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New insights into an old problem CHU Liège, APF

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Valve thrombosis after transcatheter aortic valve implantation

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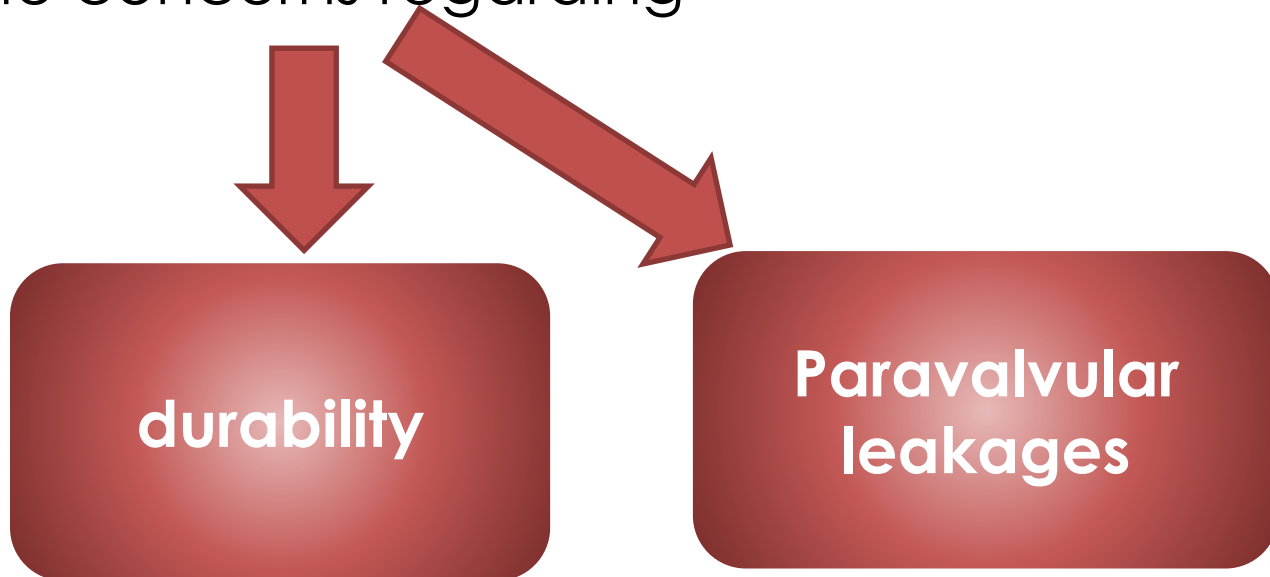


Disclosure of Interest

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 cm²
 - ▶ 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 cm²
- ▶ Mild paravalvular regurgitation

Case report

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



Aspirin



Clopidogrel  after 3 months



Follow up

- ▶ TTE @ 6 months
 - ▶ Mean gradient : 16 mmHg
 - ▶ EOA : 1.2 cm²
- ▶ TTE @ 12 months
 - ▶ Mean gradient : 42 mmHg
 - ▶ EOA : 0.69 cm²
- ▶ Patient symptomatic
- ▶ NYHA 2-3/4



