PCI for Acute Coronary Syndrome with Thrombotic Total Occlusion of Ostial Left Circumflex Artery

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Case details

- 59 yrs old male,
- diabetic , with past h/o ACS with PCI+DES to LAD done- 5 yrs back; previously documented LVEF 45%
- Current admission for chest pain of 8 hours duration with ECG changes of acute ,true posterior wall MI
- Clinically signs of heart failure, Killip class 3, tachycardia, tachypnea ; BP 96/70 mm Hg
- Echo : posterior wall akinesia ,anterior wall and IVS hypokinesia with moderate MR, LVEF 30%.
- Troponin positive.

Coronary angiography :

- Right dominant coronary anatomy
- Normal Left main.
- Thrombotic total occlusion of LCx artery from its origin (Ostial Flush Occlusion)
- 60% Instent restenosis in Proximal LAD
- Discrete 90% stenosis of proximal RCA

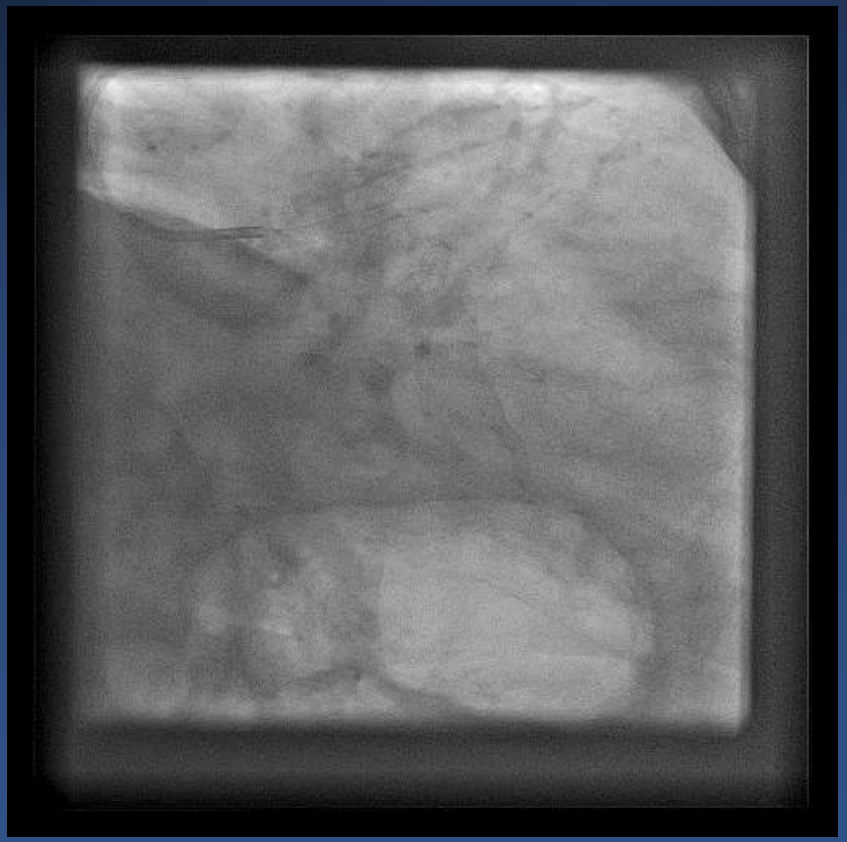
- Coronary angiography:

* LCx : Ostial 100% occlusion ; no stump visible

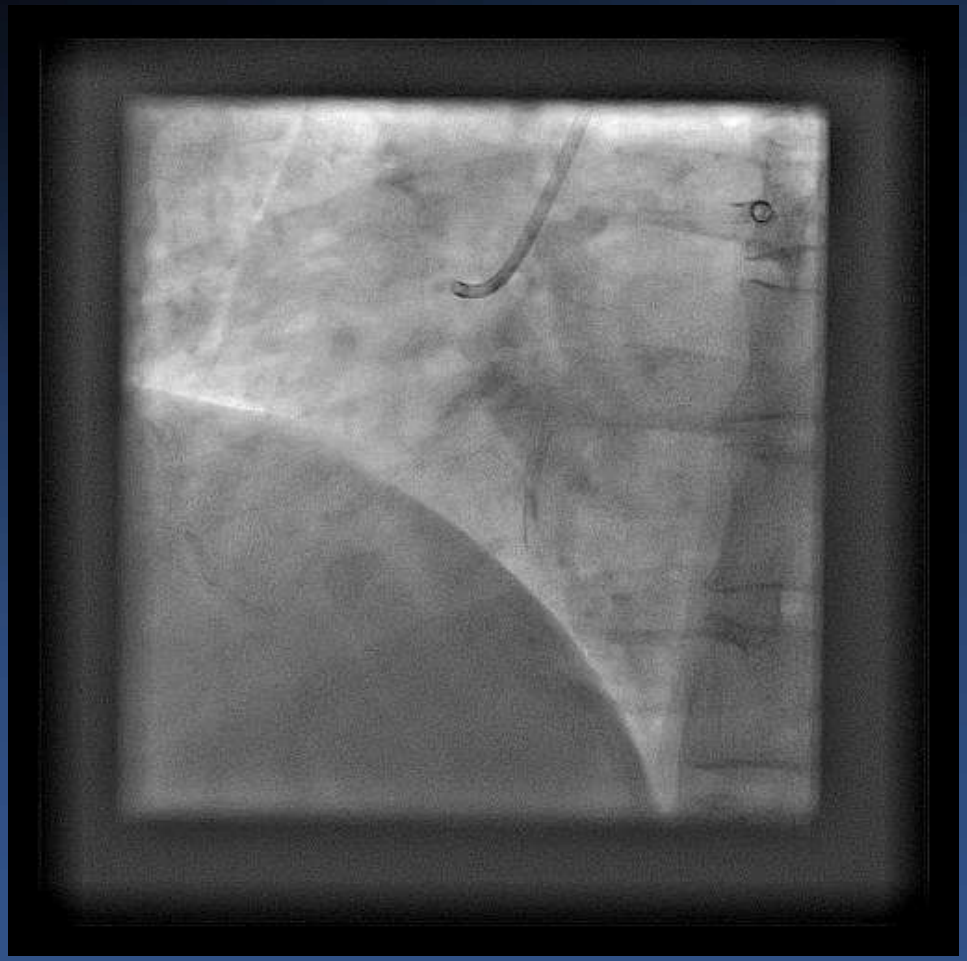
LAD : ostioproximal discrete, instent restenosis 50-60%

LCA angio -LAO caudal

LCA angio –RAO caudal



RCA angio.:



Approach to revascularisation:

- Multivessel CAD, with ACS- true posterior wall MI, LV dysfunction, DM, prior MI
- Culprit vessel PCI : treatment of choice
- Odds: LCx flush occlusion, TVD+LM bifurcation disease: (Medina 0,1,1) –requiring elective double stent at LMCA bifurcation
- Clinical instability- high risk of acute mortality, if left untreated in acute stage.

CABG- high perioperative risk if operated in emergency scenario in acute stage

STS Adult Cardiac Surgery Database Version 2.9

RISK SCORES

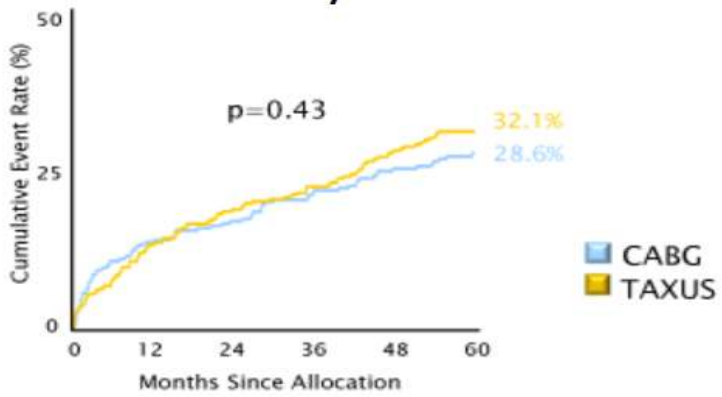
Procedure: Isolated CAB

CALCULATE

Risk of Mortality:	8.441%
Renal Failure:	2.623%
Permanent Stroke:	4.712%
Prolonged Ventilation:	61.001%
DSW Infection:	0.115%
Reoperation:	10.246%
Morbidity or Mortality:	63.792%
Short Length of Stay:	16.396%
Long Length of Stay:	20.783%

Approach : multivessel CAD, with ACS, LV dysfunction, DM, prior MI

Syntax score=21.5: MACCE with CABG & PCI NS



The cumulative MACCE rate is displayed for the SYNTAX Trial group this score corresponds to.

