

Post TAVR Management Infective Endocarditis

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Disclosure

- Consultant and proctor to Edwards, Boston, St Jude.
- Clinical trial arrangements with Edwards, Boston, St Jude, Abbott, Symmentis, Medtronic.

Infective endocarditis

- rare & serious complication of surgical AVR
- first year 0.1%-2.3% regardless of type of prosthetic valve (biological or mechanical)
- Complications are high and mortality frequent
 - In-hospital mortality 15-20%
 - One year mortality 30-40%
 - Non-fatal complications
 - Acute stroke 15%
 - CHF 30%
 - Thromboembolic events >20%
 - Valve surgery 50%

Post TAVR Management

Infective Endocarditis

	Total number of patients	Number of TAVIE (%)	
PARTNER A TAVI (2011)	348	2 (0.6%) at 1 year follow-up	4 (1.5%) at 2 year follow-up
PARTNER A Surgery (2011)	351	3 (1%) at 1 year follow-up	3 (1%) at 2 year follow-up
PARTNER B (2010) TAVI	179	2 (1.4%) at 1 year follow-up	3 (2.3%) at 2 year follow-up
PARTNER B Standard therapy	179	1 (0.8%) at 1 year follow-up	1 (0.8%) at 2 year follow-up
SOURCE (2010)	1038	10 (1%)	
Gurvitch, R. (2010)	70	1 (1.4%), 3.4 years follow-up	
Genereux, P. (2012)	832	5 (0.6%)	(Meta-analysis)
Ang/Walters D. (2012)	132	4 (3.0% at one year)	
Puls M (2013)	180	5 (3.4% at one year)	
		0.6-3.4%	0.8-2.3%

Post TAVR Management

Infective Endocarditis

	Total number of patients	TAVIE 1 yr follow up
Amat –Santos Multicenter Registry (2015)	7944	53 (0.7%)
Latib (2014)	2572	29 (1.1%)
Mangner (2016)	1820	55 (3.0%)

Limited but growing volume of data 0.87% (12,336)

~ 1 in 100 cases

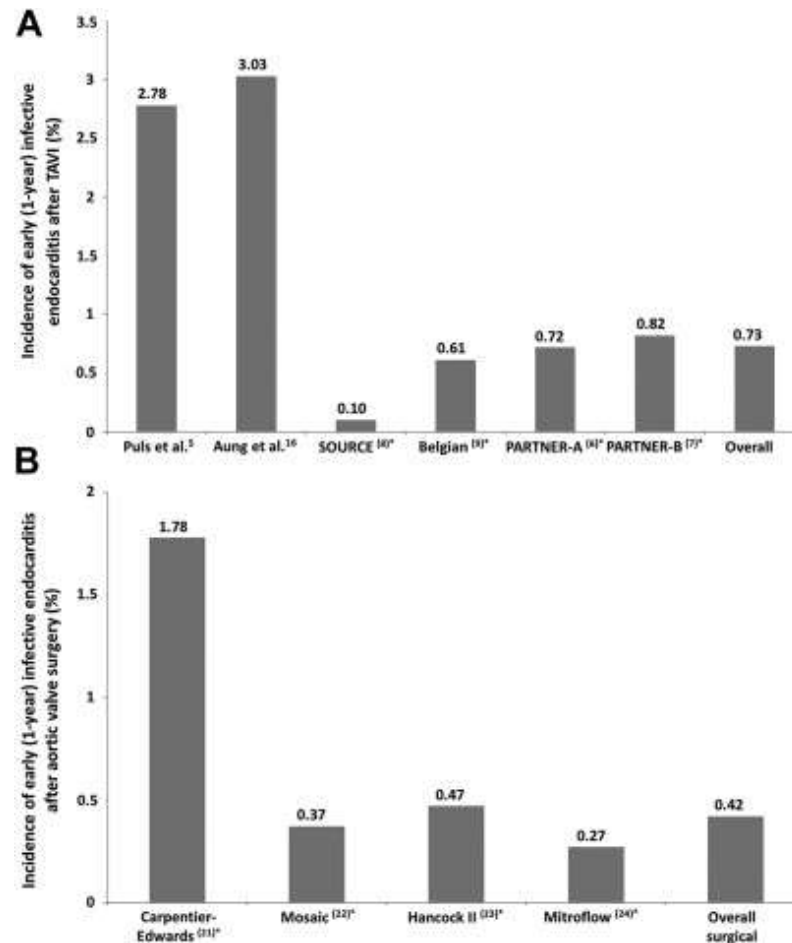
Busy centre will see one or more cases per year.

