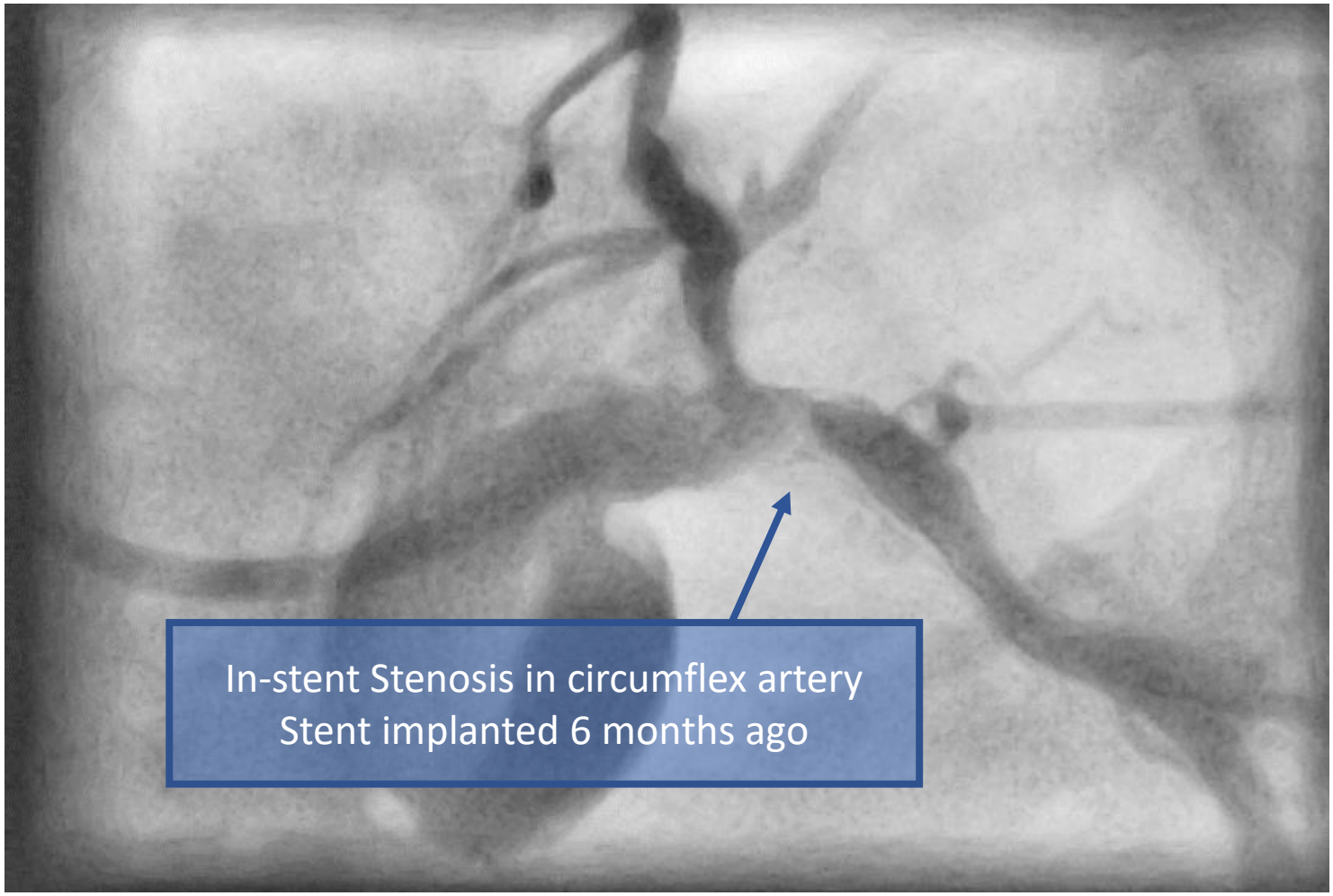
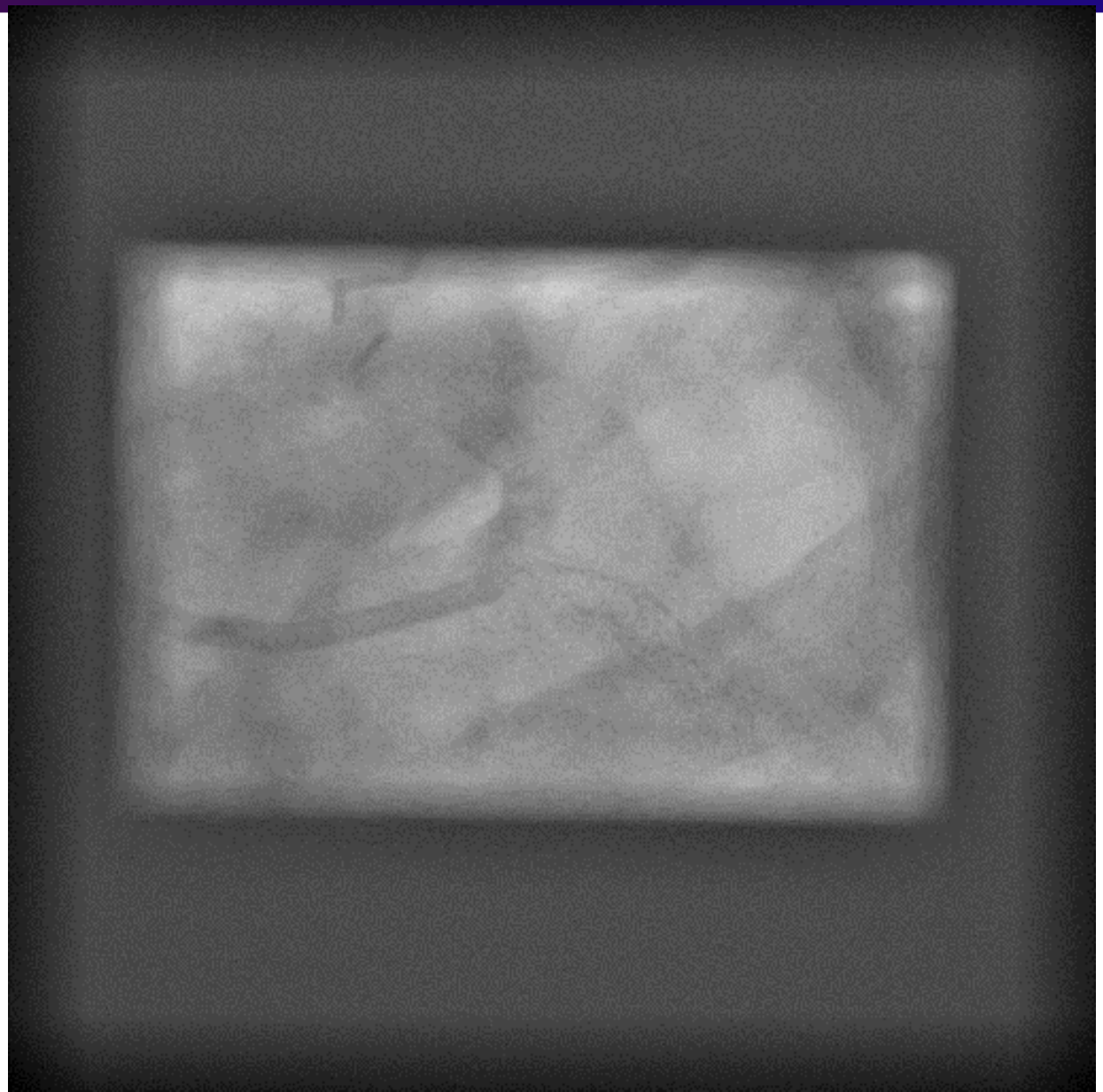
2021 euro PCR

