

Transcatheter Pulmonary Valve implantation

The role of imaging for patients selection
and procedure monitoring

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Melody[®]

Transcatheter Pulmonary Valve



- 18mm Contegra modified-bovine jugular vein with valve segment
- NuMed Platinum Iridium Stent
 - 28 mm length
 - Crimped down to 6mm, re-expanded 18mm up to 22mm
- Balloon Expandable system

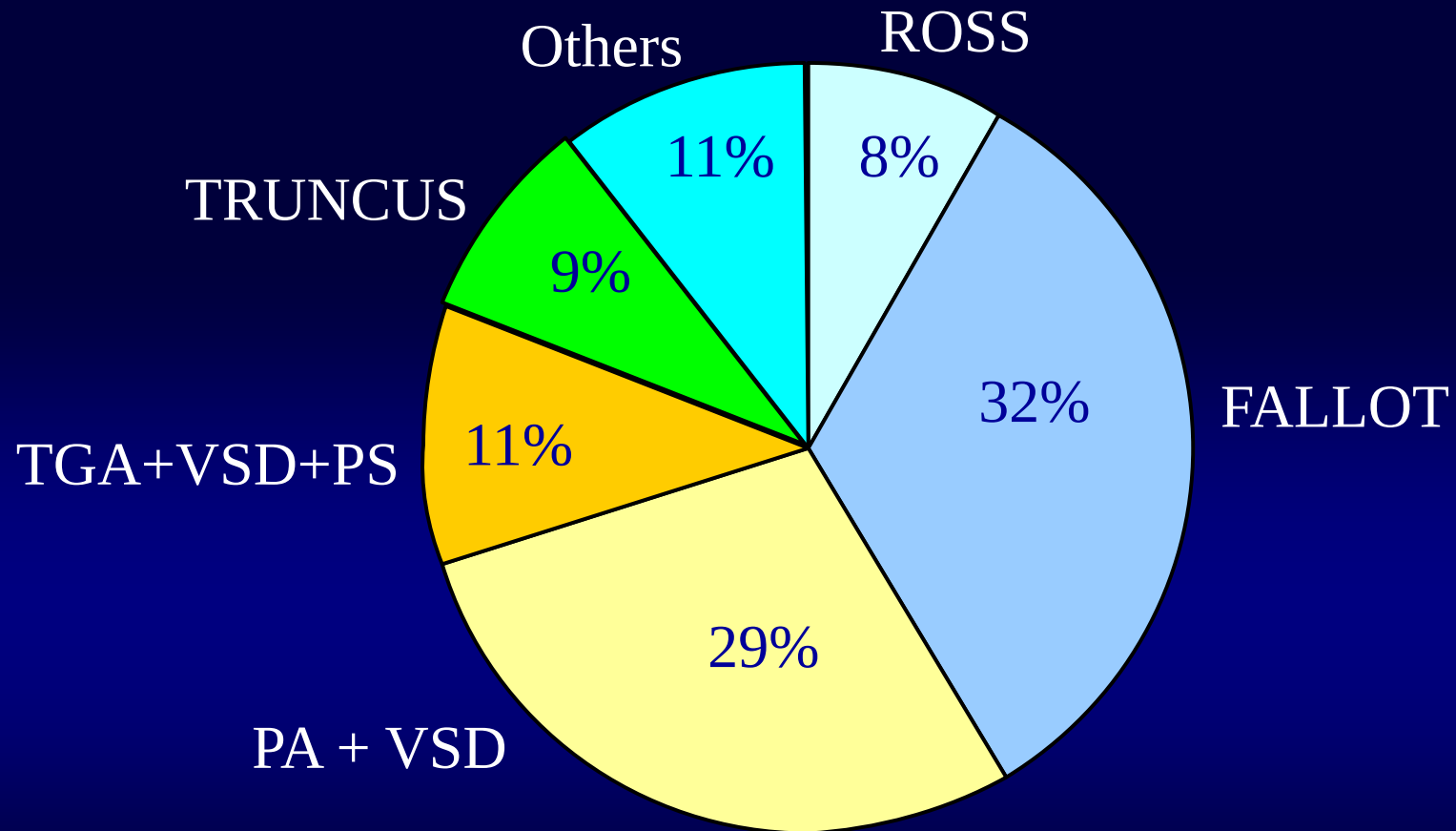


Melody® Indications

- Extend the functional life of the RV-PA conduit
- Restore & maintain pulmonary valve competence
- Relieve conduit stenosis without inducing regurgitation



RVOT disfunction: target population



Patient Selection

- RV outflow tract obstruction (RVOTO)
 - RV systolic pressure $\geq 2/3$ of systemic
- Moderate to severe regurgitation (PR)
 - Impaired exercise capacity (<65% of predicted)
 - Significant RV dilatation / dysfunction

