

APPLICAZIONI DELL'INTELLIGENZA ARTIFICIALE IN EMODINAMICA.

IVUS, OCT, FFR e QFR.

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Ospedale Pio XI, Desio

ASST Brianza

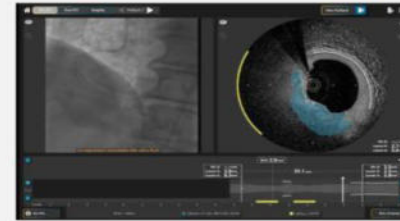
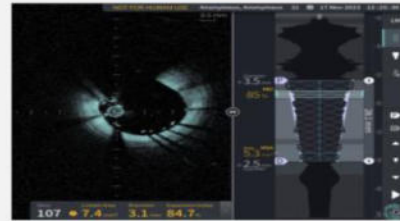
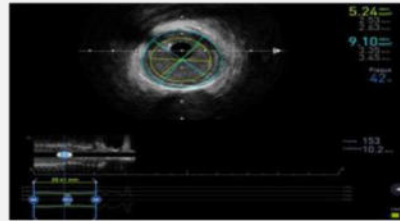
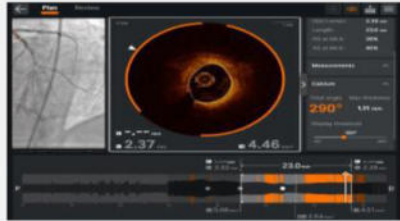
23 aprile 2026

Intelligenza artificiale in Emodinamica

Intravascular Imaging

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Artificial Intelligence

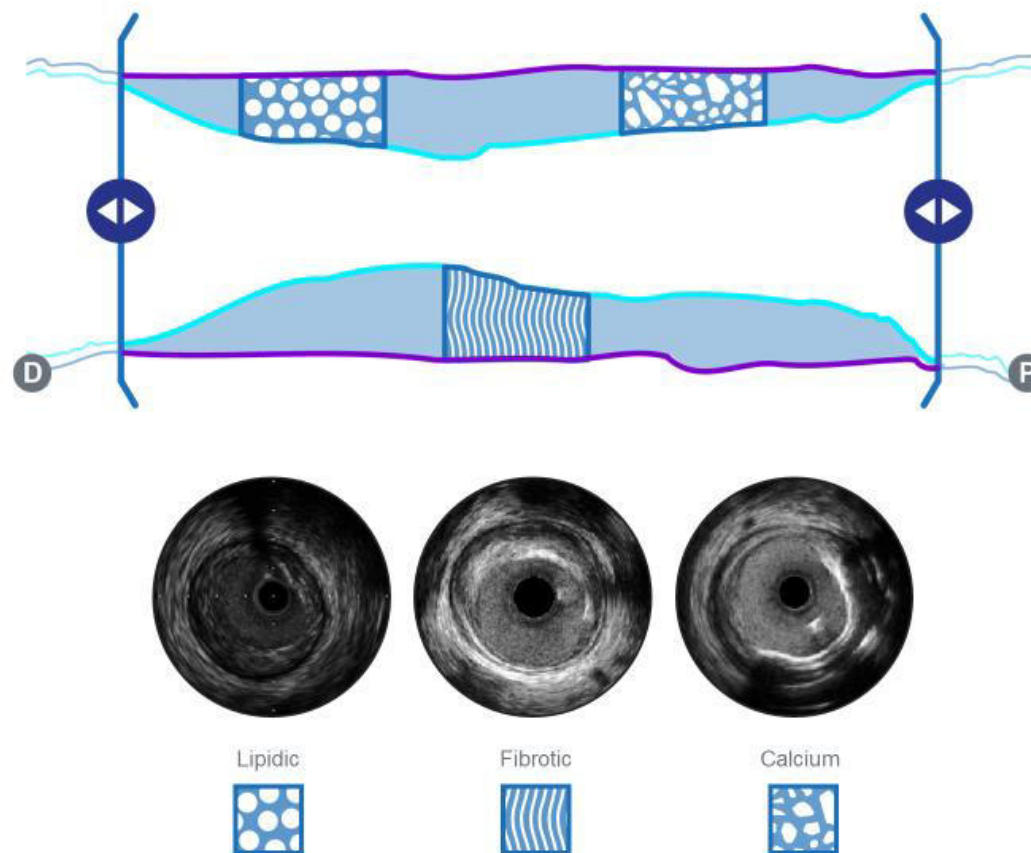


- Automated vessel, lumen, and stent detection
- Automated calculation of vessel, lumen size, and plaque burden
- Automated calcium and lipid assessment

- Facilitate image interpretation and streamline PCI procedures
- Enable precise decision-making and support operators