The underexpanded stent remains an undefeated enemy

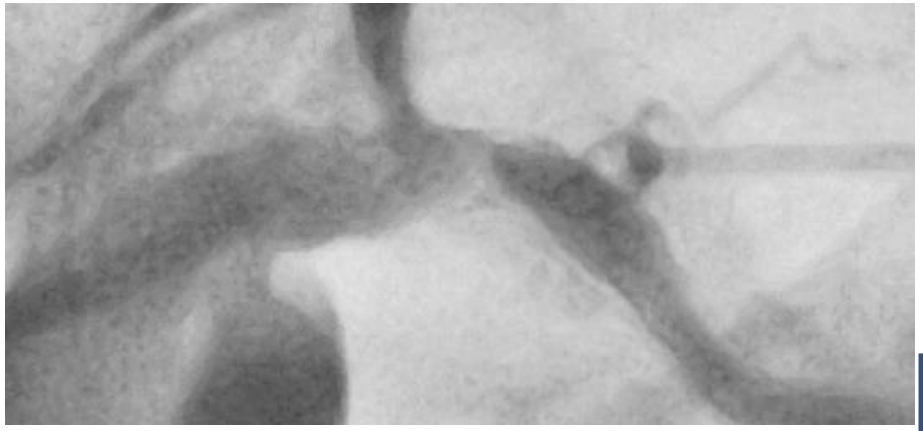
75 y/o male, stable angina CCS 2, prior CABG

