What is a significant coronary stenosis?

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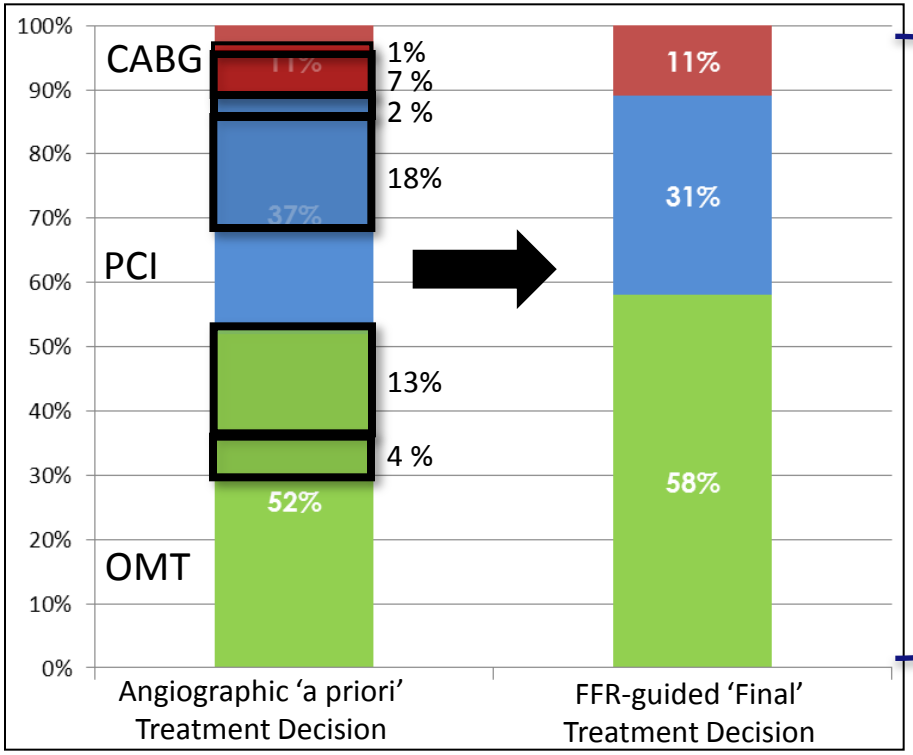
Disclosures

- Speaker honoraria:

  Volcano

Is FFR impacting the treatment strategy? (example of the R3F registry)



45% of patients changed therapy with FFR guidance

- 945 patients evaluated with angio, then FFR for final treatment decision
- FFR guidance reduced PCIs by 6%, but **changed the treatment for 45% of patients**

- Val Belle, E., et. al. Impact of the use of FFR on the coronary revascularization strategy: insights from a large French multicenter FFR registry). Archives of Cardiovascular Diseases Supplements (2011) 3, 1-25

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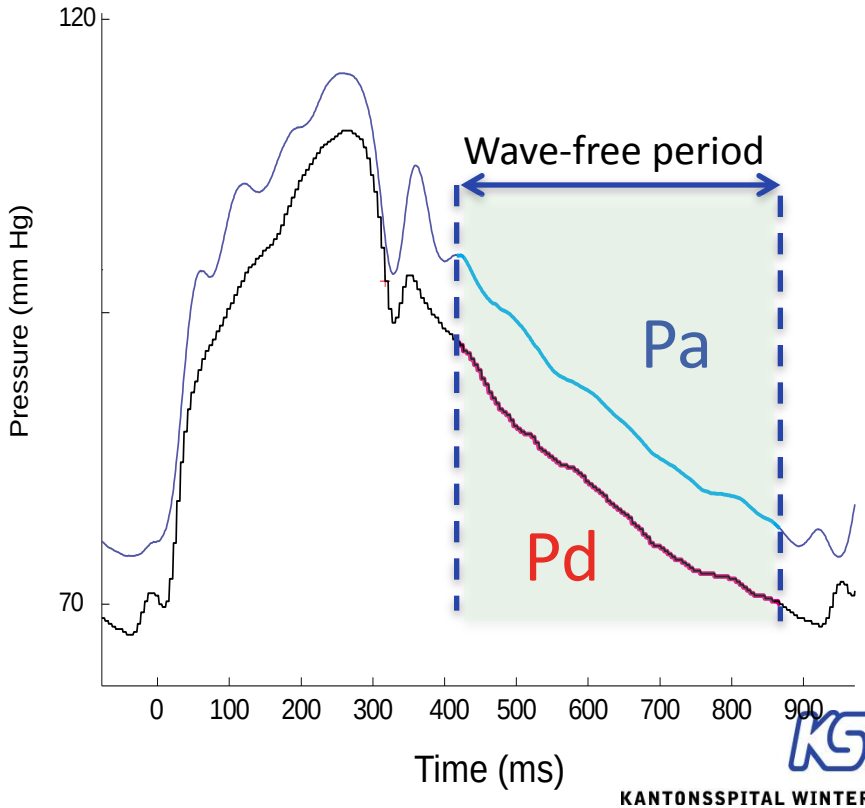
iFR = instantaneous wave-free ratio

$$iFR = \frac{Pd}{Pa}$$

During the Wave Free period

Definition: Instantaneous pressure ratio, across a stenosis during the wave-free period, when resistance is naturally constant and minimised in the cardiac cycle



Sen S et al. J Am Coll Cardiol. 2012 Apr 10;59(15):1392-402

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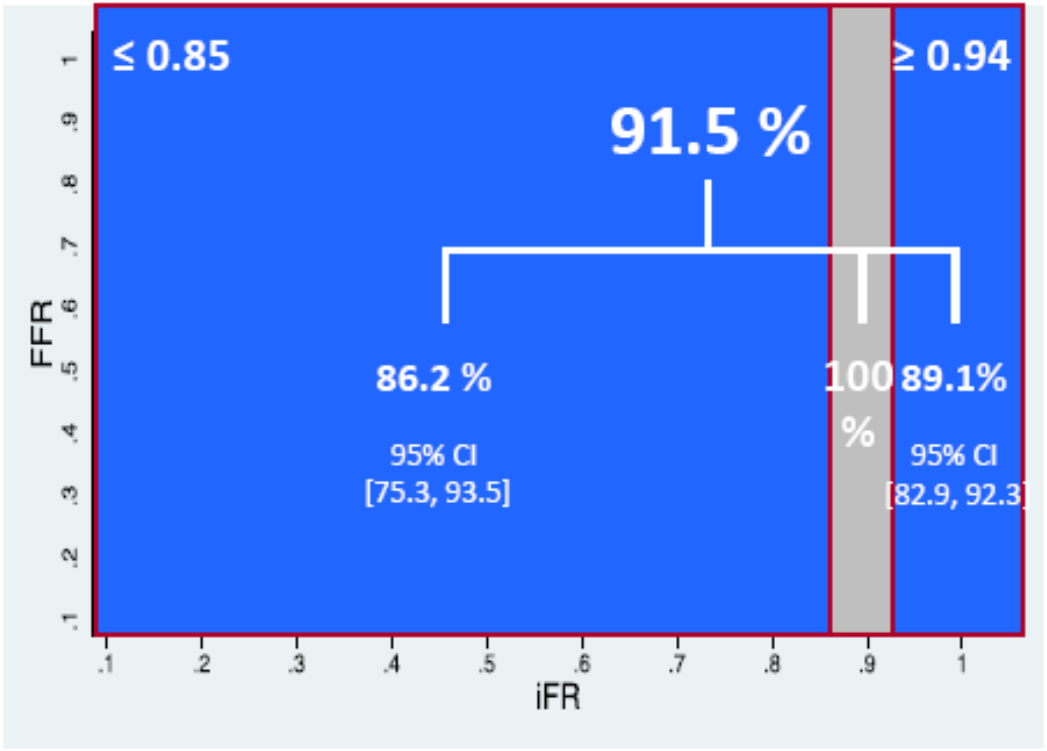
Diagnostic accuracy of the hybrid *i*FR/FFR approach

- Classification match: **91.5%**
- Specificity: **94.89%**
- Sensitivity: **86.11%**
- Positive predictive value:**91.18%**
- Negative predictive value: **91.76%**



Clinical MVD Case

69 Year old Lady, 157 cm, 77 kg

Risk Factors:
- Hypertension, Dyslipidemia, active smoker

Diagnostic:
- Subacute STEMI Anterior wall

Angiogram:
- Significant Stenosis on the Prox LAD
- Intermediate Stenosis in Bifurcation RCX and mid RCA