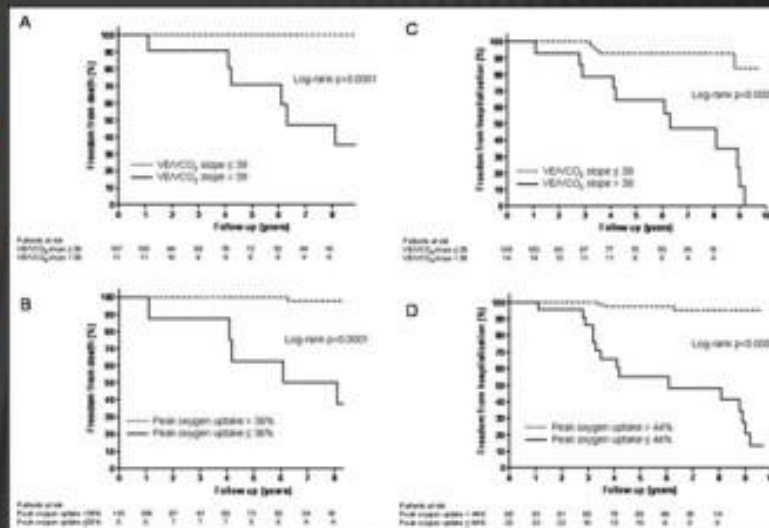


Patient evaluation

- Clinical/functional (CPEX)
- ECG/Holter
- Echocardiography
- Cardiac MRI



REDUCED EXERCISE CAPACITY



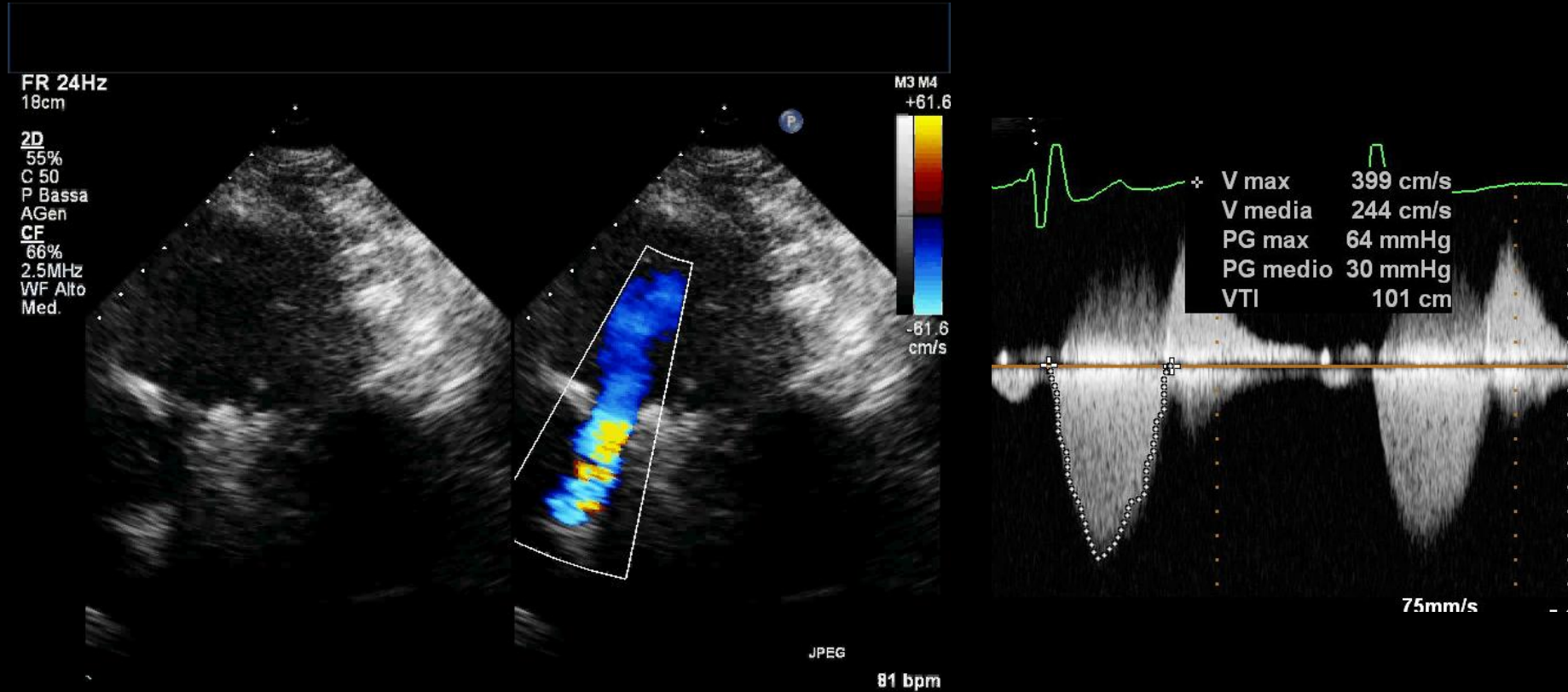
Giardini, Am J Cardiol 2007



Echocardiography

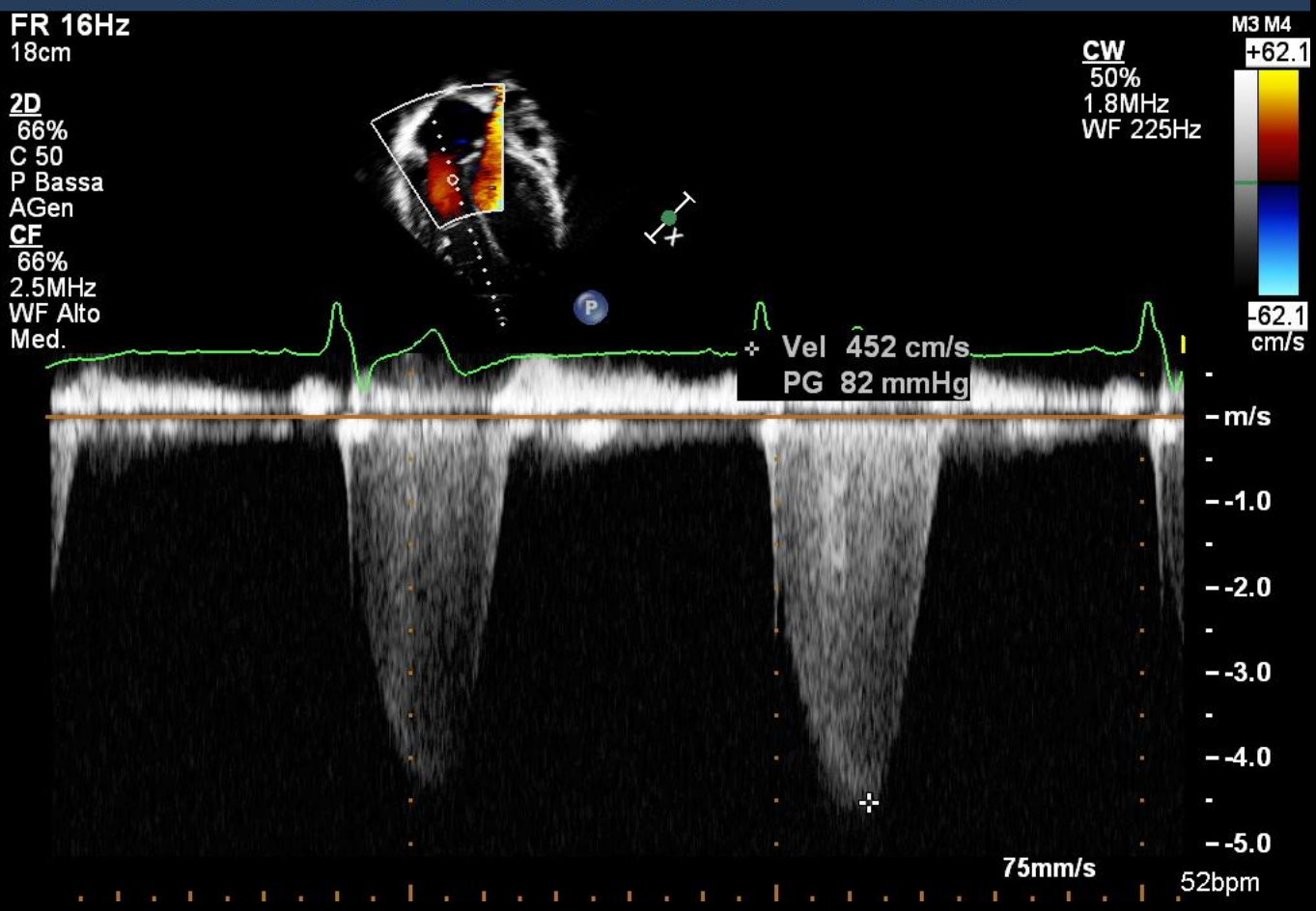


Echocardiography



Severe Tricuspid regurgitation





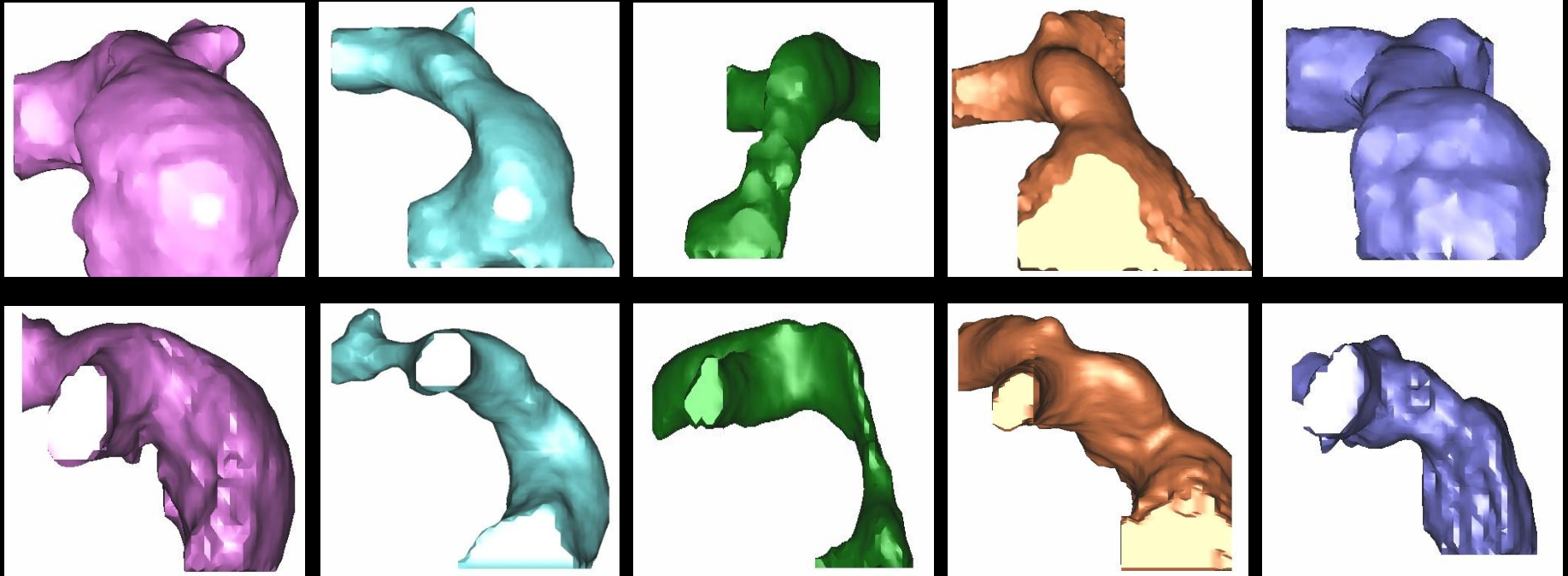
Magnetic resonance imaging

- RVOT morphology
- Pulmonary trunk/branches anatomy
- RV size and function
- Evaluation of pulmonary stenosis/regurgitation (regurgitant fraction)



Magnetic resonance imaging

- RVOT morphology (suitability?)



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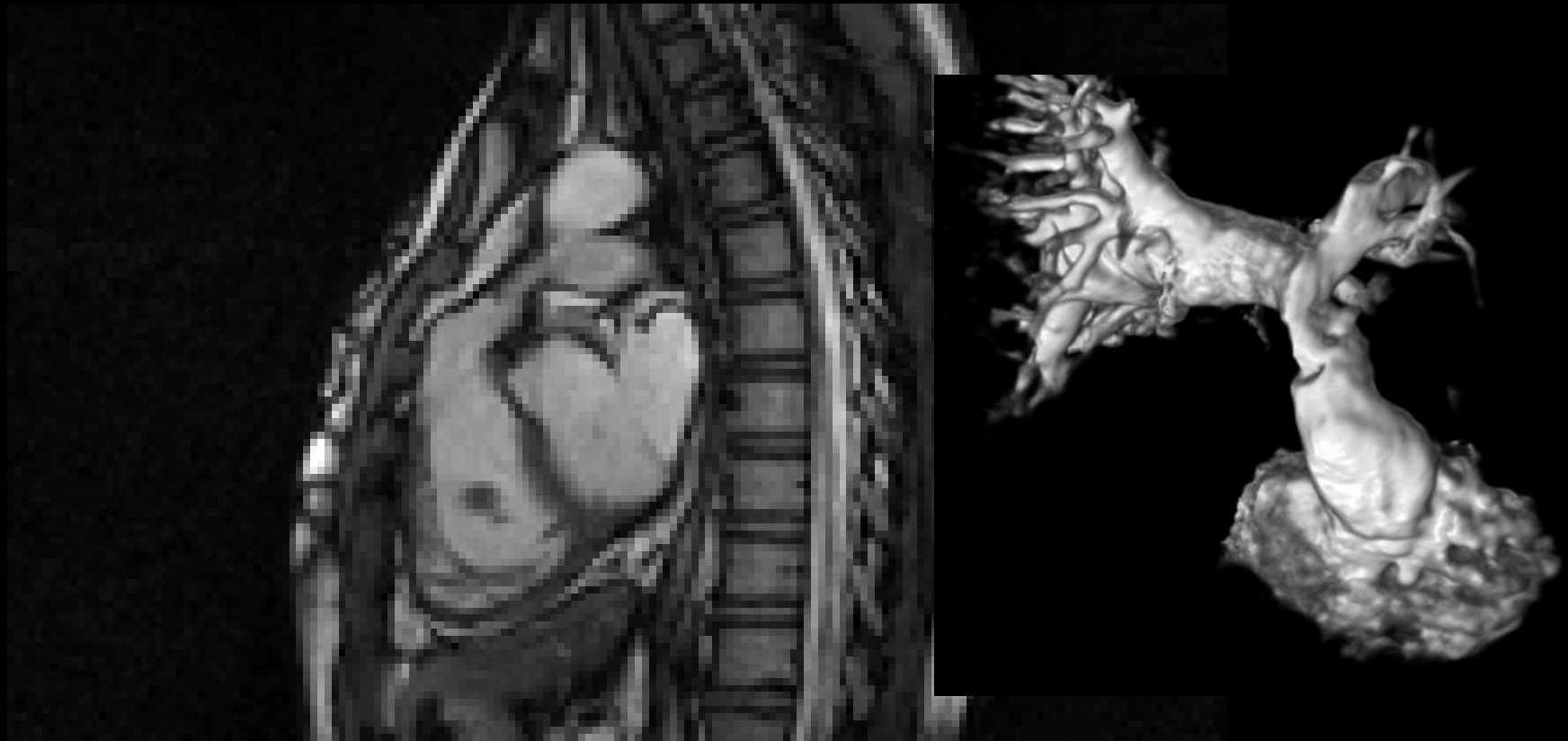
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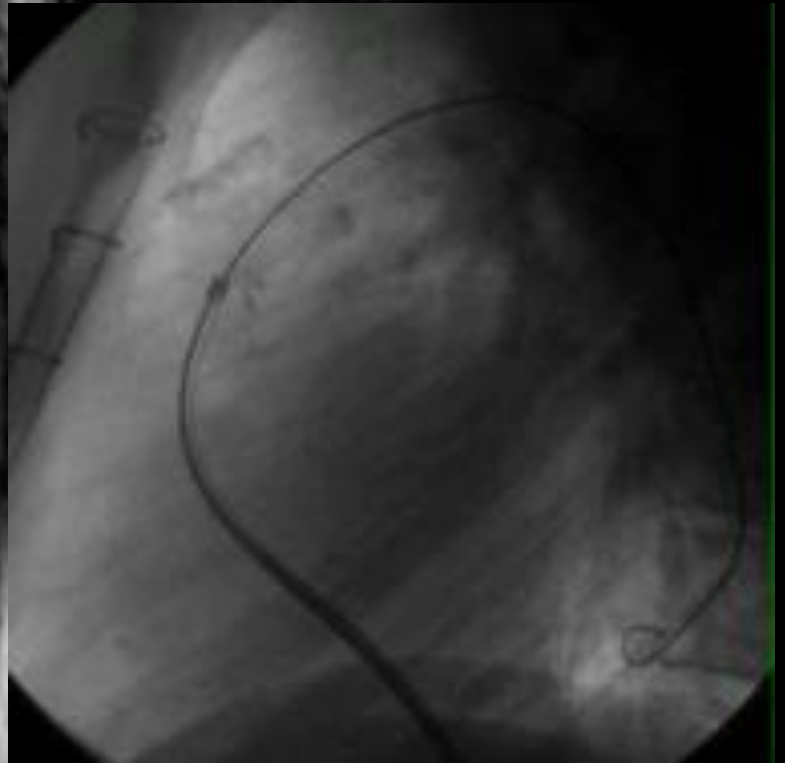
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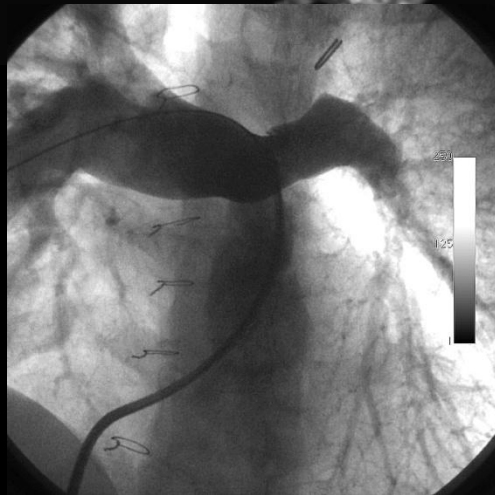
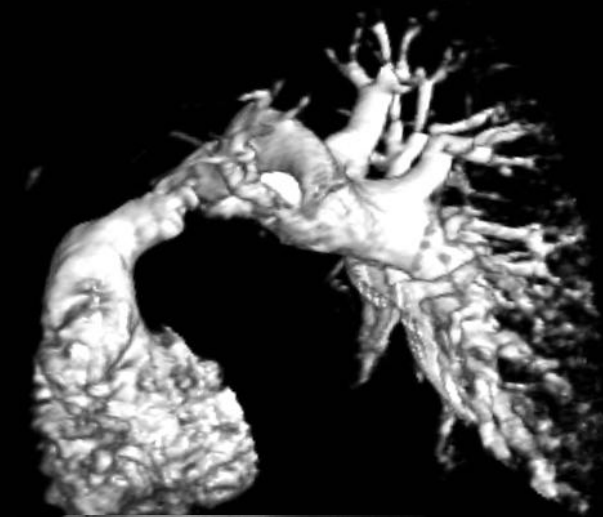
MR + 3D reconstruction



