

September 15-17

**2016**

Crowne Plaza Hotel  
Liège, Belgium

# 5<sup>th</sup> International Meeting on Aortic Diseases

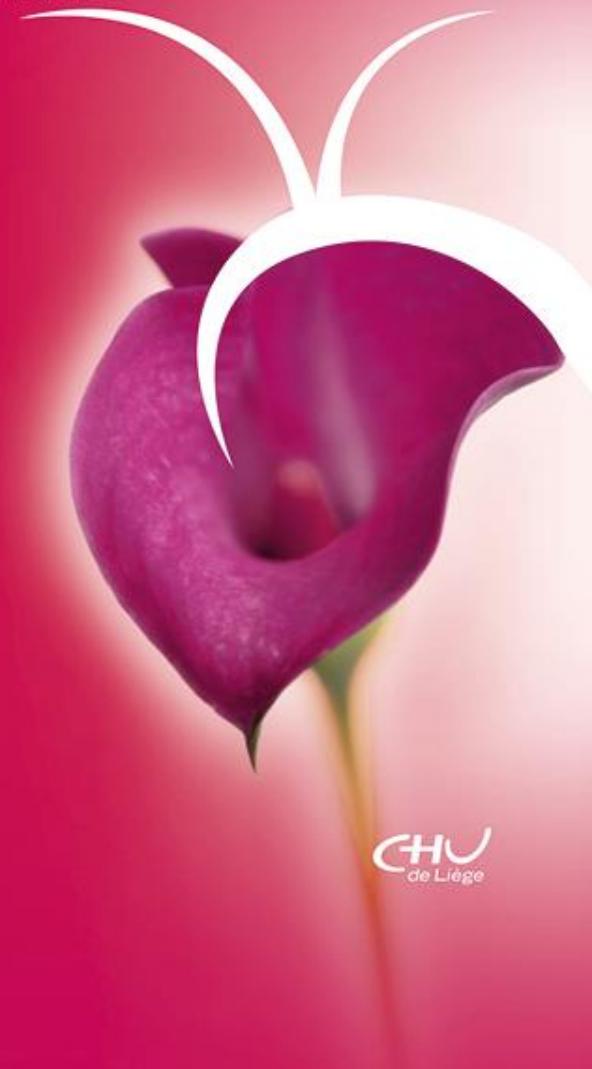
New insights into an old problem CHU Liège, APF  
[www.chuliege-imaa.be](http://www.chuliege-imaa.be)

## **Valve thrombosis after transcatheter aortic valve implantation**

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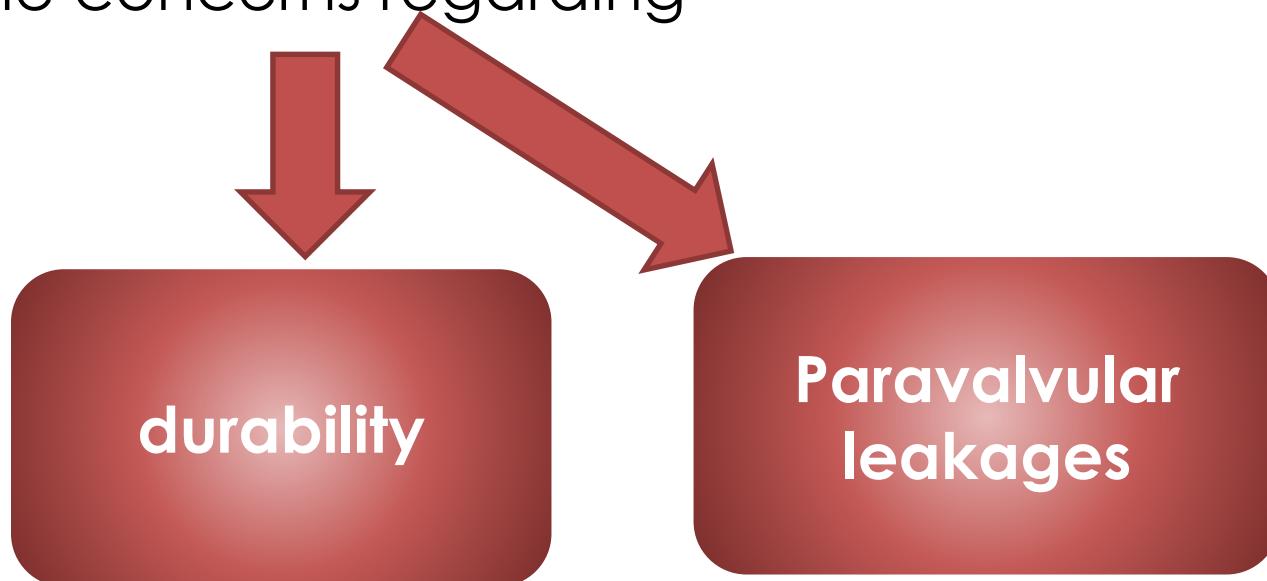
# Disclosure of Interest

I have nothing to  
disclose



# Introduction

- ▶ Transcatheter aortic valve implantation (TAVI) is an elegant alternative to surgical aortic valve replacement (SAVR) in high-risk patients with symptomatic severe aortic stenosis
- ▶ some concerns regarding





