

# The Double Kissing Snare for Dislodged Stent Retrieval

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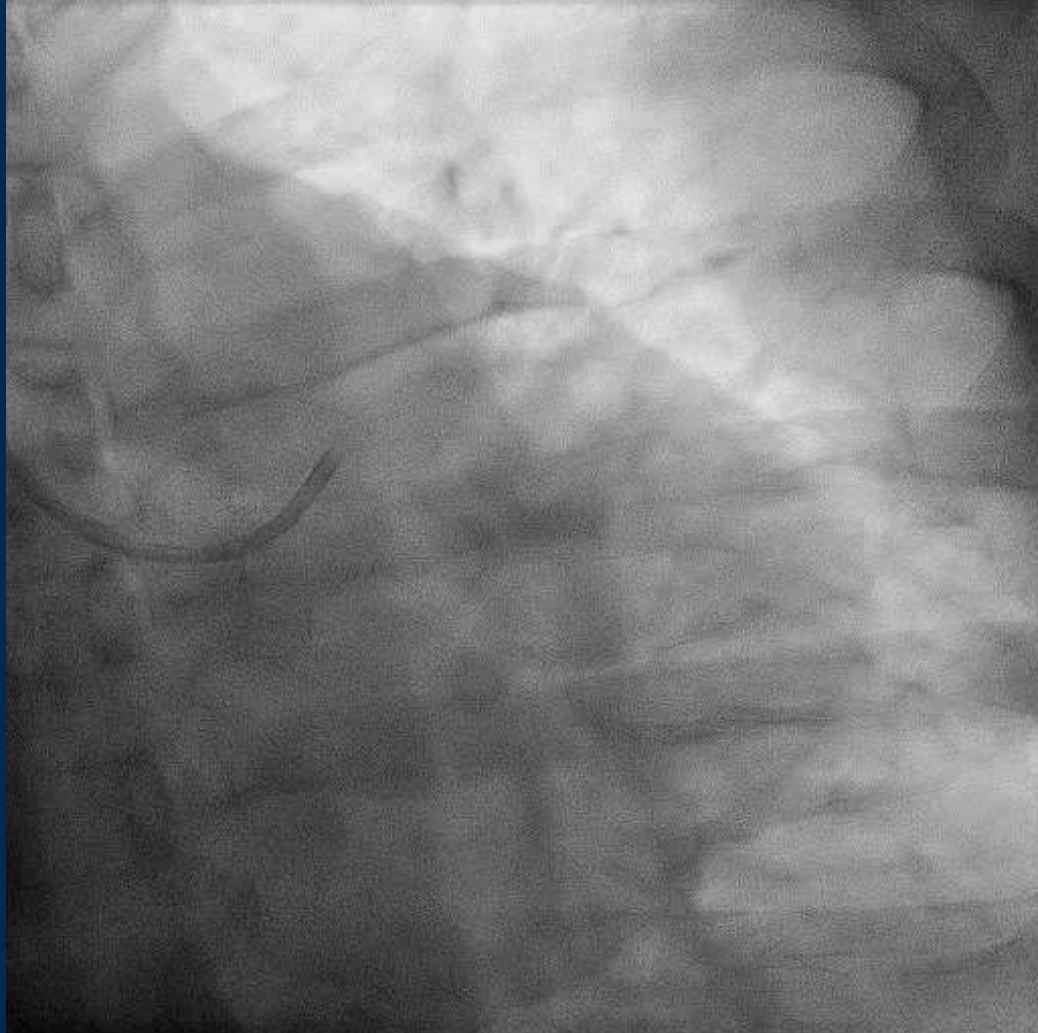
# Disclosure

- No potential conflicts of interest to disclose

# Clinical History

- 55-year-old male
- Comorbidities
  - Hypertension
  - Dyslipidaemia
  - History of Anterior STEMI – PCI to LAD done
- NYHA I
- CCS II
- Resting Echocardiogram
  - LVEF 50%
  - Basal anterolateral and lateral wall hypokinesia
- Electively admitted for staged PCI to left circumflex (LCx) artery stenosis

# Diagnostic CAG



# Diagnostic CAG Summary

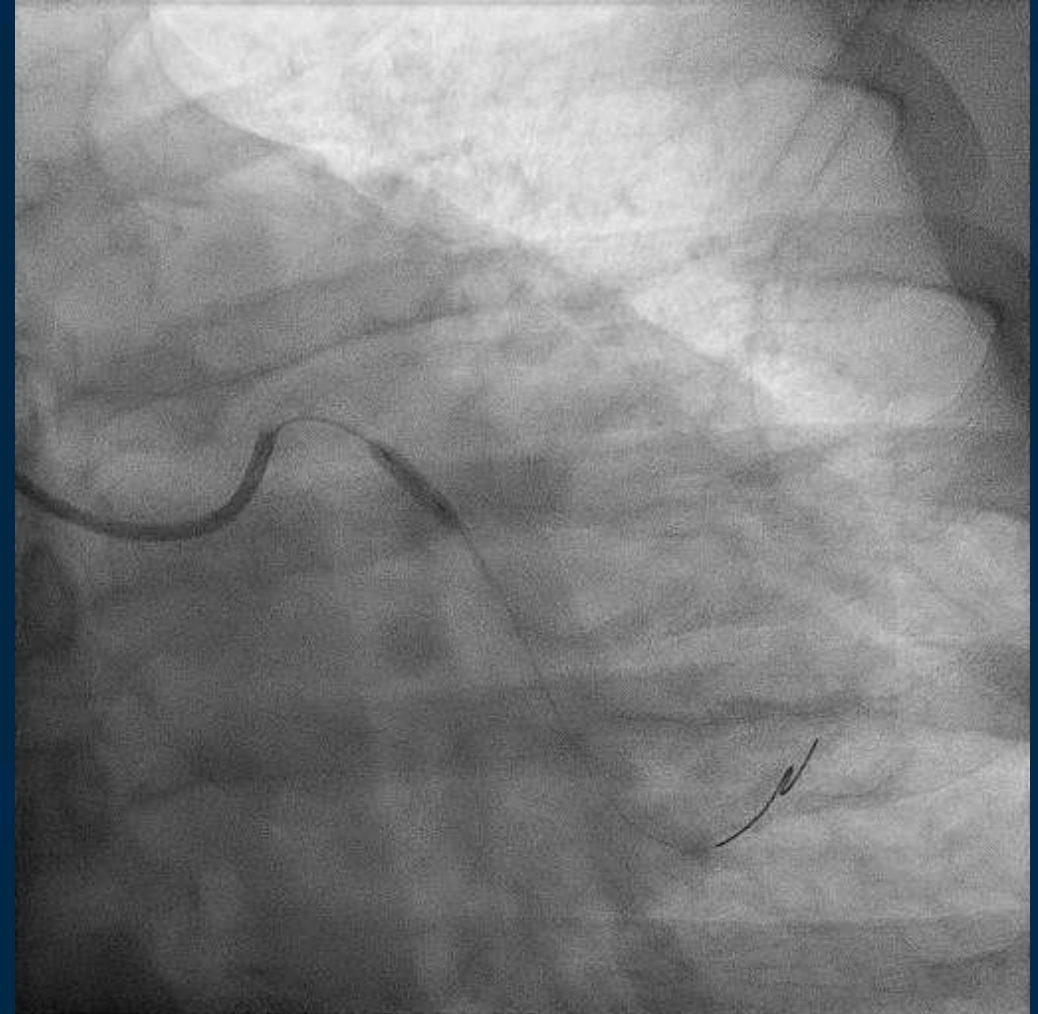
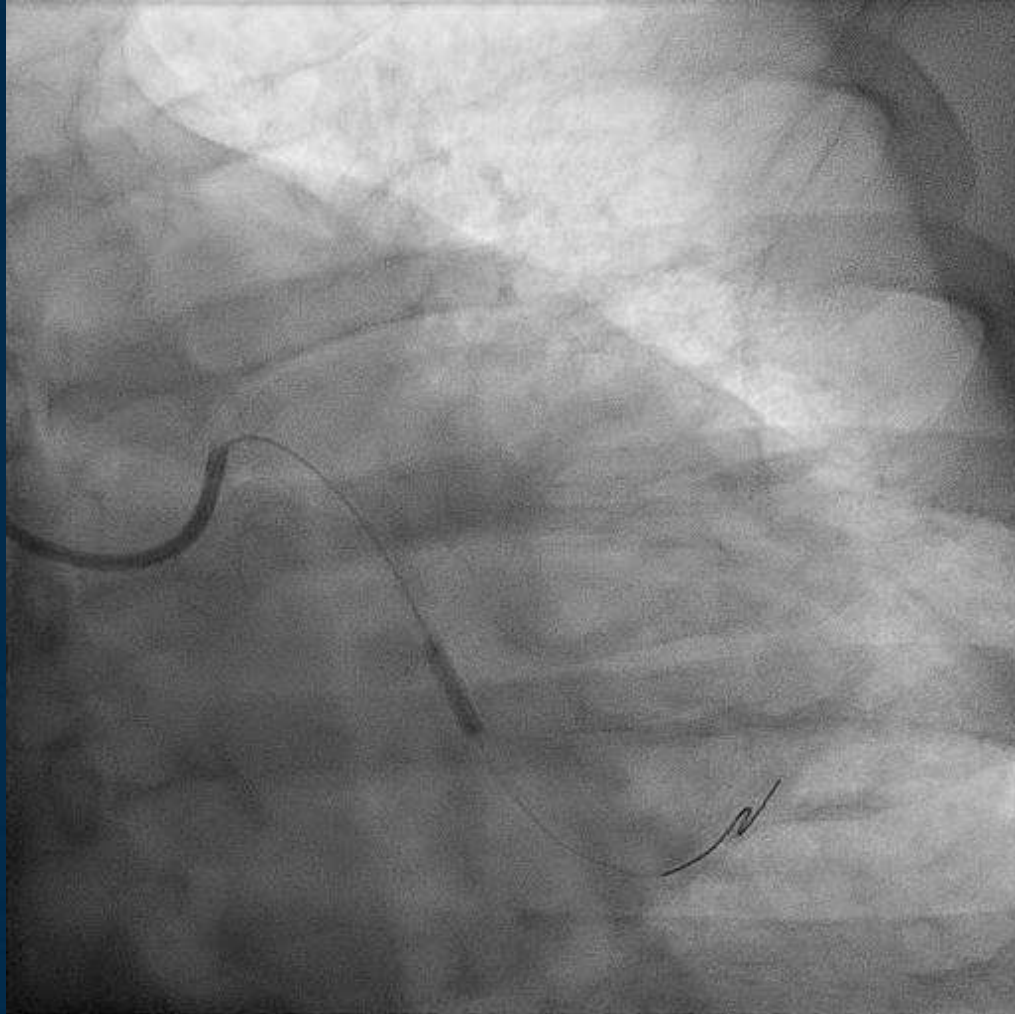
- LCx acute angulation of 90° from LM
- pLCx: 80% non calcified stenosis
- dLCx: 70% stenosis
  
