

AEPC Linz 2014

# Outlook on complex procedures

- Marc Gewillig
- Leuven, Belgium

# Complex procedure: outlook

- Equipment

- Cathlab:

- mono- vs biplane
    - 3D

- Safety

- Monitors, DC
    - Retrieval, embolisation, covered stents, drains

- Personnel

- Doctors
    - Nurses
    - Technical
    - Surgeon

# Recommended surrounding: PA dilation

- Anesthesia
- Monitoring
  - Arterial BP - Beep on pulse
- Access : veins, artery
- Bleeding
  - Occlusion (coils, plugs) ; covered stents ; balloon tamponnade
  - Bilumen ET tube (2 ventilators) – selective intubation
  - Drains
  - Blood
  - Surgeon – ECMO
- If low CO : ? fenestrate IAS
- If low sat : ? ECMO
- Foley in bladder

# Complex procedures

- Have a good routine
  - Vascular access
  - Keep wire position – fast exchange
  - Keep wire clean – clot free
  - Anticoagulation
  - Air embolus
  - Keep table clean – order
  - Ergonomics : long table in continuity with access point
  - Anesthesia : monitoring mechanical pulse – pH – lactate
- Know (limits of) your tools
- Keep stock above minimum setpoints

# Complex procedure: strategy

- Define objectives
  - Minimum
  - Maximum
  - At what risk ? Know the alternatives ...
  - Be 2 steps ahead ...
- Have a plan “B”
- If A’ happens, have a plan “C” & “D” & ....

# Complex procedure: legal issues

- Discuss essentials of procedure
- Informed consent
- Risk prediction: “never say never”

# Cathlab : hierarchy

- Hierarchy of battleship
  - Captain
    - Accepts indications, defines objectives
    - Do not hide behind “majority vote of staff meeting”
  - 1st officer
  - Admiral, Secretary of state
- No place for democracy
- Communication
  - Continuous
  - avoid big threshold - hierarchical distance
    - Abnormality must be reported early
    - Preferably before it becomes a complication

# Complication: who to blame ?

- Fellow ?
- Scrub sister ?
- Anesthesiologist ?
- Catheter company ?
- Patient: anatomic variant ?
  
- ...
- Captain !!!



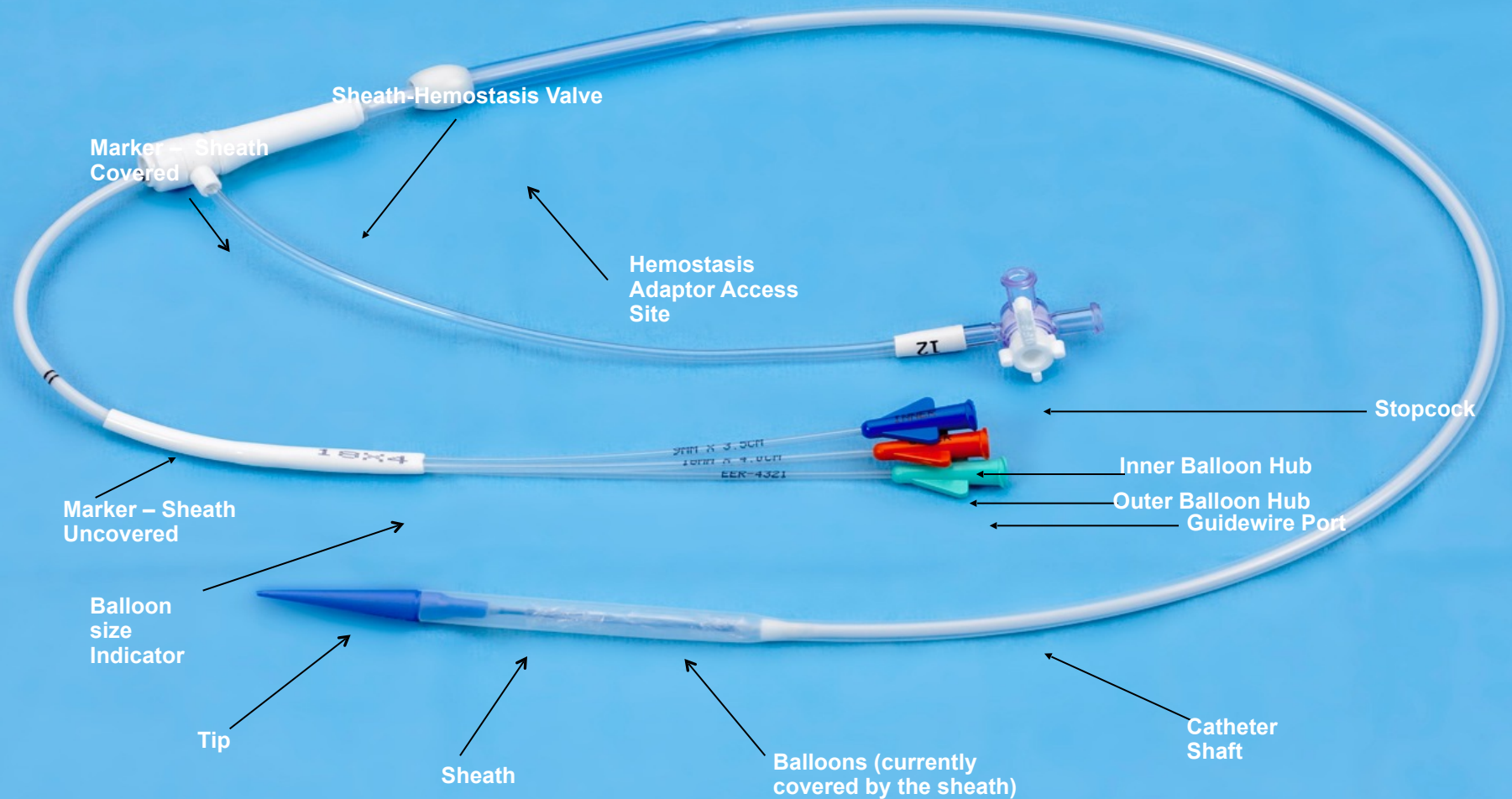
# Complication : management

- If it can go wrong, it once will go wrong
- Catheterization
  - Definition complication: not if no residual lesion
  - If ends well, all is well !
  - Near miss but happy end  $\approx$  success
- Aviation
  - Definition collision : when 2 planes closer than 400m
  - For further analyses: irrelevant whether collision or not

