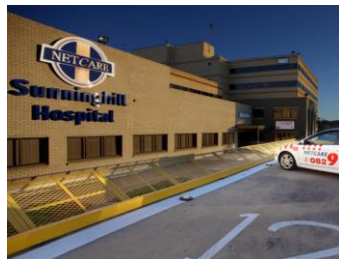


# POST TAVR MICRO-LEAFLET THROMBOSIS

**David Jankelow**

**Sunninghill Hospital & Linksfield Clinic**



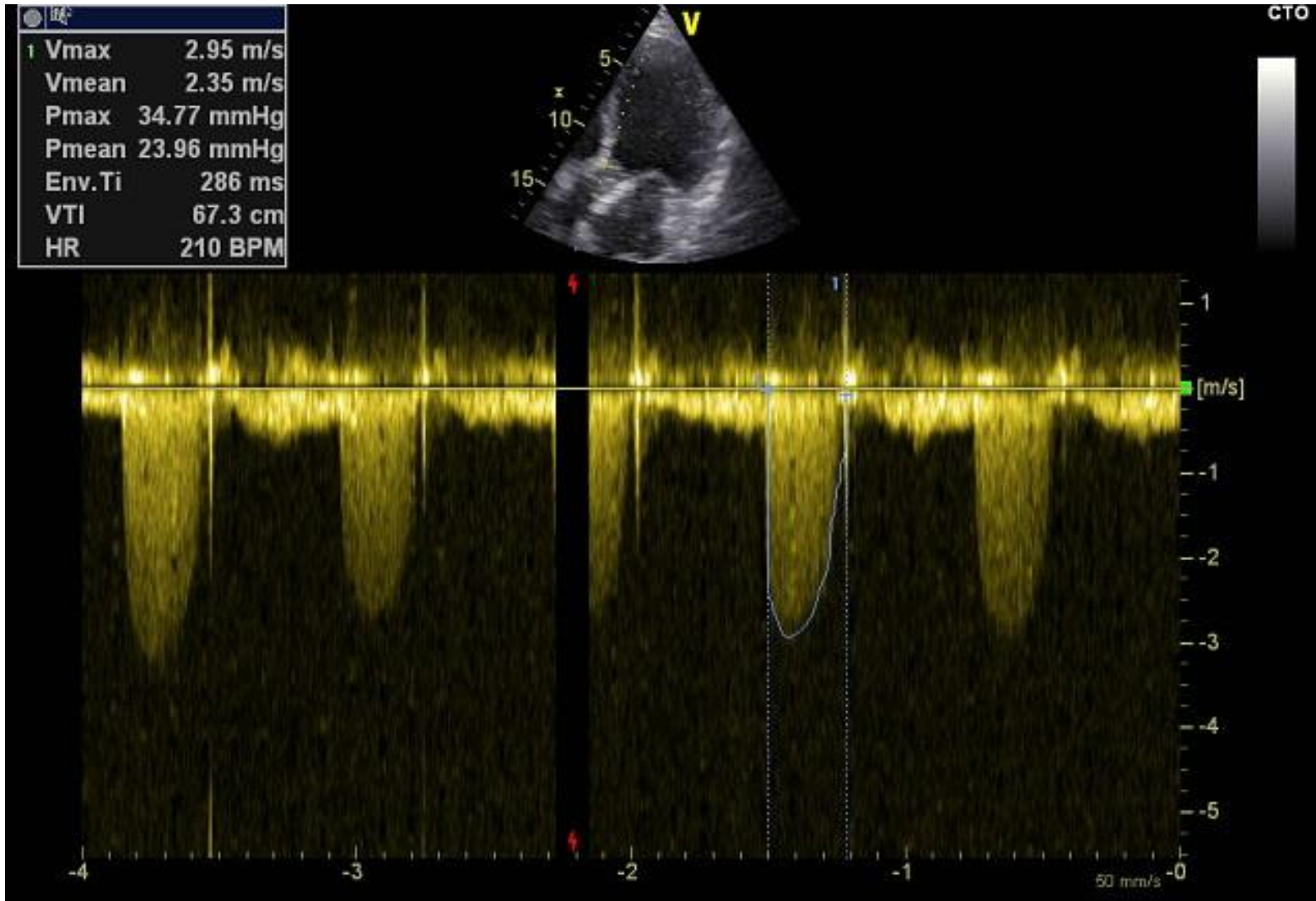
- **78 y's; COPD; long ethanol history.**
- **2010 - Moderate calcific AS; LVEF 55%.**
- **successful ablation for recurrent atrial flutter; maintained SR.**
- **2013: SR; stress test non-ischaemic; LVEF 47%; AS – max PG 40mmHg; mean PG 29.**
- **Asprin; ACE I; statin.**
- **June 2016: FCII-III; LVEF 23%; tight AS – AVA 0.9cm<sup>2</sup>; max PG 40mmHg; mean 29mmHg; trivial AR; pulse slow rising 60/min; BP 110/70; JVP not ↑;**
- **Pt delayed further investigations.**