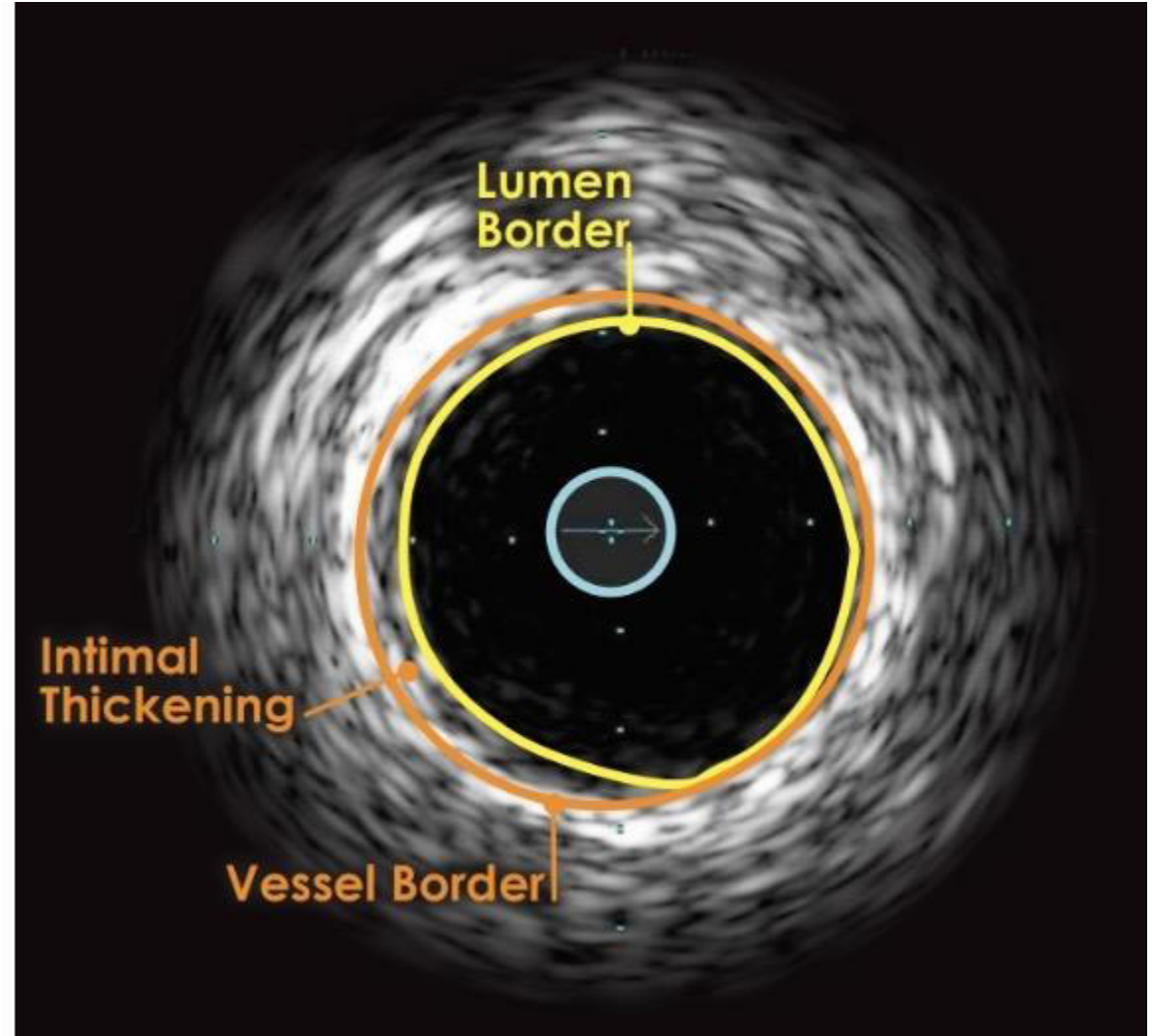
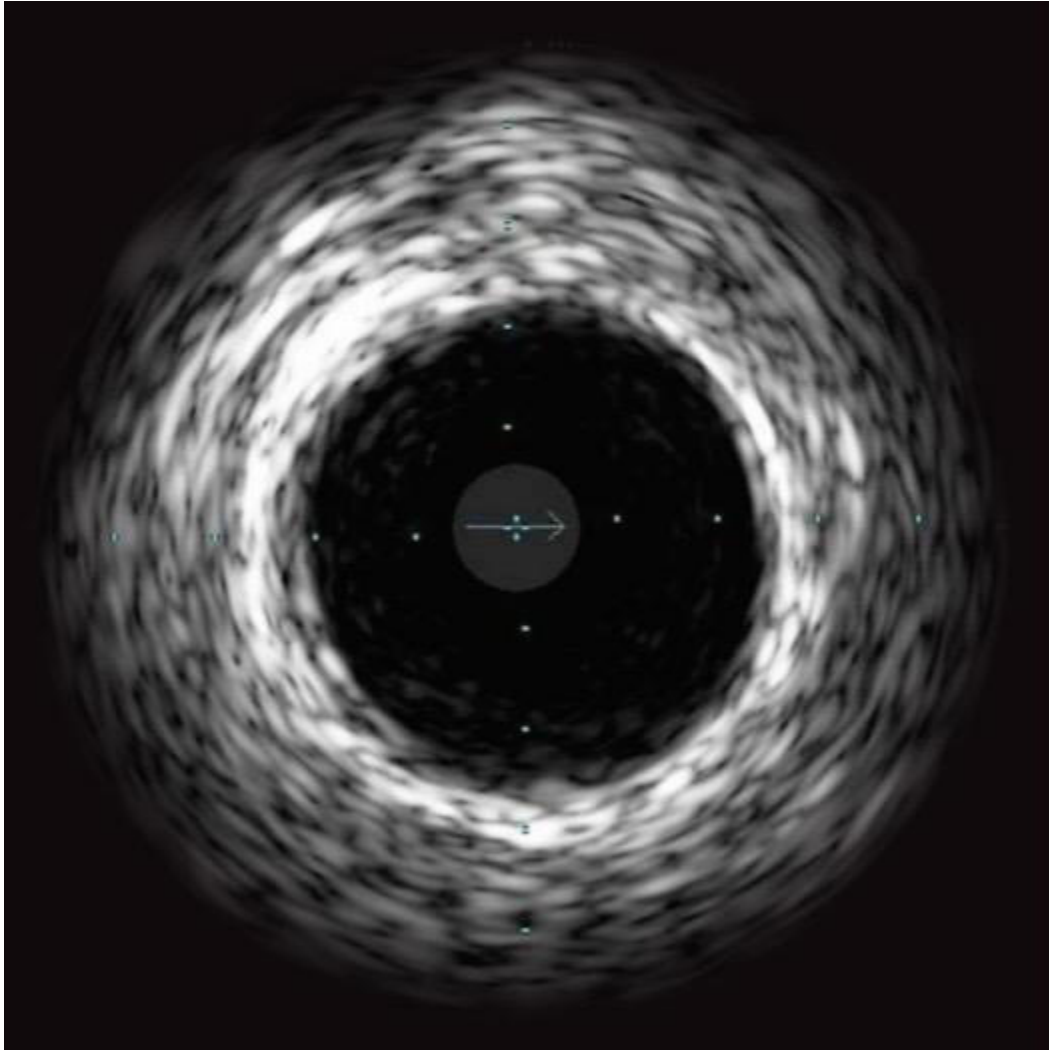
- Increase the adoption of intravascular imaging
- Improve PCI results and patient outcomes

Define the plaque morphology: lipidic, fibrotic, calcium.