SYNTAX Score I

Lesion 1	
segment number(s)	
(segment 1): 1x2=	2
(segment 6): 3.5x2=	7
(segment 11): 1.5x5=	7.5
+ Blunt stump	1
the first segment beyond the T.O. visualized by contrast: 11	0
+ sidebranch: Yes, all sidebranches >=1.5mm	1
Bifurcation Type: Medina 0,1,1:	2
Thrombus	1
Sub total lesion 1	*21.5*
TOTAL:	*21.5*

Syntax 2 score:

SYNTAX Score II

SYNTAX II

Decision making -between CABG and PCI- guided by the SYNTAX Score II to be endorsed by the Heart Team.

PCI

SYNTAX Score II:	36.0
PCI 4 Year Mortality:	11.0 %

CABG

SYNTAX Score II:	23.6
CABG 4 Year Mortality:	4.0 %

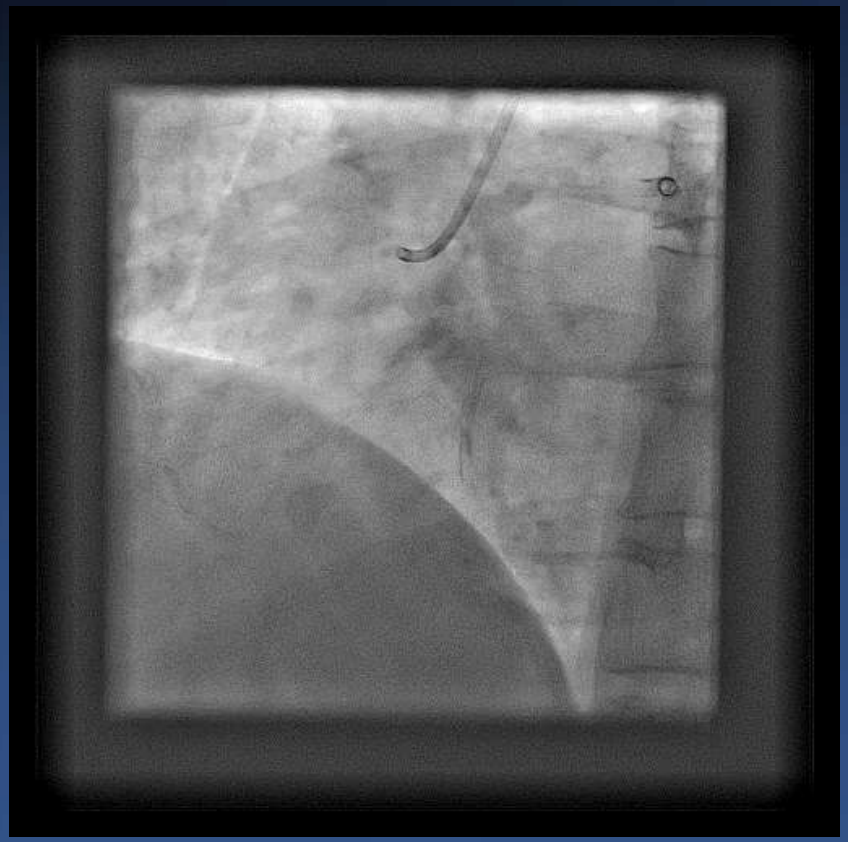
Treatment recommendation : *CABG*

Heart team approach:

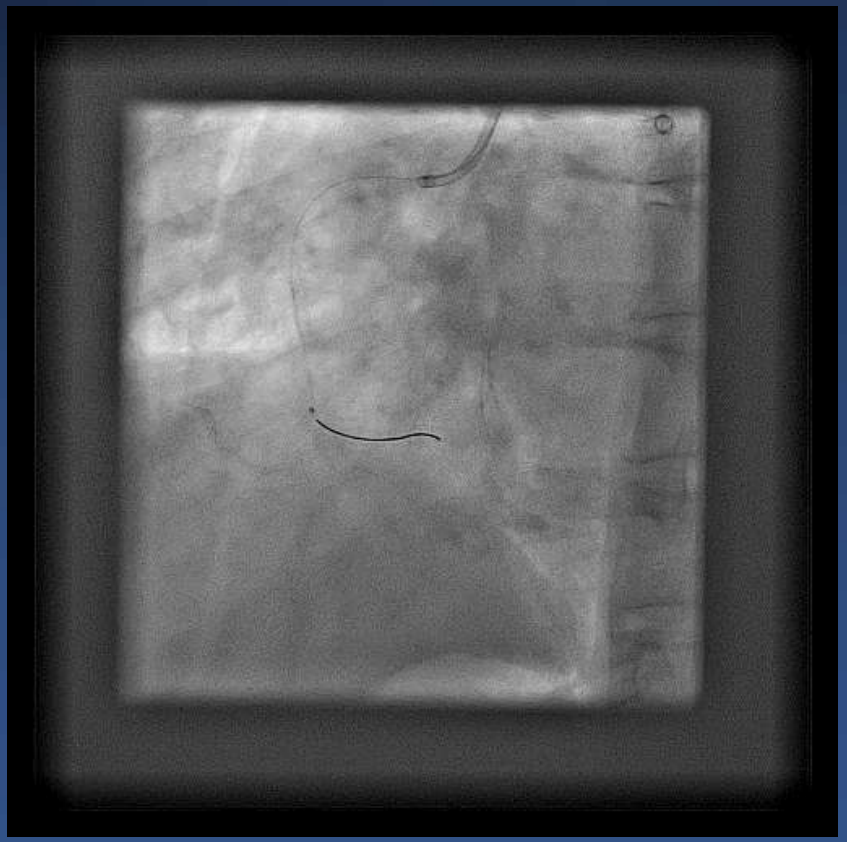
- Finally concluded: PCI preferred
- Elective double stent to LMCA bifurcation-
  - minicrush technique.
- To establish safety of LMCA PCI- a relatively simple RCA revascularisation to be done first.