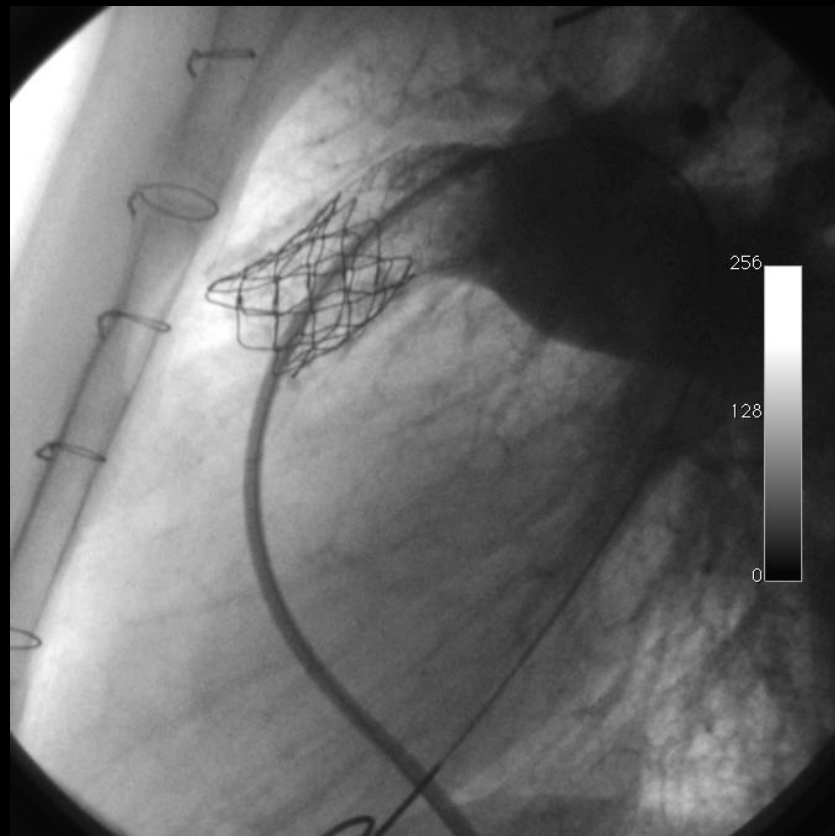
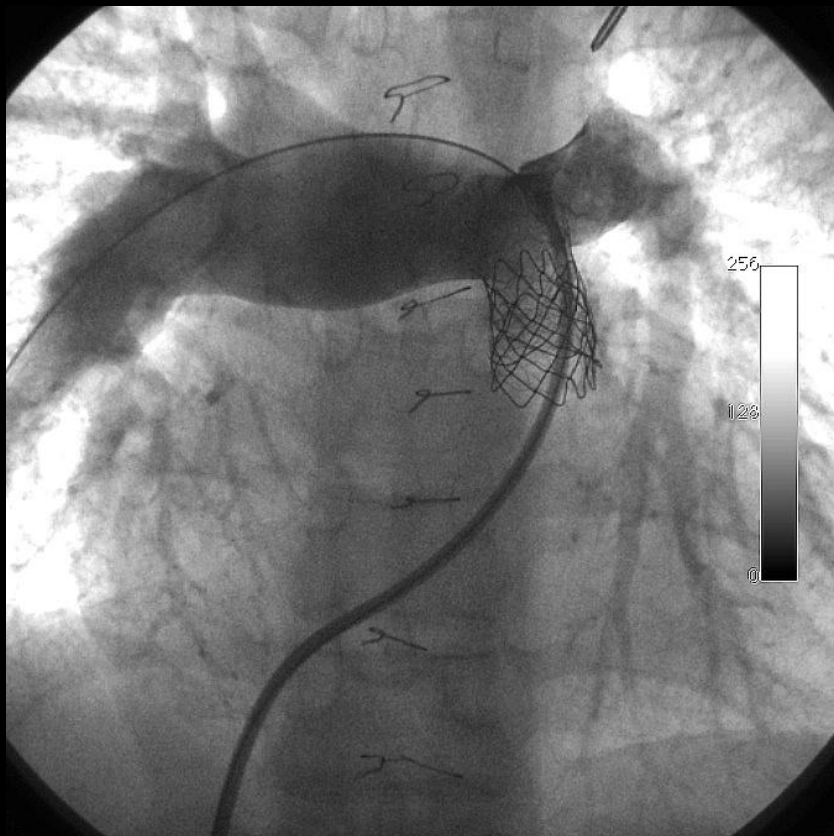
MR-Angiogram



