

Complications of Percutaneous Pulmonary Valve Implantation

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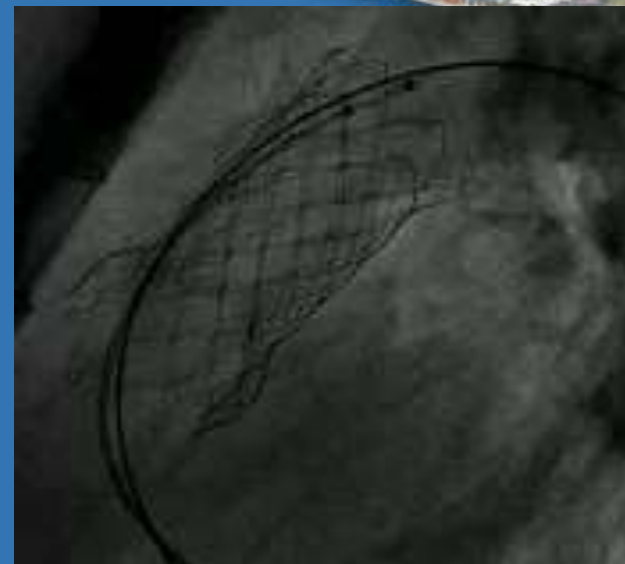
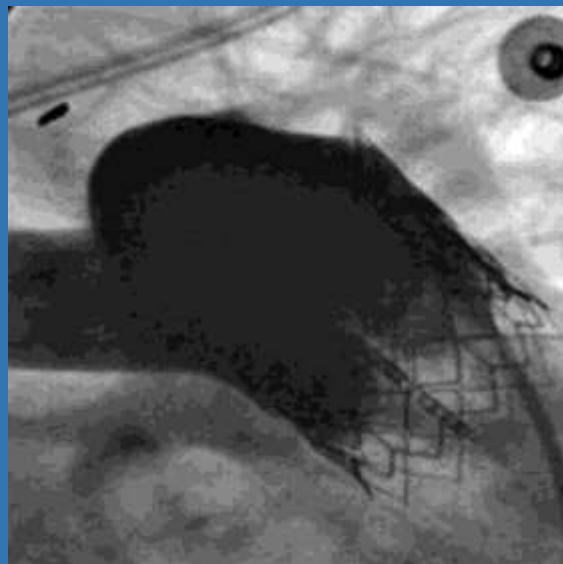
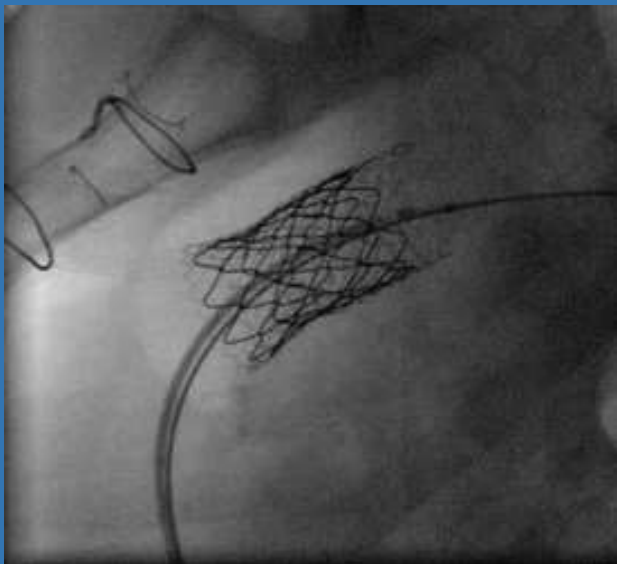


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What are we using & is there a difference?



Complications of Percutaneous Pulmonary Valve Implantation

- General complications of cardiac catheterisation
- Bleeding, pulse loss, dysrhythmias etc
- Those related to the specific stages of implanting the pulmonary valve:
 - Conduit dilation, stenting, wire positioning
 - Valve implantation
 - Complications on follow up: Valve durability



What's in the literature?

MELODY in Pulmonary Position

- Zahn, Hellenbrand, Lock, McElhinney J Am Coll Cardiol 2009;18:1722-9
- Multicenter early results
- 34 patients (3 centres) successful 29/30 patients (97%)
- Conduit rupture 1 patient
- Pulmonary haemorrhage 1 patient
- Wide complex tachycardia 1 patient
- Stent fracture 8/29 implants (27%) 3 treated with second Melody implant later

Major adverse events 21%



What's in the literature?

SAPIEN in pulmonary position

- Kenny, Hijazi, Kar et al J Am Coll Cardiol 2011;58:2248-56
- Multicenter early results
- 36 patients (4 centres) 33/34 success (97%)
- Valve migration 3 patients (2 surgical retrieval)
- Pulmonary haemorrhage 2 patients
- Ventricular fibrillation 1 patient
- Stent migration 1 patient

