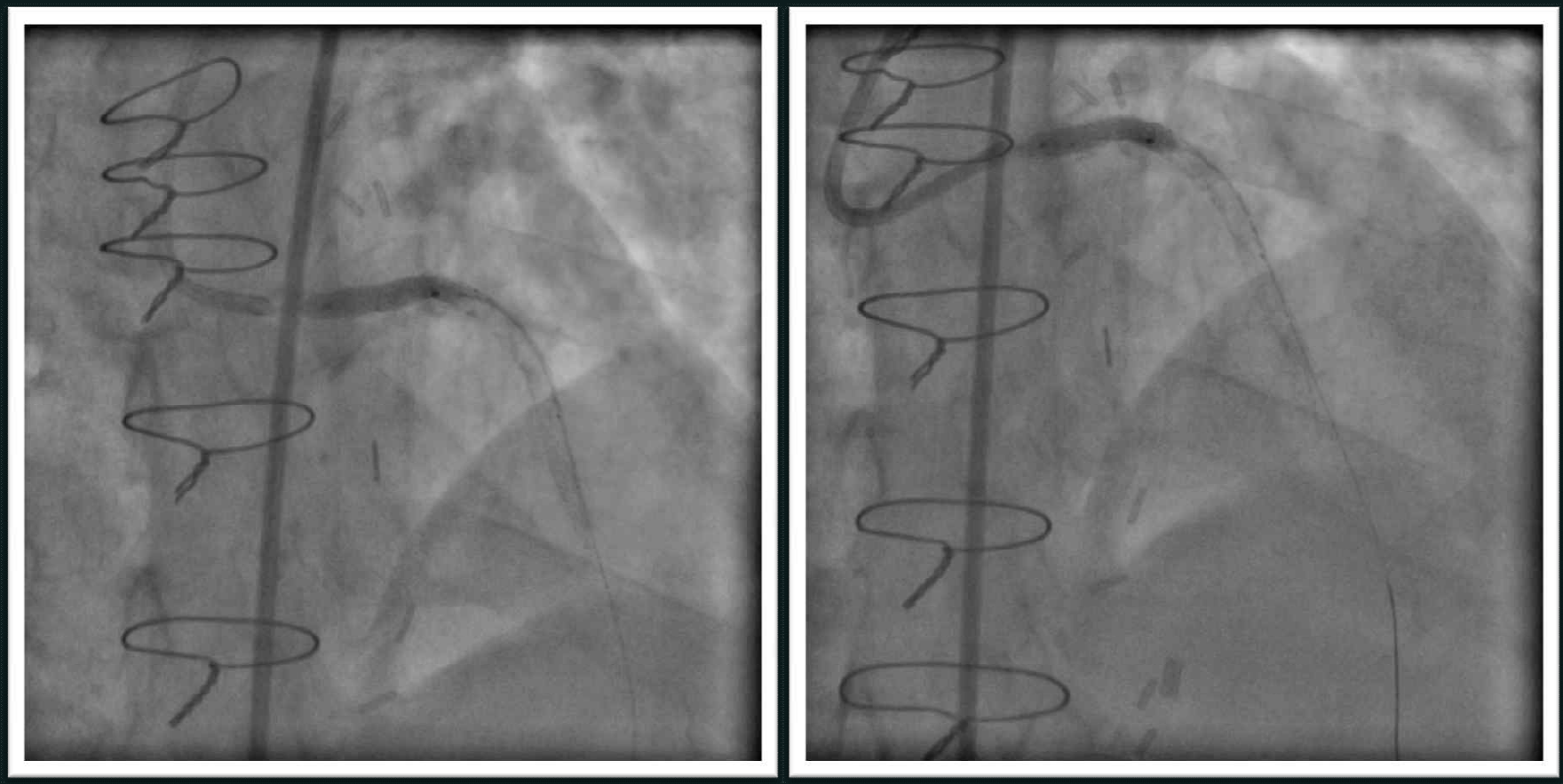


Another DES 3.5x32 Intrepide Stent was deployed after taking multiple views in Ostial Left main