What do we know

- Incidence
 - 0.87% similar to Surgical AVR but perhaps higher 3%
 - TAVI rates are increasing globally -?rare may be not
- Timing
 - Early post TAVI median time 5 months
 - < 1yr in 70- 80%
- Organism
 - Staph (50% coag -, 50% coag+) 40%
 - Enterococcus, 25%
 - Strep viridans & other 20%
 - Others HACEK et al.

JACC: Cardiovascular Interventions, Volume 8, Issue 2, 2015, 334–346
Circulation. 2015;131:1566-1574.
J Am Coll Cardiol. 2016 Jun 21;67(24):2907-8

What do we know

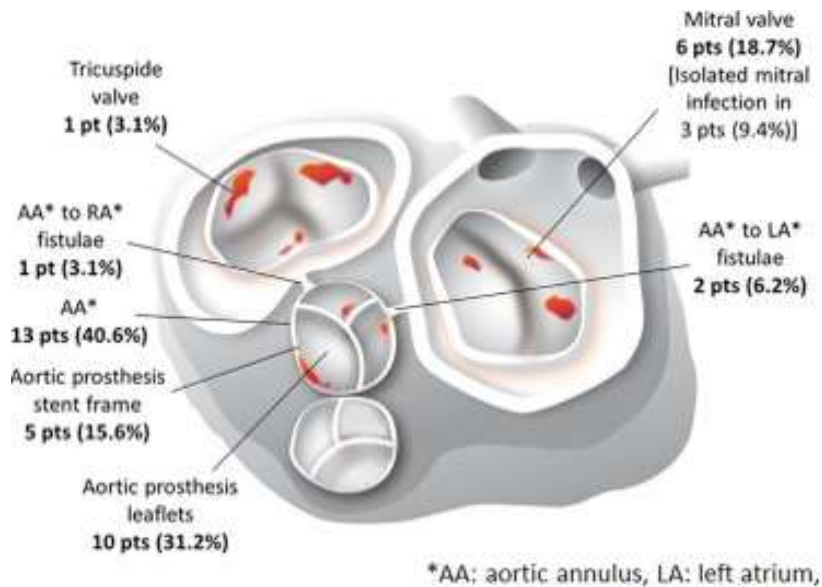


Incidence of Early Infective Endocarditis After TAVR and Surgical Aortic Valve Replacement
Incidence of early (1 year) infective endocarditis after TAVR (A) and surgical aortic valve replacement (B). *Online References. TAVR = transcatheter aortic val...

Prosthetic Valve Endocarditis After Transcatheter Valve Replacement : A Systematic Review

What do we know

- Location



JACC: Cardiovascular Interventions, Volume 8, Issue 2, 2015, 334–346

What do we know

- Clinical presentation
 - Fever 75%
 - Dyspnea 35%
 - CVA 25%
 - Heart failure 15%
 - CAVB
 - Shock/MOF 40%
- Explanation 40%
- Mortality is high 47.2-63.6%

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What we don't know

CLINICAL

- may be under-reported: selection/reporting bias
- Does the Modified Duke Criteria apply
- Diagnosis is difficult even with TOE – echo metal frame shadowing
- Comorbidities increase predilection chronic kidney disease, poor skin integrity, cellulitis, urinary tract infection, institutionalized environment, impaired mobility, poor respiratory reserve, immunocompromised conditions such as steroid therapy, diabetes, or malignancy
 - Where to draw the line?
- Manage medically or surgically??