Major adverse events 21%

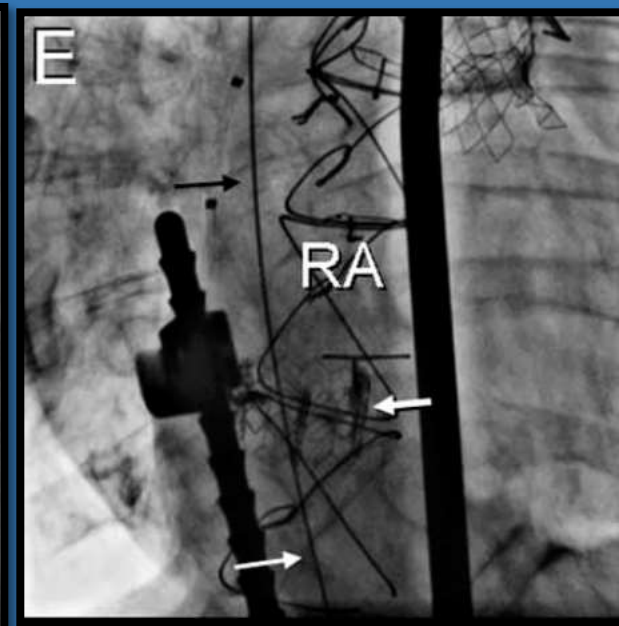
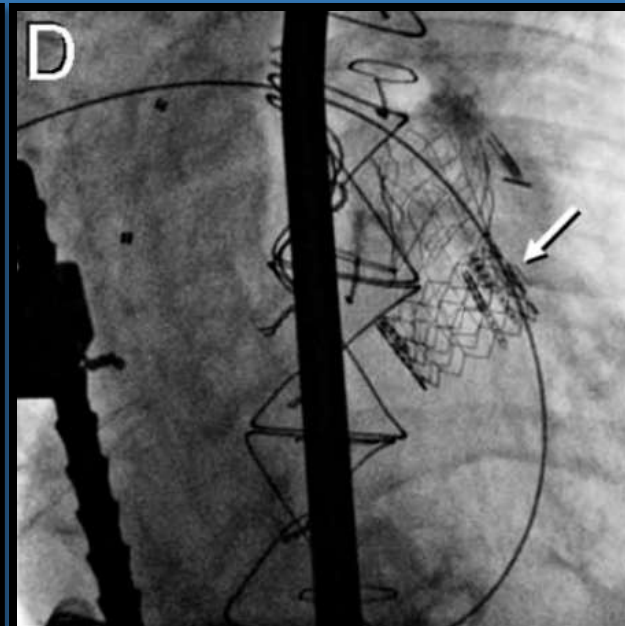
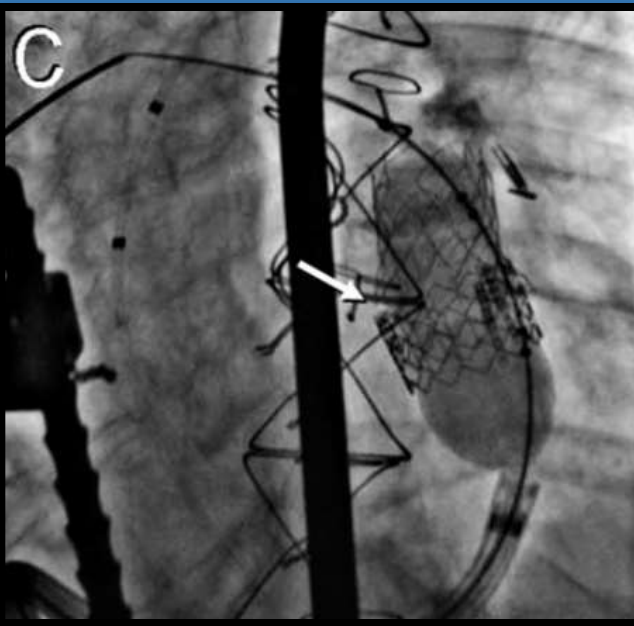