EF: 50%

Purpose:
- Target vessels interogation with iFR/ FFR

Right coronary artery

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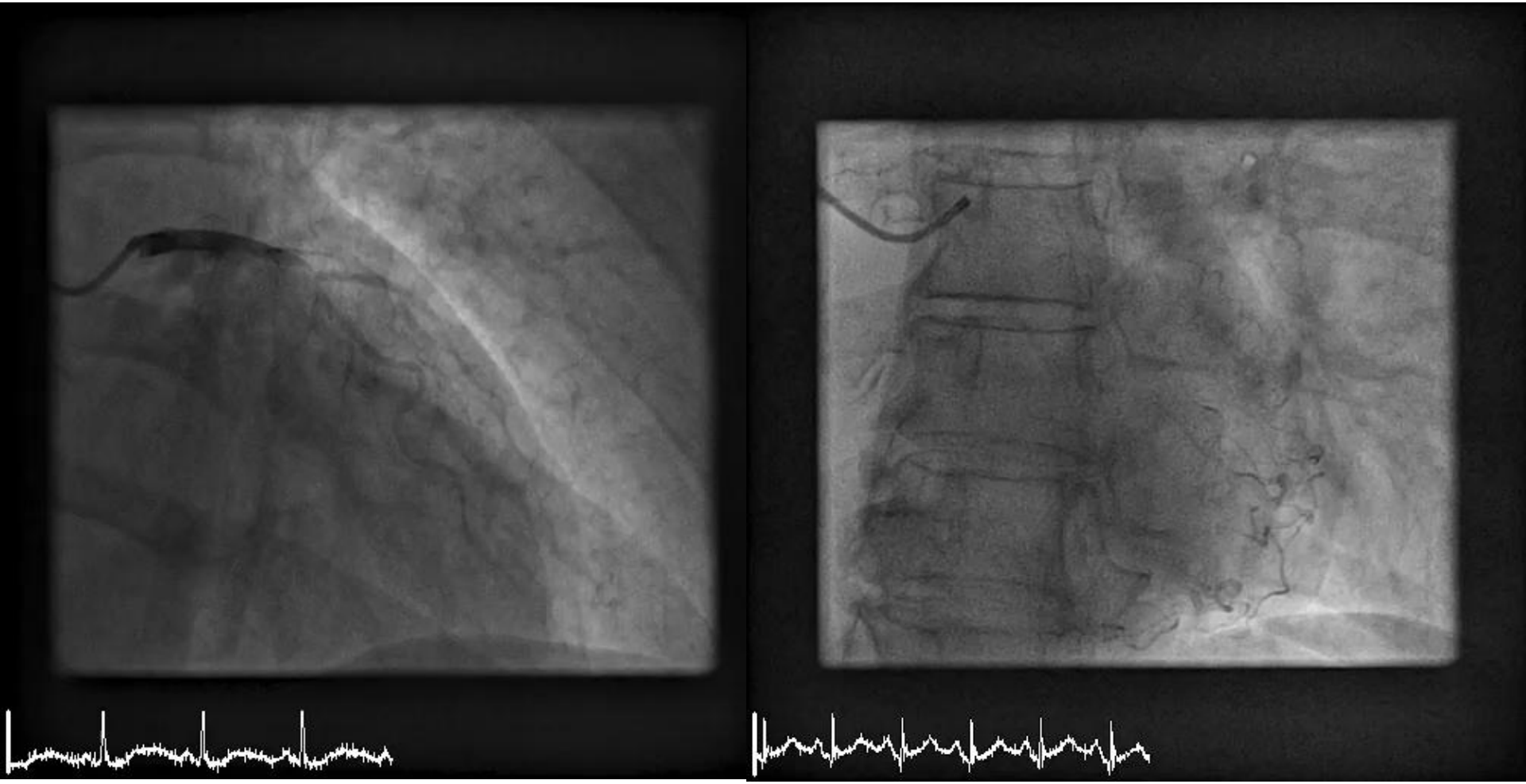
Left coronary artery



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LCX


Bild-Größe: 512 x 512
Ansichts-Größe: 985 x 985
WL: 206 WW: 423
711113 (68 y , 68 y)
Kardio – Linke Koronar 15 B-s Linka
HK 365/13
4
419
207
-5
Zoom: 192% Winkel: 0
B: 24/54
JPEGLossless:Non-hierarchical-1stOrderPrediction
NICHT FÜR PRIMÄRE DIAGNOSTIK
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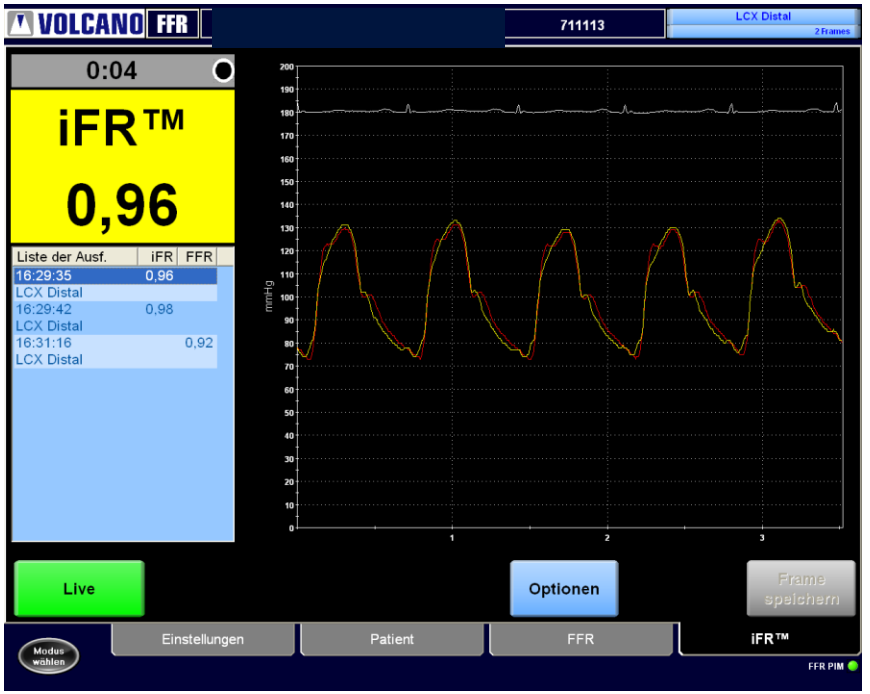
VOLCANO FFR
711113
LCX Distal
2 Frames
0:04
iFR™
0,96
Liste der Ausf.
iFR
FFR
16:29:35 0,96
LCX Distal
16:29:42 0,98
LCX Distal
16:31:16 0,92
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mmHg
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Optionen
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Modus wählen
Einstellungen
Patient
FFR
iFR™
FFR PIM


VOLCANO FFR
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LCX Distal
0 Frames
0:54
FFR 0,92
Pd/Pa 0,92
Pa:iPa 91:118
Pd:iPd 84:106
HR 86
Liste der Ausf.
iFR
FFR
16:29:35 0,96
16:29:42 0,98
16:31:16 0,92
LCX Distal
mmHg
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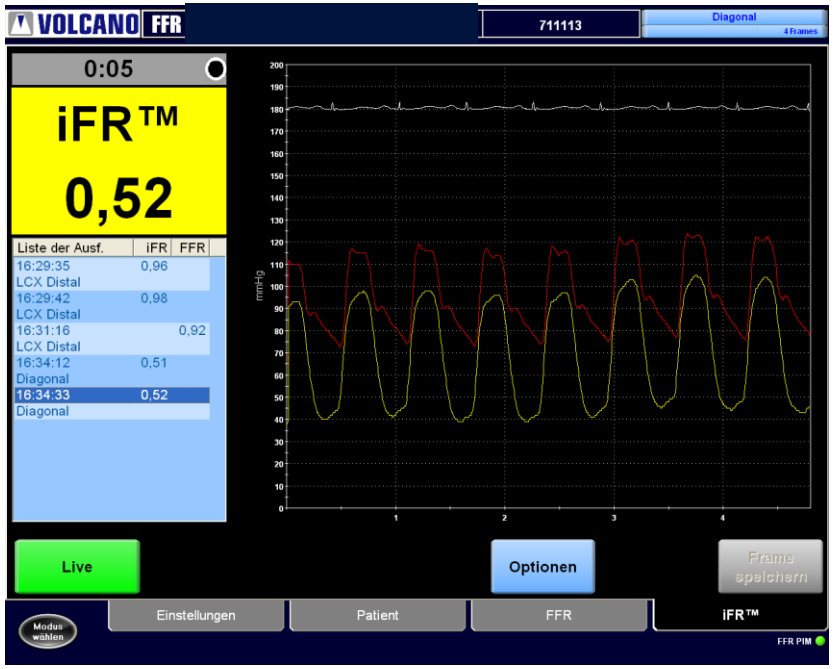
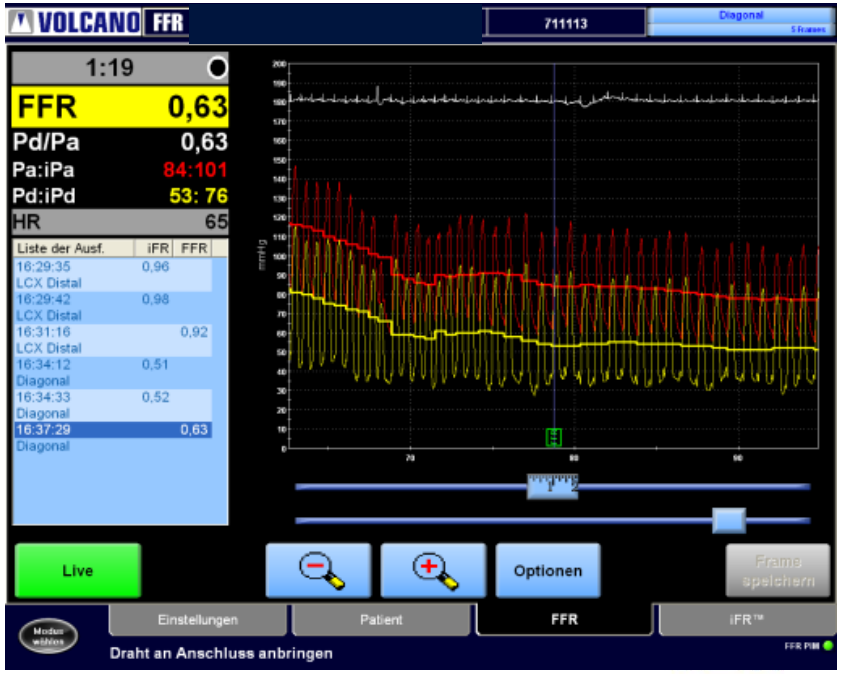
Optionen
Frame speichern
Modus wählen
Einstellungen
Patient
FFR
iFR™
FFR PIM