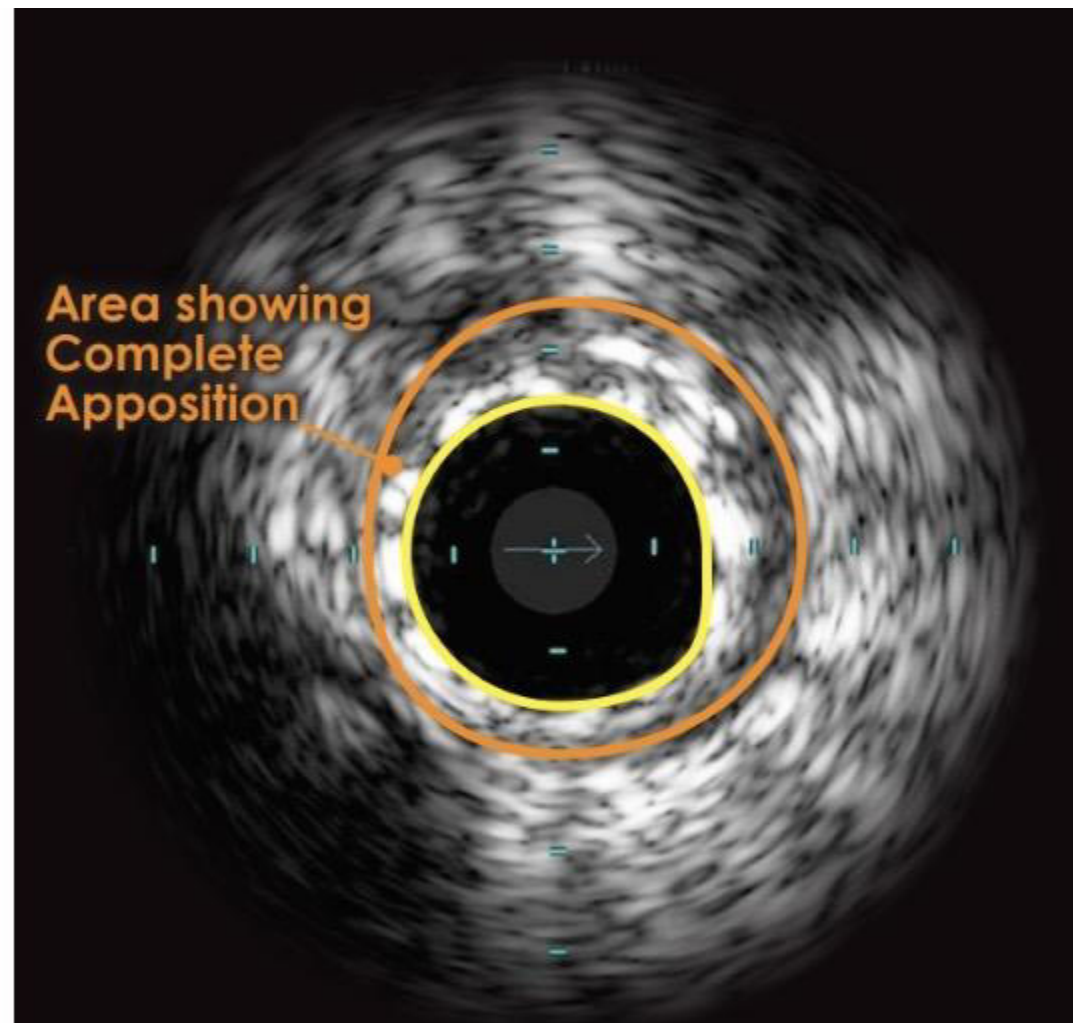
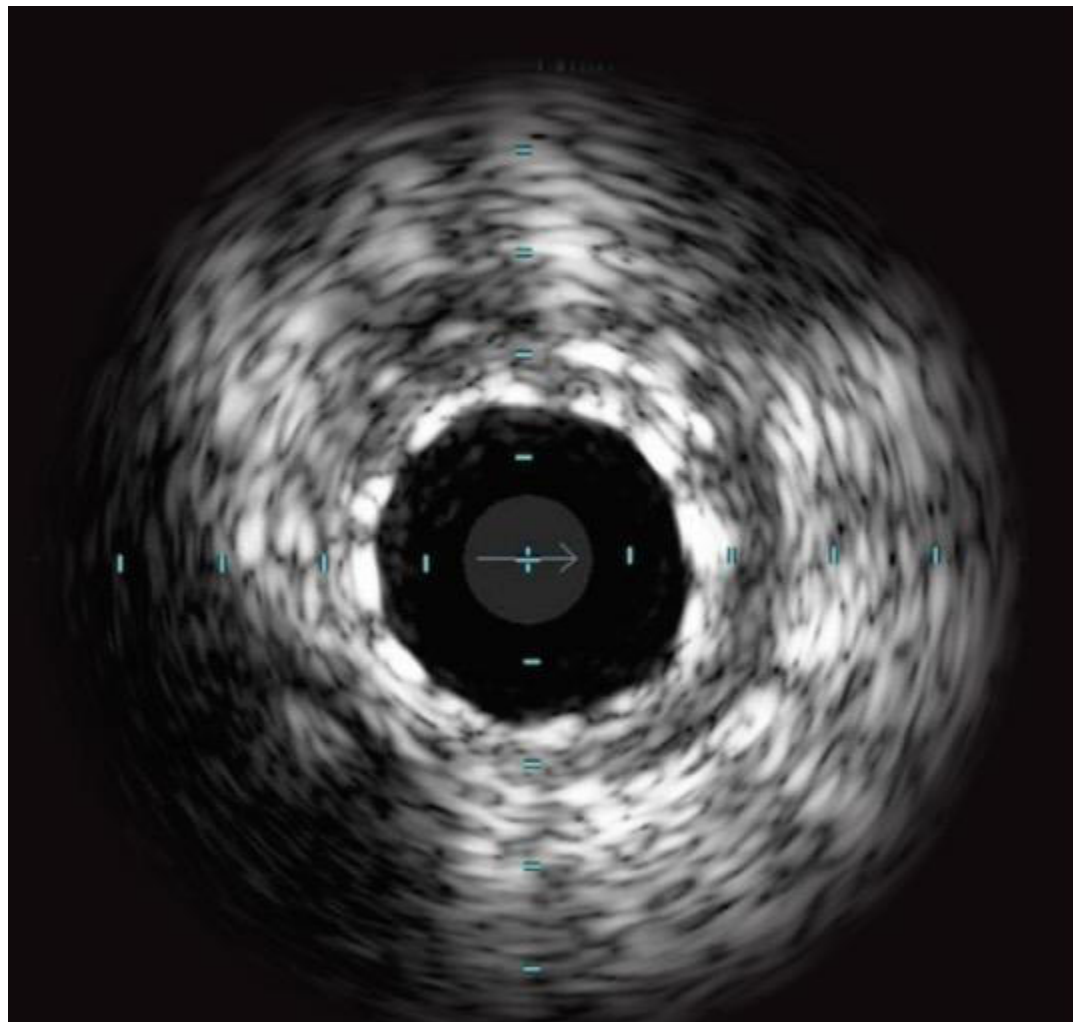


Differing plaque morphologies drive modification device selection strategies.

Example: Native Vessel.

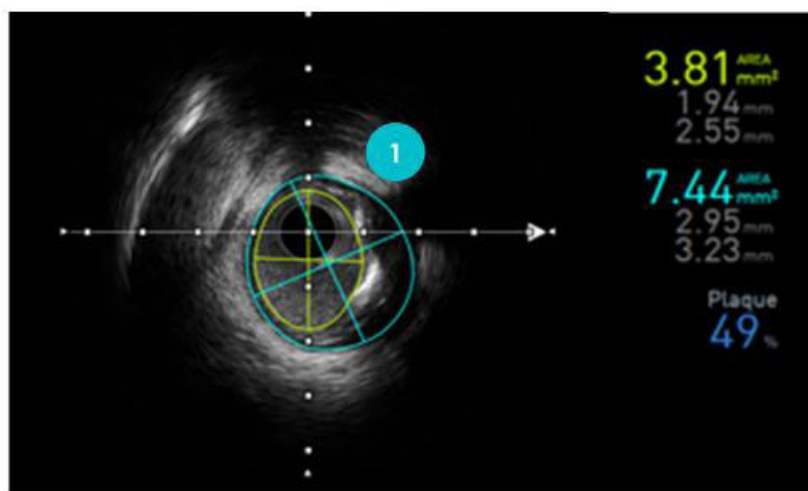
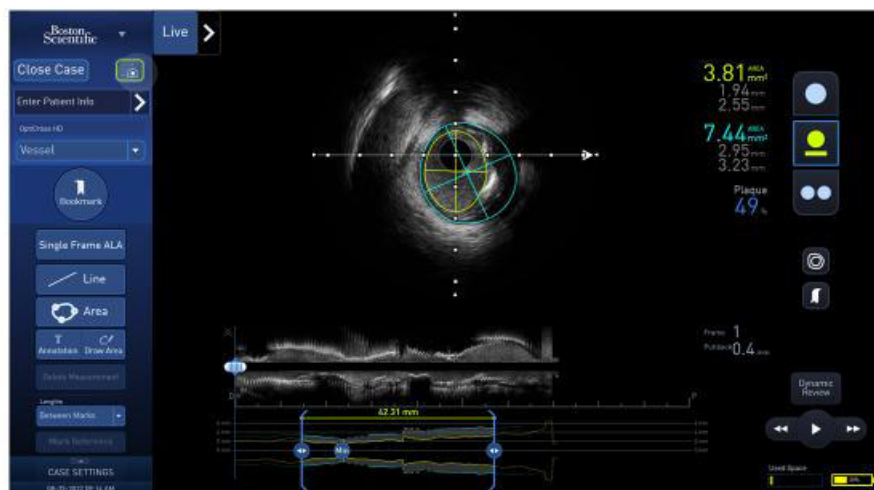


Example: Stent with complete apposition.