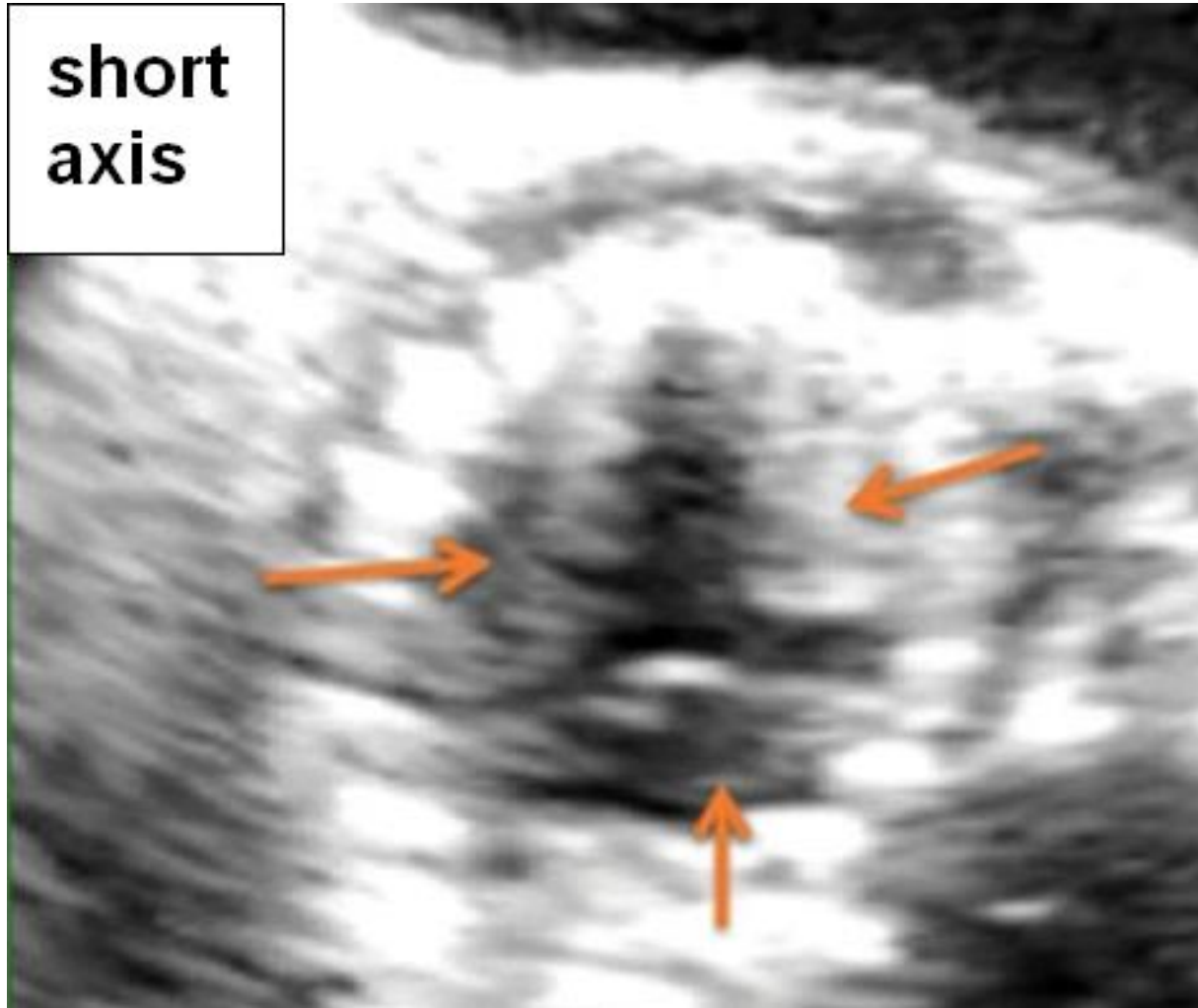
CT-scan





Transesophageal echocardiography

short
axis



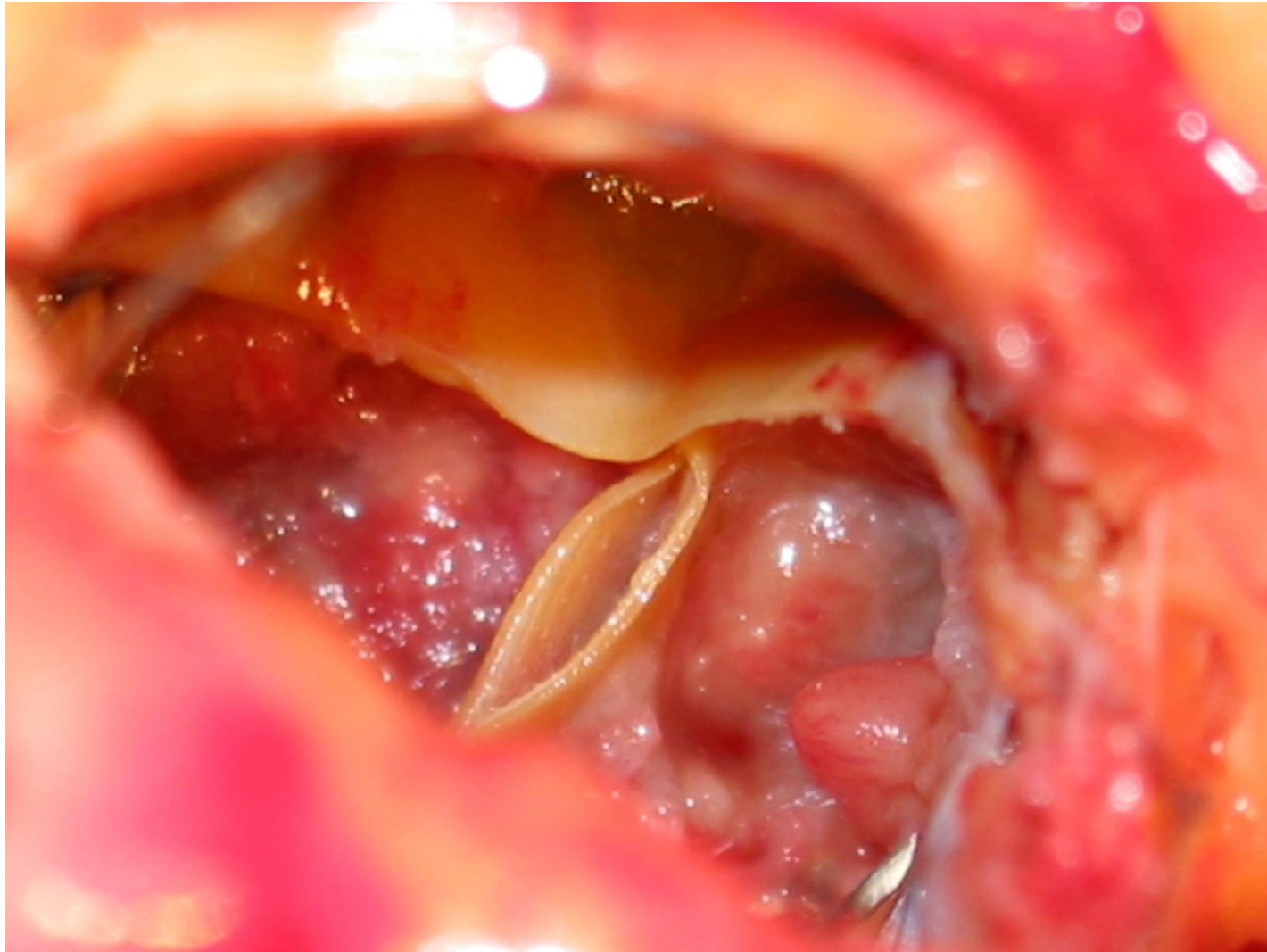