What we don't know

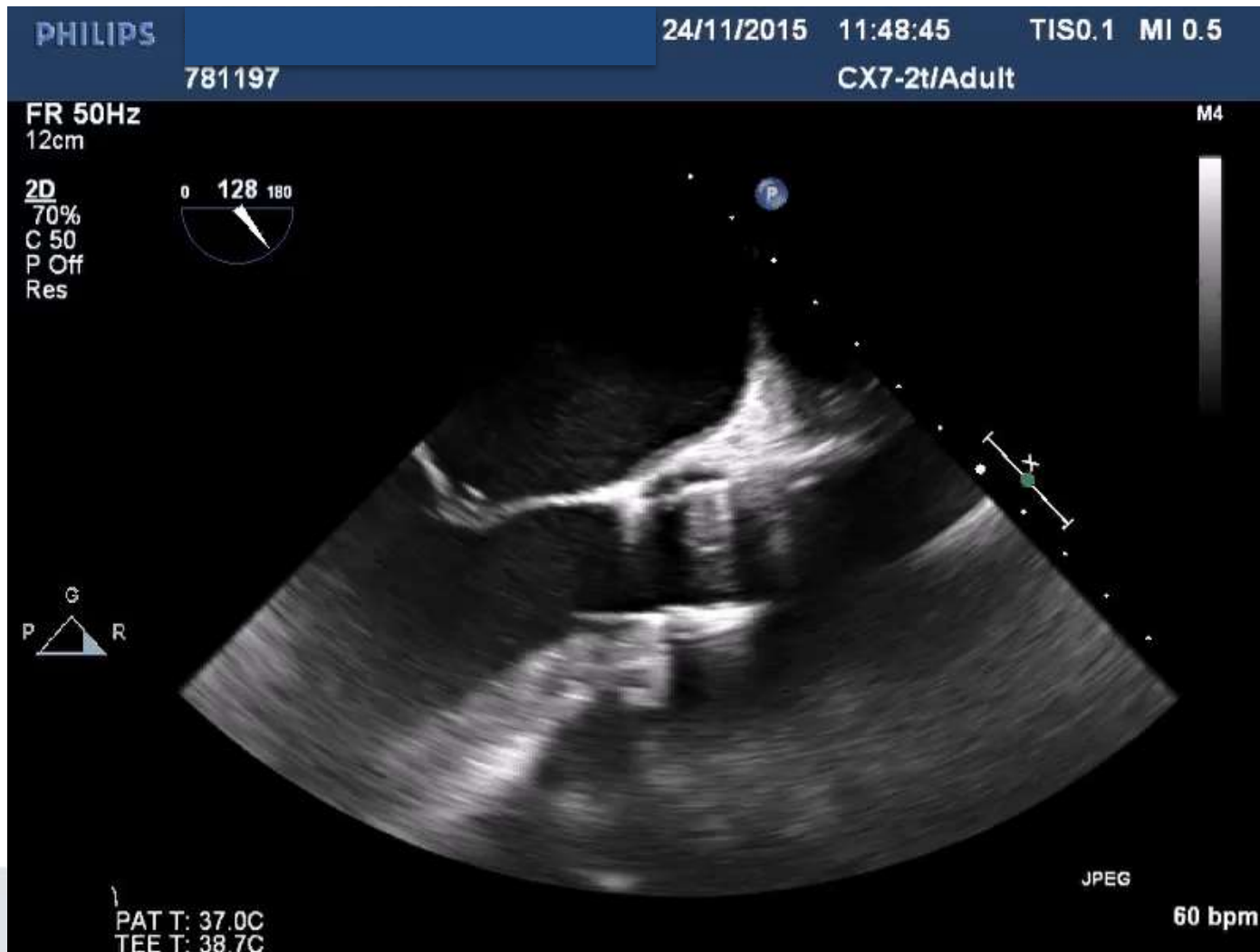
Echo cardiographic features

- Can be challenging due to
 - frame & shadowing,
 - unfamiliar appearances of valve
 - frequent presence of PVL
 - differentiate from thrombus