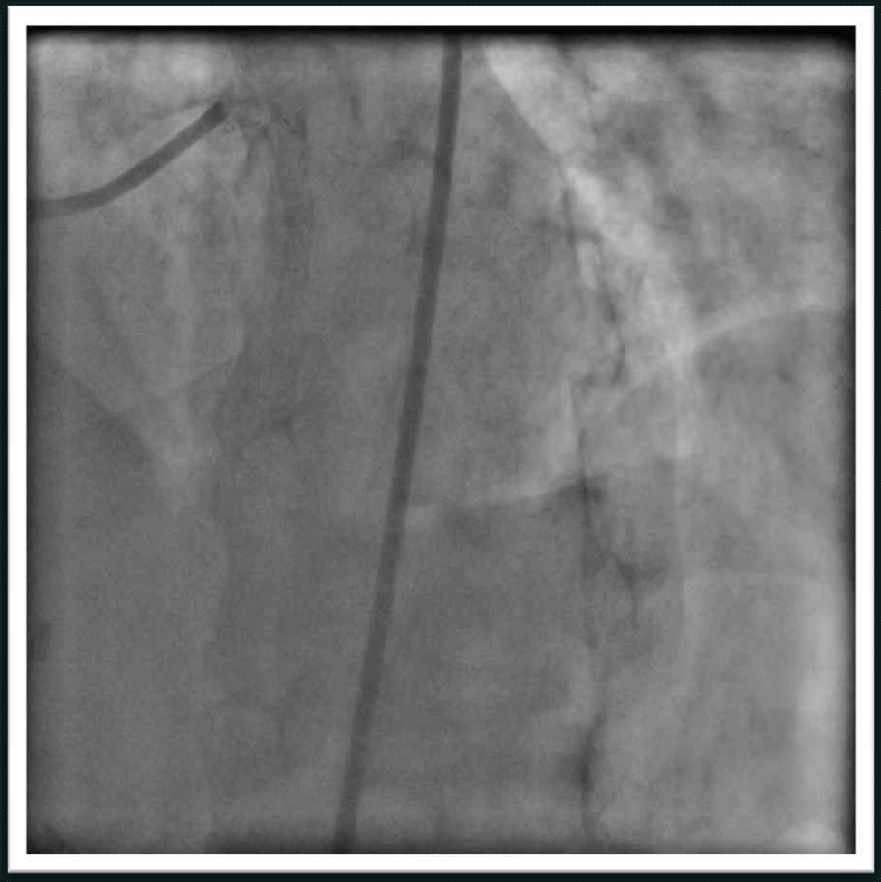


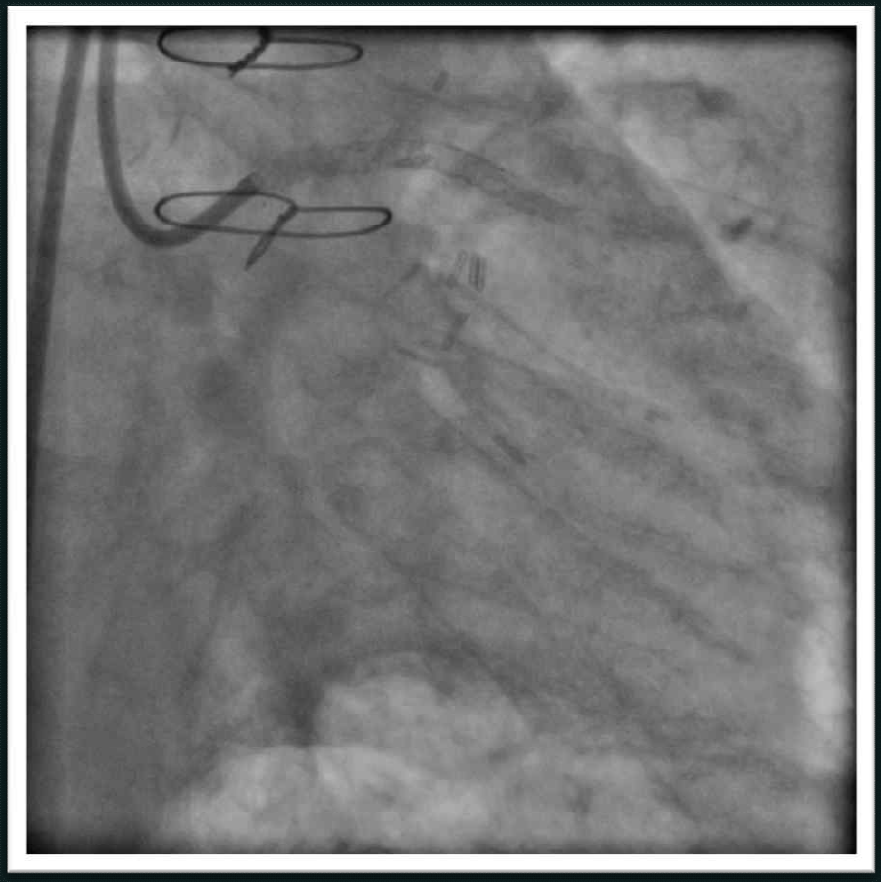


Post dilated both stents with NC Sapphire (Orbus Neich) 3.75 x 15 mm at high pressure