- LAD: patent stent
  
- RI: 50% stenosis
  
- RCA: Dominant, mild disease

# Equipment & Interventional Strategy

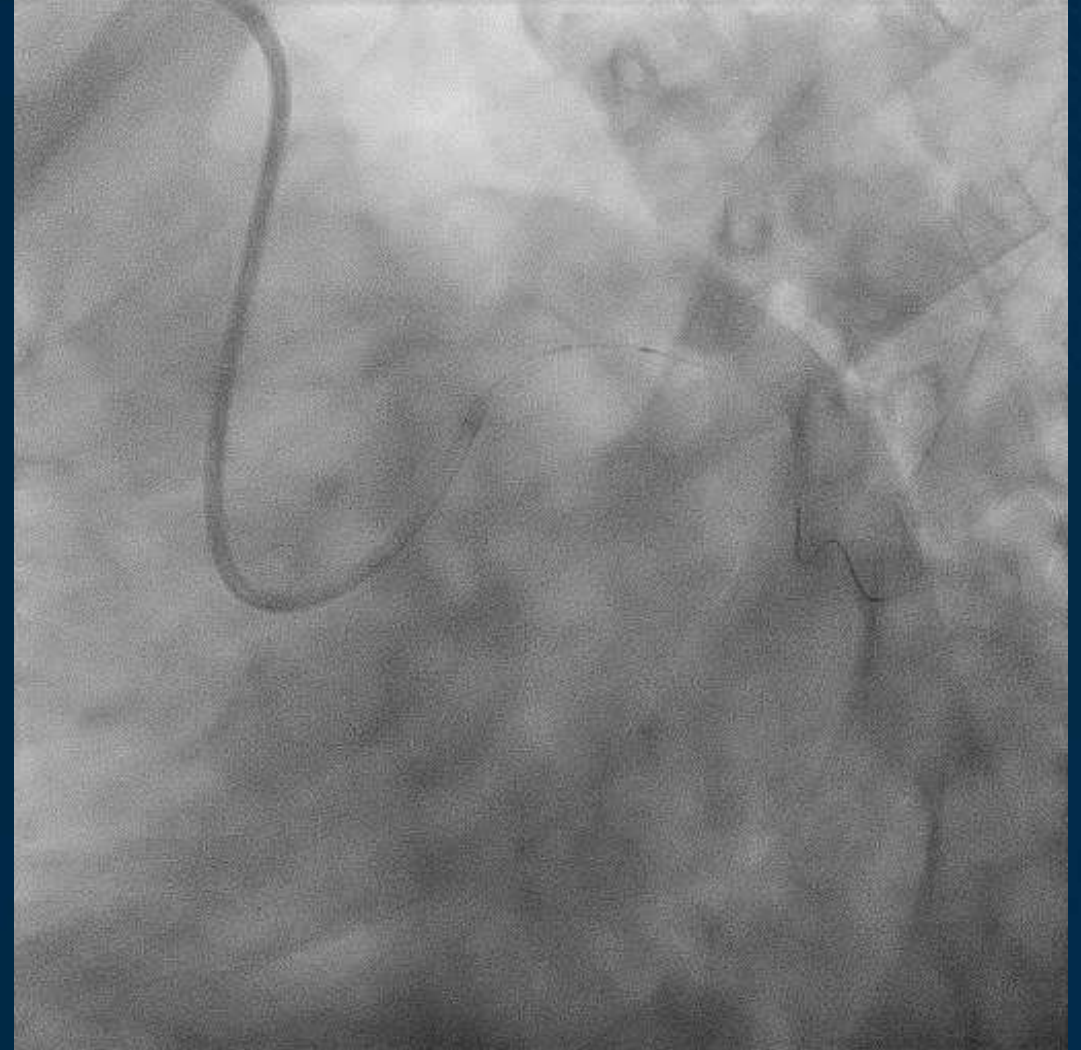
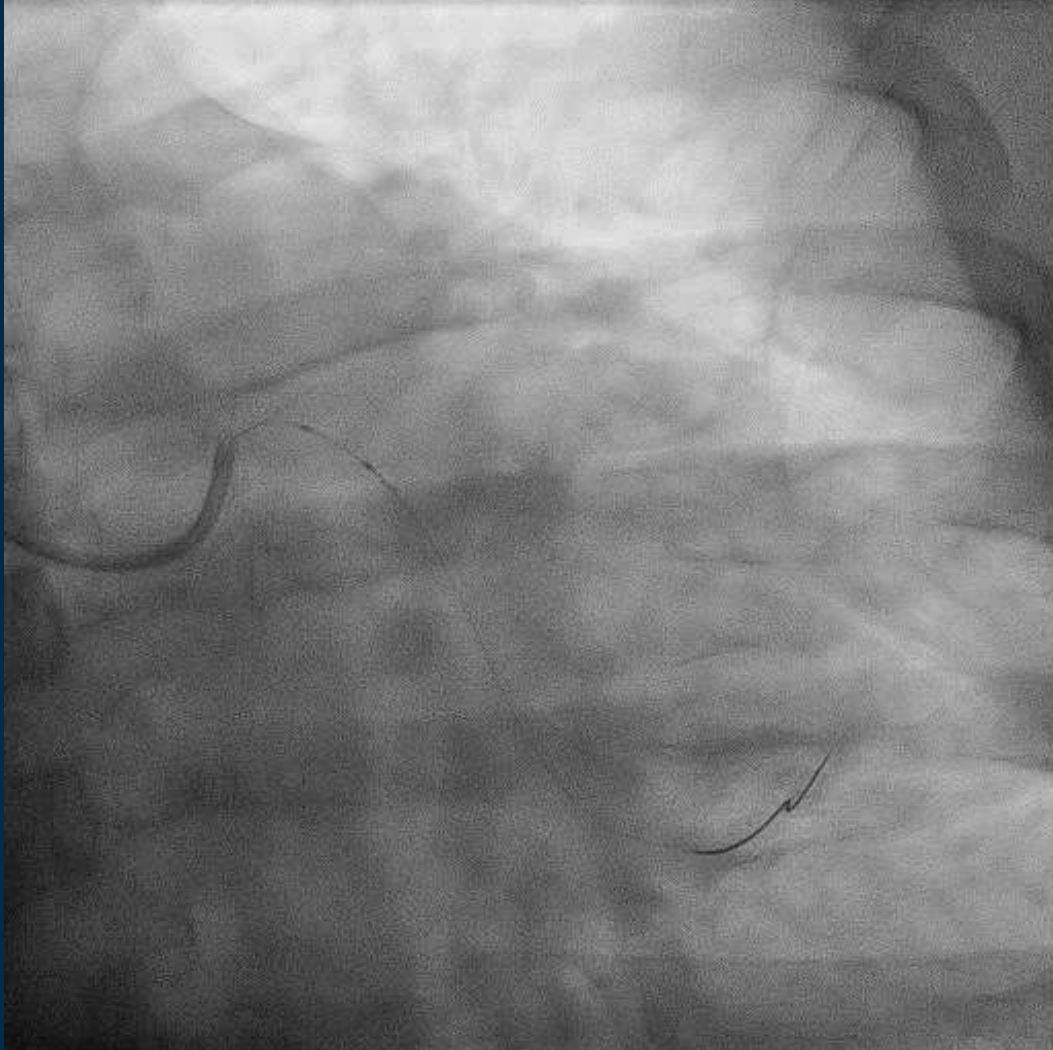
- Vascular access: Right radial artery with 6Fr sheath
- Coronary catheter: EBU 3.0 6Fr
- Interventional steps: Predilatation of dLCx and pLCx lesions  
Stenting of dLCx followed by pLCx  
Stents postdilatation

# LCx Predilatation

dLCx and pLCX sequentially predilated with SC 2.5 x 10mm at 14-20atm



# Post LCx lesion predilatation





# Attempted dLCx stenting



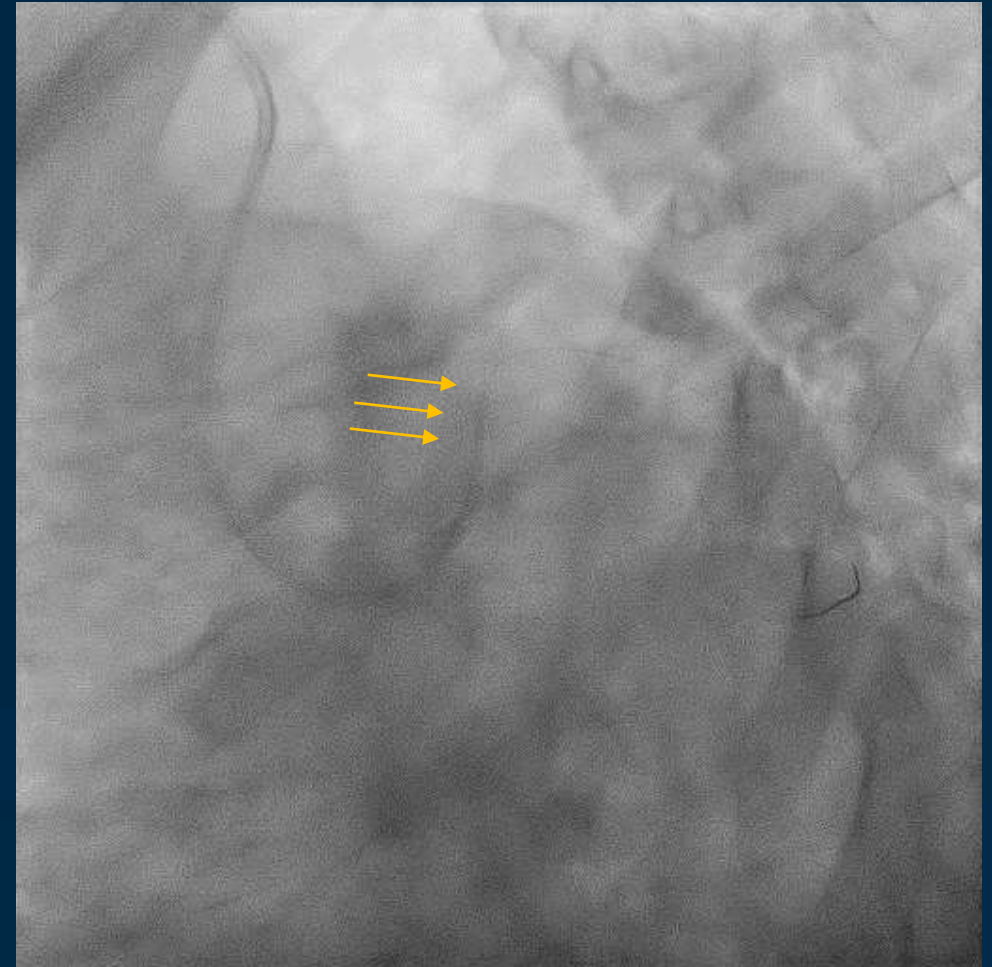
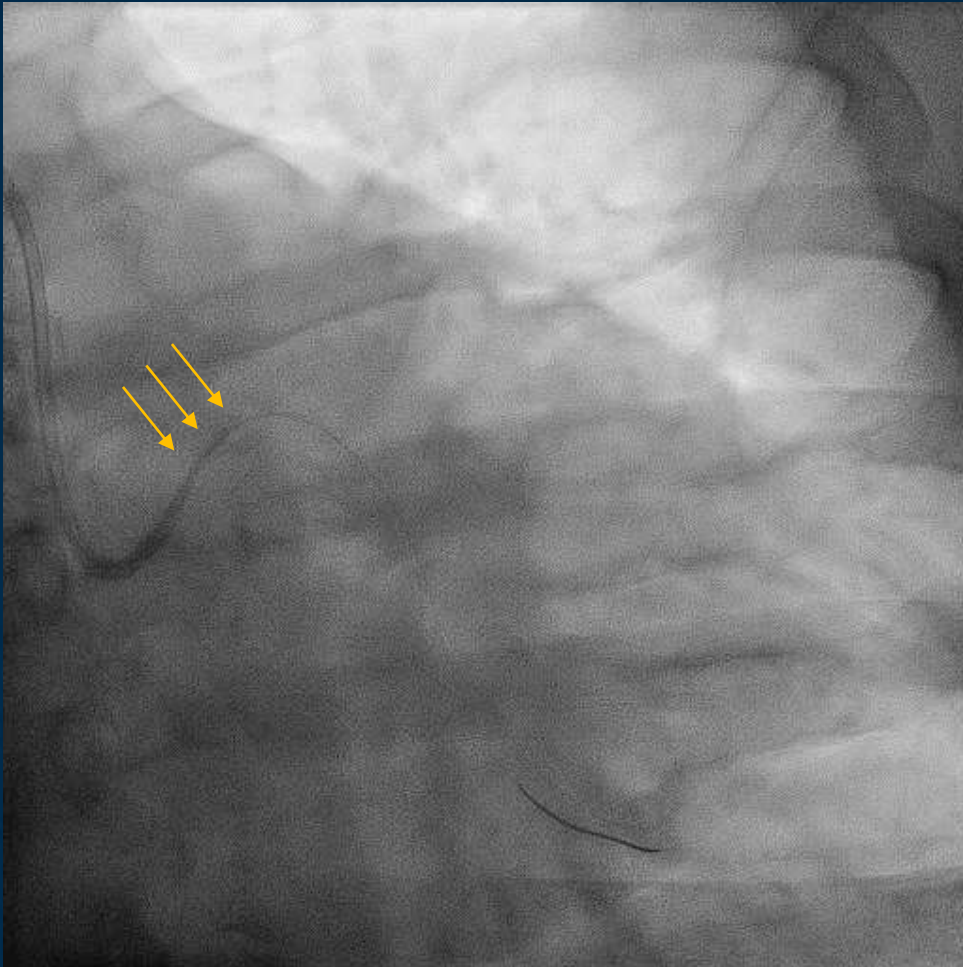
Attempted to deliver DES 2.75 x 33mm to dLCx

