TCTAP

SEOUL

FEATURED LECTURE | 12’

# The Clinical Syndrome of Transcatheter Valve Thrombosis

## Diagnosis and Management


Università di Catania

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## Financial disclosures

Within the past 12 months, with respect to the content of this presentation, I, **Davide Capodanno**, have had a financial interest/arrangement or affiliation with the organization(s) listed below:

### Advisory Board fees

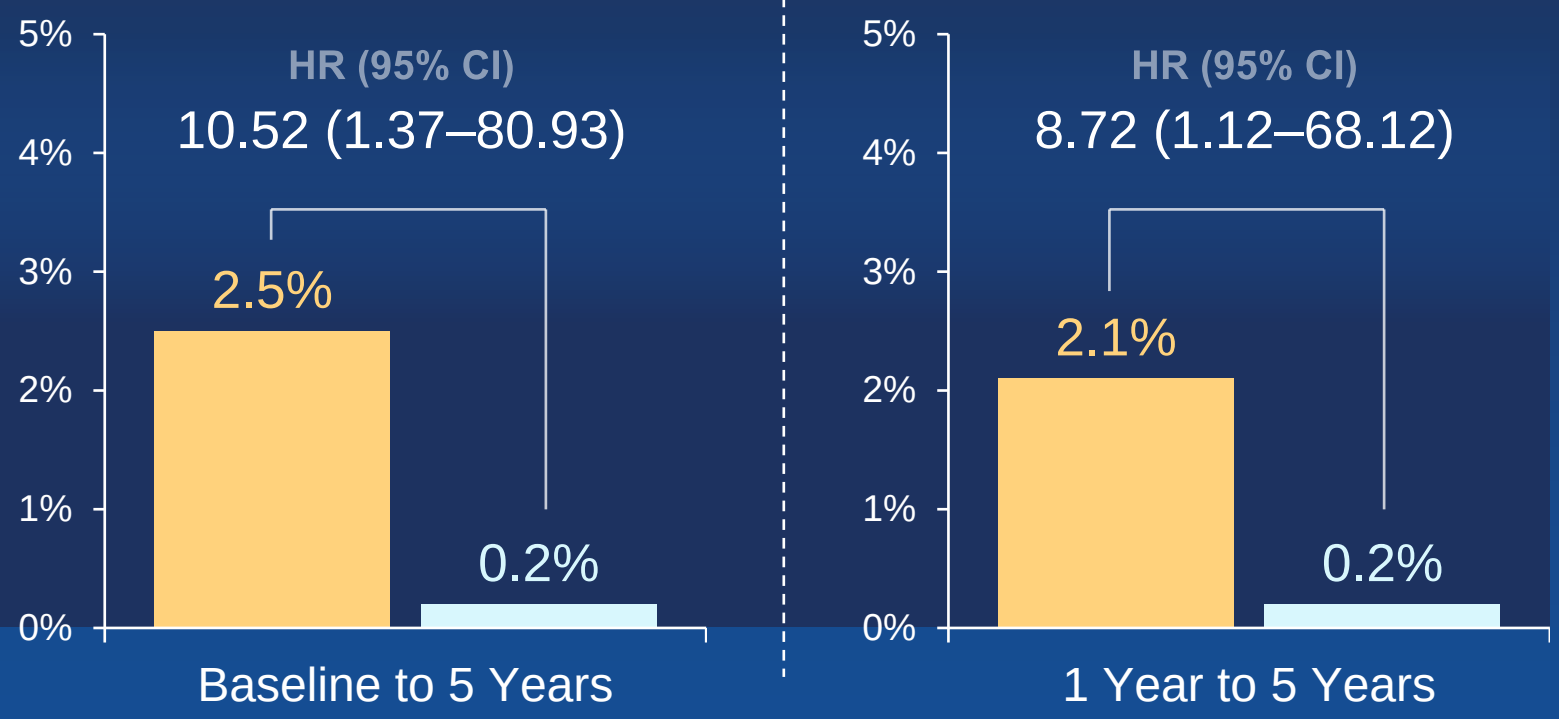
- *Bristol-Myers Squibb, Daiichi Sankyo*

### Lecture Fees

- *Novo Nordisk, Sanofi, Terumo*

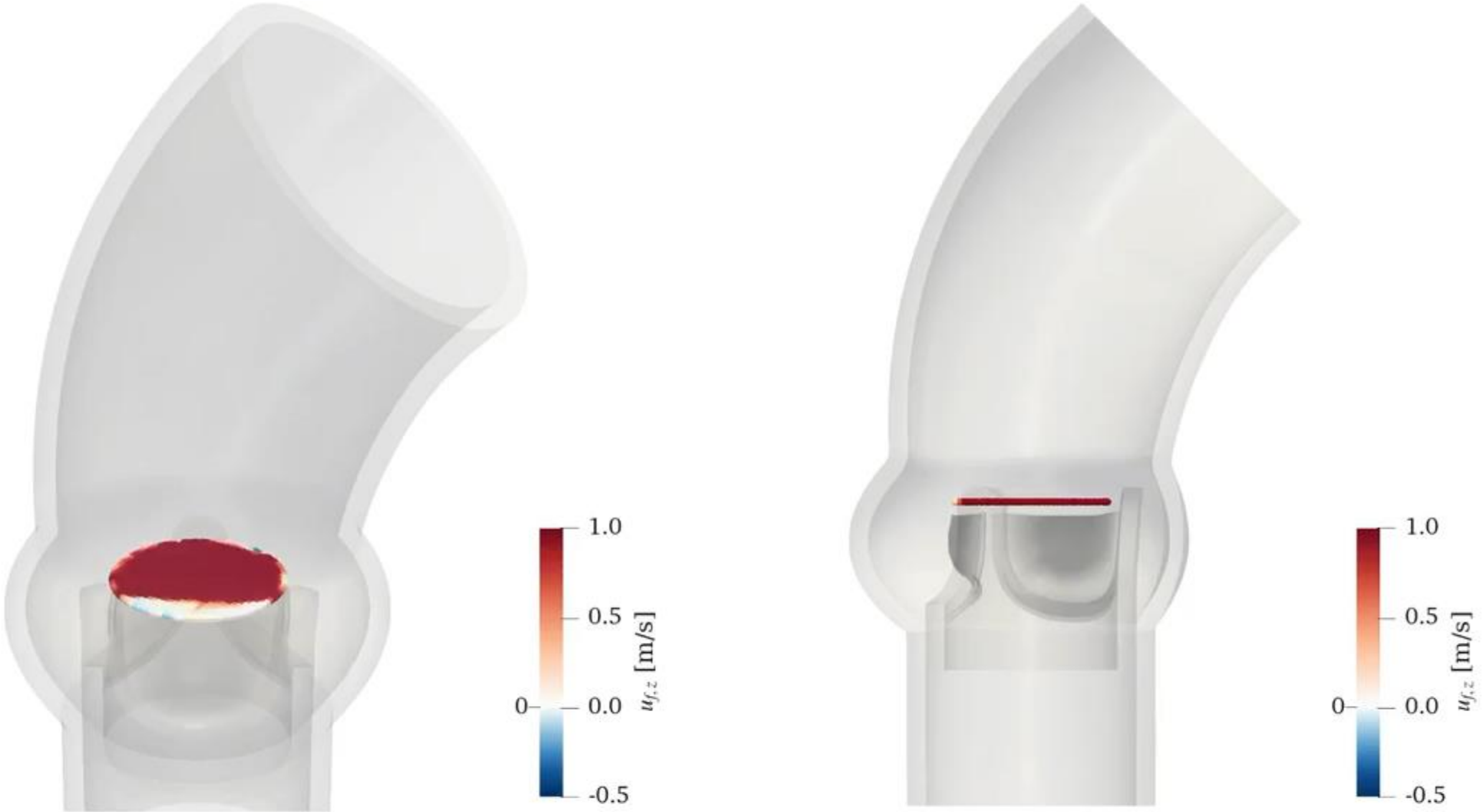
# PARTNER 3 Trial

Adjudicated by **VARC-3** criteria *




* Clinical sequelae of a thrombo-embolic event or worsening valve stenosis or regurgitation, and i) hemodynamic valve deterioration Stage 2 or 3 (moderate or severe), or ii) confirmatory imaging (CT evidence of HALT or TEE findings). In the absence of clinical events, both severe hemodynamic valve deterioration and confirmatory imaging conditions are required.