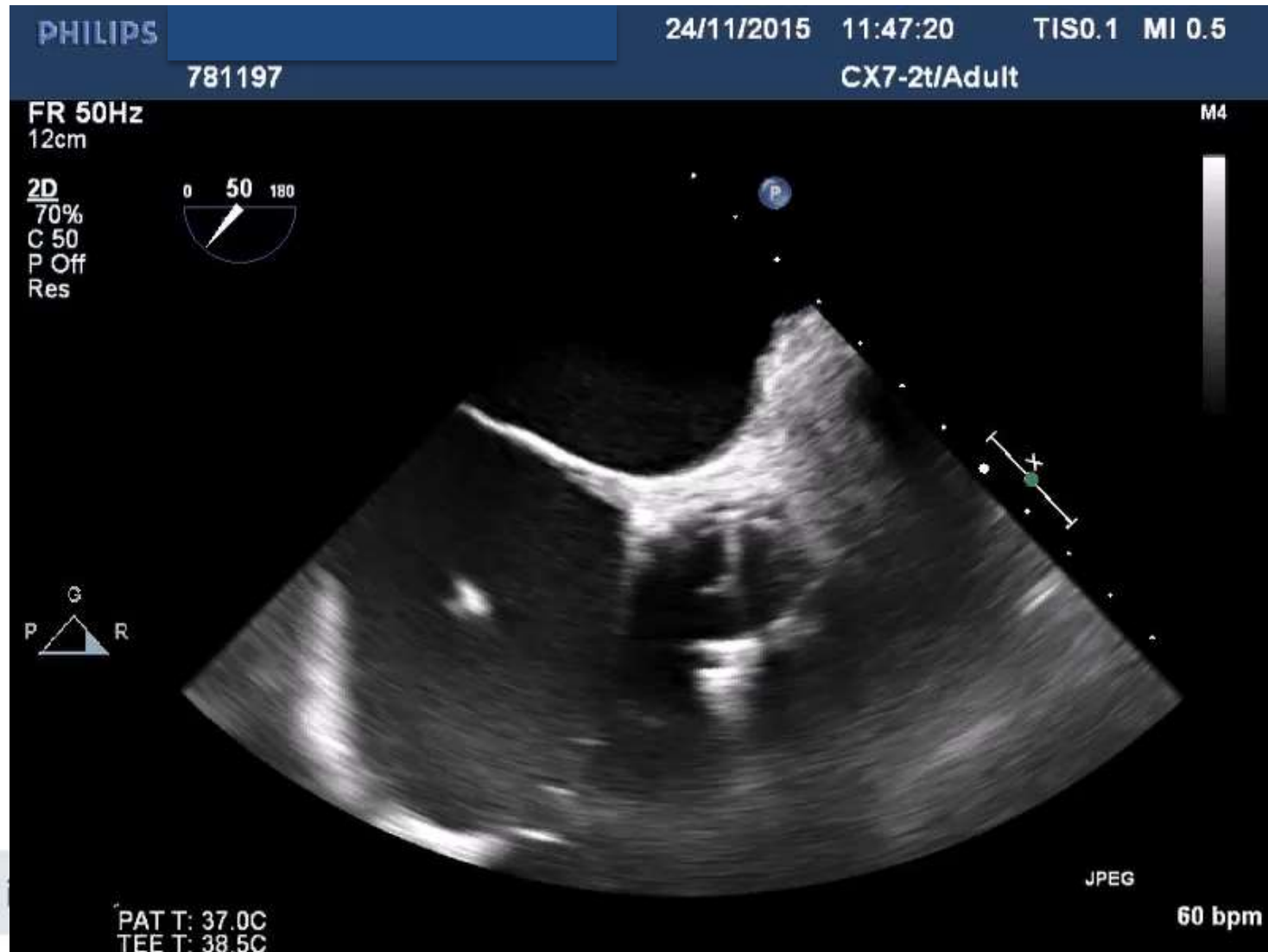
Echo cardiographic features

Portico Valve



Echo cardiographic features

Portico Valve



What we don't know

Procedural

- Adequacy of sterile conditions for valve preparation and implantation- laminar flow? sterile technique? room size
- Handling during preparation- loading and crimping
- Catheter lab vs hybrid lab
- Leaflet damage during valve preparation and loading-crimping
- Femoral insertion- skin preparation
- Antibiotic prophylaxis –when, what, in whom.
- Pre dilatation, Post dilatation