# Case report

- ▶ 87 year-old male patient with severe symptomatic aortic stenosis
- ▶ NYHA 3
- ▶ TTE :
  - ▶ severely calcified aortic valve
  - ▶ valve area of  $0.8 \text{ cm}^2$
  - ▶ mean gradient of 44 mmHg
  - ▶ LVEF of 62%



# Case report

- ▶ Due to age and comorbidities (Euroscore 2 : 7%)
  - non surgical candidate
- ▶ Percutaneous valve implantation through a retrograde femoral approach (CoreValve bioprosthesis 26 mm) in october 2010
- ▶ Post-procedural TTE :
  - ▶ Mean gradient : 10 mmHg
  - ▶ Aortic effective orifice area : 1.9 cm<sup>2</sup>
  - ▶ Mild paravalvular regurgitation



# Case report

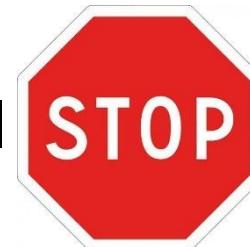
- ▶ Uneventful post-implantation course
- ▶ Discharged on dual antiplatelet therapy



Aspirin



Clopidogrel



**STOP**

after 3 months



# Follow up

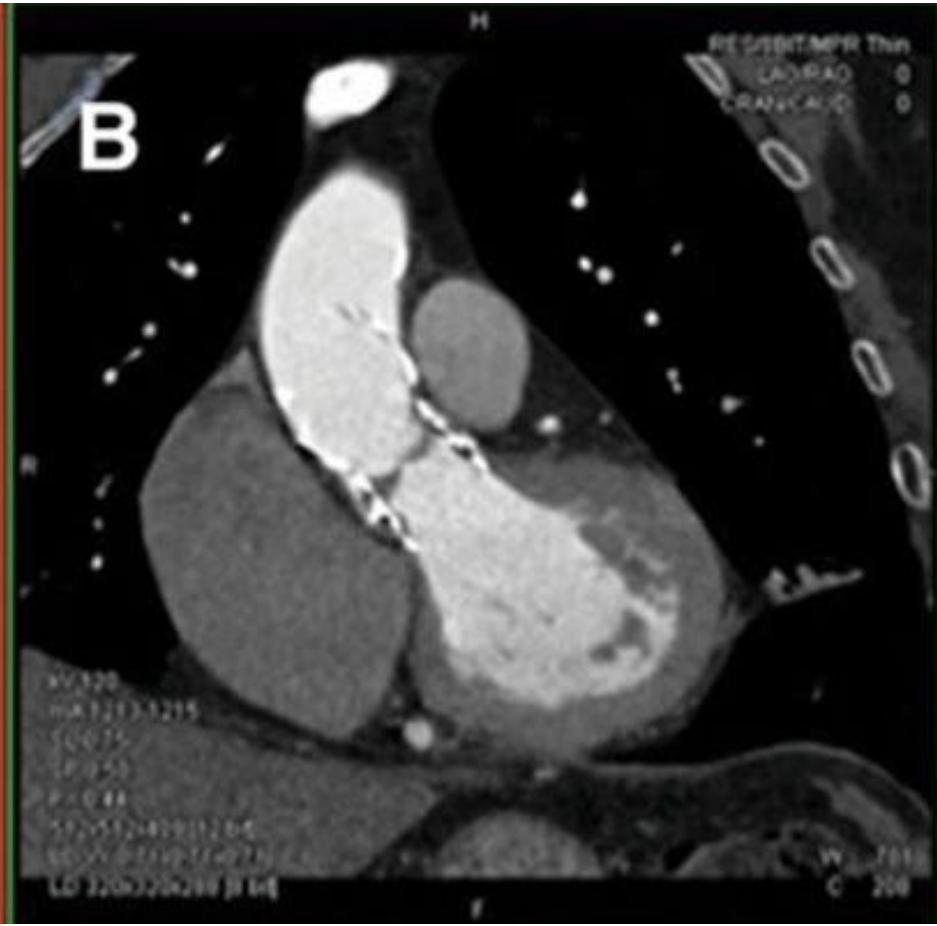
- ▶ TTE @ 6 months
  - ▶ Mean gradient : 16 mmHg
  - ▶ EOA : 1.2 cm<sup>2</sup>
- ▶ TTE @12 months
  - ▶ Mean gradient : 42 mmHg
  - ▶ EOA : 0.69 cm<sup>2</sup>
- ▶ Patient symptomatic
- ▶ NYHA 2-3/4