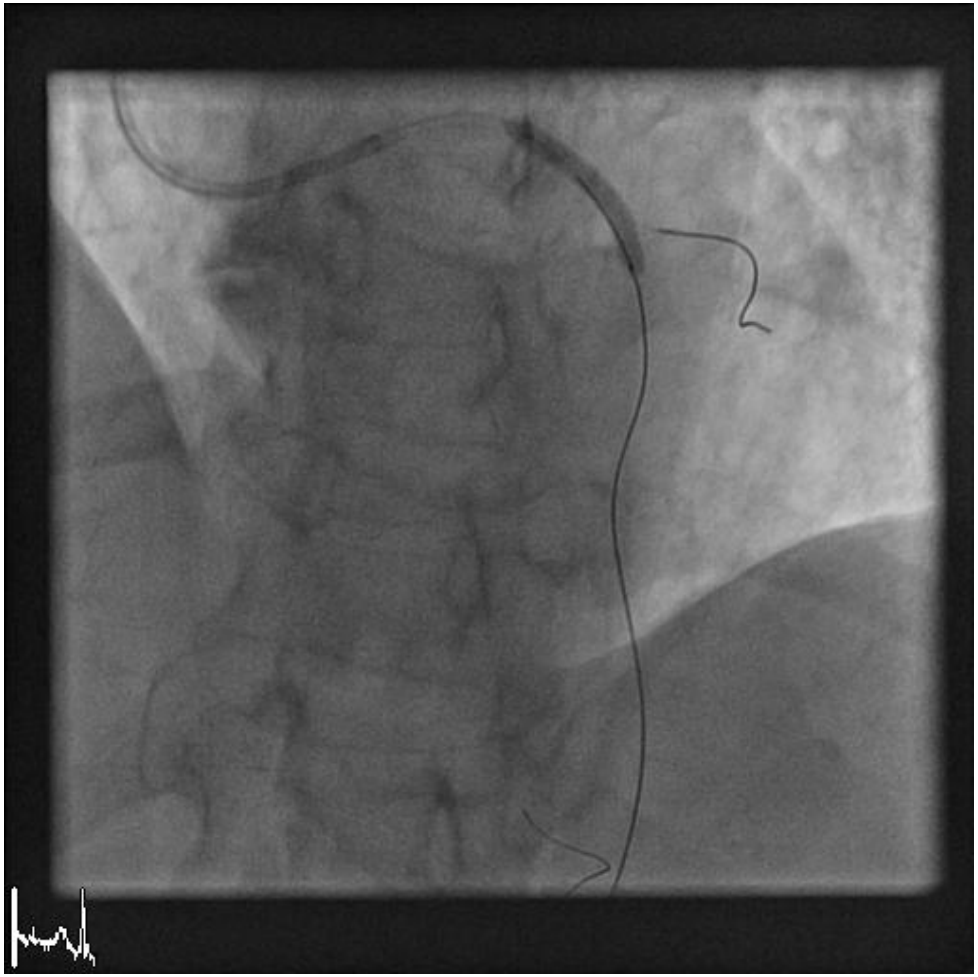
LAD/Rd1





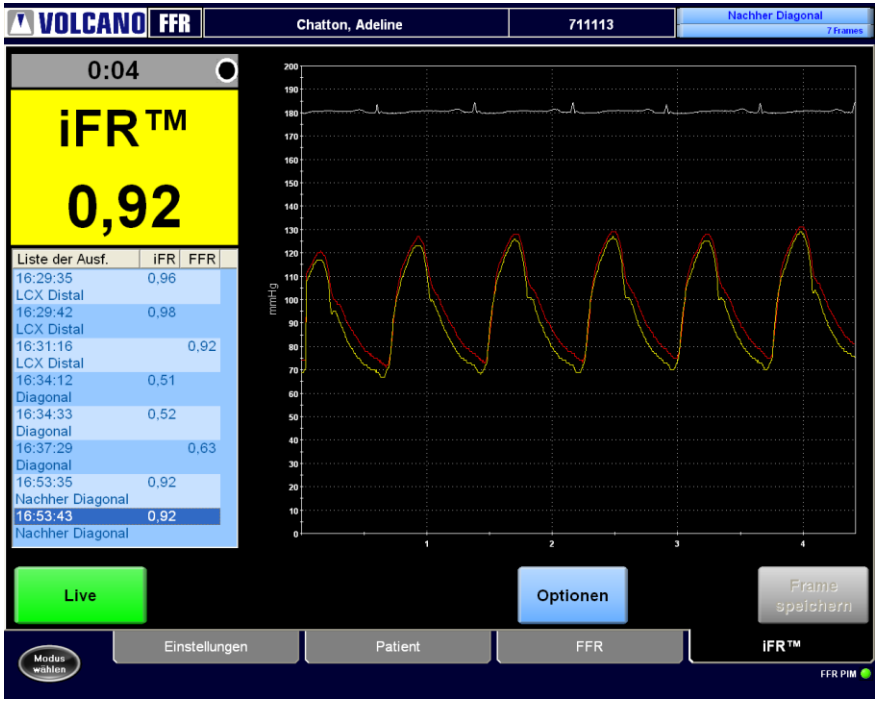
- Pressure wire in Rd

Diagonal Bifurcation PCI



- Pre Dilat: 2.5 X 20 mm
- DES 2.75 x 20
- DES 2.50 x 08

Angiographic result RIVA /Rd



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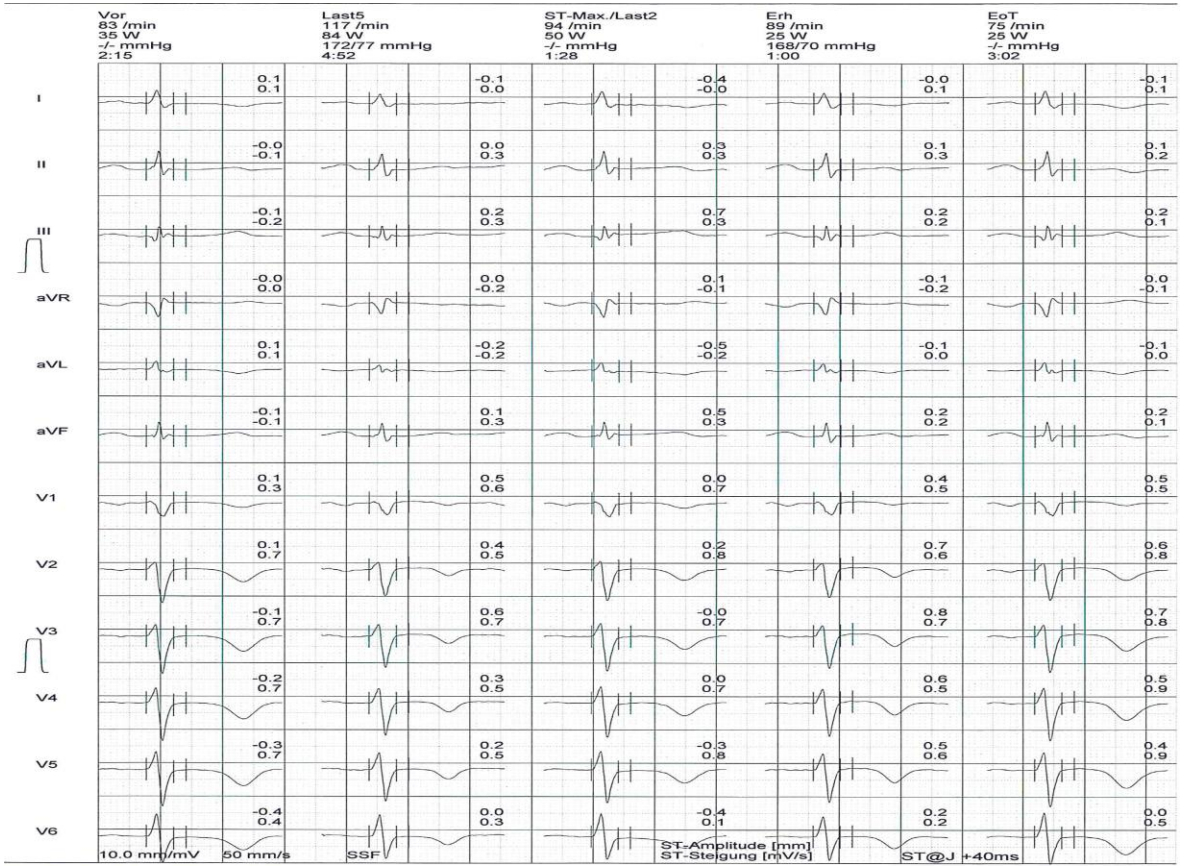
Follow up



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Follow up

- No cardiac limitation in the follow up
- Compromised by Polymyalgia rheumatica
- Medication:
  - Aspirin 100
  - Atorvastatin 40
  - Zestril 10
  - Vit.D3 and Calcium
  - Spiricort 20 mg

Conclusions

- Measurement of iFR in Real time is available on the console and simple to perform