Unable to manoeuvre stent to LCx due to acute angle resulting in guider kicked back

Undeployed stent edge wedged at distal guider edge resulting in stent slippage from stent balloon on pull back

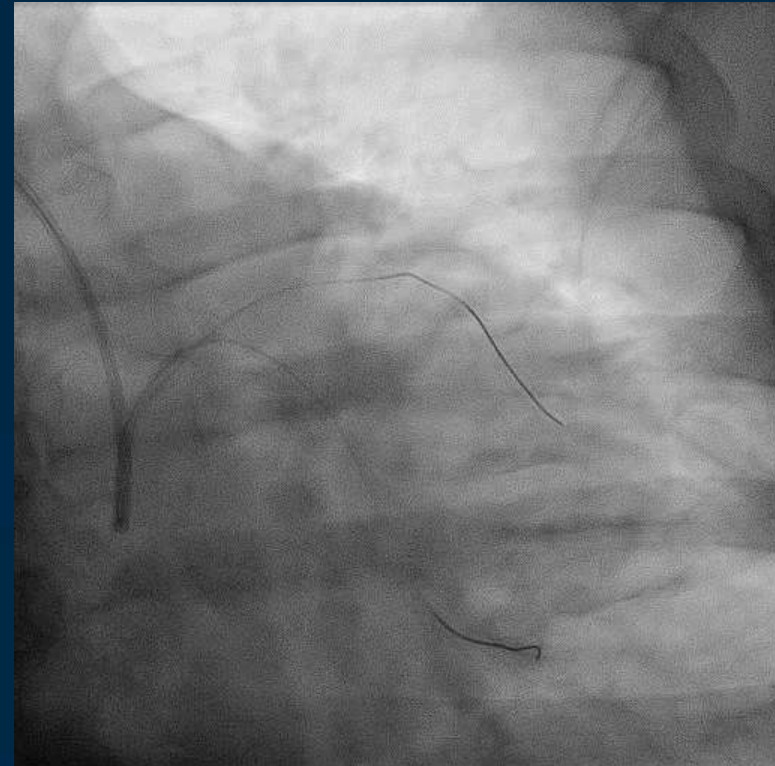
# Stent Dislodged

Stent dislodged outside guider, partially hanging between LM and left aortic cusp



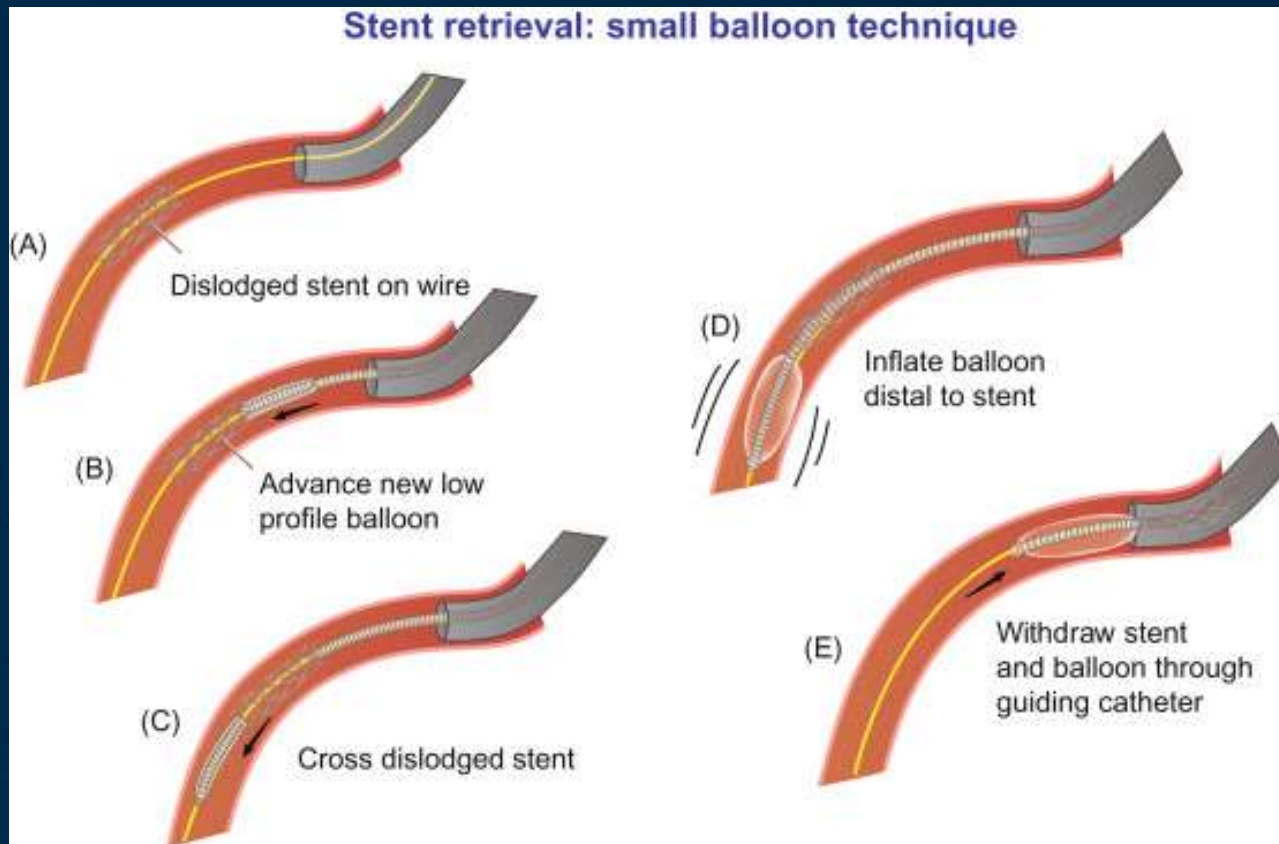
# Situational Assessment

- Dislodged stent – although in LM, was non flow limiting
- No angina, hemodynamically stable
- Paramount not to lose guider and wire position
- Introduced anchor wire into LAD to stabilise guider



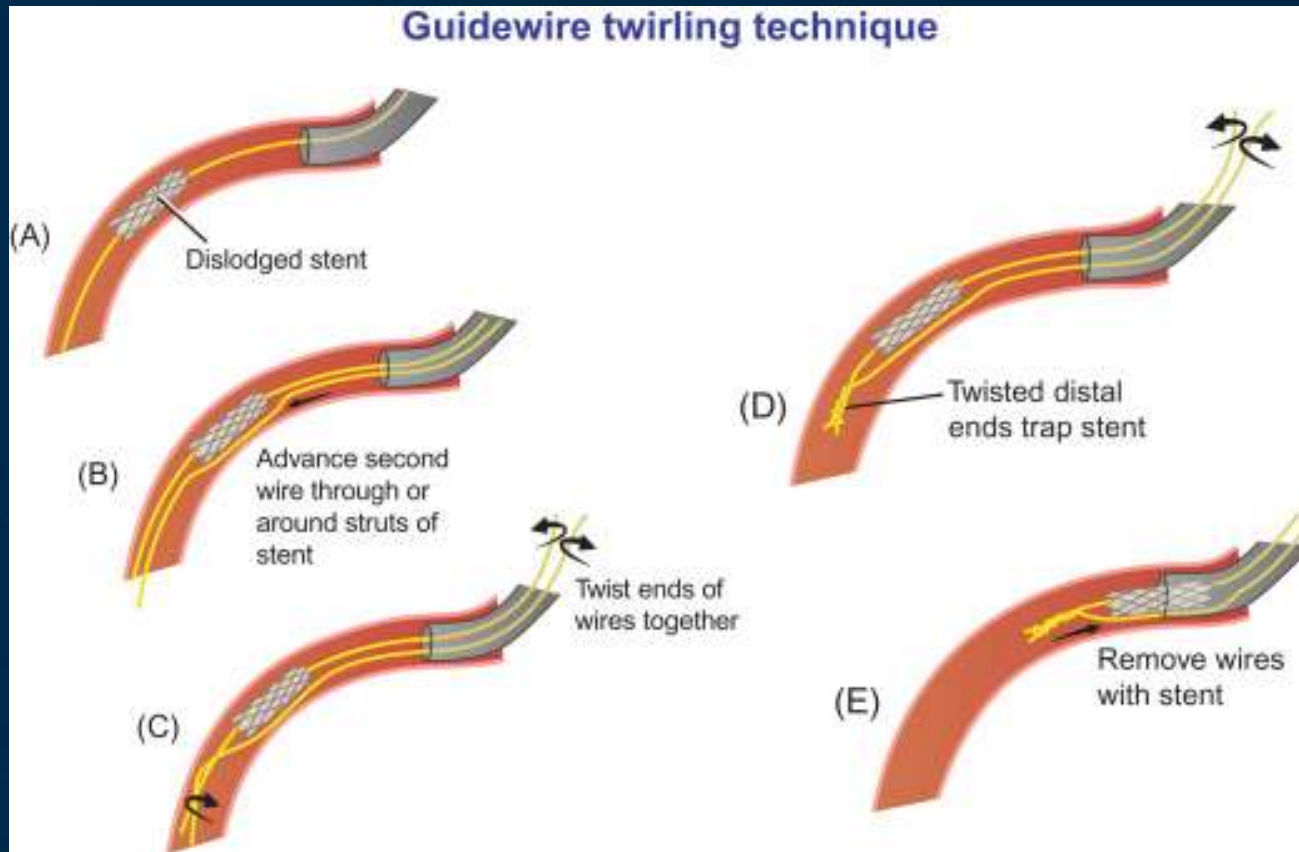
# Stent Retrieval Options?

- Small distal balloon technique
  - Introduce low profile balloon through dislodged stent and inflate distally. Balloon provides traction to trawl stent back



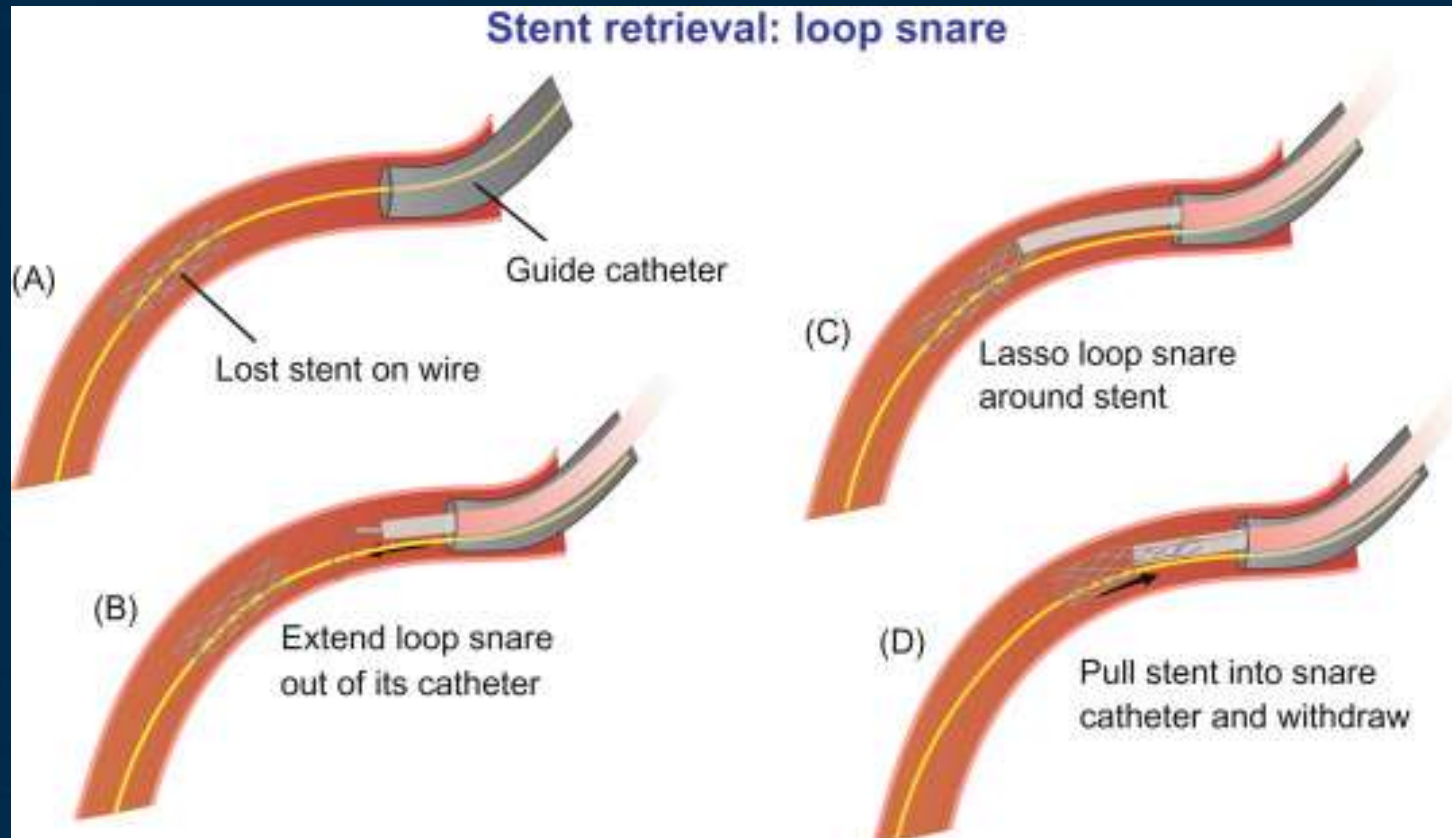
# Stent Retrieval Options?