RCA : discrete 90% stenosis in proximal RCA
PCI +DES to RCA as a first step

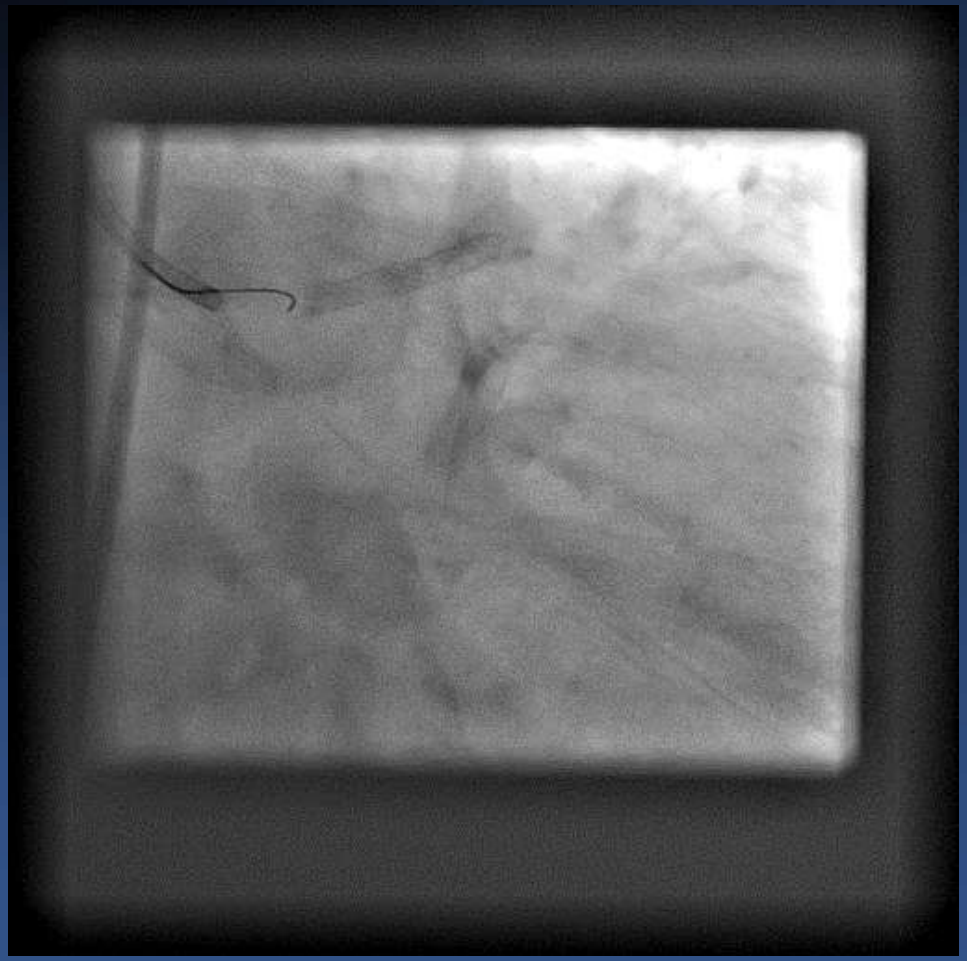
RCA angio- LAO cranial



RCA- PCI DES 3.5x20 mm



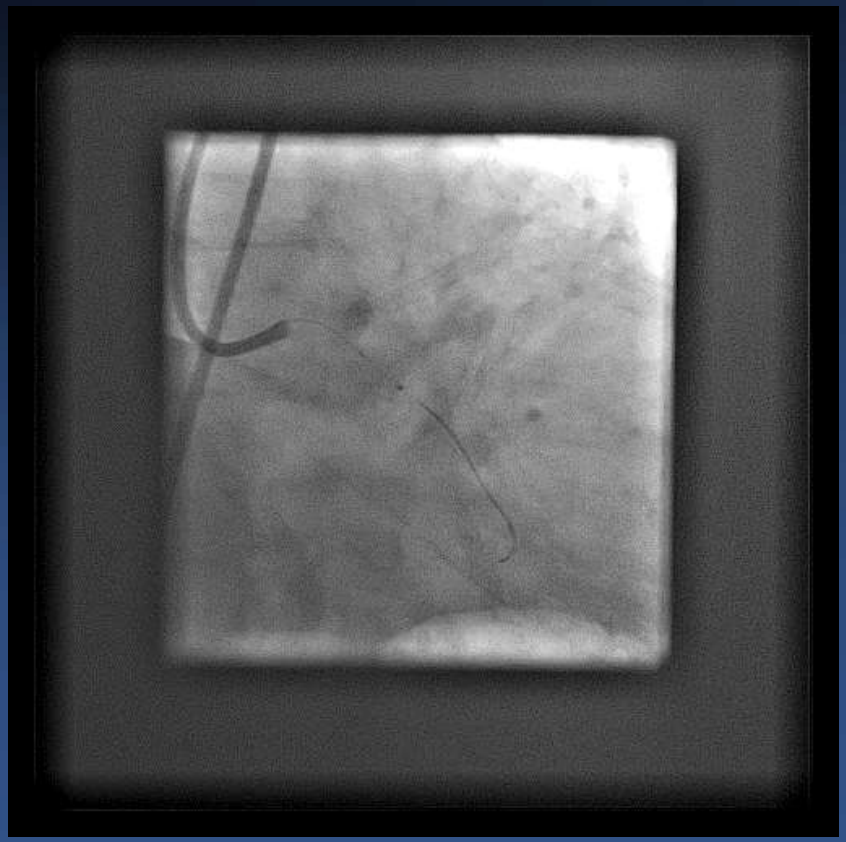
3: PCI: transfemoral , XB 7F guide, Runthrough NS guidewire initially- failed



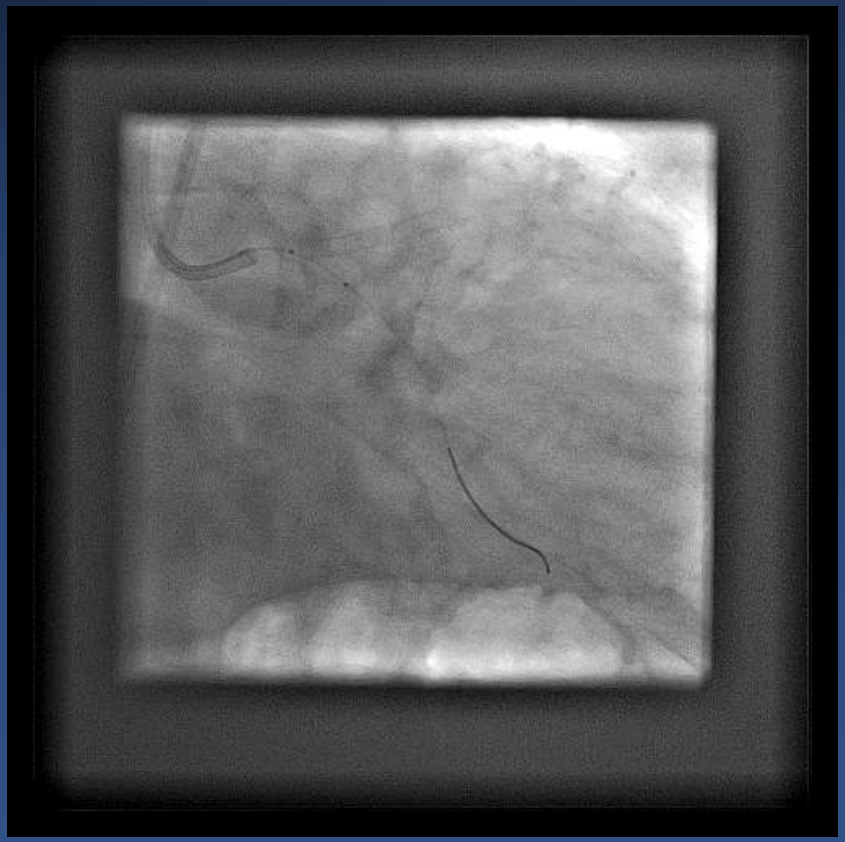
4. Finecross microcatheter with Pilot'50 guidewire, angulated at tip.