**JUNE 2016 - LVEF 23%; max PG 40mmHg; mean PG 29mmHg;  
trivial AR; AVA 0.9cm<sup>2</sup>;**



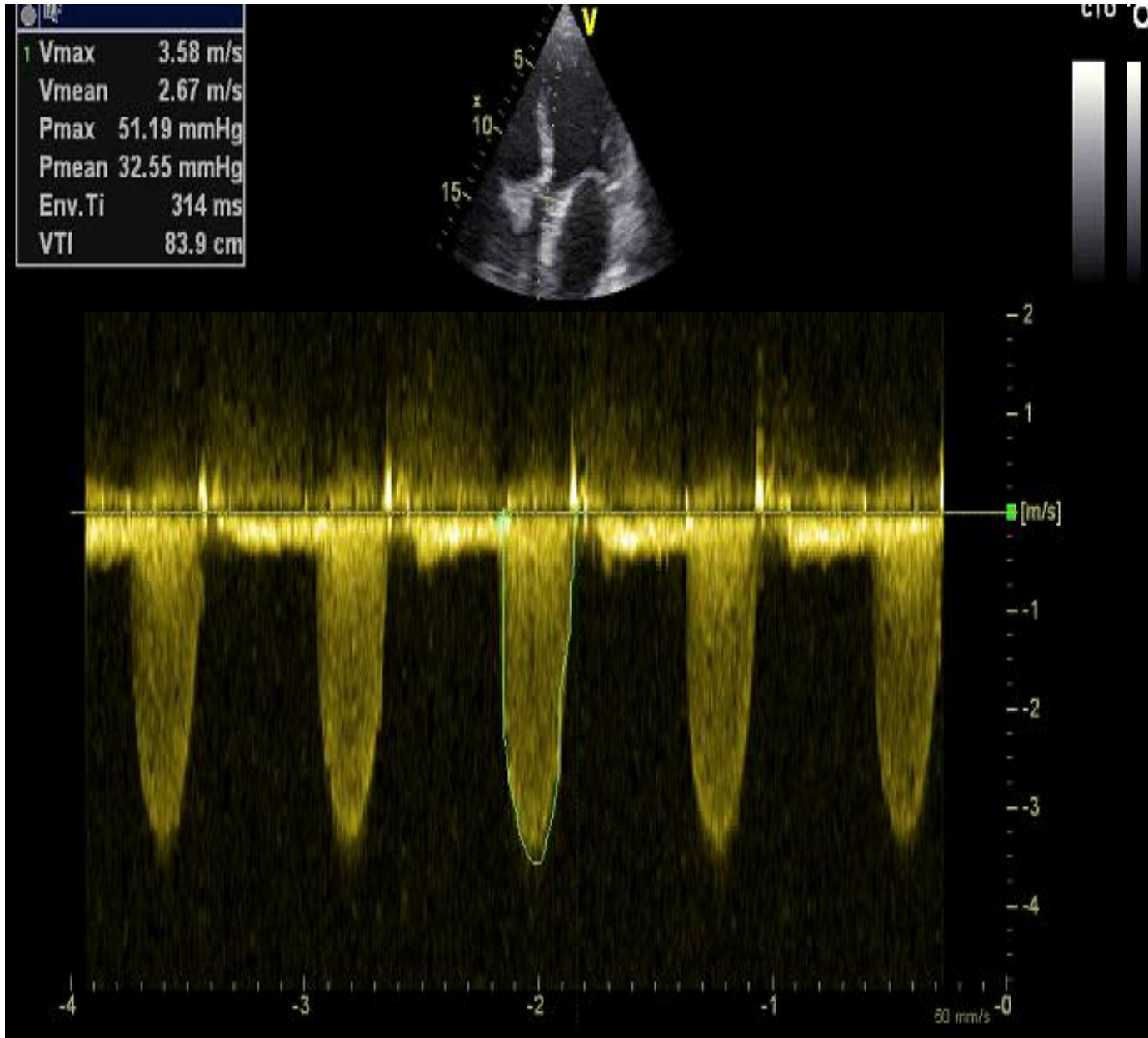
- **July 2016: admitted in CCF; BP normal; SR.**
- **Stress ECHO:**
  - **Dobutamine uptitrated to 20ug/kg/min.**
  - **LVEF increased 20% to 36%**
  - **AV PG – max 85mmHg; mean 46mmHg.**
- **Coronary angiogram – minor plaque only.**
- **Euroscore = 25%; STS = 21.2%.**
- **Successful TAVR: 29mm Sapien XT valve implantation.**
- **1-month later: FC-2; SR; LVEF 45%; AV PG – lower max 28mmHg & mean 16mmHg; no AR.**
- **Asprin 81mmHg; Statin; ACE I; Aldactone; Thiamine; inhaler; Furosemide stopped.**