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Sapien Valve Migration

Thanks Damien Kenny

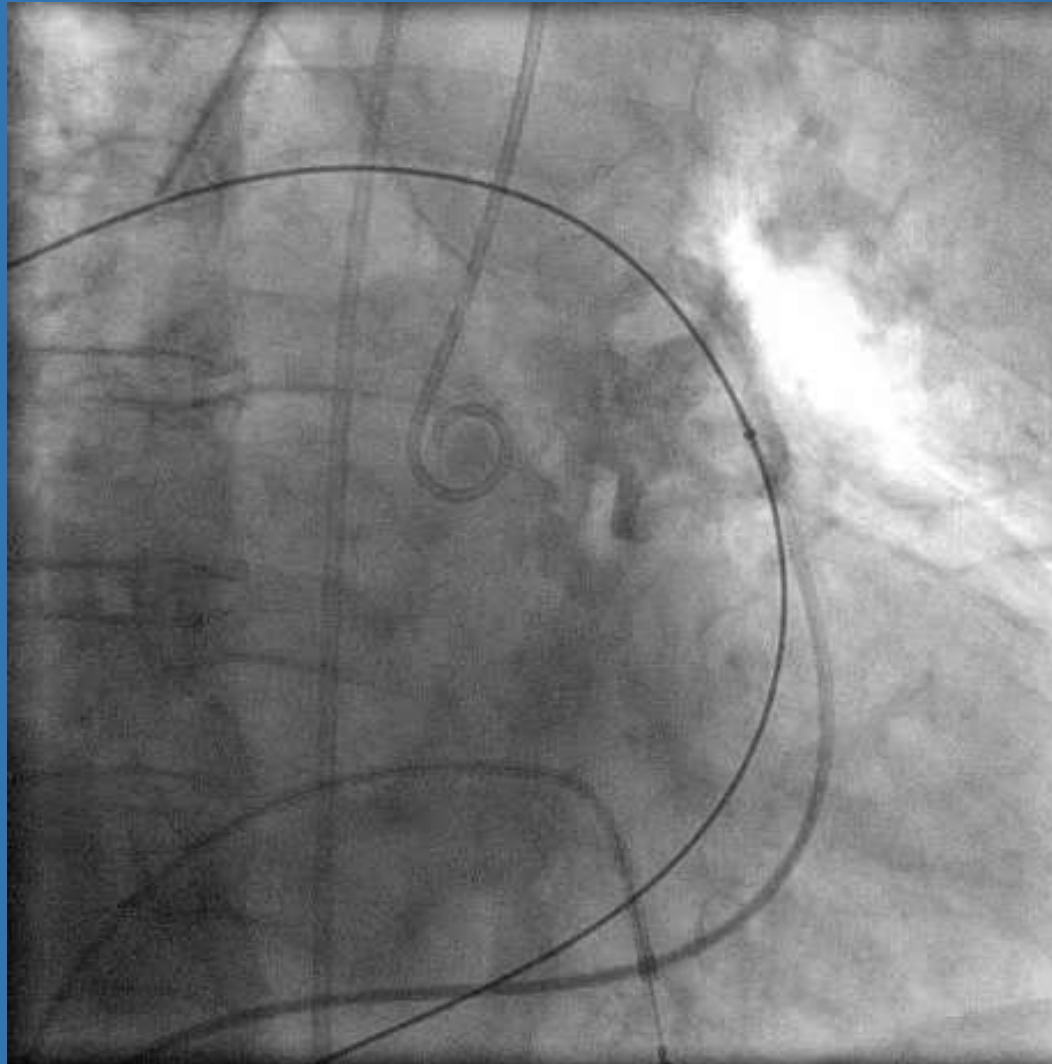
Proximal Migration





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Extensive Calcification





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Homograft Fracture



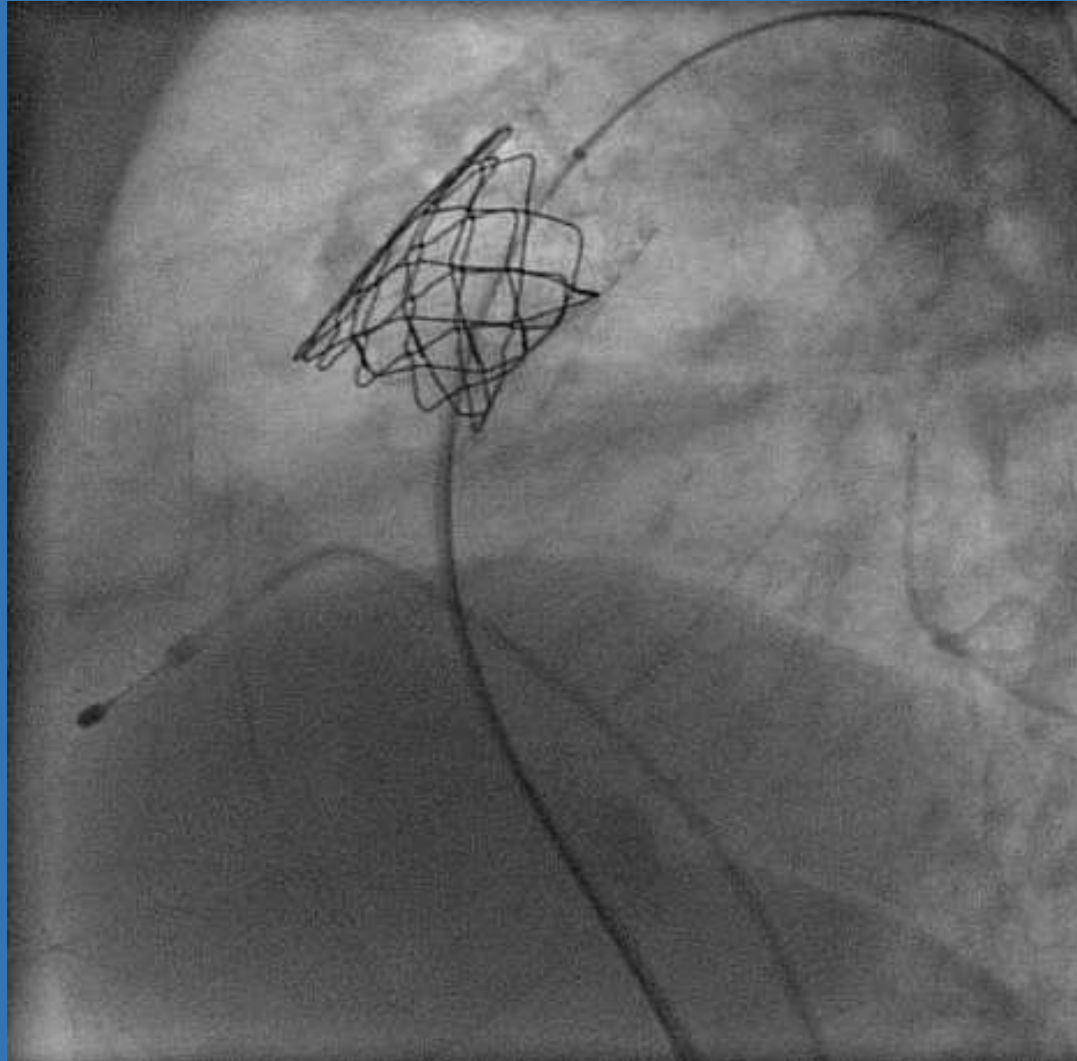


Homograft Fracture

How to avoid it?

- Calcification very common and can be extensive
- Unpredictable
- Stepwise dilation?
- Angiography after each dilation
- Covered preenting?
- Two stage procedure?

Other Calcification Problem: Paravalve Leak / Contained Rupture



Respond to postdilation
Well tolerated
Resolve spontaneously



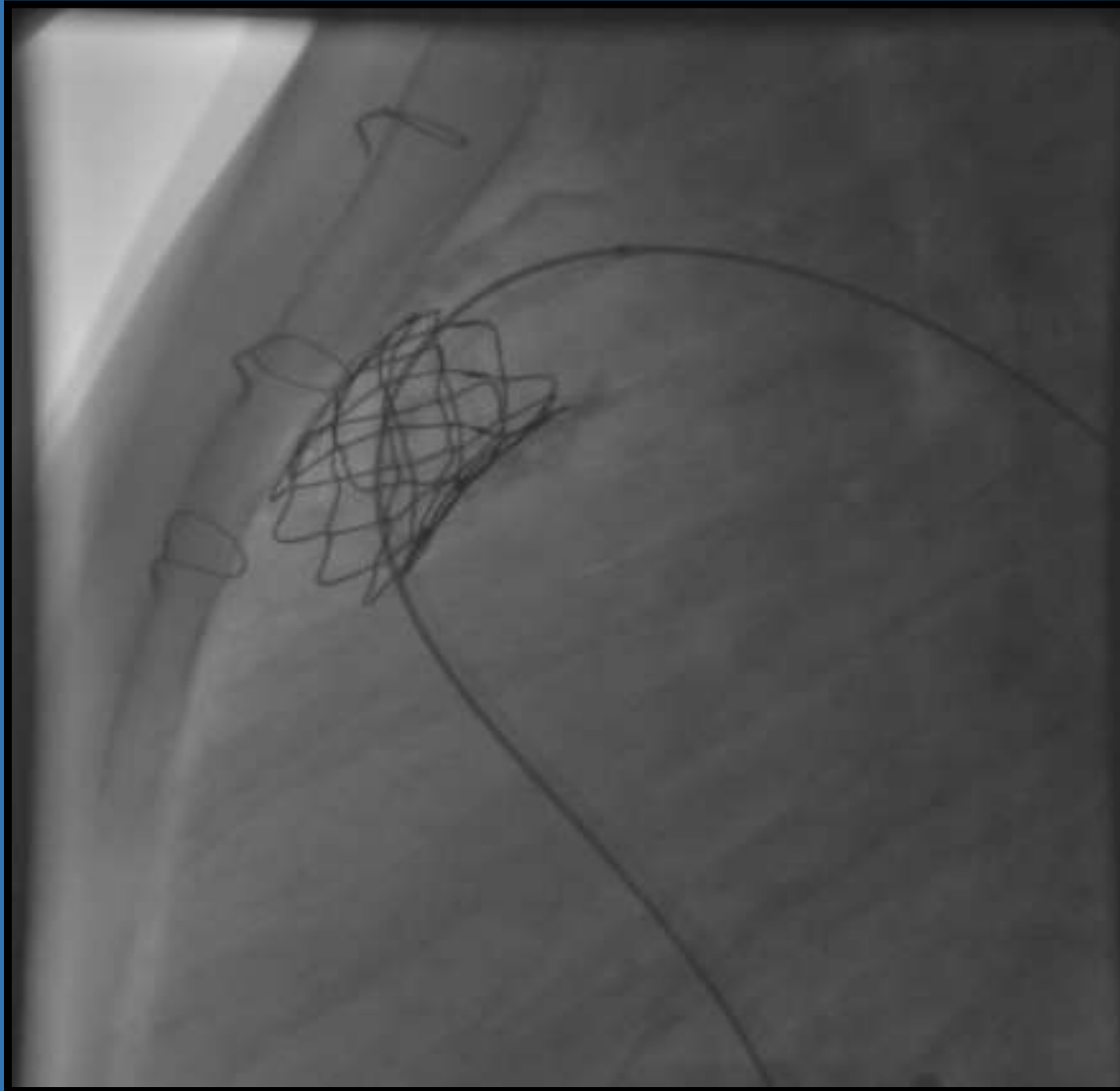
Coronary Artery Compression

- Moray, McElhinney, Cheatham et al *Cir Cardiovasc Interv* 2013;5:535-42
- Multicenter
- 404 pts 407 procedures potential implants. 343 received a valve (84%)
- 68 patients (17%) had 'abnormal' coronary anatomy
- 21 pts had evidence of coronary artery compression (5%)
- Tetralogy of Fallot + abnormal coronaries: 21% demonstrated coronary compression