Automated Lesion Assessment leverages the power of machine learning to automatically deliver key measurements and borders, with a high degree of accuracy



1 Vessel and Lumen Borders

Vessel and lumen borders on every frame

Vessel area, lumen area and diameter measurements on every frame

2 Vessel Profile

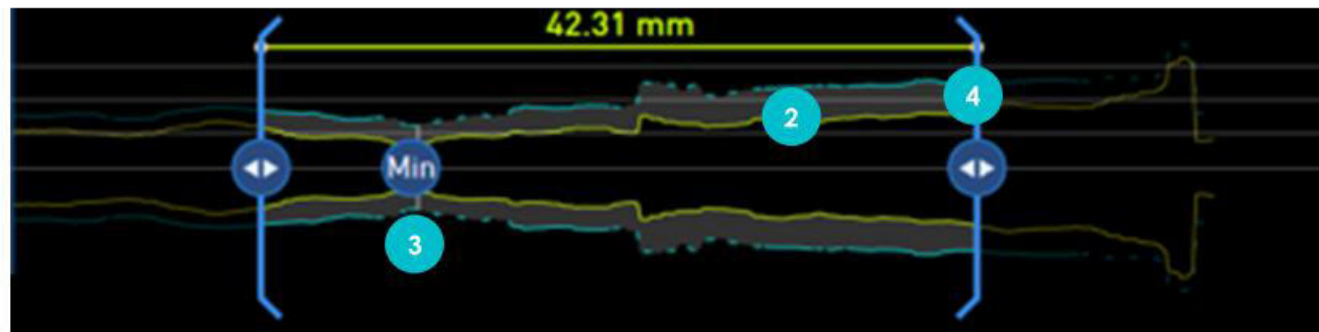
Graphical representation of the average vessel and lumen diameters

3 Min Key Frame marker

Minimum lumen area in IVUS run

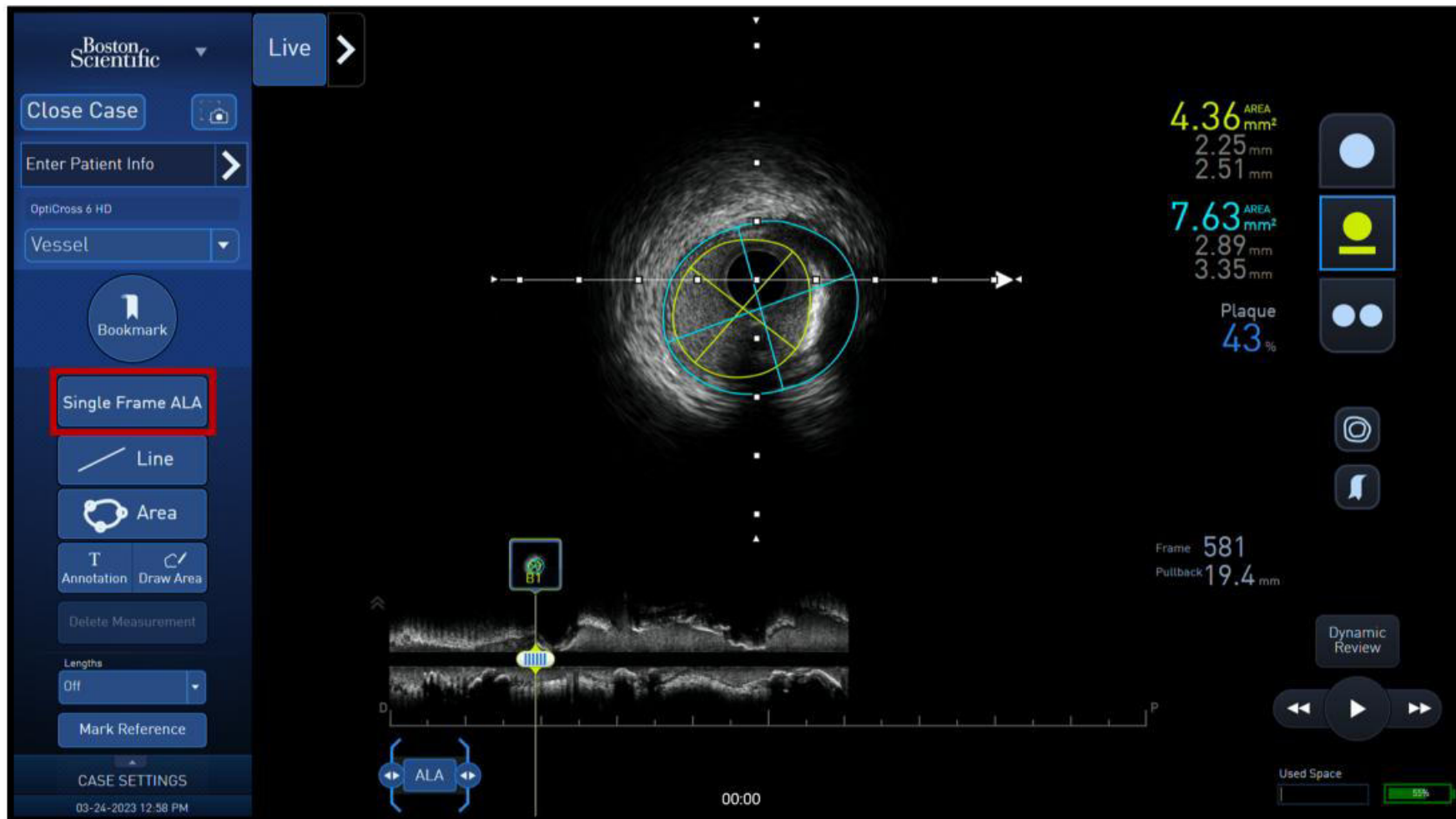
4 Distal & Proximal Key Frame markers

Proximal and distal key frame markers represented at 50% or less plaque burden from minimum frame





Single Frame ALA provides vessel and lumen areas on a single frame if ALA has not been applied to the entire run

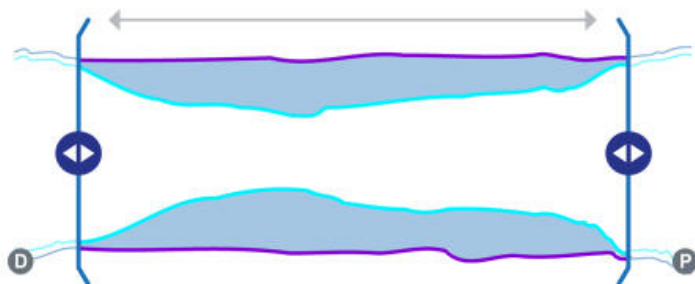


*If ALA borders have been edited, Single Frame ALA will return the borders to the ALA algorithm position

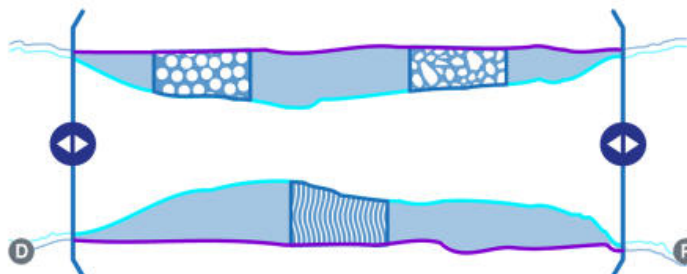
IVUS 123 helps users apply IVUS information systematically before and after stent implant to improve patient outcomes.