# AUGUST 2016

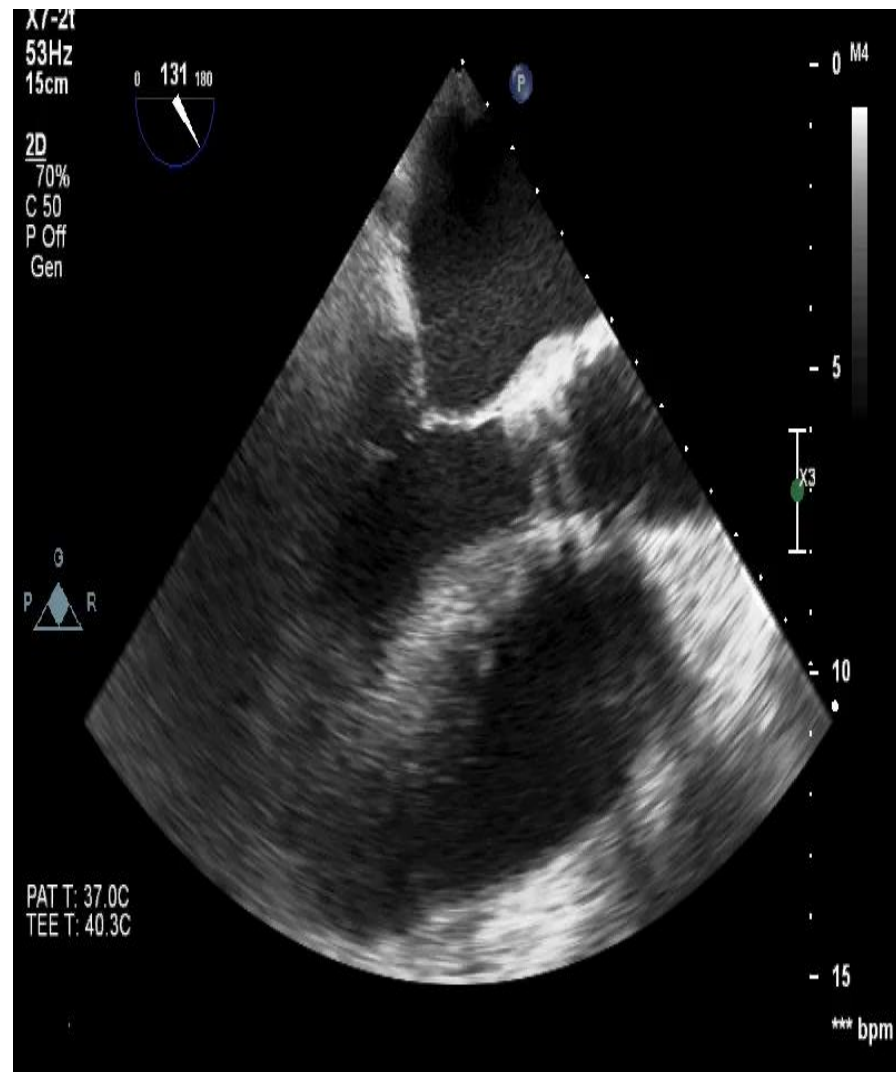
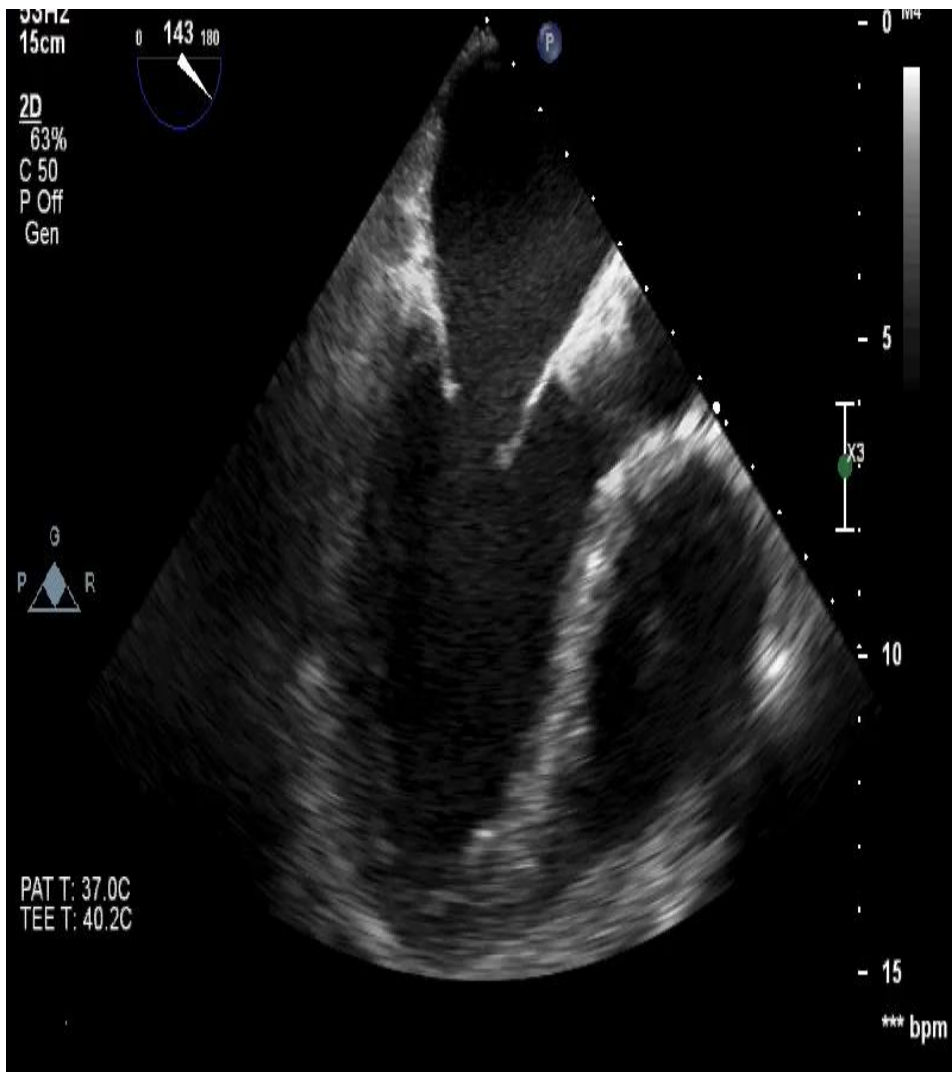


- **Nov 2016: Episode bronchitis; CCF**
- **LVEF 37%; No AR; Max PG 33mmhg; mean PG 20mmHg; mild MR; PAP 38mmHg.**
- **Cardioselective BB introduced; ACEI; Aldactone; Furosemide; Slow K; Statin; Bronchodilator.**
- **Jan 2017 – further admission CCF; LVEF 20%; AV -Max PG 51mmHg; Mean PG 32mmHg;**