What we don't know

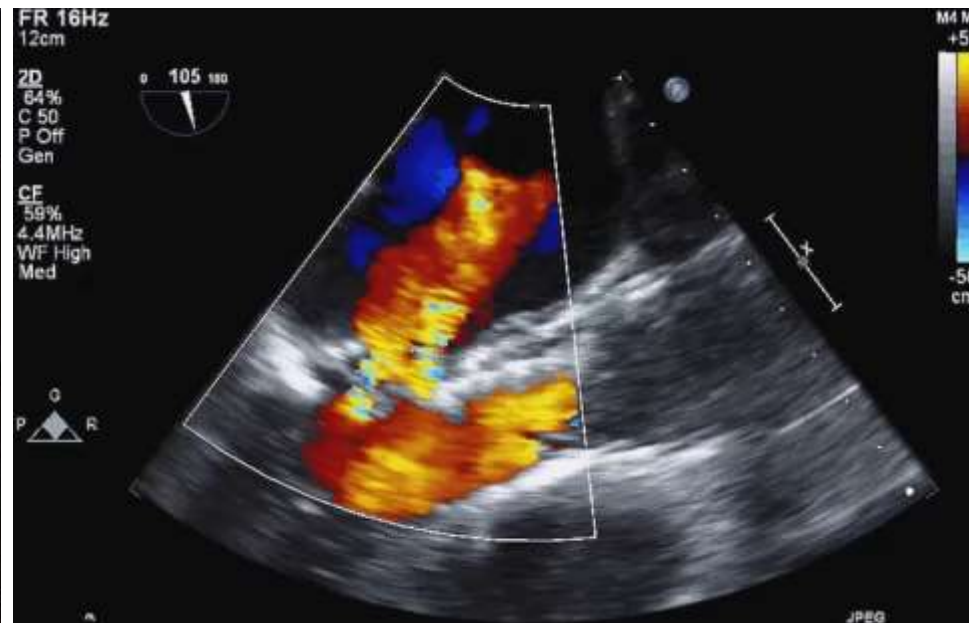
Pathophysiology of TAVR

- Residual Aortic Regurgitation may be a cause of continuous endothelial damage
- Frame trauma on mitral annulus
- Wire on mitral annulus,
- Balloon in mitral
- Limited recommendations for antibiotic prophylaxis post — dental, skin, urological, GI scope