- Double wire braiding technique
  - Pass a stiff guidewire through dislodged stent struts. Both guidewires are braided until the intertwining wires capture the stent



# Stent Retrieval Options?

- Loop snare
  - Utilise a dedicated snare to capture the proximal end of the stent for retrieval into the guider

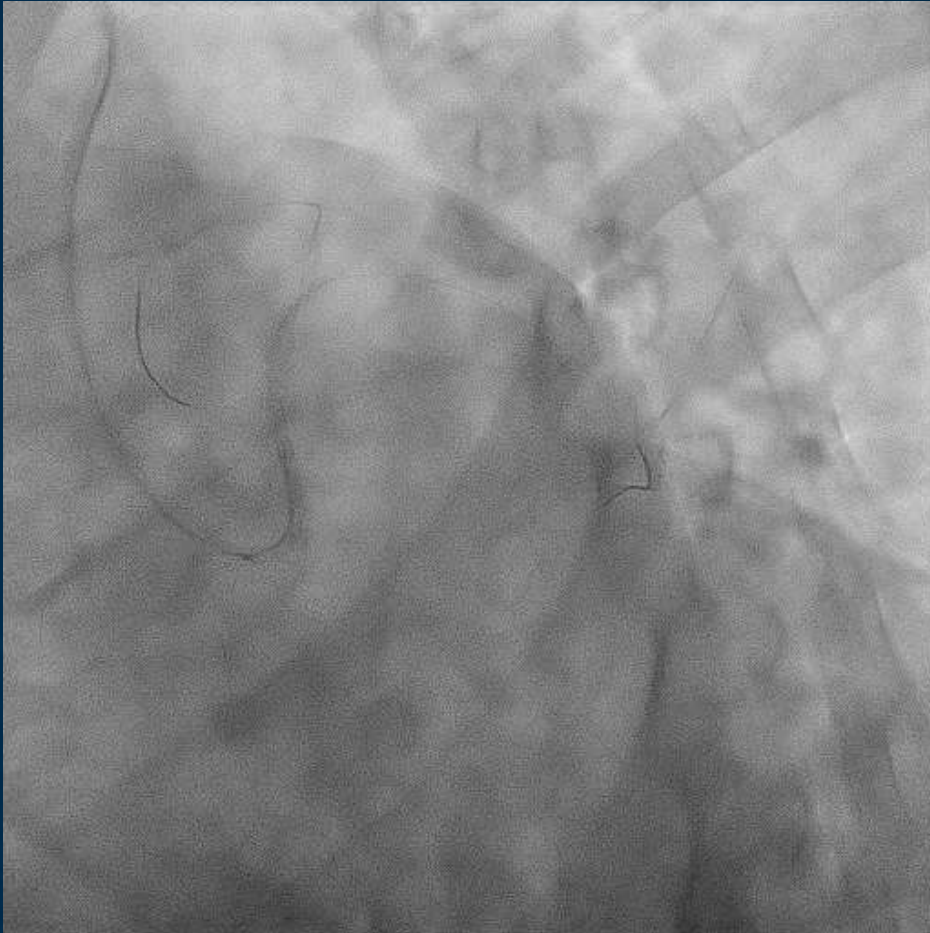


# Published Data

- Limited published data available on the subject of dislodged stent retrievals
- Brilakis et al. found that in a single center experience, stent loss occurred in 38 / 11773 PCI (0.32%)
- Retrieval methods used included:
  - distal balloon technique (45%)
  - loop snare (26%)
  - two wire technique (5%)
  - biliary forceps (12%)
  - Cook retained fragment retriever (10%)
  - basket retrieval device (2%)

# Endovascular Snare

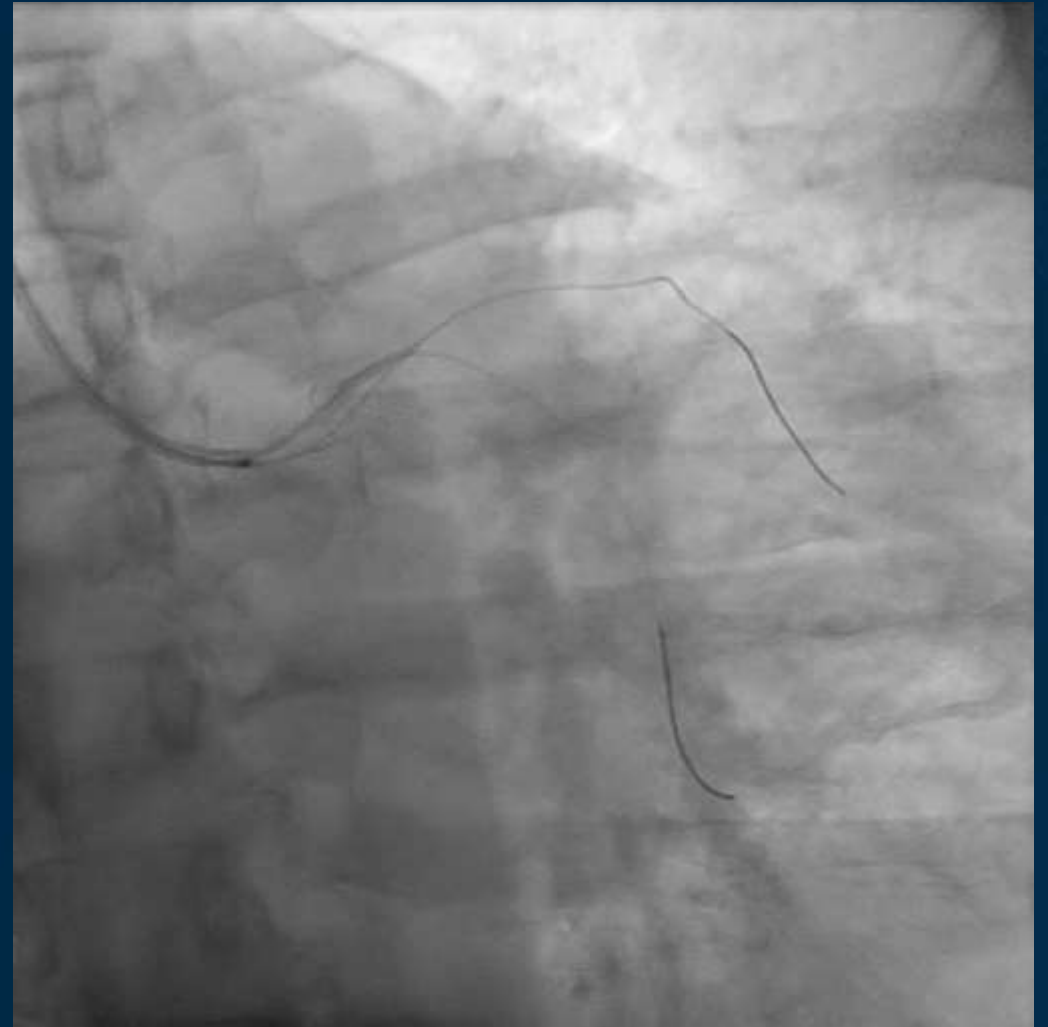
ONE Endovascular Snare 7mm, 200cm (Merit Medical) introduced through radial EBU guider





# Successful Snaring

Successful snaring of body of stent after multiple attempts



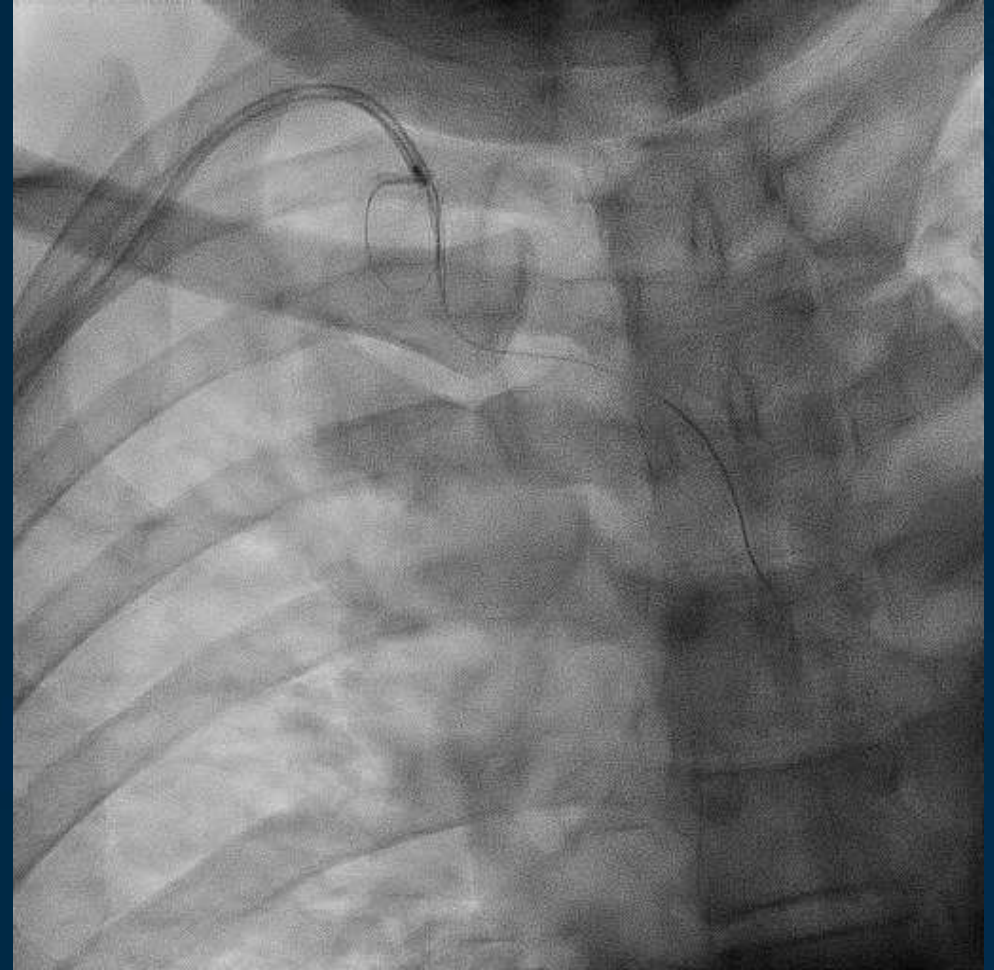
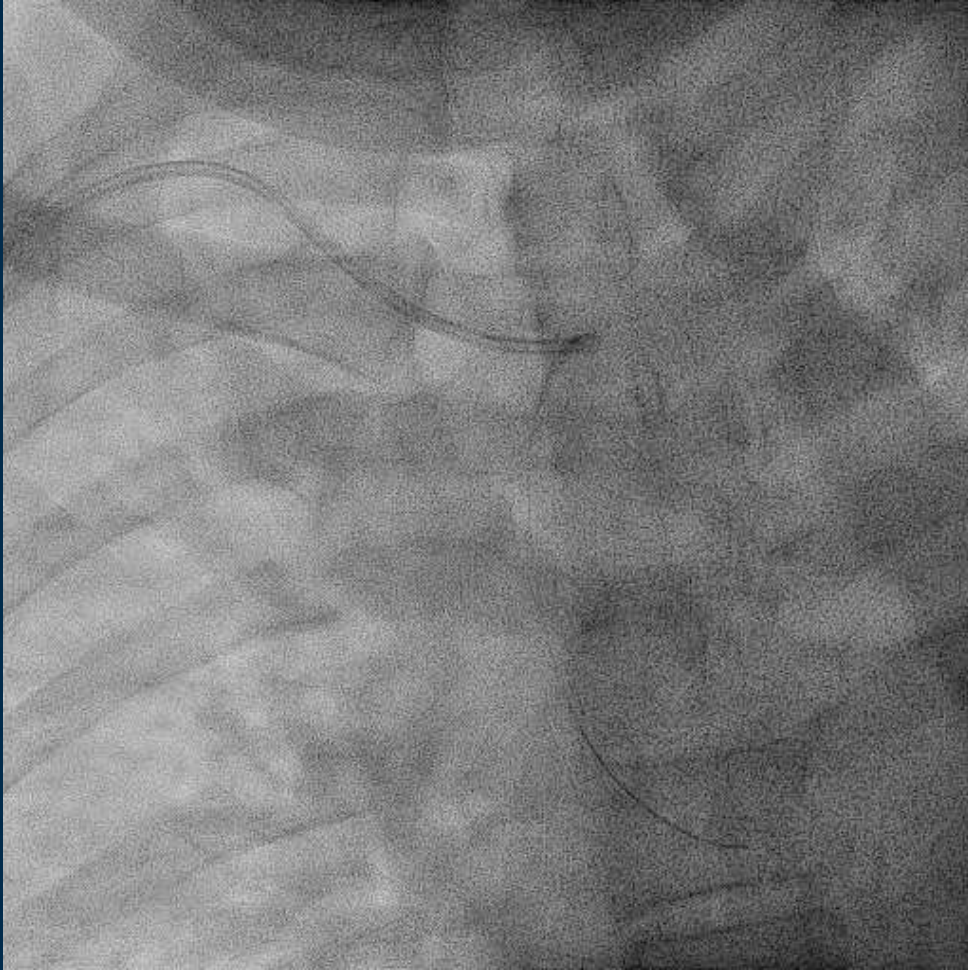
# Stent Retrieved