BMW in LCx → POBA at ostium

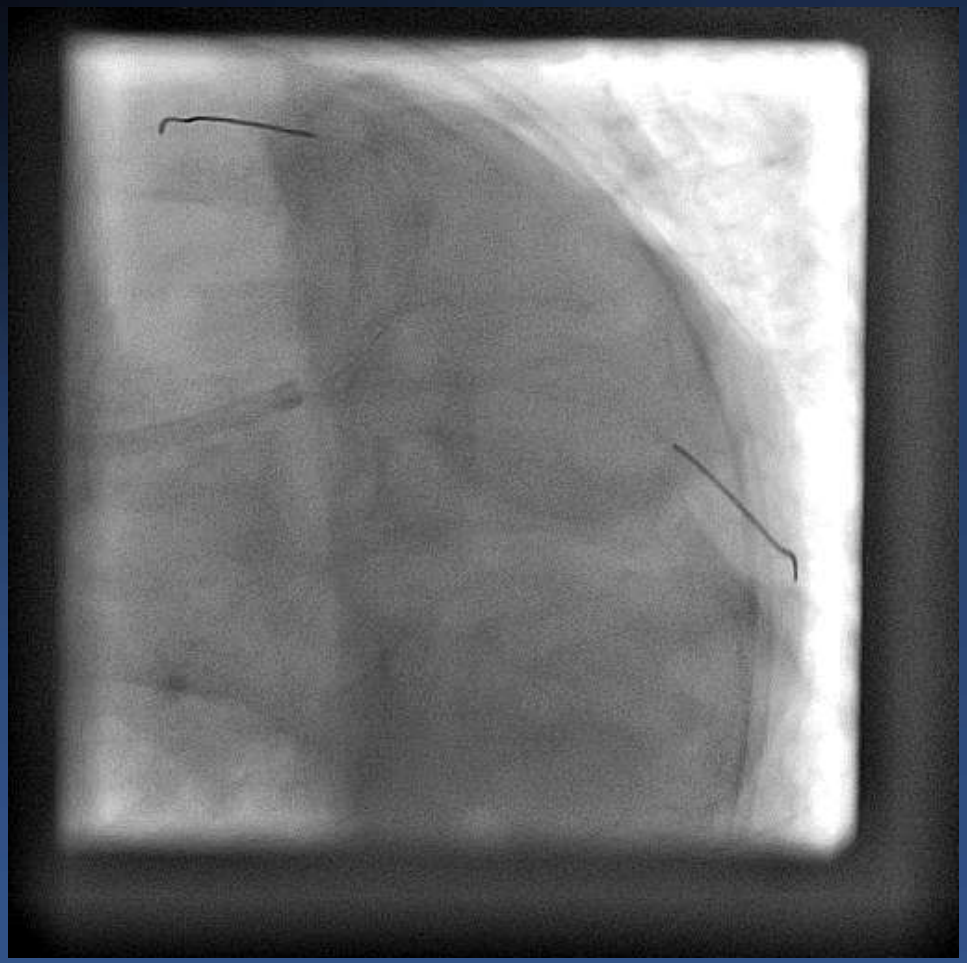
Pilot'50 exchanged with BMW



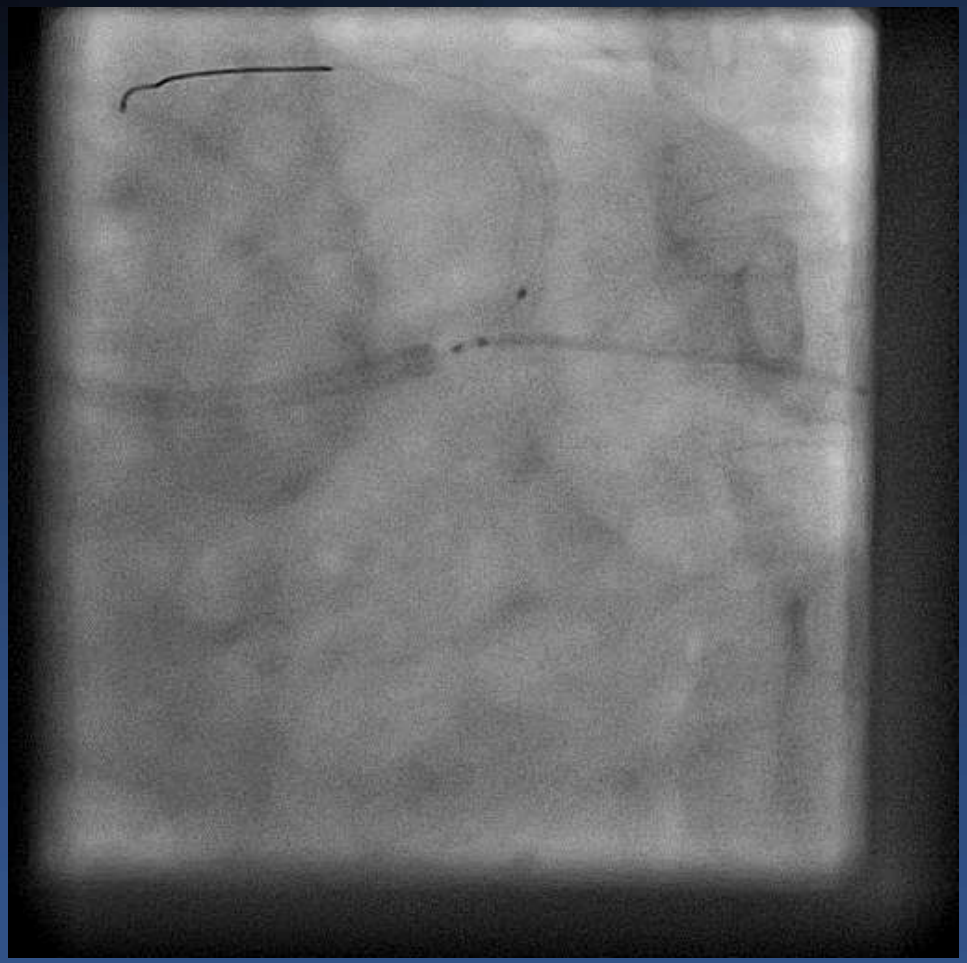
Predilated 2.0 x12 mm@8 atm



Guidewires: BMW in LCx, Runthrough NS in LAD

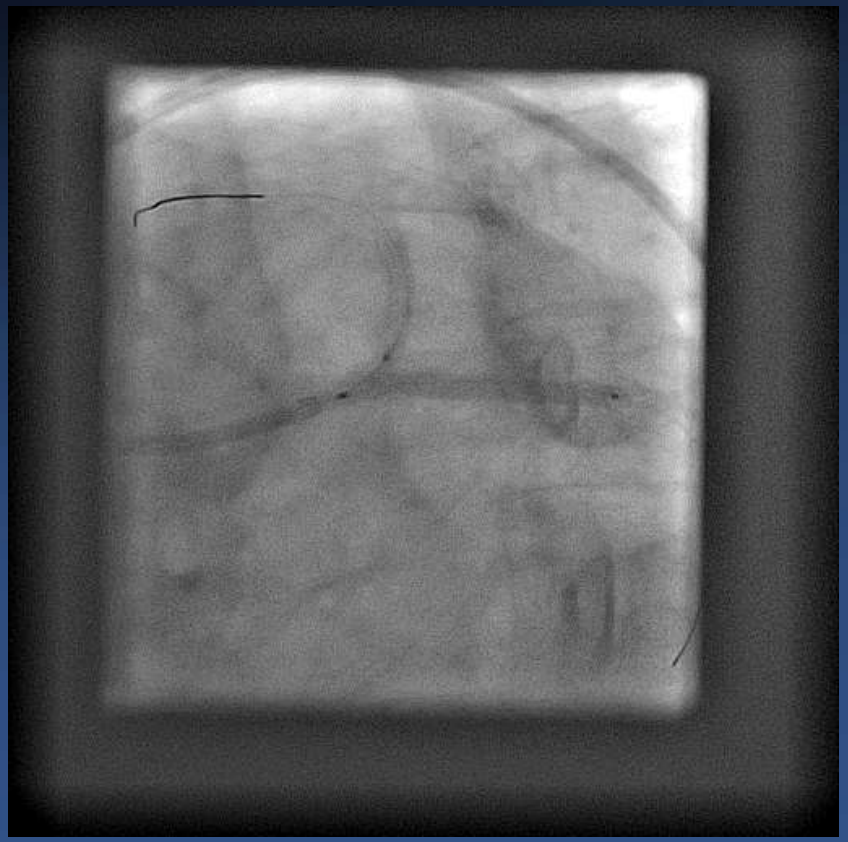


3.5 x 08 mm NC balloon in LMCA-LAD
LAD ostium predilated @14 atm & NCB left in situ
-- 3.0 x 33 mm DES in LCx;