Final Result

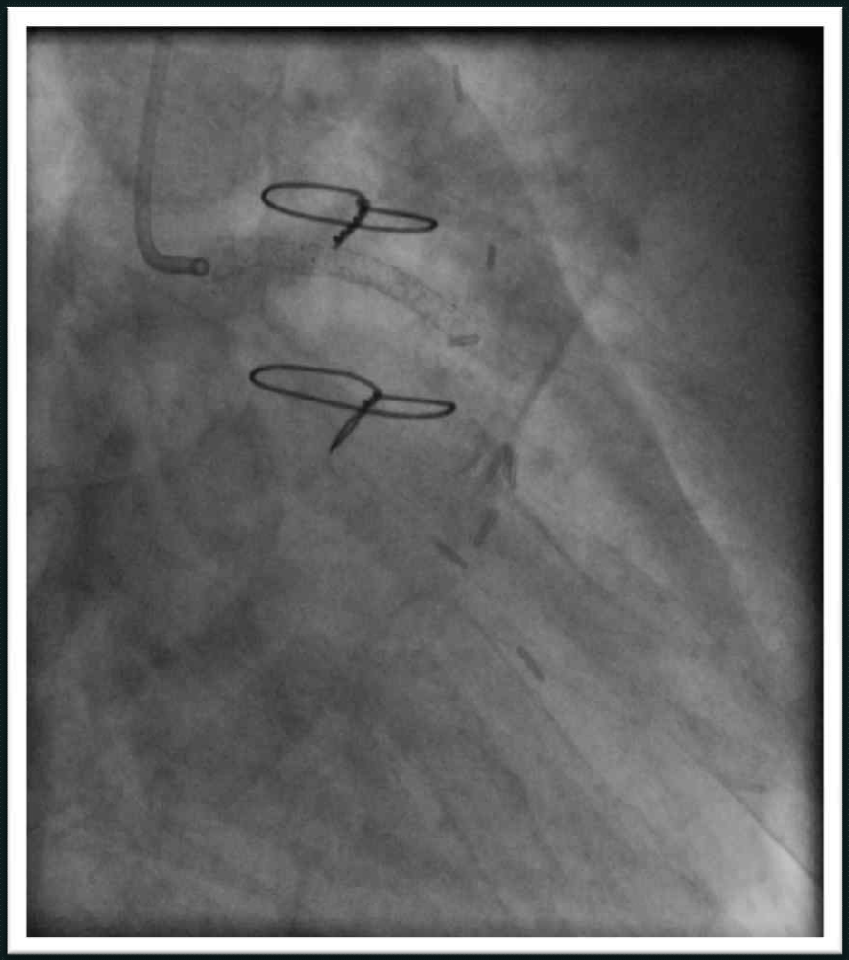


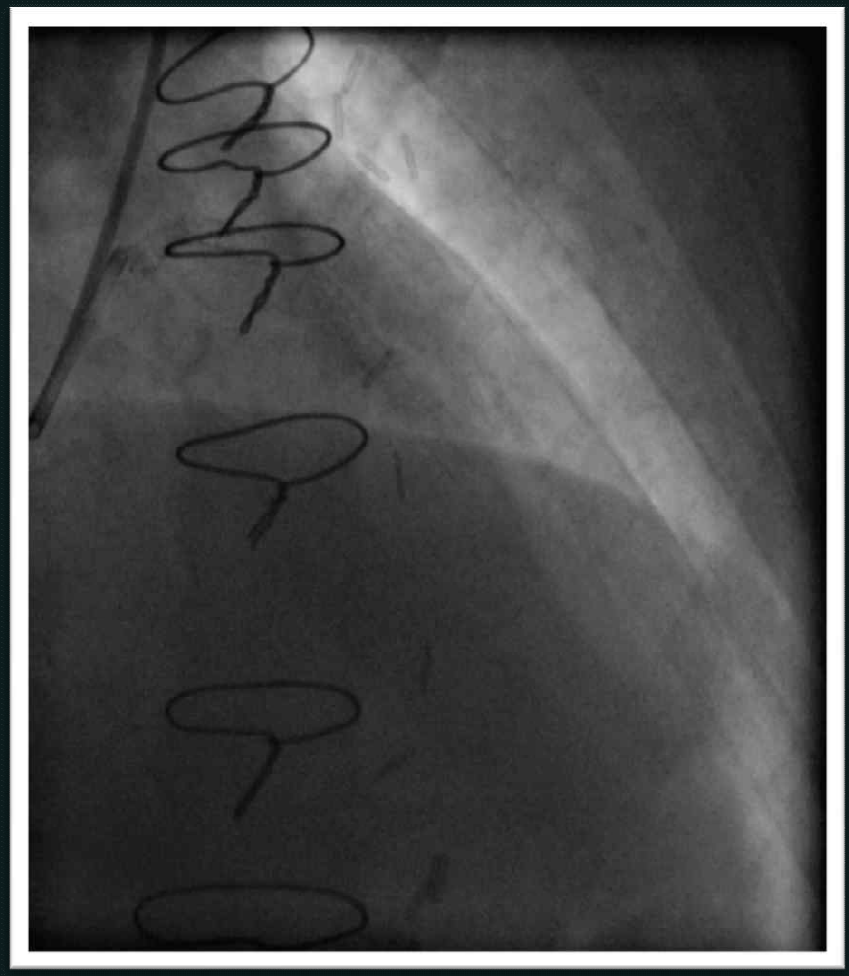


Odyssey continues

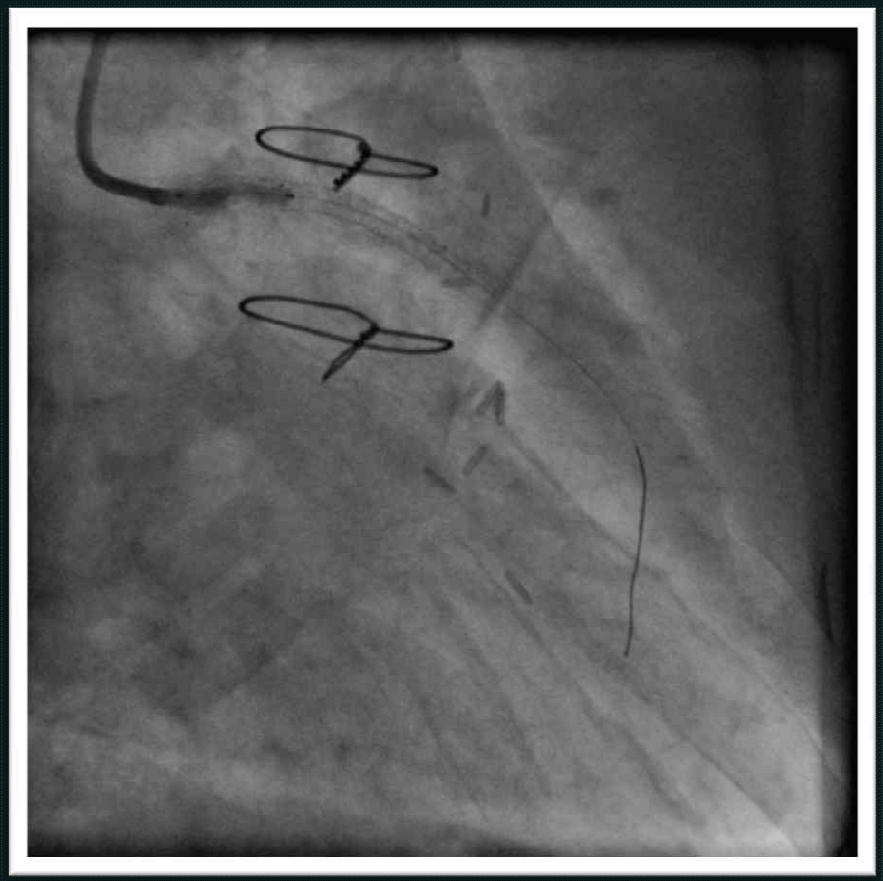
- Three months later patient again started having chest pain (Class III-IV) Angina
- Considering recurrent left main restenosis a follow up coronary angiogram was done:

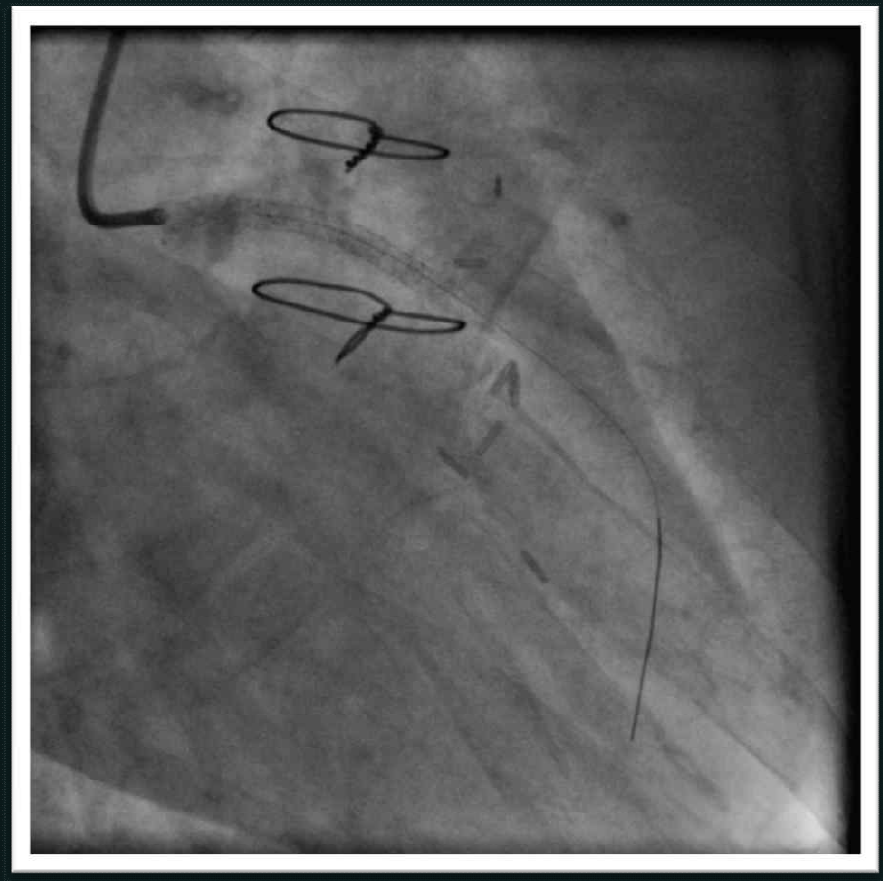
Severe ISR in LM stent



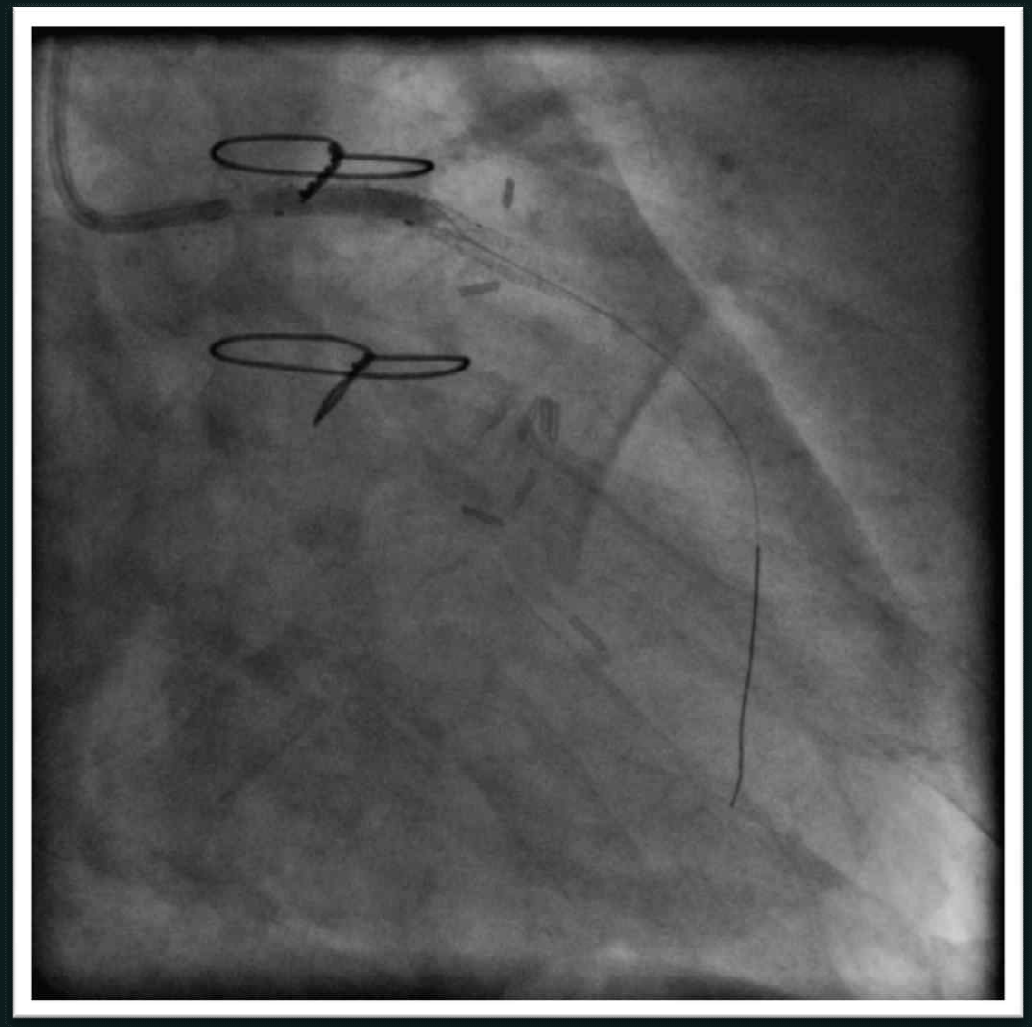


LM engaged with XB 3.0 6F guide.
Wired with Fielder FC wire and POBA with Pro-PTCA (ALL-PRO) 2.0 x 15 mm at 18 atm.

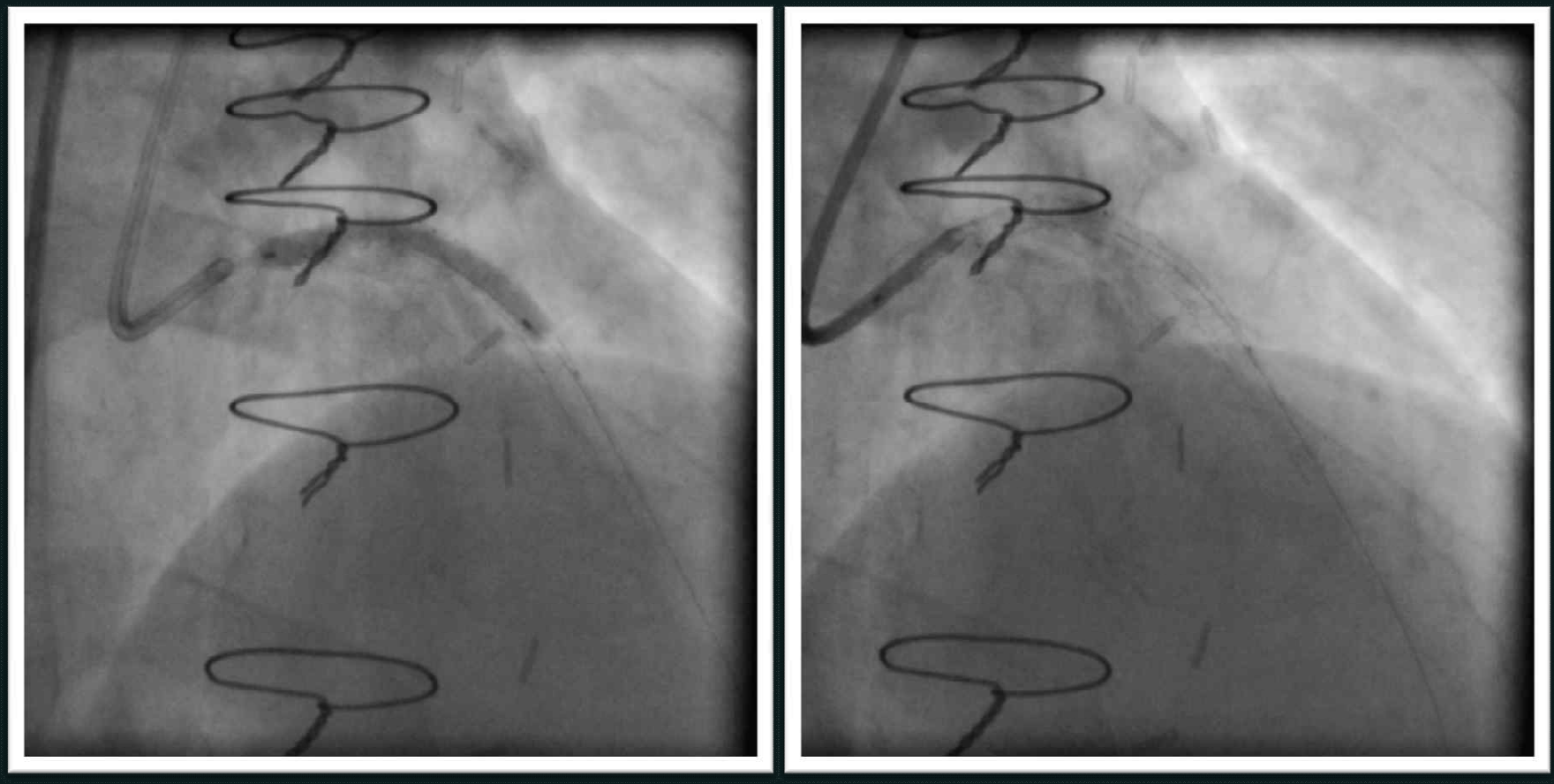




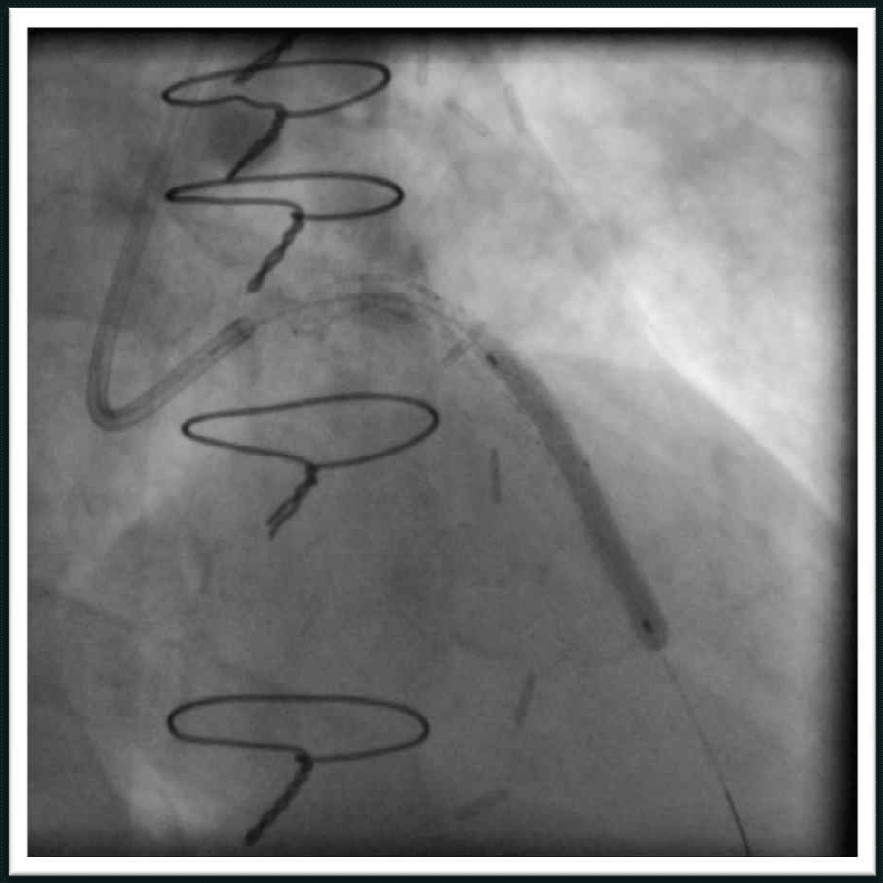
Followed by POBA with Score flex 3.0 x 15 mm at 18-22 atm.

