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BUENOS AIRES HILTON  
BUENOS AIRES, ARGENTINA

AUGUST  
7 - 9  
2024

# CORONARY STENT POSITIONING UNDER LIVE IVUS GUIDANCE IN LOW CONTRAST SEVERE CALCIFICATION AND COMPLEX PERCUTANEOUS CORONARY INTERVENTIONS



XXXIX ANNUAL CONGRESS OF LATIN AMERICAN SOCIETY OF INTERVENTIONAL CARDIOLOGY  
XXXIV NATIONAL ANNUAL CONGRESS OF THE ARGENTINE COLLEGE OF INTERVENTIONAL CARDIOANGIOLOGY

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- JPCB, male, 78 yo
- - Hypertention; AMI + PTCA 2000 (3 stents) ; former smoker; SAVR metallic prosthesis in 2001 (Clopidogrel and Warfarin and Rosuvastatine).
- - Admitted: acute AF + typical heart pain – ECV – sinus rhythm with heart pain improvement
  - - EKG: sinus rhythm and inferior negative electrical area
  - - troponin: 406-376 (normal: <2) = **AMI w/o ST-segment elevation**
  - - LAB: creat = 1.9 mg/dL; Clearance Creat = 38 ml/min
  - - TT ECHO :
    - LV 59 x 44 mm (inferior akinesia)
    - EF = 49%; LA = 36 mm
    - metallic prosthesis ok (grads = 19 mmHg / 10 mmHg )



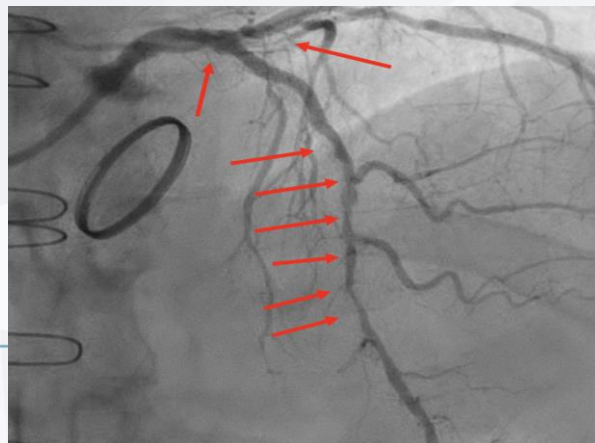
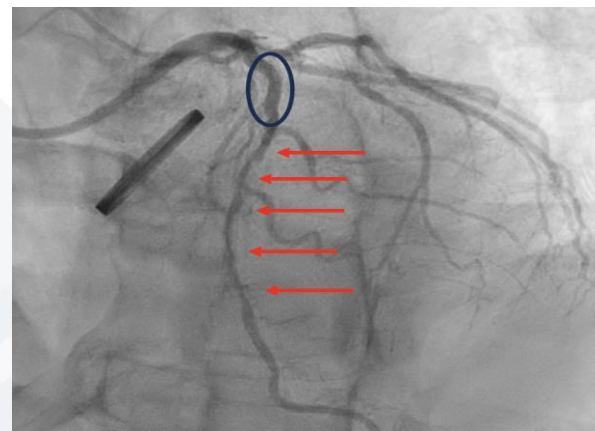
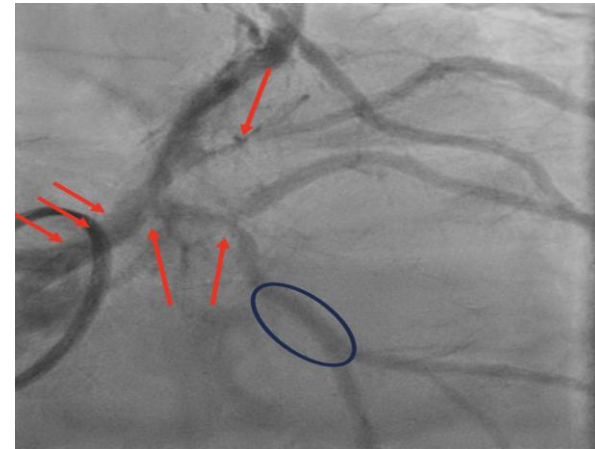
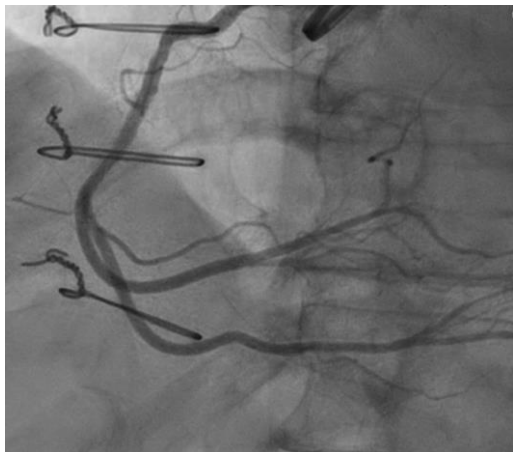
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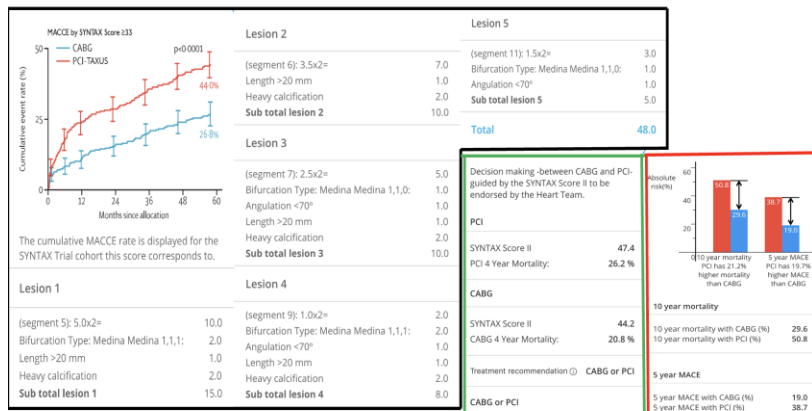
## ANGIOGRAPHY