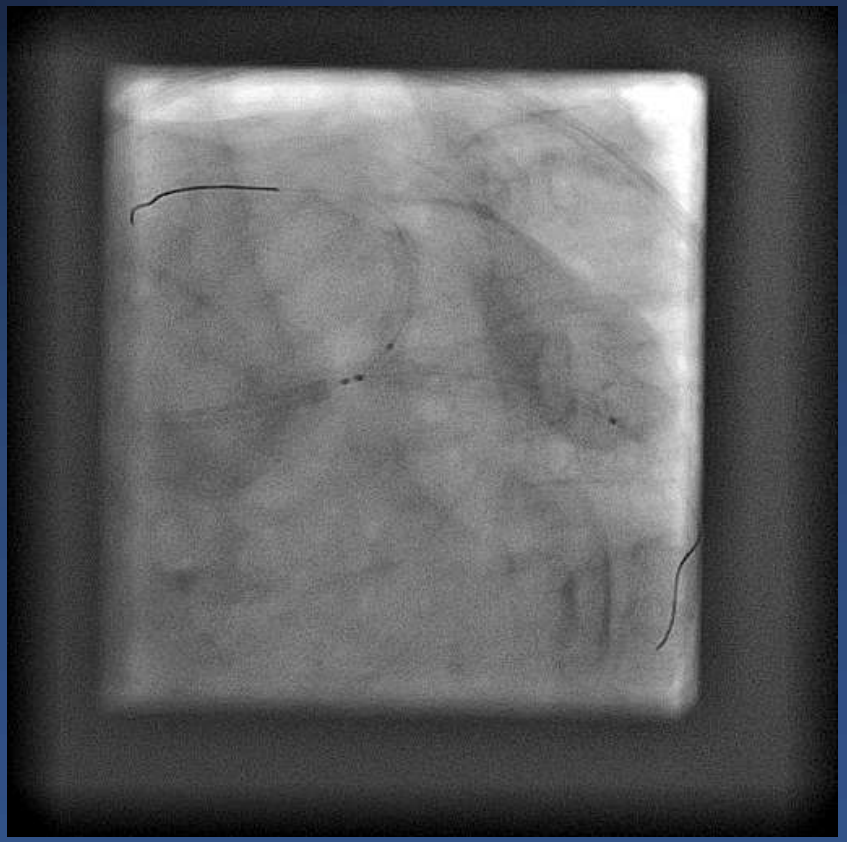


DES deployed at LCx ostium with 2 mm protrusion in LMCA

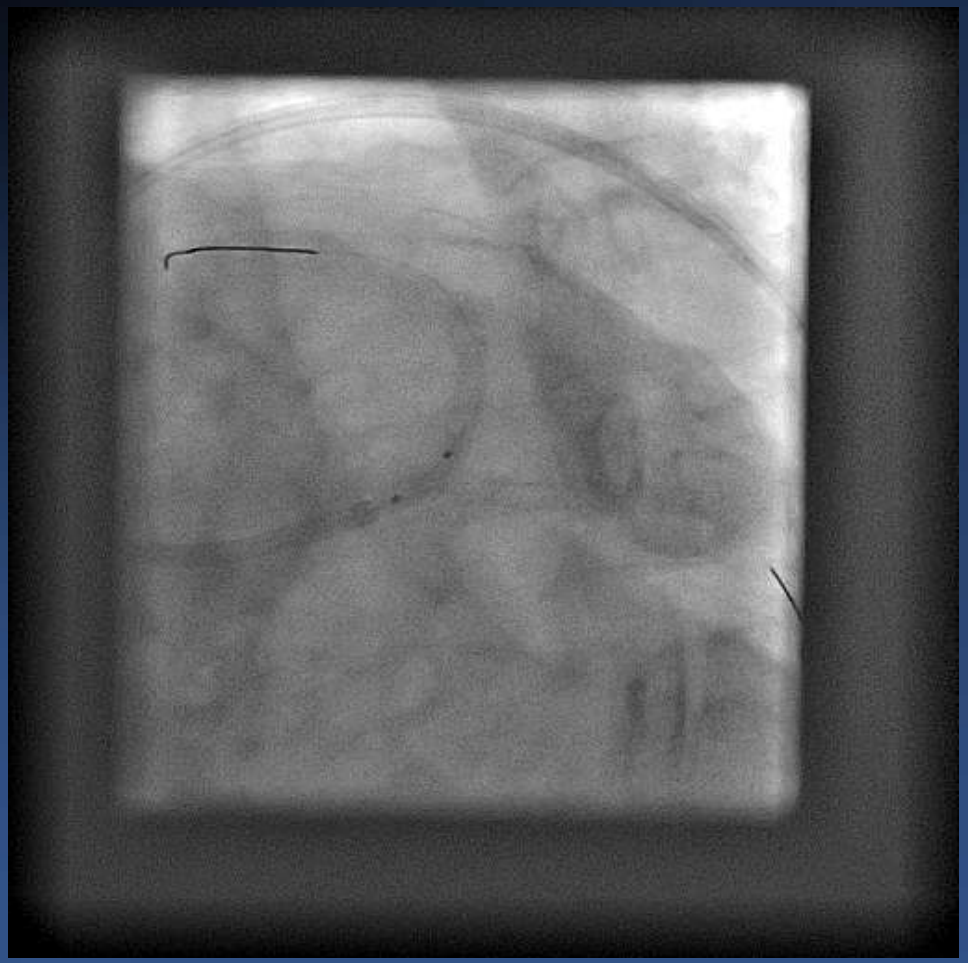
3.0 x 33 mm DES@14 atm



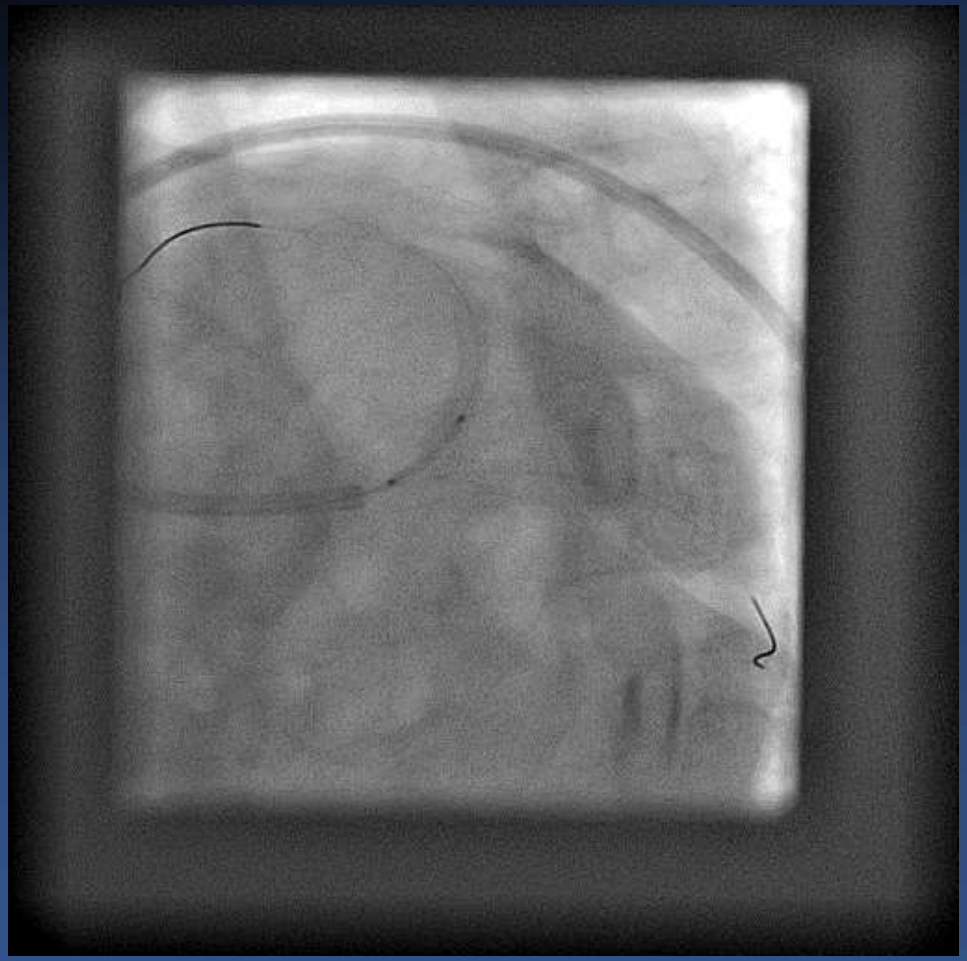
Post stent -LCx



LCx stent crushed with 3.5 x 08 mm NC balloon in LM-LAD

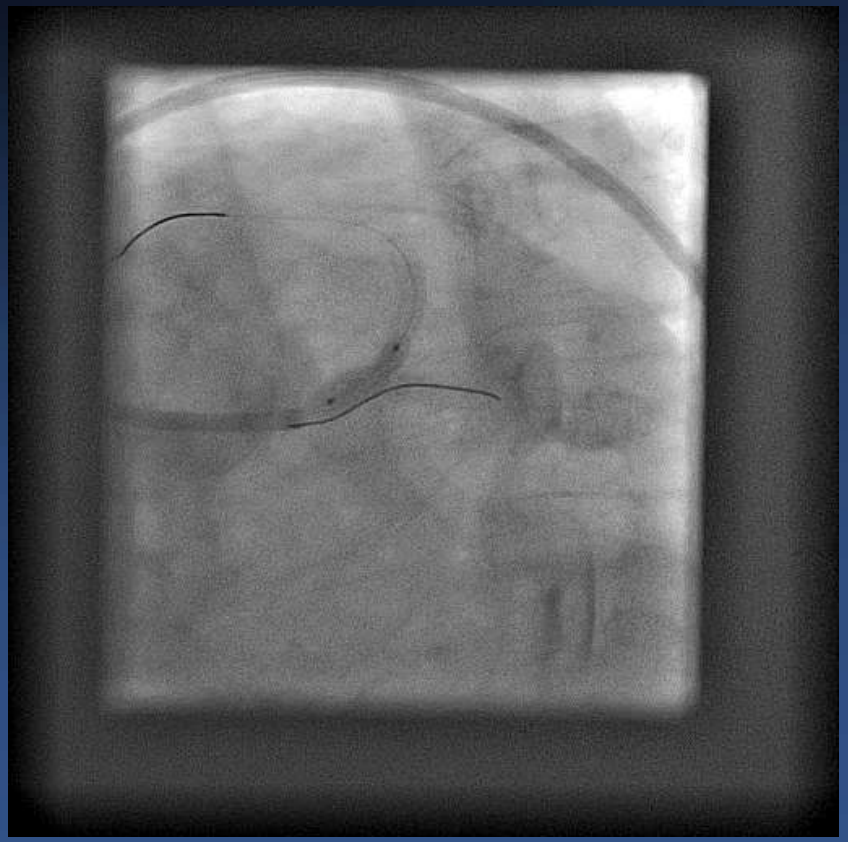