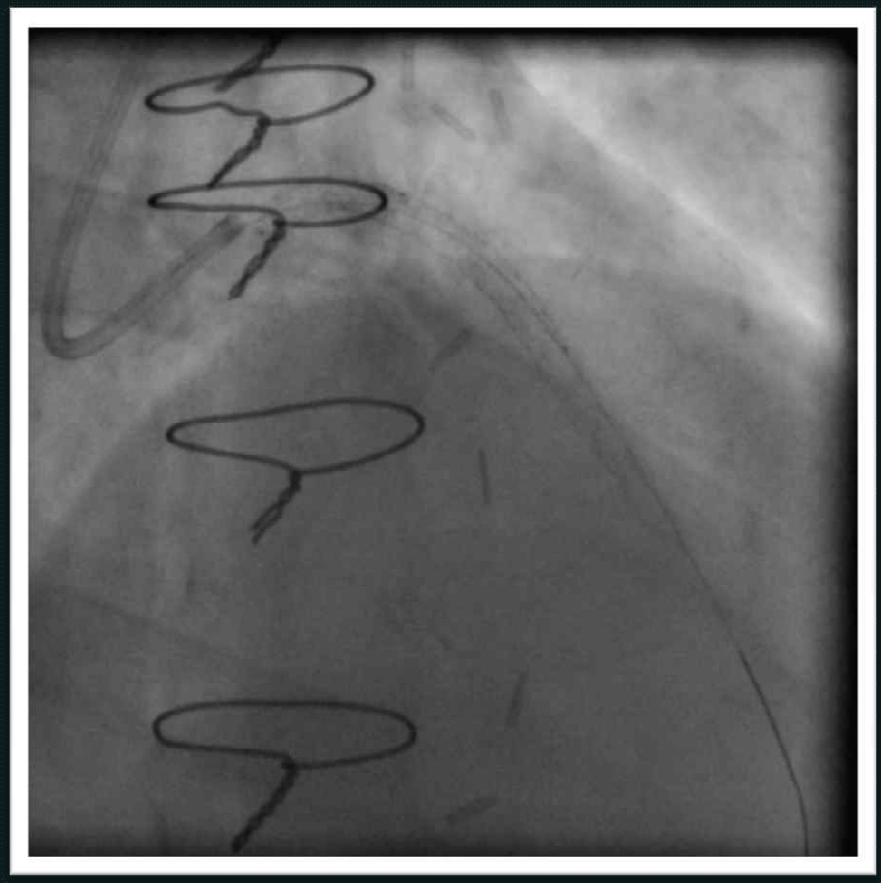


Finally POBA with Sequent Please, DEB (B-Braun) 3.5 x 30 mm at 16 atm for one minute in the proximal half