# JAN 2017

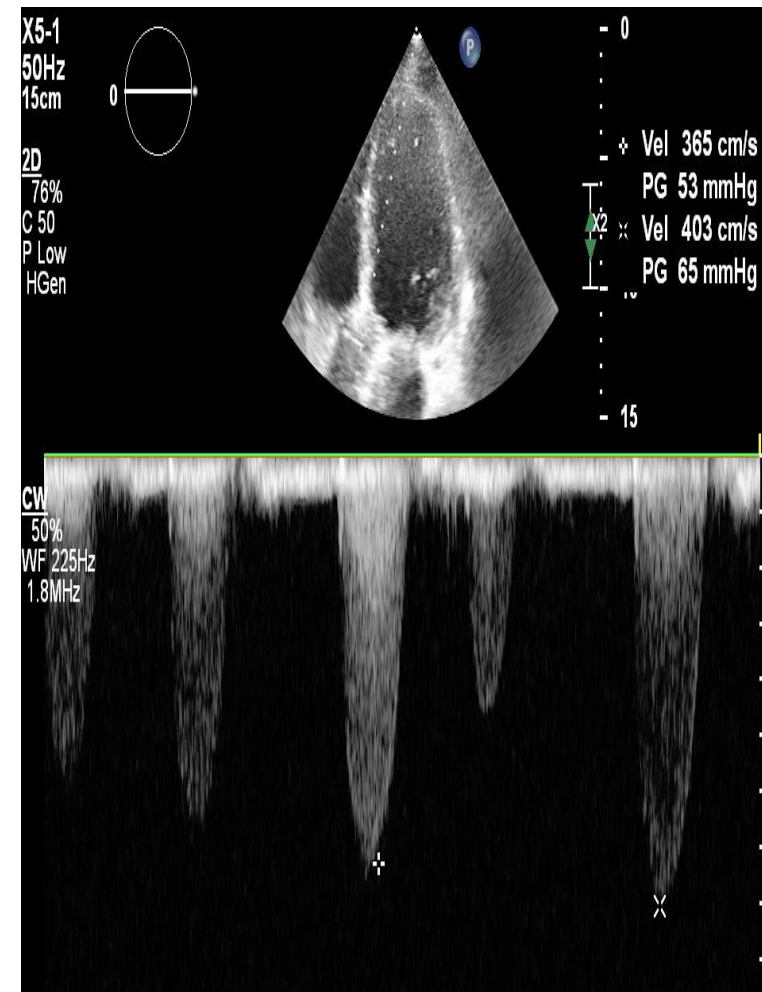
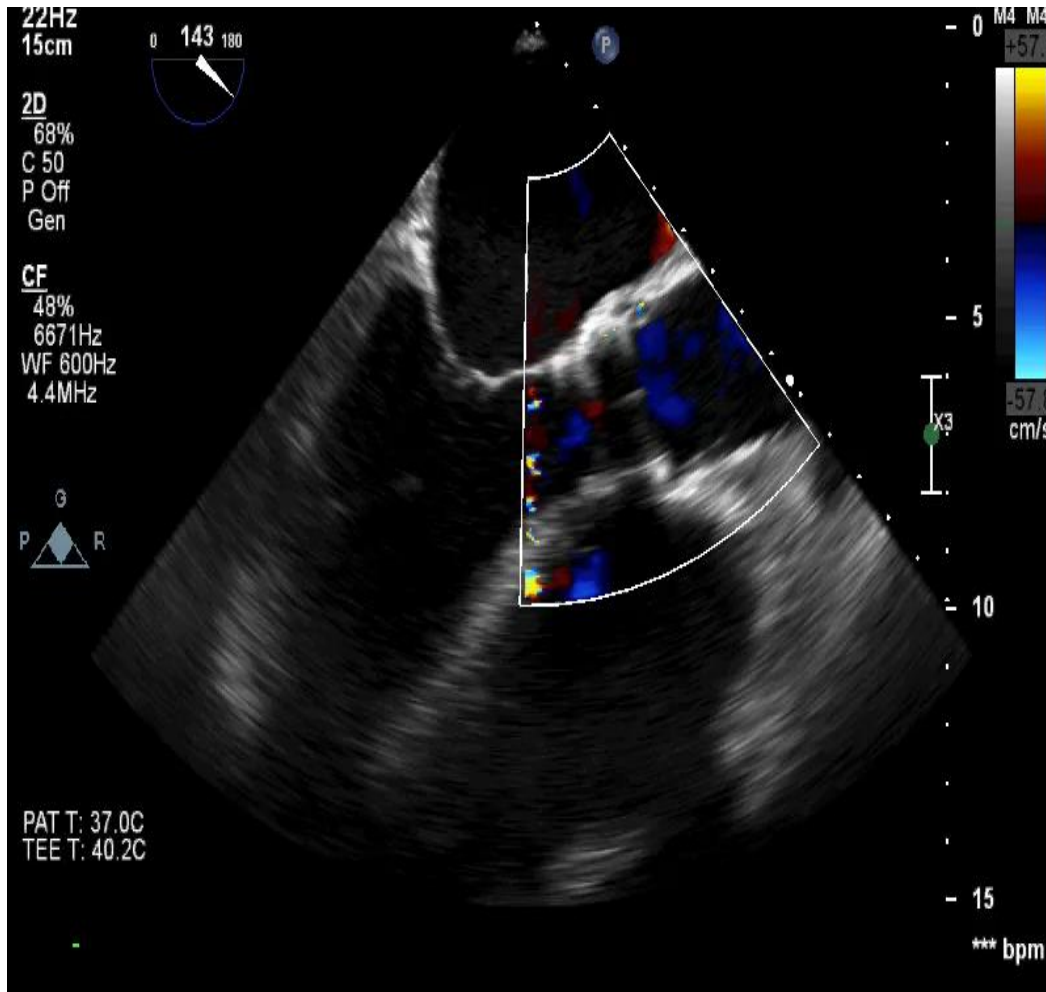