LMCA-LAD stented with 4.0 x 12 mm DES - from mid shaft LMCA to ostioproximal LAD

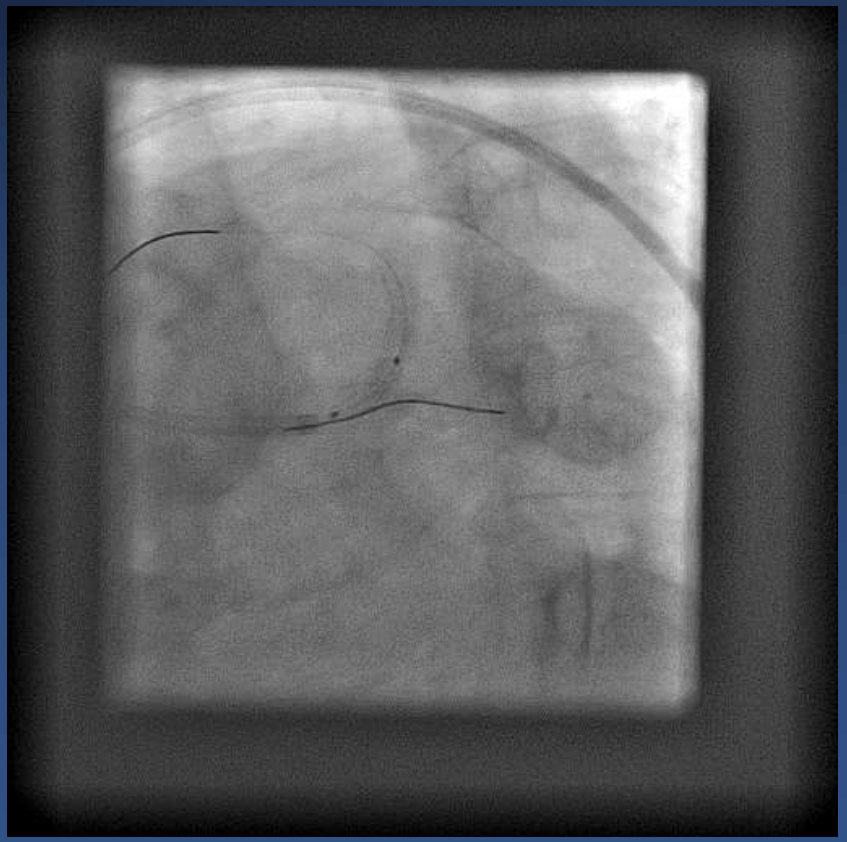


Stent : LM-LAD

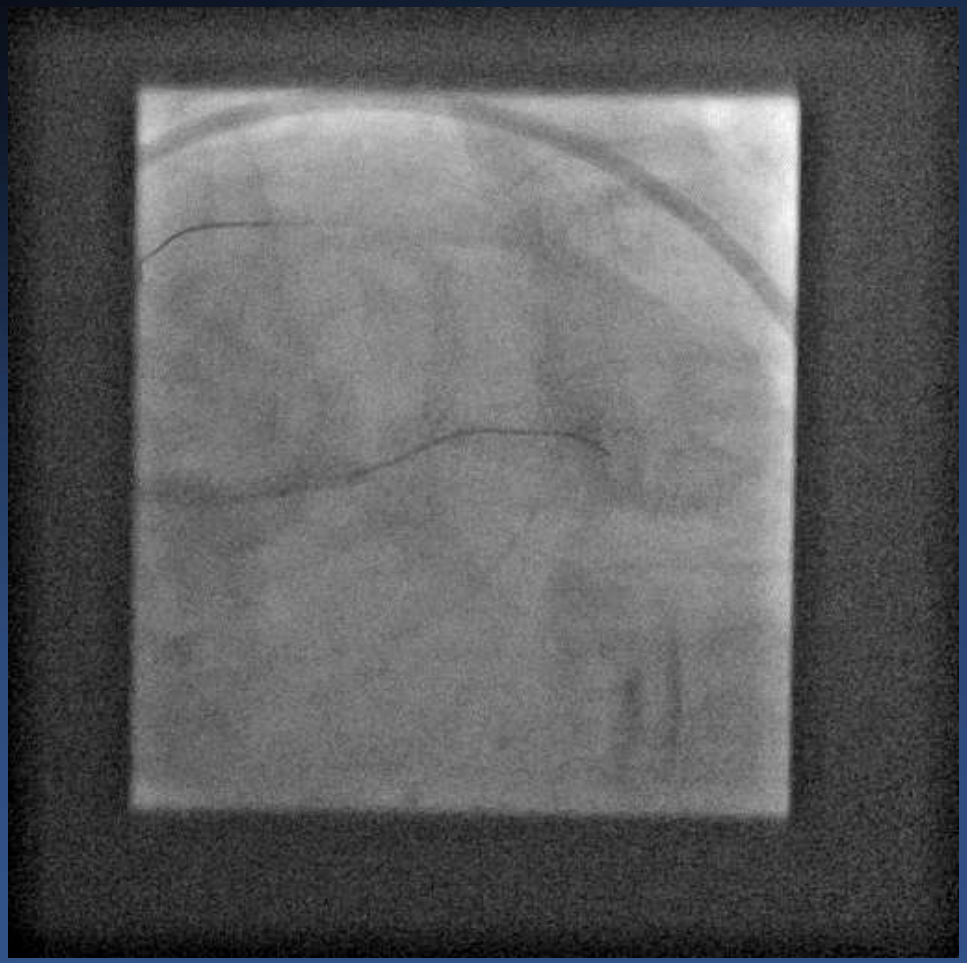
4.0x12 mm DES @12 atm



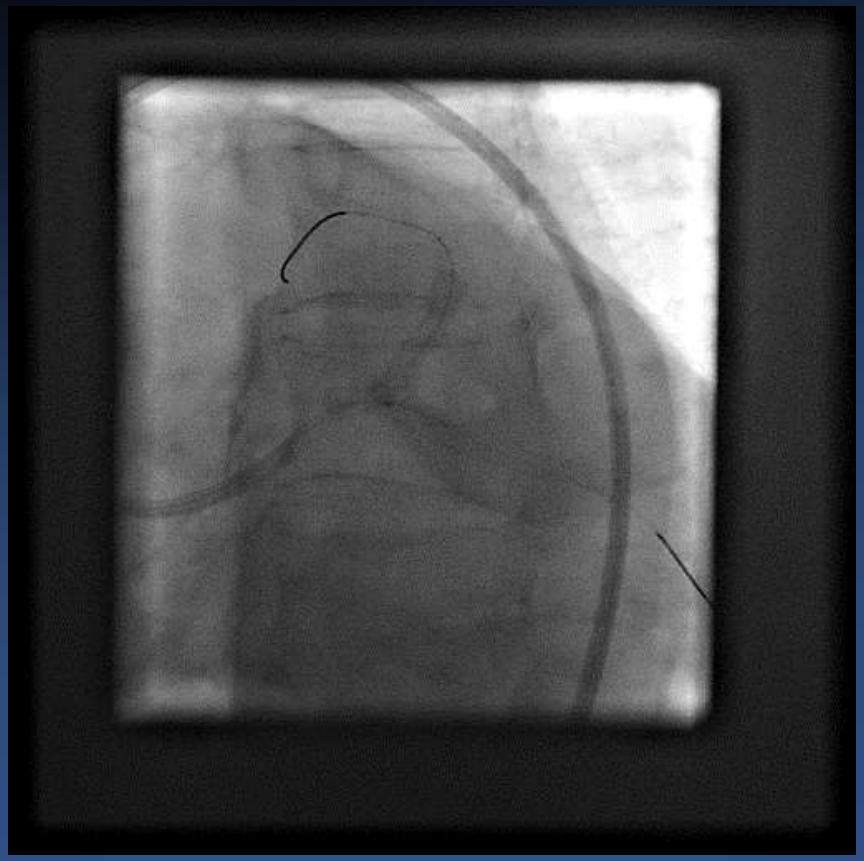
Post stent : LMCA-LAD



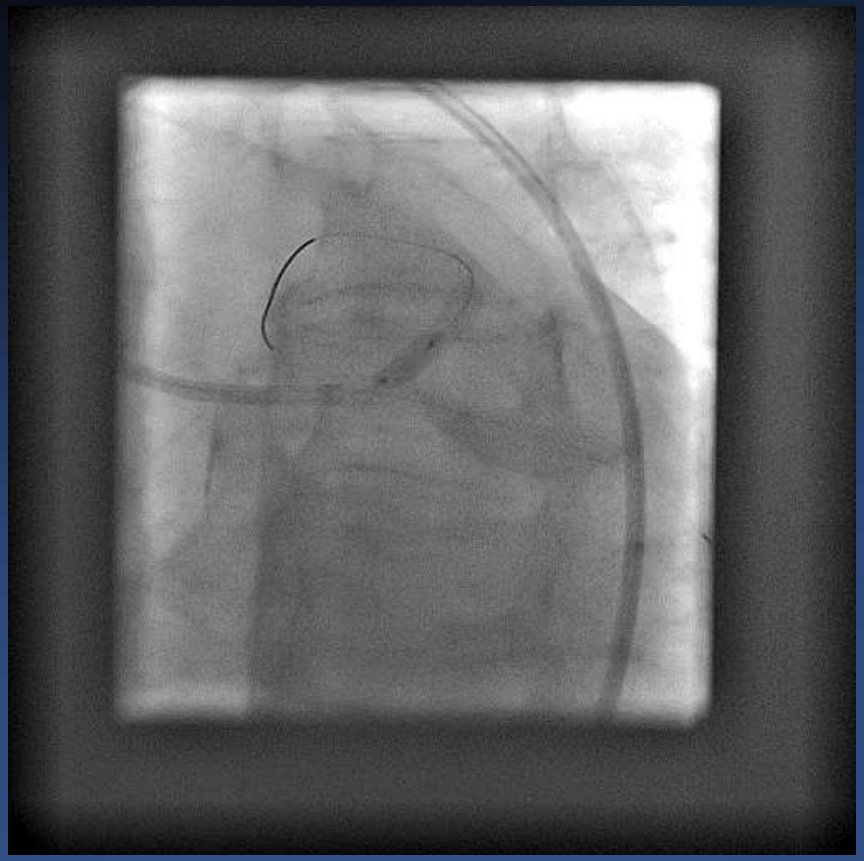
