# An unusual case of chronic total occlusion

**Catherine Liontou, MD, PhD**

D Oikonomou, D Mpenia, V Kalogera, P Stamatakos, I Chaveles, E Papadopoulou, D Stalikas, T Kratimenos, K Triantafyllou

**Evaggelismos General Hospital**

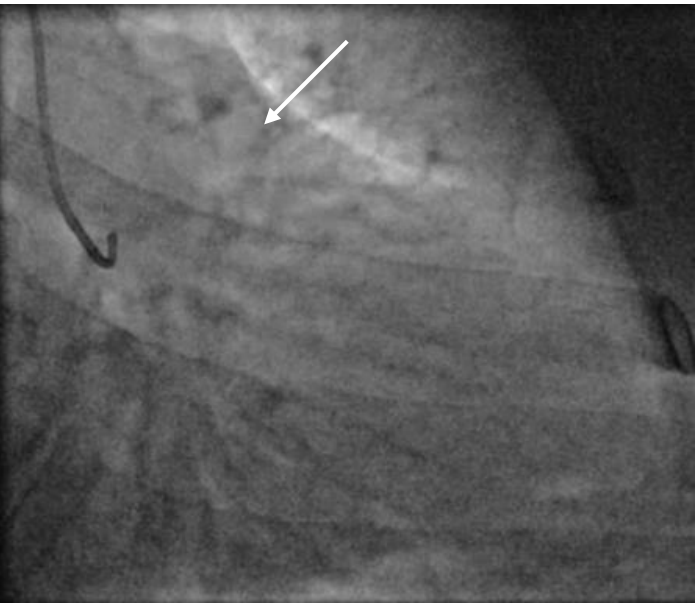
**Athens, Greece**

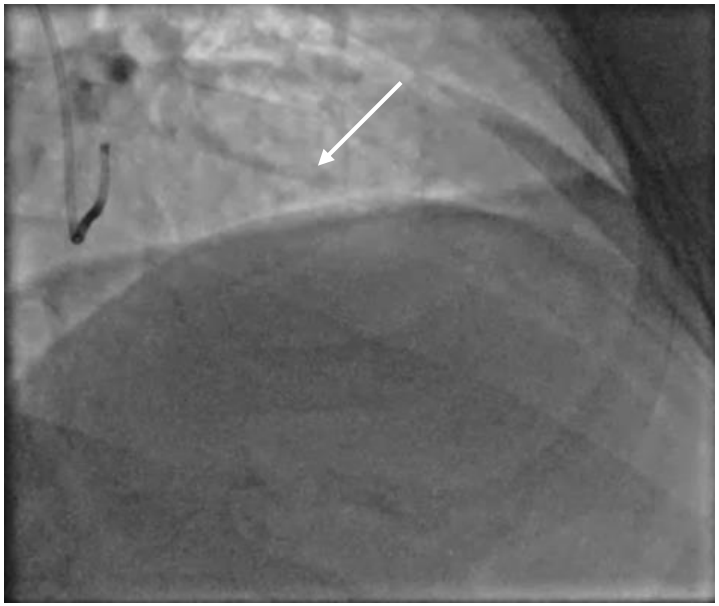
# Clinical History and Presentation

**Male patient, 61-year old, admitted for effort angina (Canadian Cardiovascular Society Grade II)**

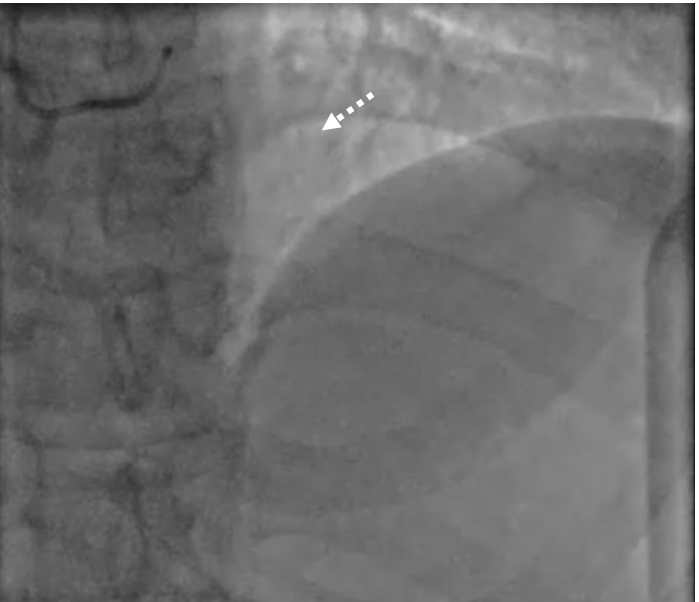
- **Cardiovascular Risk Factors:** ex-smoker, dyslipidaemia
- **Cardiovascular History:**
- Coronary angiogram 2 years ago (performed due to angina):
  - CTO in mid LAD
  - Congenital fistula between LAD and pulmonary artery
  - Conservative management
- Ischaemic Cardiomyopathy: LVEF= 45-50%
