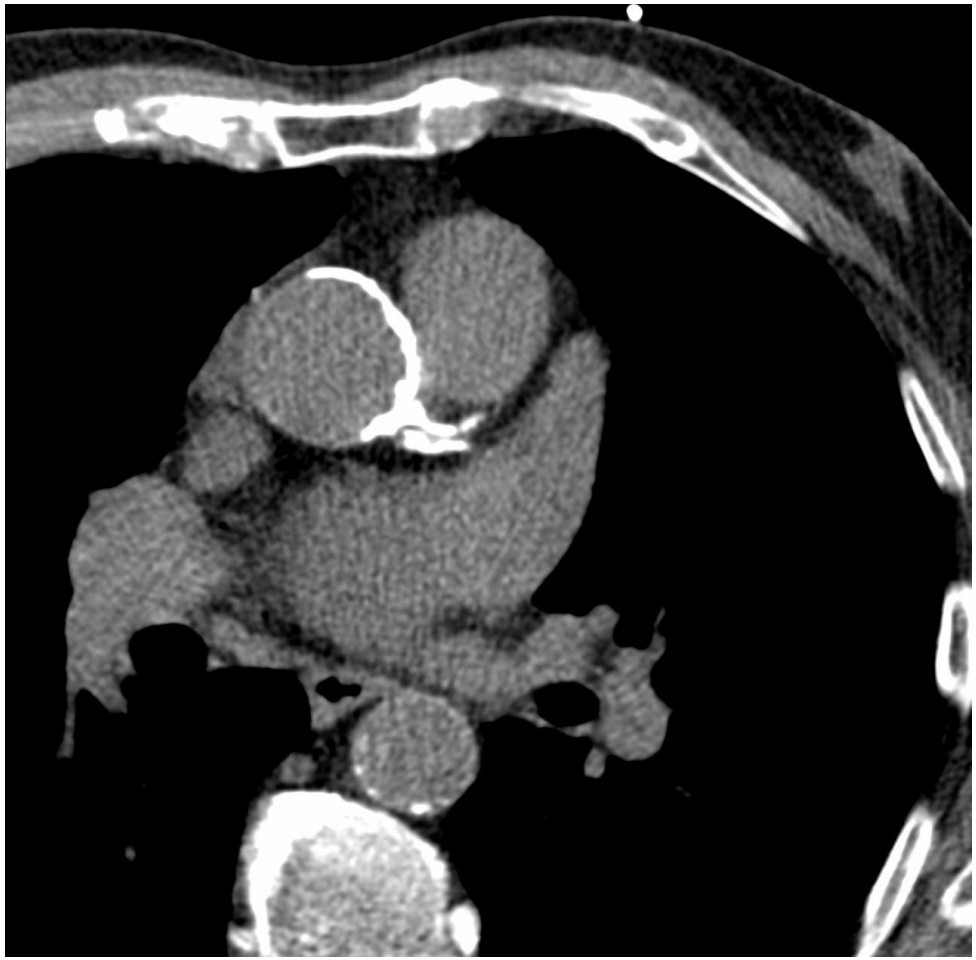
PCI of a severely calcified left main bifurcational stenosis supported by ECMO