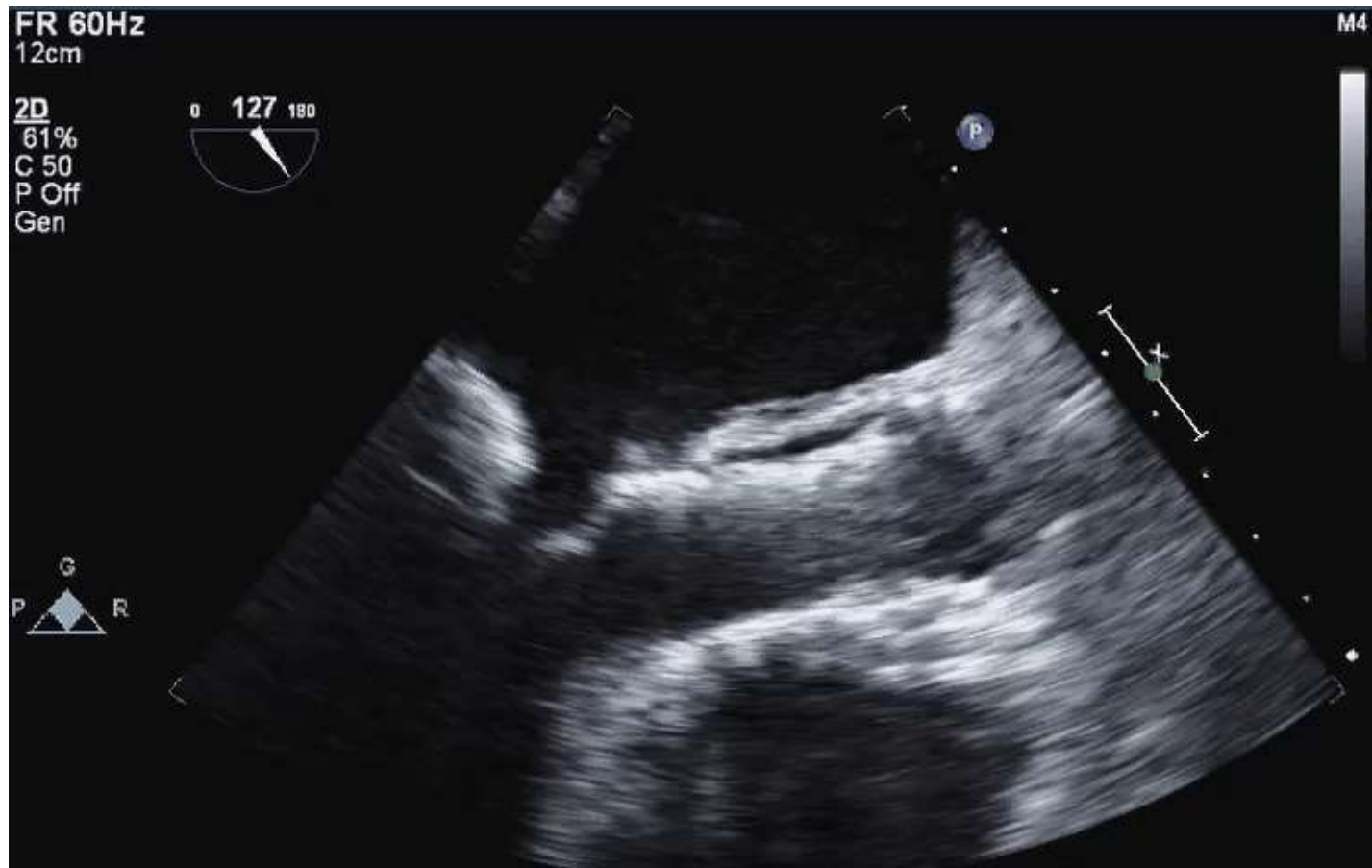
Pathophysiology of TAVR

Echo cardiographic features

- Case1:Core Valve frame low and PVL on Mitral



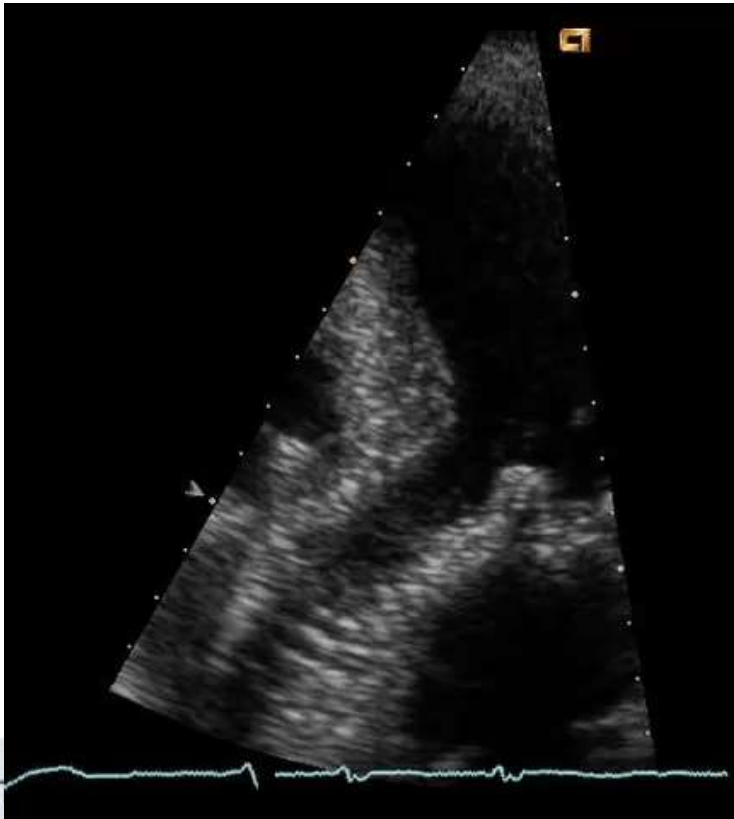
Echo cardiographic features



Pathophysiology of TAVR

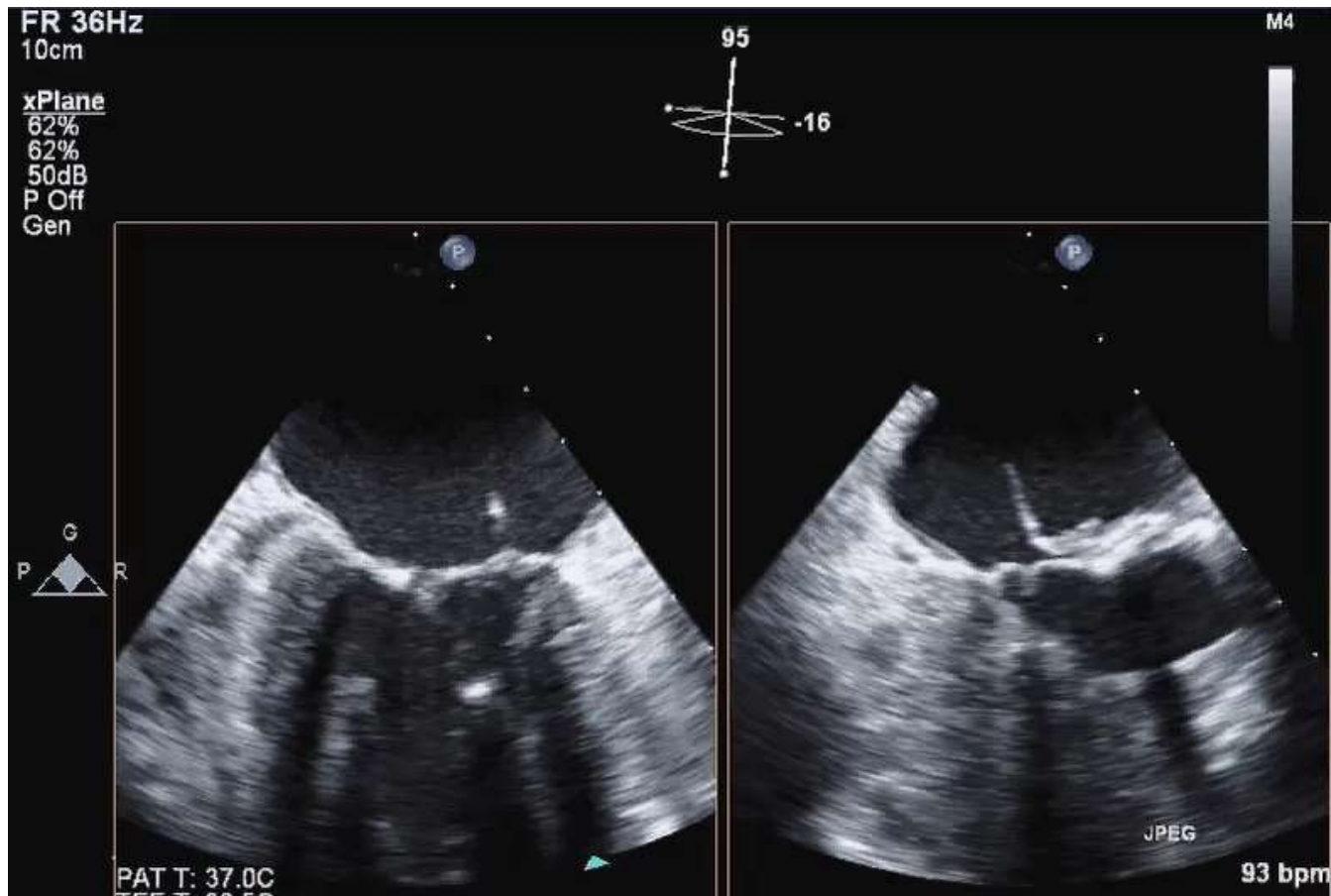
Echo cardiographic features