- **Medications:** Aspirin 100mg, Clopidogrel 75mg, Ramipril 5mg, Carvedilol 6.25mg BD, Eplerenone 25mg, Atorvastatin 40mg BD, Pantoprazole 40mg.
- **Lab:** Hb: 13.5g/dl; Cr: 1.1mg/dl; negative cardiac biomarkers
- **ECG:** Sinus rhythm, no evidence of ischaemia at rest
- **Echocardiography:**
  - Mild left ventricular systolic dysfunction (LVEF:45-50%).
  - Inferior wall akinesia, anteroseptal and apical hypokinesia.
  - Normal right ventricular function, no valvular disease.

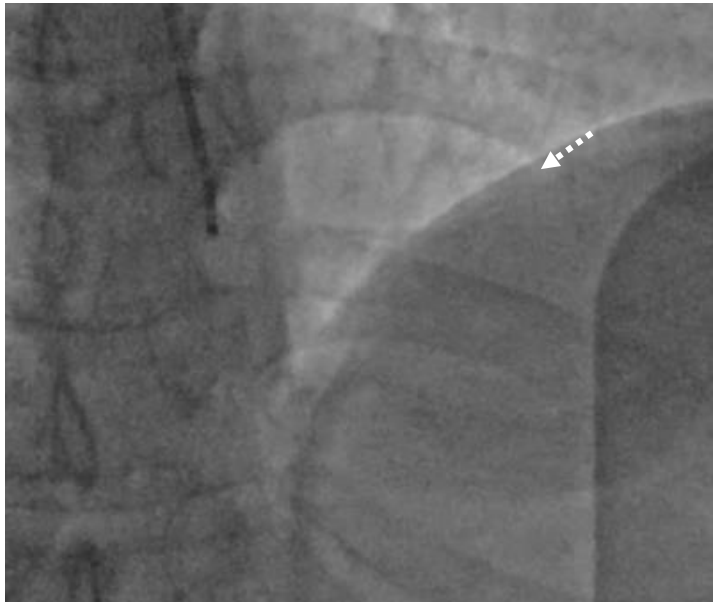
# Diagnostic Angiogram





Large fistula from mid-left anterior descending artery to pulmonary artery (arrows)





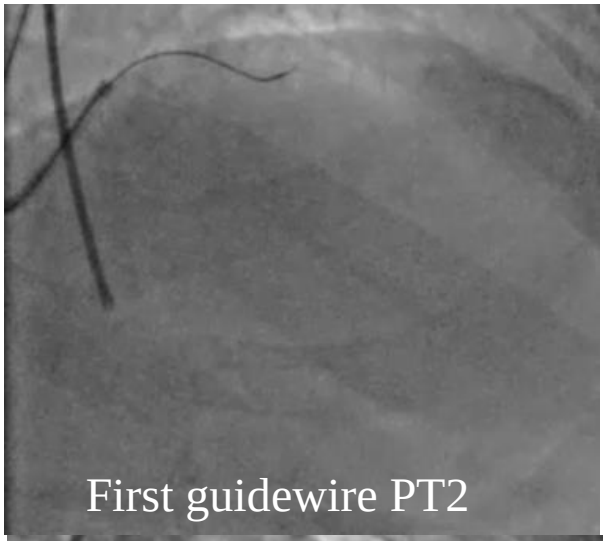
Antegrade and Retrograde LAD filling through microchannels and collaterals from RCA (Rentrop grade II-III) (dashed arrows).