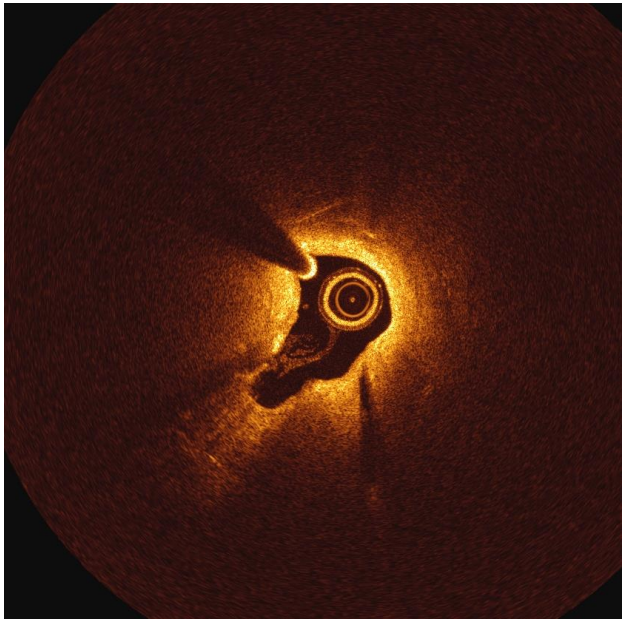
- left internal mammary artery on left anterior descending artery
- SVG on marginal branch not supplying the distal left circumflex artery territory