Runthrough NS guidewire re-introduced into LCx

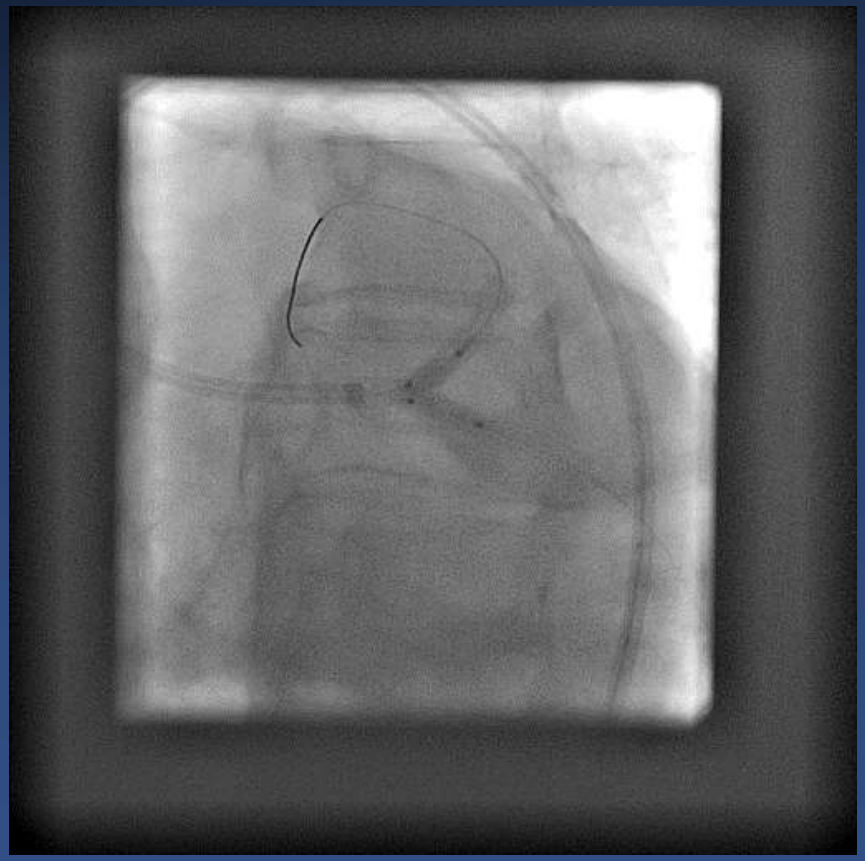


LCx stent struts dilated: 1.5 mm and 2.5 mm balloons

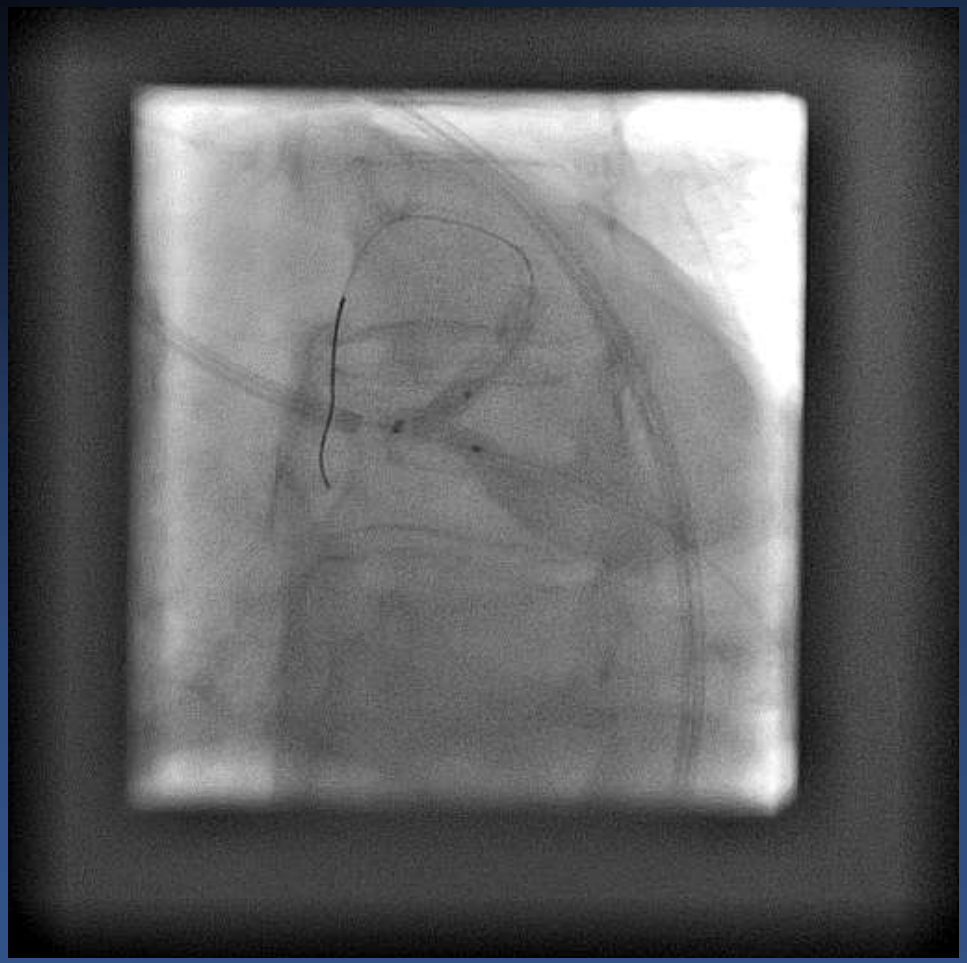


Kissing balloon dilatation:
NCB: 4.0 x 08 mm in LAD; 3.5 x 08 mm in LCx
- both at 10-12 atm pressures