PRE-PCI WORKFLOW

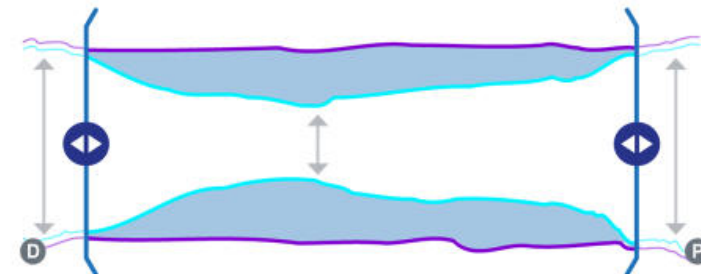
Distance



Definition

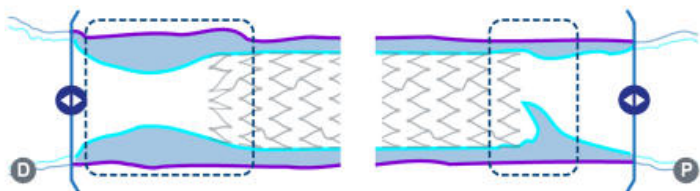


Diameter

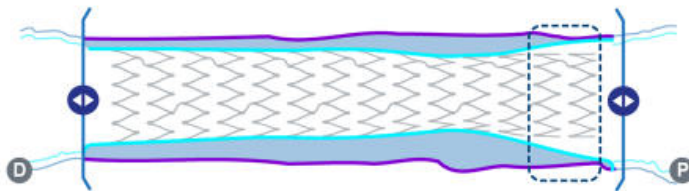


POST-STENT WORKFLOW

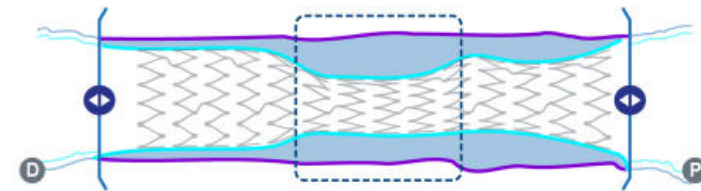
Stent Edges



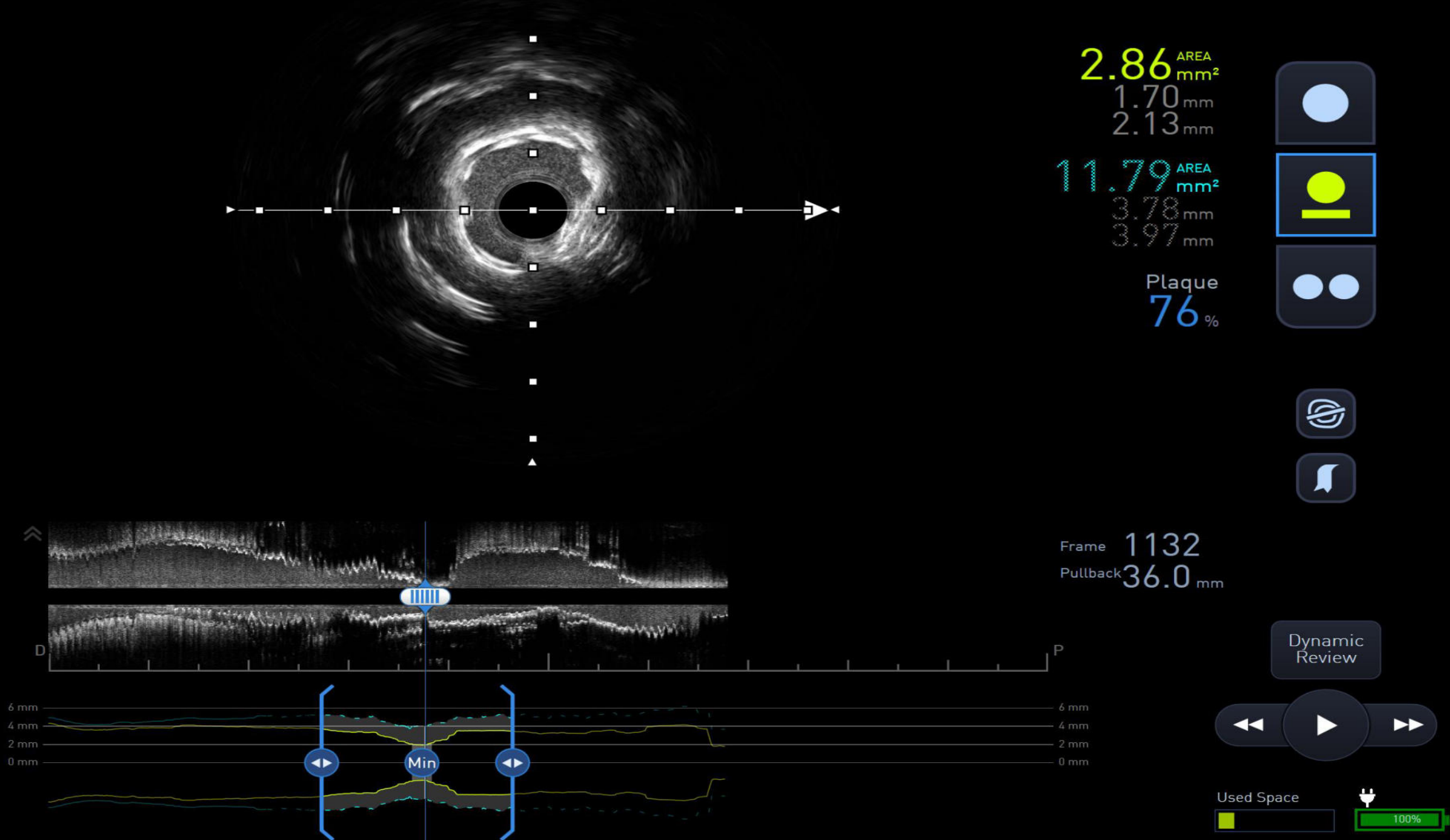
Stent Apposition



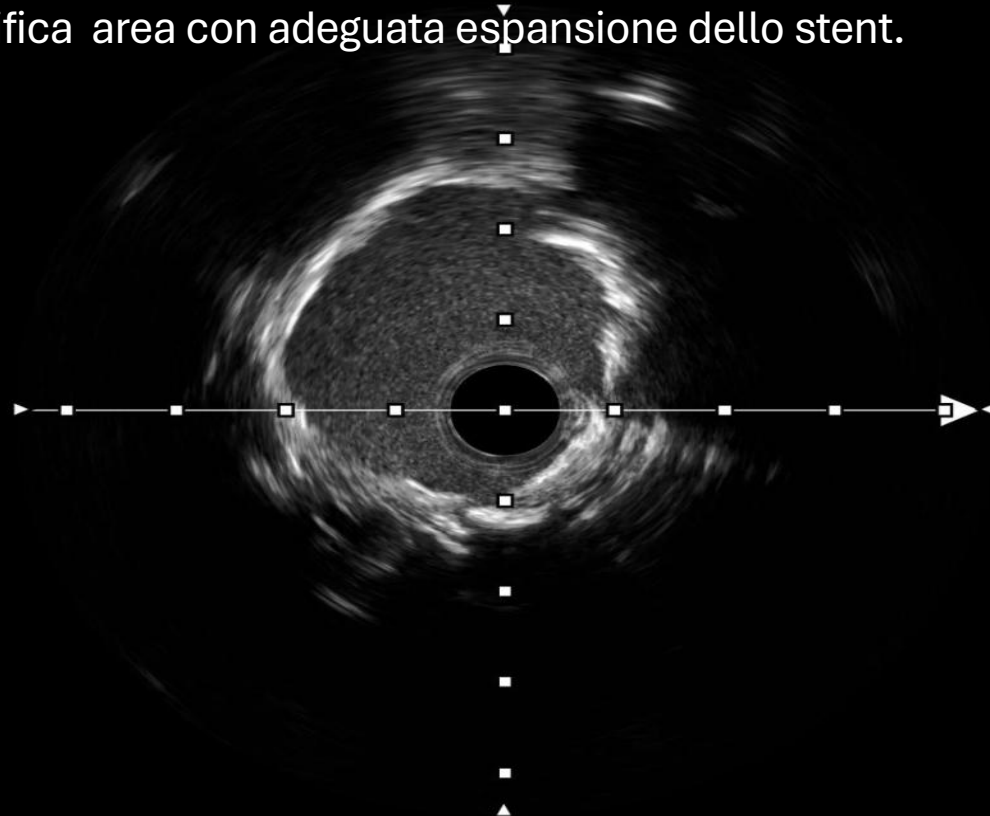
Stent Expansion



L'IA evidenzia una minima area dello stent, indicativa di franca sottoespansione su lesione calcifica concentrica.”



Post PCI, l'IA identifica area con adeguata espansione dello stent.