Case report

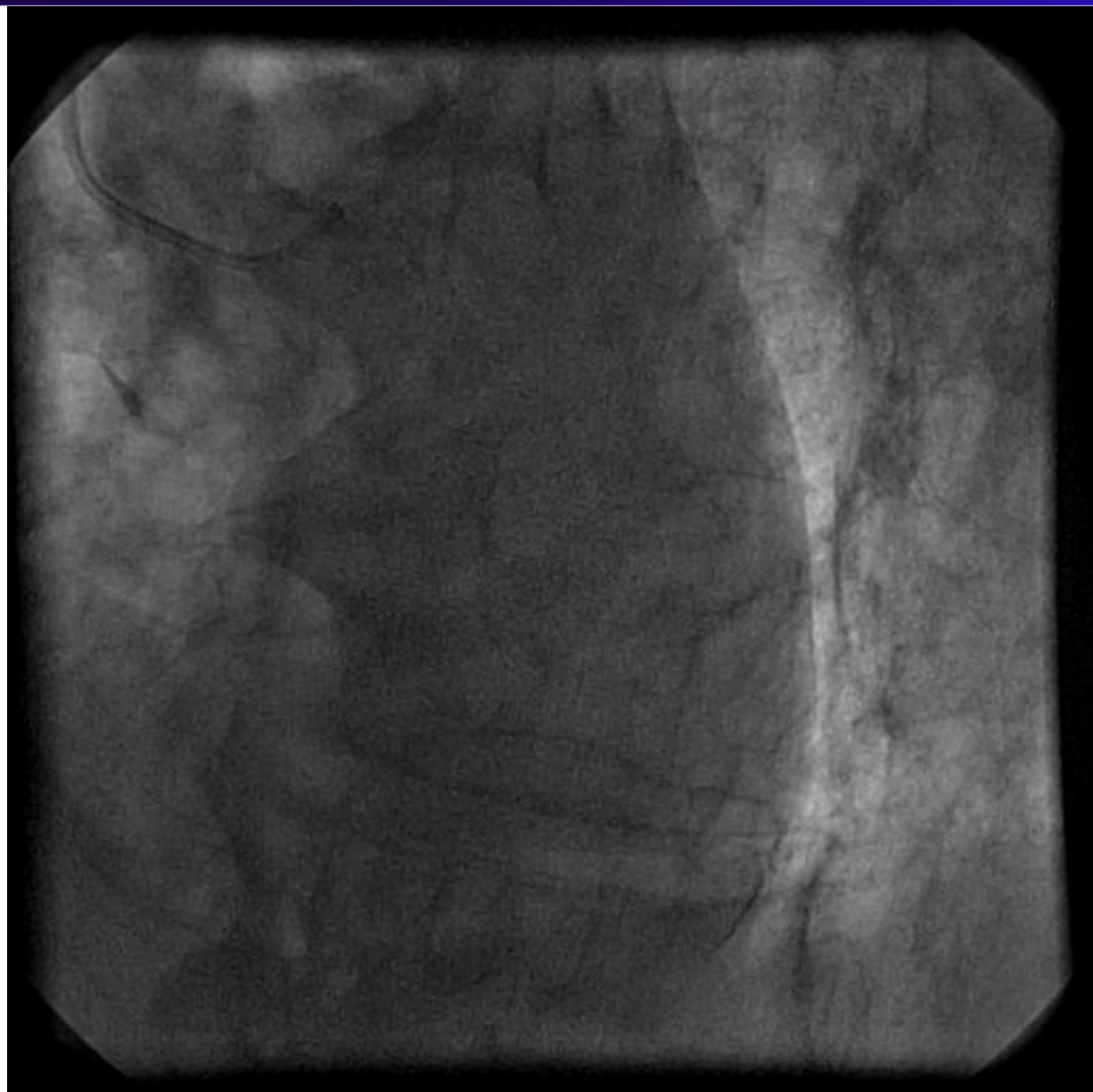
Do you recognize the patient?

- 87 year old retired Navy officer
- Clinical presentation:
  - **Crescendo angina (CC III)**
- Medical history:
  - HTN, HLP, CAD
  - Aspirin, Nebivolol, Amlodipin, ISMN, Rosuvastatin, Nitrates
  - Well controlled angina (CC I)
  - **Until 6 months ago exercising regularly**, walking several kilometers daily
- Examinations:
  - EKG sinus, QRS normal, horizontal ST depression, T-wave inversion in D1, avL, D2, D3, avF, V4-V6
  - ECHO: **normal left ventricle**, LVEF 60%, mild degenerative changes of MV, AV, mild left atrial dilatation
  - CT coronary angiography: numerous long segments of **calcifications** with extremely high Agatston calcium score (1538), significant (70%) left main stenosis, significant, up to 80-90% ostial LAD stenosis extending along the entire proximal LAD segment, significant, up to 70-80% stenosis of proximal segment of dominant Cx
  - LAB normal values