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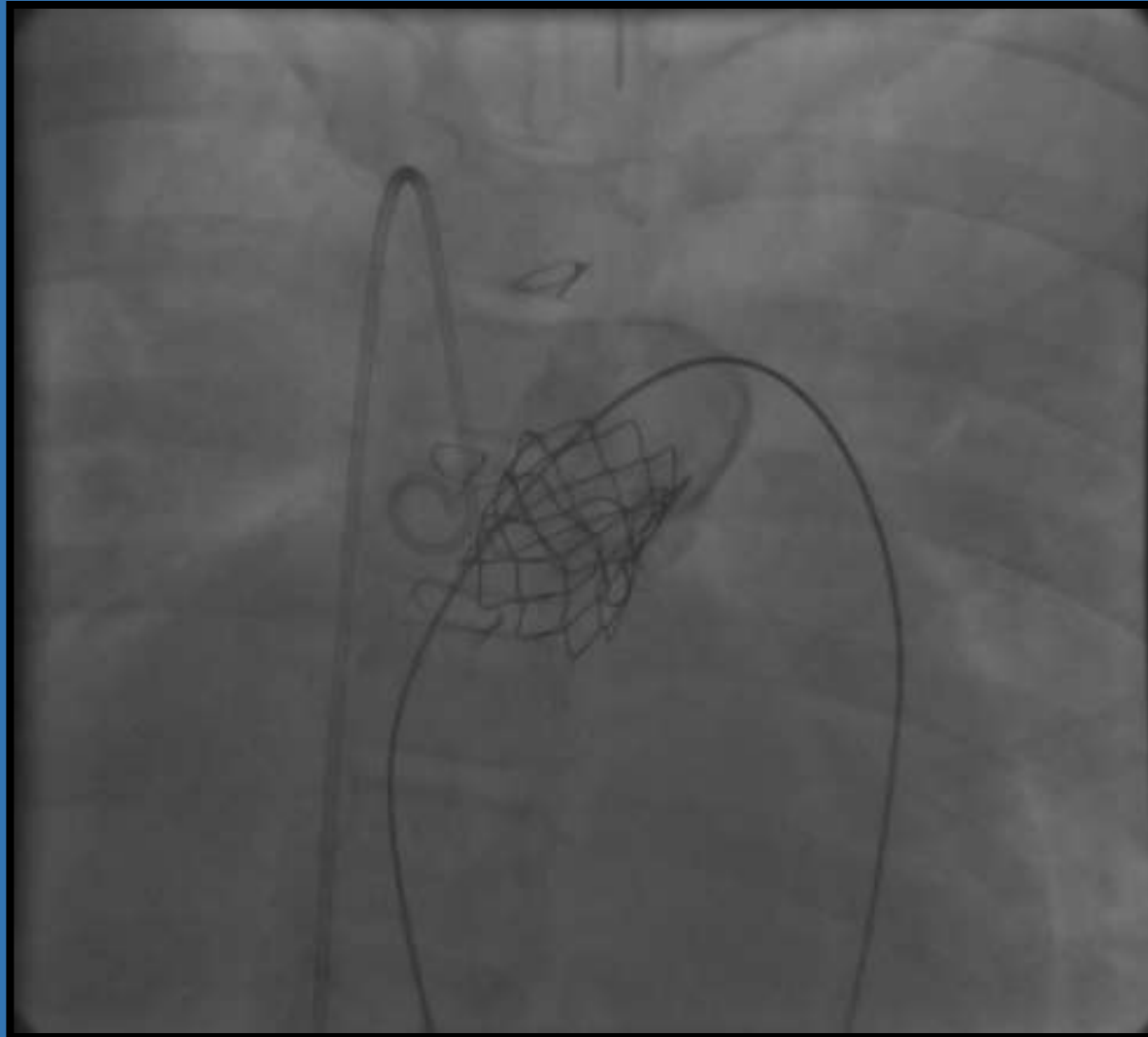
CCTGA VSD PS s/p 'Rastelli'





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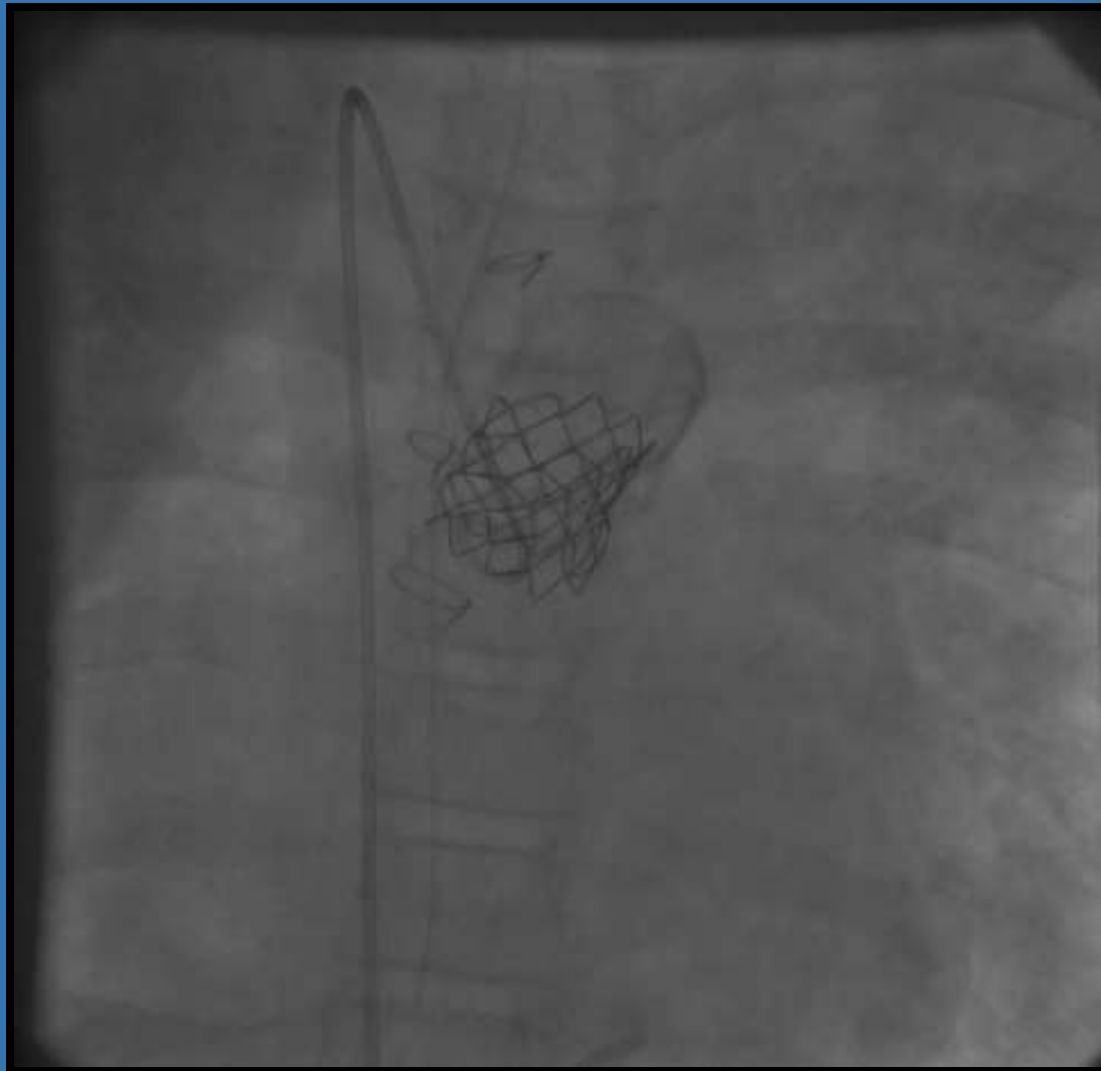
Something Missing