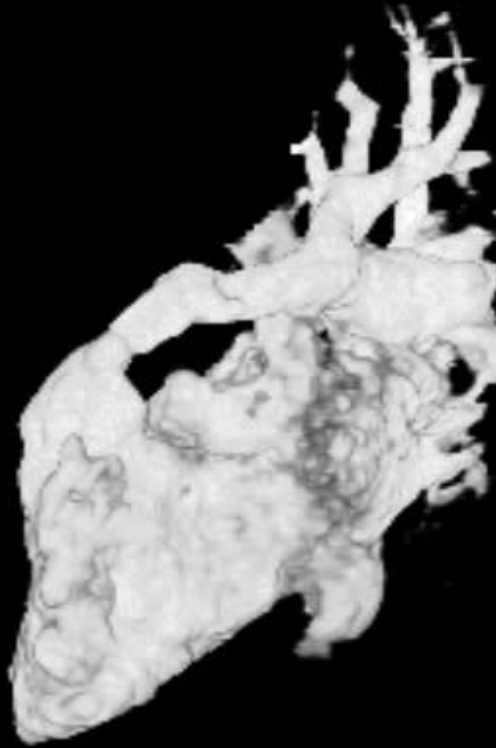
Distal conduit stenosis



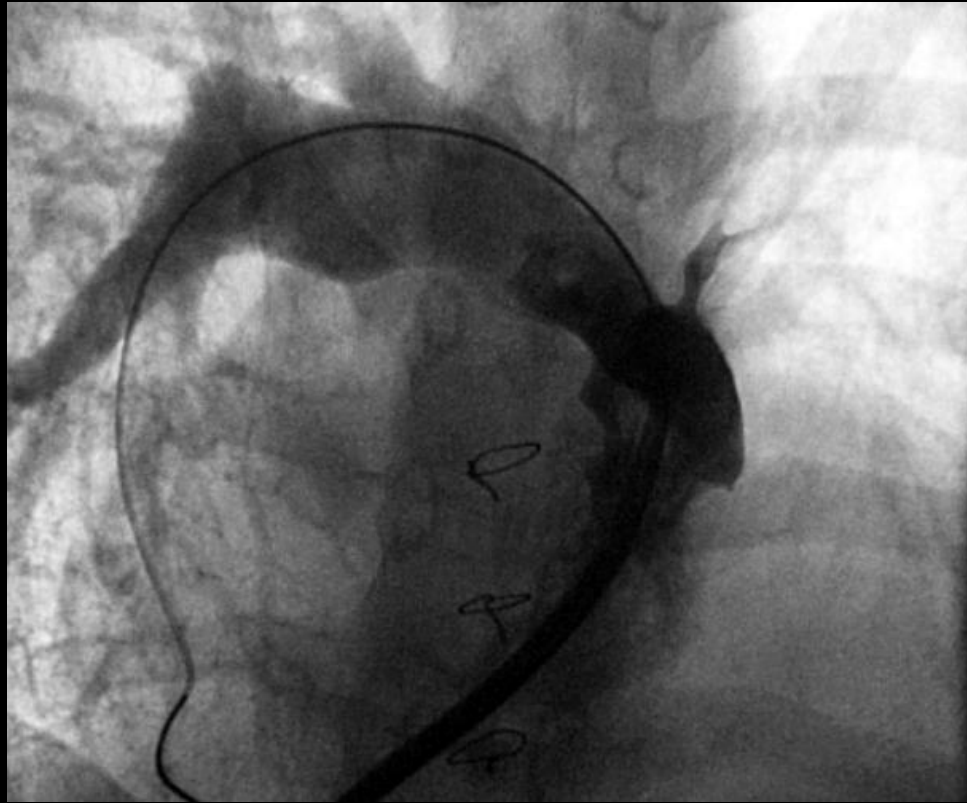
Melody



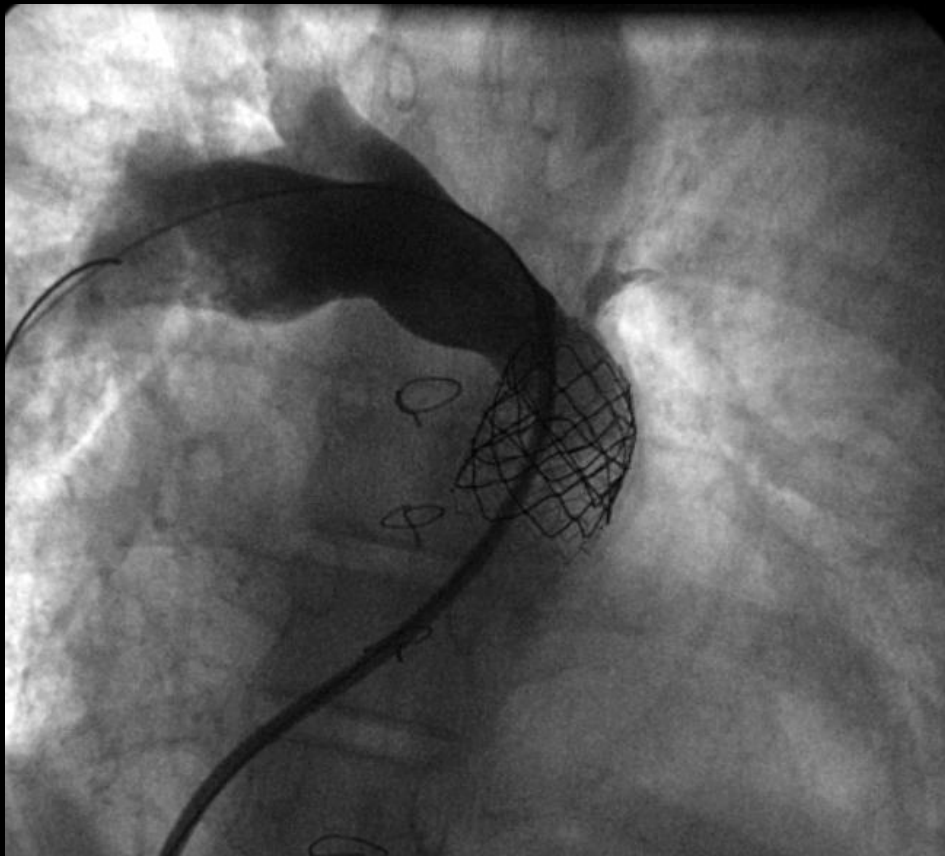
LPA severe hypoplasia



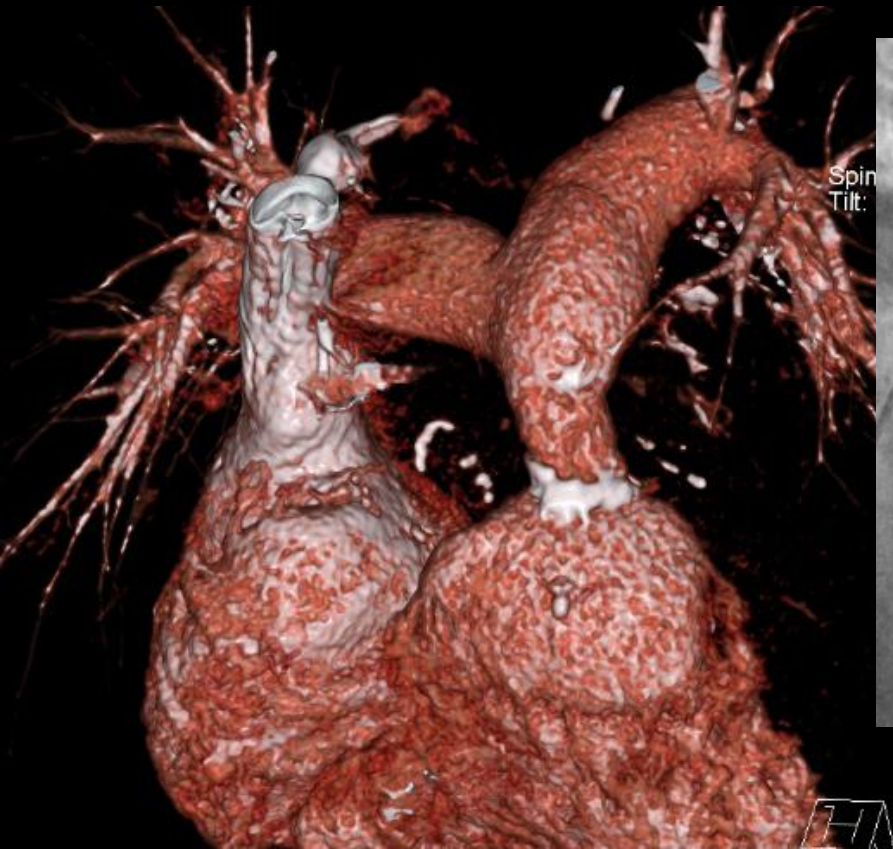
LPA severe hypoplasia



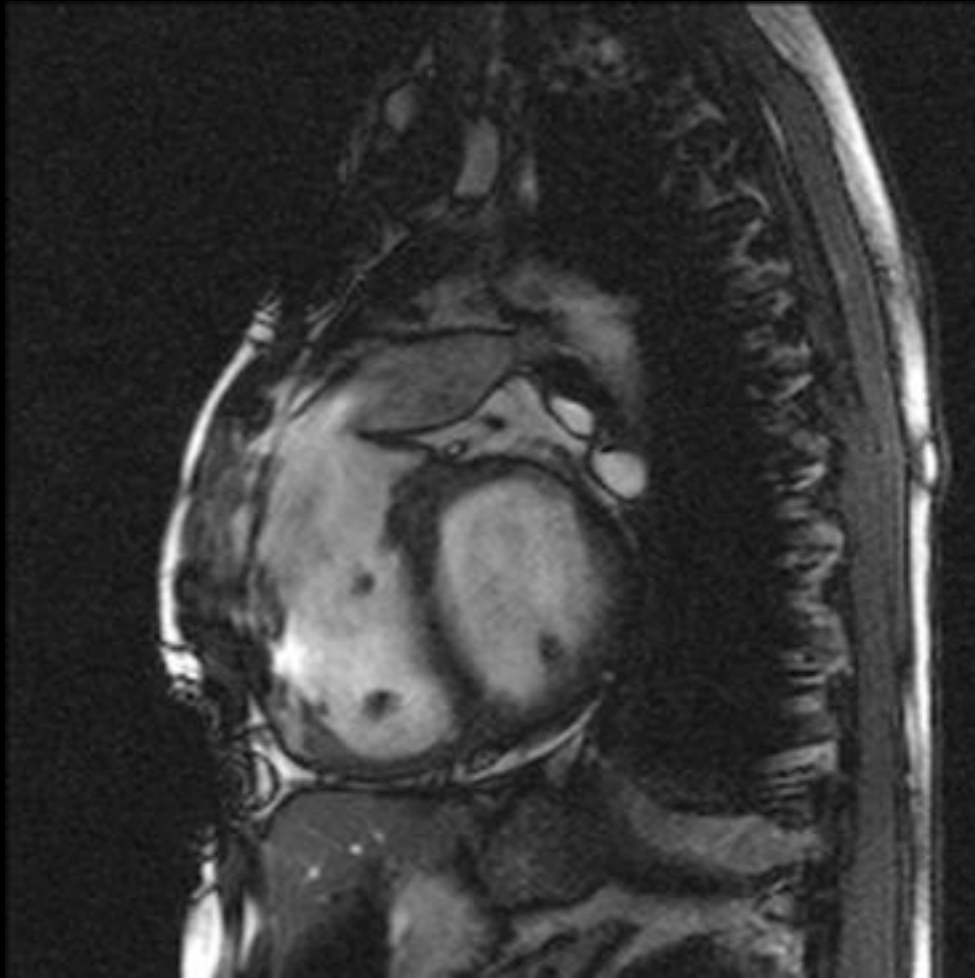
Melody



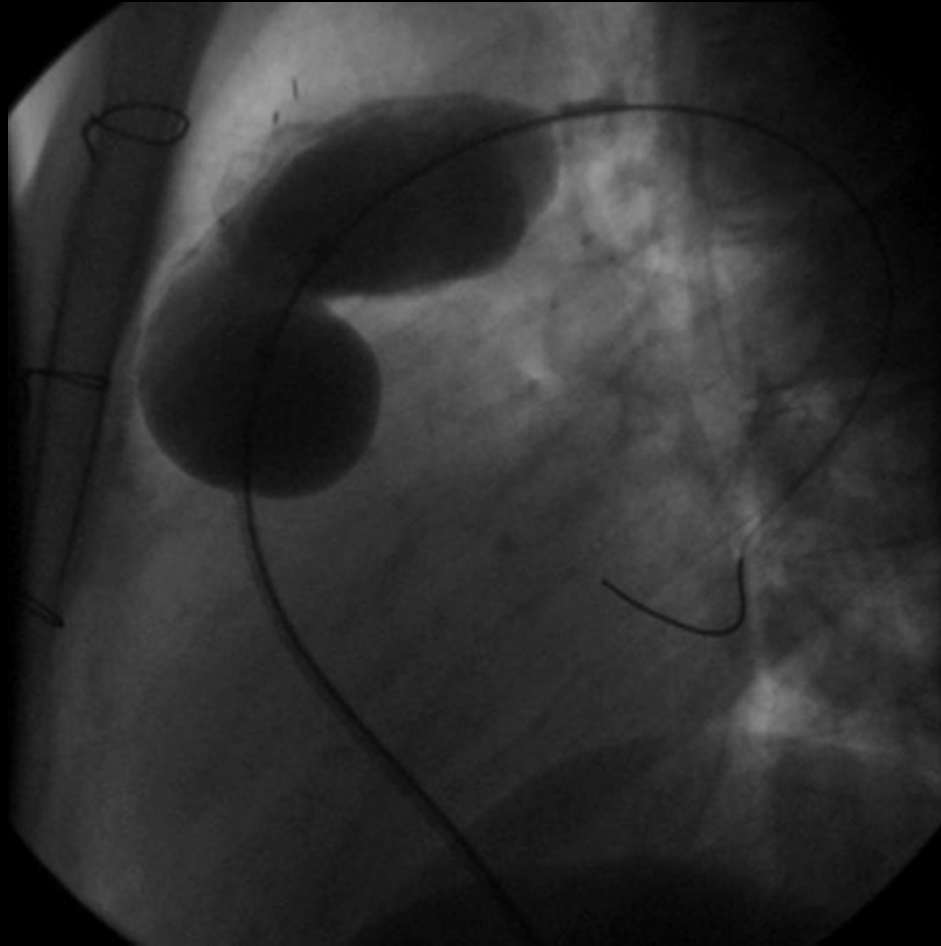
CT as an alternative to MR

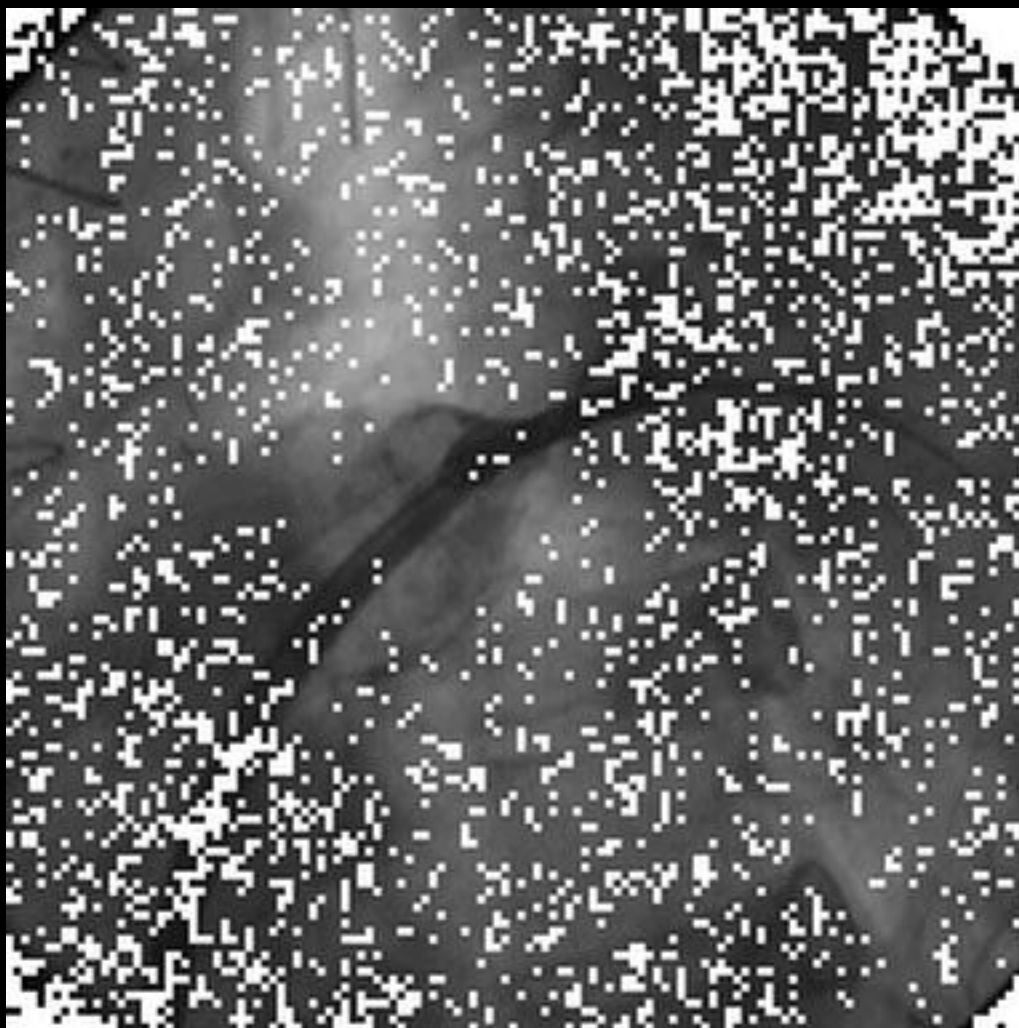


RVOT too large????