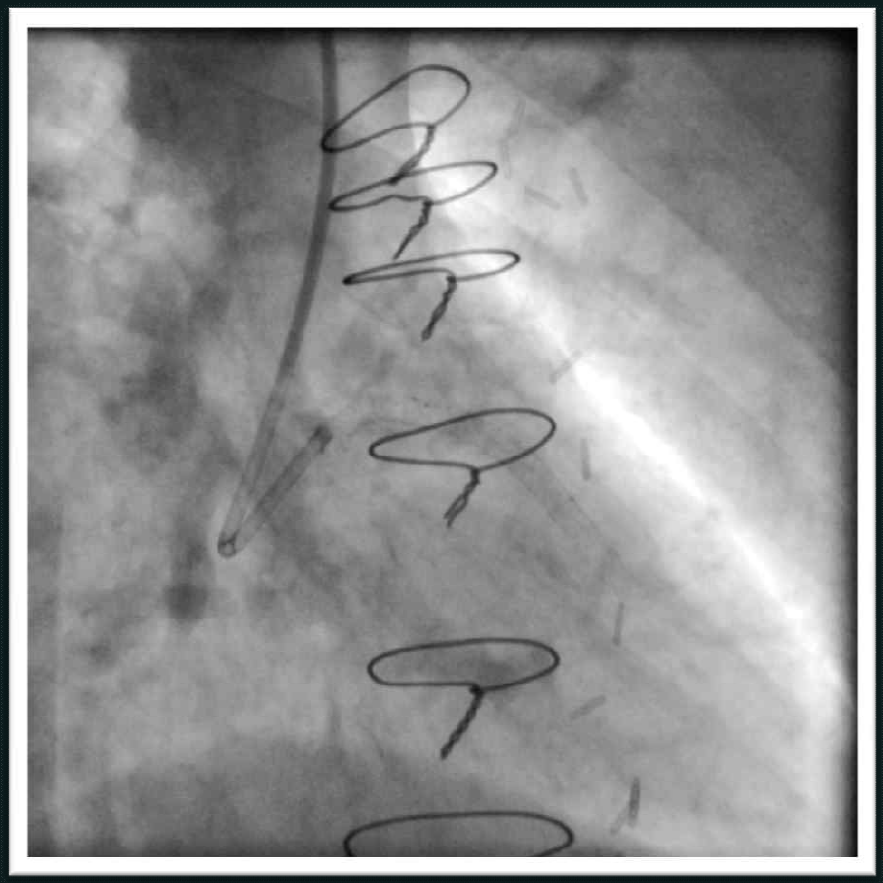


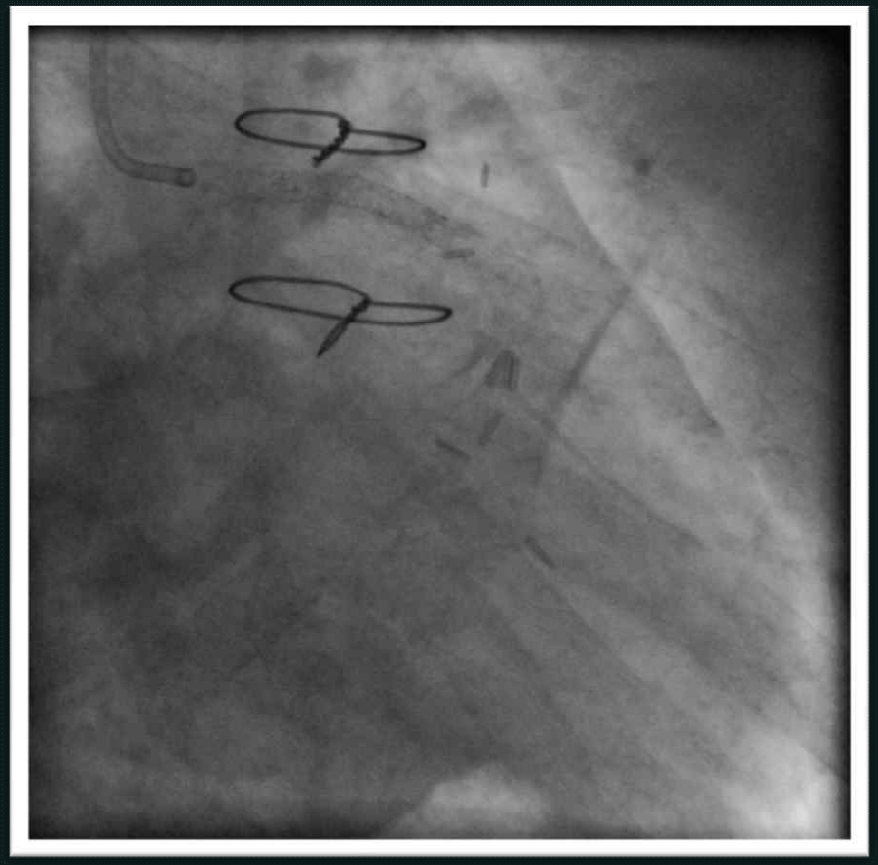
POBA with Sequent Please 3.5 x 30 mm at 14 atm for one minute distally