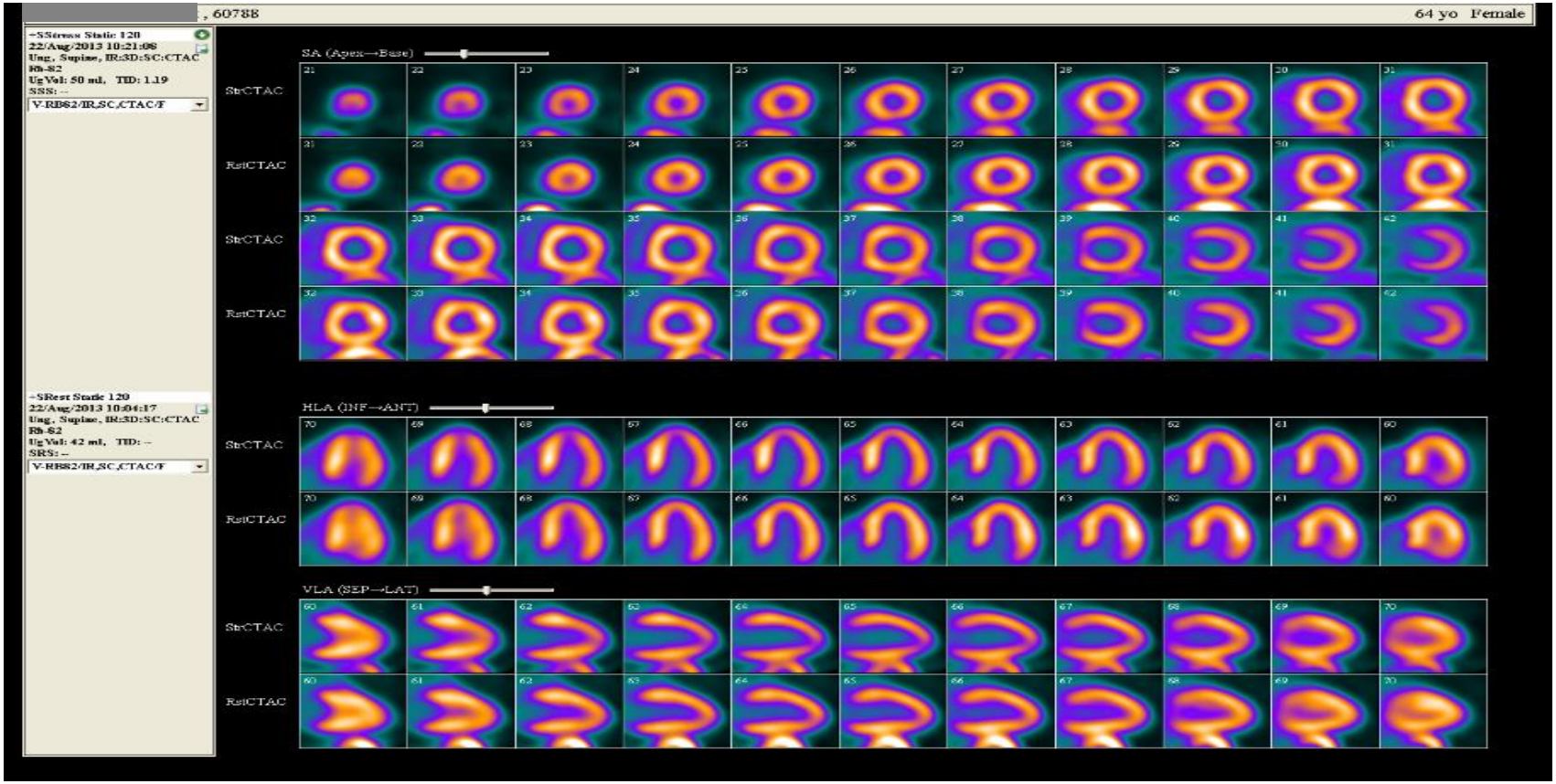
- The hybrid iFR-FFR approach, where adenosine is only used in the grey-Zone (0.86 <iFR<0.93) can save 60-70% of procedure to require adenosine while remaining accurate.

- ADVISE II and Syntax II will contribute to validate iFR in clinical practice and with clinical outcome result in MVD patient.

Case summary

- 64 yrs old female.
- DM 26 years on insulin.
- HTN 26 years.
- IHD mild to moderate lesions 2007.
- NYHA class II-III
- HbA1c 10.5
- LDL 1.3, HDL 1.28
- Cr 87
- ECG LBBB
- EF > 55%.
- Mild-moderate MR.
- PET stress: mild anterior wall ischemia, TID 1.19.

PET stress



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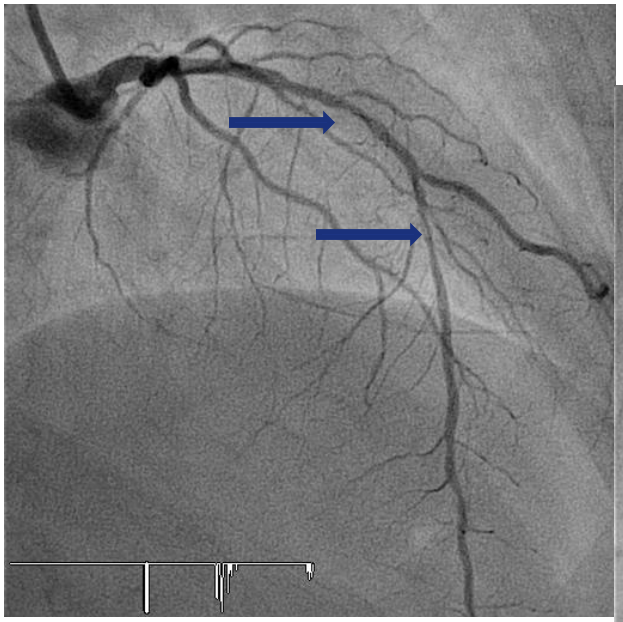
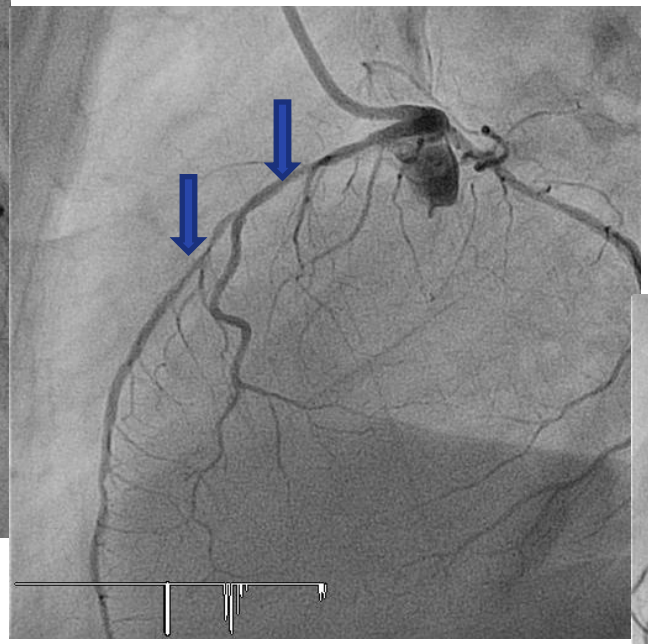
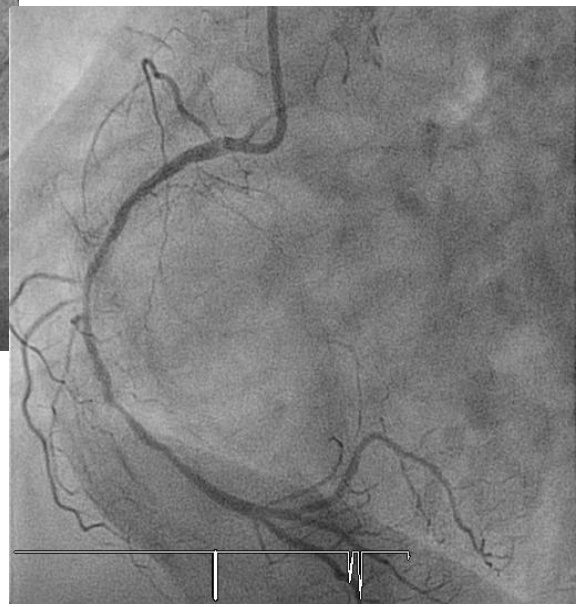
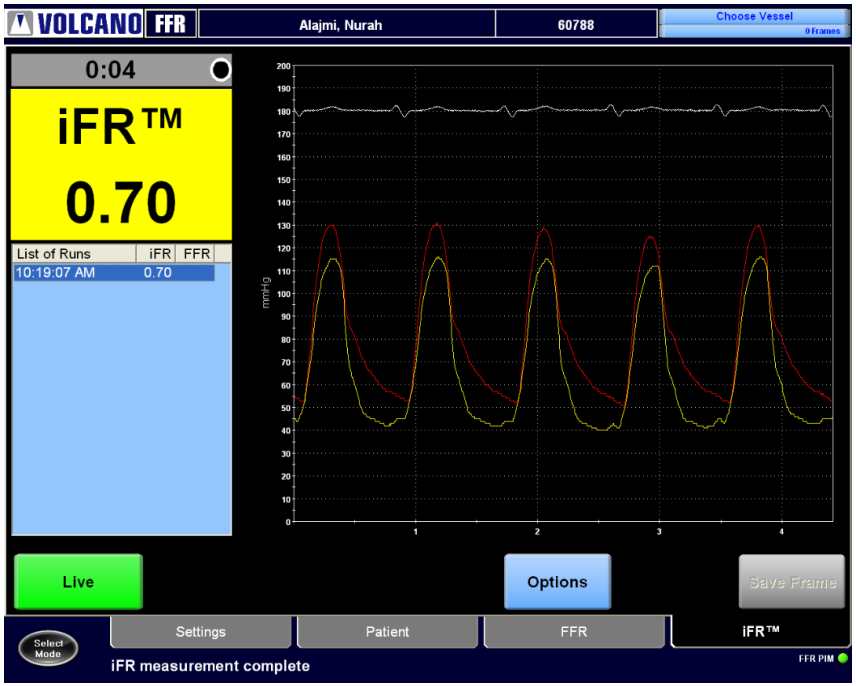
Coronary angiogram