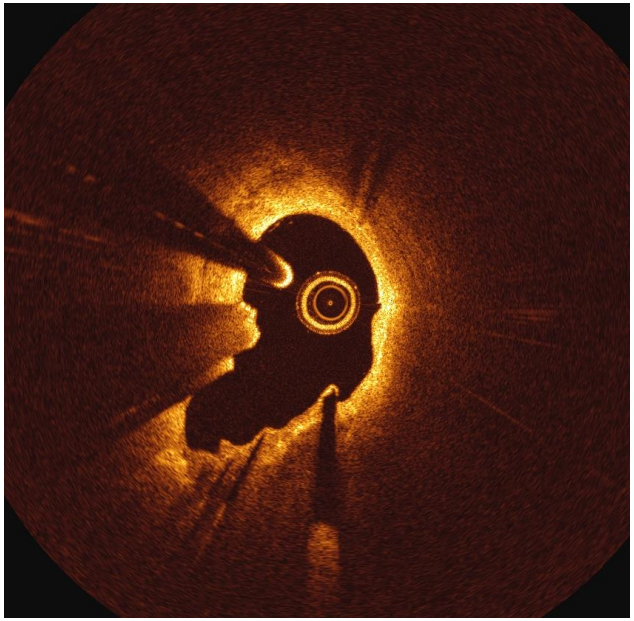


Understanding the lesion

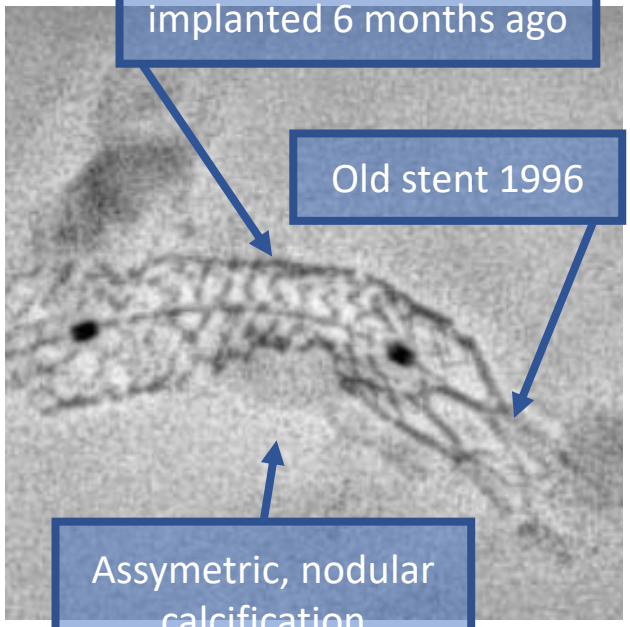




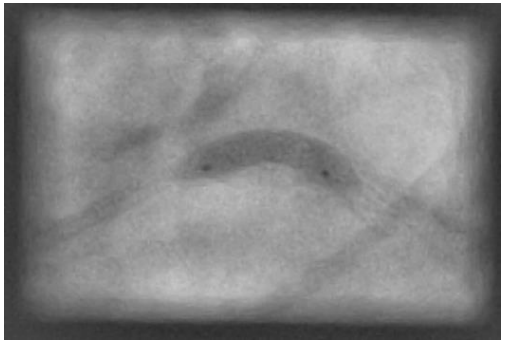
Underexpanded stent
MLA 1.9 mm²



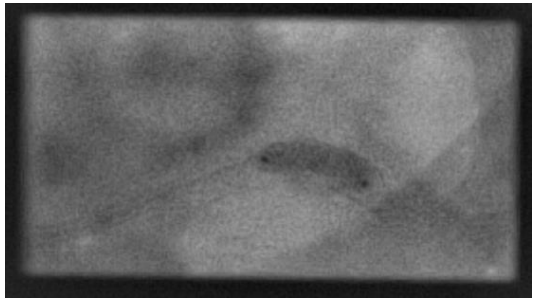
Pointed calcification
in-stent



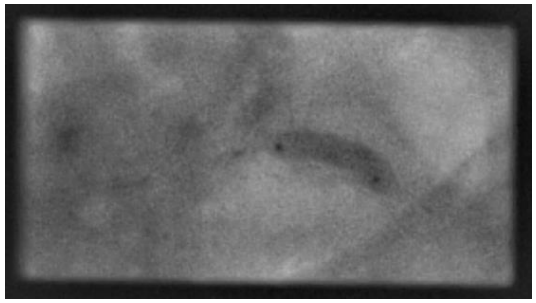