**TEE: no thrombus; mildly thickened leaflets with reduced excursion; turbulent flow at this level**

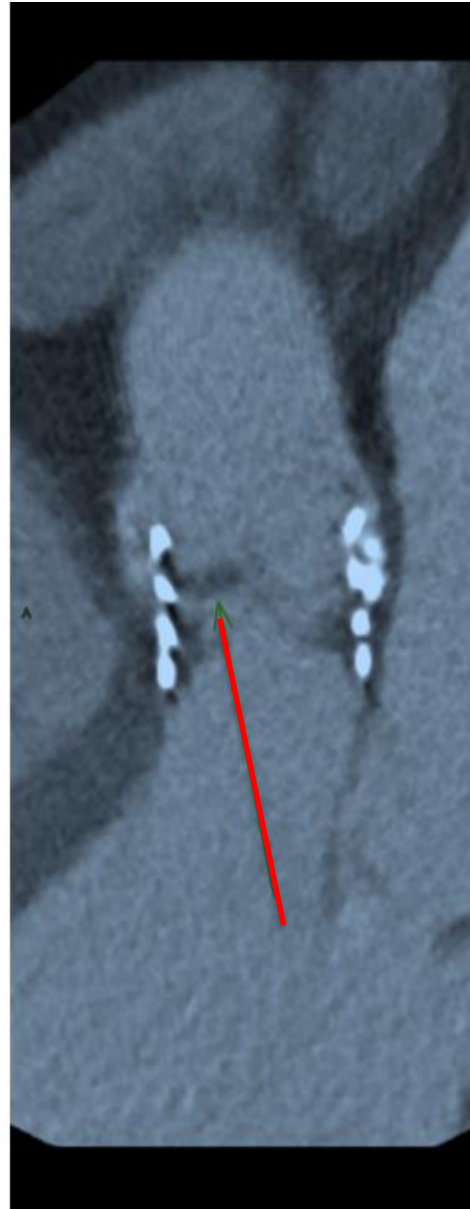
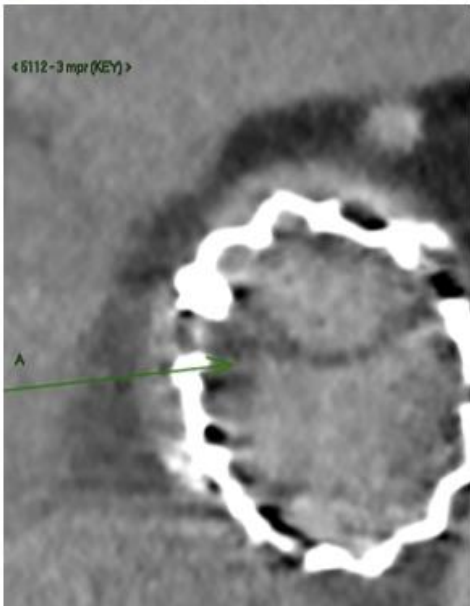
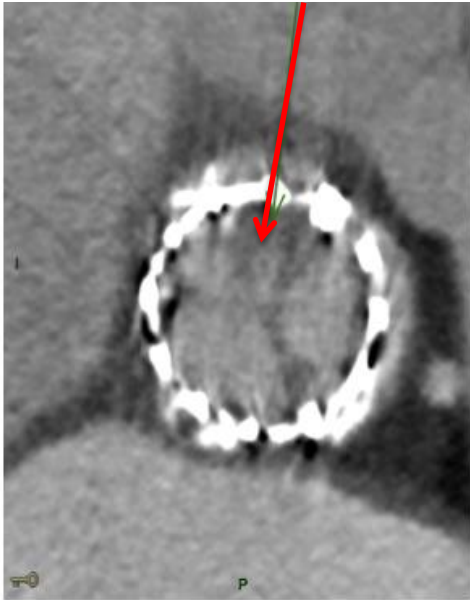