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SYNTAX SCORE I, II & 2020



STS Short-Term Mortality

STS SCORE

Simulated Patient Summary

Procedure Type: **Isolated CABG**

Perioperative Outcome	Estimate %
Operative Mortality	2.47%
Morbidity & Mortality	10.4%
Stroke	1.22%
Renal Failure	3.26%
Reoperation	3.51%
Prolonged Ventilation	6.58%
Deep Sternal Wound Infection	0.218%
Long Hospital Stay (>14 days)	4.11%
Short Hospital Stay (<8 days)*	42%

\*higher values reflect a better outcome

HEART TEAM

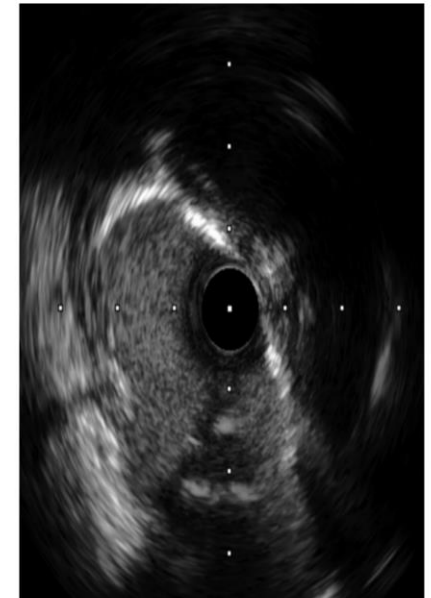
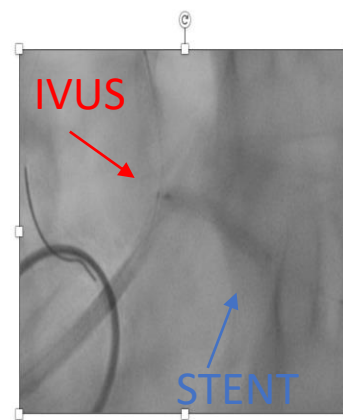
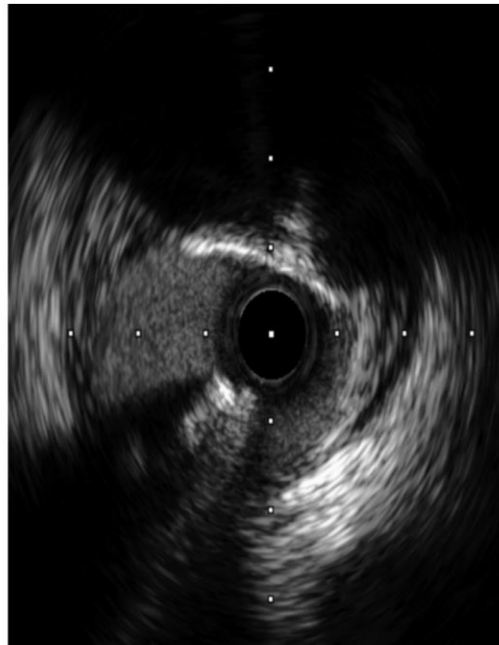
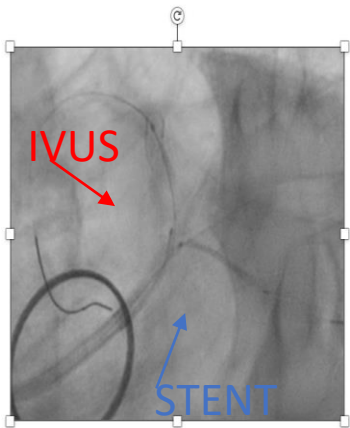
- Clinical vs Percutaneous vs Surgery;
- But: no-contrast thoracic CT scan:

**Suggestion:**

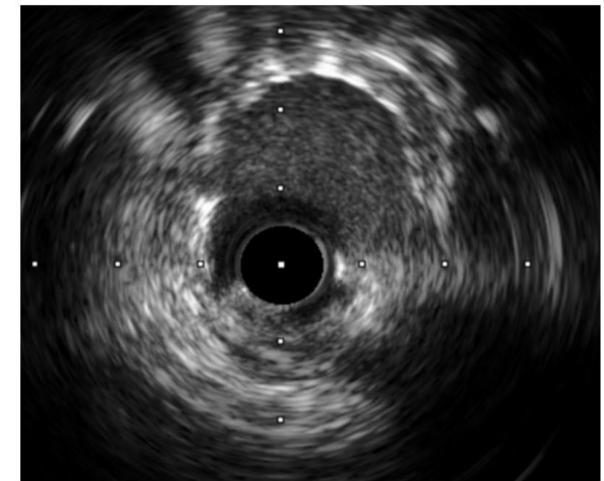
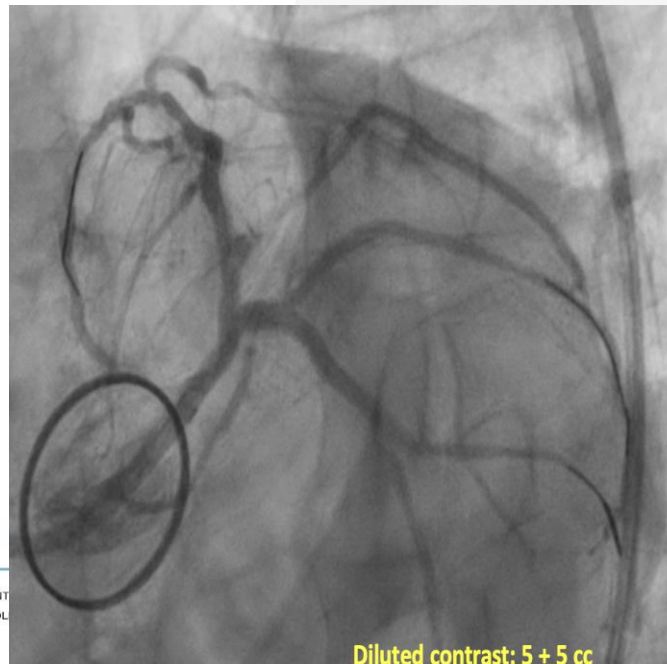
- **Imaged-guided multivessel angioplasty with complete revascularization.**
- **IVUS guided strategies to reduce the volume of contrast**