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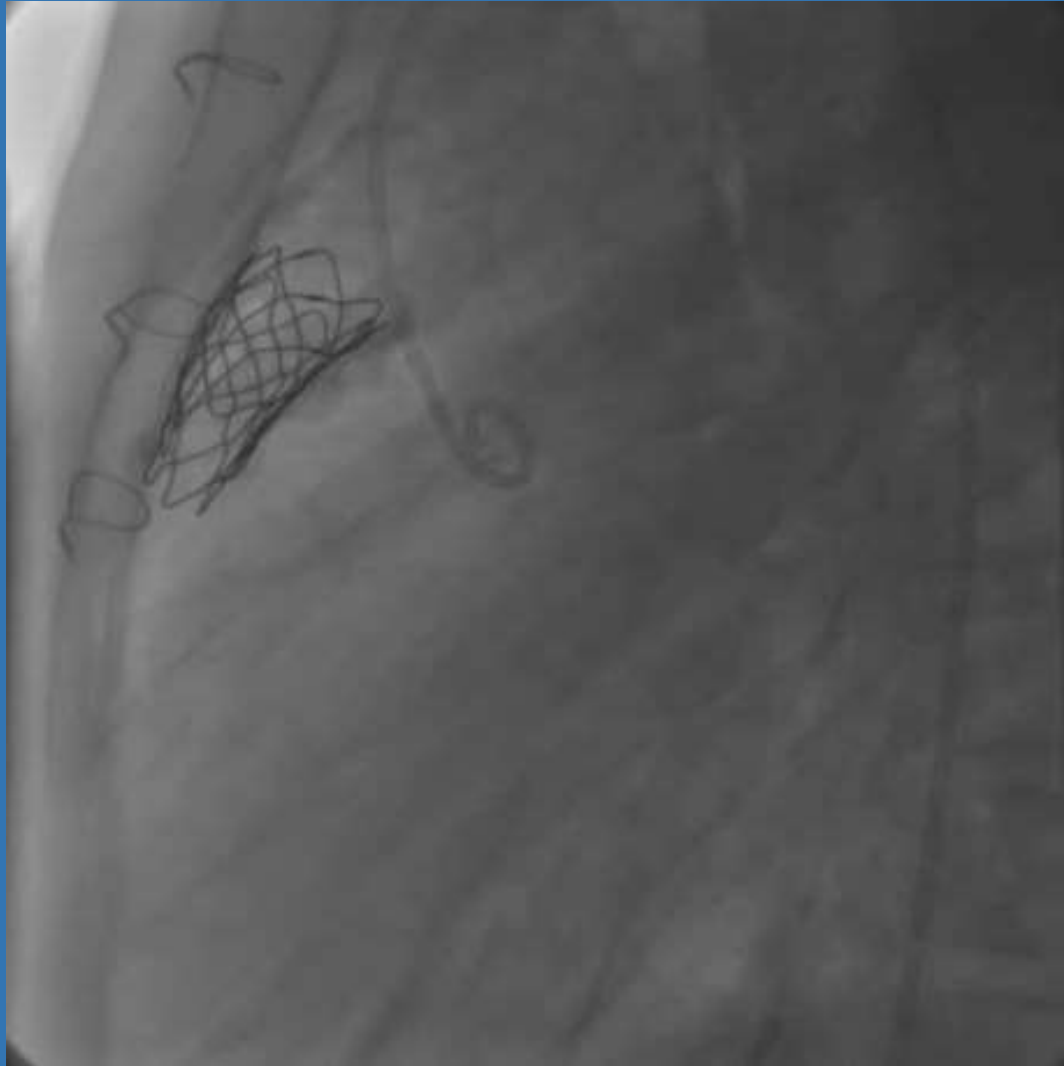
Return of the Coronary