# Complex procedure : complication

- Complications do happen
- Knowledge is essential
  - Avoid
  - Controls for early recognition
  - Have exit strategies ready
- No panic ; be a leader
- Communicate
  - With team
  - With family
  - Debriefing
    - Acknowledge different contributions

# Ensemble™ Delivery System Components



# Wire : provide support for cath - sheath

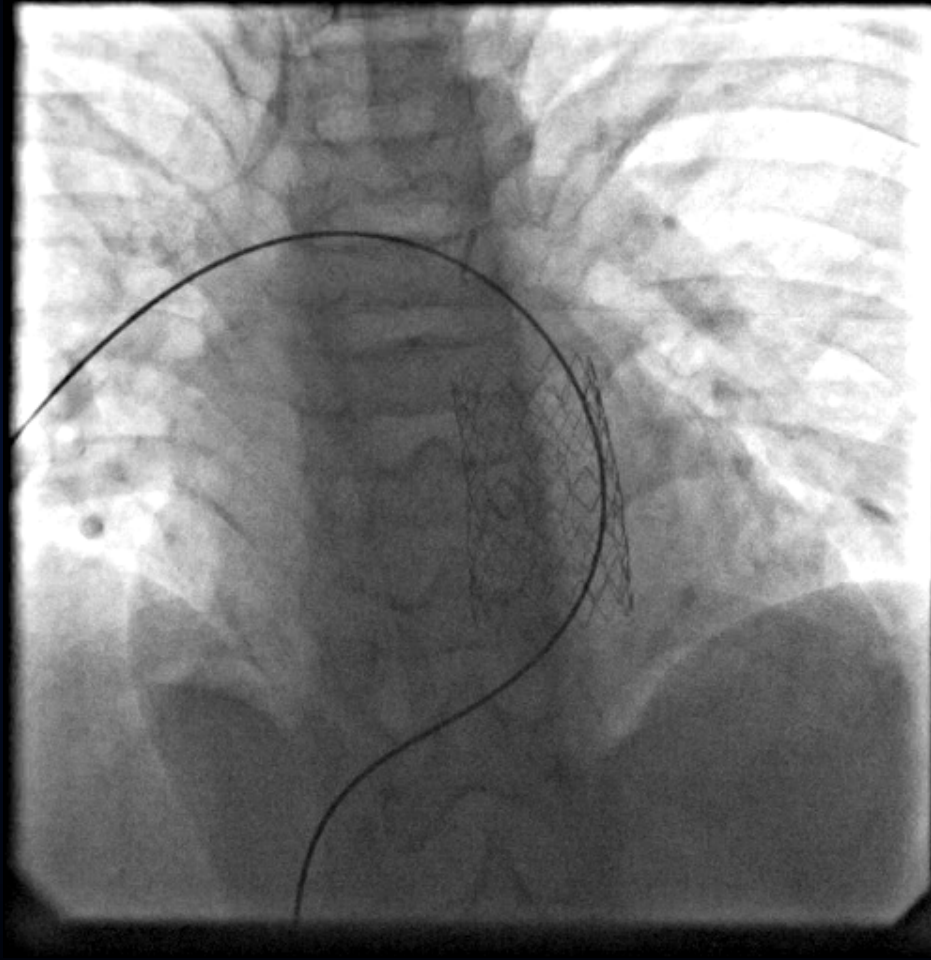
## Steering the Ensemble sheath

- Forward, backward; no torque

## Steering the wire : possibilities : stiffness, prebended

- Loose
- Fixed
  - To the table
  - Dynamic
    - Keep catheter-wire out of patient straight
    - Curve in ICV – RA – RVO
    - Tip of wire
      - Push to keep tension; to allow 270°
      - Pull to keep from wall – no encroaching
- Need for 3 – 5 coordinated hands