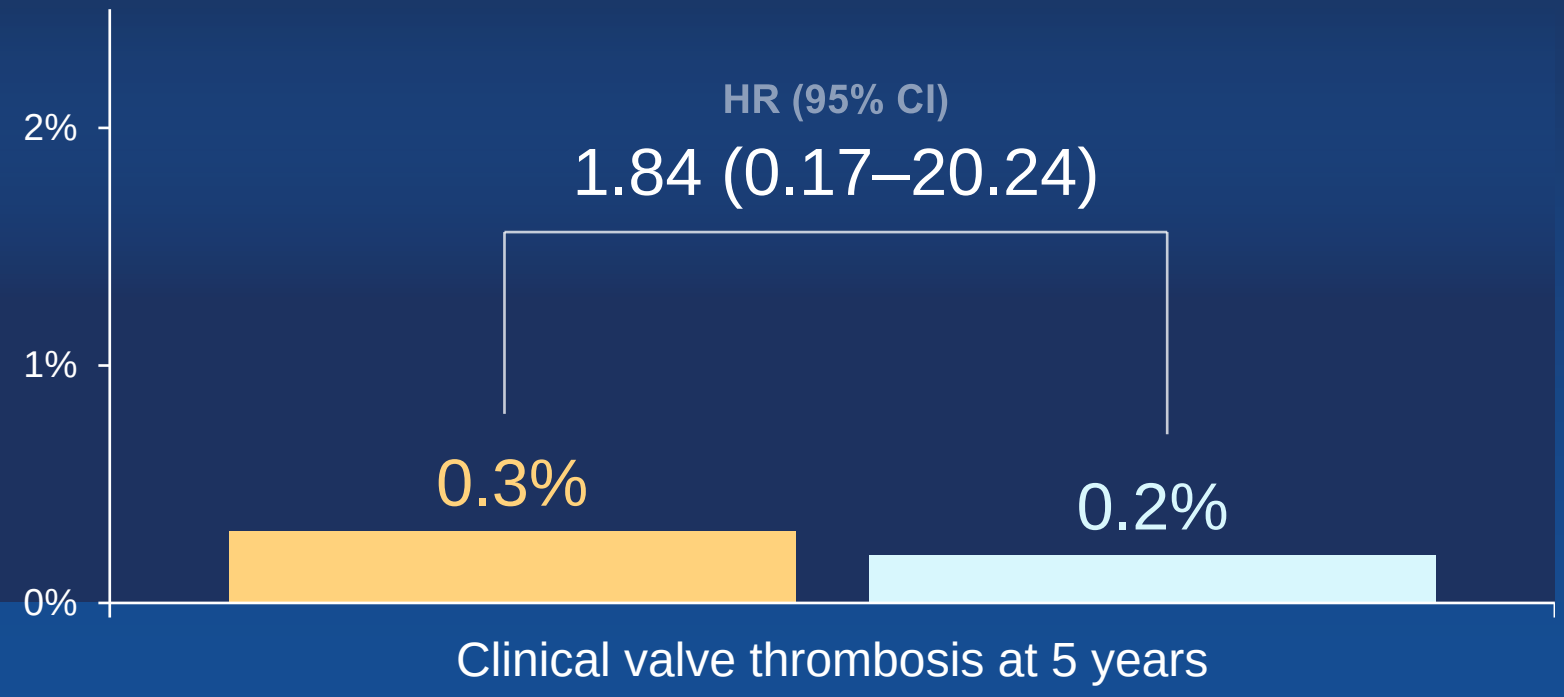
Mach MJ, et al. N Engl J Med 2023;389:1949-1960




Bornemann KM, et al. Comput Biol Med. 2024 Sep:179:108828

# EVOLUT Low Risk Trial

Trial defined criteria *

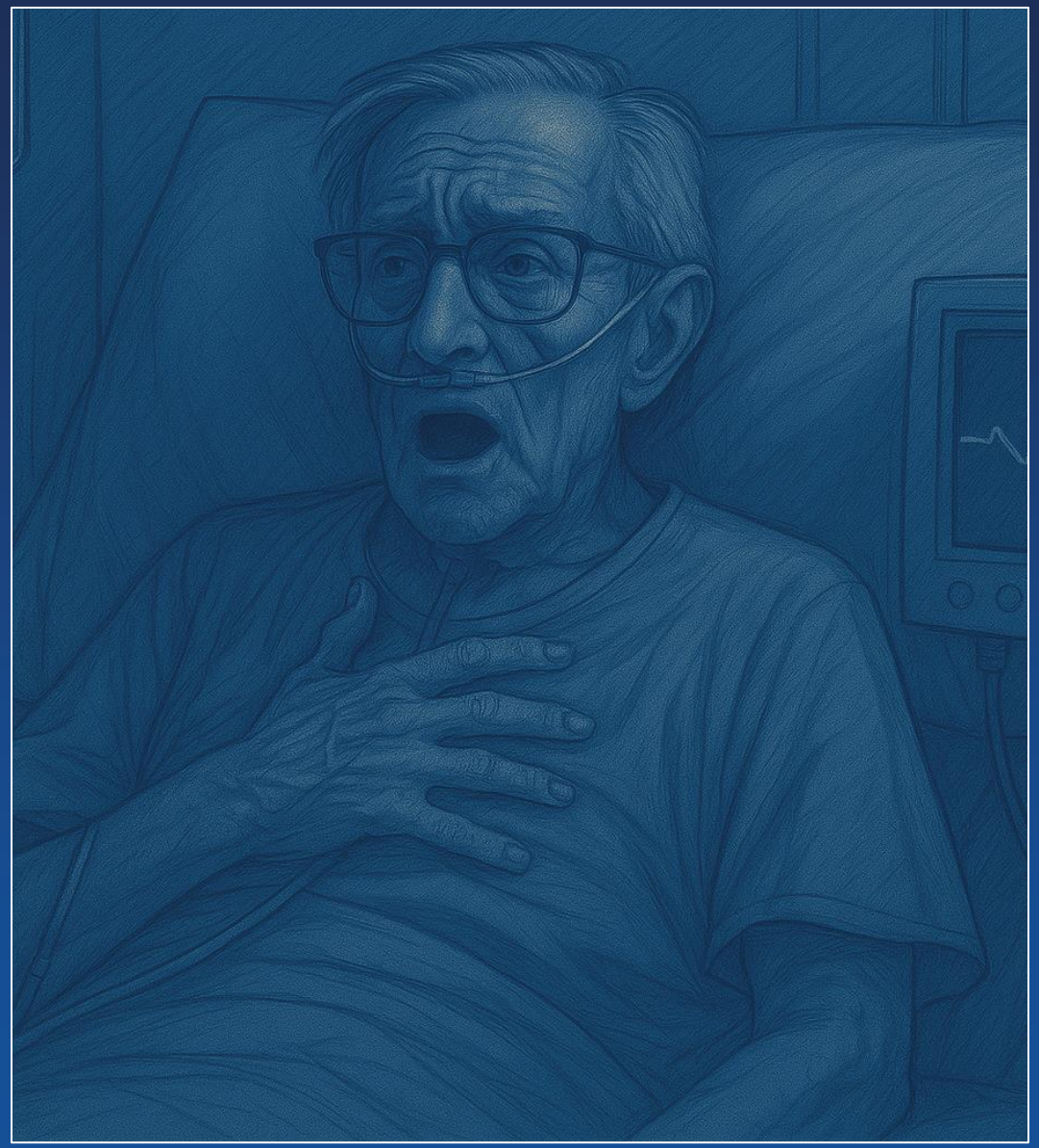



* Defined as any thrombus not caused by infection attached to or near the trial valve that occludes part of the blood flow path, interferes with valve function, or is sufficiently large to warrant treatment and is associated with any of the following clinical sequelae: any ischemic stroke, any peripheral embolic event, STEMI or NSTEMI, or hemodynamic impairment associated with a worsening heart failure