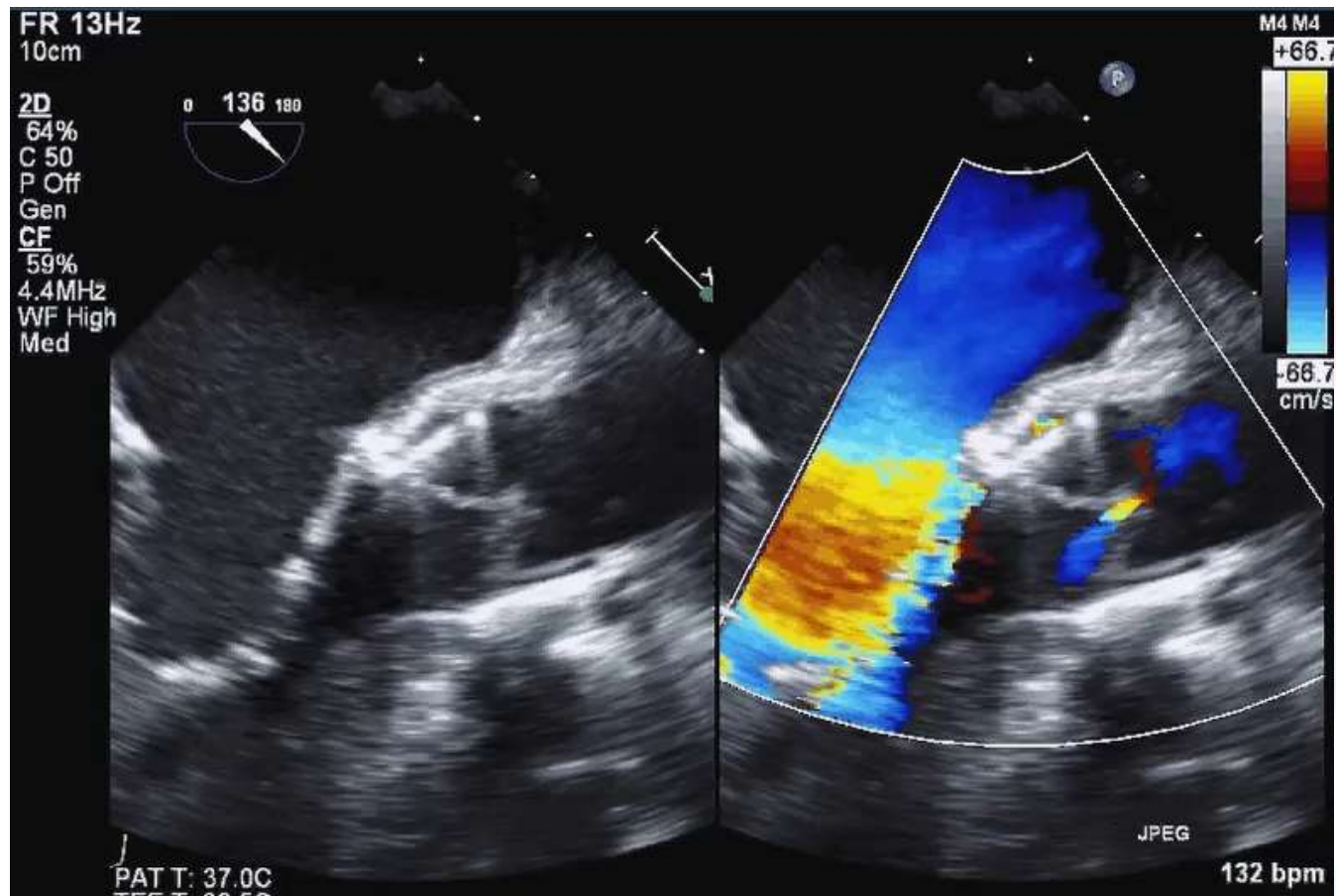
- Case 2: Core Valve little low, LVOT acceleration and PVL on Mitral



Echo cardiographic features

- Case 2 : Sapien XT on Mitral





Conclusions

- Incidence is rare but likely to be more frequently encountered as TAVI increases
- TAVI patients are particularly predisposed to infection
- Staphylococcal and Streptococcal species are common
- Echocardiography is of important diagnostic value but may be more challenging.
- Mortality is high: options beyond medical therapy limited
- Minimizing PVL and optimising placement may important
- Consider prophylaxis- pre and post