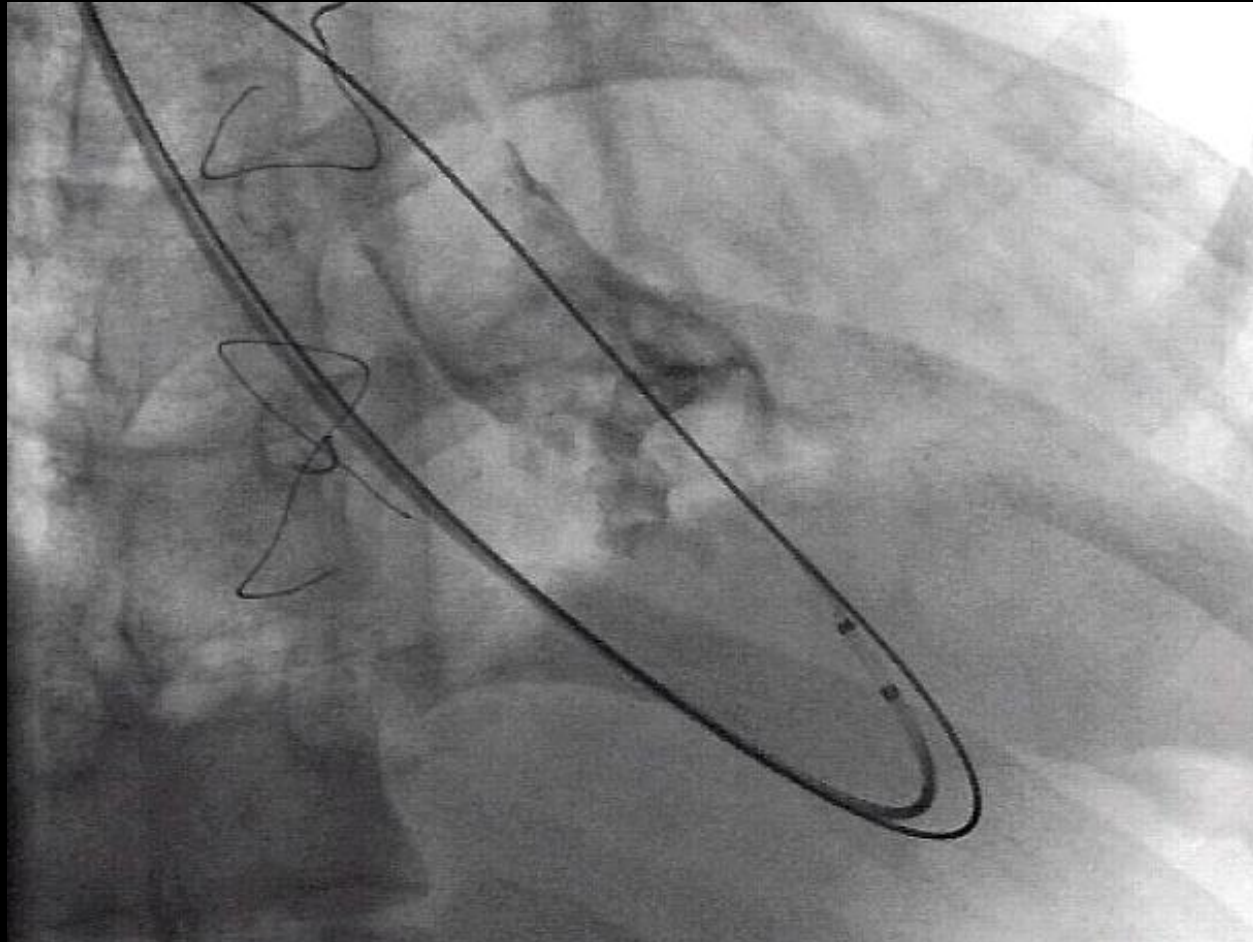


RVOT sizing

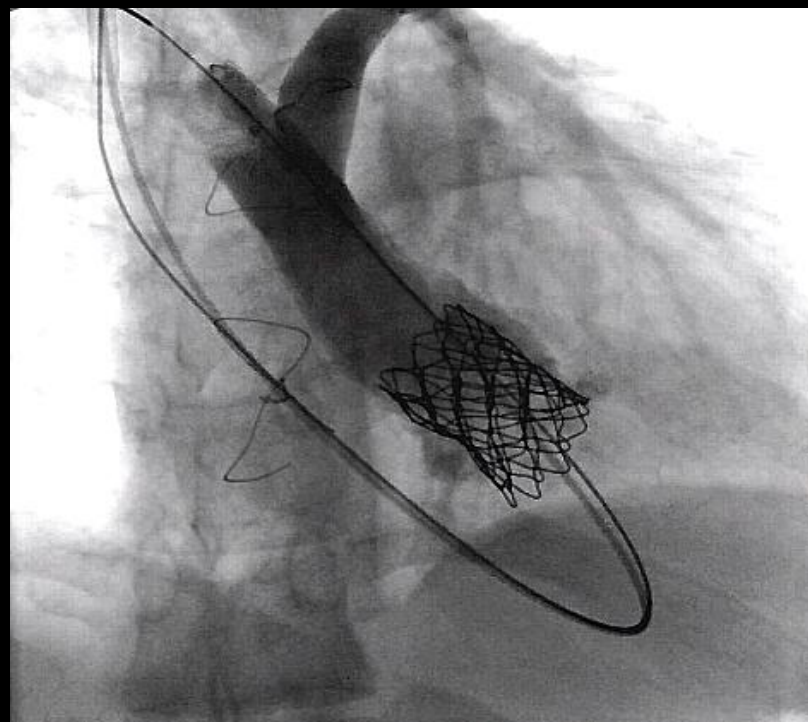
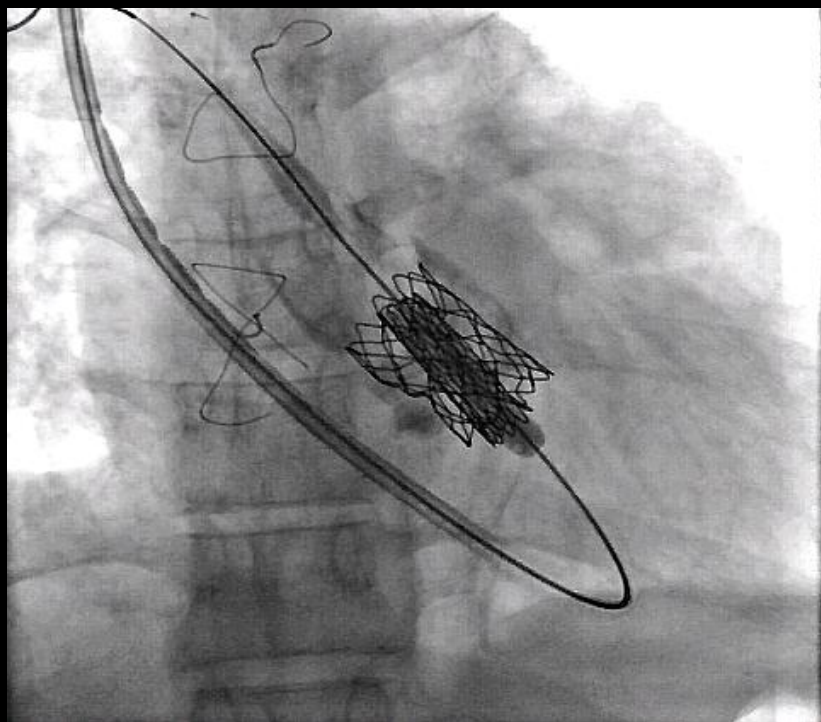