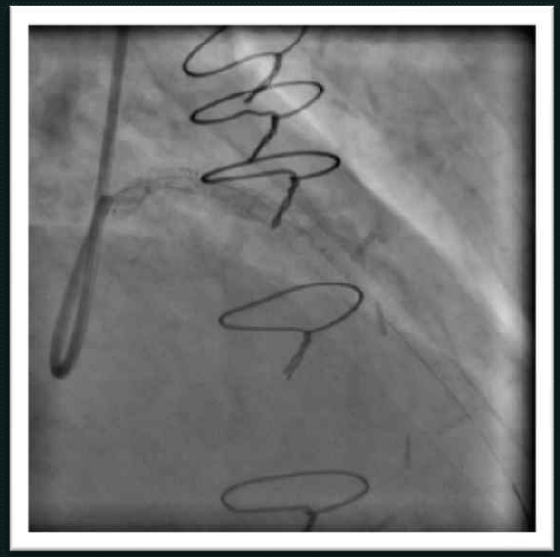


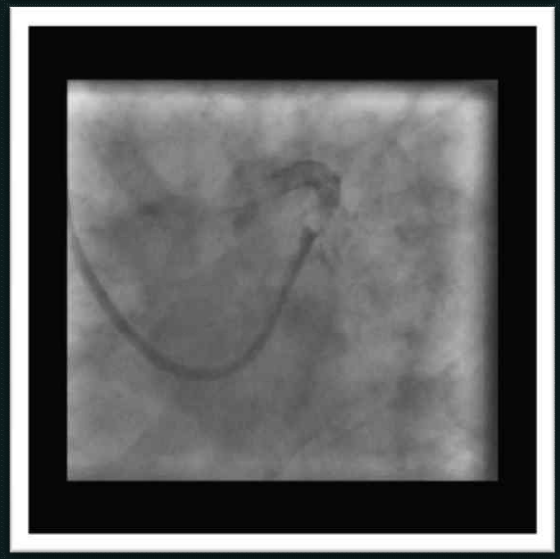
POST DEB Result

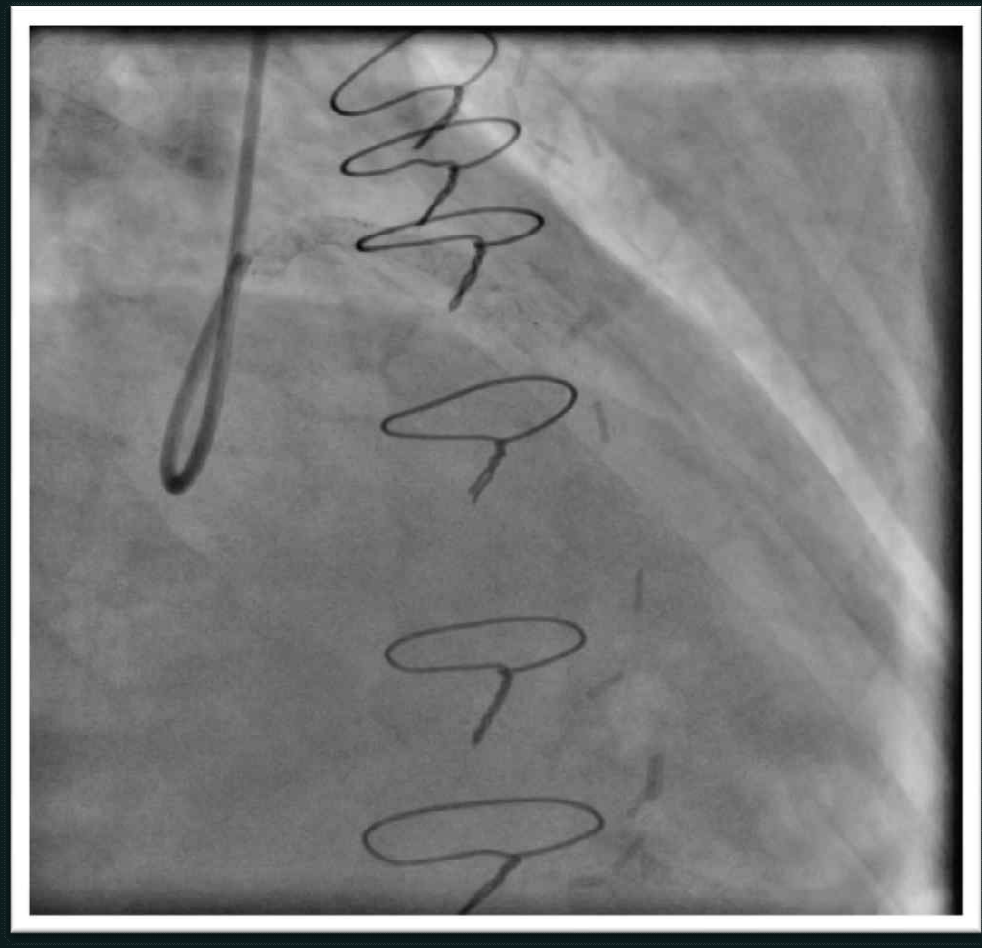




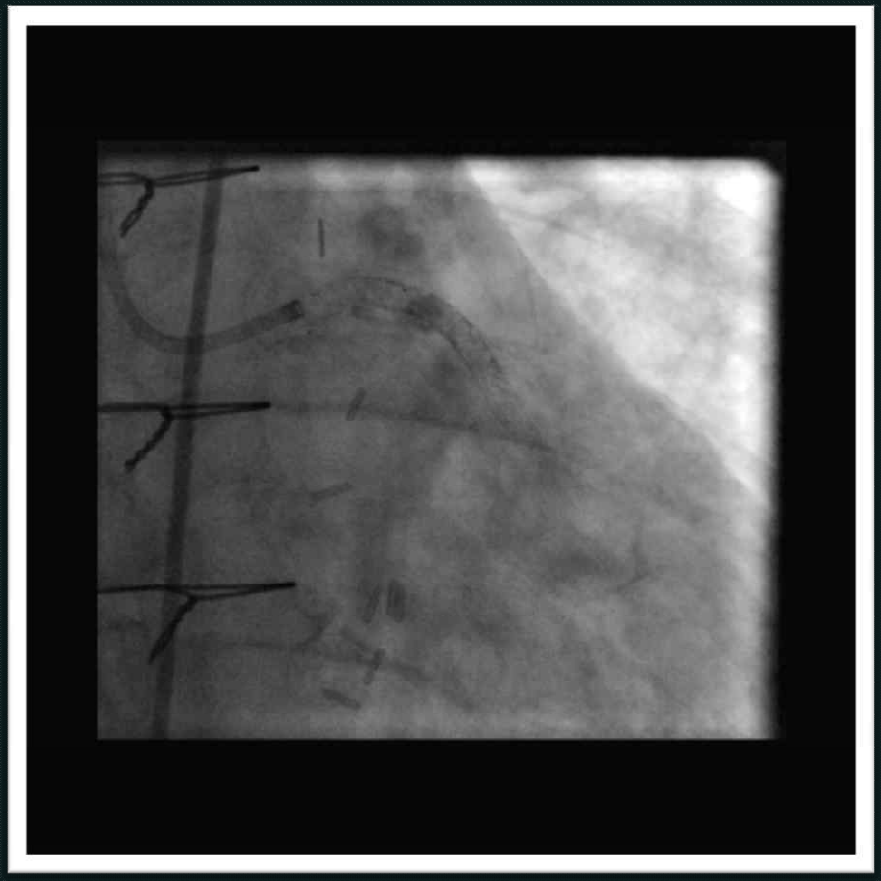
Final Result

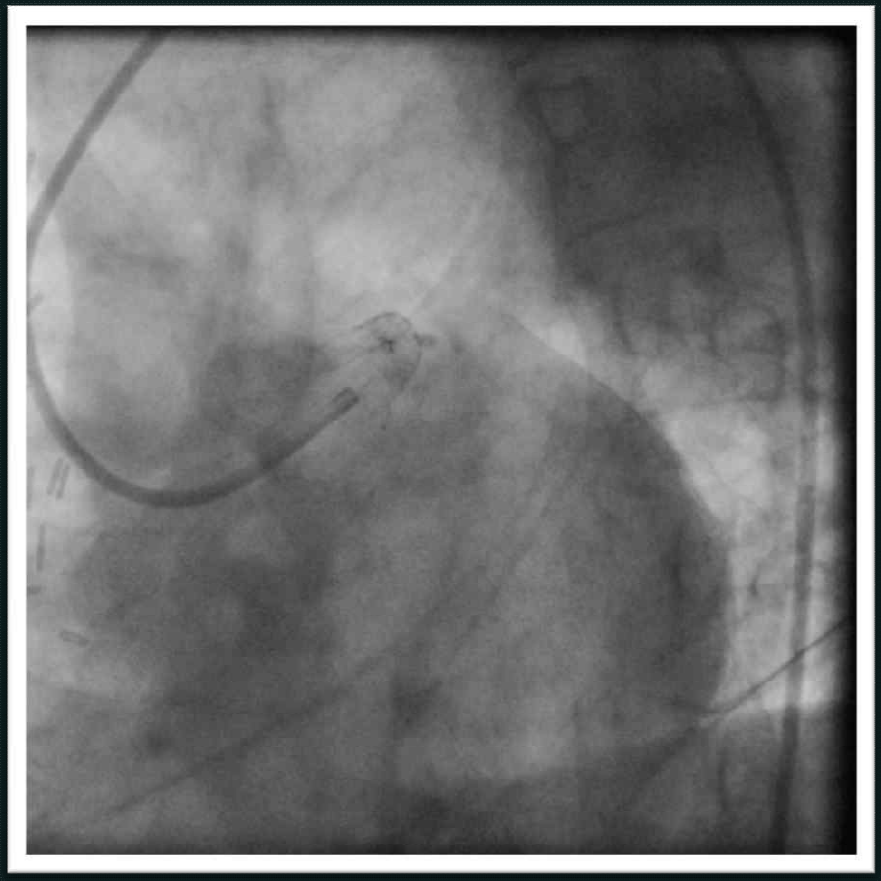




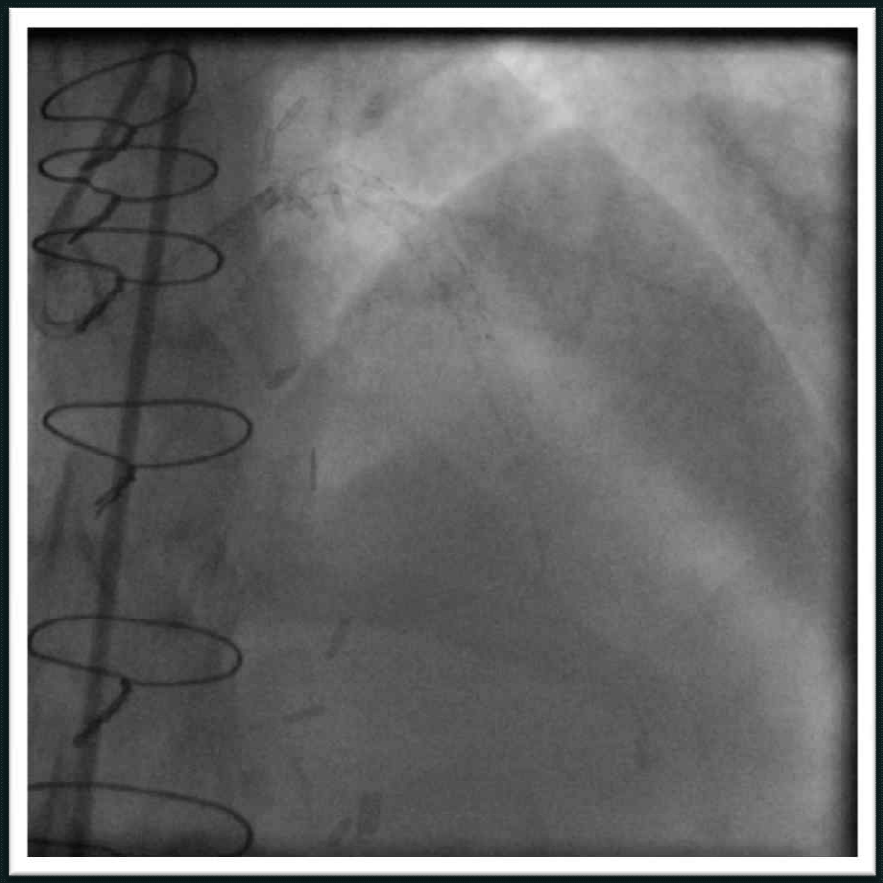


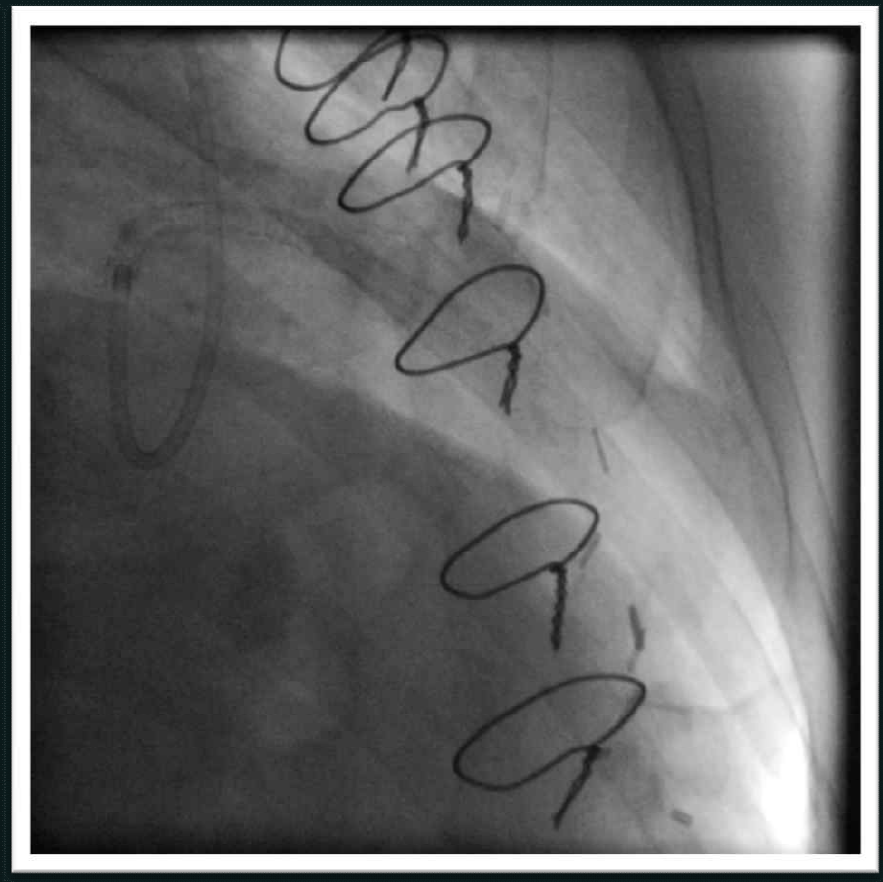
Six Months after Last PCI
Patient has remained asymptomatic
Follow up Coronary Angiogram





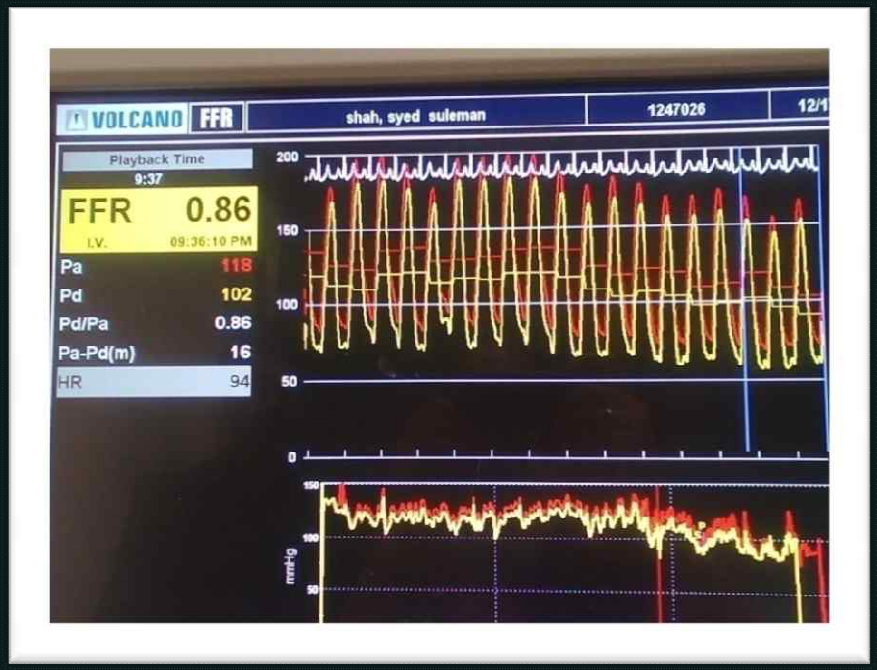
No significant In-stent Restenosis