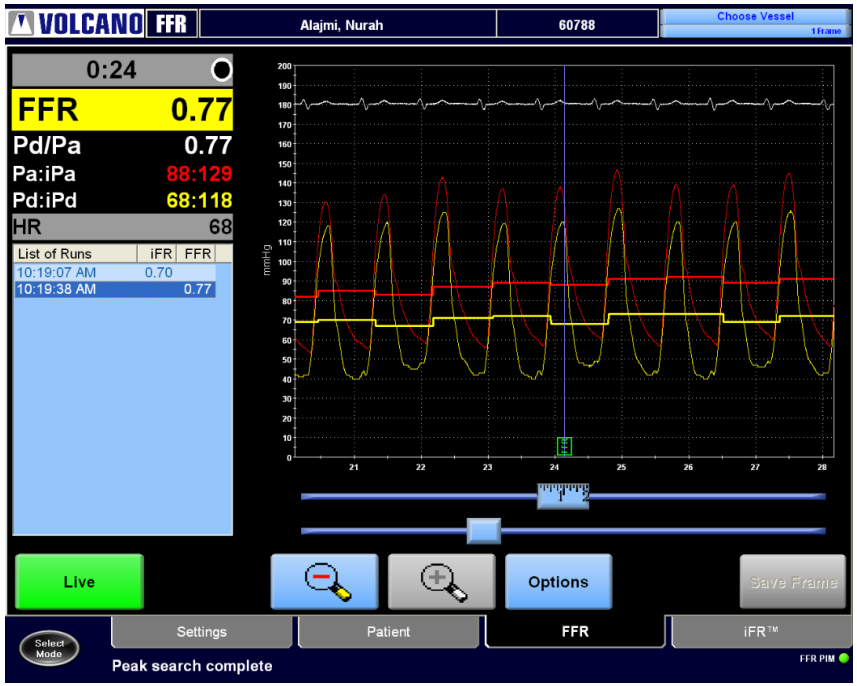






iFR/FFR LAD
IV adenosine 140 mcg/kg/min through RFV





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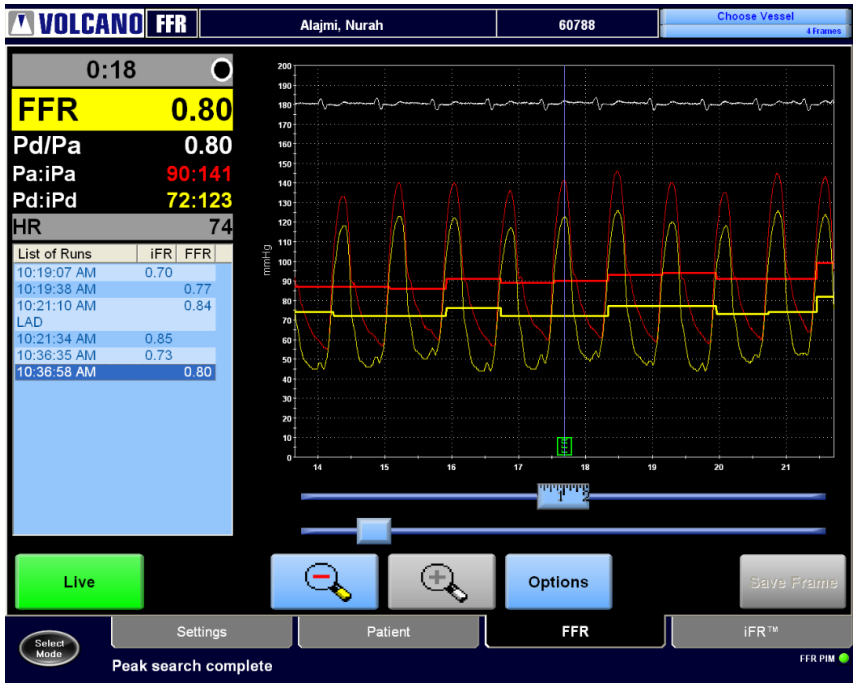
Mid LAD stented
iFR/FFR after stenting mid LAD



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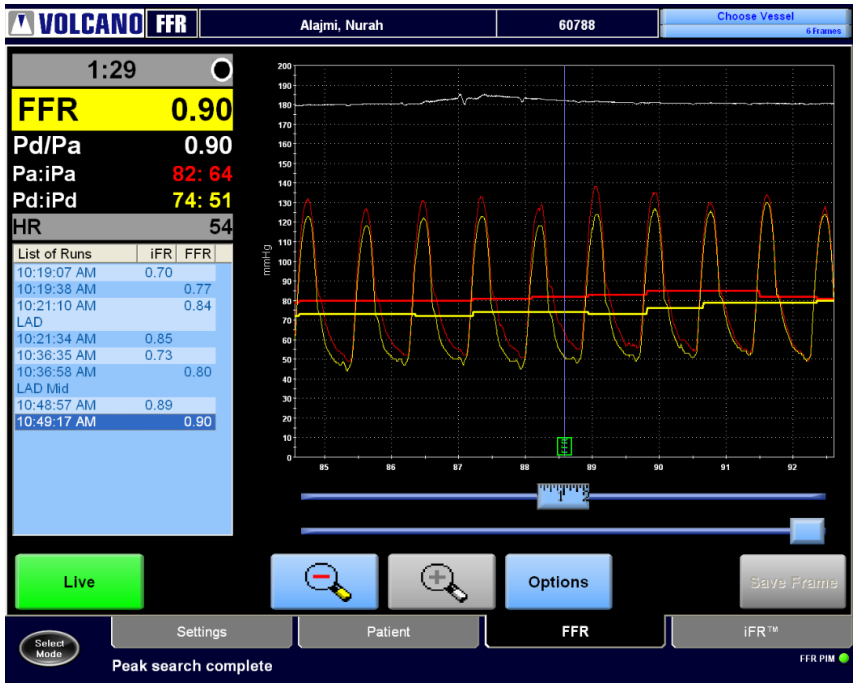
Proximal LAD stented
iFR/FFR after stenting proximal LAD