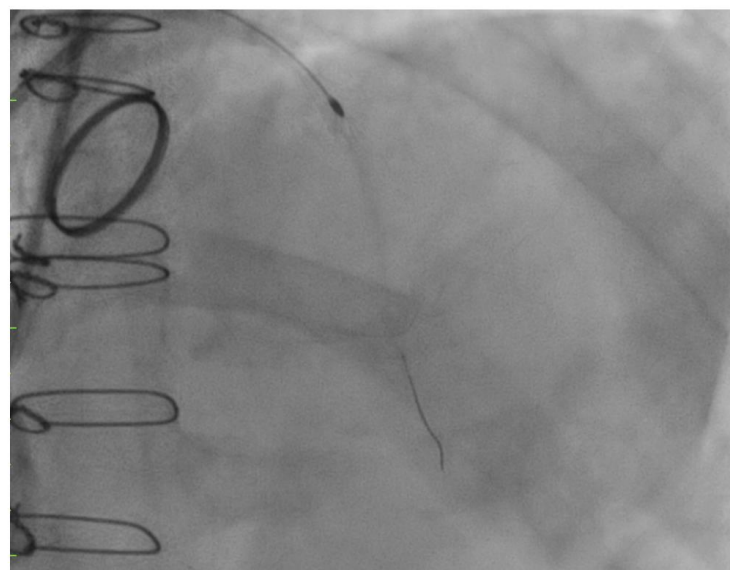
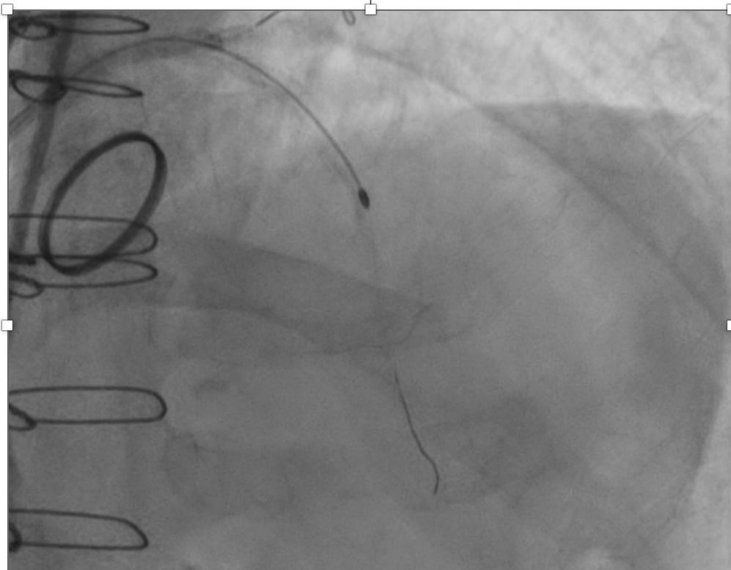