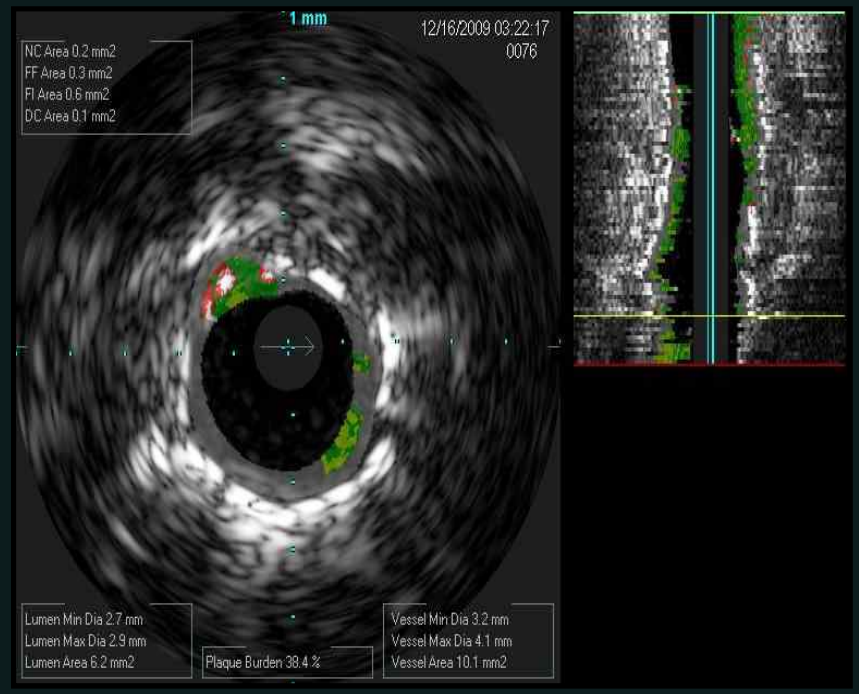


FFR and Coronary Imaging

FFR > 0.86 in Distal LAD after adenosine infusion



IVUS: In-stent cross sectional area > 5.5 mm2



Conclusion of Case

- This case demonstrates multiple problems encountered during PCI and managed appropriately.
- A case of malignant recurrent restenosis treated successfully so far with the available options.
- A message for the interventionalists to be patient and persistent in their effort to do complex angioplasty

Thank you