Lesion preparation



Non-compliant balloon
3.5x15 mm, 3x 26 atm

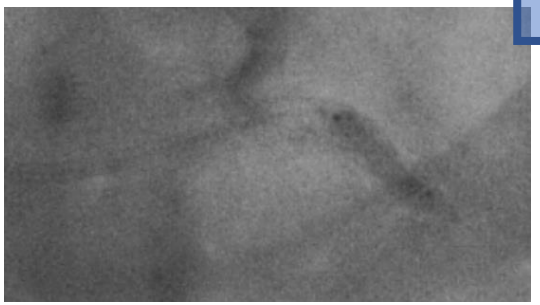


Lithoplasty balloon
3.5x12 mm, 4 atm + 6 atm
1st cycle

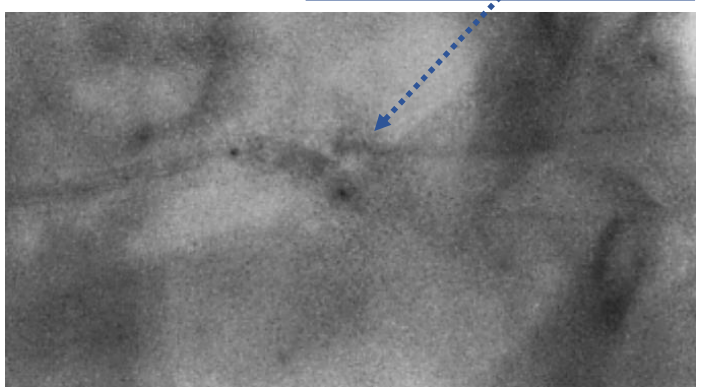


2nd cycle

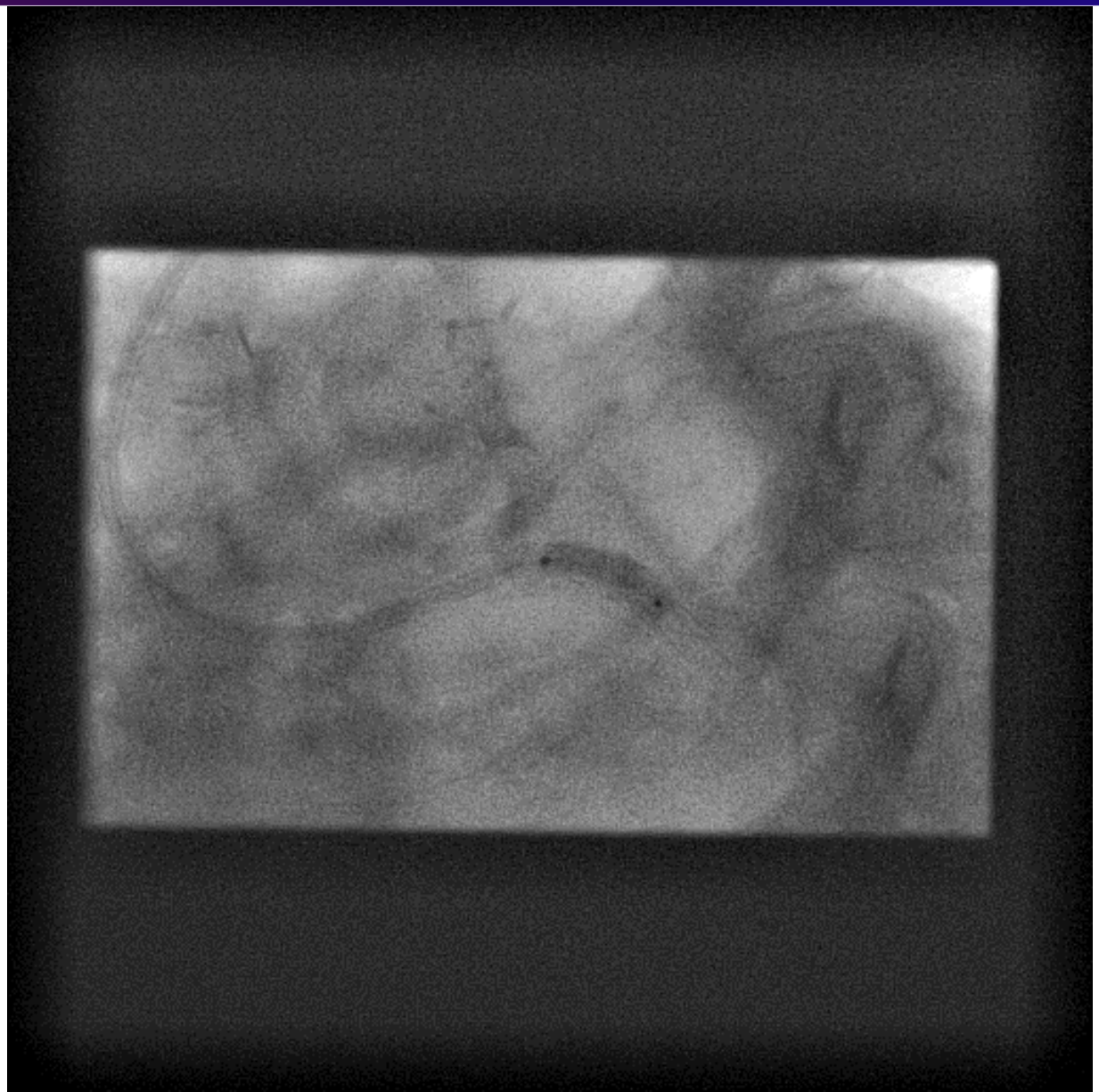
3rd cycle