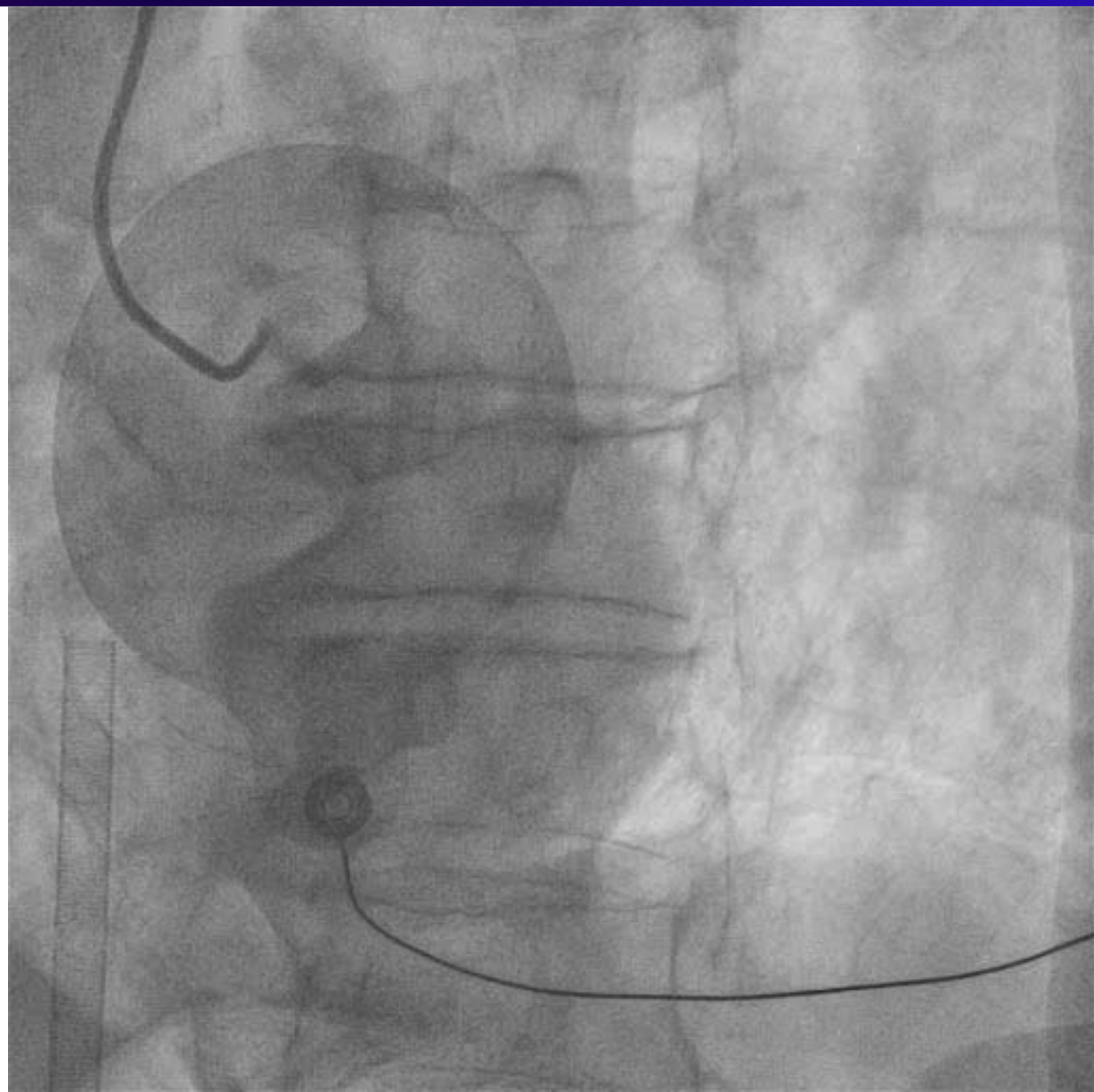
How would you approach this lesion?