7.48 AREA
mm²

2.83 mm

3.35 mm

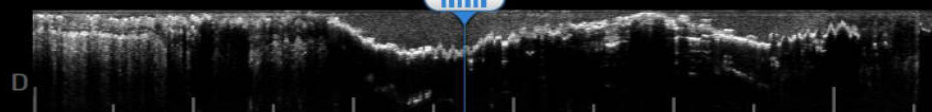
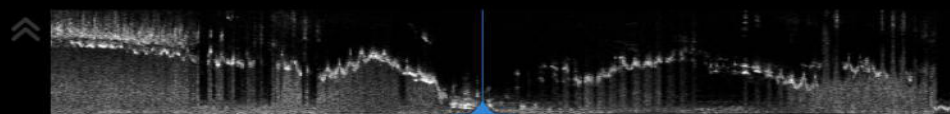
17.96 AREA
mm²

4.66 mm

4.91 mm

Plaque

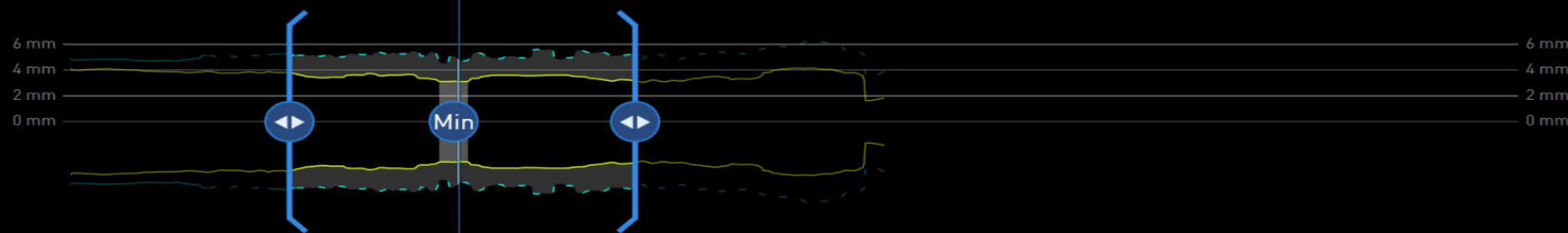
58 %



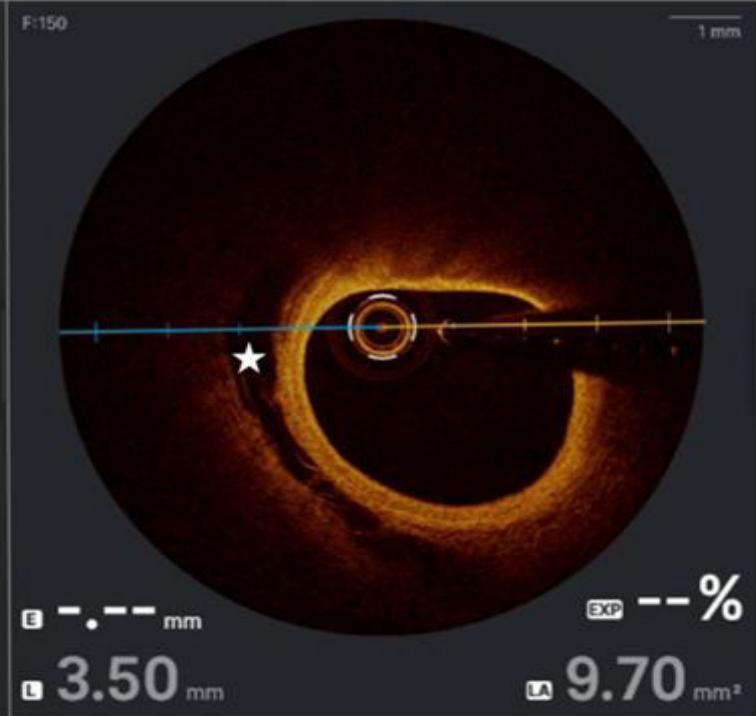
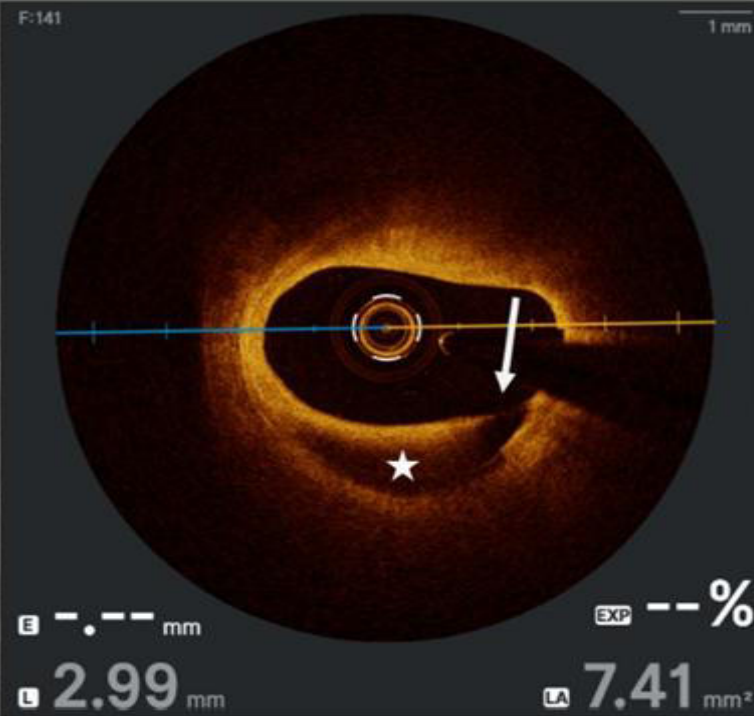
Frame 810