# TURBULANT FLOW AT THE LEVEL OF THE AORTIC VALVE; HIGH PG



# CT cardiac gated imaging - prosthetic aortic valve

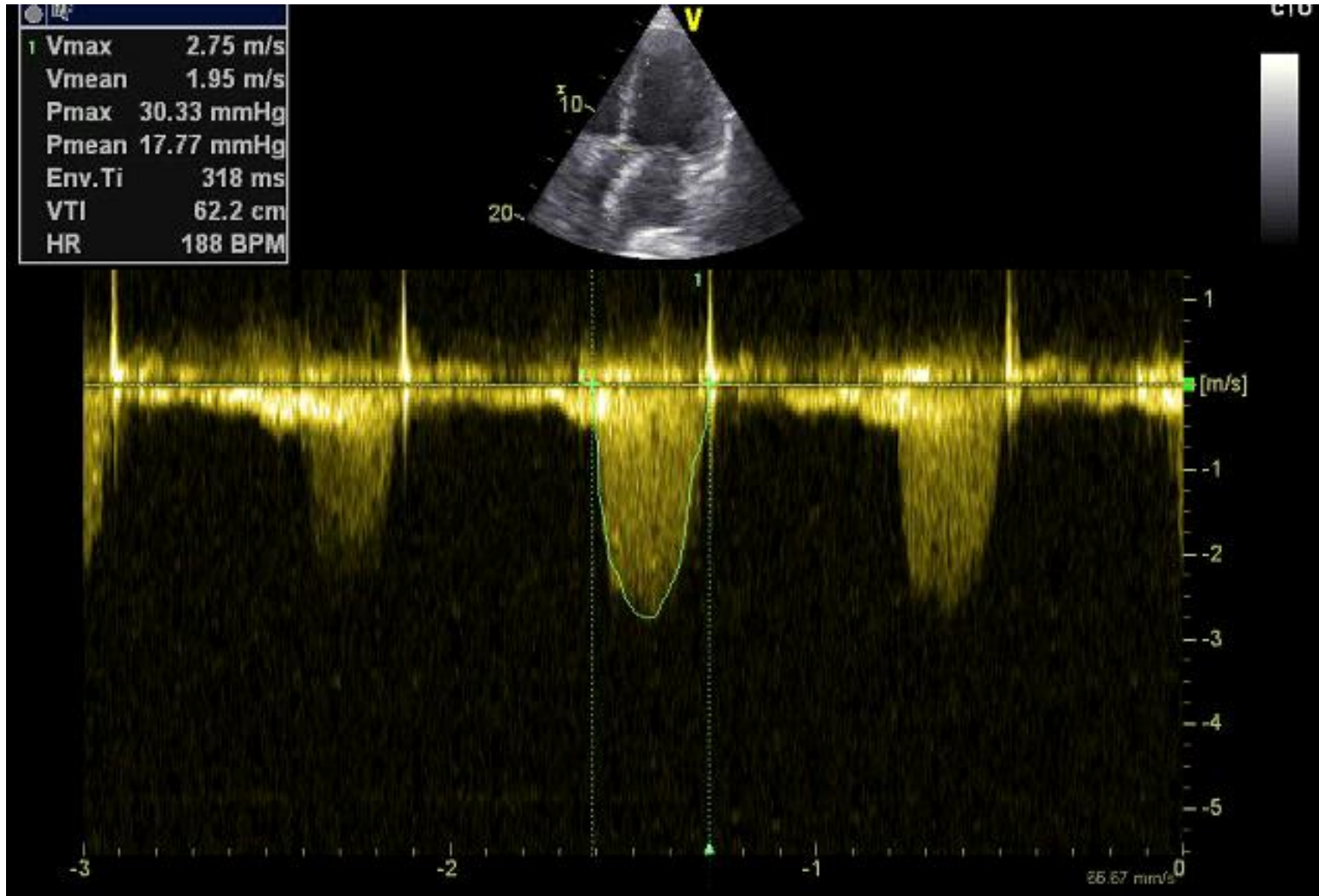


- thickening of the anterior aortic coronary leaflet
- reflect the presence of leaflet thrombosis;
- no regional dissection, false aneurysm or encroachment on the coronary artery ostii.

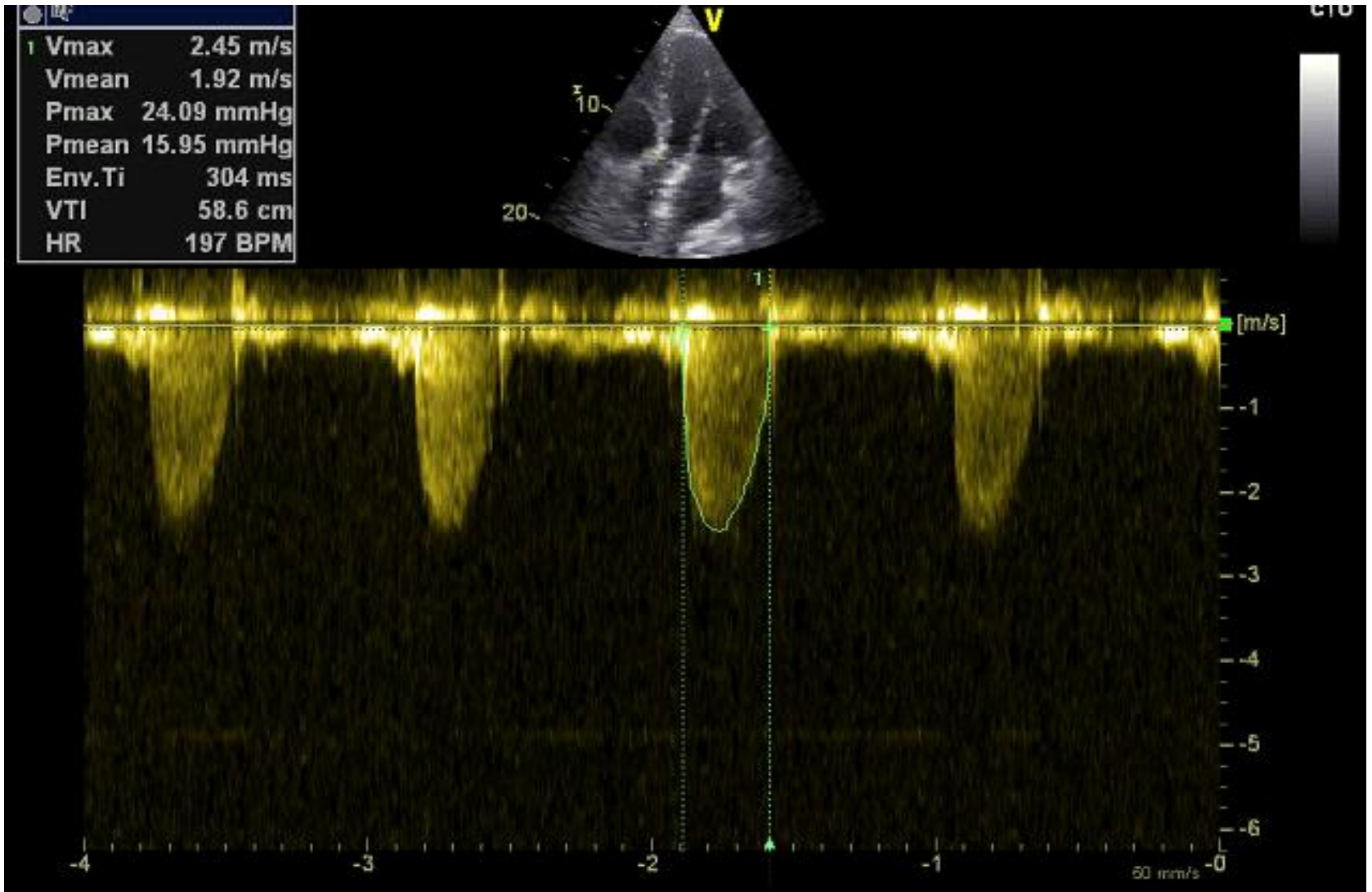
- **MICROLEAFLET THROMBOSIS.**
- **ANTICOAGUALTED WITH XARELTO 20MG/D.**
- **Full dose ACEI; BB slowly up-titrated; Diuretic; Aldactone; Statin; Thiamine; Inhalers.**
- **Would have considered balloon valvuloplasty, if no subsequent improvement.**