Surgical AVR after TAVI

- ▶ 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

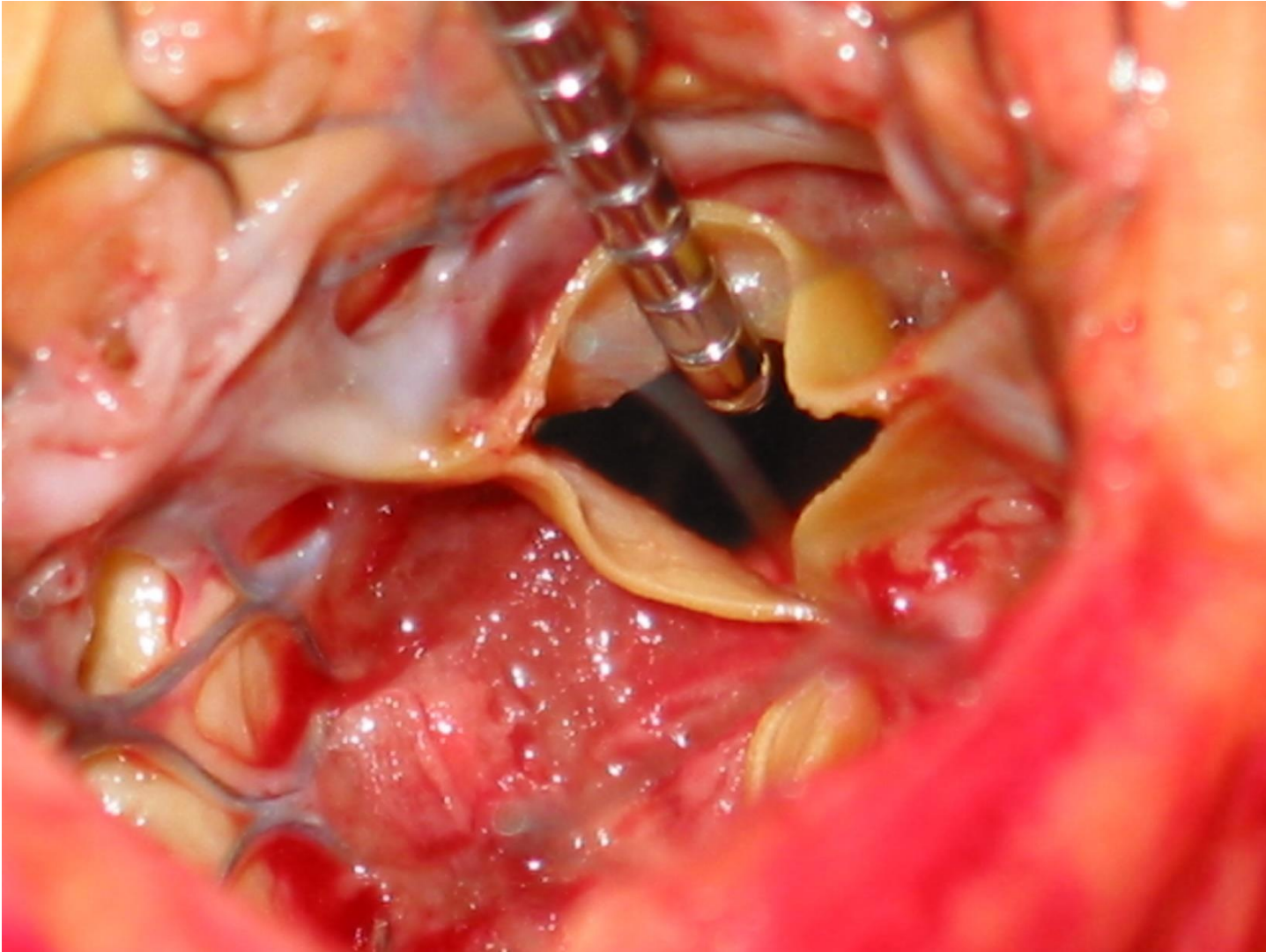


Surgical AVR after TAVI



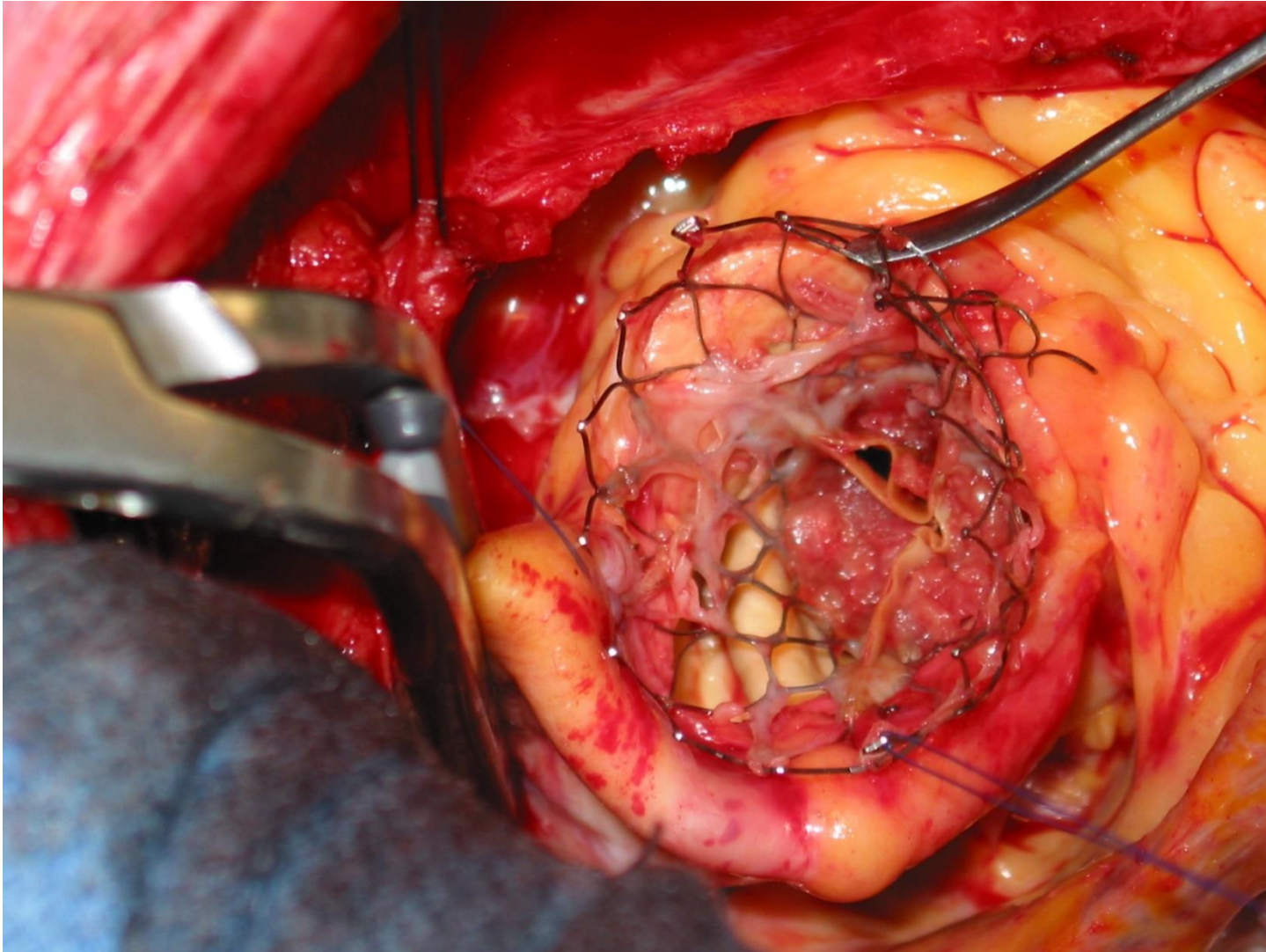


Surgical AVR after TAVI