Pullback 26.0 mm

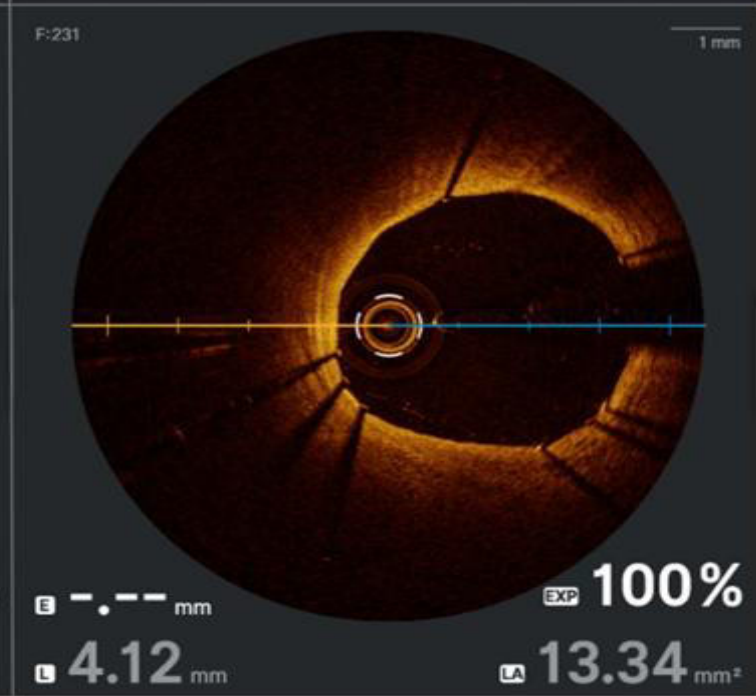
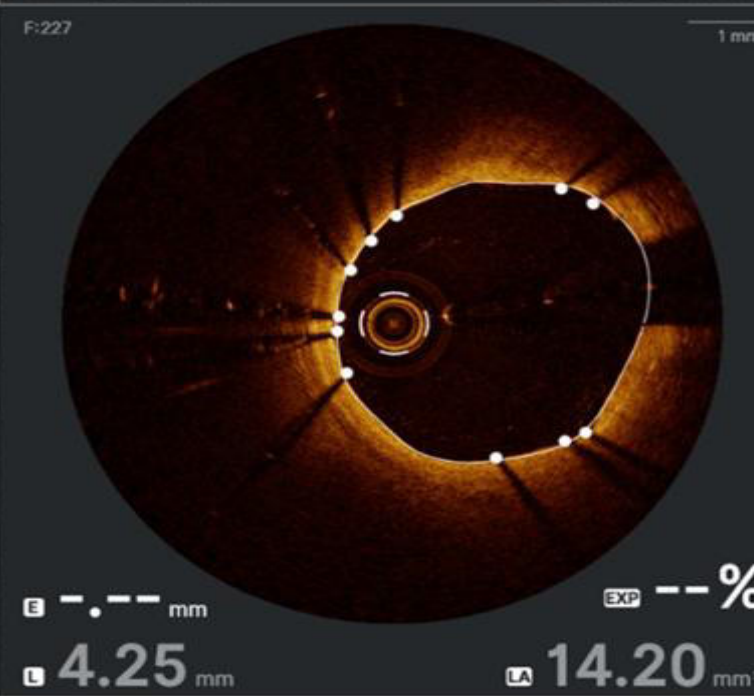
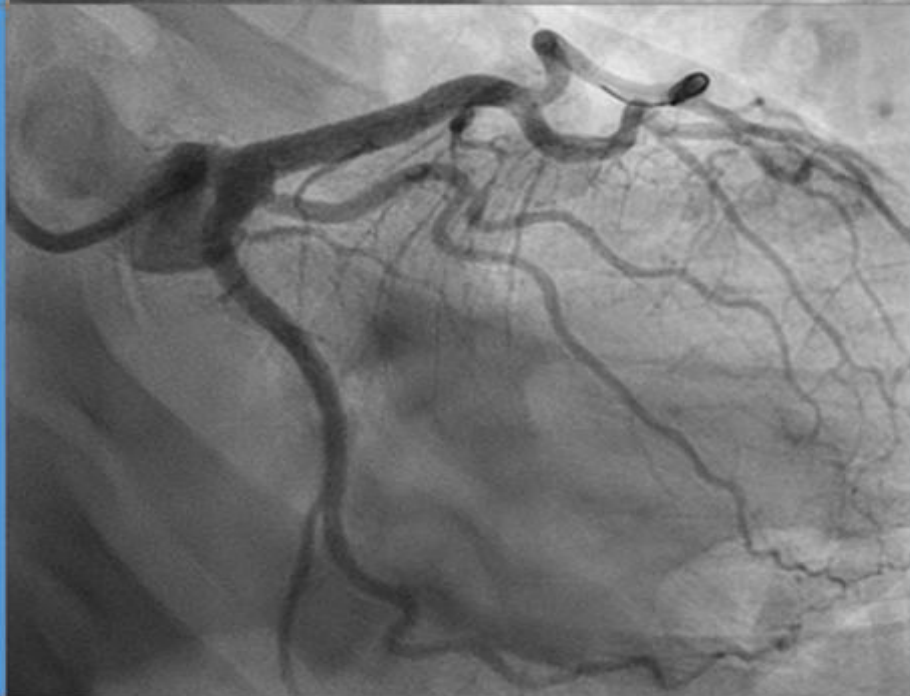
Dynamic
Review



Baseline



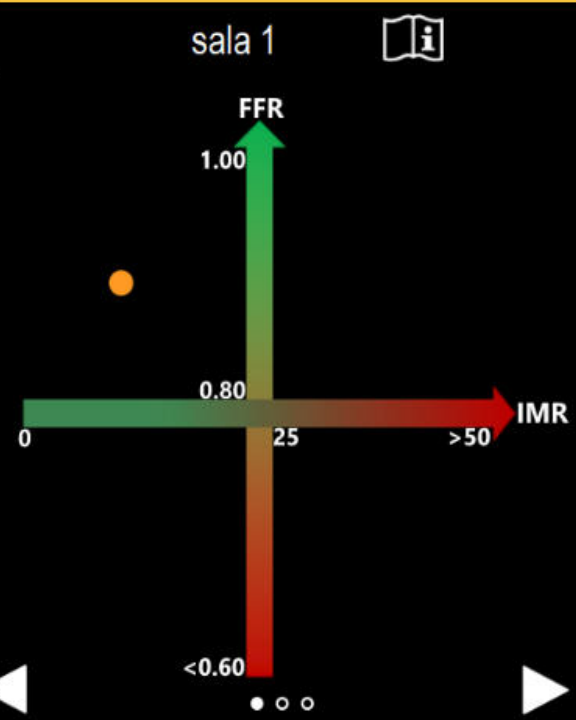
Post-PCI



Studio angiografico che evidenzia ateromasia moderata di IVA prossimale in paziente sintomatica per angina.