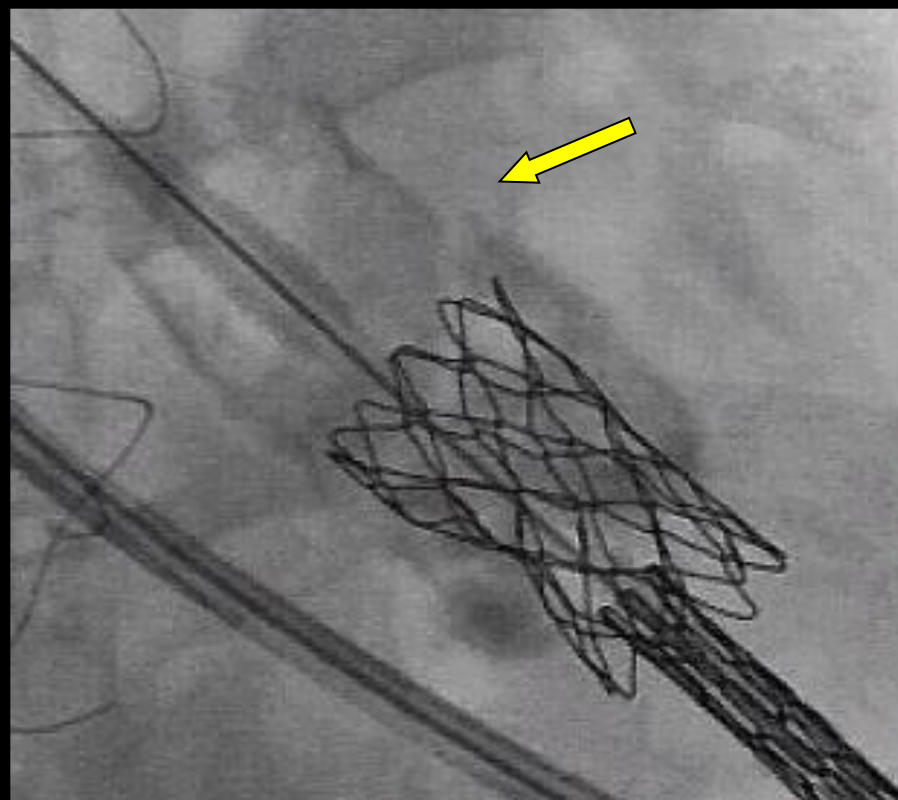
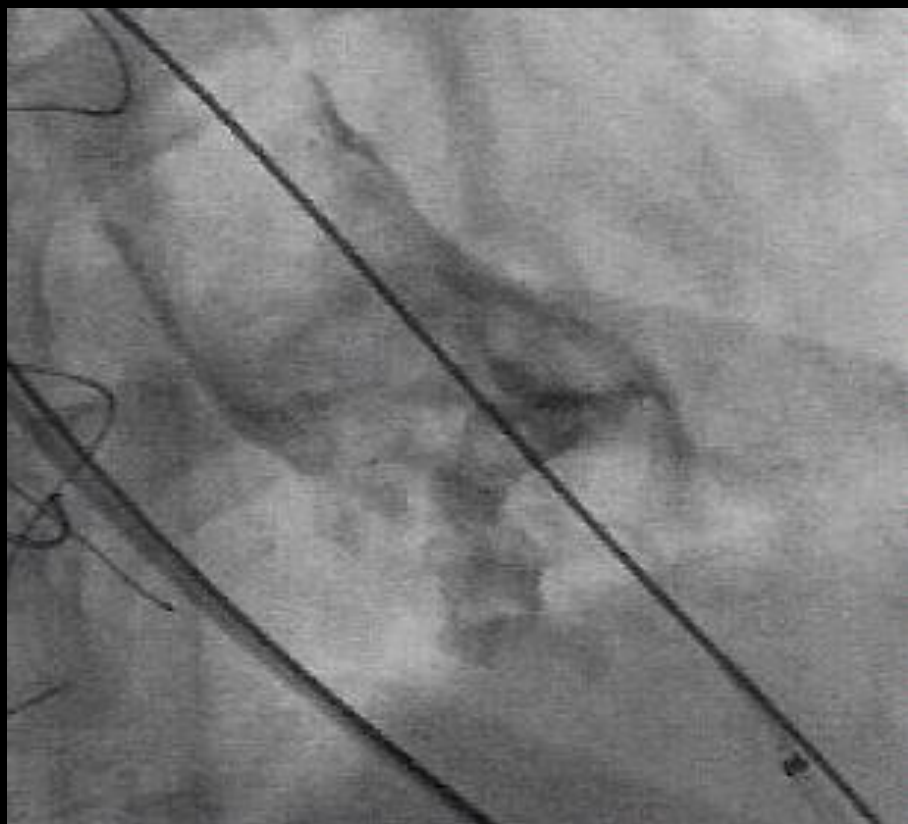


Extensive conduit calcification

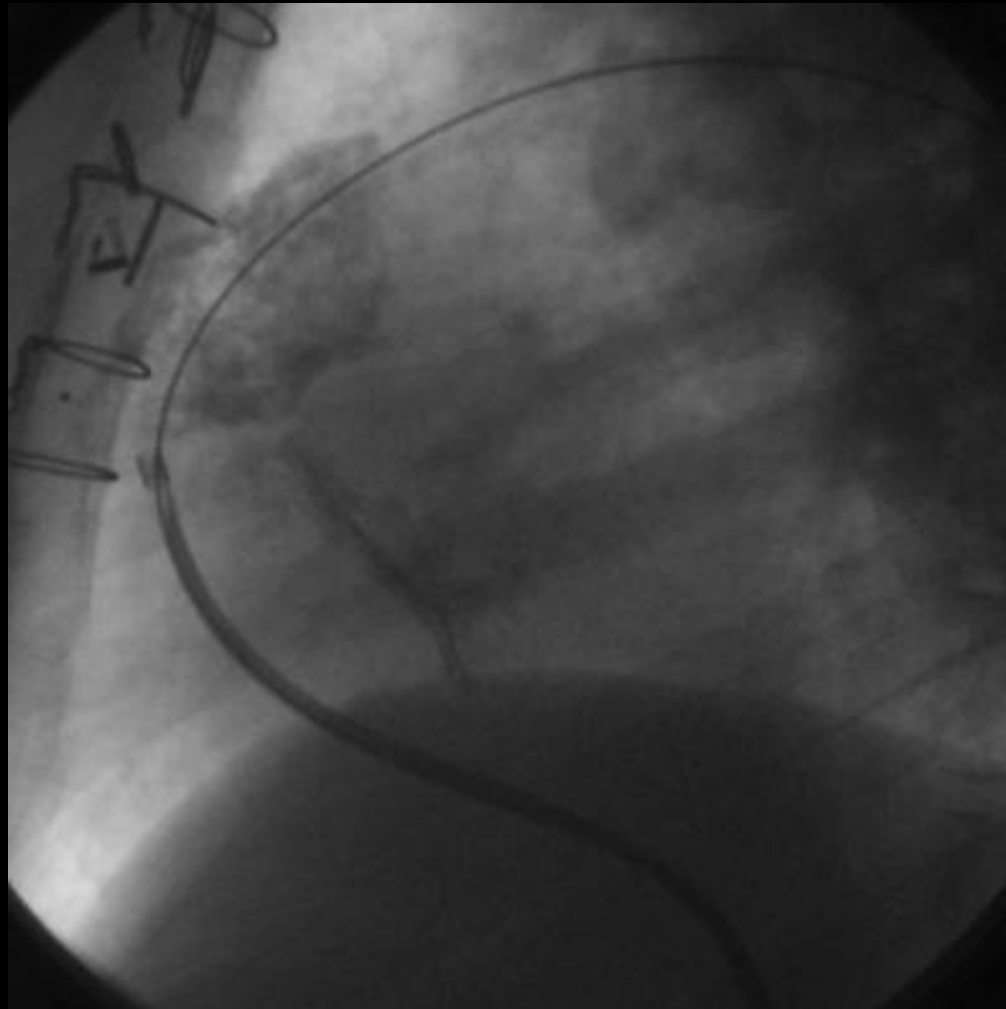


Prestenting + Melody

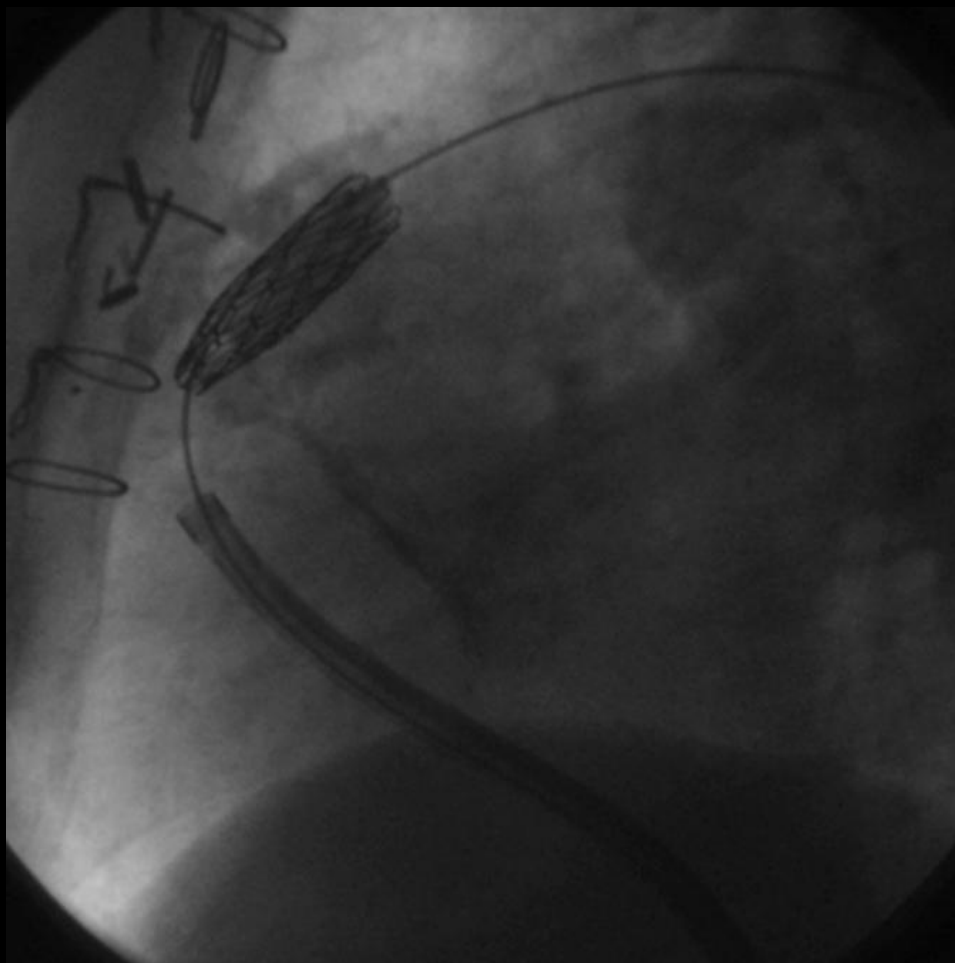




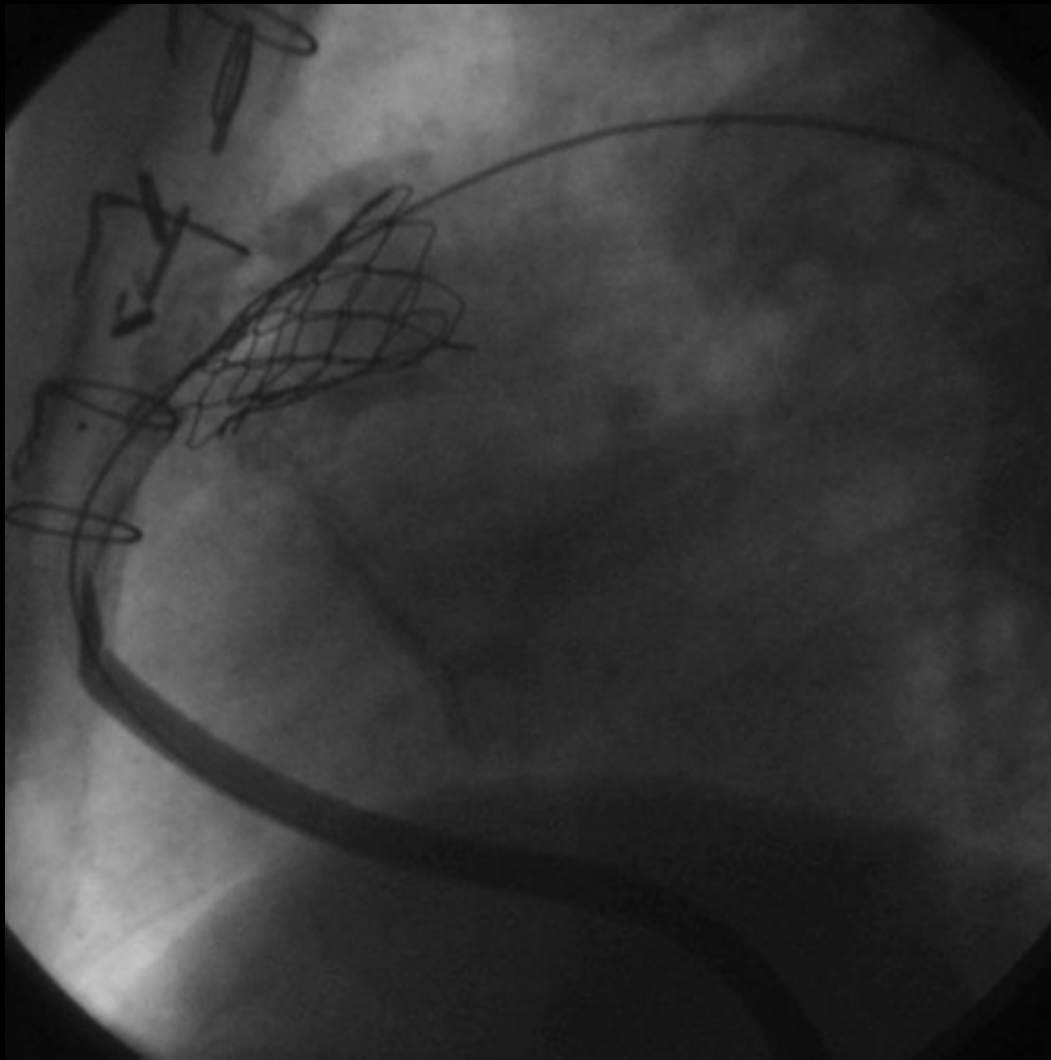
VD, 32 y, TGA+VSD+PS, Rastelli with RV-PA homograft 18
Conduit severe stenosis and calcification