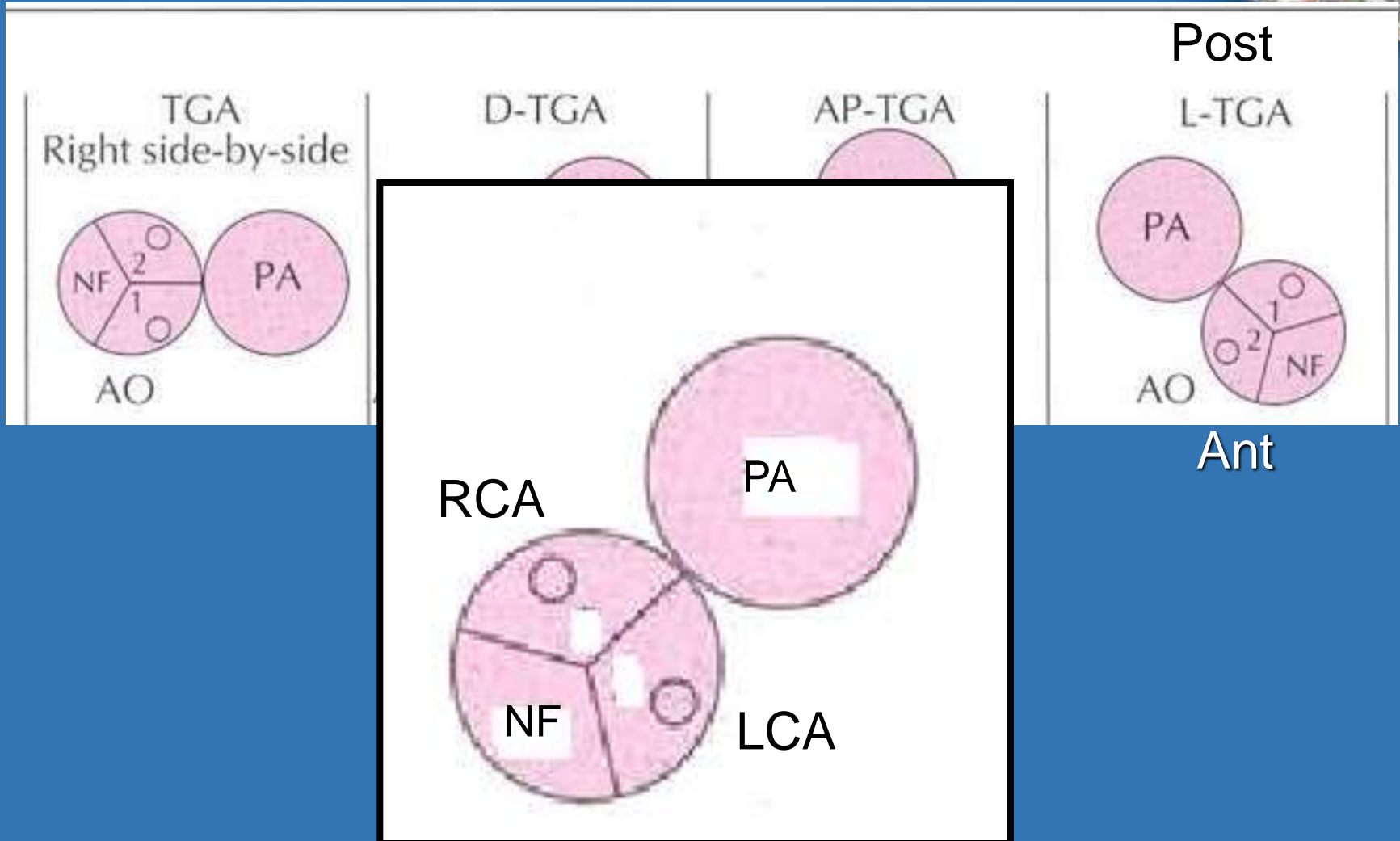


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Return of the Coronary



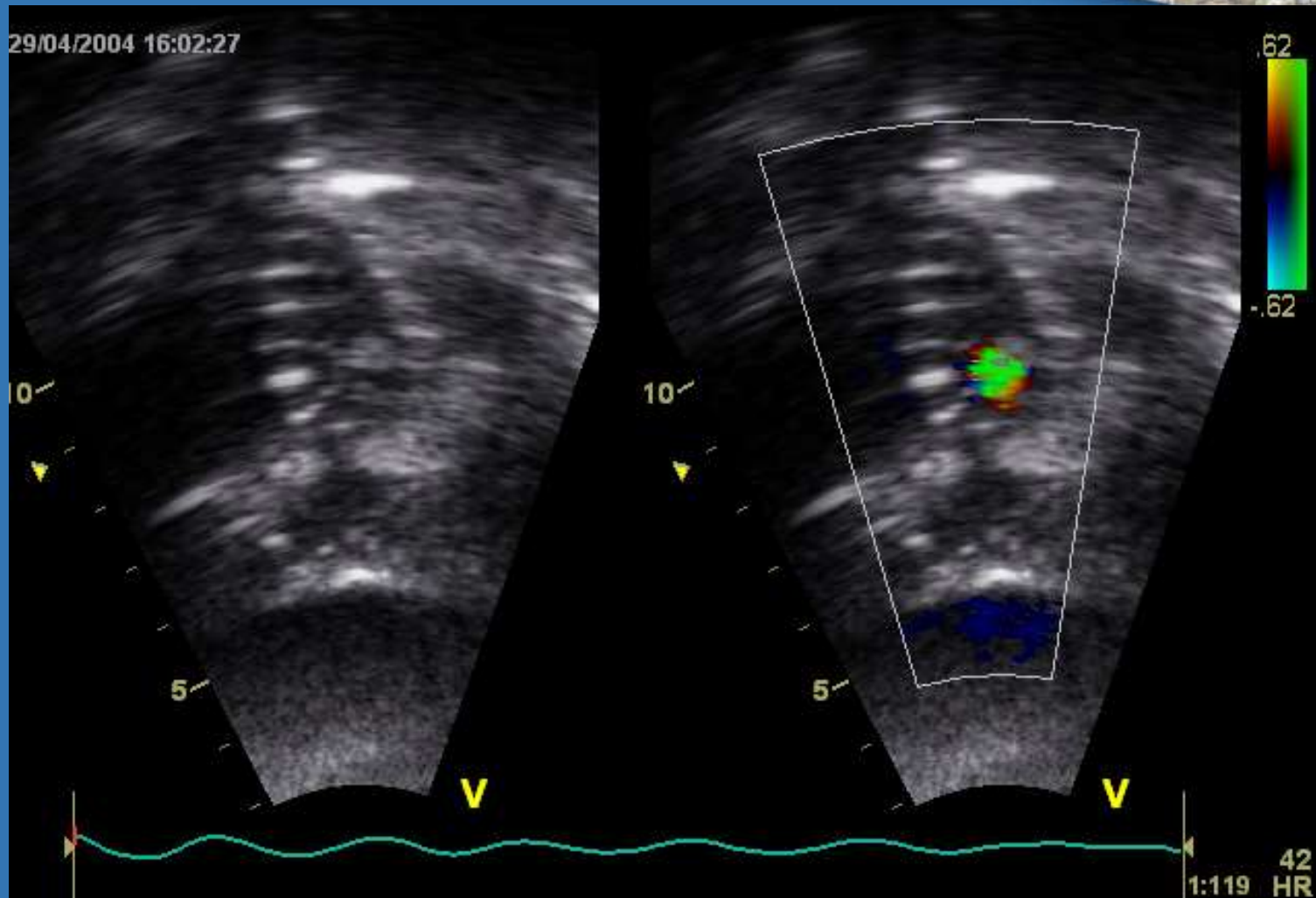
Coronary Patterns





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Endocarditis



Endocarditis

Circ Cardiovasc Interv 2013;6:292-300

Infective Endocarditis After Transcatheter Pulmonary Valve
Replacement Using the Melody Valve

Combined Results of 3 Prospective North American and European Studies

McElhinney, Benson, Eicken, Jacqueline Kreutzer,
Robert F. Padera, MD, Evan M. Zahn, MD

311 pts followed for 687 pt years (median f/up 2.5 years)