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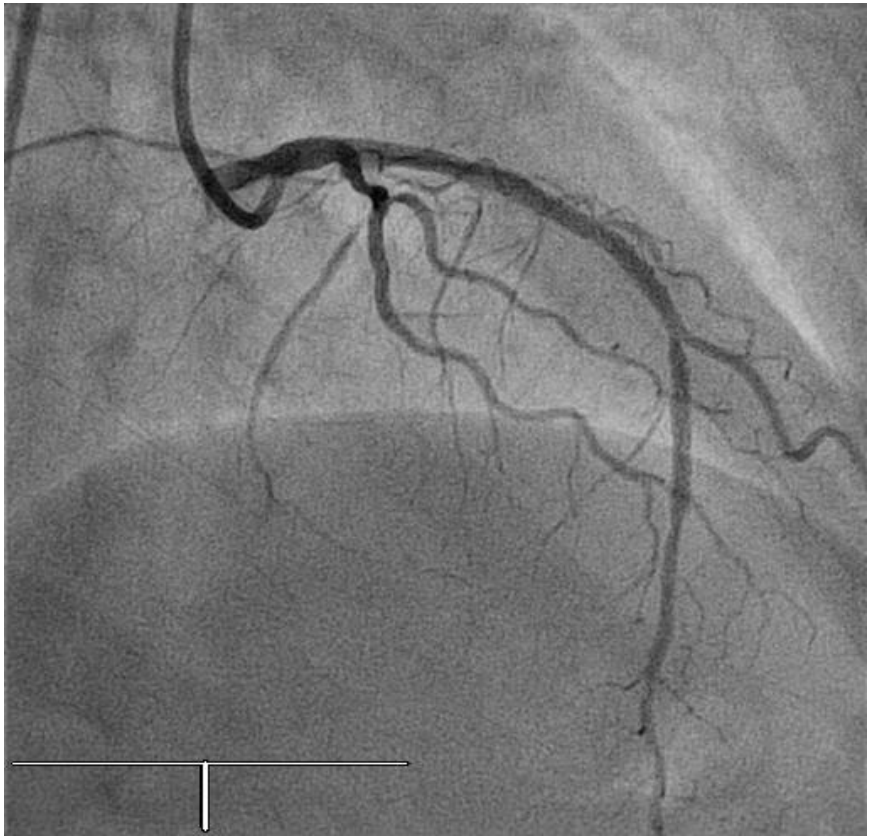
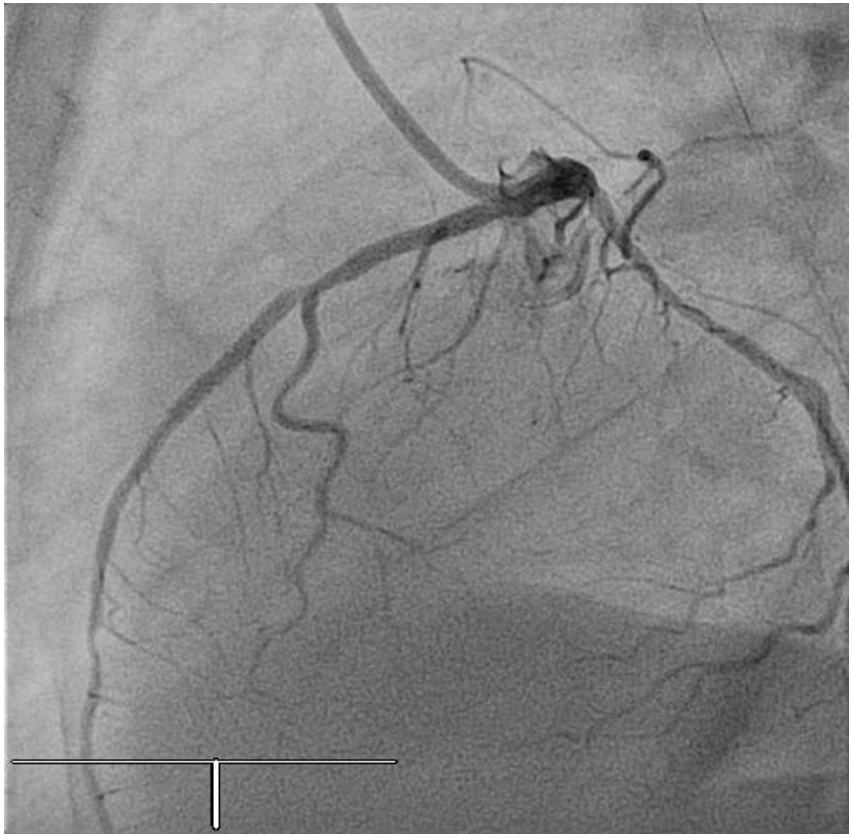
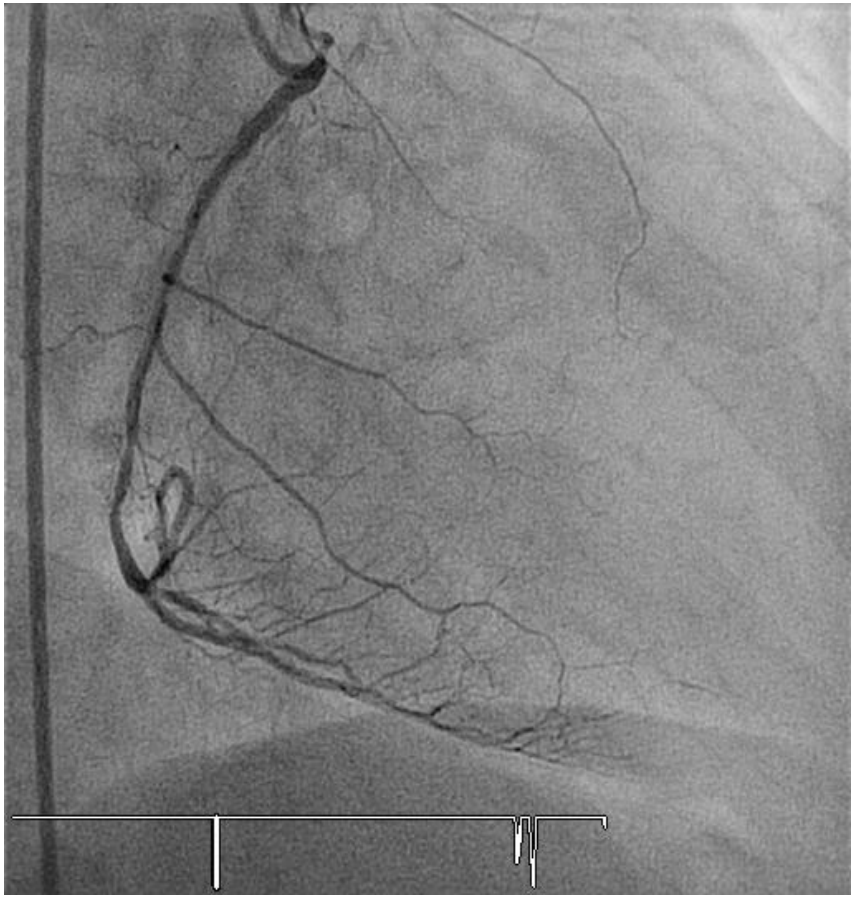
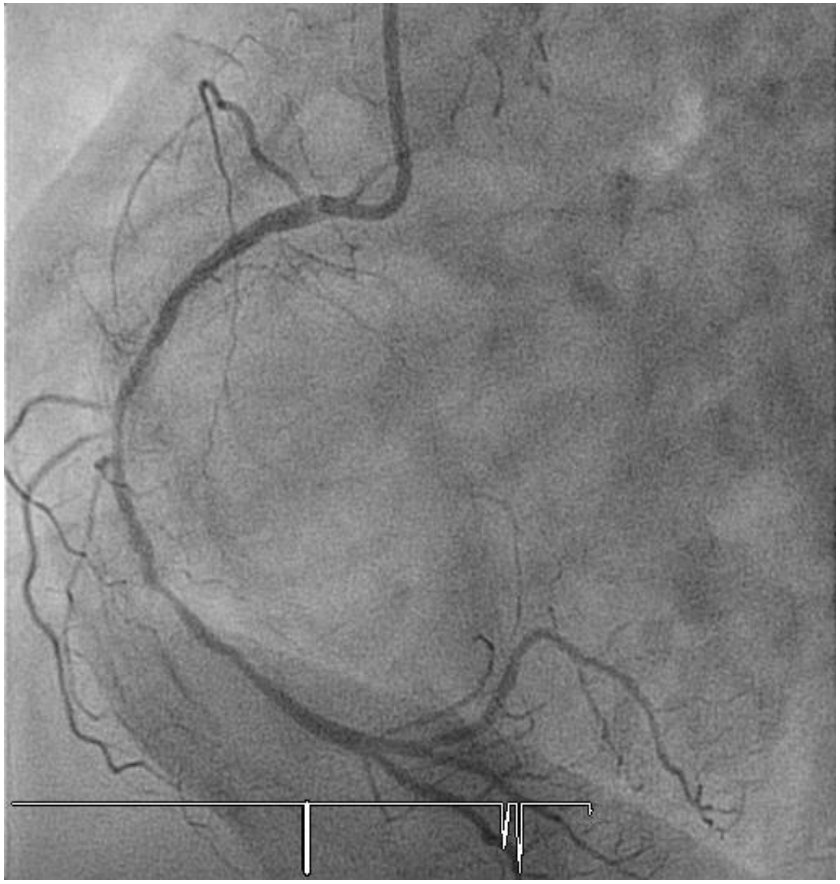
Final result





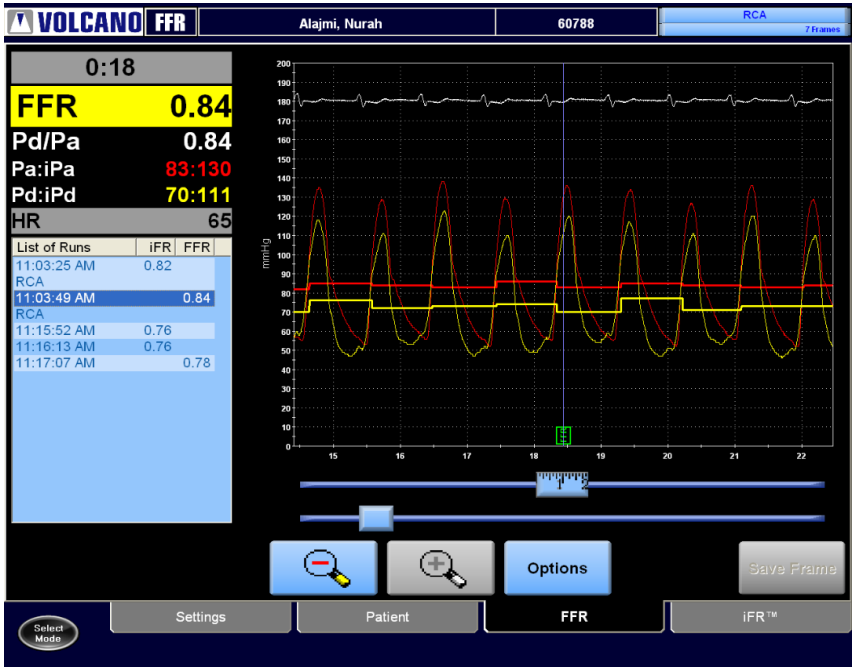
RCA





iFR/FFR RCA

Adenosine IV through RFV
140 mcg/kg/min



iFR support intervention, while FFR is not?
Is the patient respond to adenosine adequately or not?

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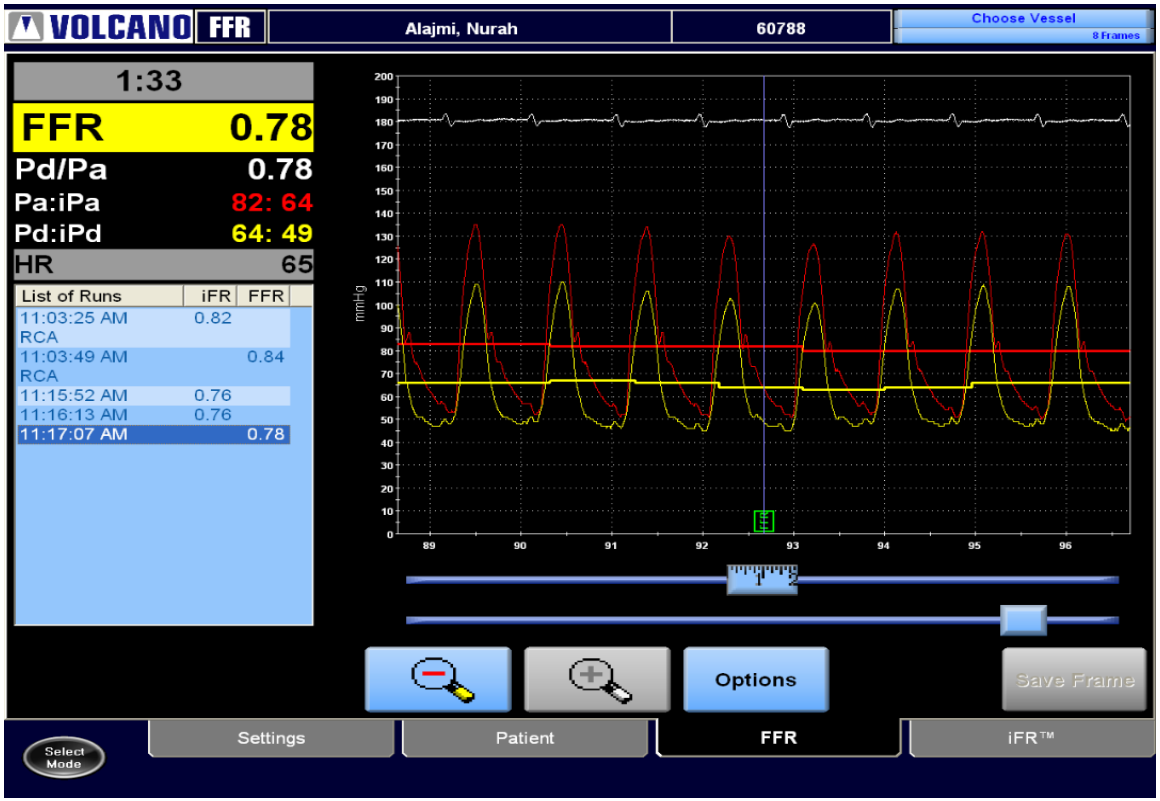
FFR RCA
Papaverine 10 mg IC



Based on iFR/FFR PCI to RCA was done.