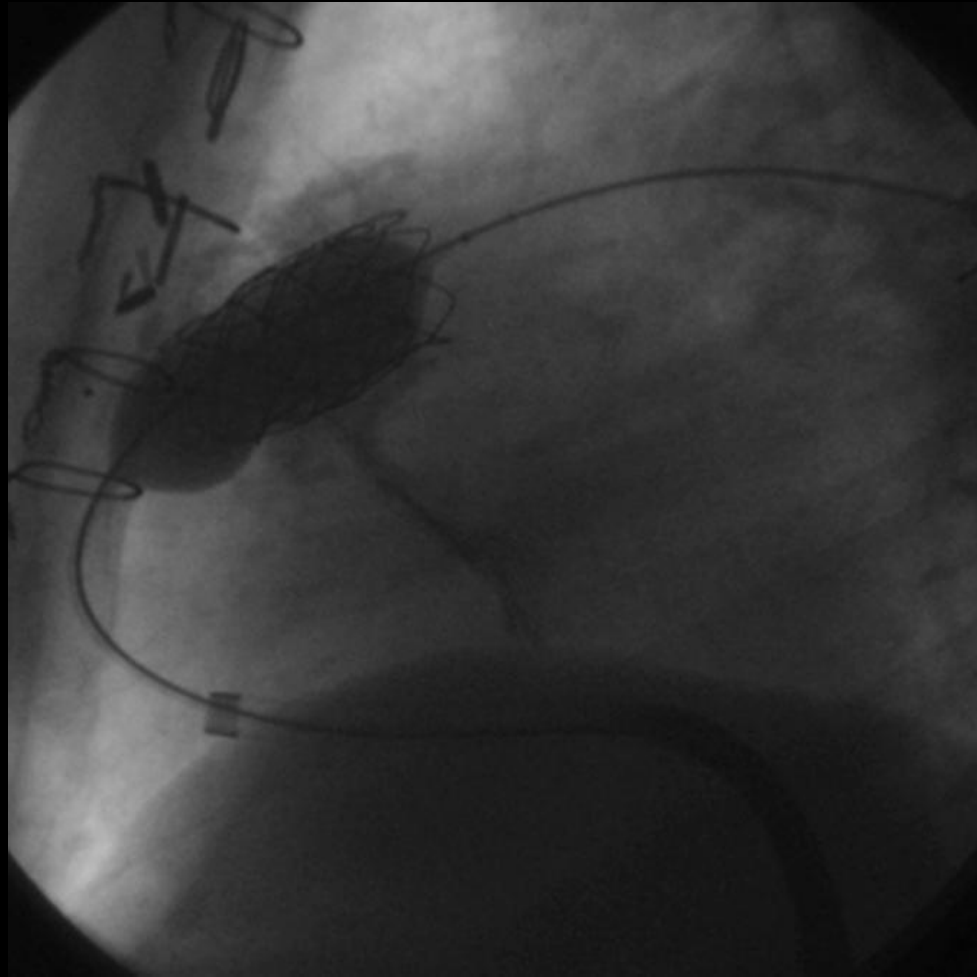
Prestenting with CP covered stent



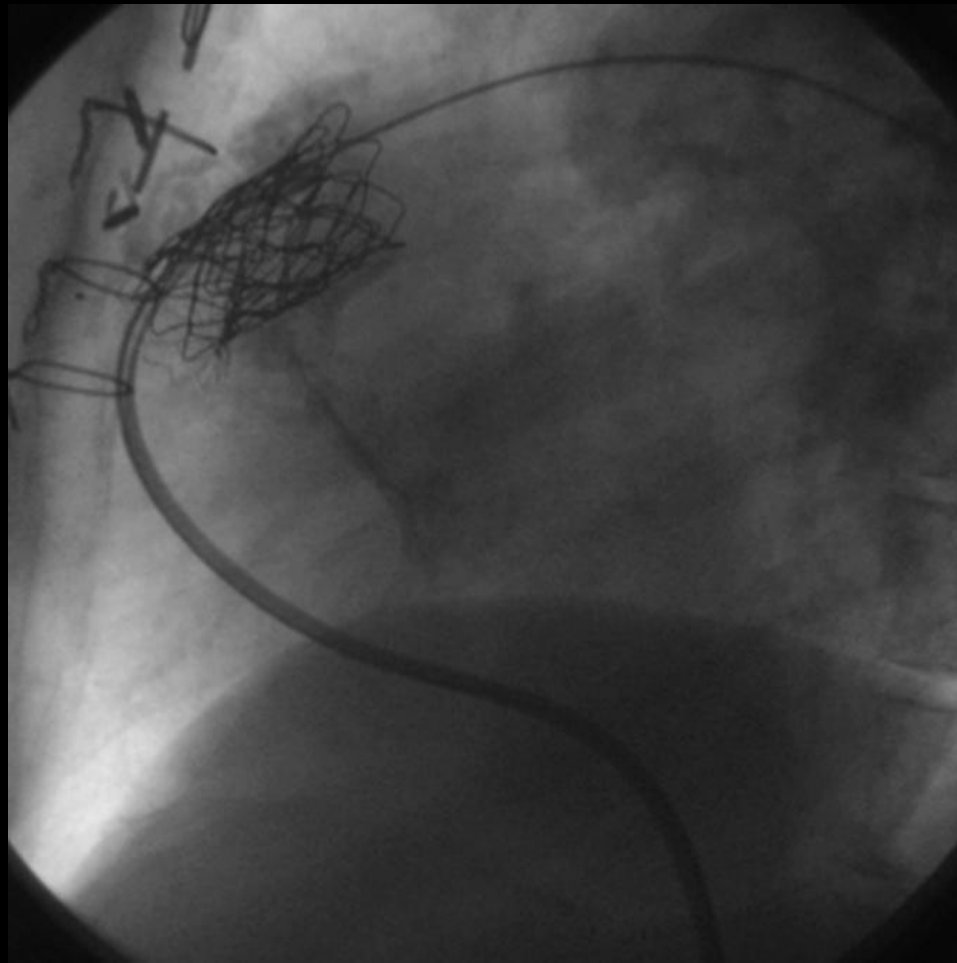
Incomplete stent expansion



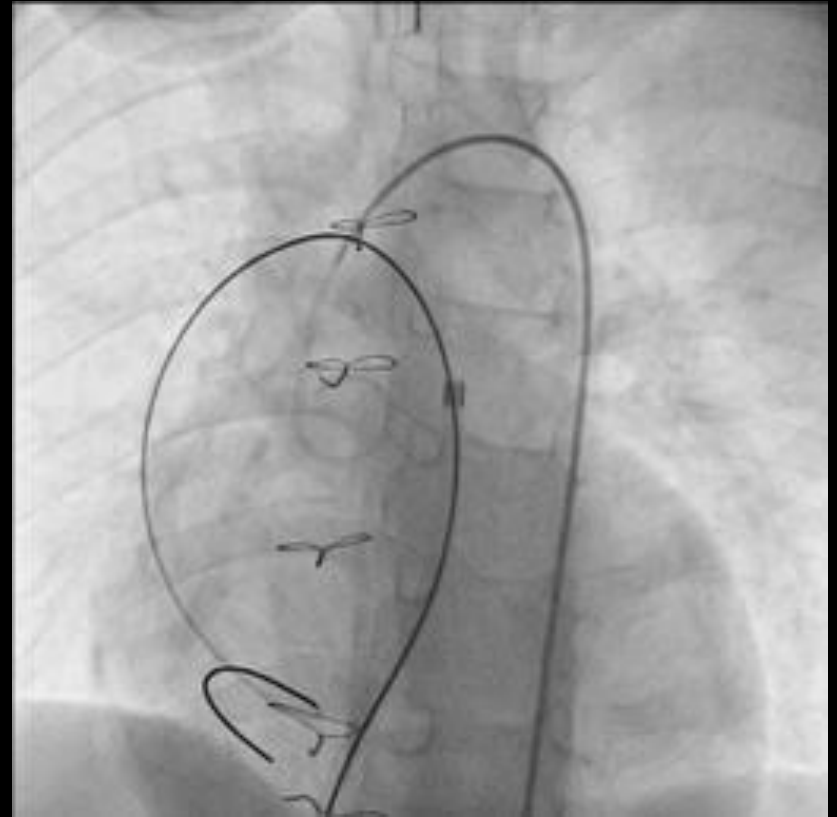
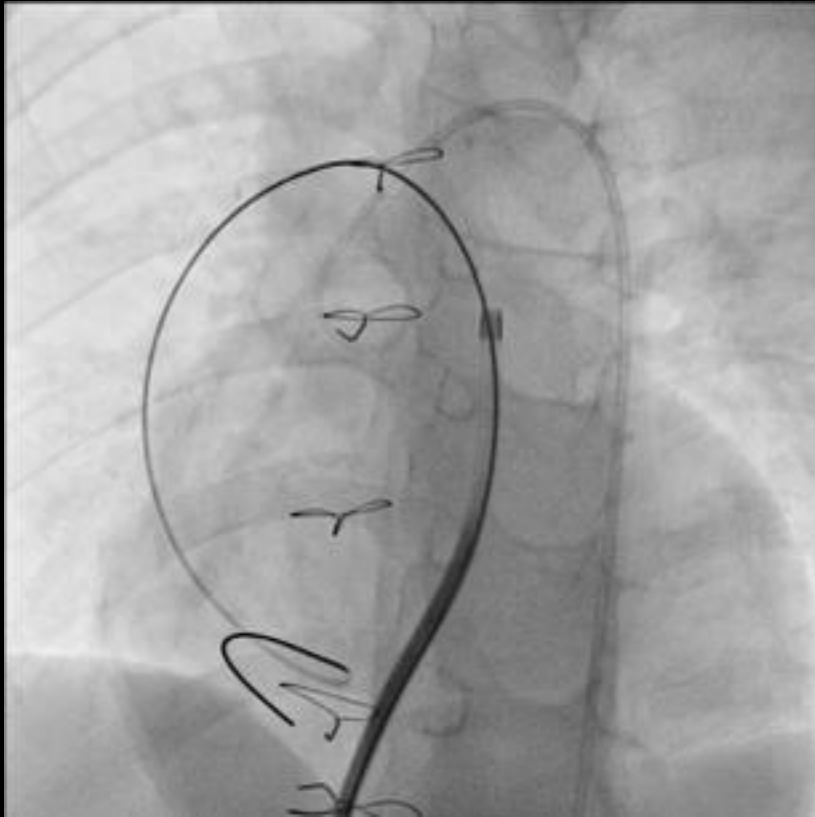
Post-dil with Mullins high pressure balloon