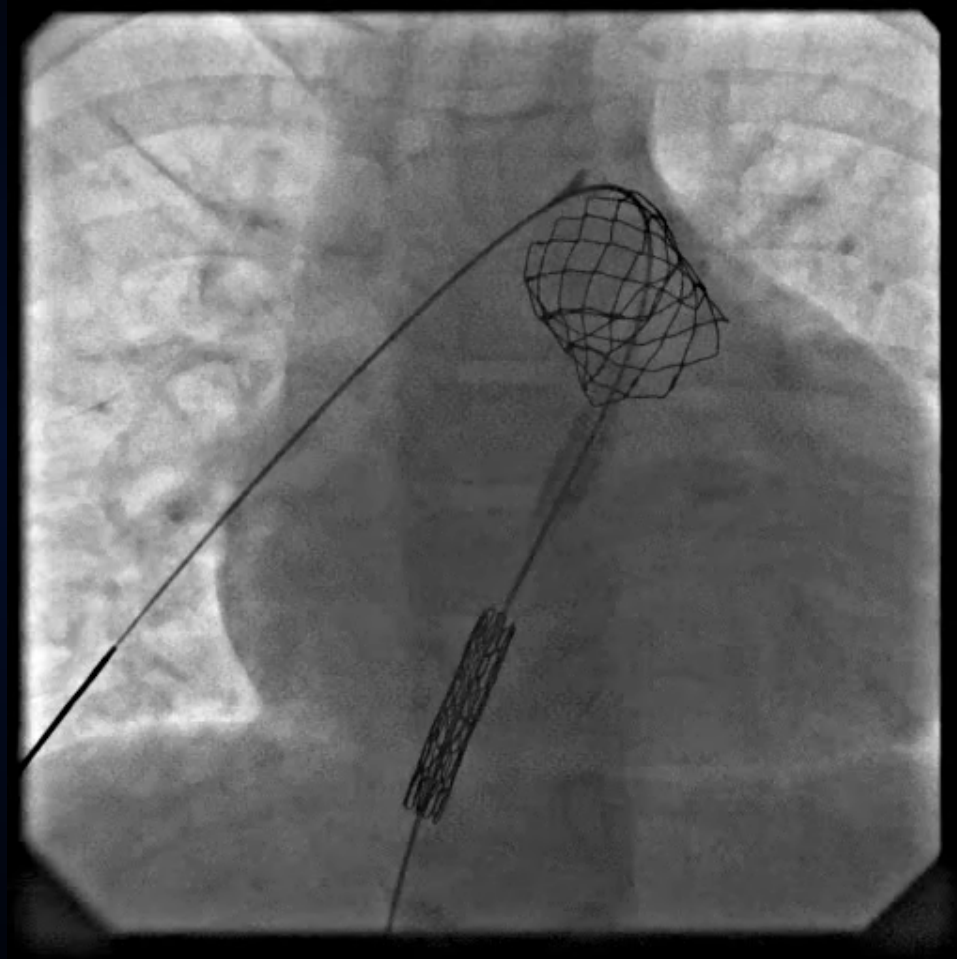
# Melody: progression of Ensemble



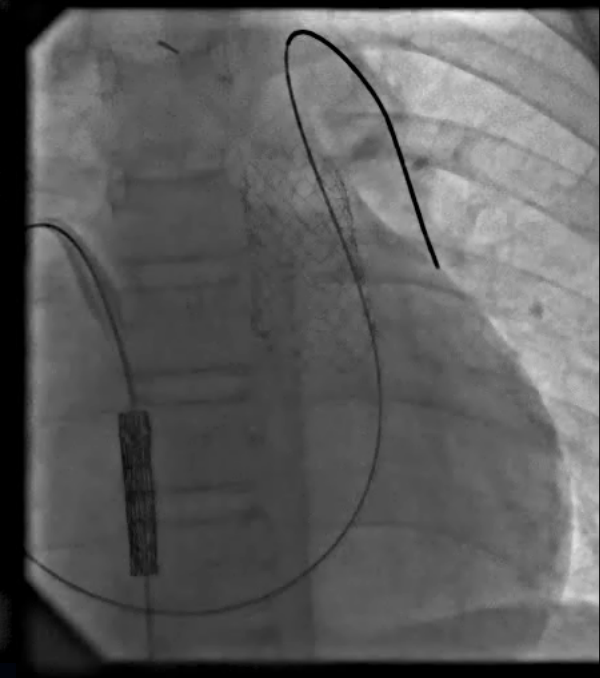
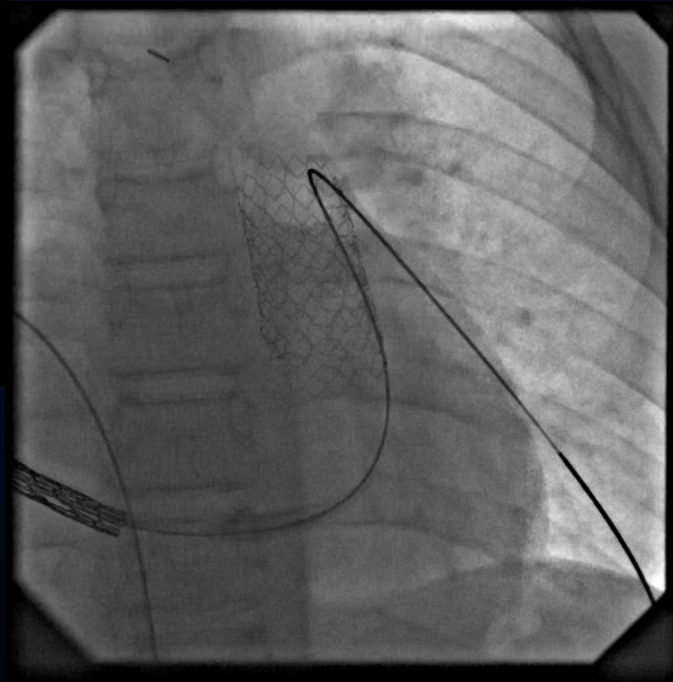
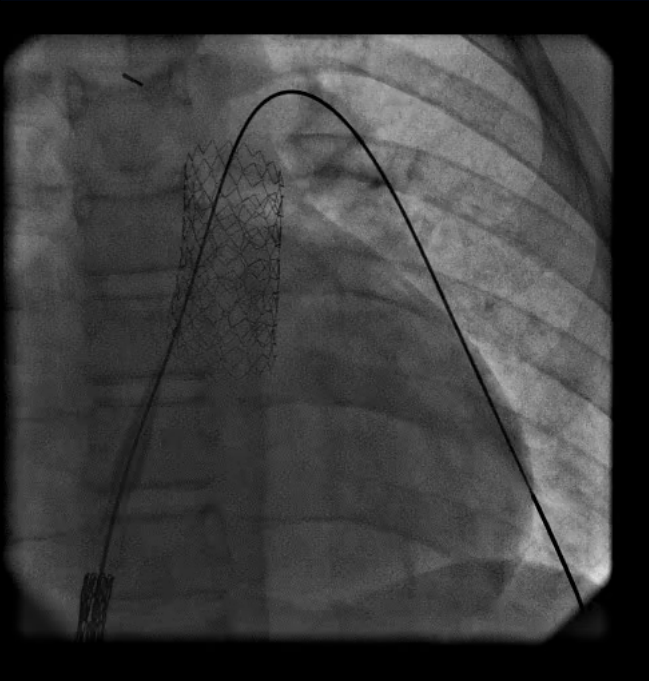
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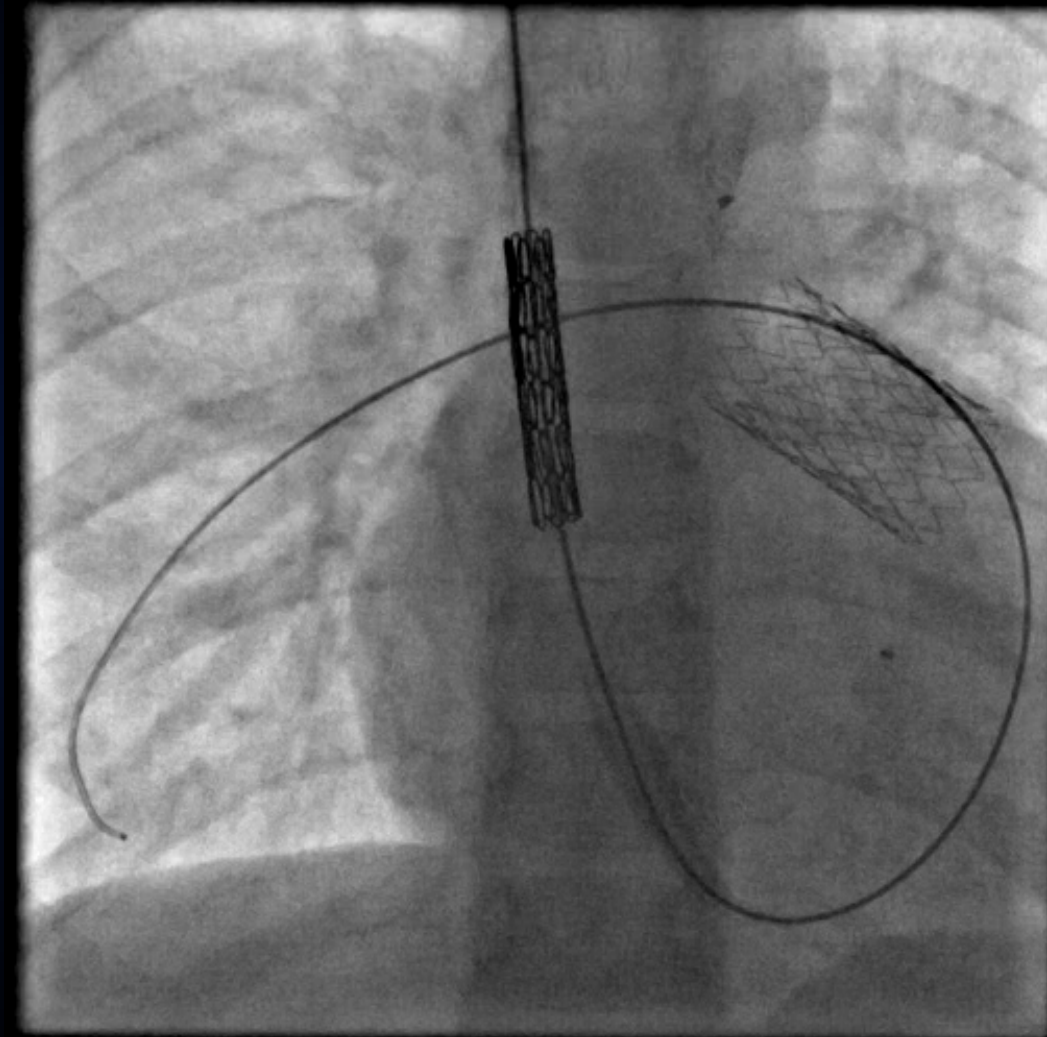