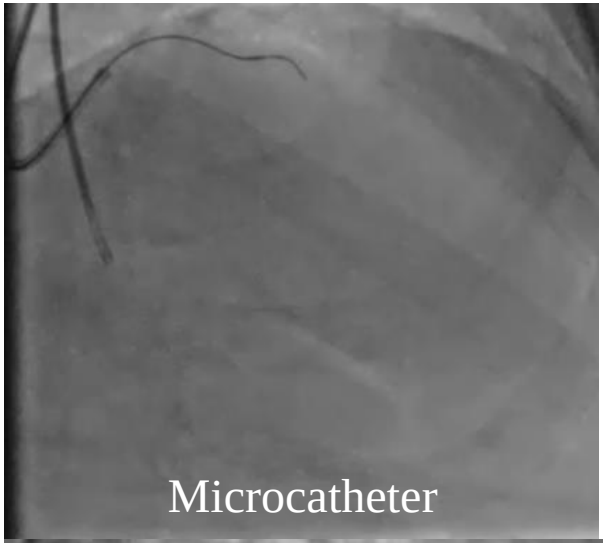
# Clinical Decision Making

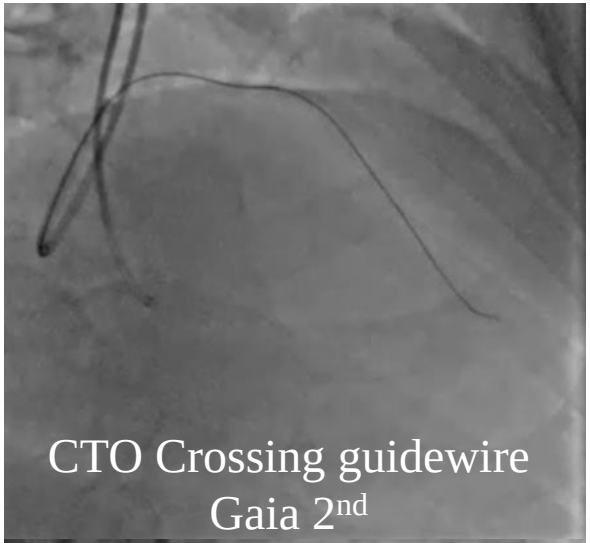
- 1 vessel coronary artery disease
- Left anterior descending CTO
- Congenital fistula left anterior descending – pulmonary artery
- The case was referred to Heart Team but the patient denied the surgical option
- Planned CTO PCI and percutaneous fistula closure in the same procedure

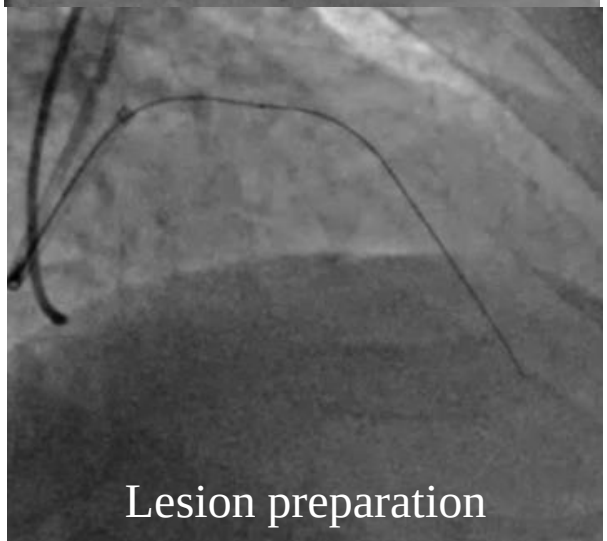
# Crossing of Left Anterior Descending CTO