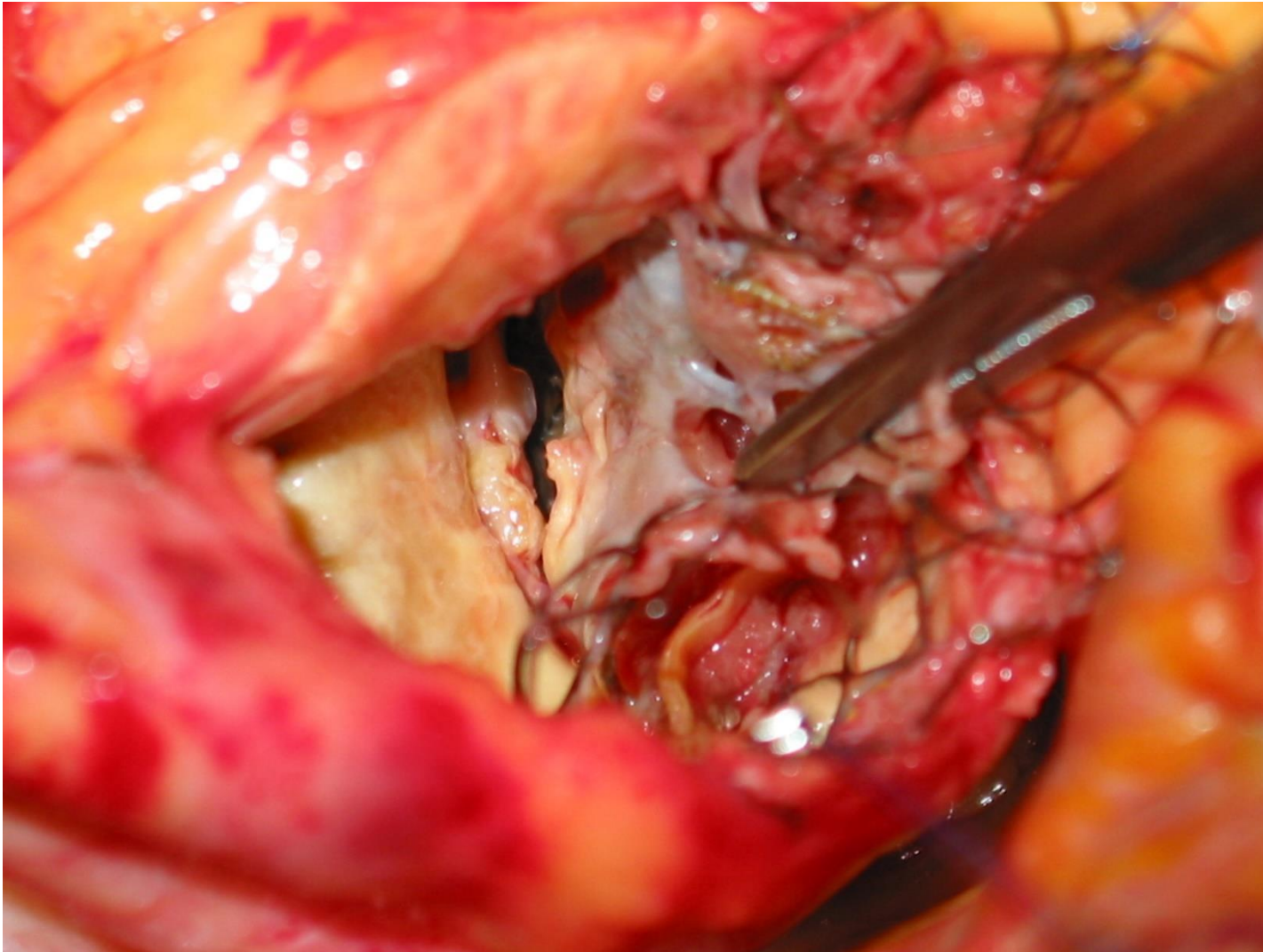


Surgical AVR after TAVI

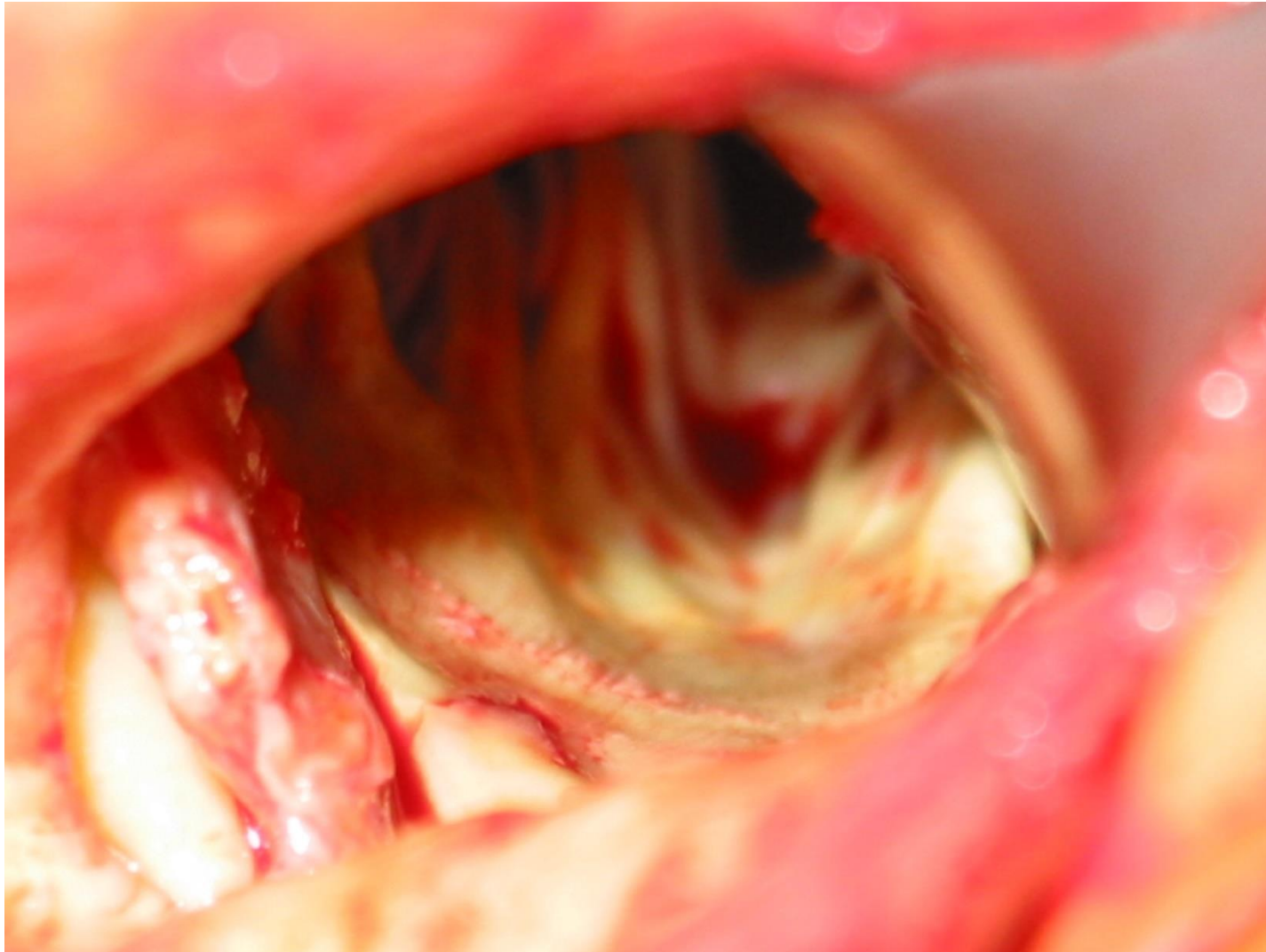