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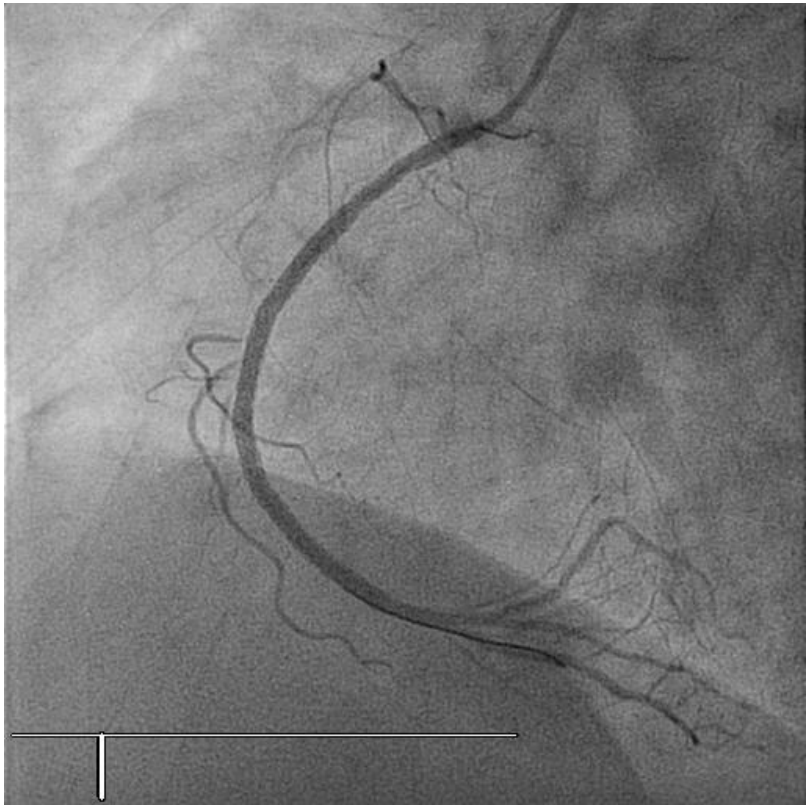
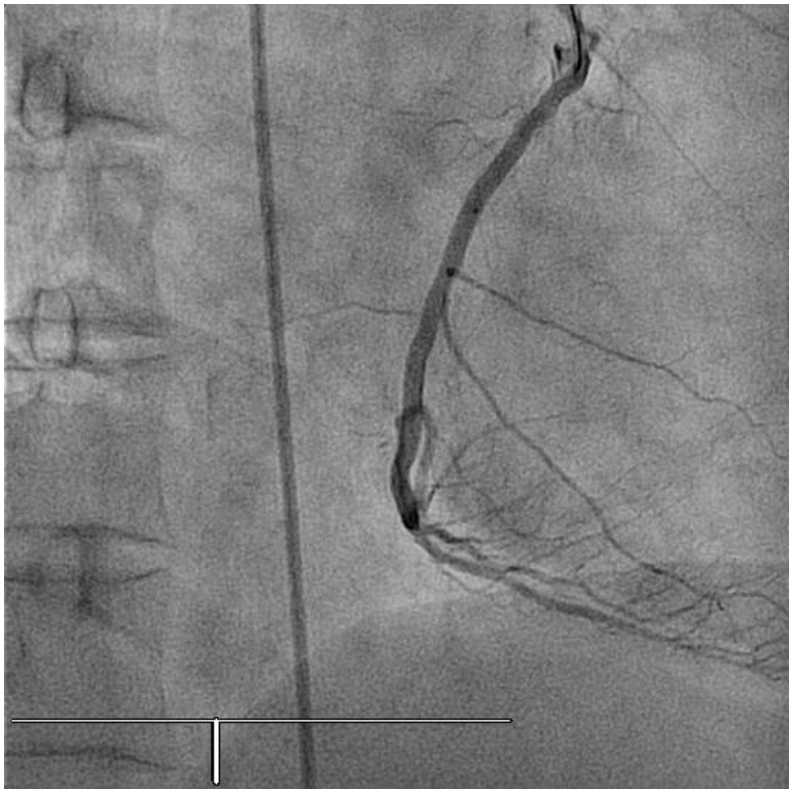
Final result

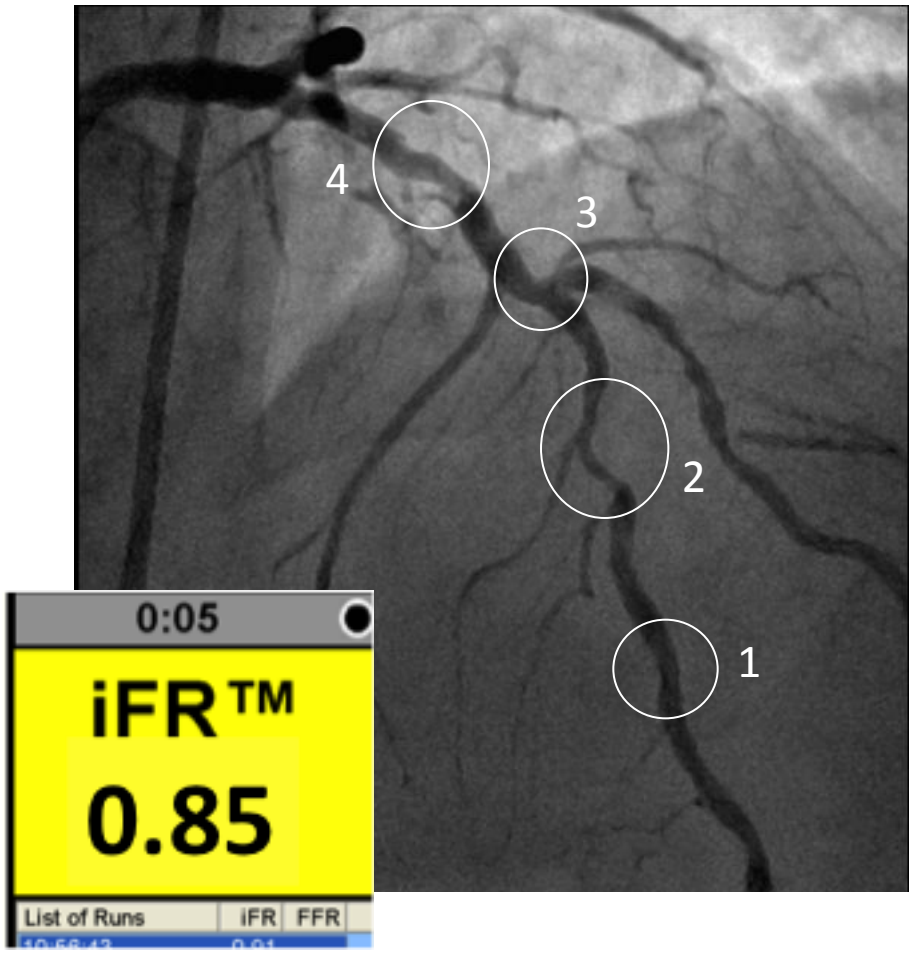




Conclusion

- In patients who are not responding or low responder to adenosine, iFR was positive, and helped to avoid leaving a significant lesion without intervening.
- Is low iFR value more accurate than FFR??? This case suggest that.

The Future



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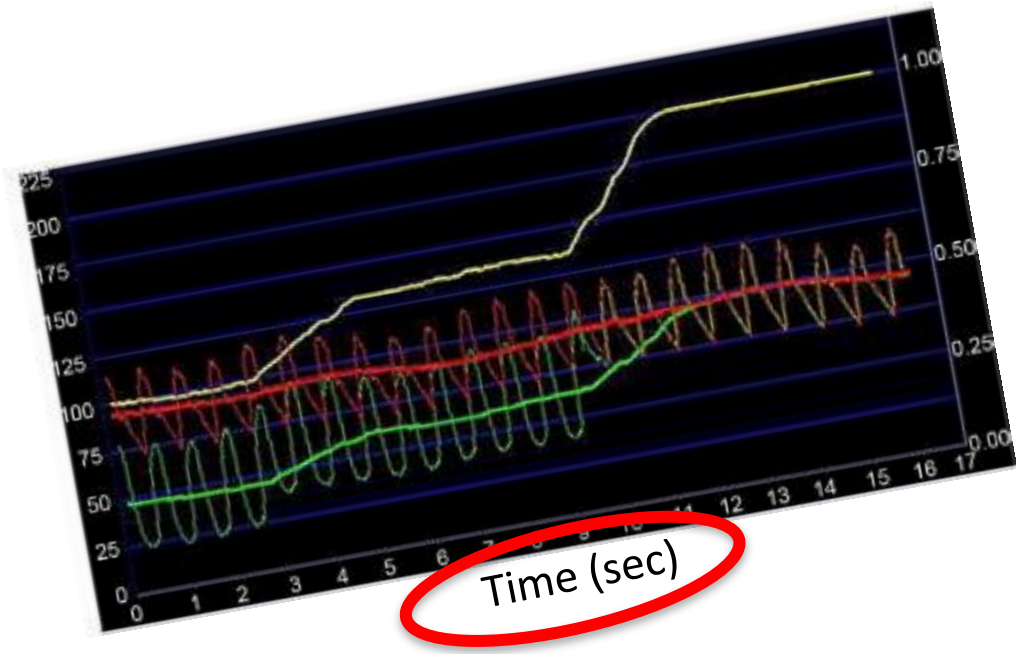
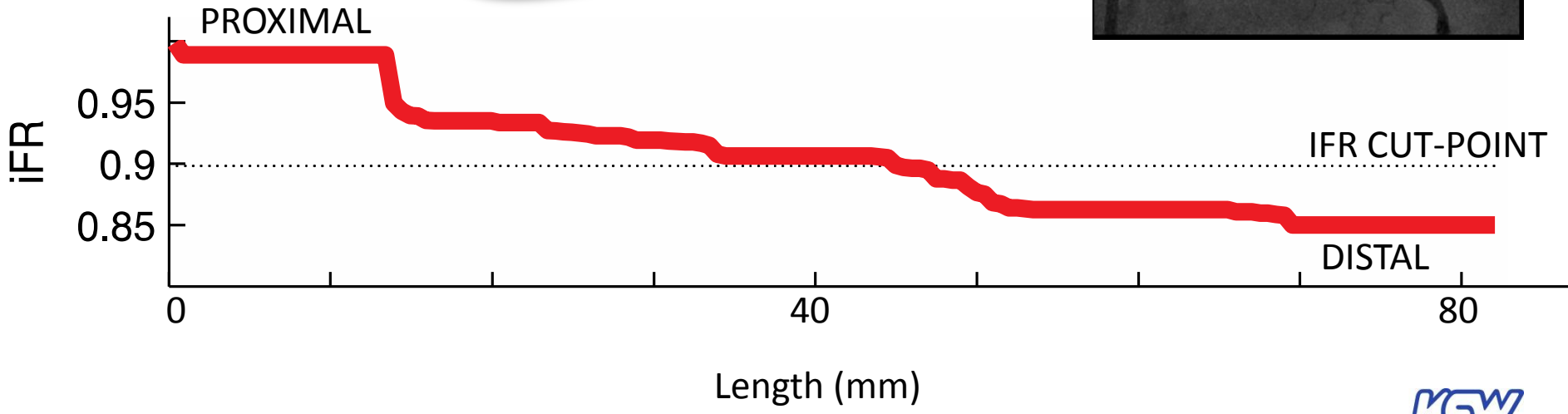
iFR pullback stenosis mapping