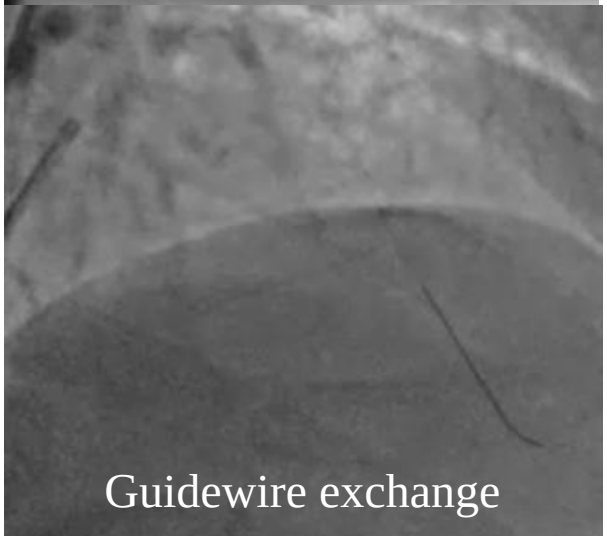
- **Right femoral access for LCA and right radial access for RCA (guide catheters XB 4, 7Fr and JR 4, 6Fr respectively). Dual injections.**

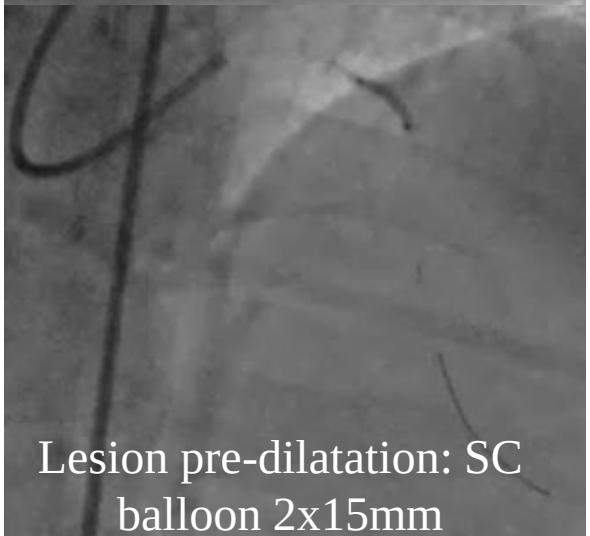

First guidewire PT2


Microcatheter

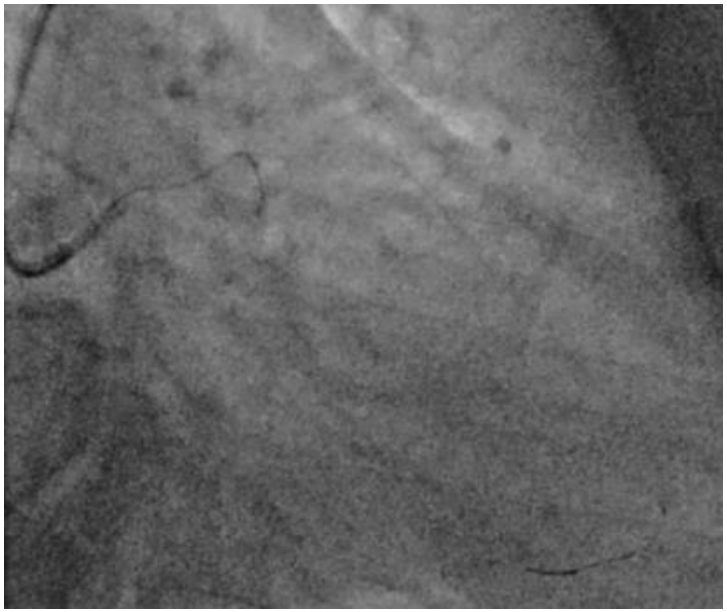

CTO Crossing guidewire Gaia 2nd

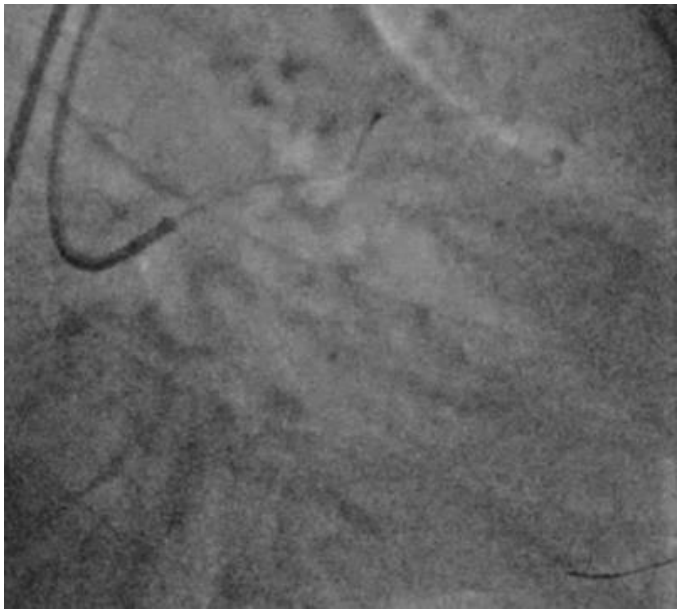

Lesion preparation

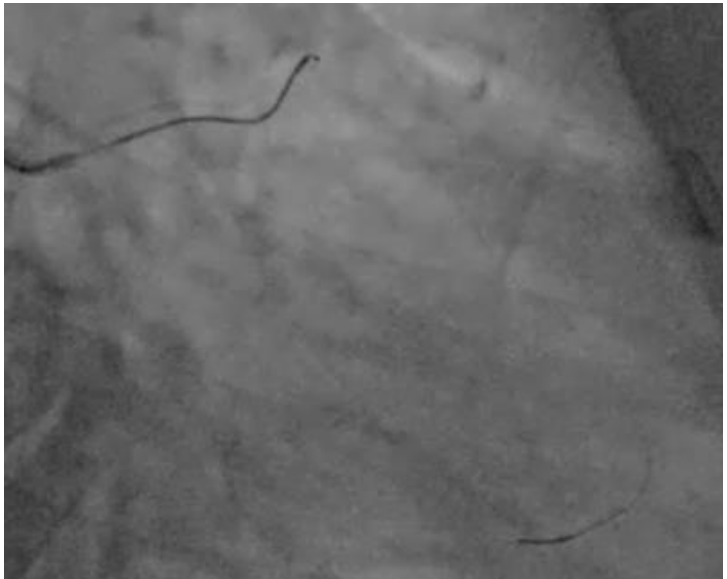