Stent pulled enbloc with coronary guidewire



# Towed to Subclavian Artery

Towed to subclavian artery but unable to retract stent into guider



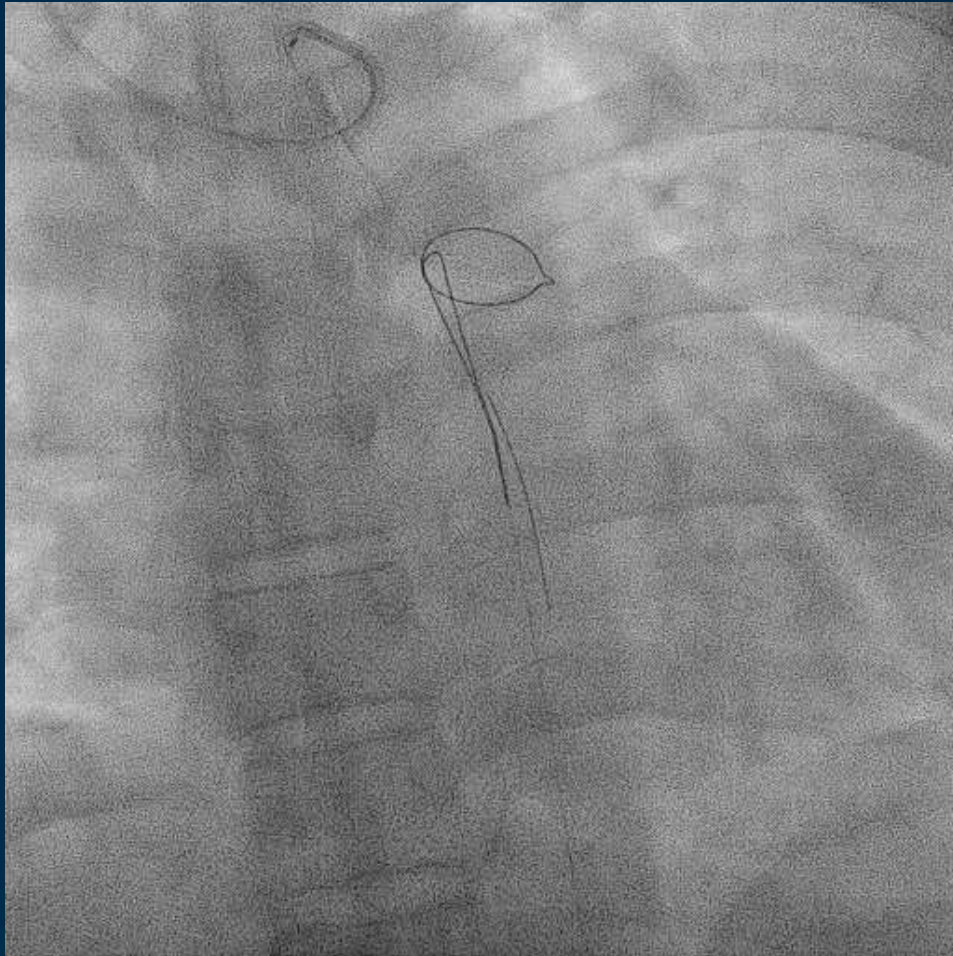
# What's Next?

- Pulling to radial sheath would risk injury/perforation of the narrower radial artery
- Decided for retrieval via femoral approach
- Larger lumen 8Fr sheath in right femoral
- Second snare utilising the Multi-Snare 15-20mm, 125cm (PFM Medical)
- Rendezvous with 1<sup>st</sup> snare at subclavian artery

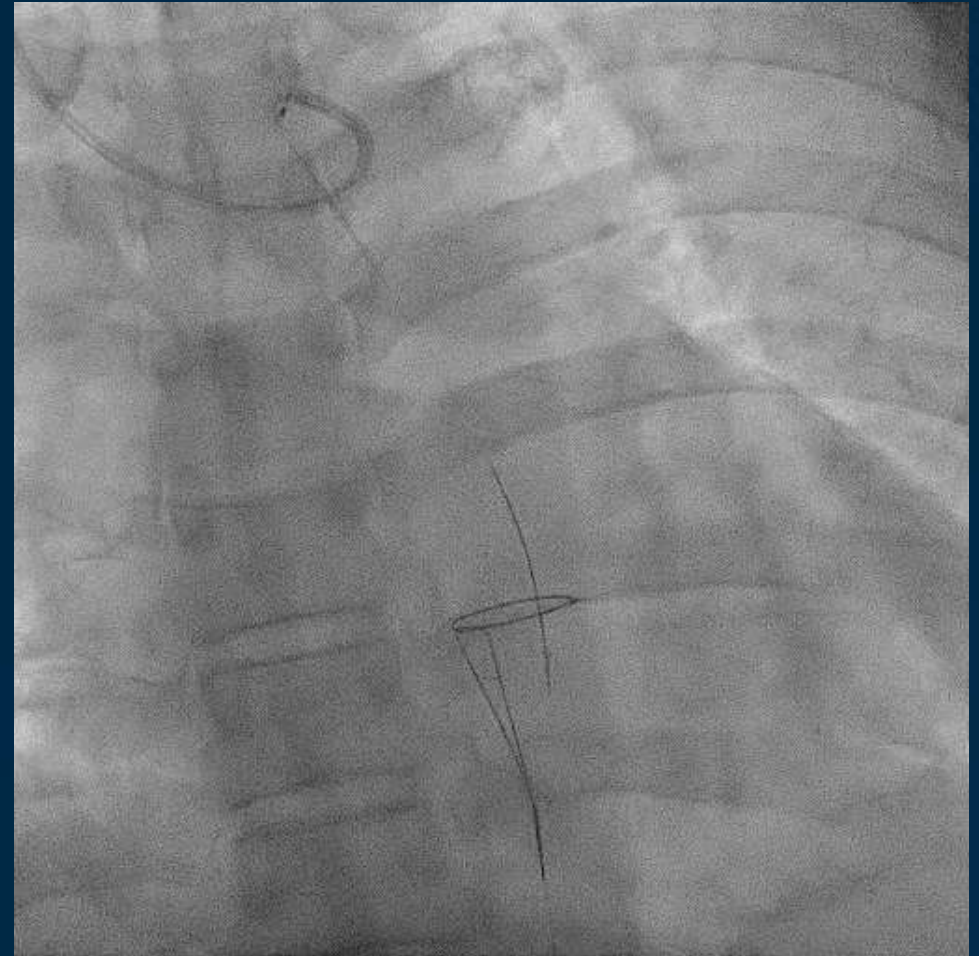


# Attempted 2<sup>nd</sup> Snare

Repositioned for snaring in descending aorta – coaxial approach

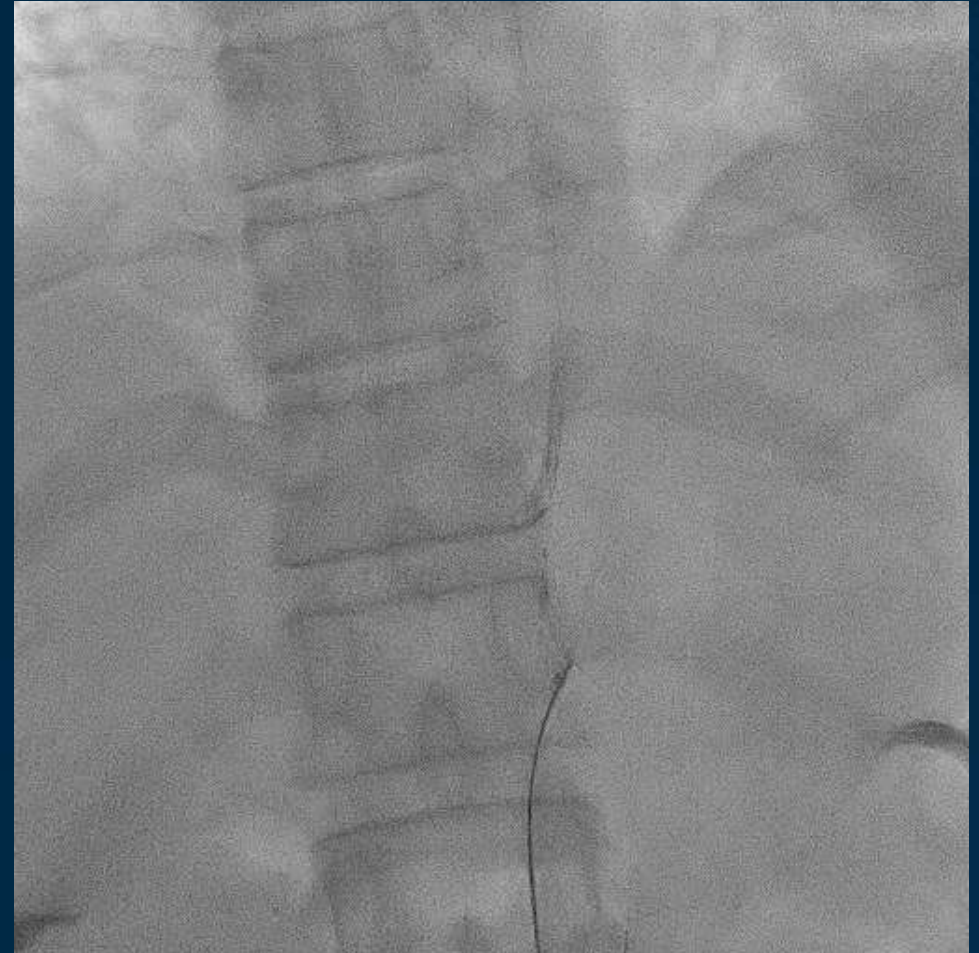
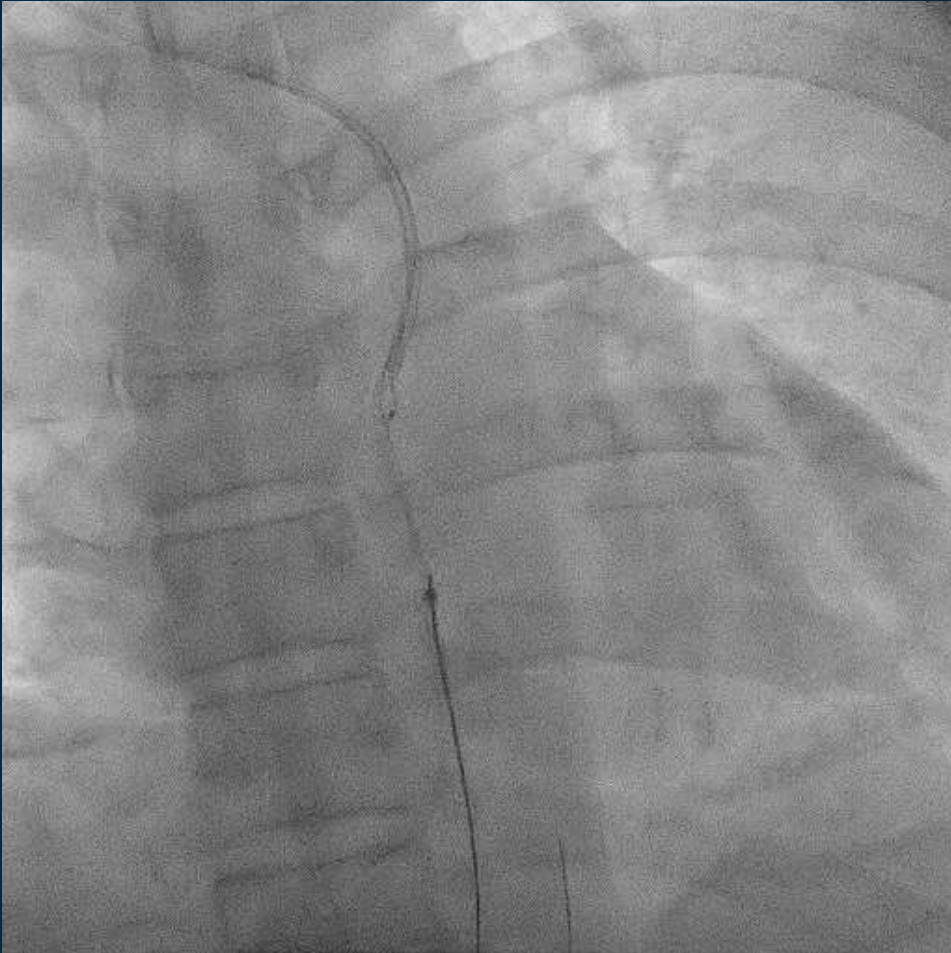