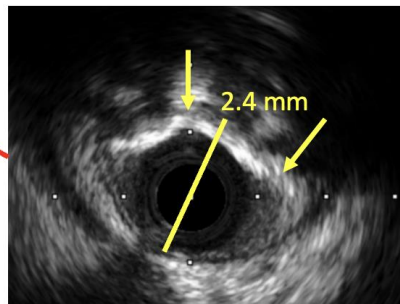
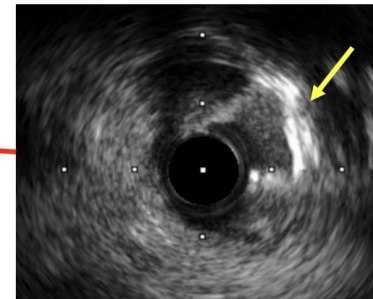
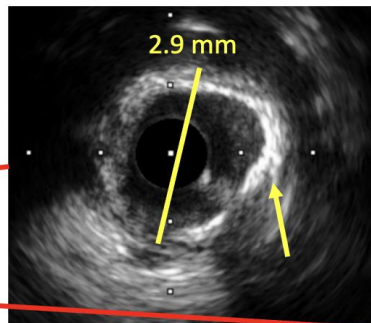
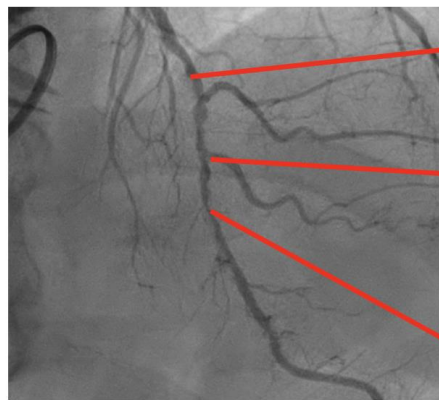
This technique involves positioning coronary stents under the live guidance of an intravascular ultrasound (IVUS) catheter which is positioned simultaneously, side by side to a stent.



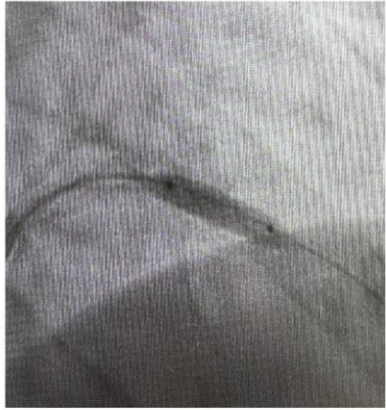
**Proximal Circ:**  
**LMA = 6.43 mm<sup>2</sup>**  
**LMA ref = 6.24**  
**Expansion: 103%**



### LAD IVUS AFTER ROTACIONAL ATHERECTOMY



## WOLVERINE CUTTING BALLON AFTER ROTACIONAL ATHERECTOMY: ROTA-CUTT STRATEGY

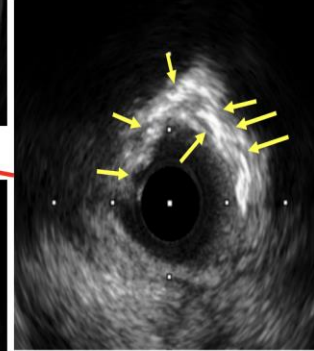
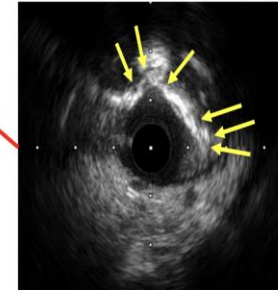
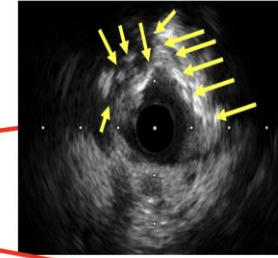
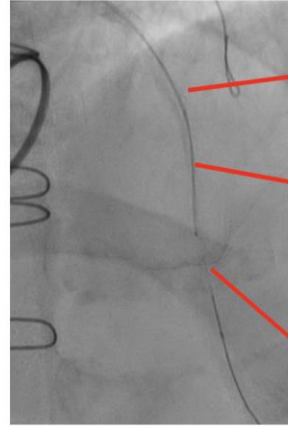