Forrest JK, et al. JACC. 2025;85:1523–1532

Valve thrombosis

# Diagnosis



# Any type of prosthetic valve and one of the following:

- Recent dyspnea
- Recent heart failure symptoms
- Embolic event
- Unexpected increase in transvalvular gradients

# 2020 ACC/AHA Guidelines

## Management of Patients with Valvular Heart Disease

**Recommendation for diagnosis**

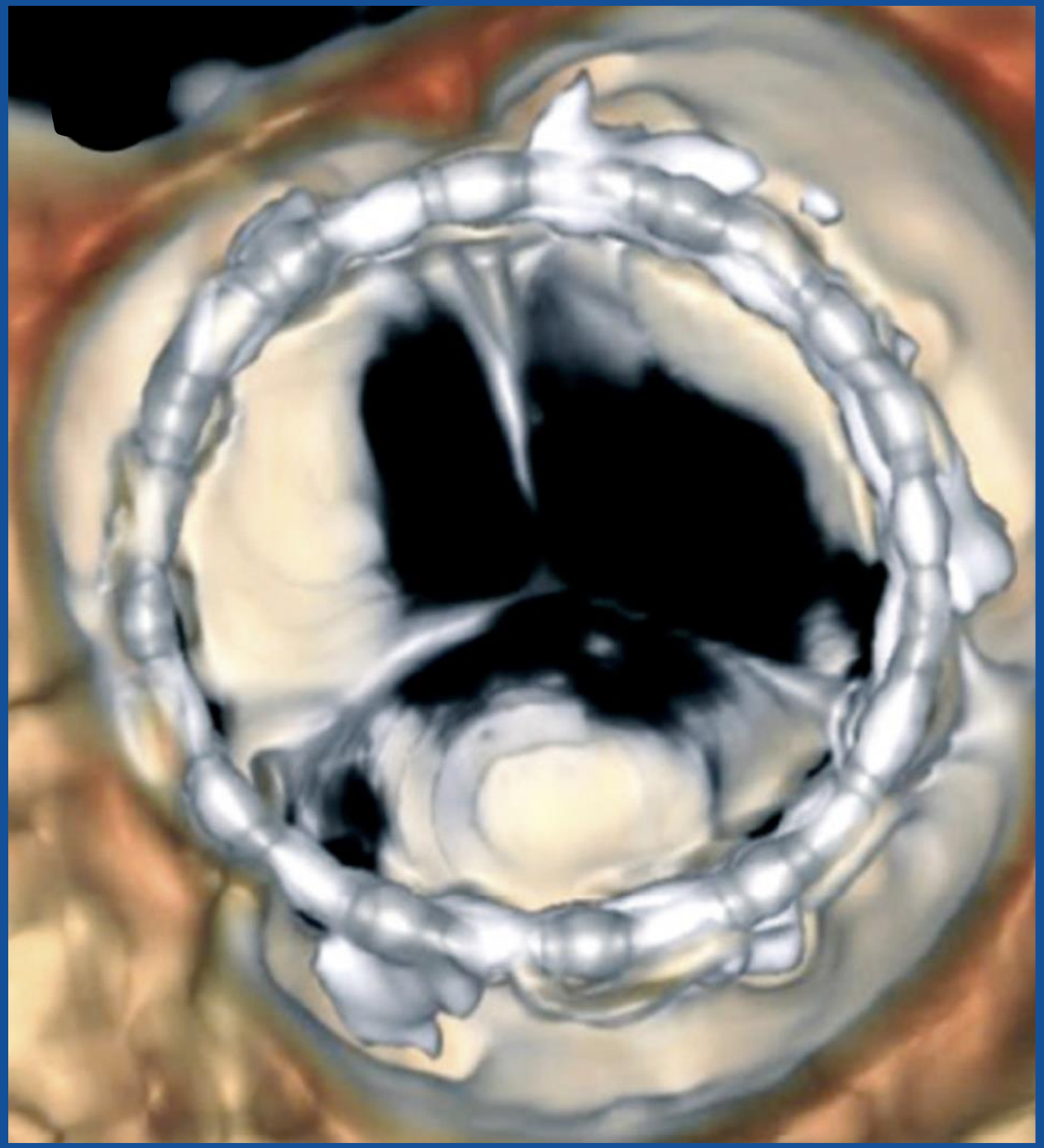
# 3D TEE or 4D CT imaging can be useful to rule out leaflet thrombosis

2a C

*In patients with suspected bioprosthetic valve thrombosis*



Otto CM, et al. J Am Coll Cardiol. 2021;77:e25-e197



Rosseel, et al. Front Cardiovasc Med. 2019;6:44e197

Valve thrombosis

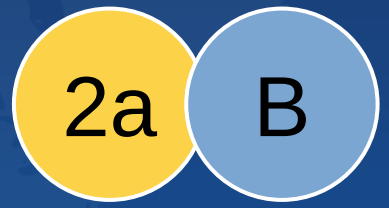
# Management

# 2020 ACC/AHA Guidelines

## Management of Patients with Valvular Heart Disease

**Recommendation for medical therapy**

## Initial treatment with a VKA is reasonable




*In patients with suspected or confirmed bioprosthetic valve thrombosis who are hemodynamically stable and have no contraindications to anticoagulation*