Guidewire exchange

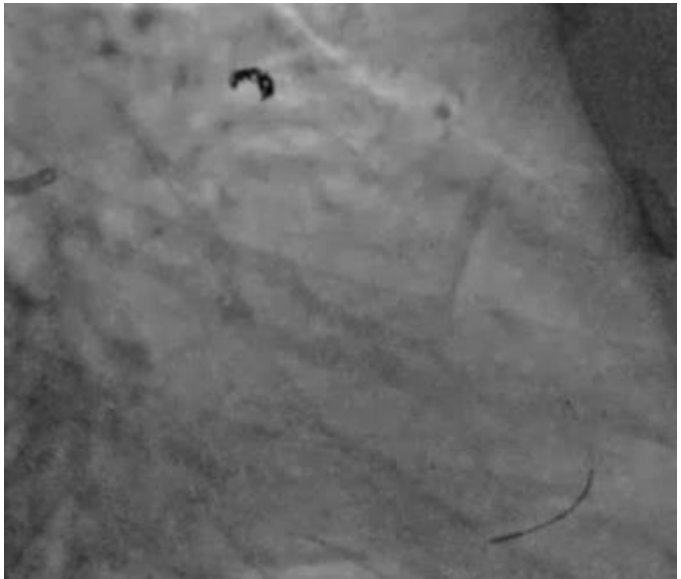

Lesion pre-dilatation: SC balloon 2x15mm

# Percutaneous Fistula Closure







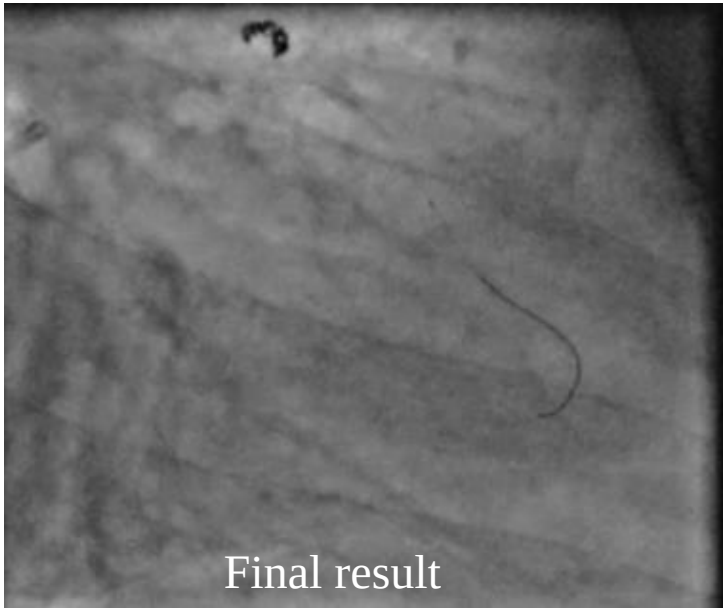


- **Insertion of highly torquable guidewire for coils in fistula.**
- **Microcatheter advancement and tip injection.**
- **Two Detachable Coils: 2mm & 4mm successfully implanted in fistula through microcatheter**