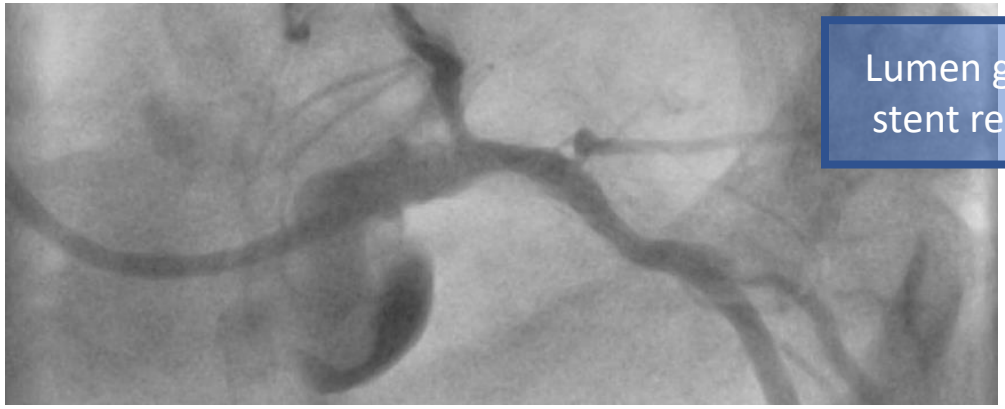


4th cycle
RUPTURE at 6 atm

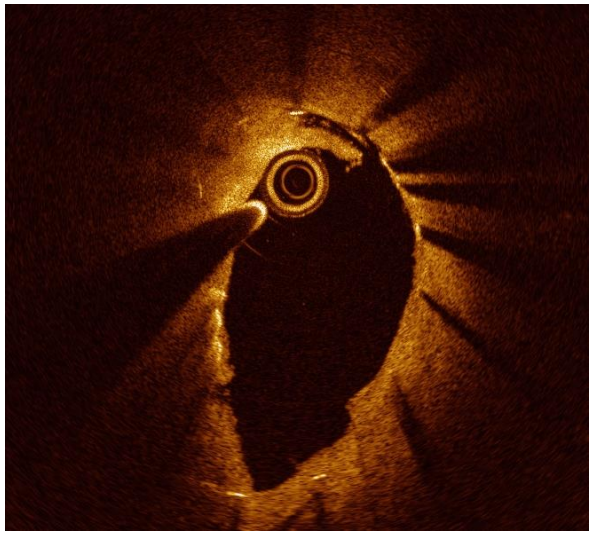


Balloons expanded properly

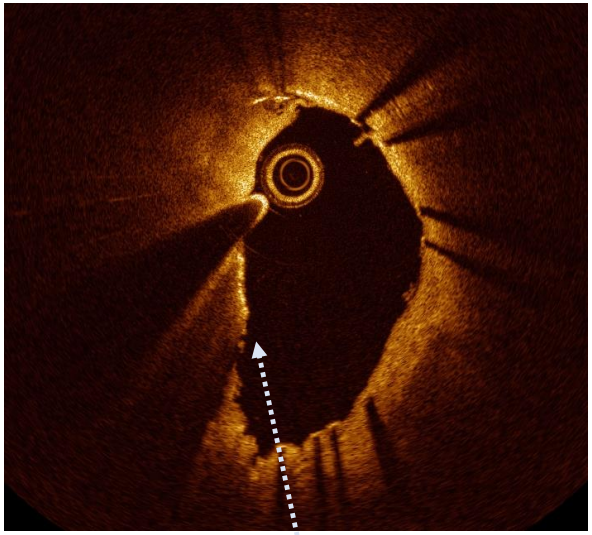




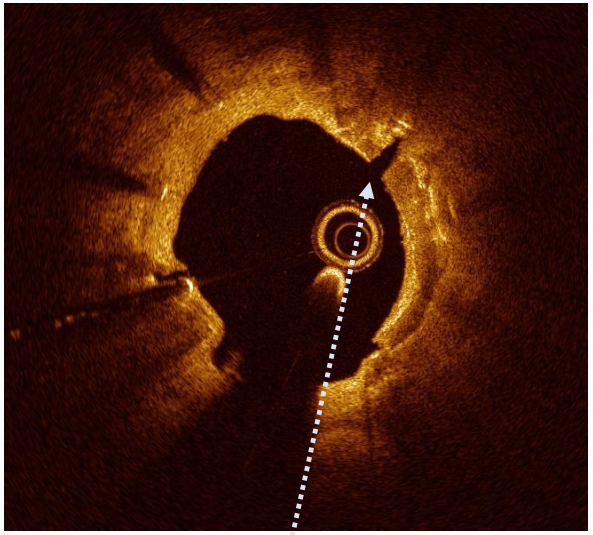
Lumen gain achieved, however stent remains underexpanded