1081620
14.05.1969
17.02.2026



Coroventis

1920 x 1080 8 Bit

FFR

0.90

54 Pd

59 Pa

Zoom 81%

WC 127 WW 255

Pd/Pa

0.92

61 Pd

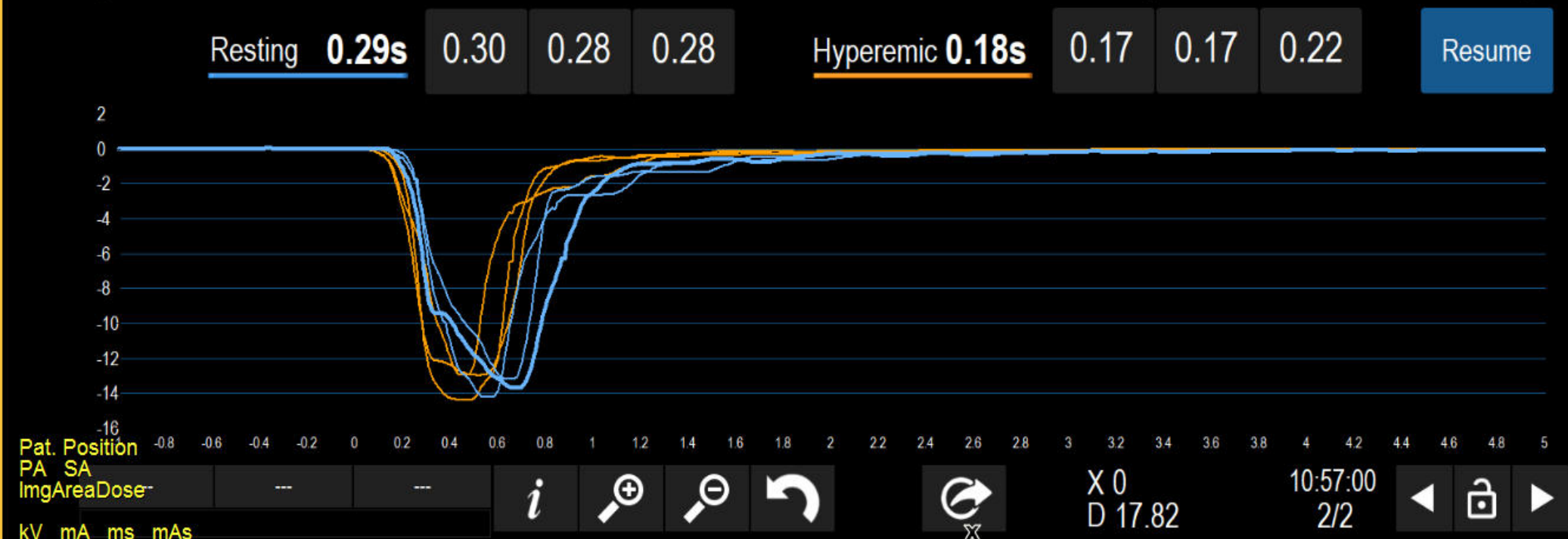
66 Pa

CFR

1.6

IMR_{Corr}

10

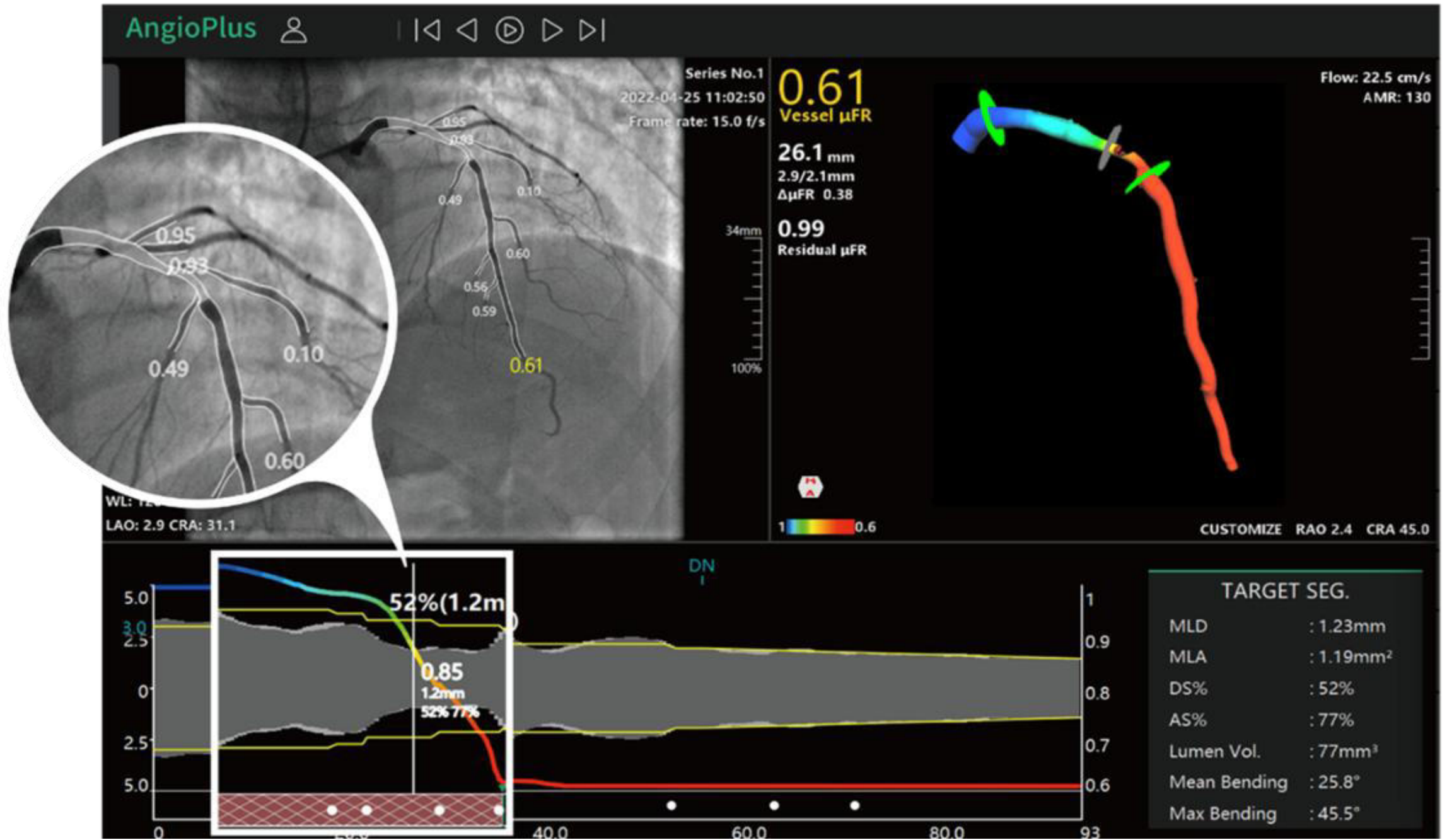


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Live

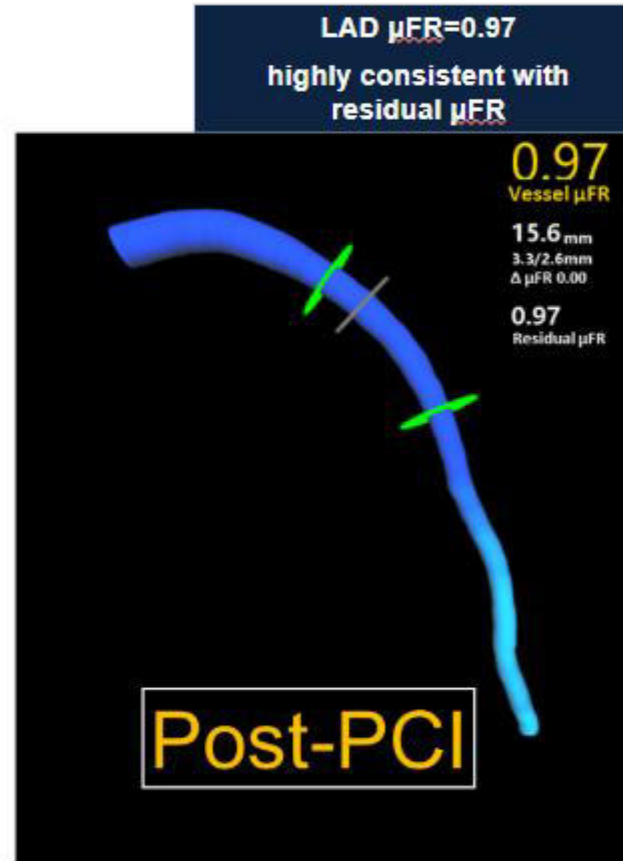
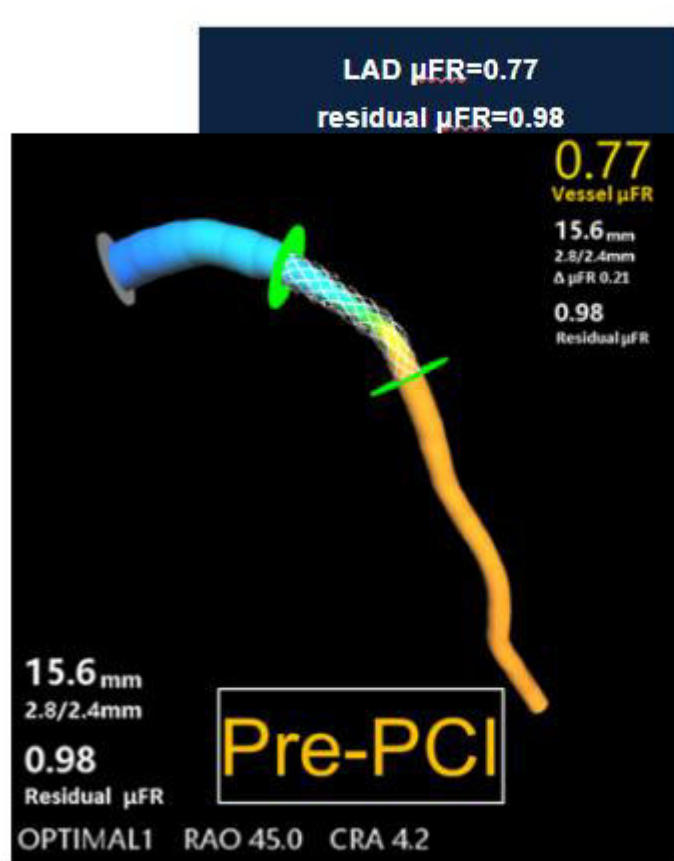
μ FR (Angio-based FFR)



Quantitative Flow Ratio analysis Software: AngioPlus Core



Advantages of μ FR[®]



Highlights

- ☐ No pressure wire
- ☐ No vasodilator
- ☐ Non-invasive
- ☐ Lower costs
- ☐ Super-fast online test
- ☐ Wide range of indications
- ☐ Real-time / retrospective analysis
- ☐ Physiological assessment & PCI Planning
- ☐ RCT validated (Lancet)

Grazie per l'attenzione
Antonia Fonte