- **SYMPTOMS CONTINUE TO IMPROVE**
- **↑ LVEF; ↓ AORTIC PG.**
- **Feb 2017: LVEF 37%**
- **March 2017: LVEF 50%; Max PG 30; Mean 17mmHg.**
- **April 2017: LVEF 52%; Max 27mmHg.**
- **August 2017: SR; managed 7:30mins effort – non-ischaemic; LVEF 60%; AV – Max PG 24mmHg; Mean PG 11mmHg; no AR; no MR.**


# MARCH 2017



# AUGUST 2017



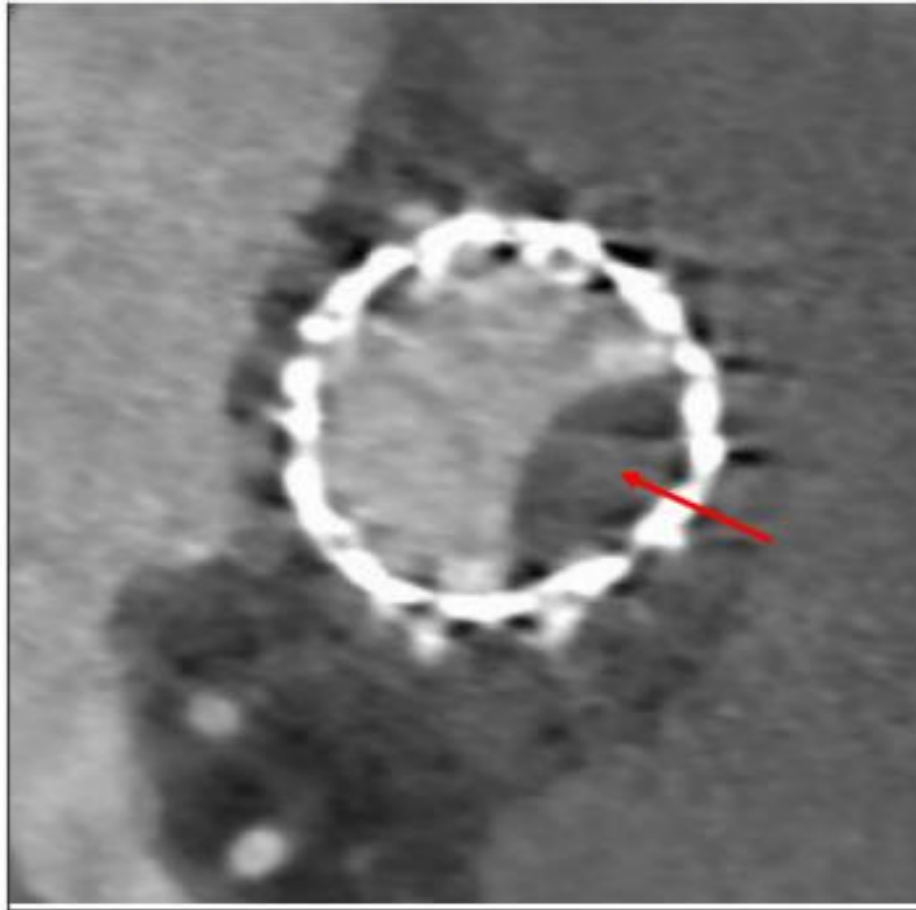
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Subclinical Leaflet Thrombosis in Surgical and Transcatheter  
Bioprosthetic Aortic Valves: An Observational Study. *Lancet*  
2017;Mar 19:[Epub ahead of print]. 

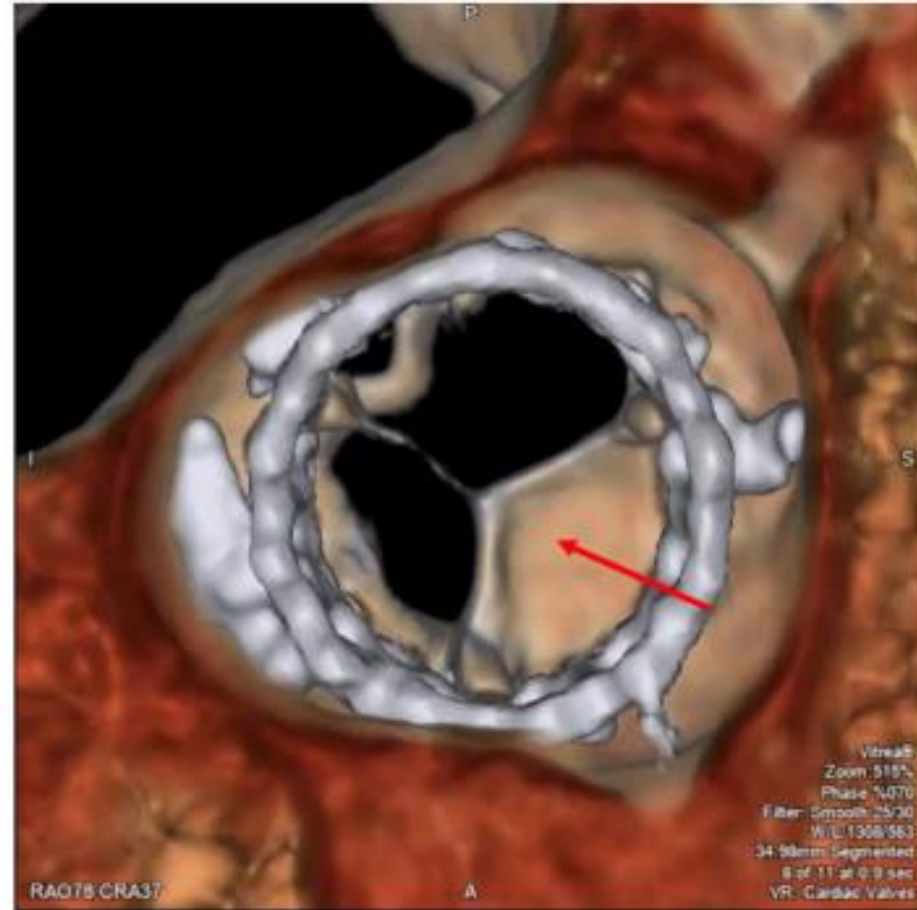
- **SLT not uncommon; occurs more often after TAVR than after SAVR; associated with higher PG's; a higher incidence of TIA or combined TIA & CVA; can be effectively Rx with either Warfarin / NOAC'S, but not with DAPT.**
- **RESOLVE & SAVORY: single-center prospective registries (TAVR / bioprosthetic SAVR).**
- **CT with 4-D volume-rendered imaging at varying intervals.**