Successful snaring with PFM Medical Multi-Snare



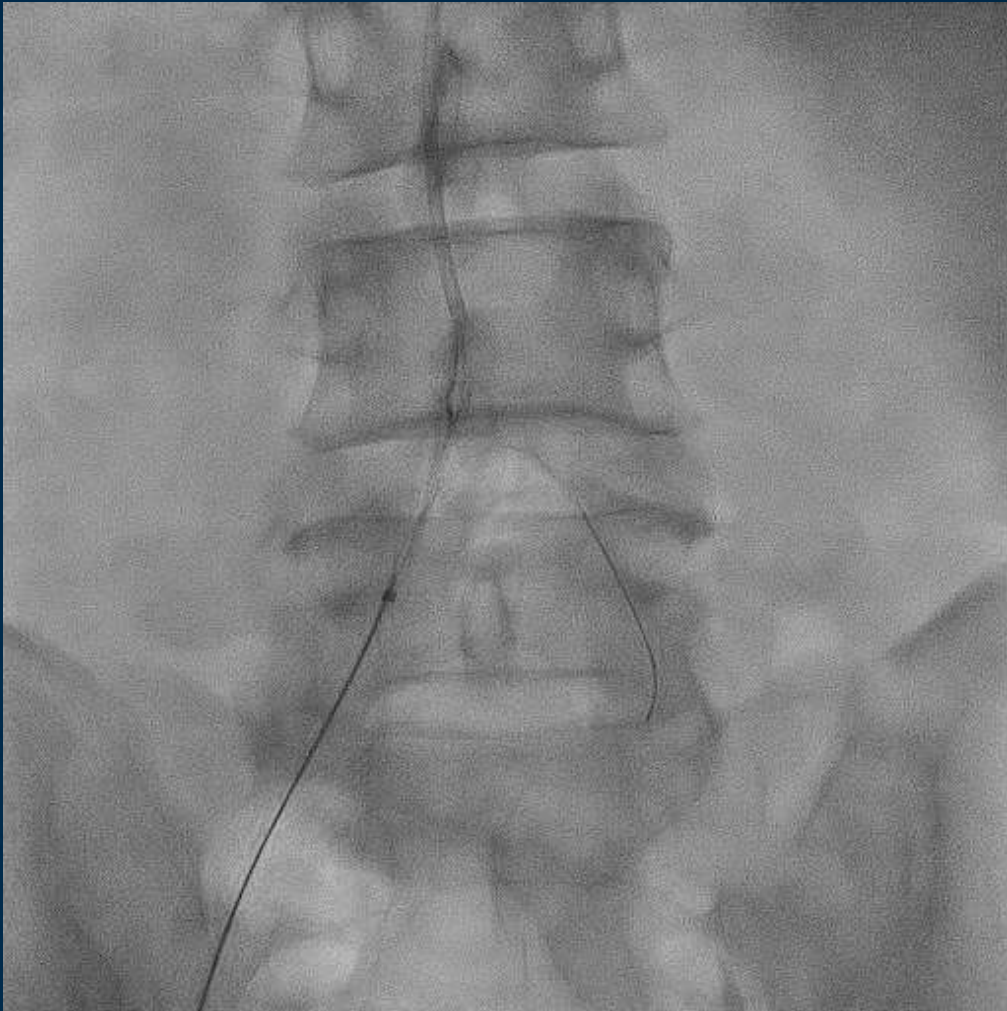
# Stent Retrieval Enbloc

Snared stent towed enbloc towards right femoral artery through simultaneous push and pull



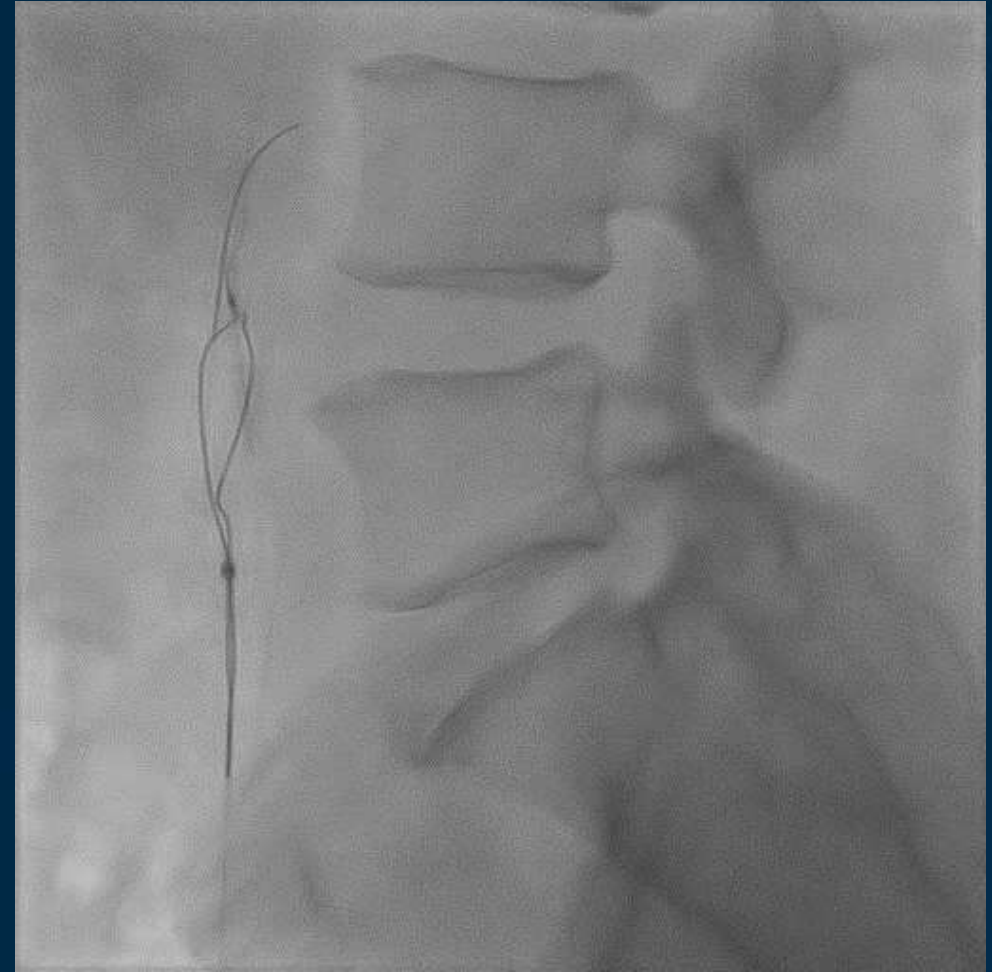
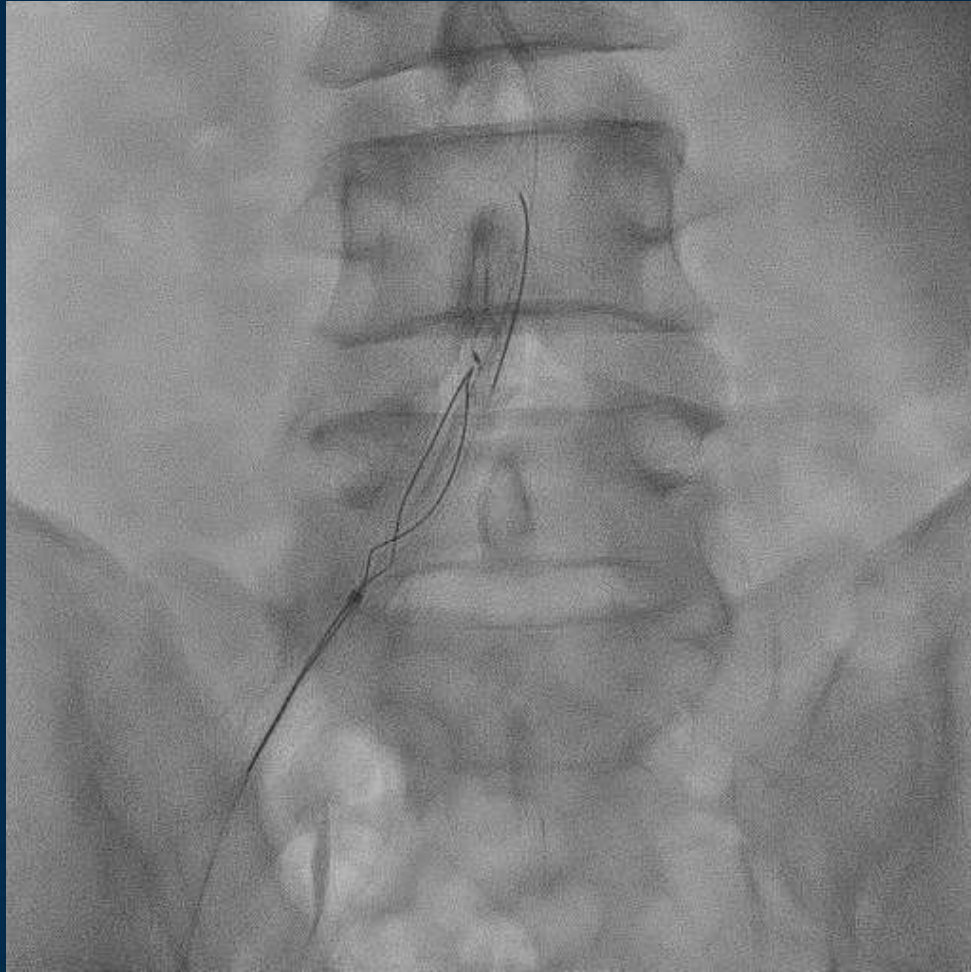
# Snare Undone