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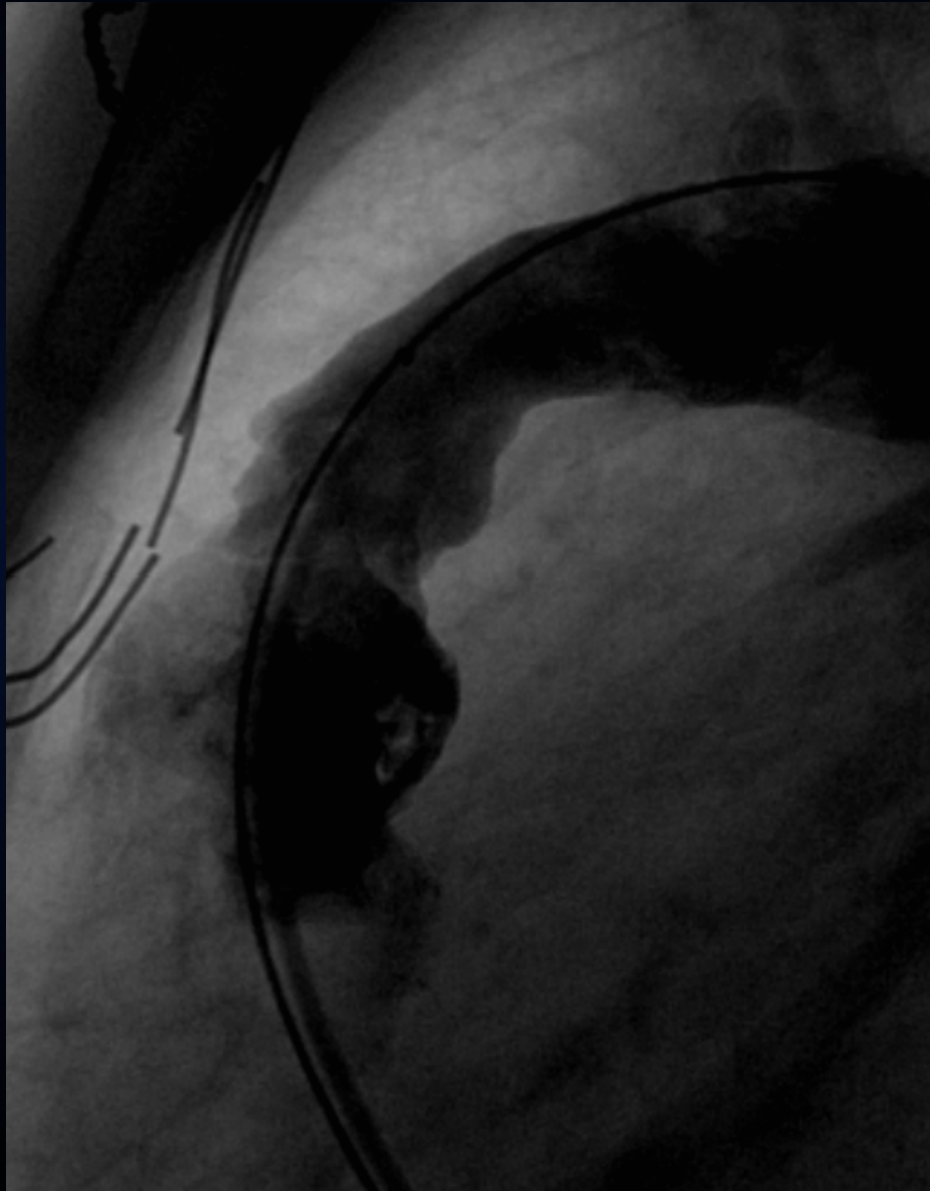