- Coronary angiography
  - left dominance,
  - calcified LM stenosis extending into the proximal LAD,
  - Medina 1,1,0
  - SYNTAX score 30
- Heart team
  - Syntax II 40
  - Refused surgery
  - Refused by surgeon
- Decision
  - Proceed with PCI
  - Rotablation
  - Haemodynamic support
- Problem
  - No Rota
  - Discharged with promise and clopidogrel



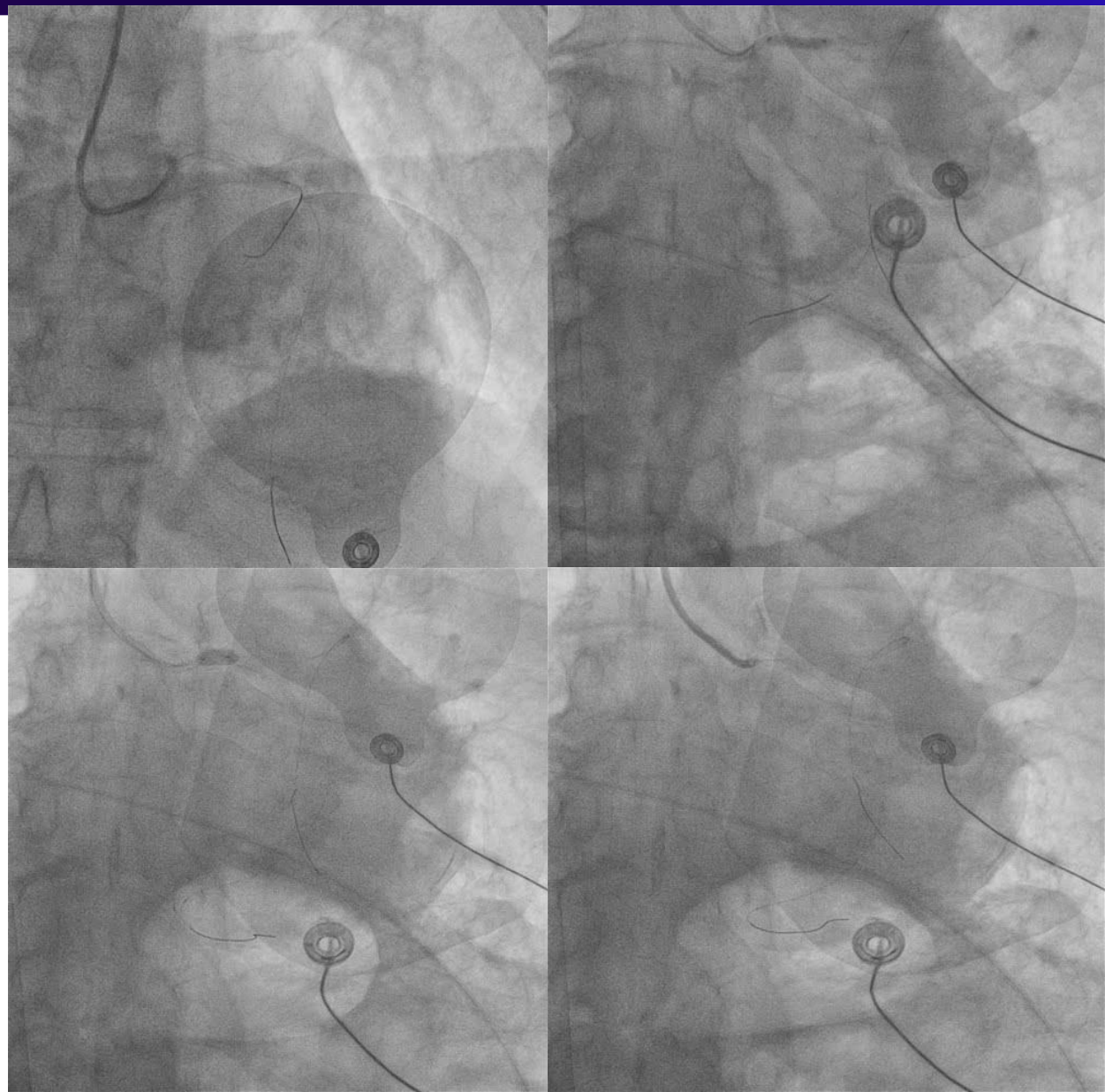
One month later, quiet evening, a call...