# CT-scan

A

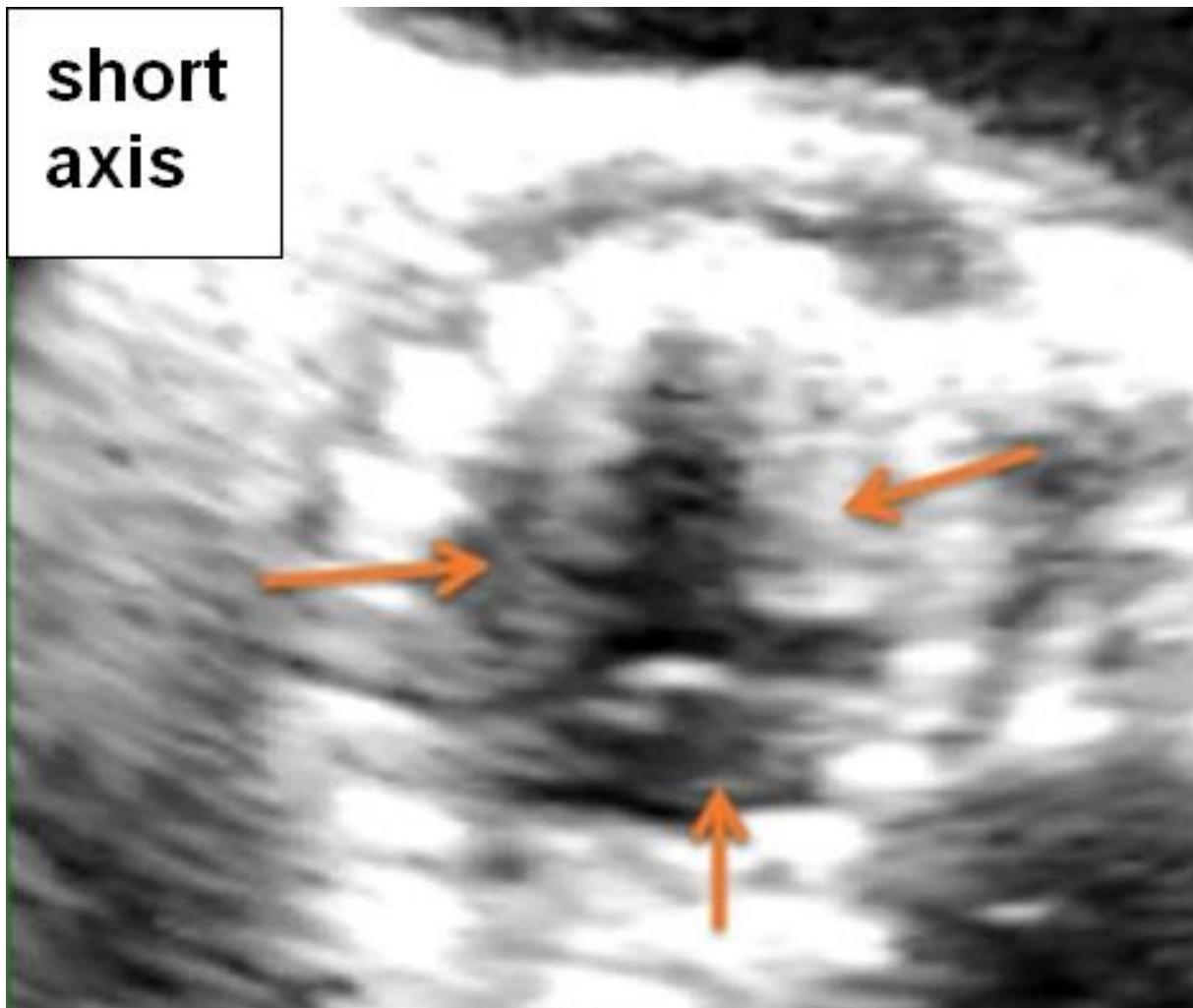


B





# Transesophageal echocardiography



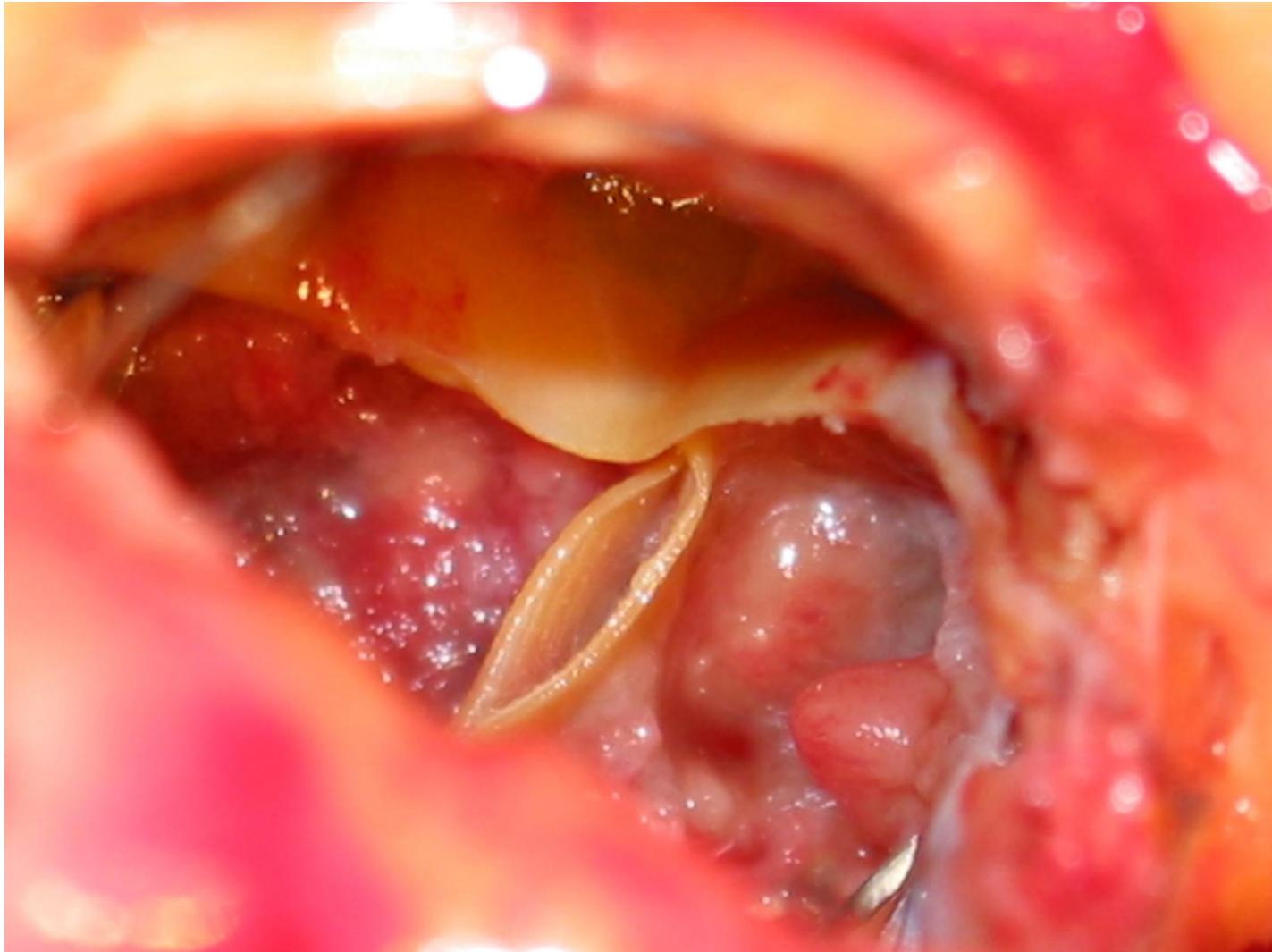


# Surgical AVR after TAVI

- ▶ Under median sternotomy and cardiopulmonary bypass
- ▶ venous cannulation of the right atrium
- ▶ Arterial cannulation through the right axillary artery
- ▶ X-clamp as distally as possible
- ▶ Both antegrade and retrograde cardioplegia
- ▶ « Lazy S » aortotomy in the anterior wall of the ascending aorta