# Melody: progression of Ensemble



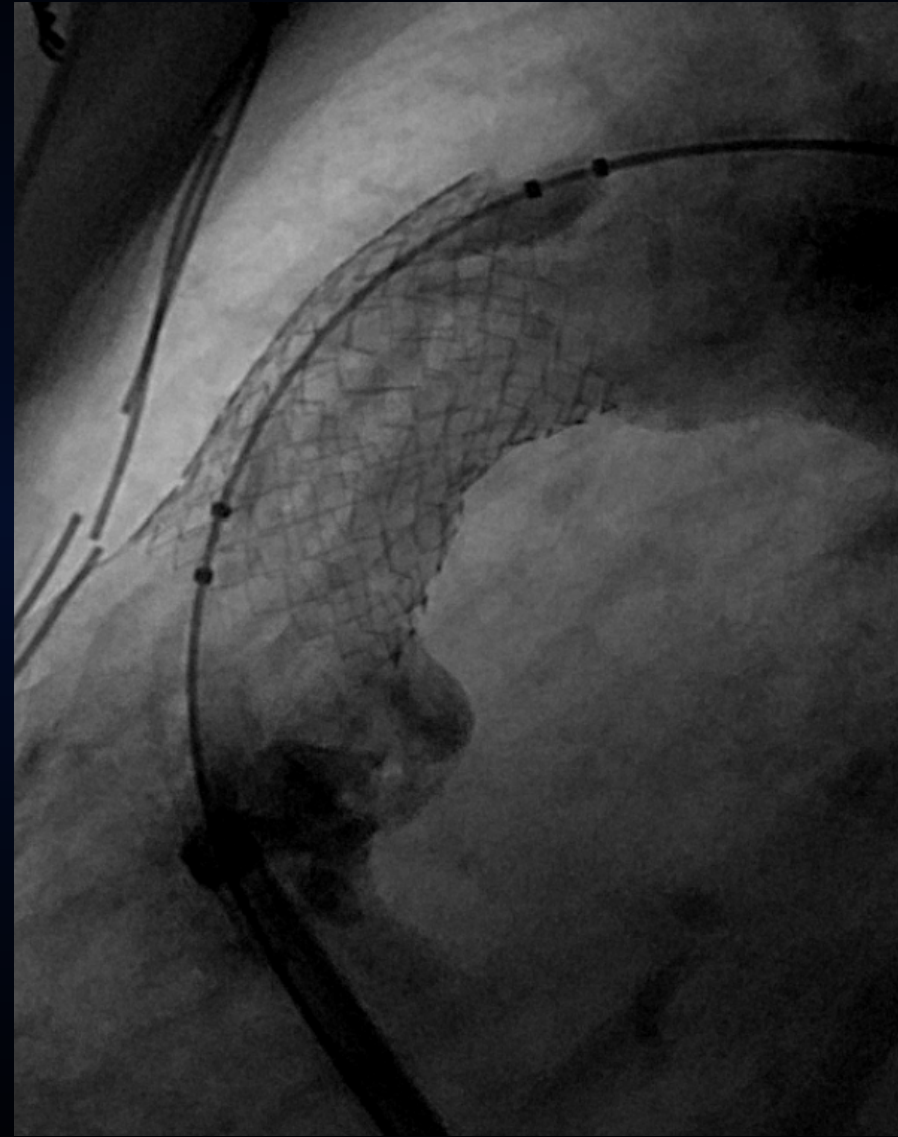
Patient 16 kg

# Recurrent stenosis homograft PO TF



- Age 17y
- Tetralogy fallot
- 23 mm EHB homograft 2003
- restenosis 80 mmHg
- failed BD