- 87-year old
- NSTEMI
- Acute heart failure (Killip IV)
- CCU
  - Medical stabilization
- Urgent PCI
- VA-ECMO
- Right transradial approach with a sheatless catheter (JL 6F - 7,5 F internal diameter)

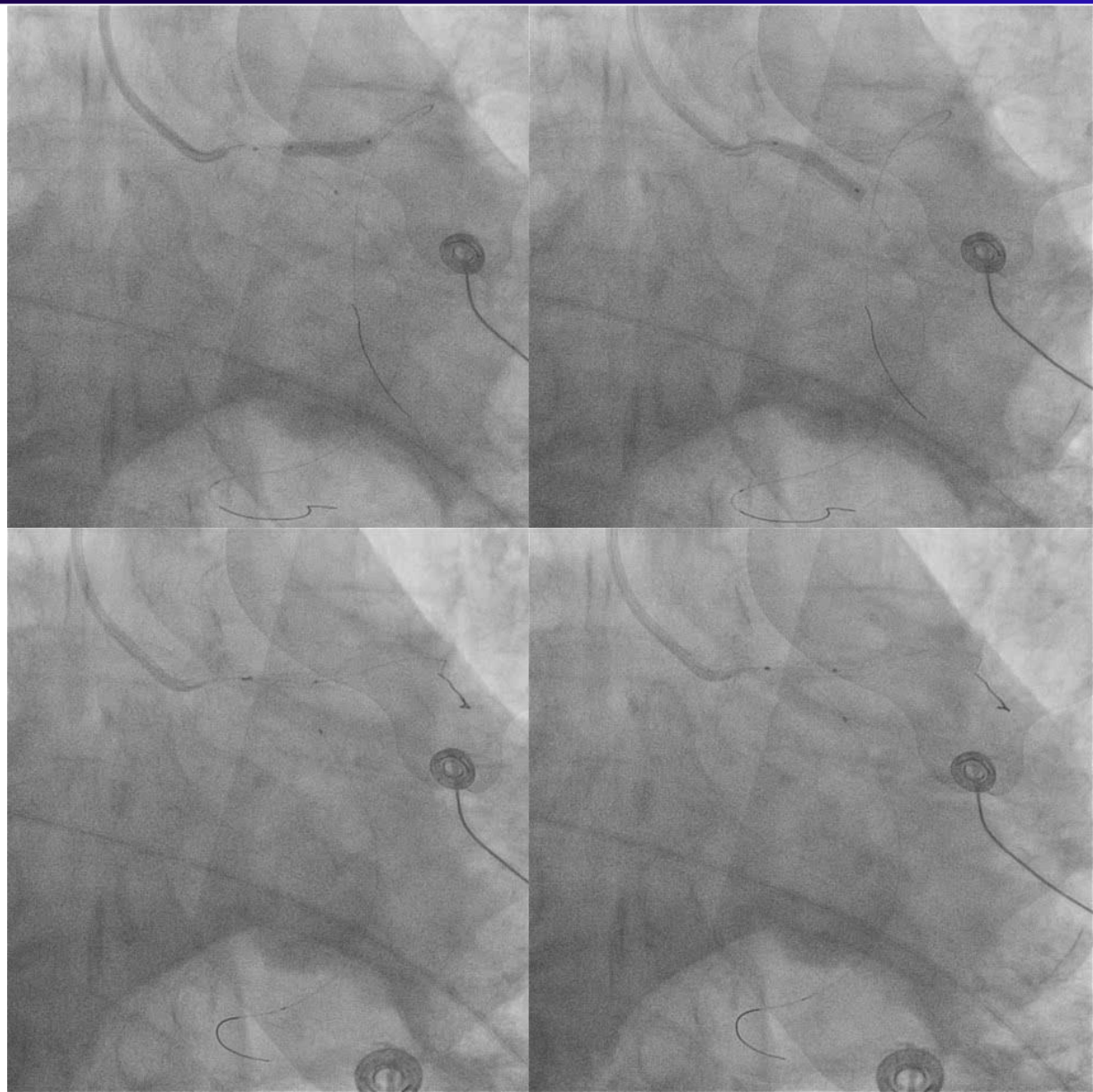


Keep it simple

- Right Radial
  - Easier
  - Both femorals ECMO
- Sheatless catheter
  - Inner diameter 7,5 F
  - Less crowding, faster
  - Multiple use of NC balloons
- JL shape
  - Less unintended intubation
- AP projections
  - A lot of equipment
  - LAO CRAN for ostial LM
- Two wires
  - Different colors
  - Less confusion
  - BMW and Runthrough