Wolverine Cutting-Balloon 3.0 x 12 mm

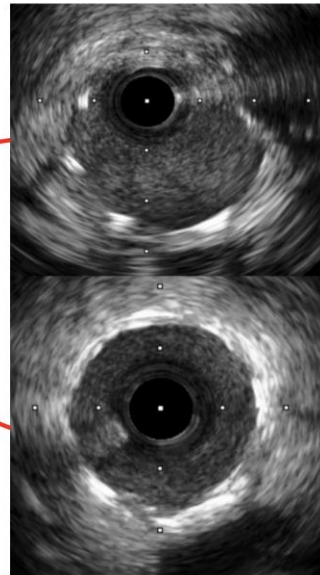
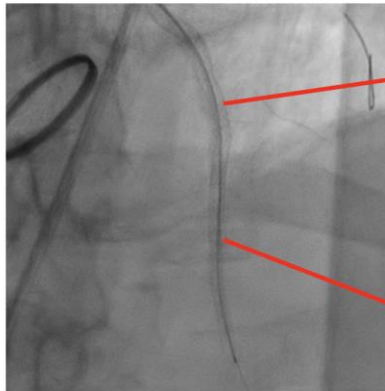


Wolverine Cutting-Balloon 2.5 x 12 mm

## LAD IVUS AFTER ROTA-CUTT STRATEGY



## LAD IVUS RESULTS

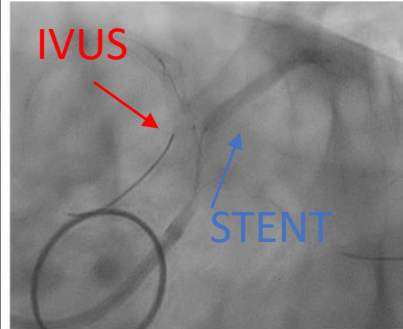
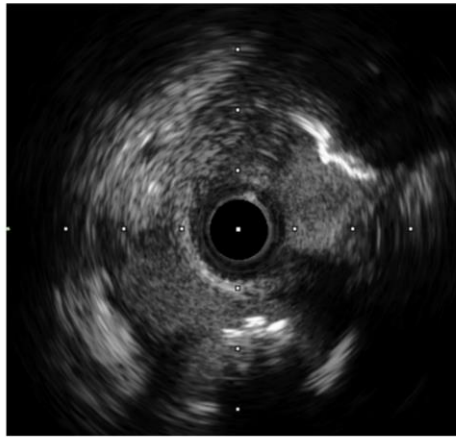
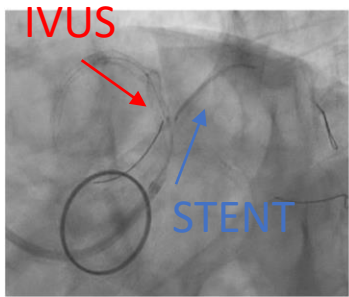


**LMA is = 8.74 mm<sup>2</sup>**  
**LMA ref = 7.28**  
**Expansion: 120%**

**LMA is = 7.86 mm<sup>2</sup>**  
**LMA ref = 7.28**  
**Expansion: 108%**

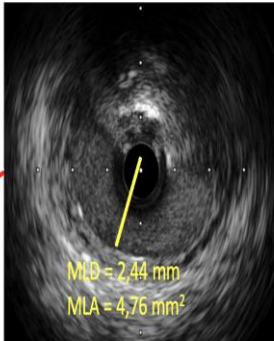


## DIAGONAL BRANCH ANGIOPLASTY



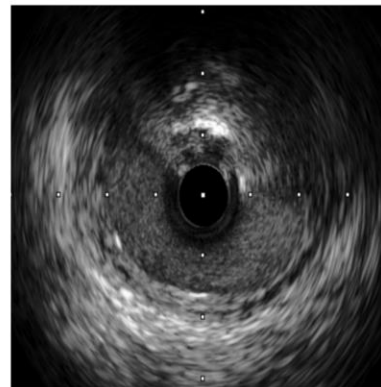
Live guidance of an intravascular ultrasound (IVUS) catheter which is positioned simultaneously, side by side to a stent, highest amount of precision in stent positioning.