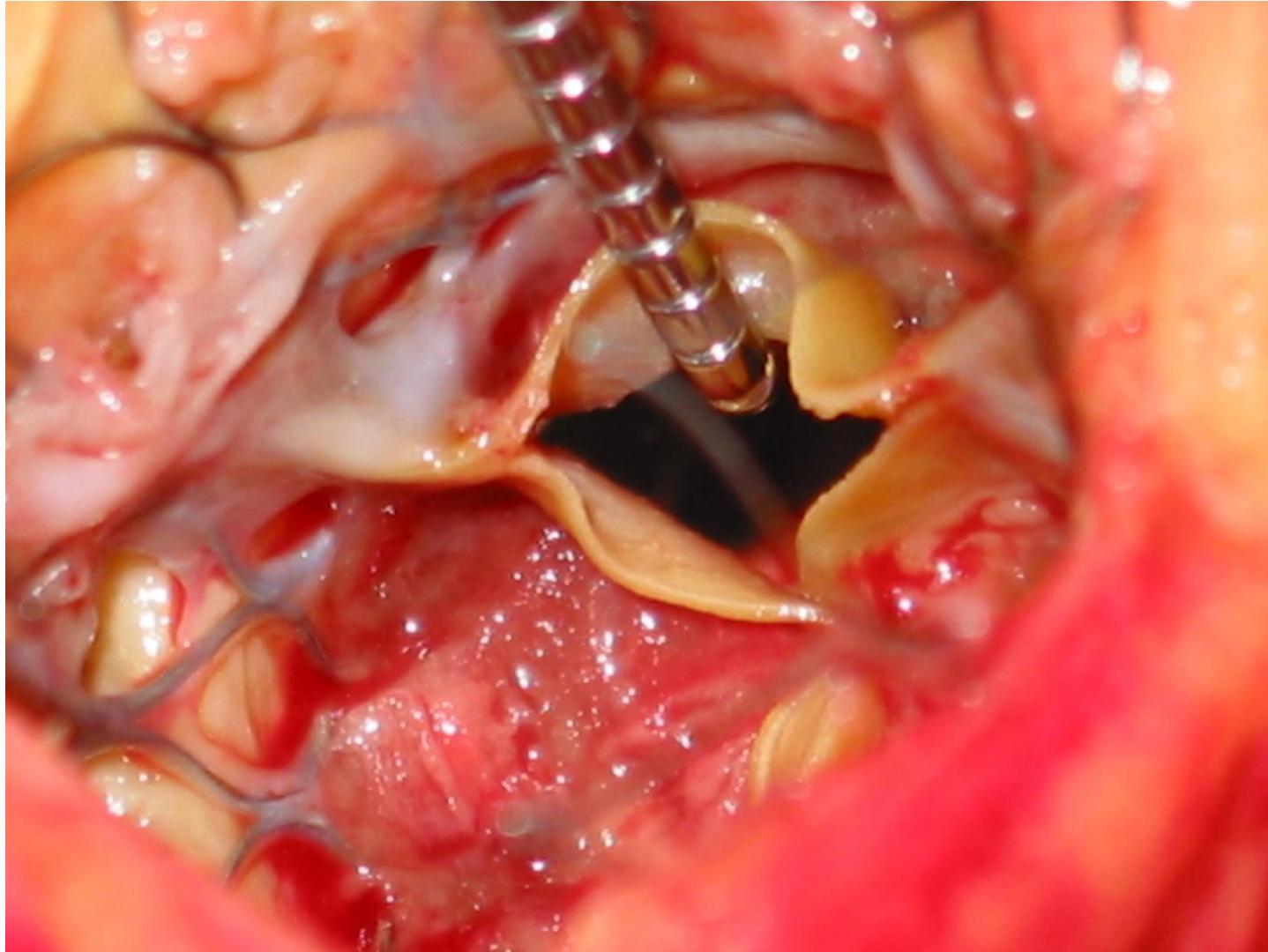


# Surgical AVR after TAVI



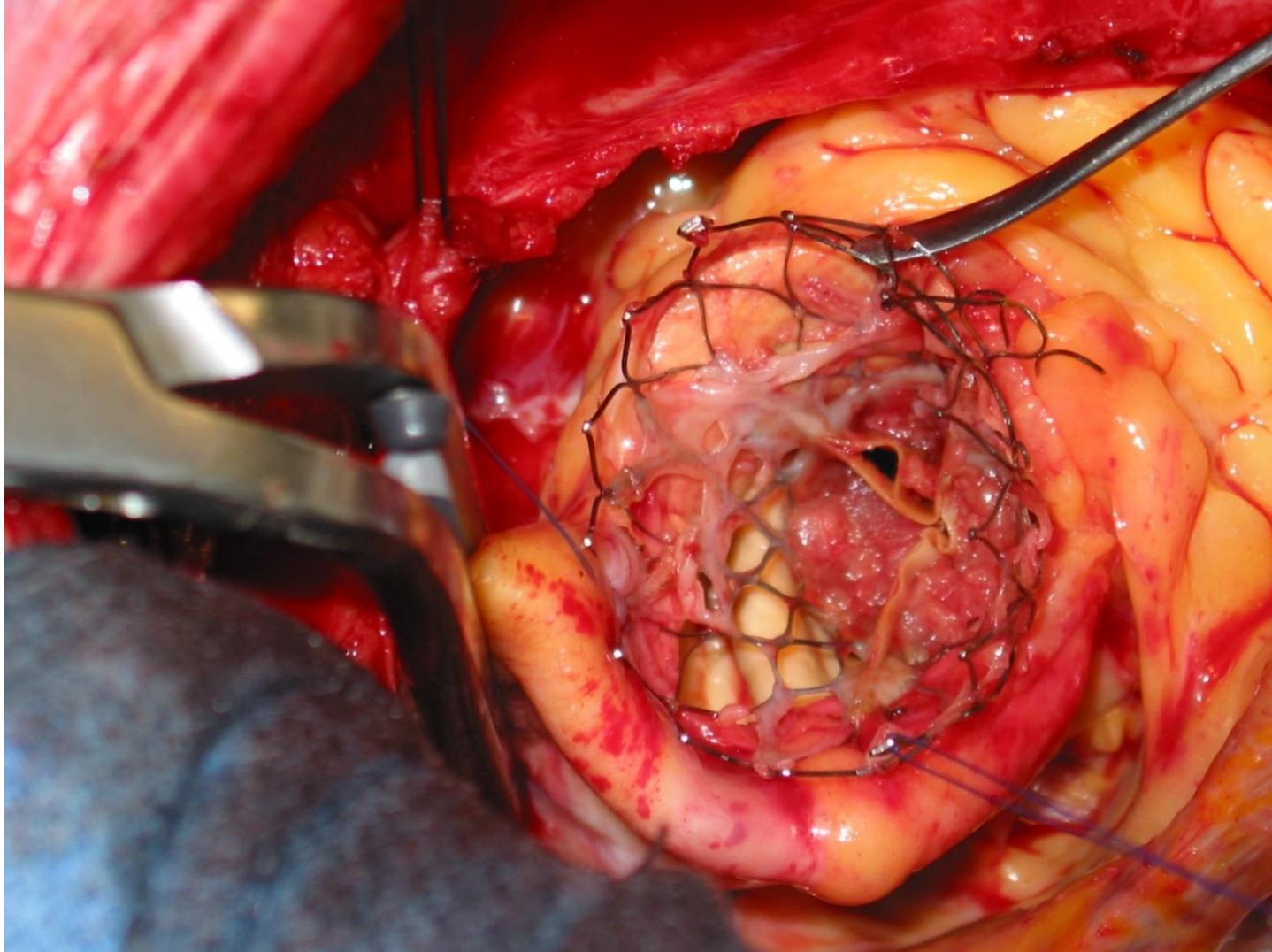


# Surgical AVR after TAVI



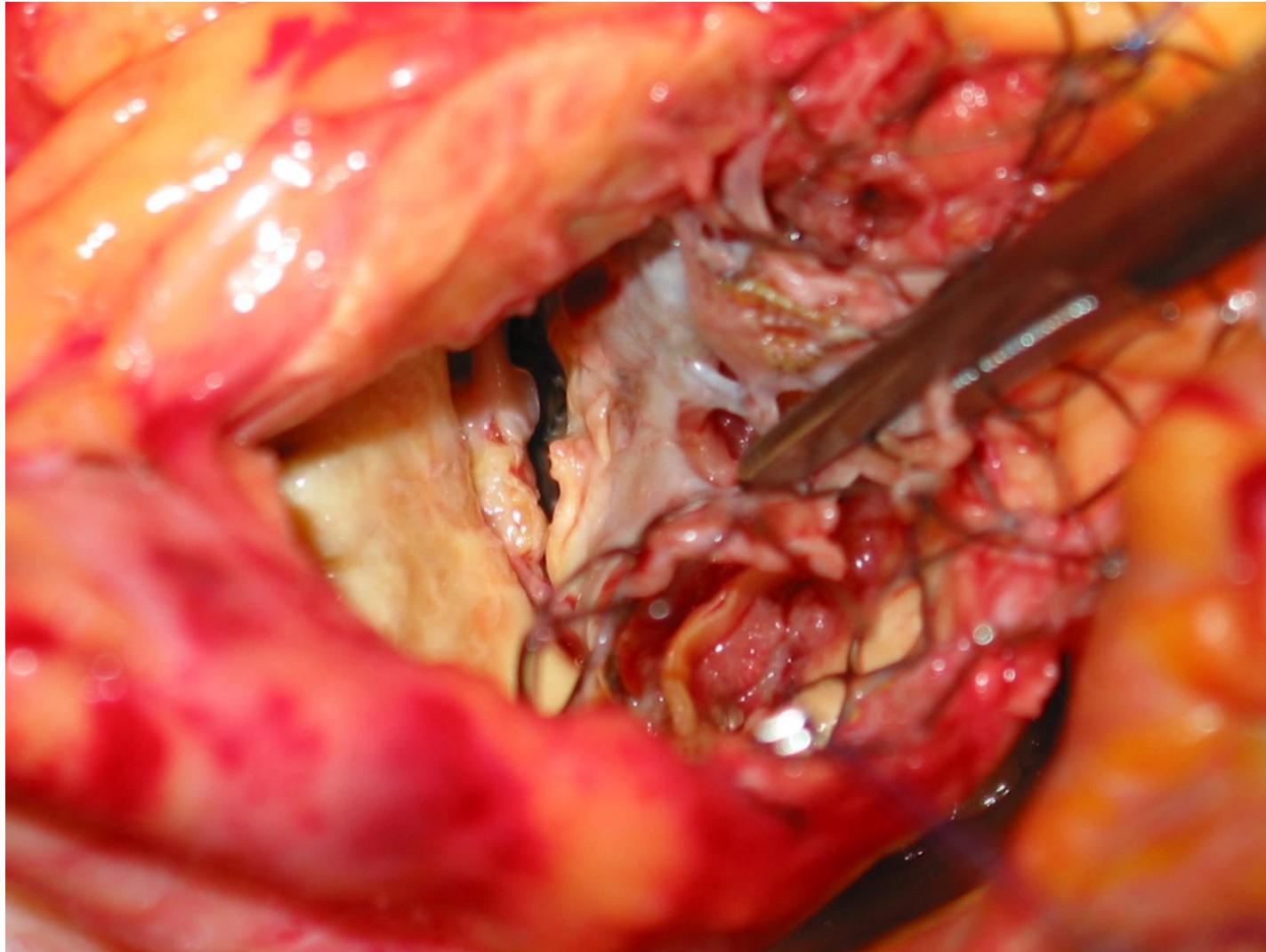


# Surgical AVR after TAVI



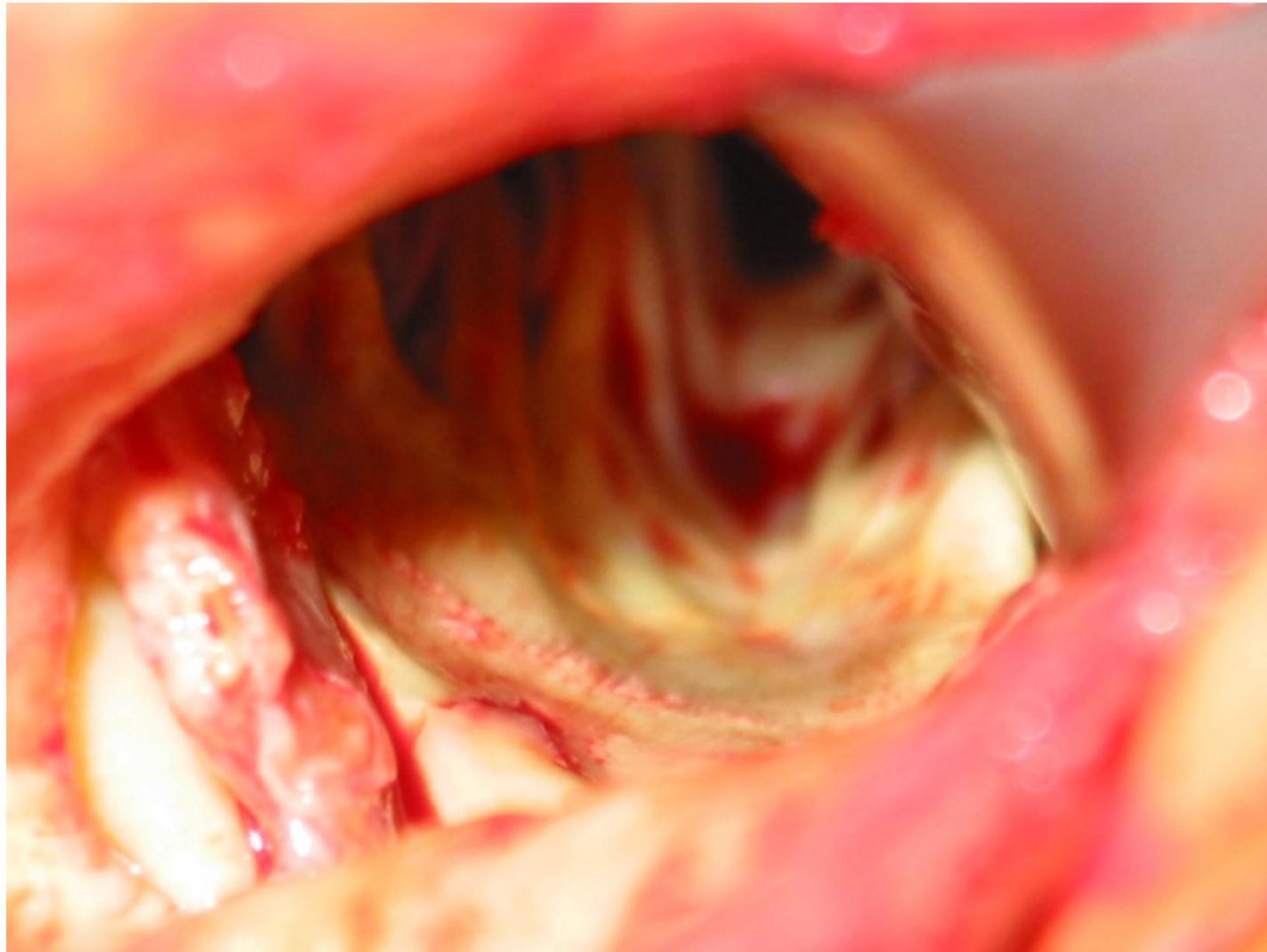


# Surgical AVR after TAVI





# Surgical AVR after TAVI



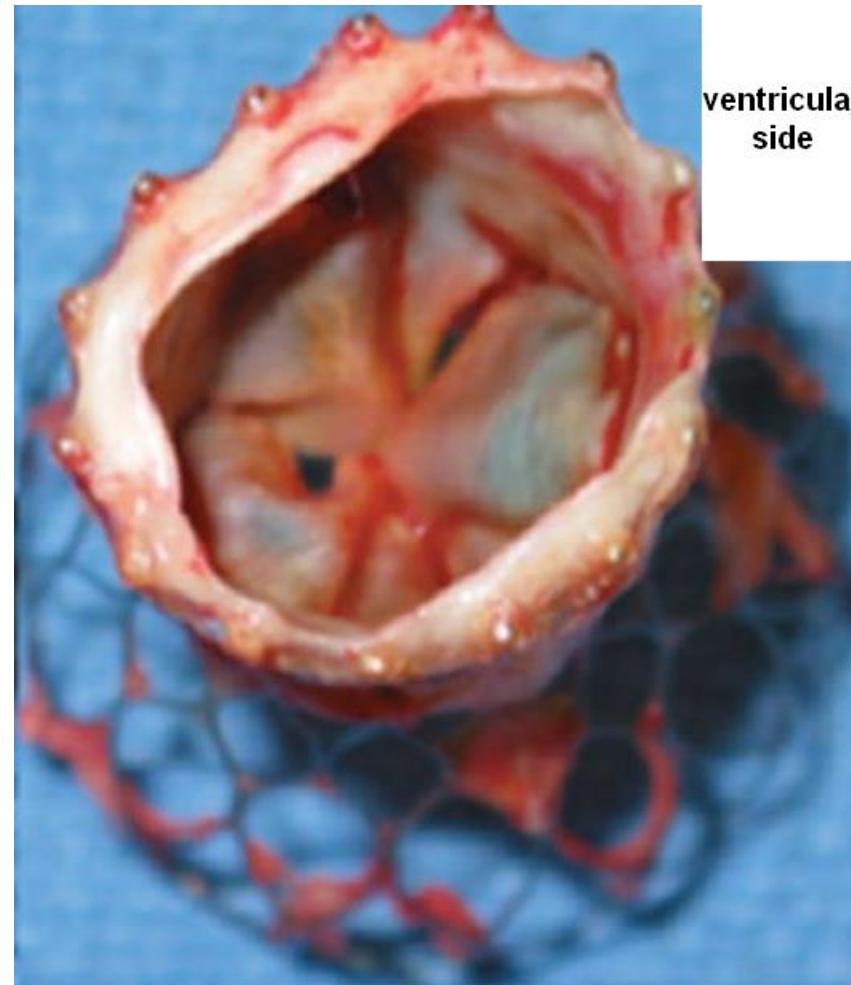


# Surgical AVR after TAVI





# Surgical AVR after TAVI





# Surgical AVR after TAVI

- ▶ Postoperative course marked by a pneumonia at day 8 which accounted for a delay in patient's discharge
- ▶ Regular follow-up as an outpatient revealed excellent outcome



# Discussion

- ▶ Only few cases of surgical aortic valve replacement after TAVI were reported in literature
  - ➡ Bail-out interventions during TAVI (Embolization, myocardial or aortic injury)