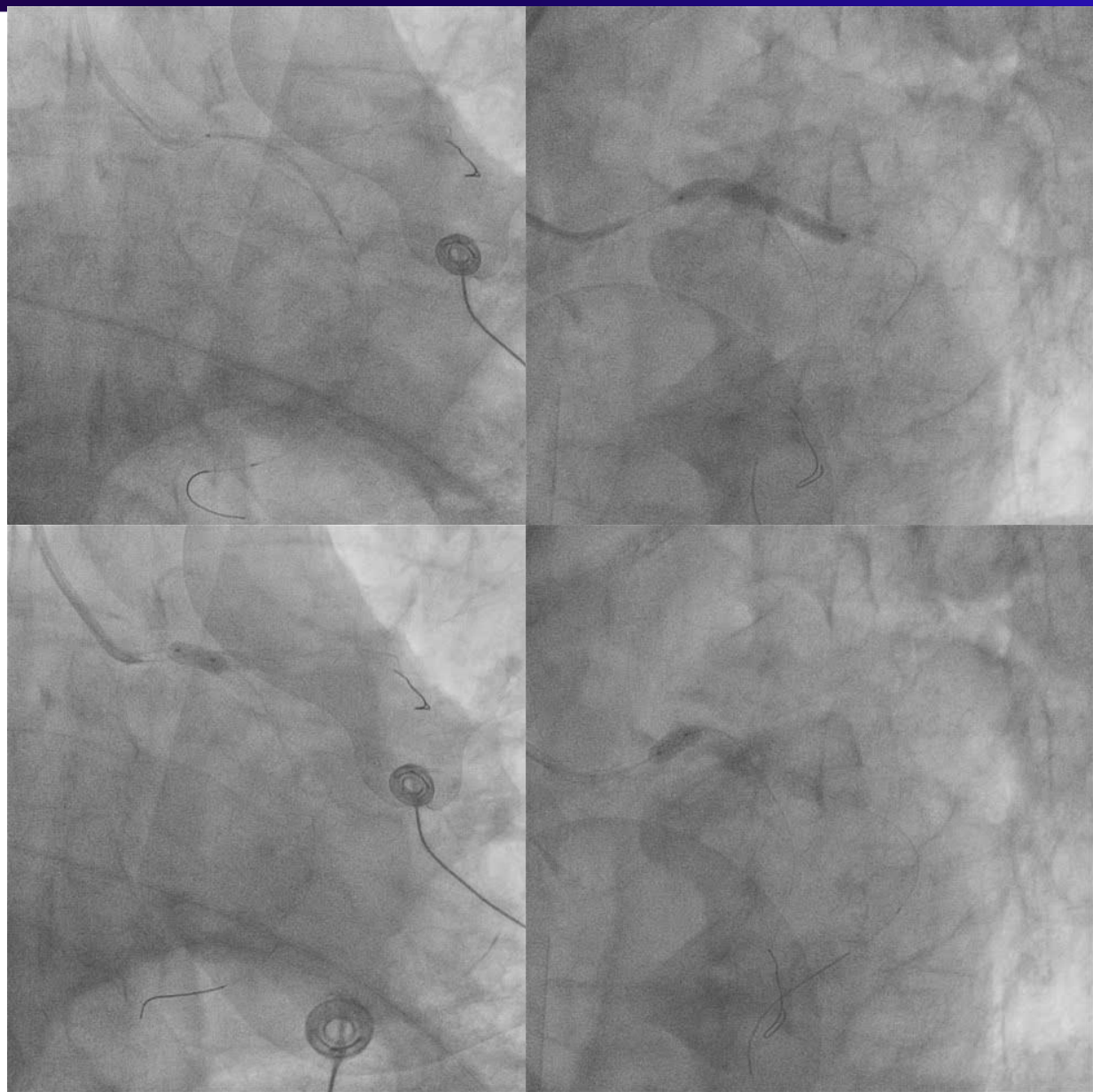


- Technique
  - Simple
  - Adapted to the clinical problem
  - Fast even with ECMO
- Adequate lesion preparation
  - Extensive, repeated
  - NC balloons 3,0 – 4,5 mm
  - 20-22 At
- Technique „minicrush”?
  - Cx as the main branch
  - LAD as the side branch
  - First LAD stent
  - Crush
  - Recross
  - Kissing Ballons
  - Could call it minicrush