Femoral snare slipped due to counter traction from radial snare



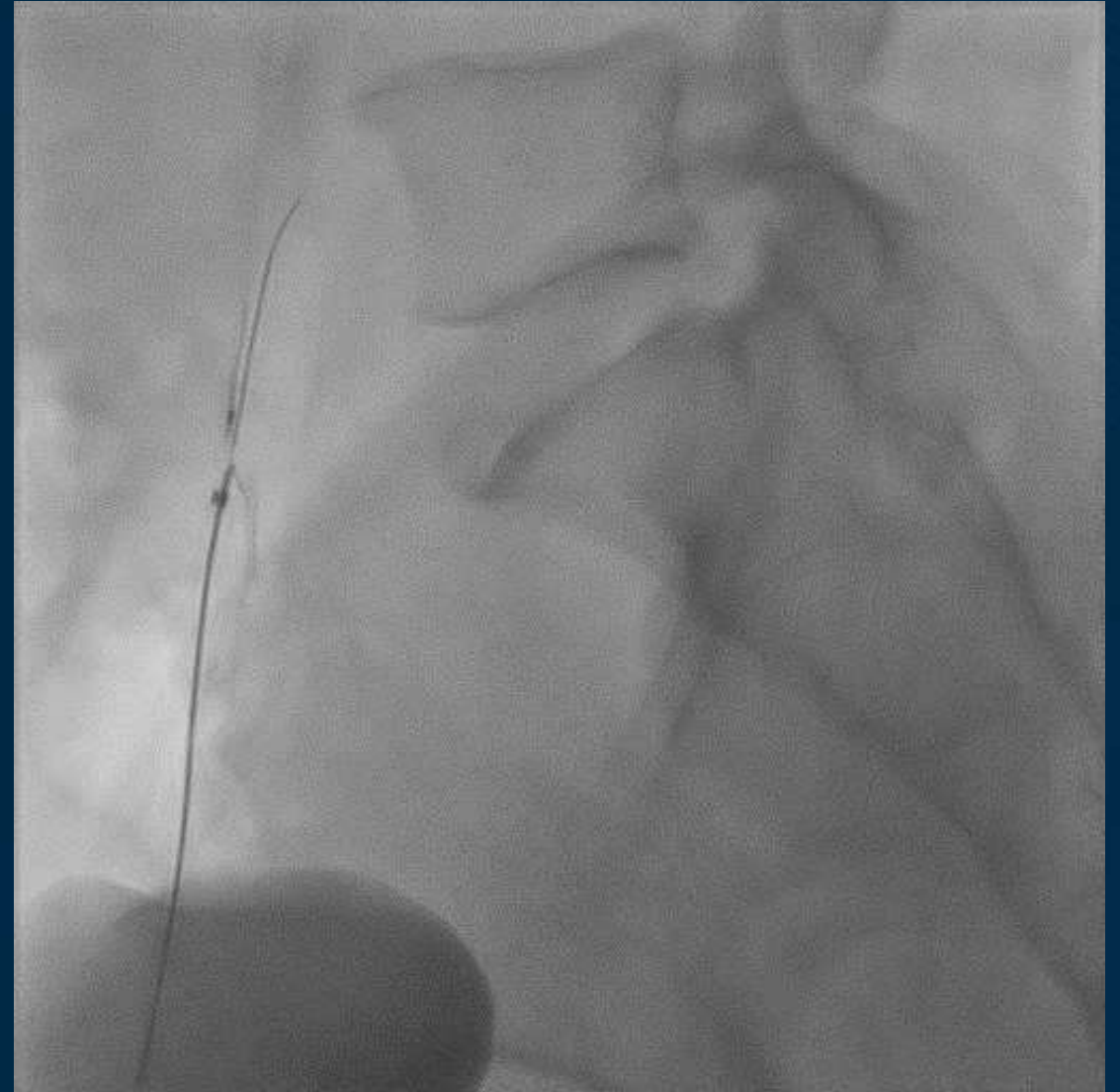
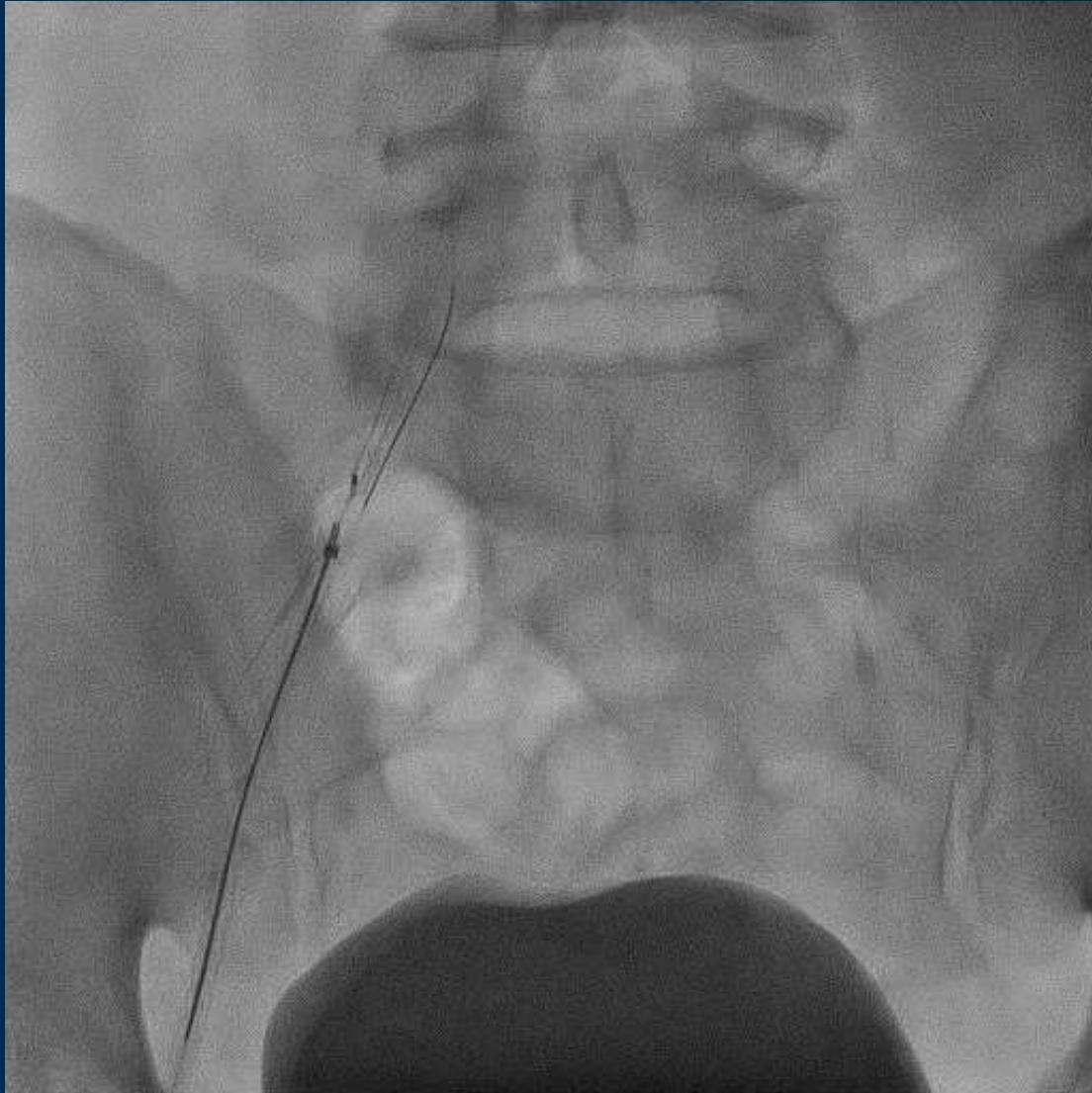
# Double Kissing Snare

Femoral PFM snare looped around radial ONE snare forming a double kissing snare, reducing risk of slippage