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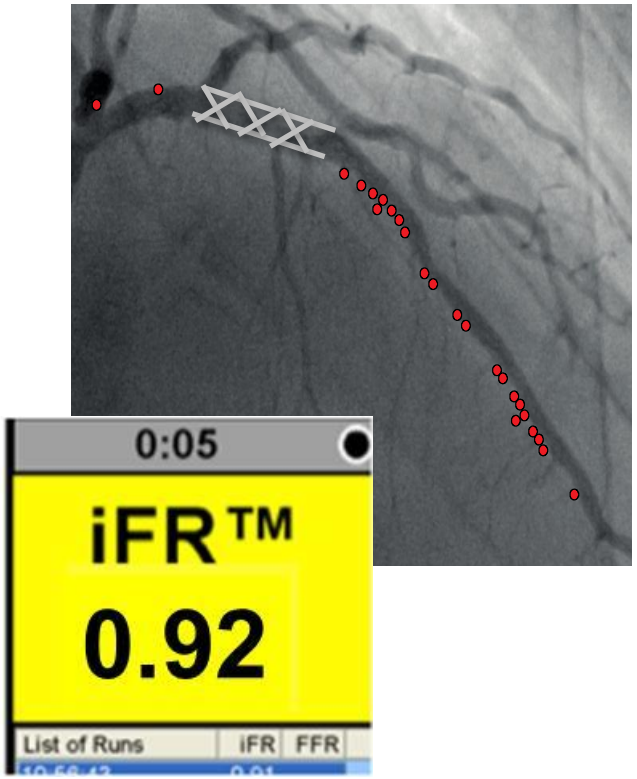
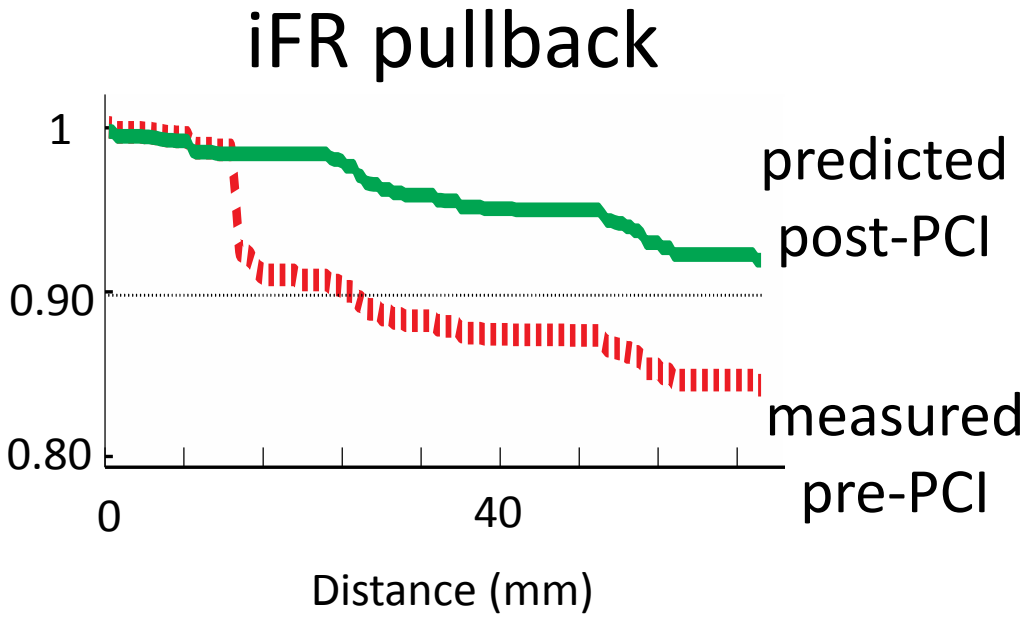
Using iFR pullback plan PCI strategy





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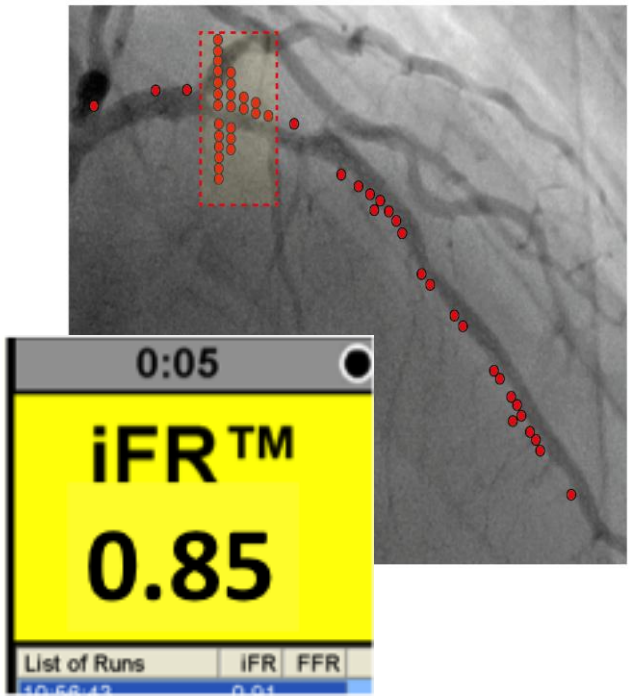
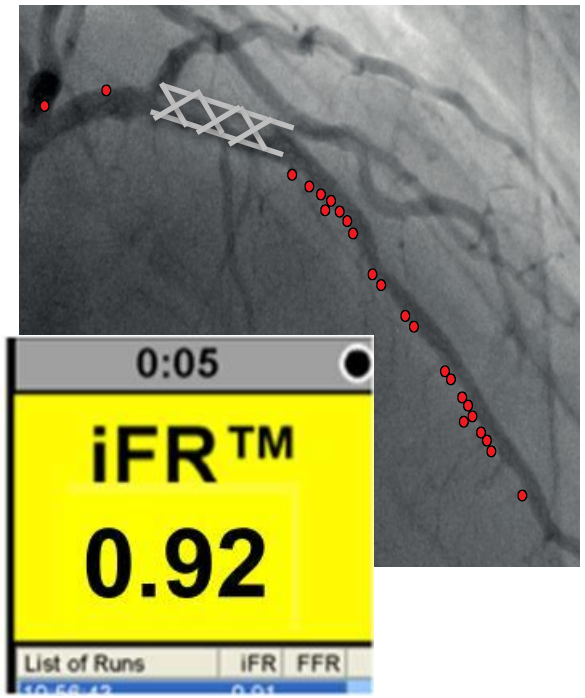
Using iFR to perform Virtual PCI

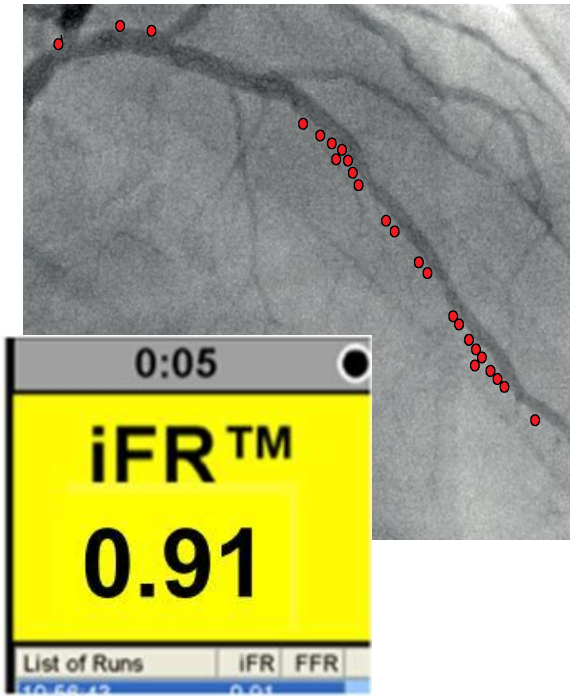
PRE-PCI
(MEASURED)



VIRTUAL PCI
(PREDICTED)



POST-PCI
(MEASURED)



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Thank You

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