## LEFT MAIN ANGIOPLASTY



Wolverine Cutting-Balloon 3.5 x 12 mm

## LEFT MAIN IVUS AFTER CUTTING BALLOON

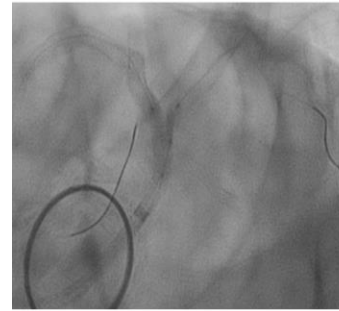
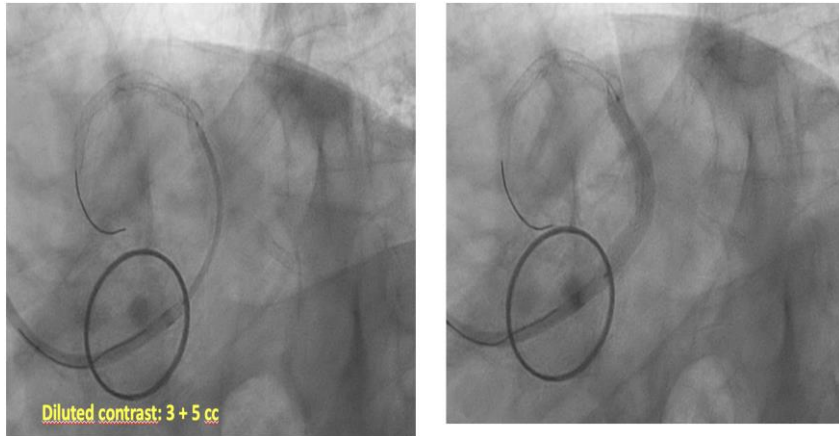


WCB 3.5 X 12 mm

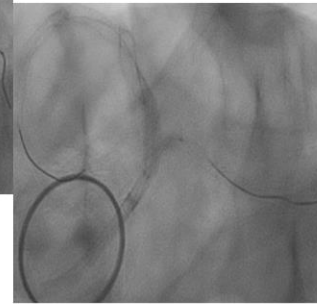




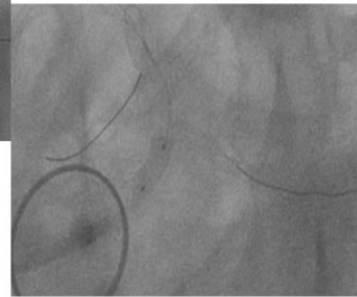
## LEFT MAIN ANGIOPLASTY



Kissing-Balloon LAD-Diag

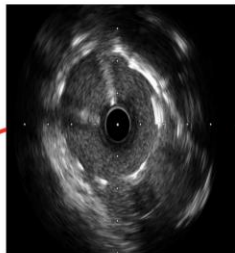
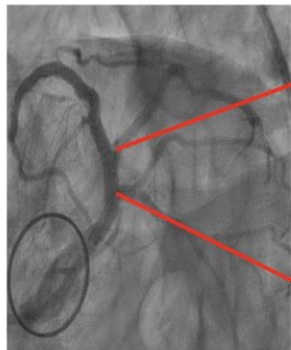


Kissing-Balloon LAD-Circ

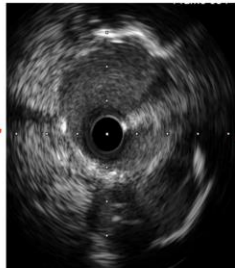


Left Main POT technique

## LAD IVUS RESULTS

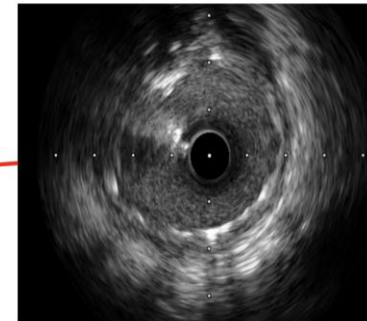
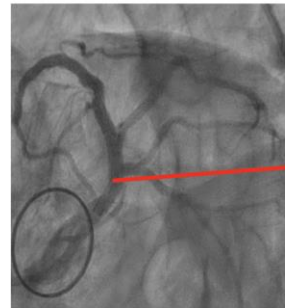