**SLT = presence of ↓ leaflet motion & corresponding hypoattenuating lesions.**

**Hypoattenuating opacity**

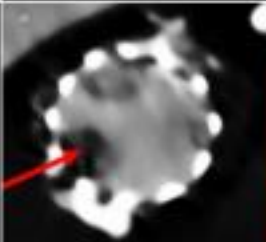
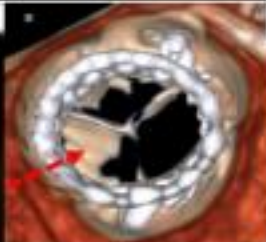
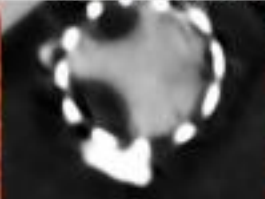



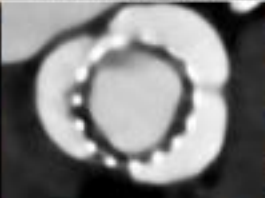

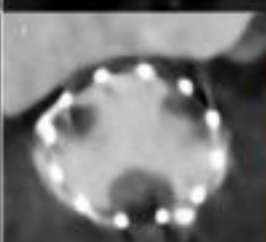

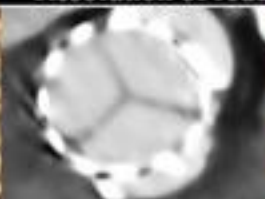


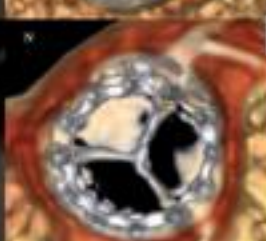




**Reduced leaflet motion**





- **106/890 pt's had SLT**
  - 5 surgical valves
  - 101 TAVR
- **less frequent among patients receiving OAC**
  - 4% vs. those receiving DAPT 15%.
- **resolved in all of 36 pt's (warfarin 24; NOACs 12) receiving OAC, but persisted in 91% if no OAC.**
- **more pt's with SLT had AO PG of >20 mm Hg & ↑ in AO PG of >10 mm Hg than those with normal leaflet motion.**

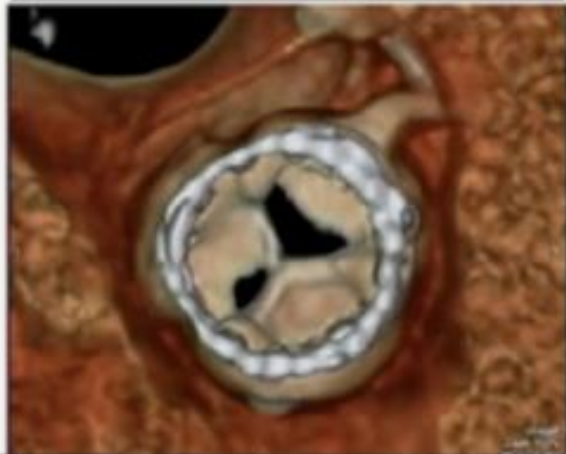
	Index CT		Follow-up CT	
<b>DAPT continued after index CT</b>				
<b>Warfarin initiated after index CT</b>				
<b>Rivaroxaban initiated after index CT</b>				
<b>Apixaban initiated after index CT</b>				



# Recurrence of reduced leaflet motion following discontinuation of anticoagulation

**Baseline**

Reduced leaflet motion



**s/p Xarelto 10mg x 3 months**

Normal leaflet motion



**Six months following discontinuation of xarelto**

Reduced leaflet motion



**Reduced leaflet motion recurred in 4 out of 8 patients in whom anticoagulation was discontinued**

Mean time from discontinuation of anticoagulation to recurrence of reduced leaflet motion was  $164 \pm 109$  days

- **Newly released (2017) AHA/ACC focused update of the 2014 guidelines for the management of PT'S with heart valve disease.**

### **IIa C**

- Dual antiplatelet therapy should be considered for the first 3–6 months after TAVI, followed by lifelong single antiplatelet therapy in patients who do not need oral anticoagulation for other reasons.

### **IIb C**

- Single antiplatelet therapy may be considered after TAVI in the case of high bleeding risk.

### **III B**

- The use of NOACs is contraindicated in mechanical valves.