Otto CM, et al. J Am Coll Cardiol. 2021;77:e25-e197

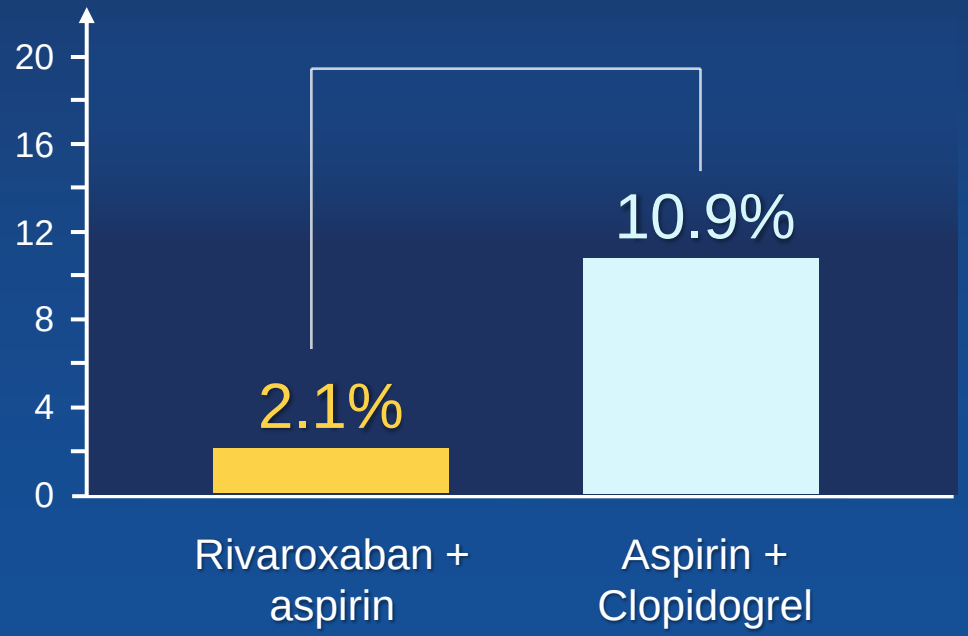
# DIRECT ORAL ANTICOAGULANTS AND SUBCLINICAL VALVE THROMBOSIS

## GALILEO-4D

1 YEAR

**>1 Leaflet with Reduced Motion Grade ≥3**

Difference, −8.8%; 95% CI, −16.5 to −1.9

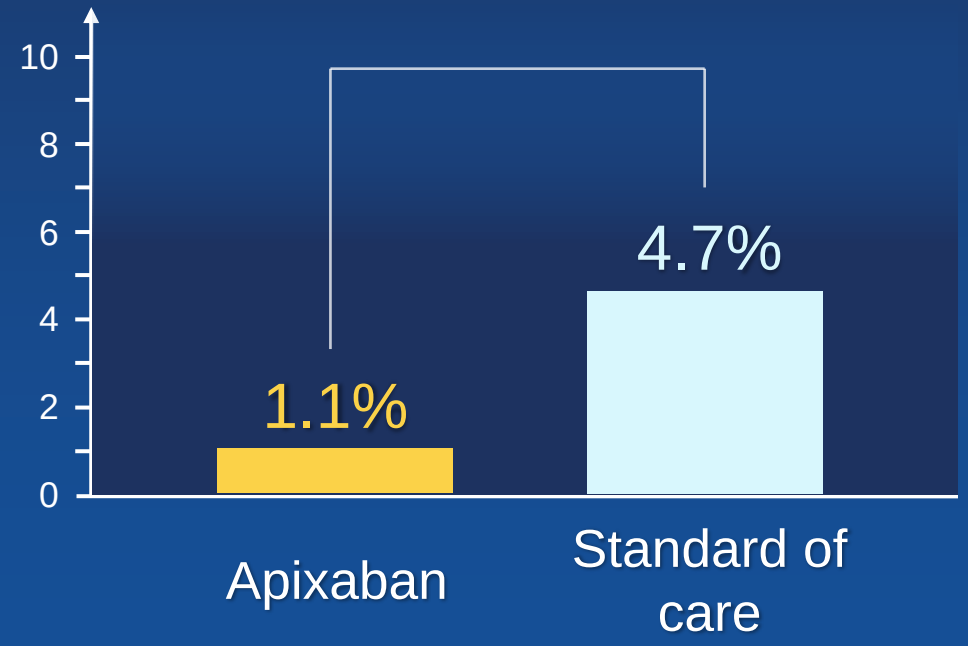



## ATLANTIS-4D-CT

1 YEAR

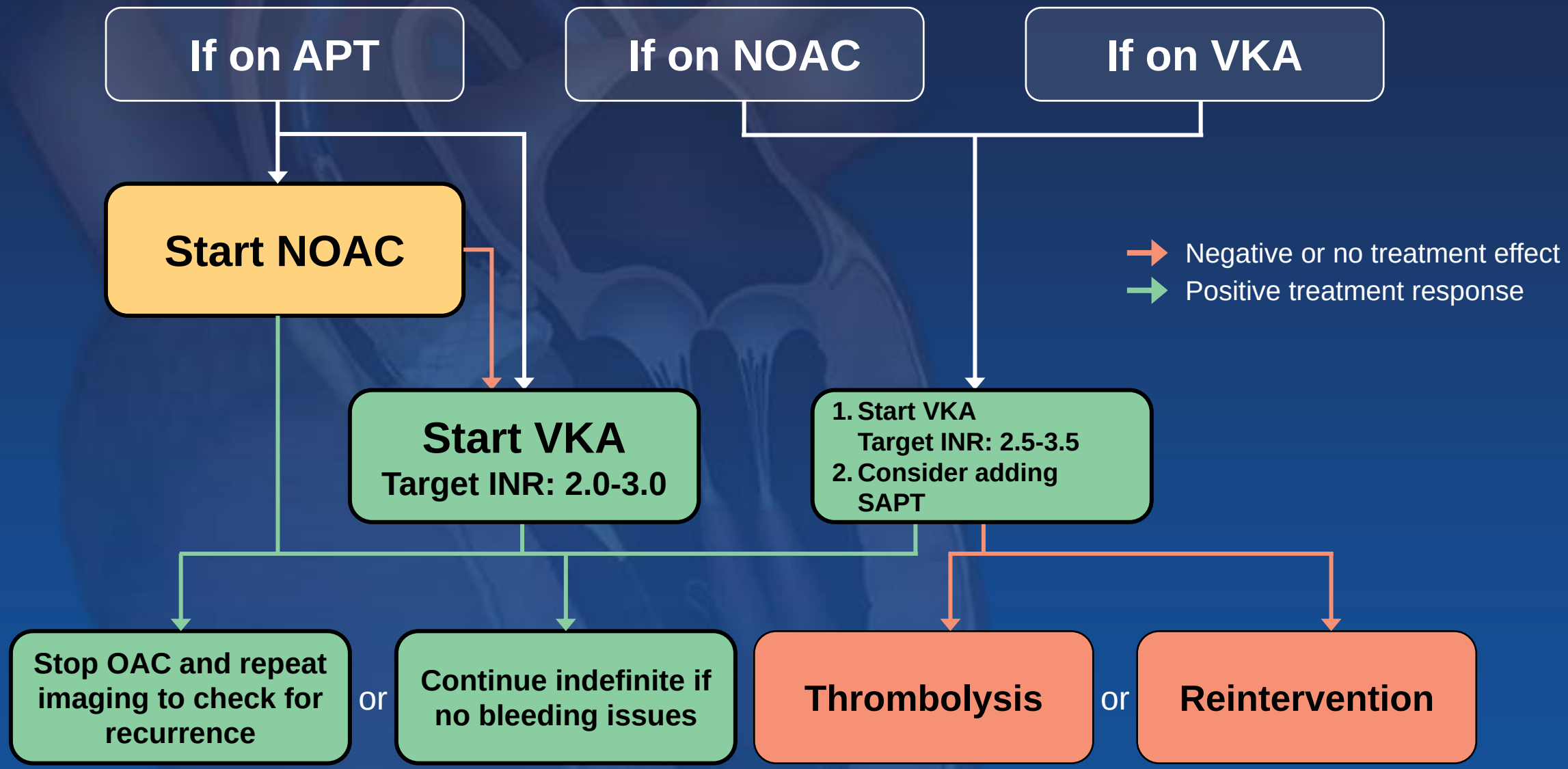
**Obstructive Valve Thrombosis**

Hazard ratio, 0.23; 95% CI 0.11 to 0.50