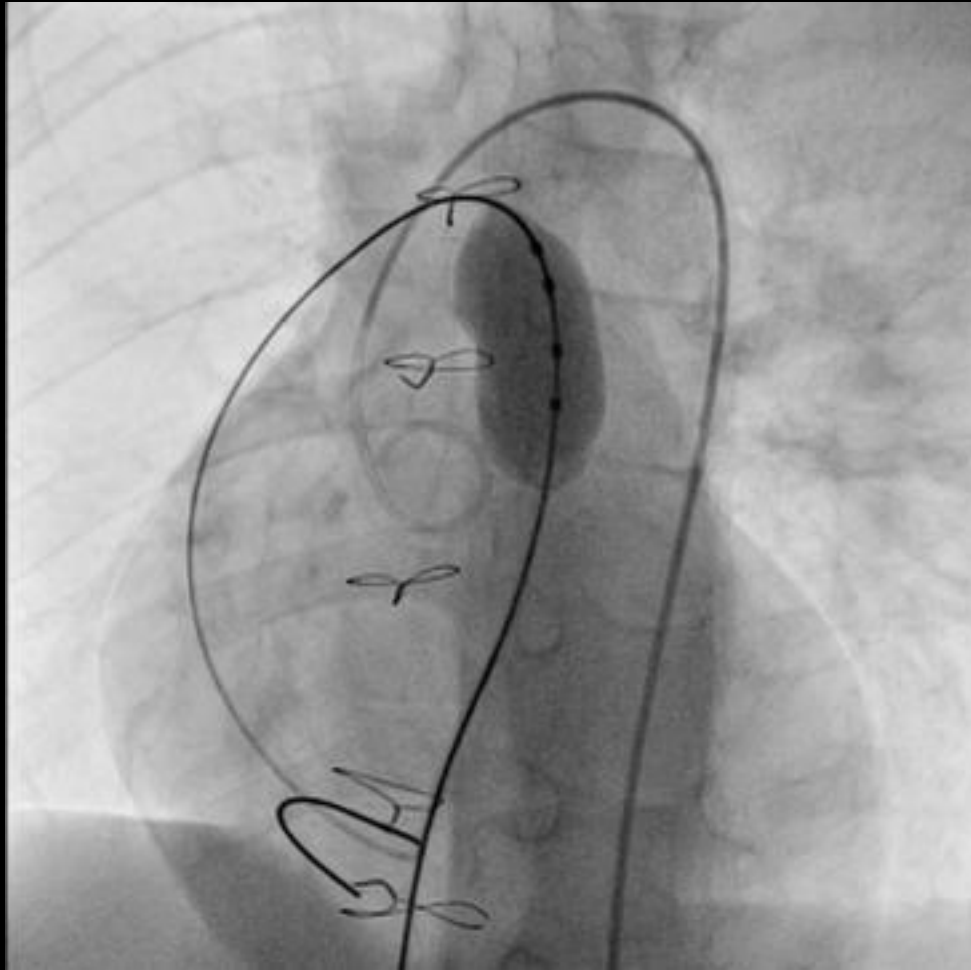
Final Angio post Melody implantation



RV-PA conduit / coronaries



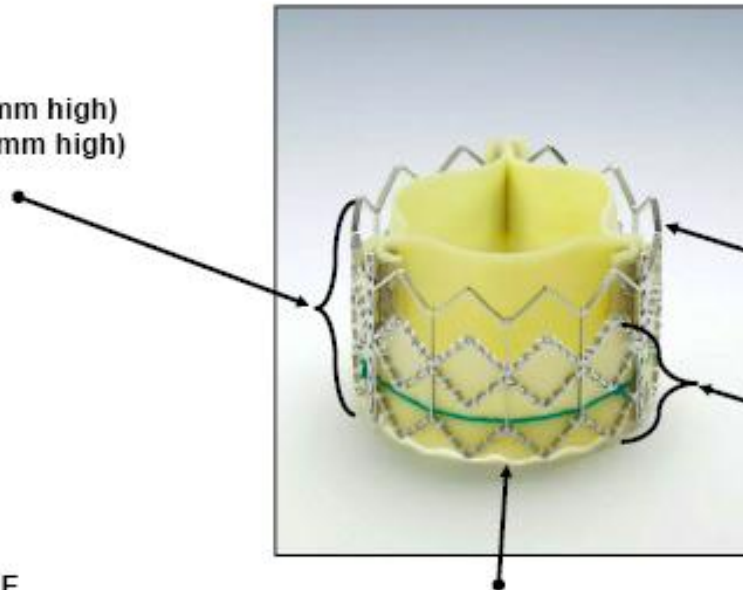
Balloon inflation and simultaneous aortogram



Device Components – SAPIEN Valve

SIZES

- 23mm (14.3mm high)
- 26mm (16.1 mm high)



STENT

- Stainless steel
- Balloon expandable

PET skirt

TISSUE

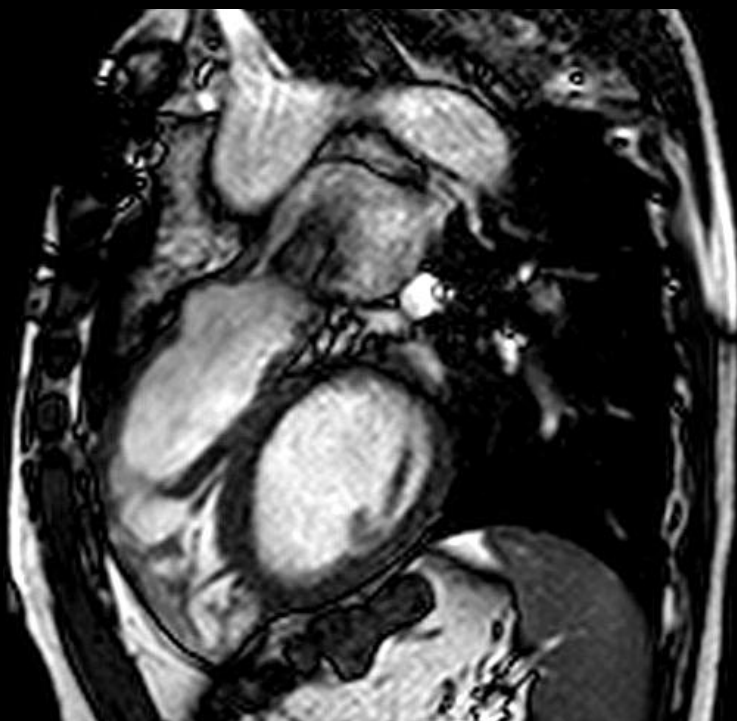
- Edwards tissue technology with 20 years of clinical performance
- Bovine pericardial tissue
- TheraFix treatment

THV

EDWARDS TRANSCATHETER HEART VALVE PROGRAM



Matrix 25 mm conduit: stenosis and regurgitation

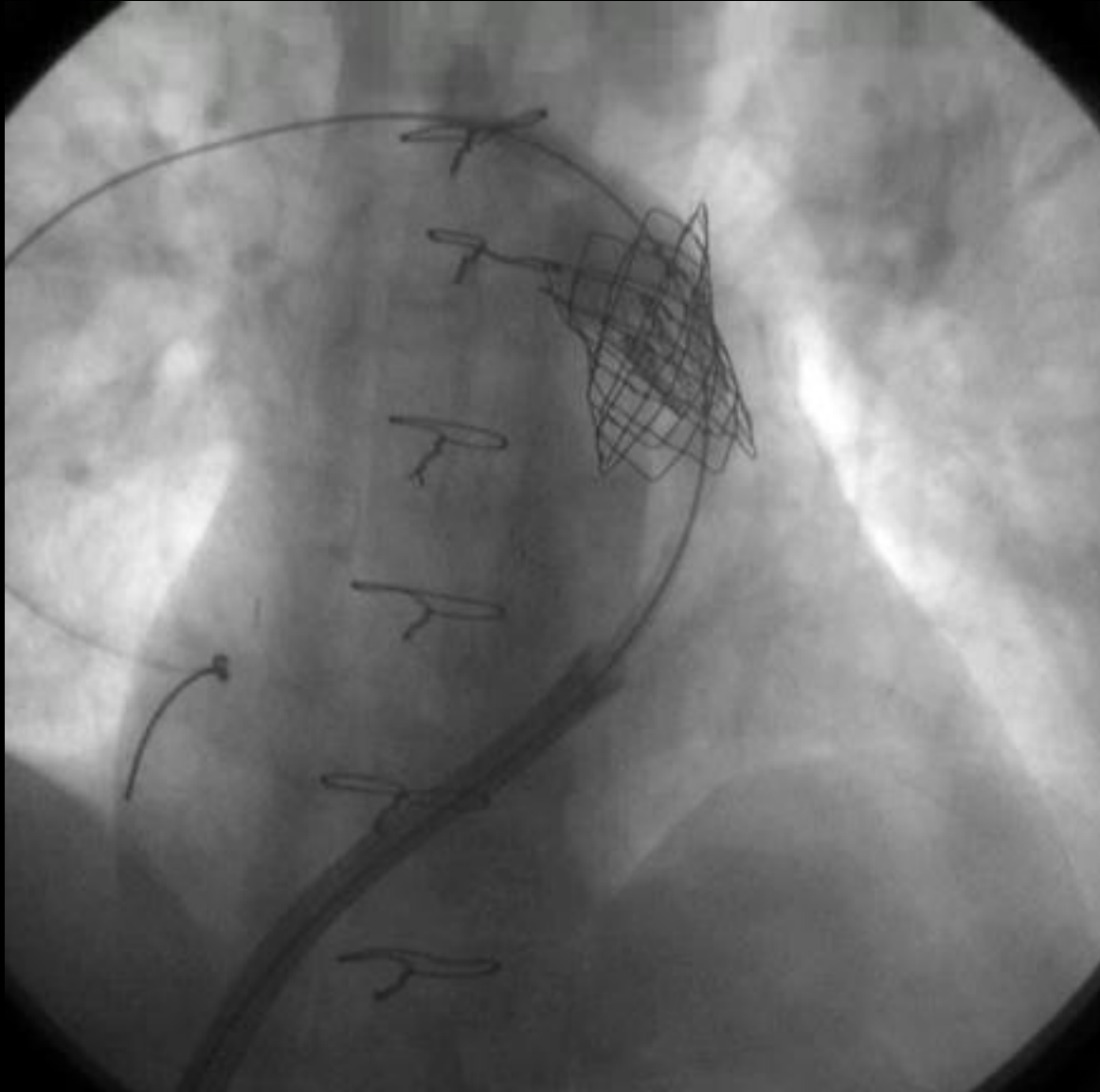




PA angiogram



26 Sapien implant



Final PA angiogram



Pre-procedure evaluation

- MR is the gold standard for:
 - * RVOT morphology
 - * RV volumes/function



Intraprocedure monitoring

- Angiography is the gold standard
(more sophisticated technology as rotational angiography may be very helpful)
- * Very little role, if any, of echo



Thank you for your attention!

Mario Carminati