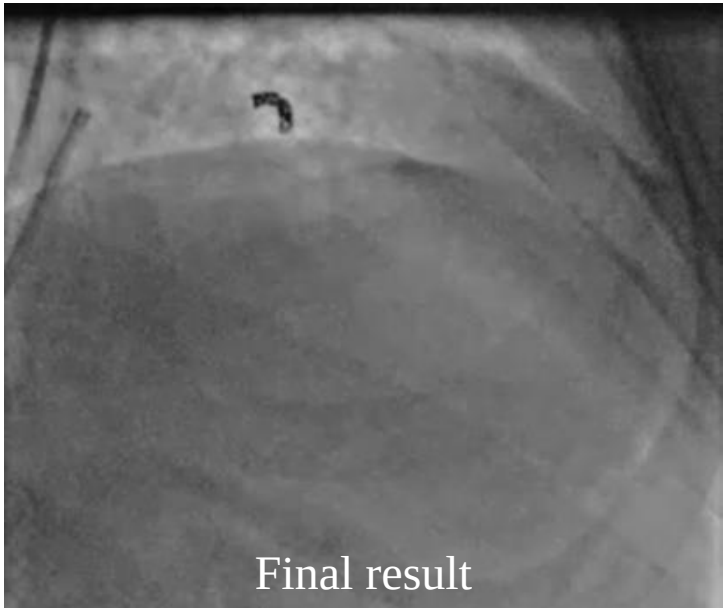
# CTO PCI Completion

DES 2.75x30mm

POT: NC balloon 3.25x6mm

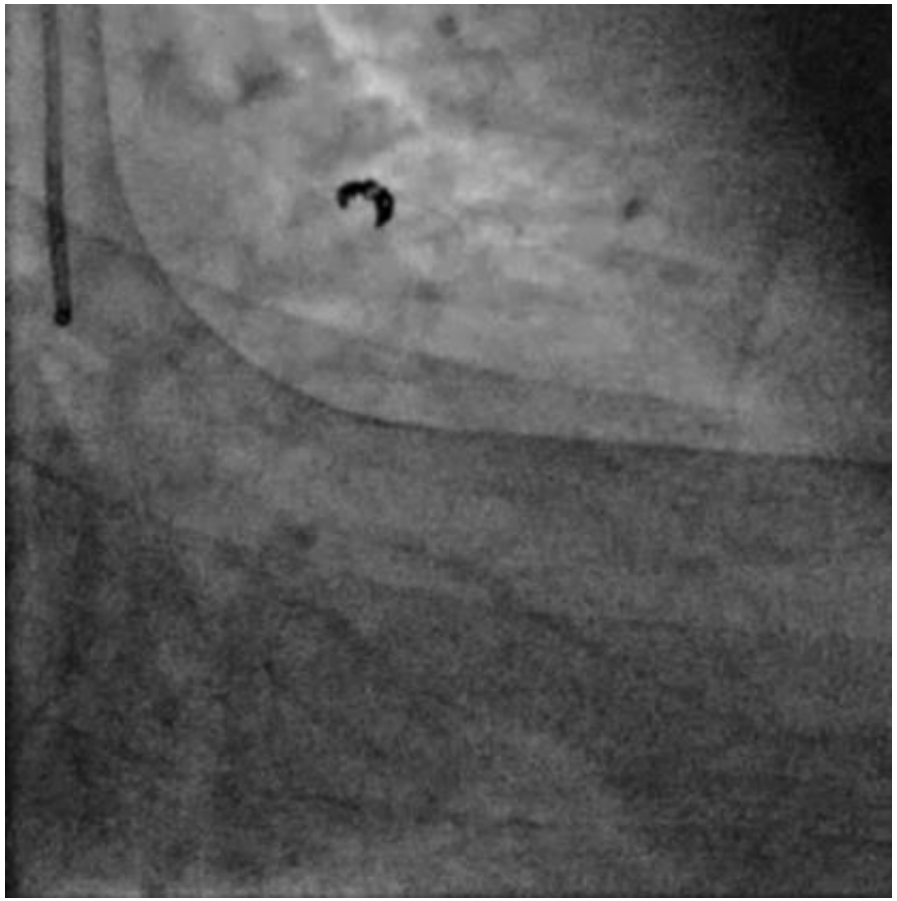


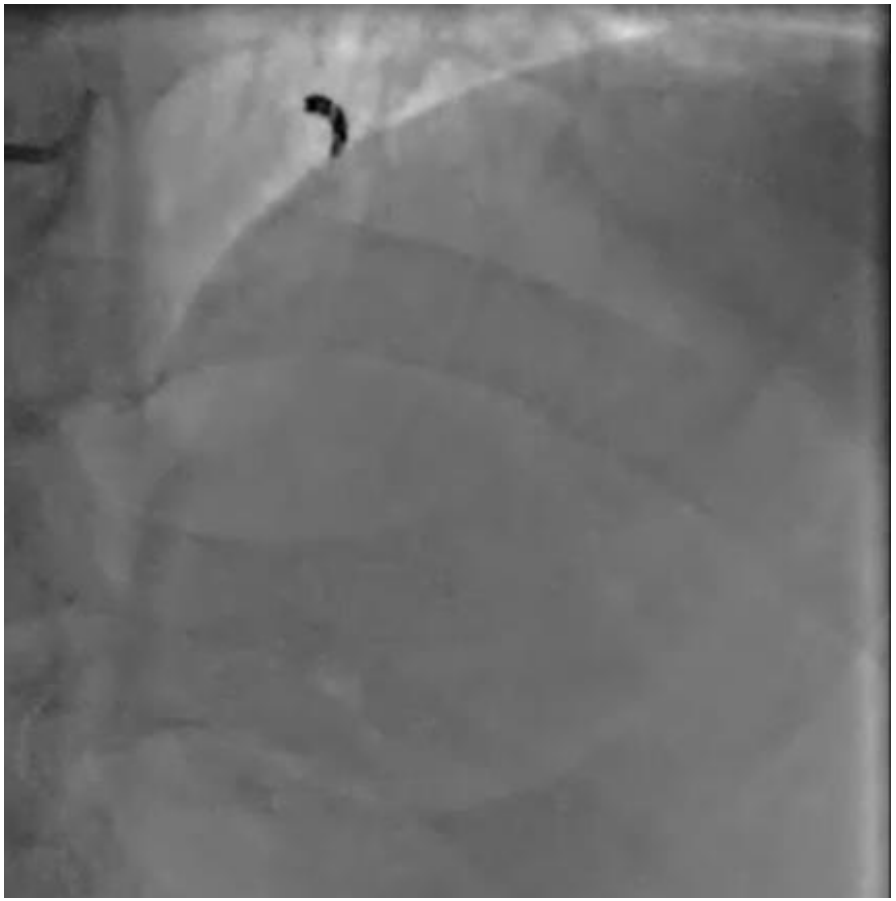
Final result



Final result

# Post 1 month





# Conclusions

- Coronary artery fistula is a rare abnormal finding of coronary angiography (prevalence: 0.1% to 0.2% of all patients who undergo invasive coronary angiography)
- When large in size and/or symptomatic, interventional or surgical closure is required
- Coronary fistulas can rarely cause myocardial ischemia due to coronary ‘steal’ or increase the progress of atherosclerosis when located in proximal part of the artery
- Familiarization with coil embolization systems is essential for the successful treatment of coronary fistulas and prevention of complications