# Prestent homograft

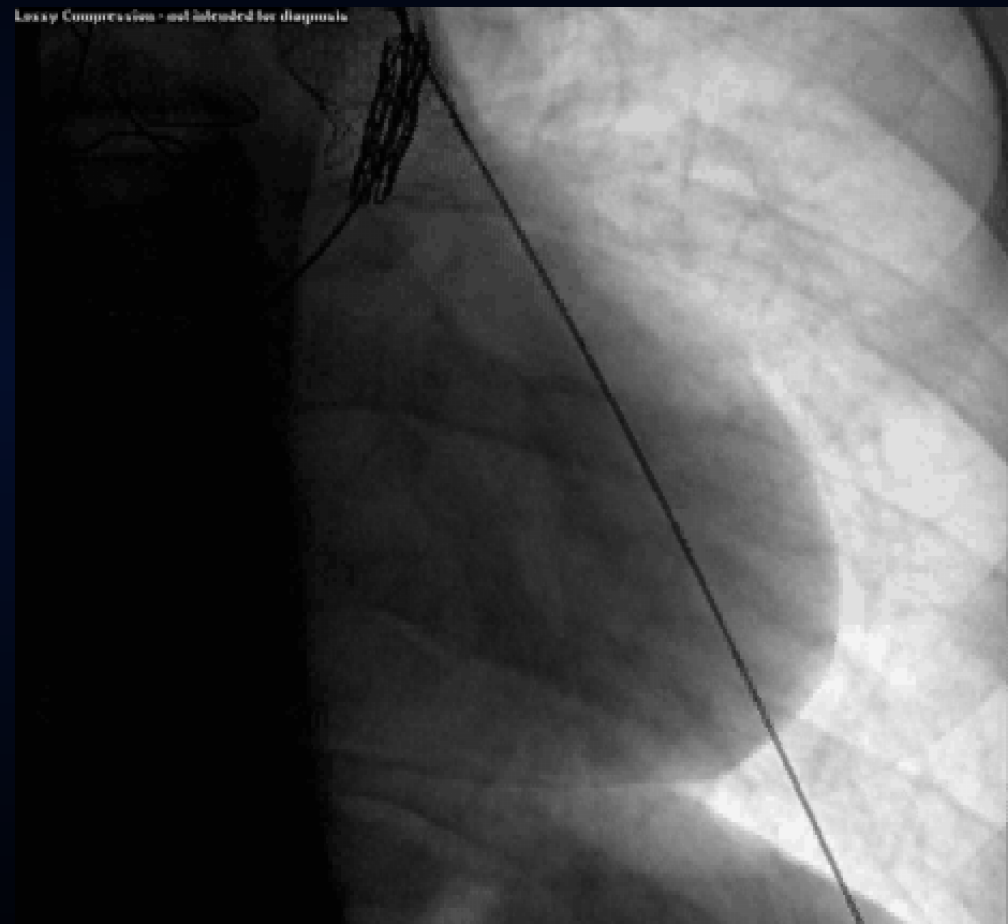
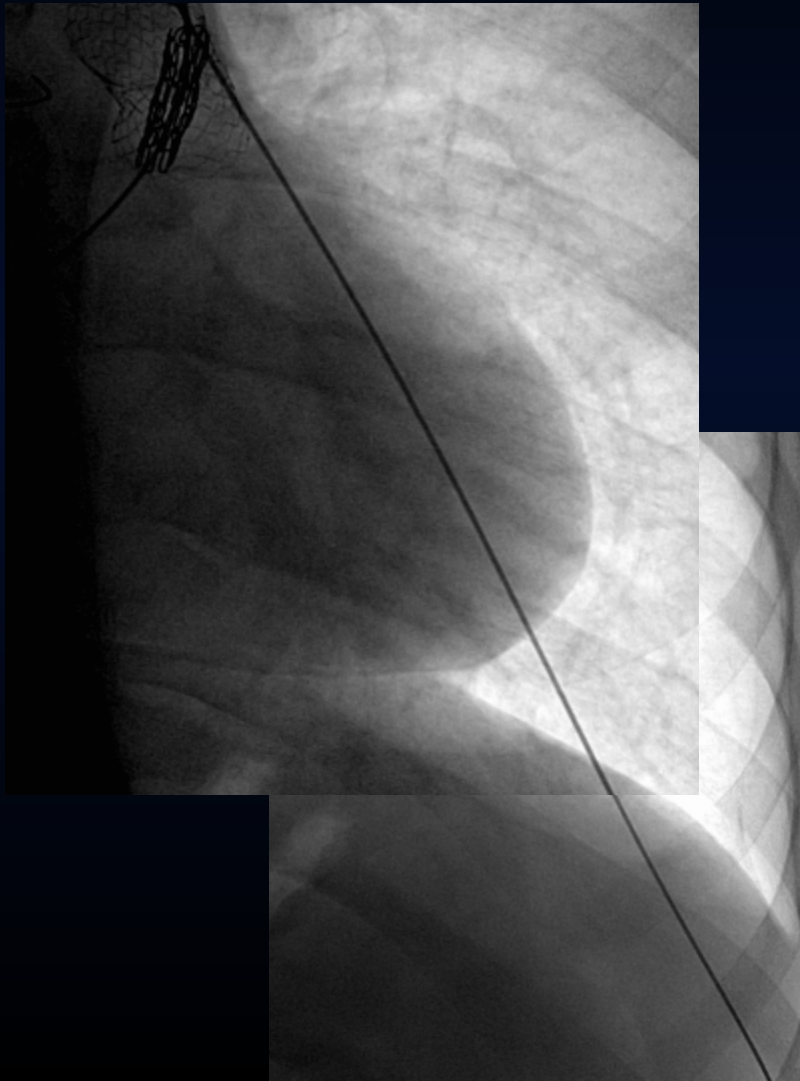