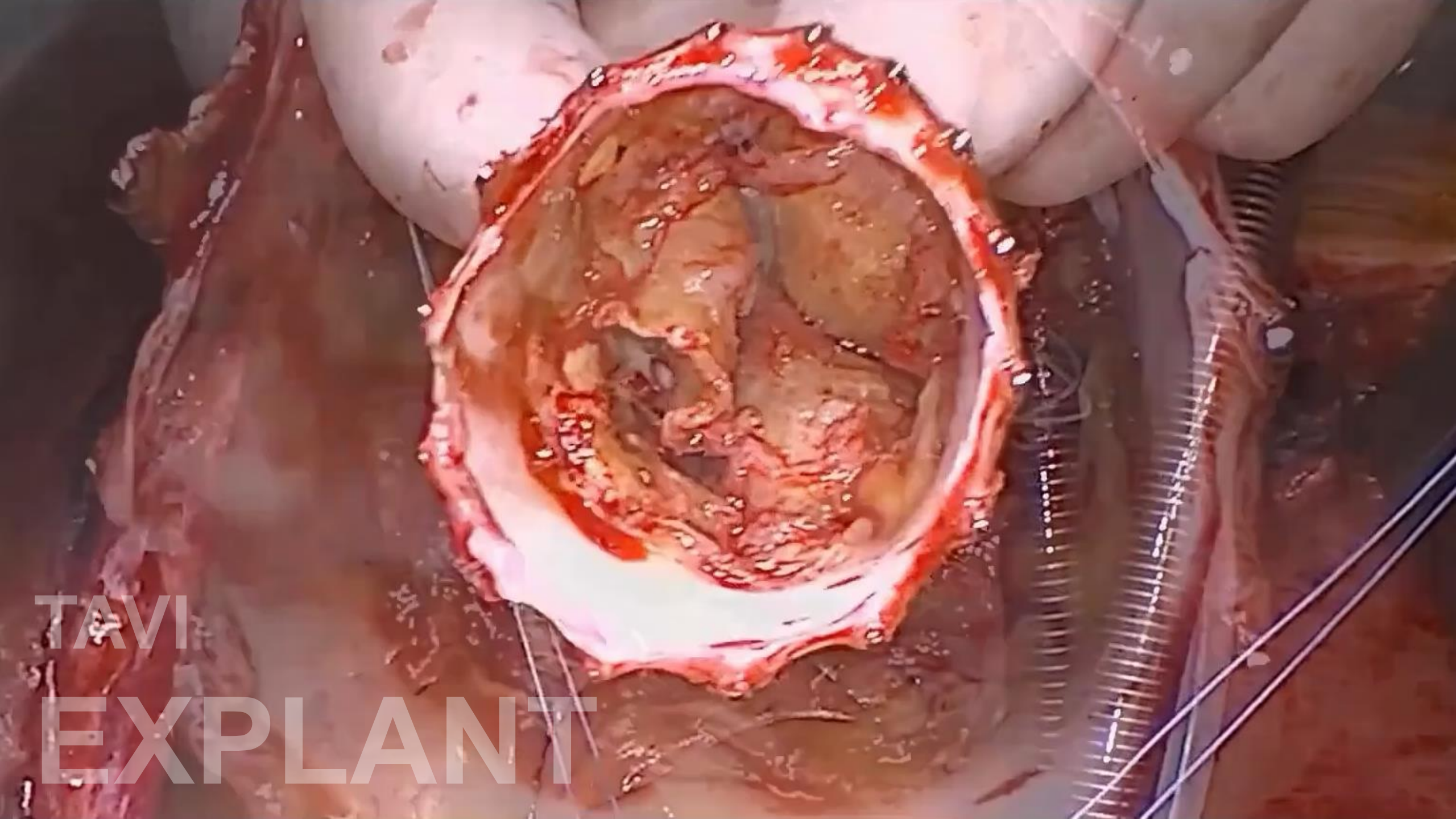



De Backer O, et al. N Engl J Med 2020;382:130-139 | Montalescot G, et al. J Am Coll Cardiol Intv. 2022;15:1794–1804

# A TREATMENT ALGORITHM

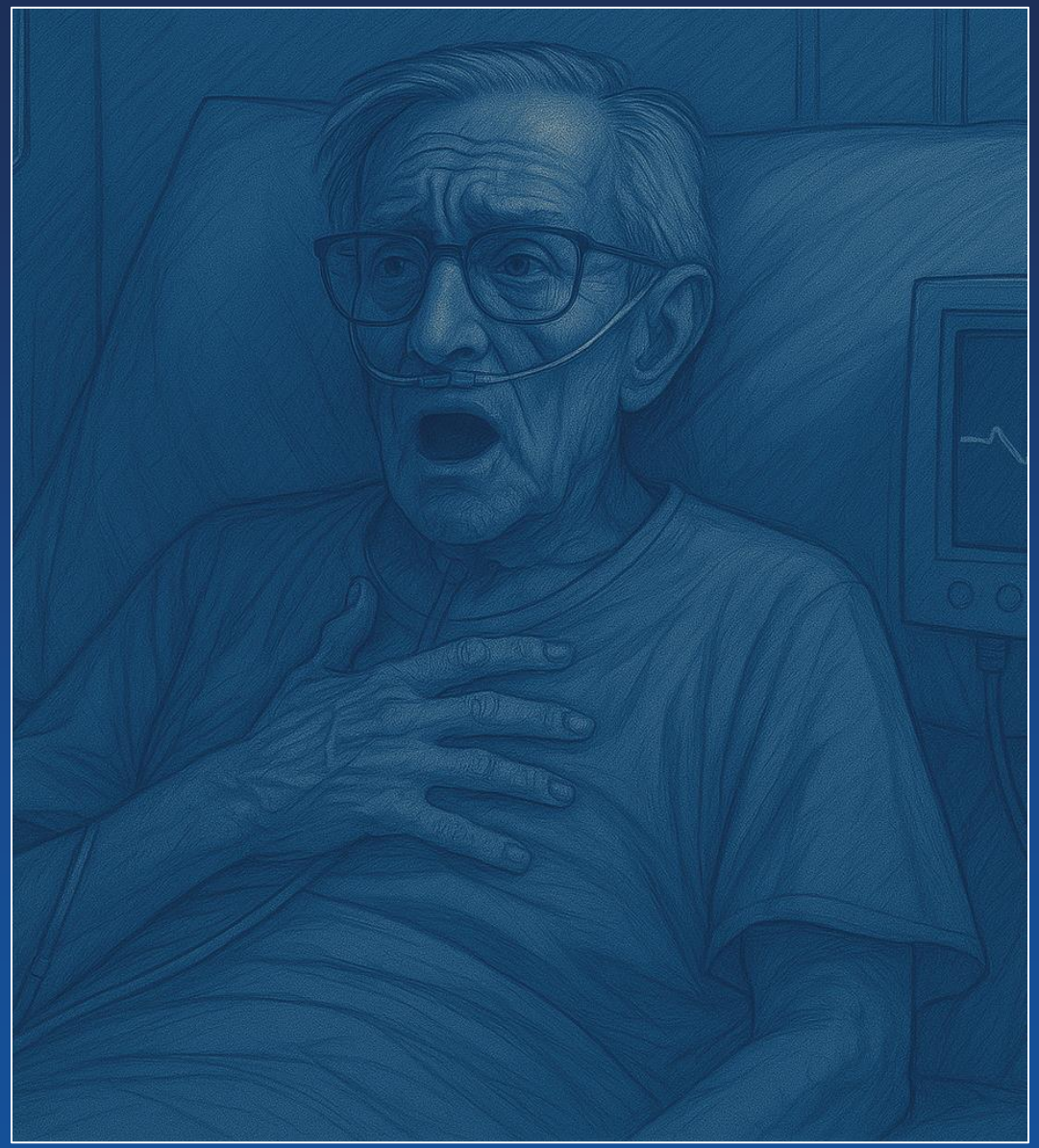



Adrichem R, et al. J Am Coll Cardiol. 2024;84:848–86


TAVI
EXPLANT

Valve thrombosis

# Case Vignettes



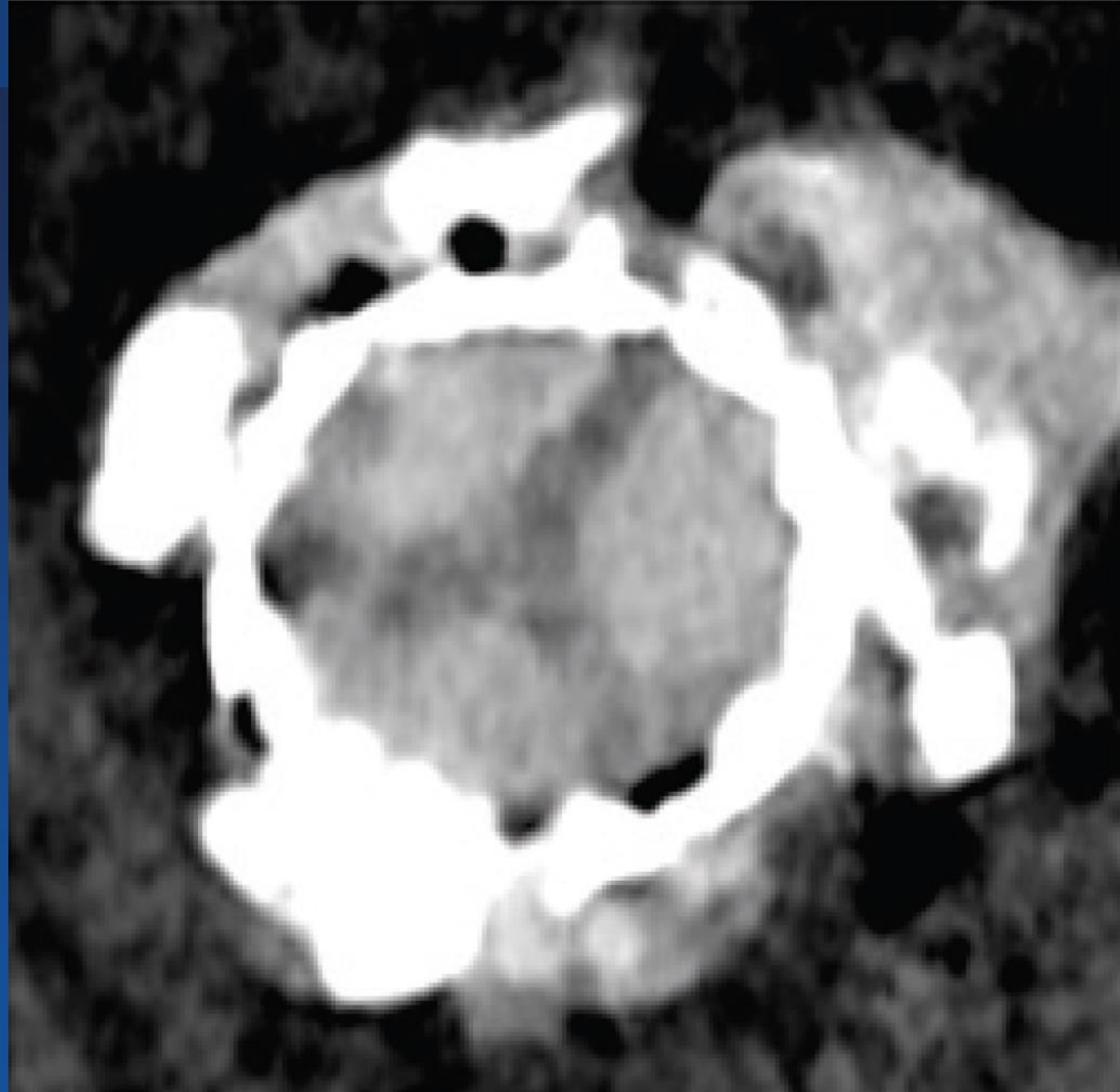
# An 82-Year-Old Male Patient:

- History of stroke and atrial fibrillation; directly after TAVR, increased transprosthetic gradients were present
- Presents 1 month after TAVR with progressive exertional dyspnea, NYHA functional class III
- On rivaroxaban 10 mg once daily

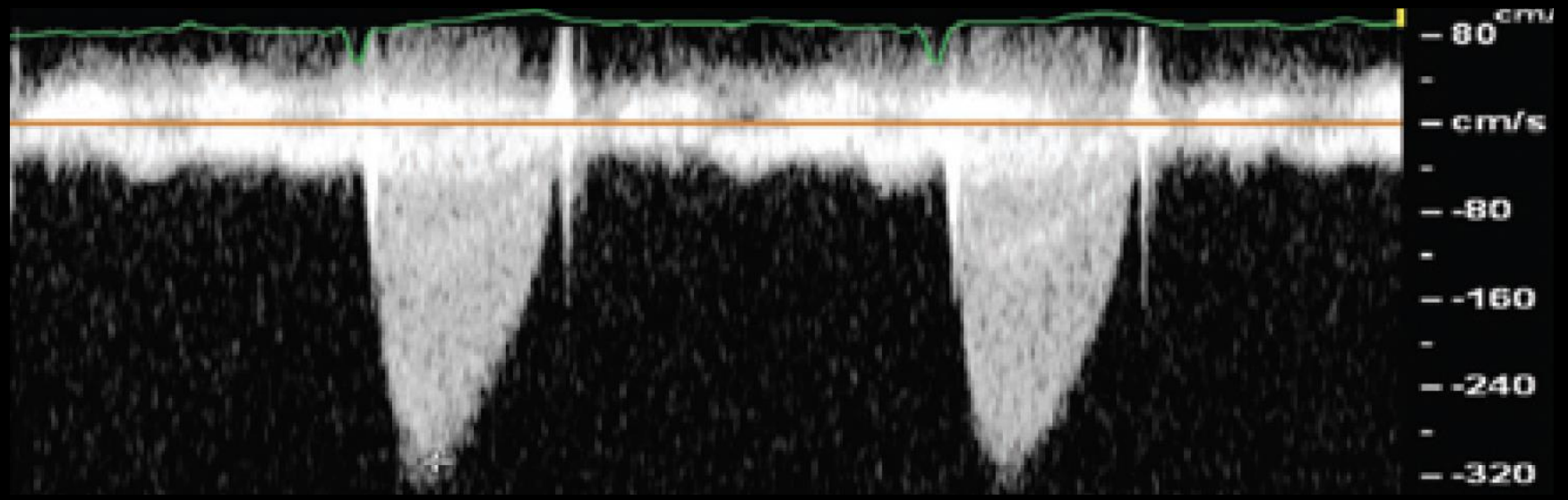
Adrichem R, et al. J Am Coll Cardiol. 2024;84:848–86