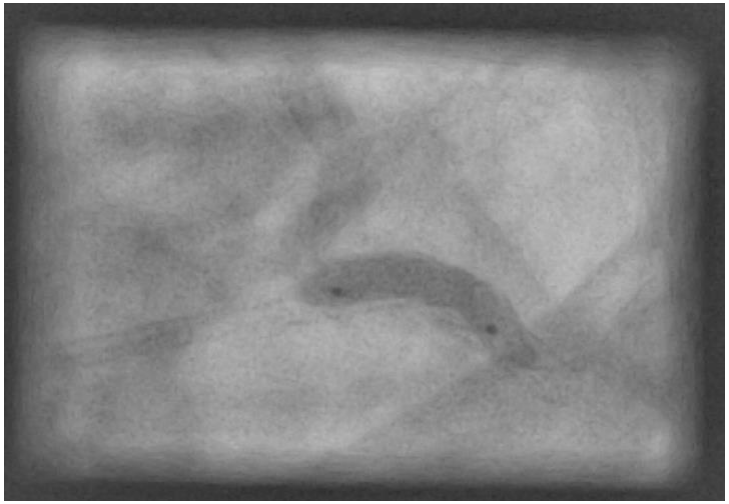
Former site of MLA
5.1 mm^2



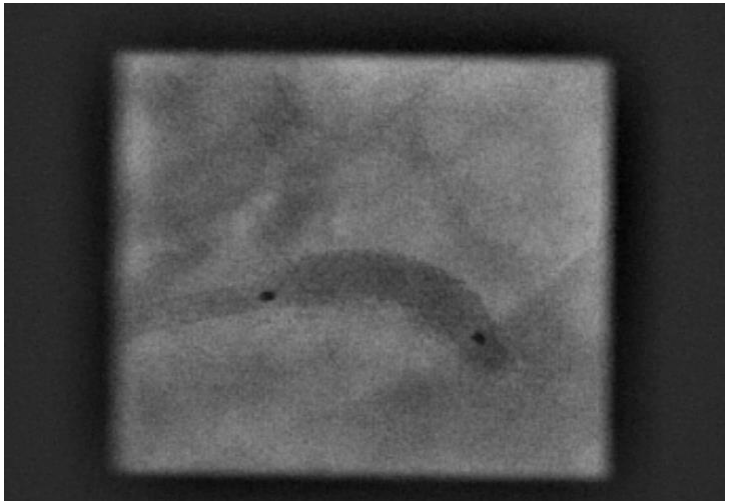
Former site of pointed calcification



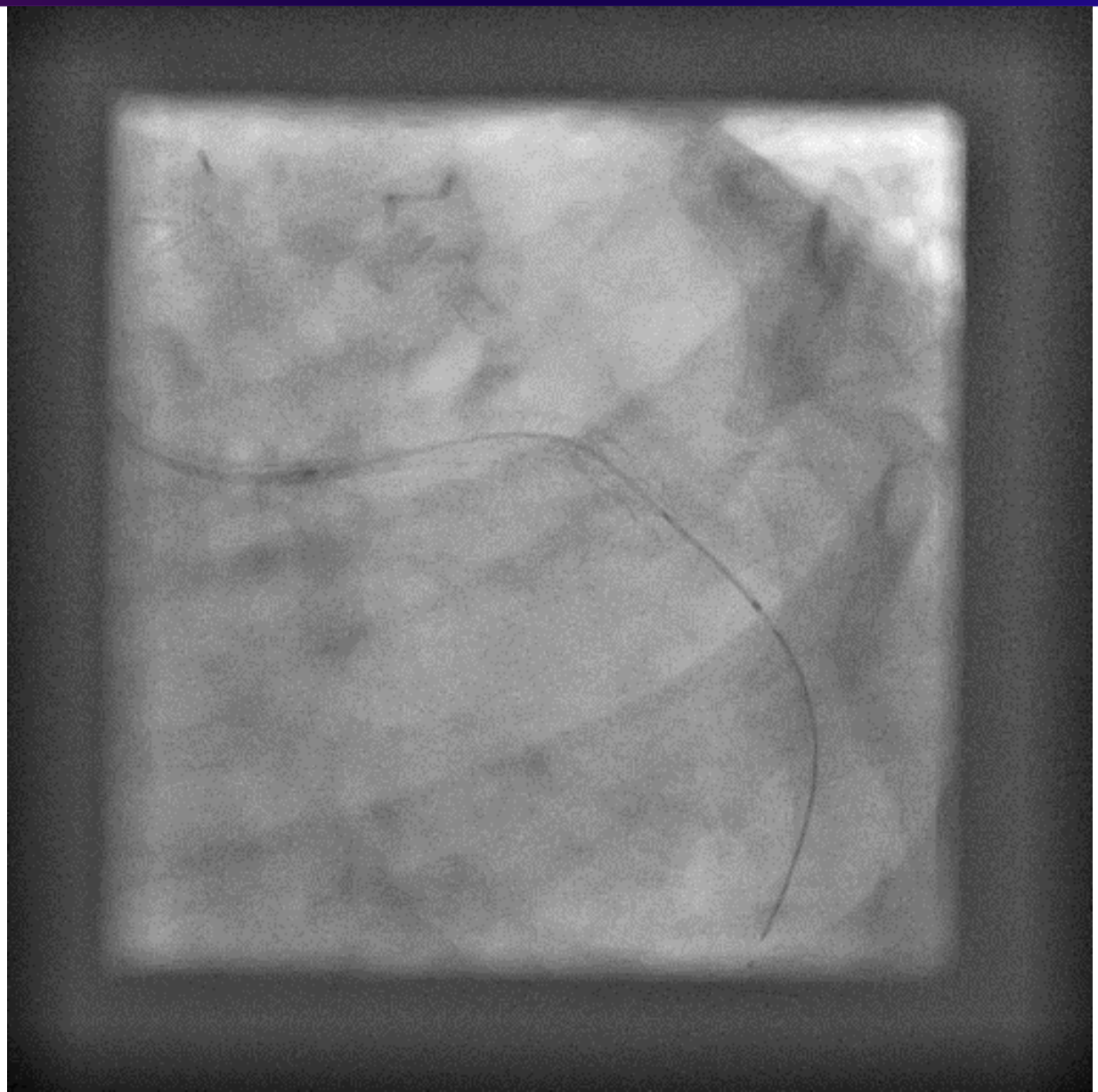
Calc-crack in the old stent
A sign of proper preparation at this site



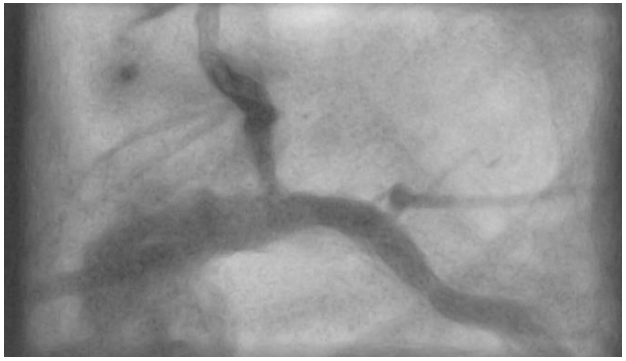
Non-compliant balloon
3.5x15 mm, 3x 26 atm