Surgical AVR after TAVI

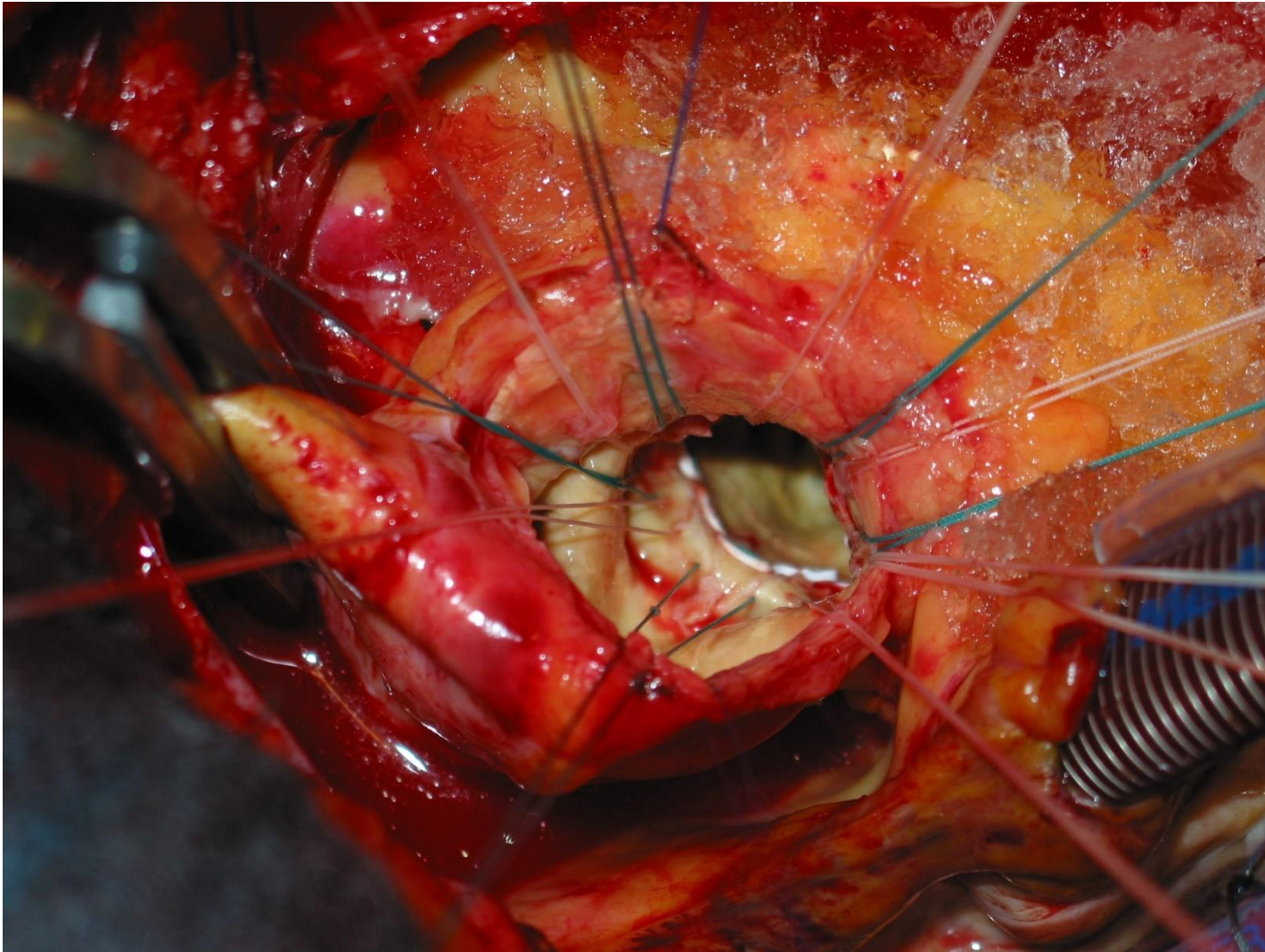


Surgical AVR after TAVI



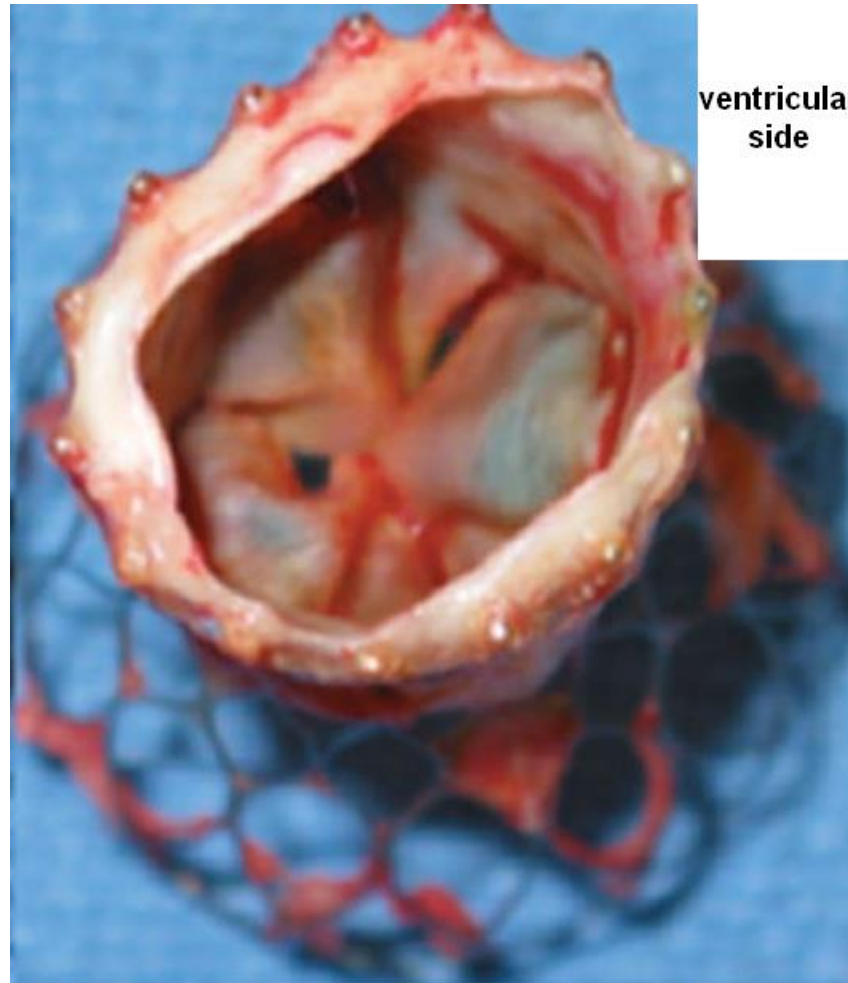


Surgical AVR after TAVI





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 Dysfunction

Endocarditis (n=34)