**LAD-diag**  
 MLA is = 10.16 mm<sup>2</sup>  
 MLA ref = 9.87 mm<sup>2</sup>  
 Expansion: 103%



**LAD ostium**  
 MLA is = 11.78 mm<sup>2</sup>  
 MLA ref = 9.87 mm<sup>2</sup>  
 Expansion: 119%

## LEFT MAIN IVUS

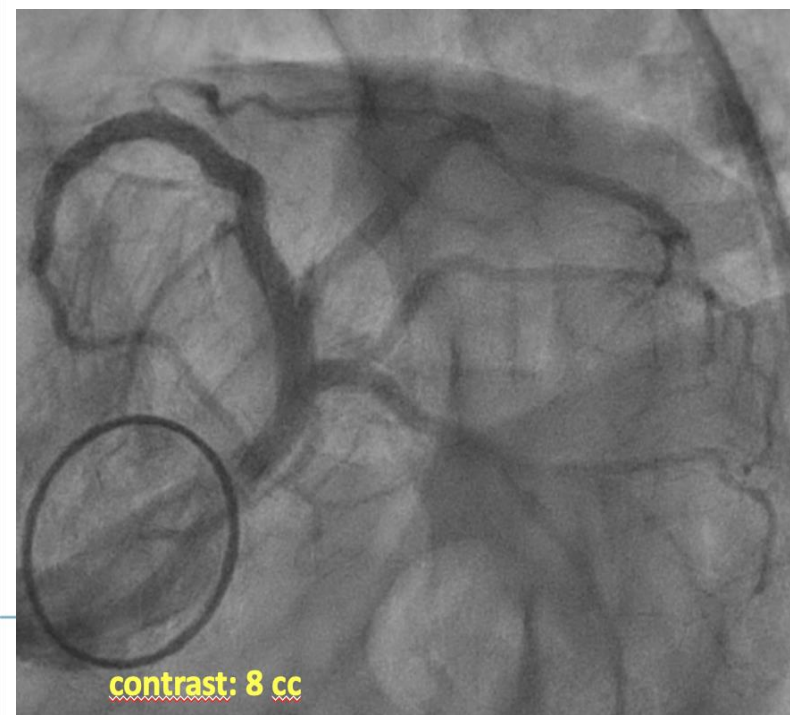


**MLA is = 14.26 mm<sup>2</sup>**



### The Procedure:

- It took 2h20 min; **18 IVUS runs & 4 stents = 4.5 IVUS runs/per stent.**
- It was done with **27 cc of contrast; BUT: 16 cc for the final angiograms - so; 11 cc of contrast for 4 stents = 2,75 cc of contrast/per stent implantation.**
- The patient woke up w/o heart pain and w/o new EKG changes;
- 48 and 72 hrs after procedure: creat = 1.8 mg/dl;
- He was discharged after 72 hrs with AAS, Clopidogrel and Warfarin (triple therapy for 30 days), and after Clopidogrel e Warfarin for 3 months (planned) and then, only Warfarin;
- He was in his doctor's office on April, 11: Asymptomatic, only Warfarin and creat = 1.9 mg/dl.





## CONCLUSIONS:

- It was a high risk and complex (and indicated) percutaneous coronary intervention (CHIP);
- We were able to do complete and IVUS optimized revascularization;
- It was necessary to use all strategies for adequate preparation and treatment of that marked calcification;
- Action and reaction with intracoronary imaging was fundamental to achieving those results – and it takes time!!!!