16 pts reported = 5.1%

4 explants

2 received second Transcatheter valve

1 sepsis related death

1 death haemoptysis

2 pts recurrent endocarditis

Endocarditis

Cheatham, Hellenbrand, Zahn et al *Circulation* 2015;22:1960-70
Clinical & Haemodynamic Outcomes up to 7 years after TPVR

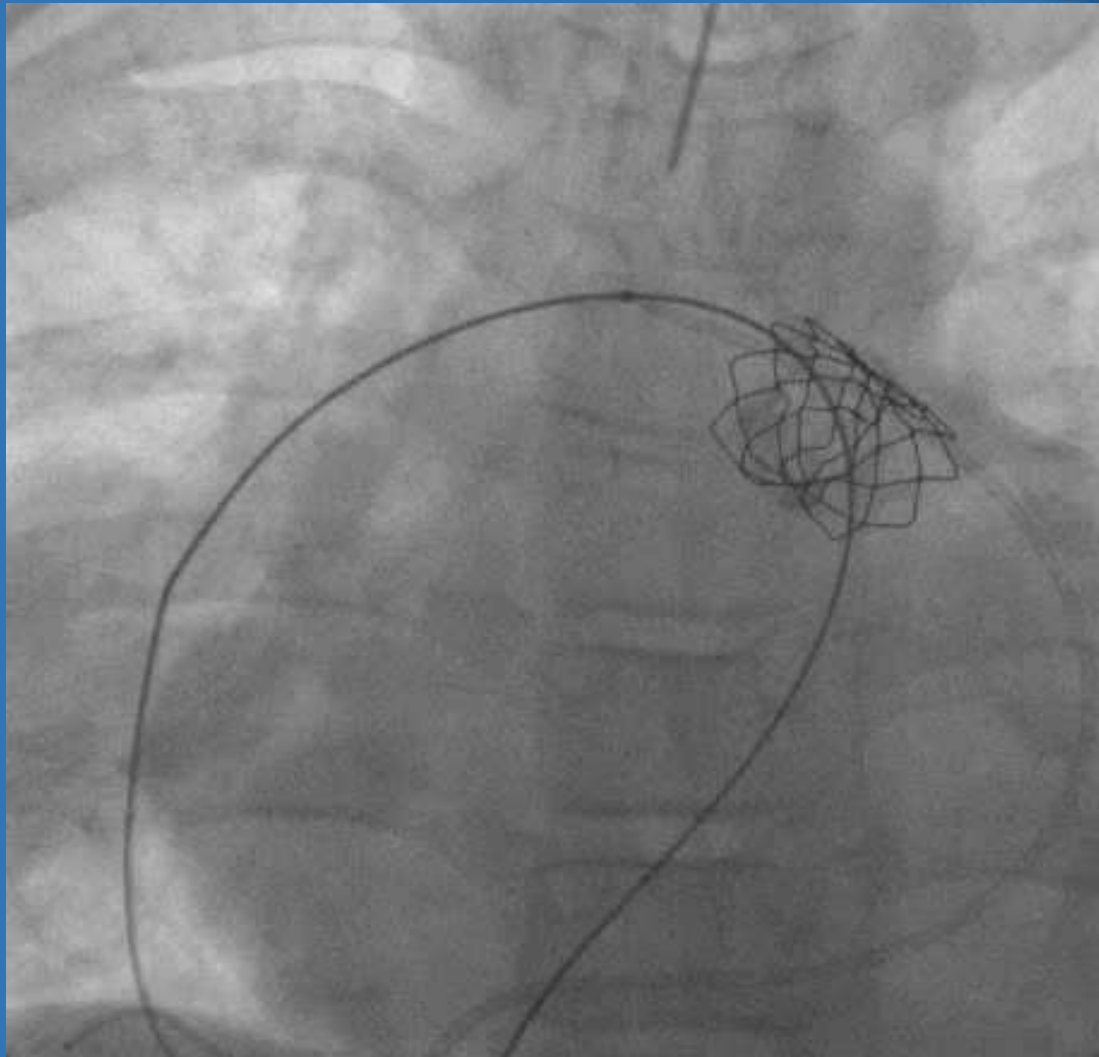
- 171 patients
- 14 pts with definite or presumed endocarditis or bloodstream infection
- 5 year freedom from endocarditis $89 \pm 3\%$



Endocarditis

- How to avoid it?
- Antibiotic Prophylaxis?
- Most centres give iv antibiotics 24 hours
- Some logic for aspirin lifelong

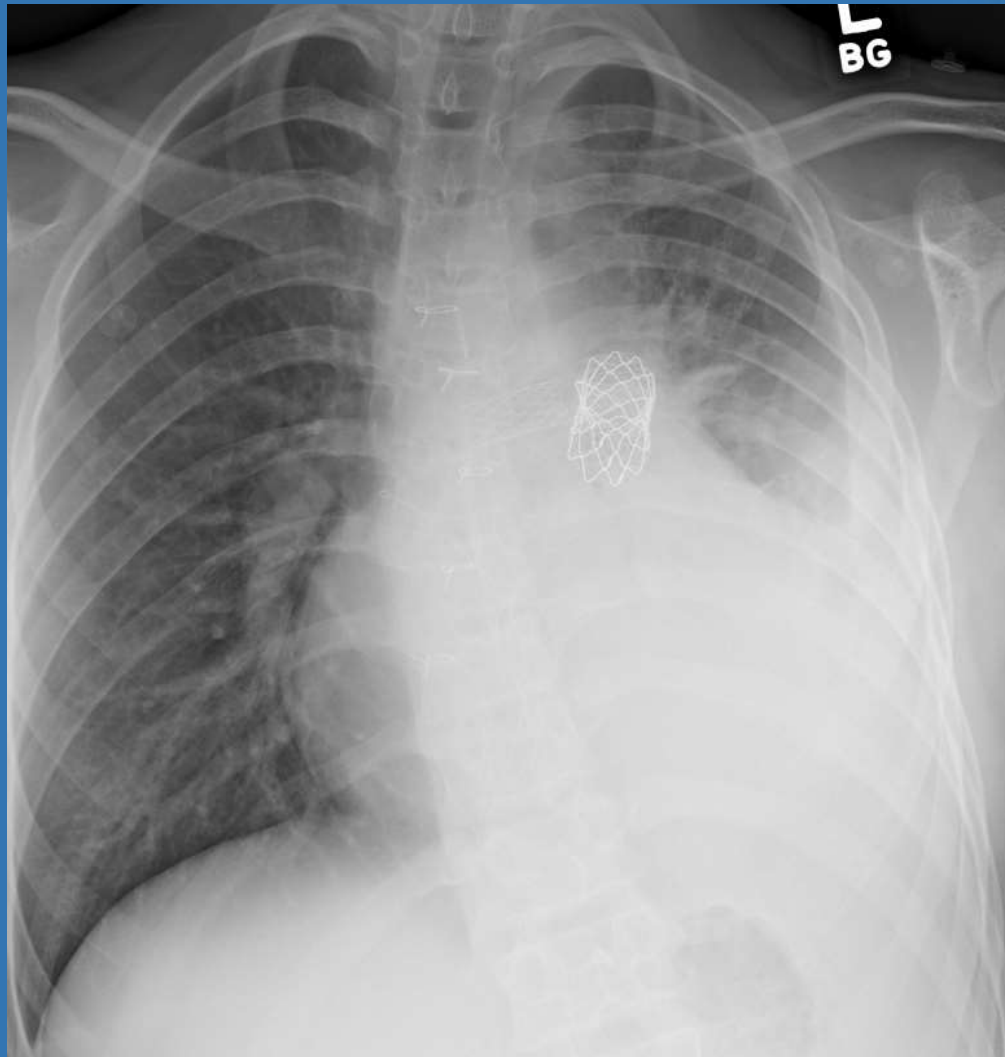
Imponderable: Dissection of PA with multitrack catheter