# CLINICAL CASE VIGNETTE #1

**Diffuse hypodense thickening of valve leaflets**

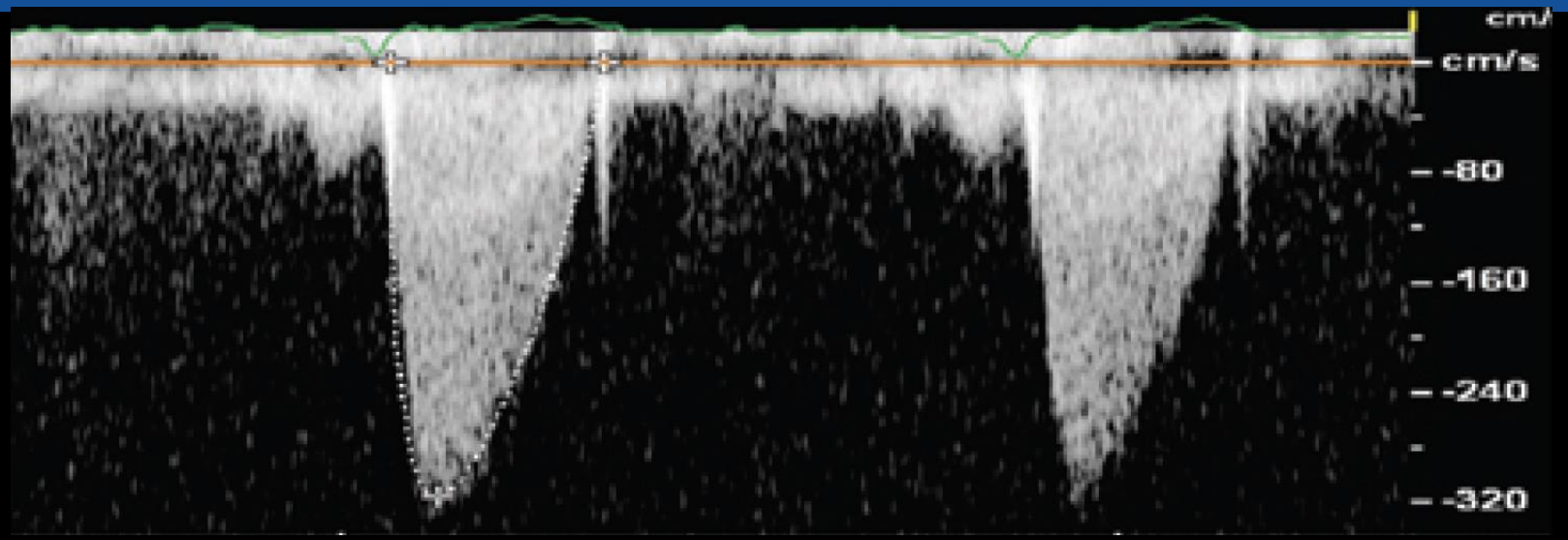


Adrichem R, et al. J Am Coll Cardiol. 2024;84:848–86

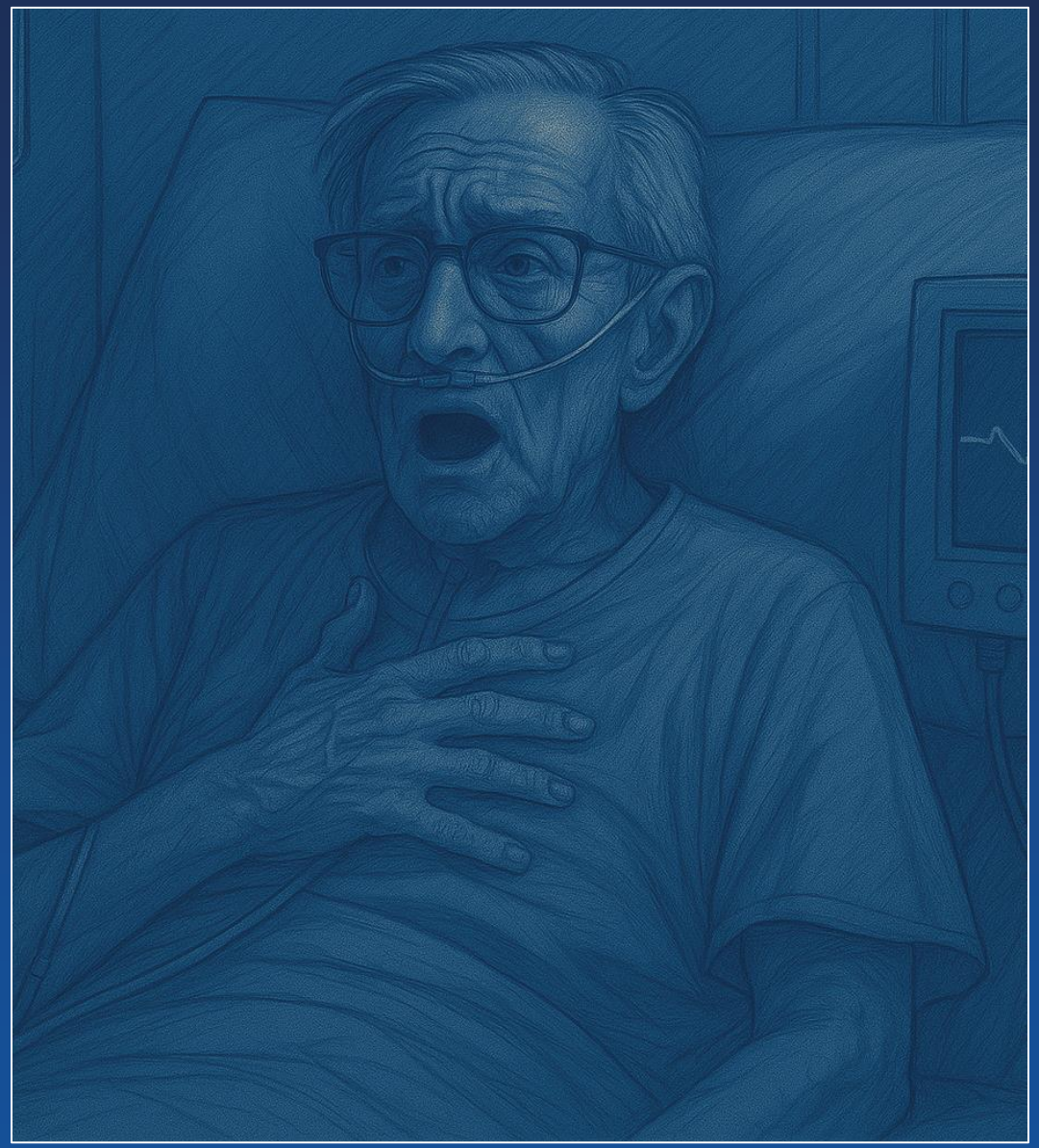



Increased gradients, mean pressure gradient 30 mm Hg, peak velocity 3.5 m/s

# **Before** and **After** switch to acenocoumarol (target INR 2.0-3.0)




Reduction but not normalization of gradients - Mean pressure gradient 22 mm Hg, peak velocity 3.2 m/s, 3 months after VKA initiation



# A 79-Year-Old Male Patient:

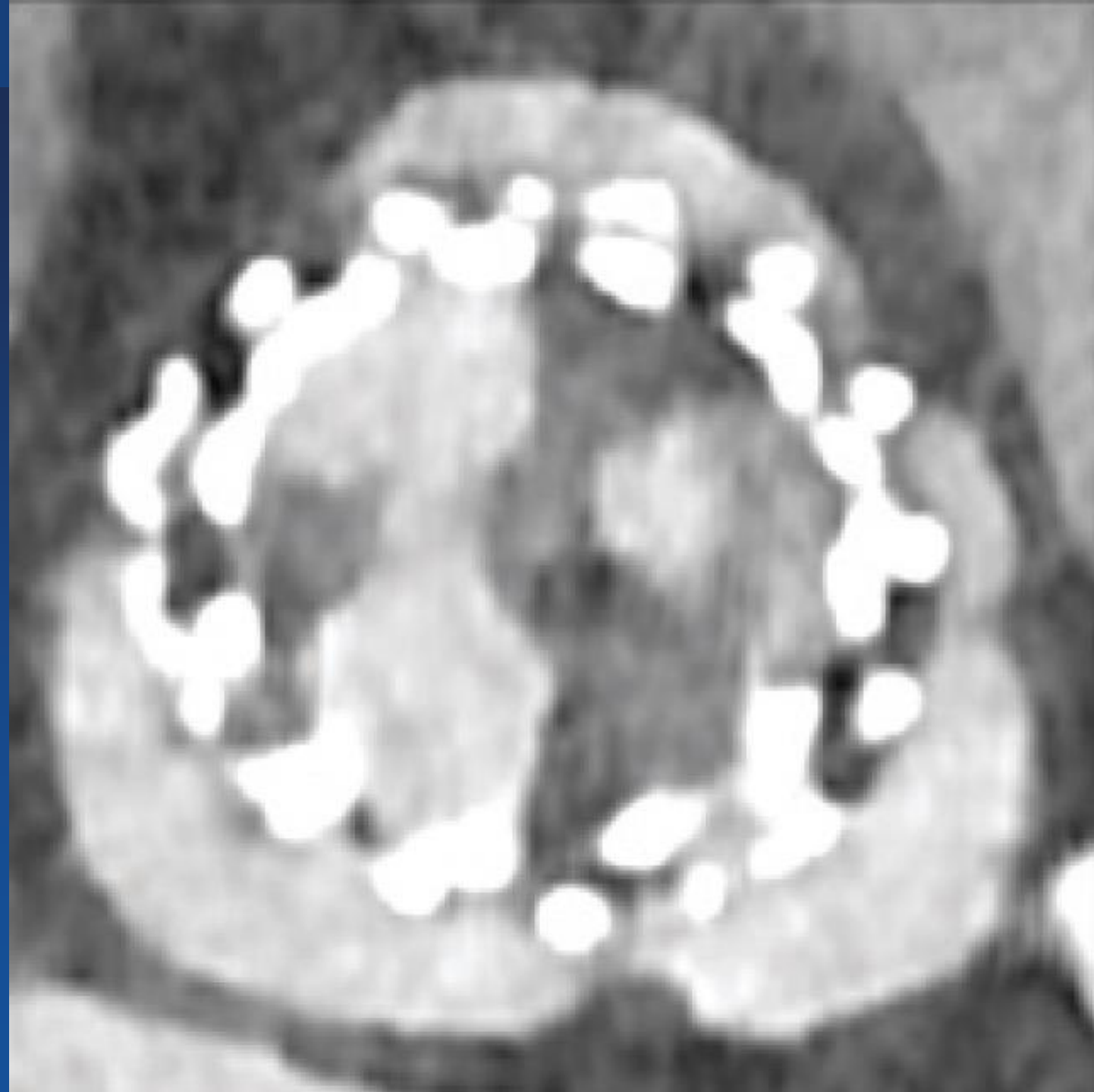
- History of atrial fibrillation, CABG, and previous homograft AVR and TAV-in-SAV intervention (Evolut R) and TAV-in-TAV (Sapien 3 Ultra)
- Presents 19 months after last TAVR with acute heart failure and elevated cardiac enzymes
- On edoxaban 60 mg once daily