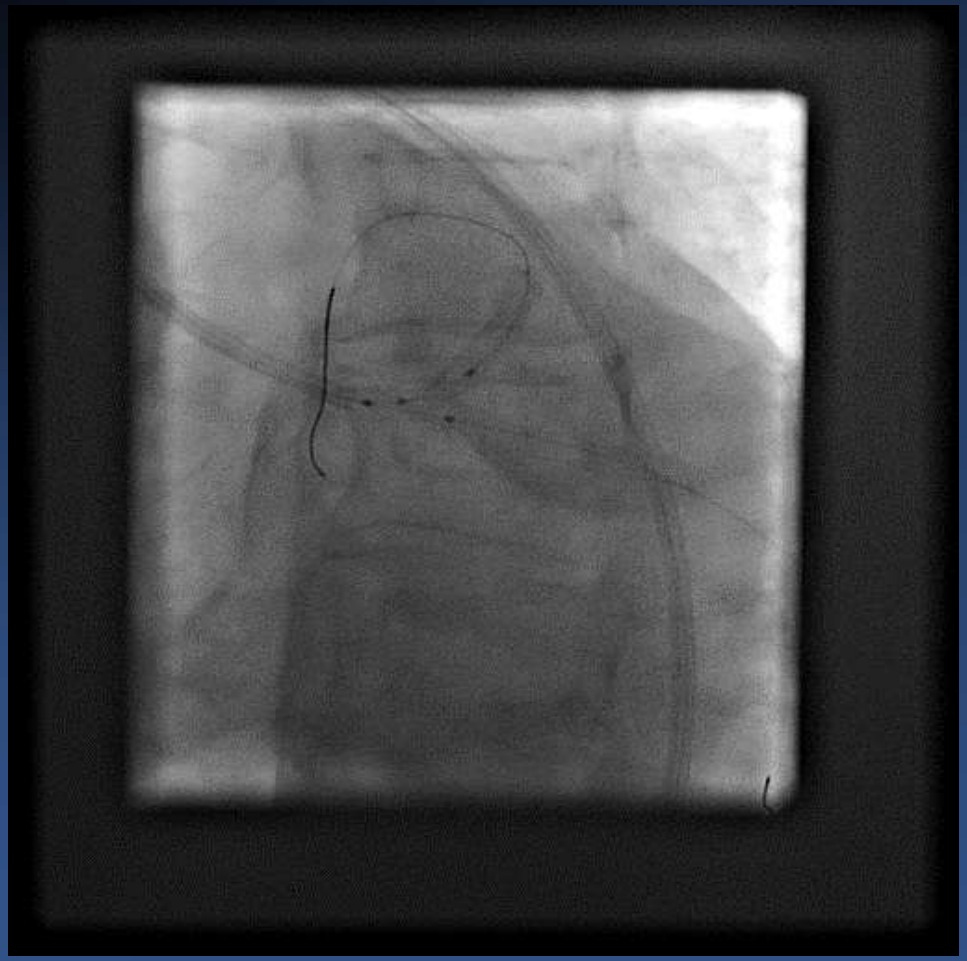




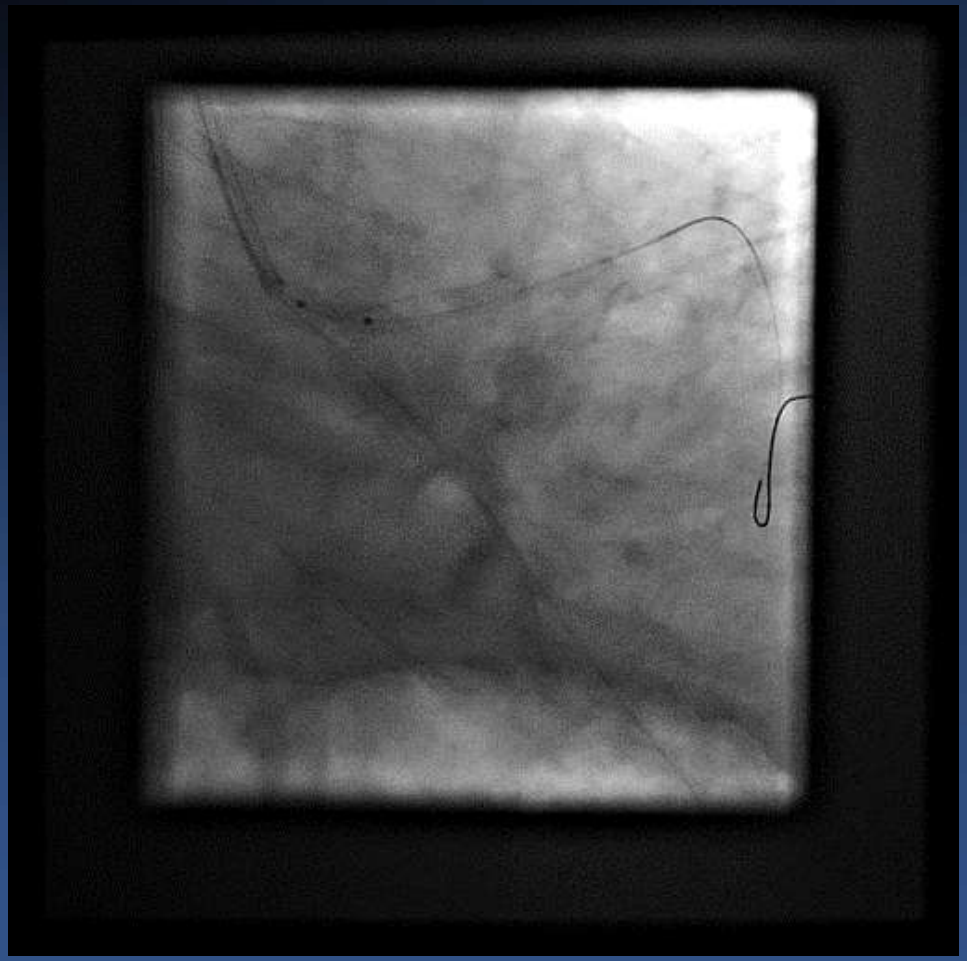
Kissing balloons dilated with their proximal ends at proximal edge of LMCA stent



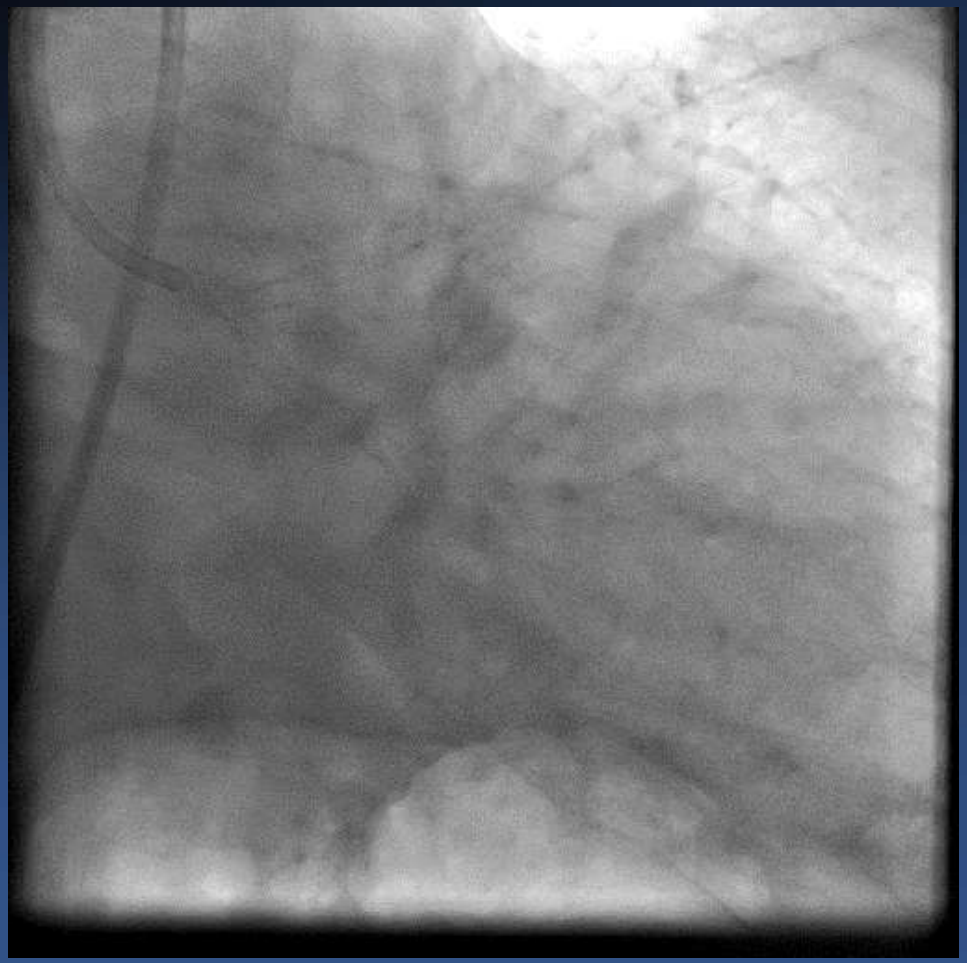
Result –post PCI- AP caudal



Following POTS in LMCA with 5.0 x 08 atm @ 14 atm



Final result post PCI



Final result post PCI

Conclusions:

- In patients with ACS, DM & multivessel disease, with LV dysfunction & MR, emergent PCI of culprit artery is needed
- LMCA bifurcation disease with flush occlusion of LCx ostium requires careful planning & swift execution of complex PCI.
- Due to high STS score predicting high surgical mortality, PCI was opted despite high Syntax 2 score.
- Nonculprit, type A lesion in RCA was treated first to ensure safety during LMCA bifurcation PCI.
- Conventional CTO tools like Microcatheter & Pilot'50 guide wire were used to cross flush occluded LCx ostium in AMI situation.
- Elective double stent with Minicrush bifurcation stent technique resulted in successful PCI.
- Coronary imaging with IVUS would have optimised the results further to ensure low MACE rates at follow up.