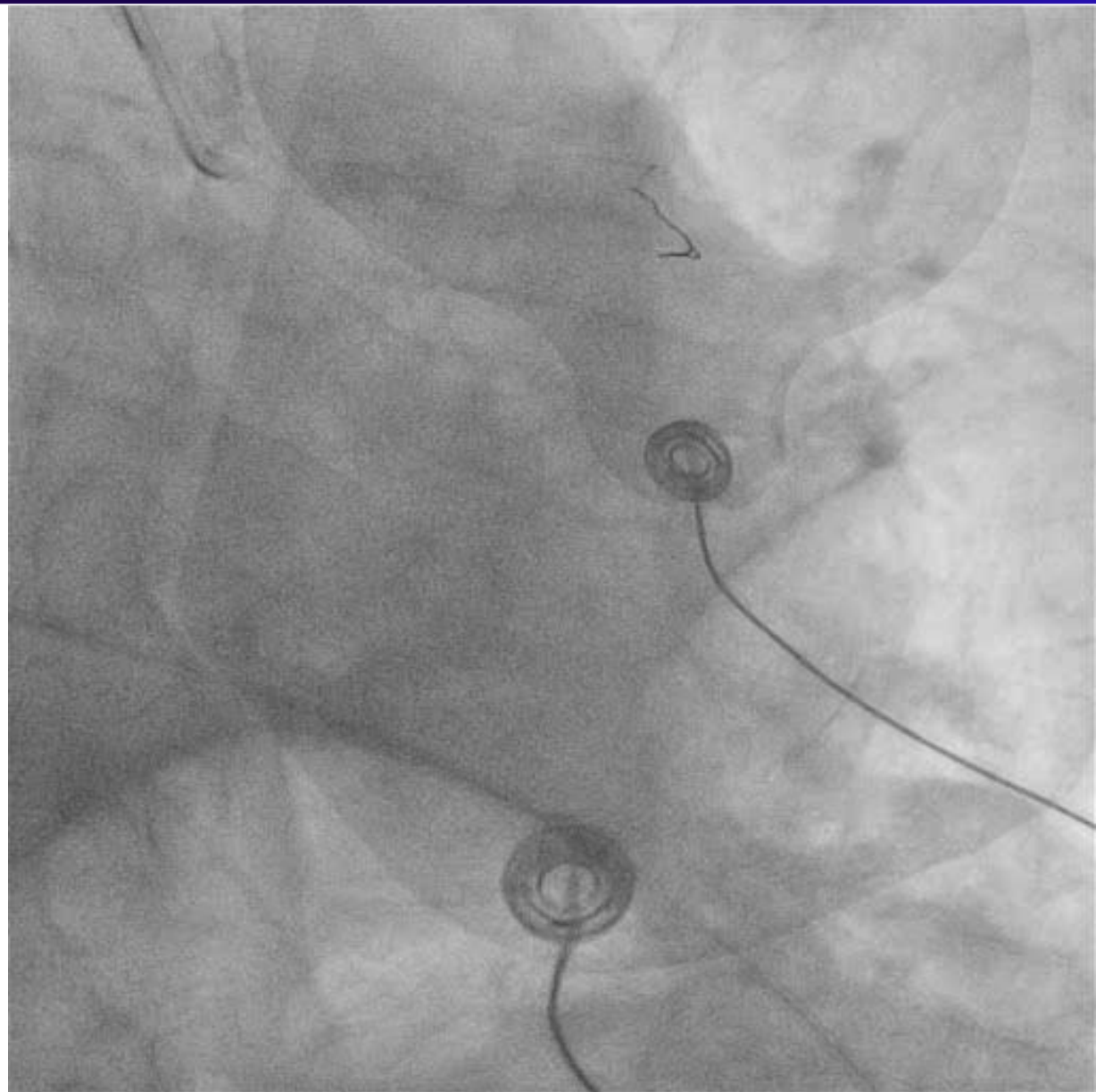
Discussion

- Two DES in the distal LM bifurcation
  - Second stent Cx
  - LAD as the side branch
  - POT+POT+POT
- Good angiographic result
- TIMI 3 flow
- Procedure duration of 1-hour



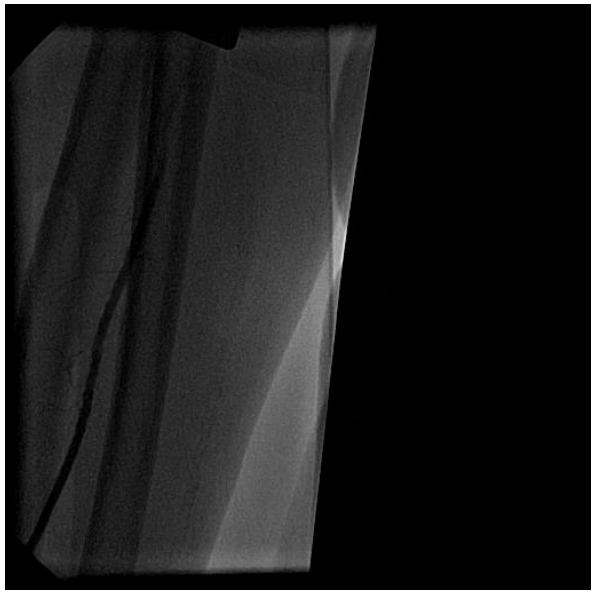
Discussion

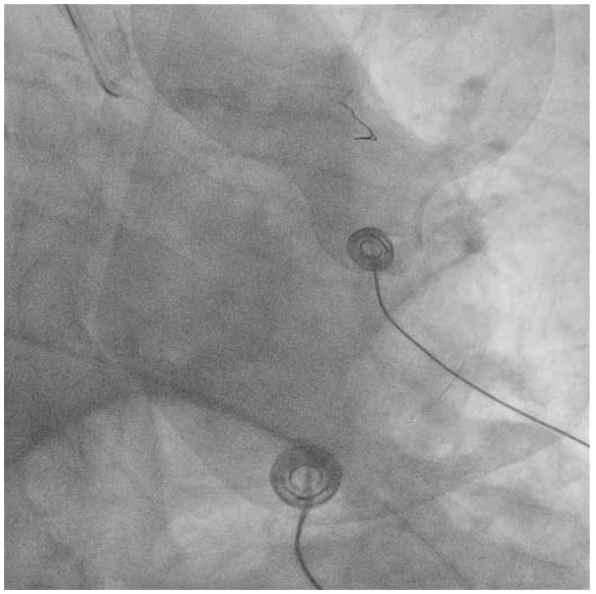
- Calcified, left main coronary disease is a serious challenge.
- If the surgical revascularization is not possible,
  - Urgent
  - High risk
  - Prefers PCI
- PCI with adequate equipment
  - high-pressure balloons
  - rotablation
  - intravascular lithotripsy
- And hemodinamic support
  - Impella
  - ECMO
  - LVAD
- remains a reasonable option.



Conclusions

- PCI of an unprotected severely calcified LM stenosis can be succesfully treated in the acute setting
- The circulatory support with veno-arterial ECMO can have life-saving role providing the necessary time for stable performance and durable PCI.
- Use of mechanical circulatory support should be clearly established





Thank you!