Structural valve deterioration (n=13)



European Heart Journal
doi:10.1093/eurh

ARCH
TAVI

87 cases
of THV
failure

THV thrombosis
(n=15)

Late THV
embolization (n=18)

THV compression
during CP
resuscitation (n=7)

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See page 1284 for the editorial comment on this article (doi:10.1093/eurh/ehu128)

Transcatheter

dysfunction

2 cases of periprocedural thrombosis

Mean time to diagnosis : 9 months



European
doi:10.1093/eurcon

SEARCH
TAVI

15 cases of THV thrombosis

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

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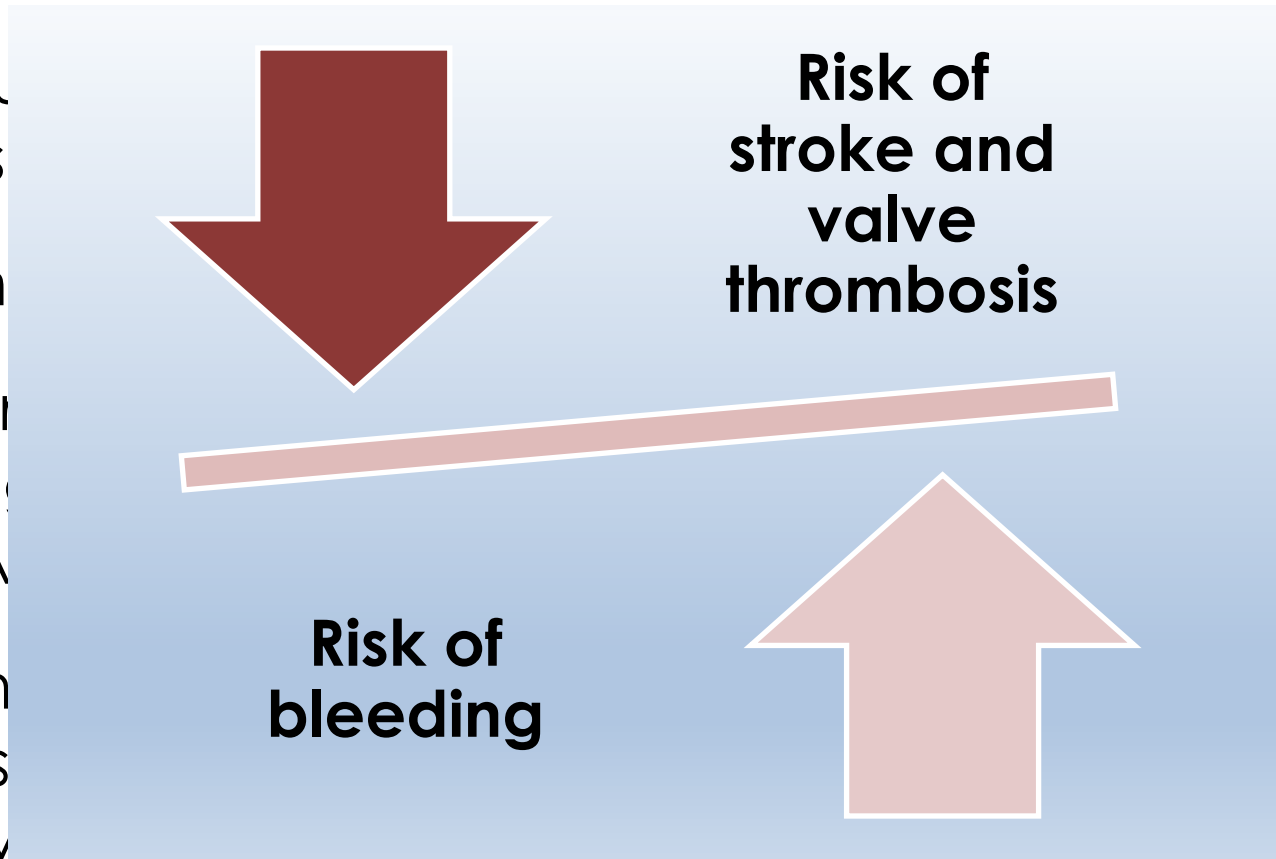
Mechanisms of thrombosis

- ▶ 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

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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