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Imponderable: Pulmonary Artery perforation secondary to heavy duty guidewire



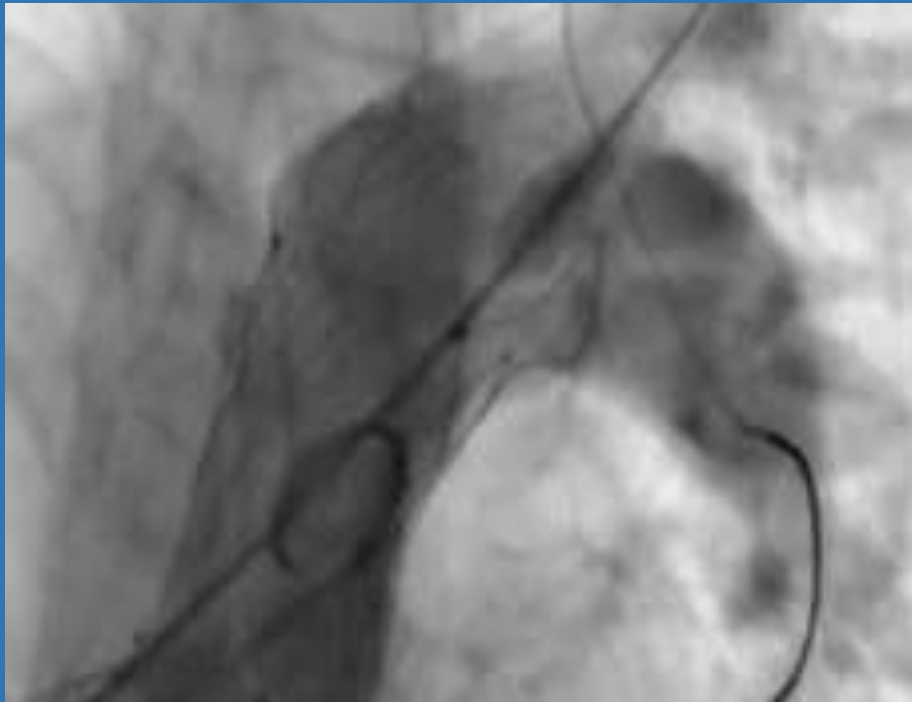


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Imponderable: RPA occlusion & recovery

Recovery & stent RPA

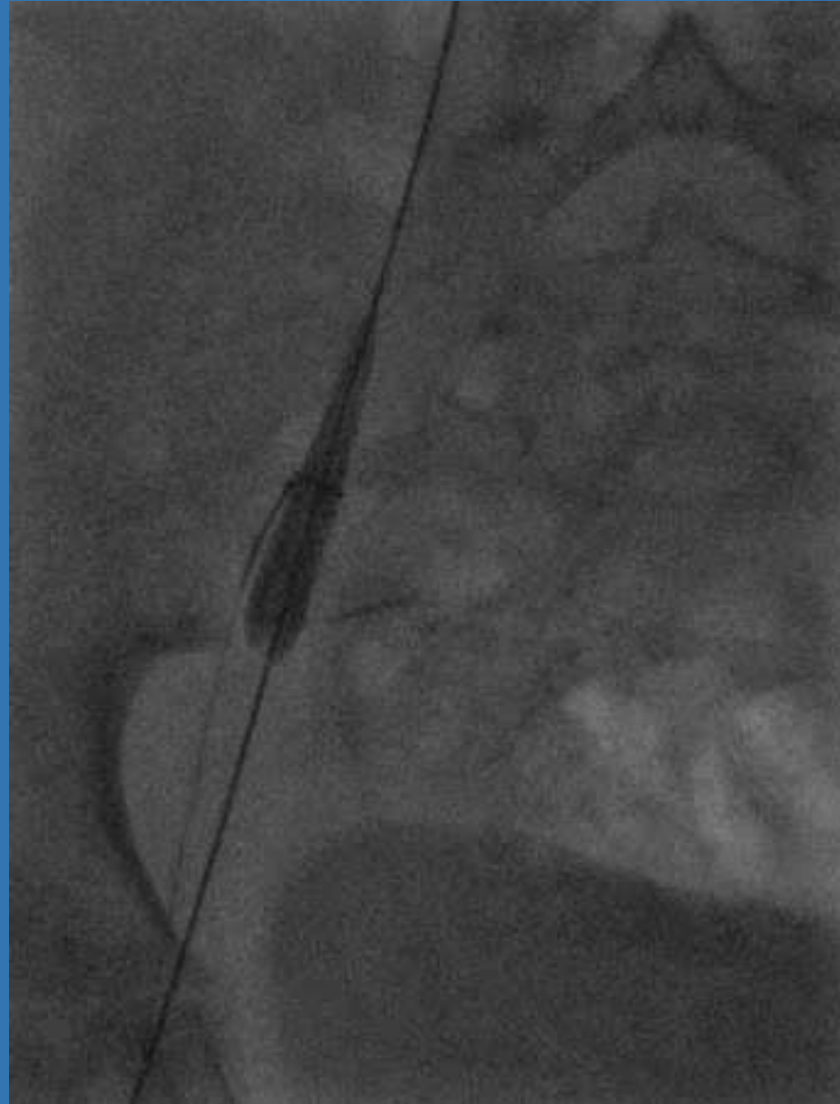
Thanks Shak Qureshi





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Imponderable: Retrieval of 'carrot' which had detached from Ensemble system





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Hybrid approach Ebsteins & mechanical valve in tricuspid position



Complications of Percutaneous Pulmonary Valve Implantation

General complications of cardiac catheterisation

- *We have learned a great deal:*
- *Coronary artery 'challenge'*
- *Prestenting +/- covered stent*
- *Hybrid approaches*
- *Lifelong aspirin*



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PPV 22-23 weeks gestation





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400 Blue Sky Days / Year