36 mm Intrastent on 20 mm BIB through 12F sheath on 0.035 Ultrastiff Amplatz

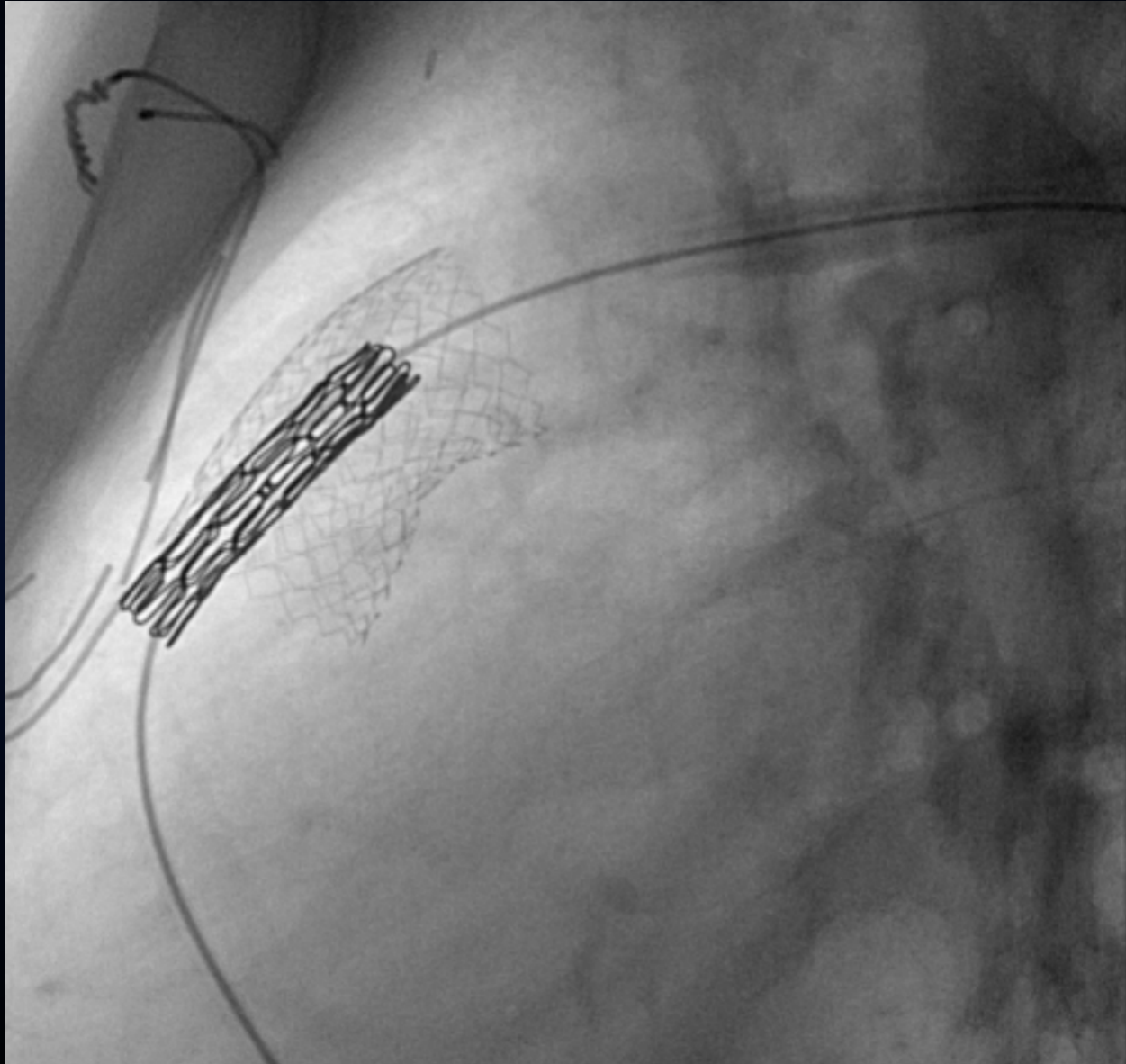
# Delivery of Melody

- Melody valve in 20 mm BIB-22F Ensemble
- Positioning difficult
  - “carrot” refused to take cranial turn in Le PA
  - Multiple manipulations, including 270° in RA
  - Melody 6-8 mm proximal, nearly in position
  - Uncover Melody to benefit from forward “jump”
  - No jump ....
  - Once uncovered, wire was noted to have regressed
  - Unsafe to deploy stent
  - While advancing wire, stent regressed into RVOT
  - Manipulations, push, pull,...
  - Wire for a fraction completely in carrot ...
  - Then easy advancement of wire & sheath into position ...