Adrichem R, et al. J Am Coll Cardiol. 2024;84:848–86

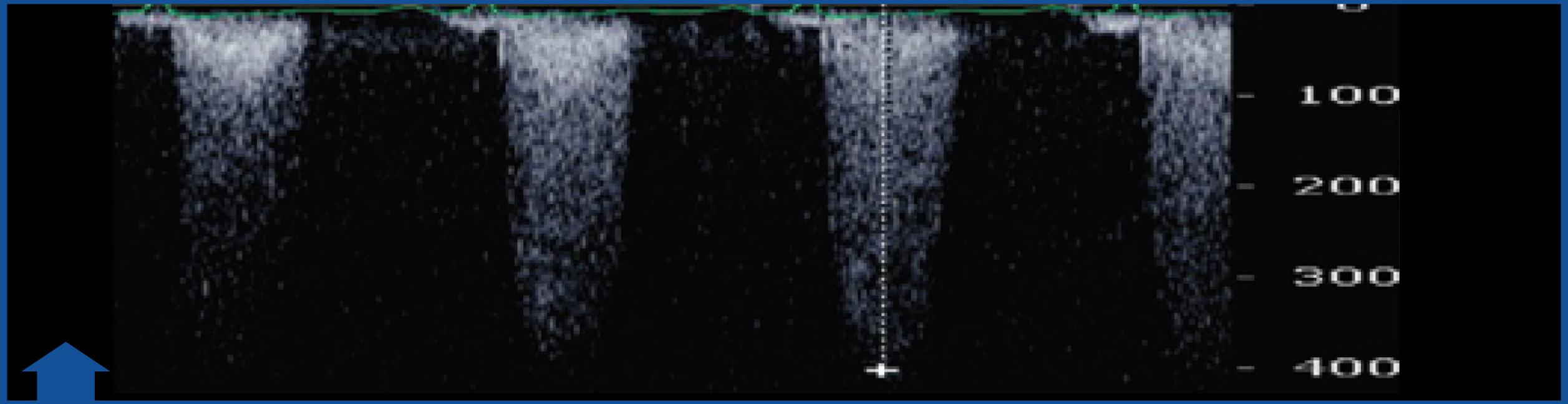
# CLINICAL CASE VIGNETTE #2

**HALT of all valve leaflets**

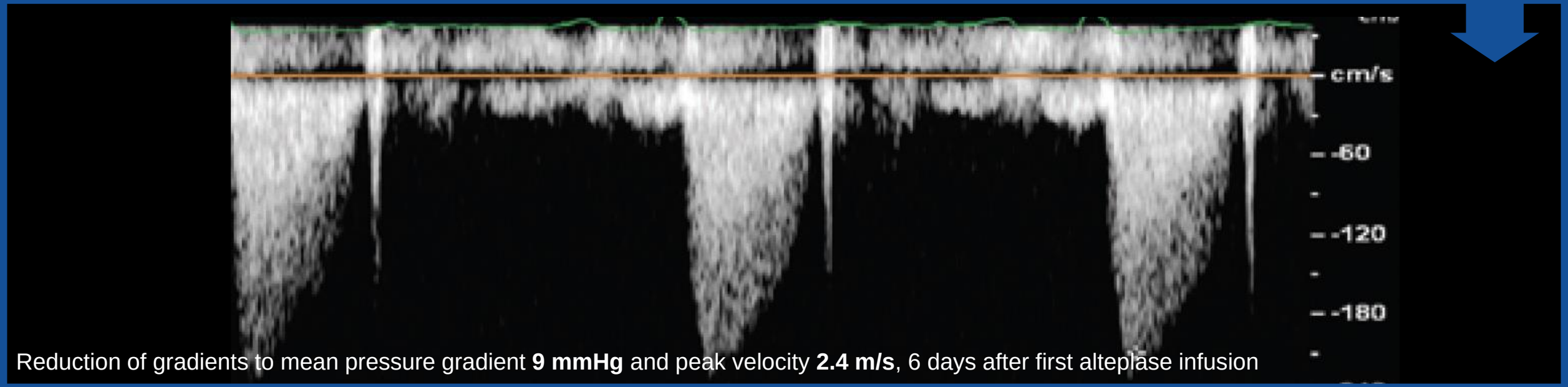
**Thickening of left leaflet suspect for thrombosis**



Adrichem R, et al. J Am Coll Cardiol. 2024;84:848–86

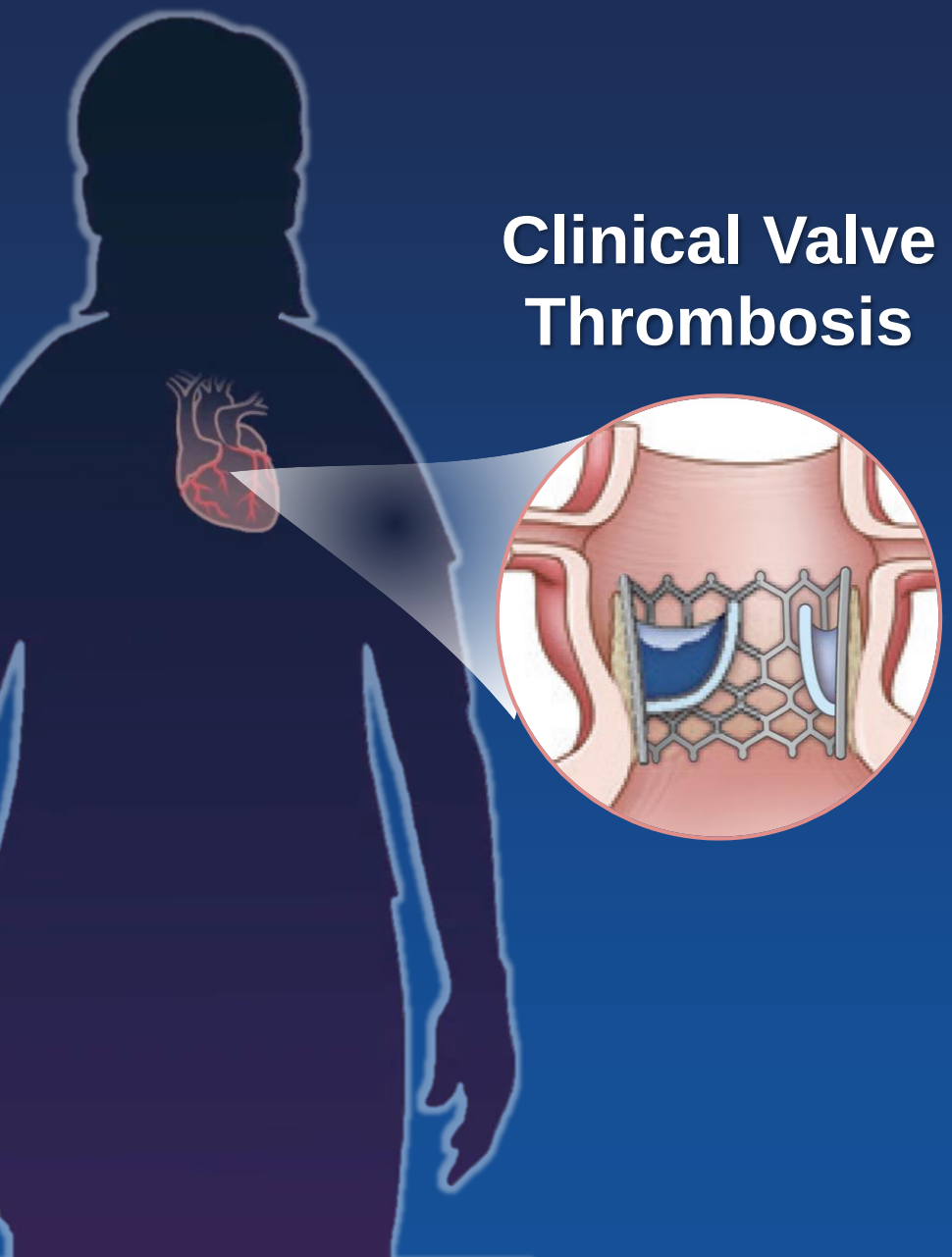



**Before** and **After** ultraslow low-dose infusions of 25 mg alteplase




Reduction of gradients to mean pressure gradient **9 mmHg** and peak velocity **2.4 m/s**, 6 days after first alteplase infusion

# CLOSING REMARKS




- Clinical valve thrombosis is a **rare occurrence**, often overlooked in early comparisons of TAVR and SAVR.
- More evidence is needed regarding the long-term outcomes and comparative safety of different TVH types.
- It may be suspected based on **clinical presentation** and **elevated mean gradients** in TAVR patients experiencing stroke, myocardial infarction, or heart failure, and can be confirmed via **4D-CT** or **TEE**.
- Patients with clinical valve thrombosis should initiate **anticoagulation** for at least three months.
- If symptoms do not improve or worsen, **thrombolysis** or **aortic reintervention** should be considered.