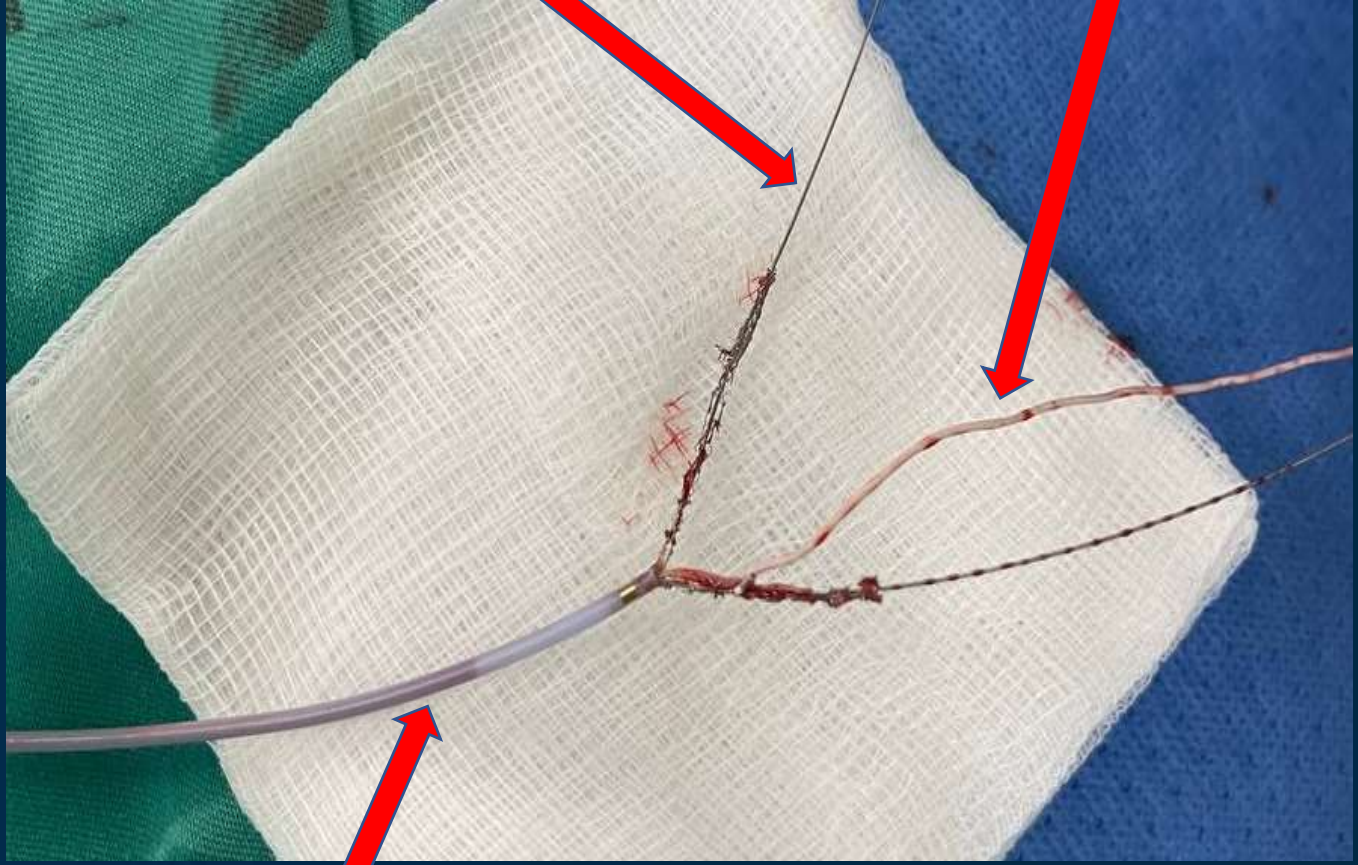


# Successful Stent Removal



RT Floppy wire

ONE snare



PFM snare



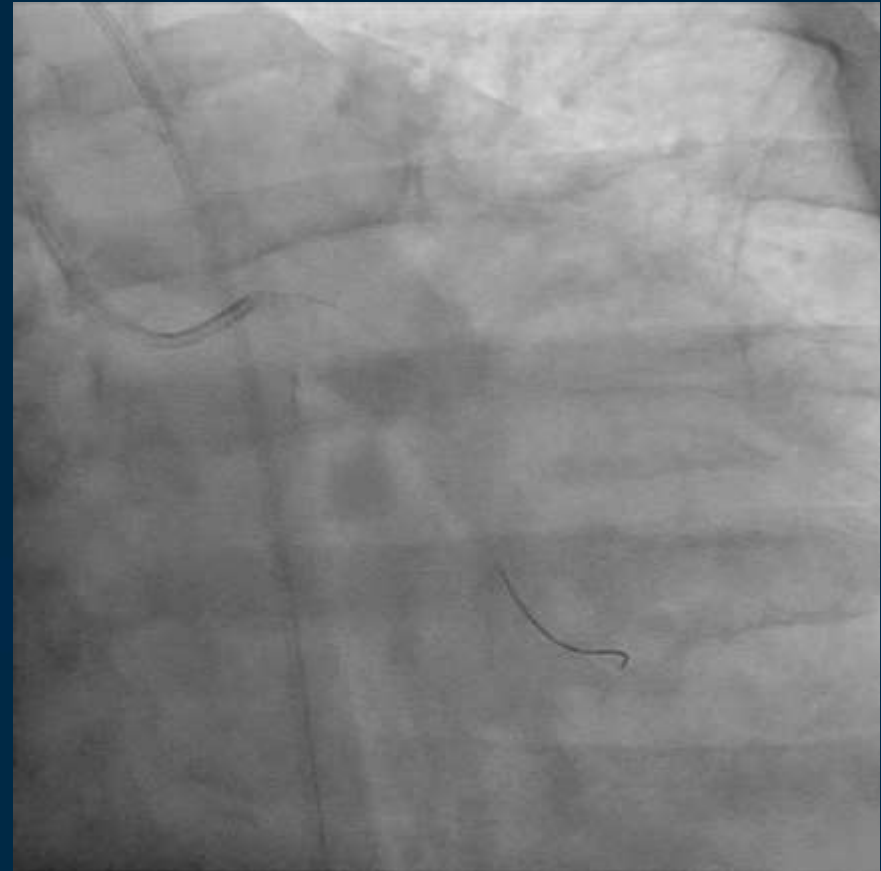
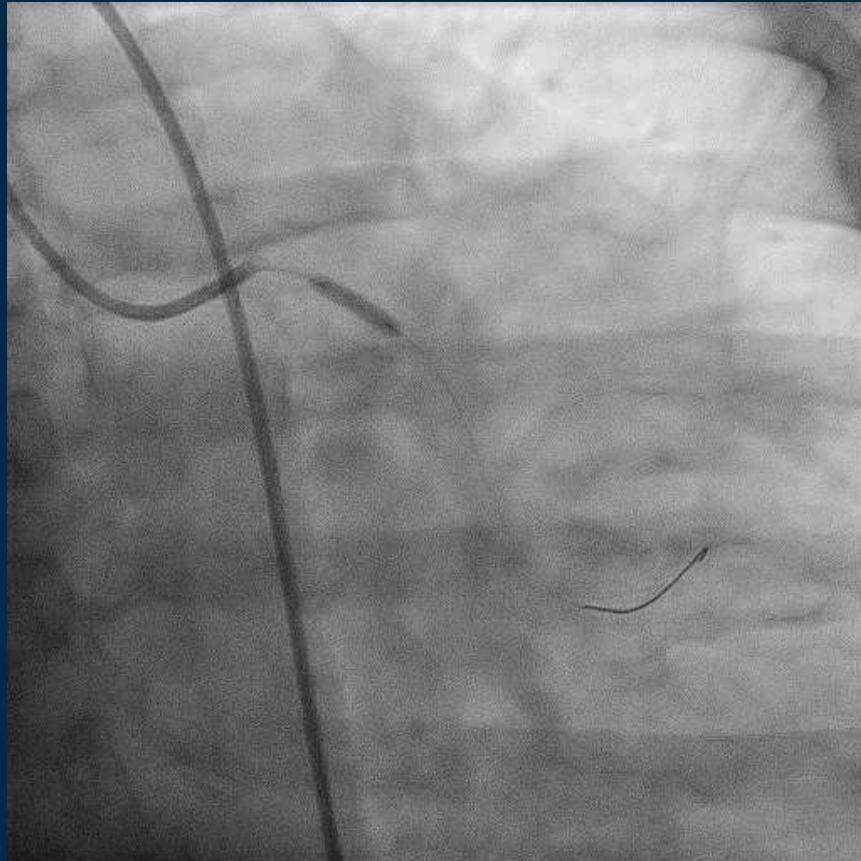
Intact elongated stent

# Reattempt PCI to LCx

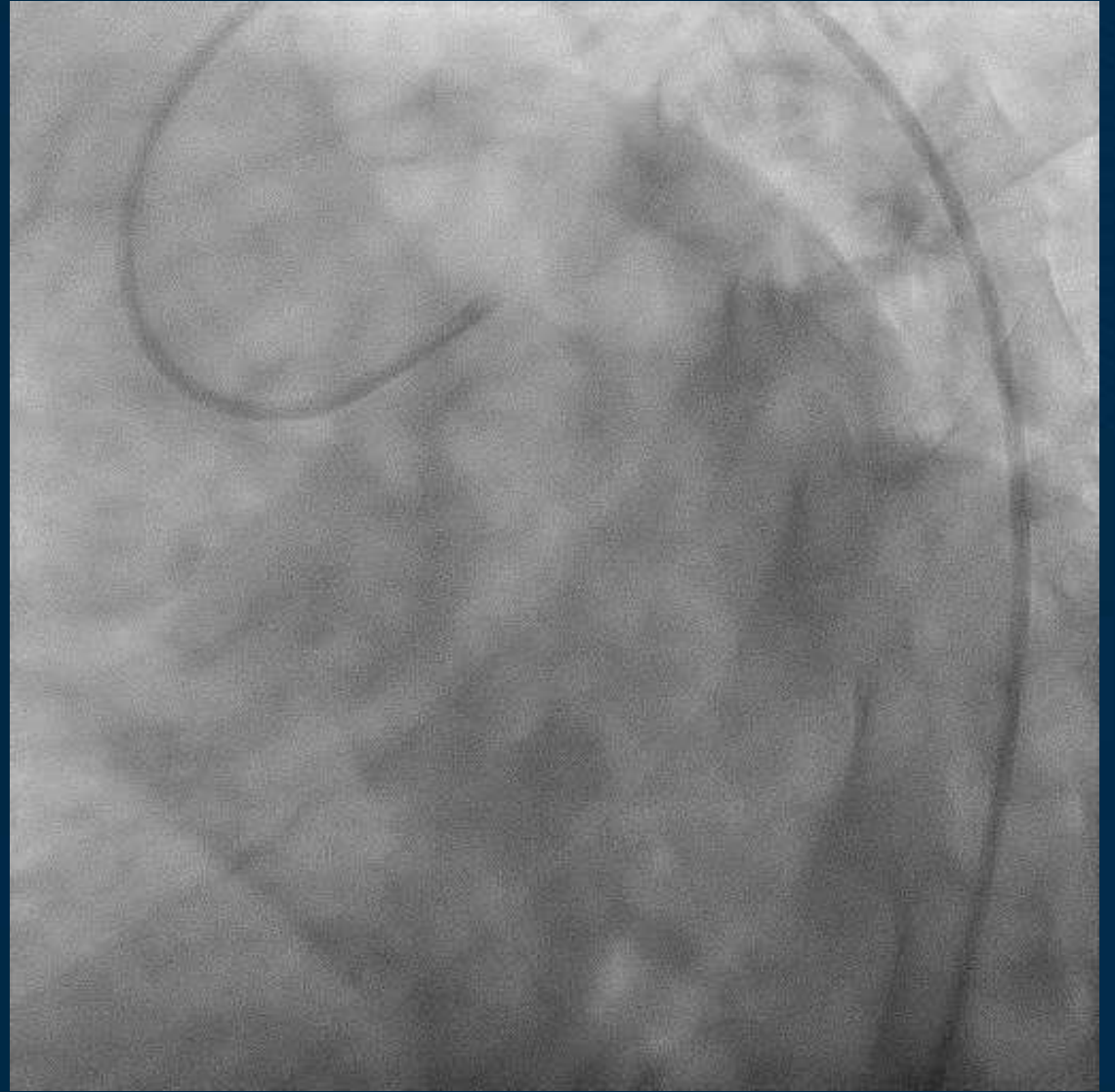
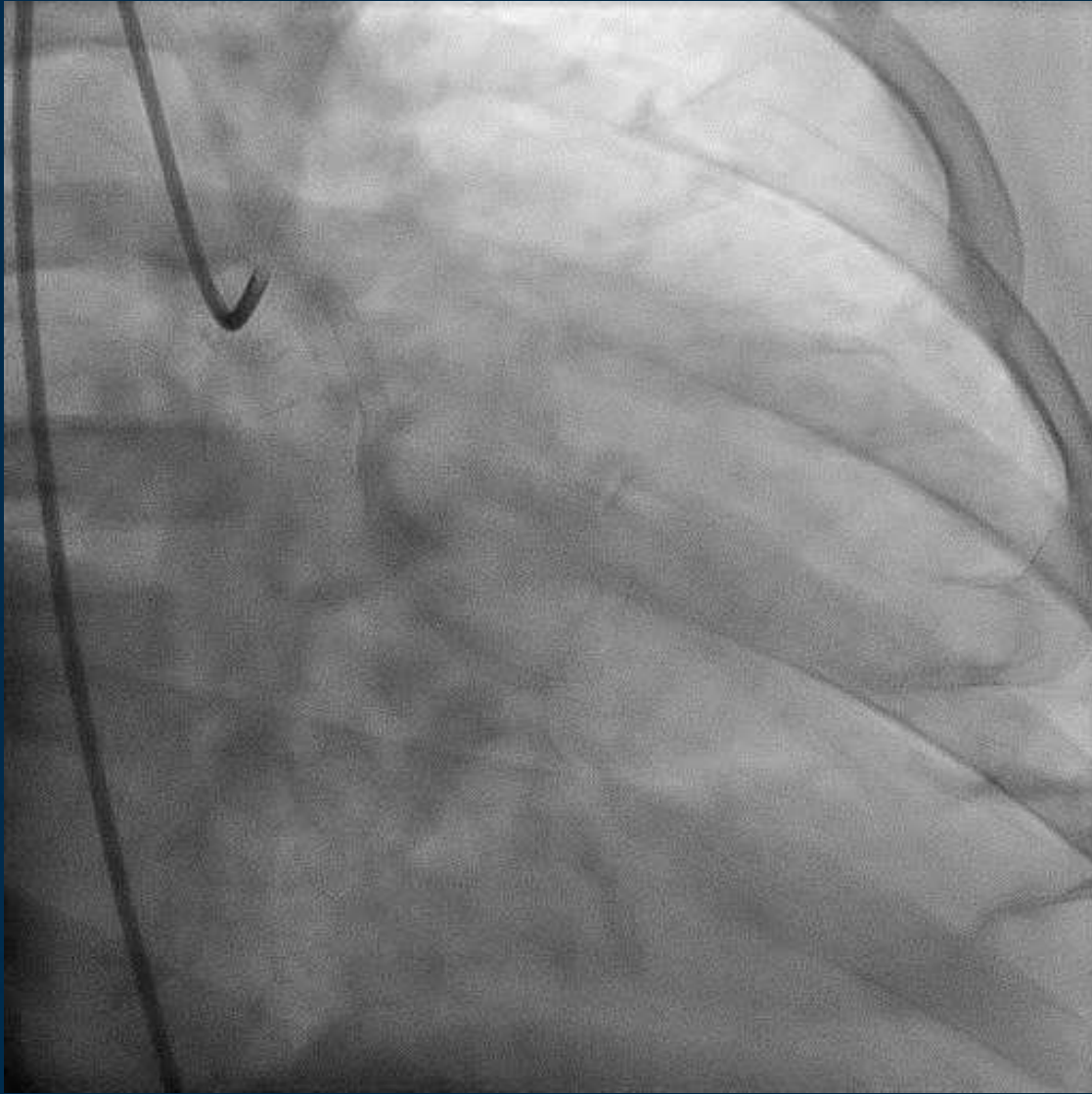
Femoral approach, 8Fr sheath, EBU 3.5 6Fr

More coaxial guider engagement

Further predilate pLCx lesion with SC 2.75 x 12mm at 16-20atm



# Final Results



# Conclusion/Take Home Message

- Stent dislodgement is a rare complication with potential for adverse events including thrombosis, embolization and need for emergency surgery
- Dislodgement may occur due to extreme coronary angulation, vessel calcification, inadequate lesion preparation or passage through another stent
- Choice of retrieval method depends on stent location, deployment status, device availability and operator experience
- The use of loop snare is an effective and safe method to retrieve dislodged stent with low incidence of morbidity
- Keep calm and assess every steps taken to avoid new complications