# Wire repositioning: too easy & too distal ...

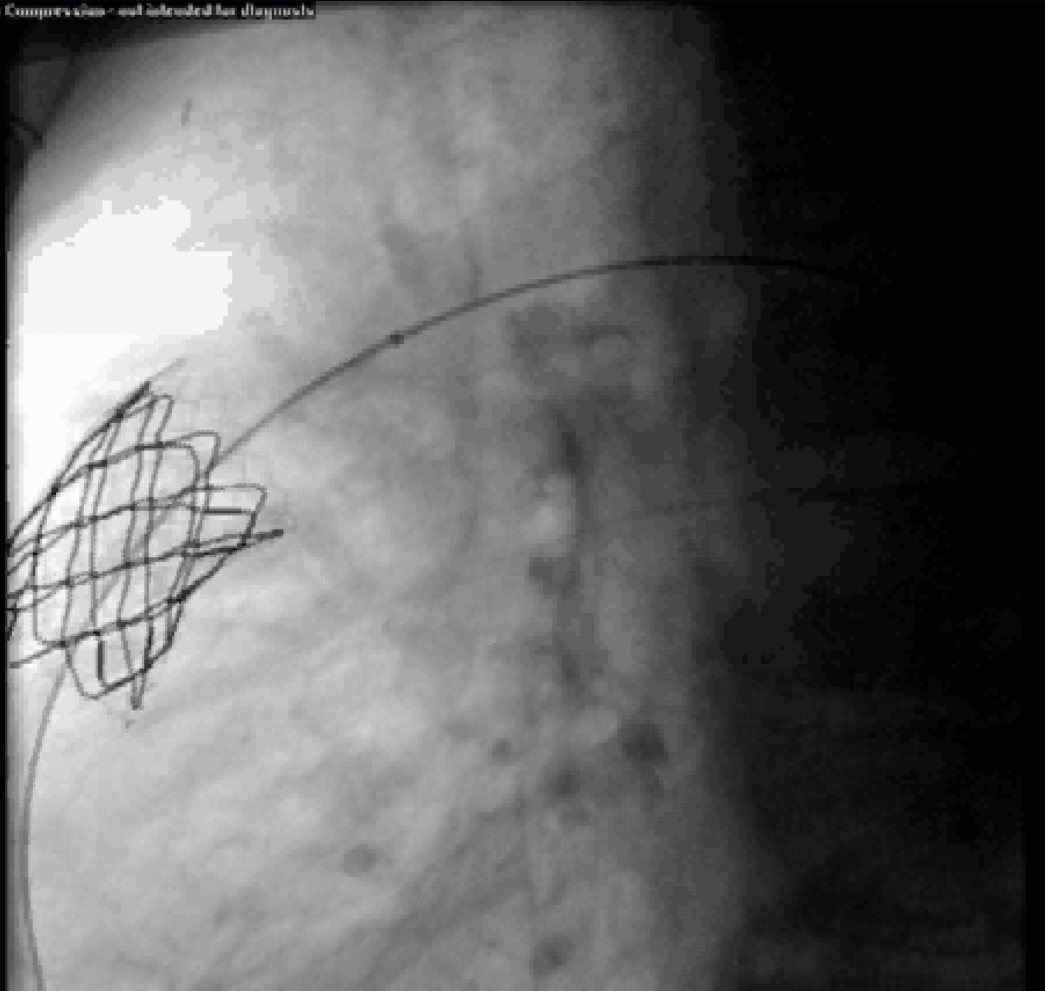


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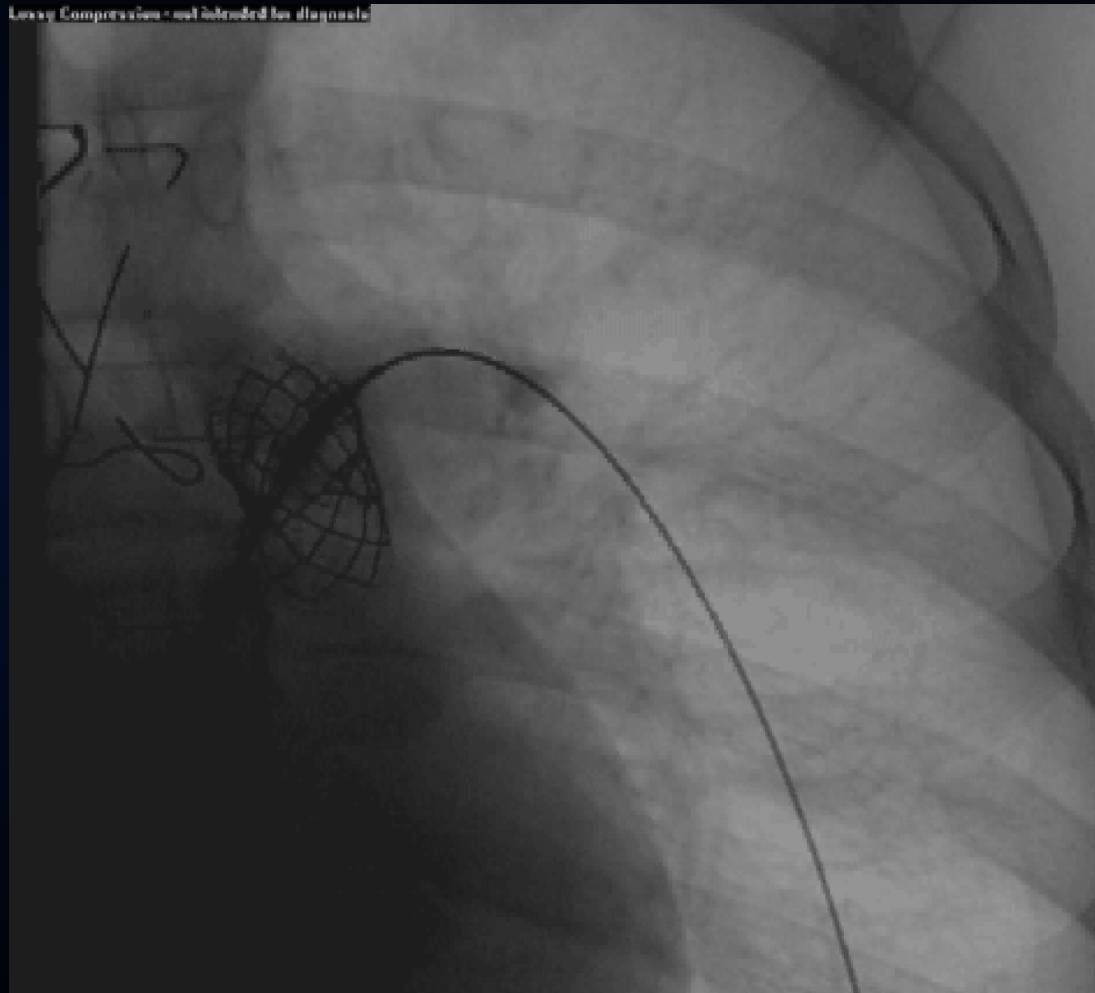
# Post deployment Melody

Lossy Compression - not intended for diagnosis

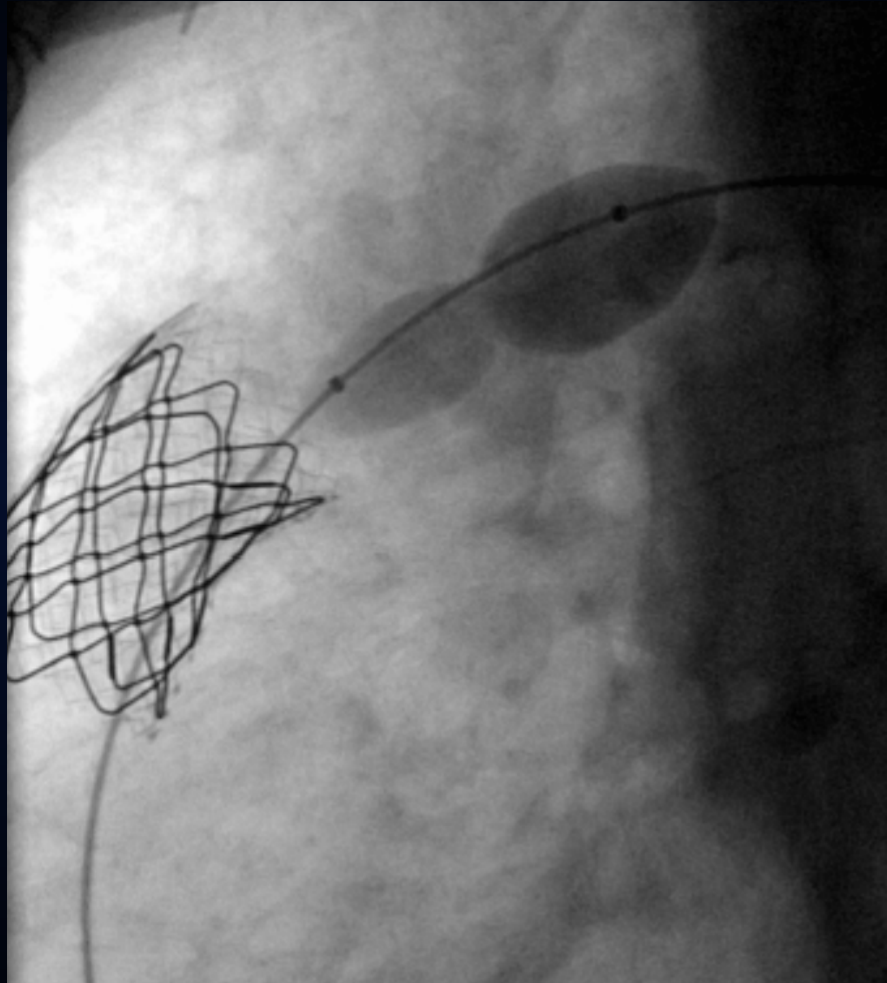




# Post deployment Melody



# Perforation left PA: assess problem



15 mm Tyshack balloon into perforation, gentle inflation to close perforation

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