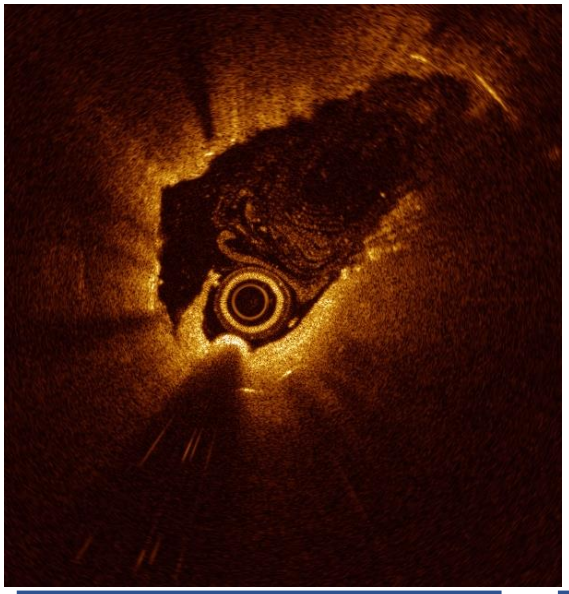


2x drug coated balloons
3.5x20 mm, 2x 26 atm, 2x 45 seconds

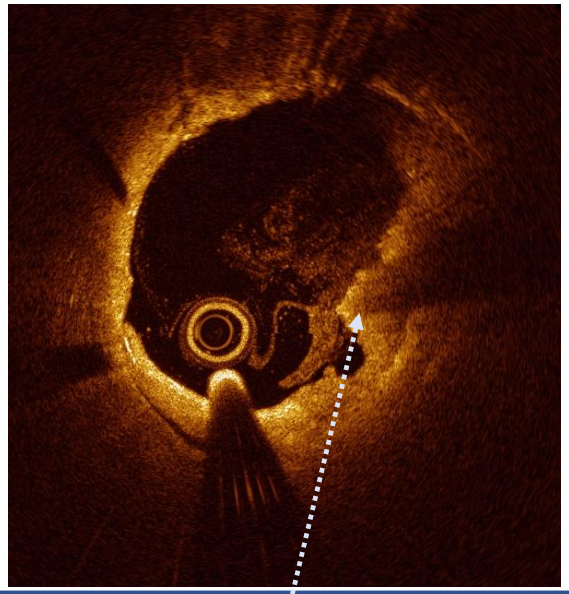


Final angiogram and OCT

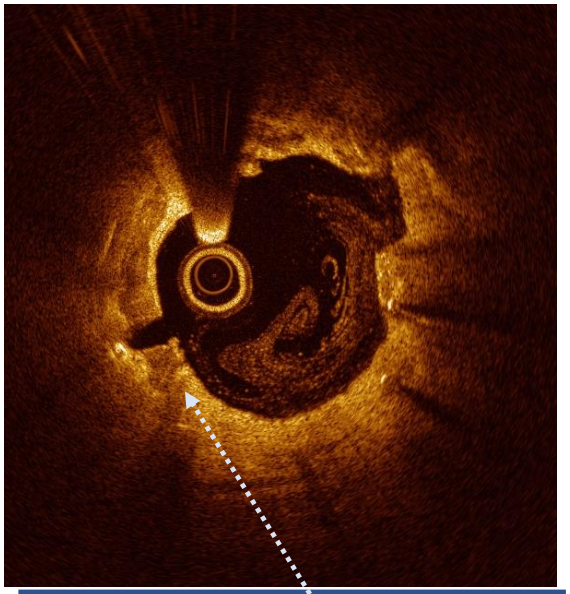




Former site of MLA
5.5 mm²



Former site of pointed calcification



Calc-crack in the old stent

We accepted the intimal tear and did not implant an additional DES to avoid stent in stent

Angiographic follow-up is scheduled in 6 months

TAKE HOME MESSAGES

- The lithoplasty balloon can rupture, although following the instruction for users.
- A possible cause might be balloon laceration by pointed calcifications or overhanging struts of underexpanded stents.
- Adequate lesion preparation prior to stent implantation is mandatory.
- The management of an underexpanded stent is more difficult than proper lesion preparation before stent implantation.
- Imaging and stent enhancing technology help to understand the lesion.