  - ➡ Symptomatic aortic regurgitation



# Transcatheter aortic valve replacement for aortic dysfunction



European Health  
doi:10.1093/eu...

# Endocarditis (n=34)

## Structural valve deterioration (n=13)

87 cases  
of THV  
failure

## THV thrombosis (n=15)

## Late THV embolization (n=18)

**te** **ter<sup>3</sup>**, **u** **rist** **, Samuel Mamane<sup>1</sup>,**  
**W** **ear** **l'Amour<sup>1</sup>**, **Luc Bilodeau<sup>1</sup>**, **Benoit de Varennes<sup>5</sup>**, **Kevyn Lachapelle<sup>5</sup>**,  
**ge<sup>3</sup>**, **Giuseppe Martucci<sup>1</sup>**, **Rony Vi** **azza<sup>1,3\*</sup>**

## THV compression during CP resuscitation (n=7)

Received 30 January 2014; revised 20 August 2014; accepted 28 August 2014; online publ

See page 1284 for the editorial comment on this article (doi:10.1002/jbm.b.31011)



# Transcat



European  
doi:10.1093/eurheartj/eht337

15 cases of  
THV  
thrombosis

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2 cases of  
periprocedural  
thrombosis

# dysfunction

Mean time to  
diagnosis : 9 months

SEARCH  
TAVI

Main symptom:  
dyspnea (n=12)

TTE : increasing  
gradient (n=12),  
thickened leaflet  
(n=8) and thrombus  
(n=5)

Systemic  
anticoagulation in 11  
patients with good  
result

Surgical AVR in 3  
patients with  
favorable outcome



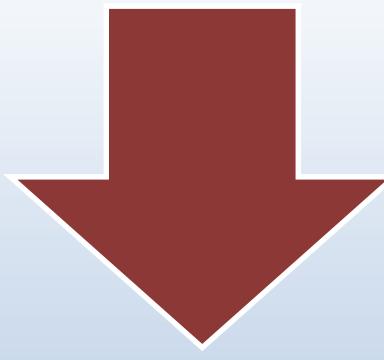
# Mechanisms of thrombosis

- ▶ Elderly population with a higher risk of coexisting prothrombotic conditions
- ▶ Metallic frame that could provide a nidus for thrombosis
- ▶ Incomplete expansion → leaflet folds
- ▶ Incomplete apposition → delay endothelialization

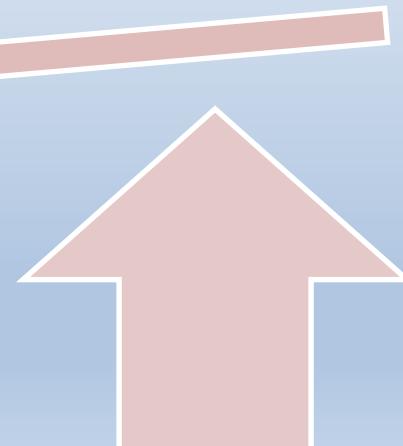


# Antiplatelet or anticoagulant therapy following TAVI

- ▶ Dual antiplatelet therapy (DAPT) is usually recommended.
- ▶ This is associated with a reduced risk of stroke and valve thrombosis (AHA/ACC guidelines).
- ▶ Shared decision making as every patient is different.



**Risk of  
stroke and  
valve  
thrombosis**



**Risk of  
bleeding**

grel) is  
ring TAVI  
gy  
timal  
oy  
een  
polic



# Conclusion

- ▶ Valve thrombosis following TAVI is a rare instance
- ▶ Valve thrombosis should be suspected in case of echocardiographic evidence of valve dysfunction (usually stenosis) even without visualization of thrombus
- ▶ Prolonged systemic anticoagulation was reported as an effective treatment of valve thrombosis after TAVI
- ▶ A surgical AVR after transcatheter valve thrombosis could be achieved with good result in patients with acceptable operative risk