GRCI 2017
France

6 AU 8 DÉCEMBRE 2017
Novotel Paris Tour Eiffel

Passion Communication Education

TAVI tomorrow: Younger/Lower Risk P Environment

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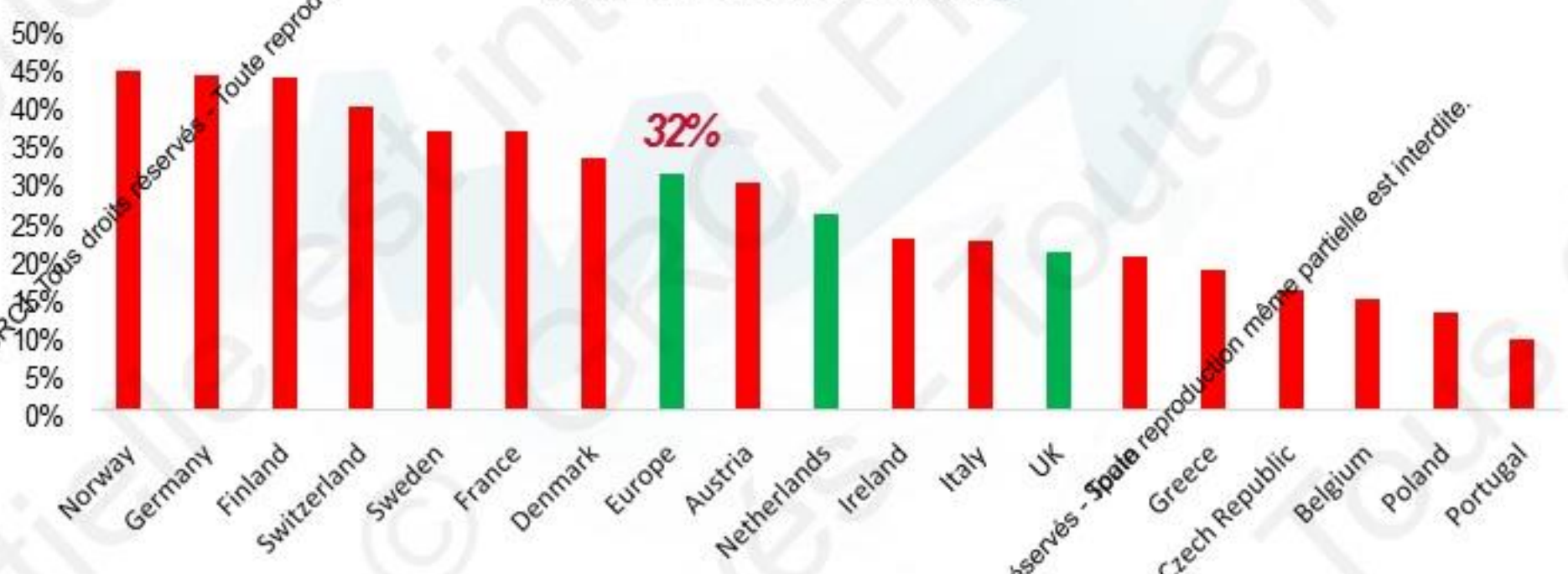
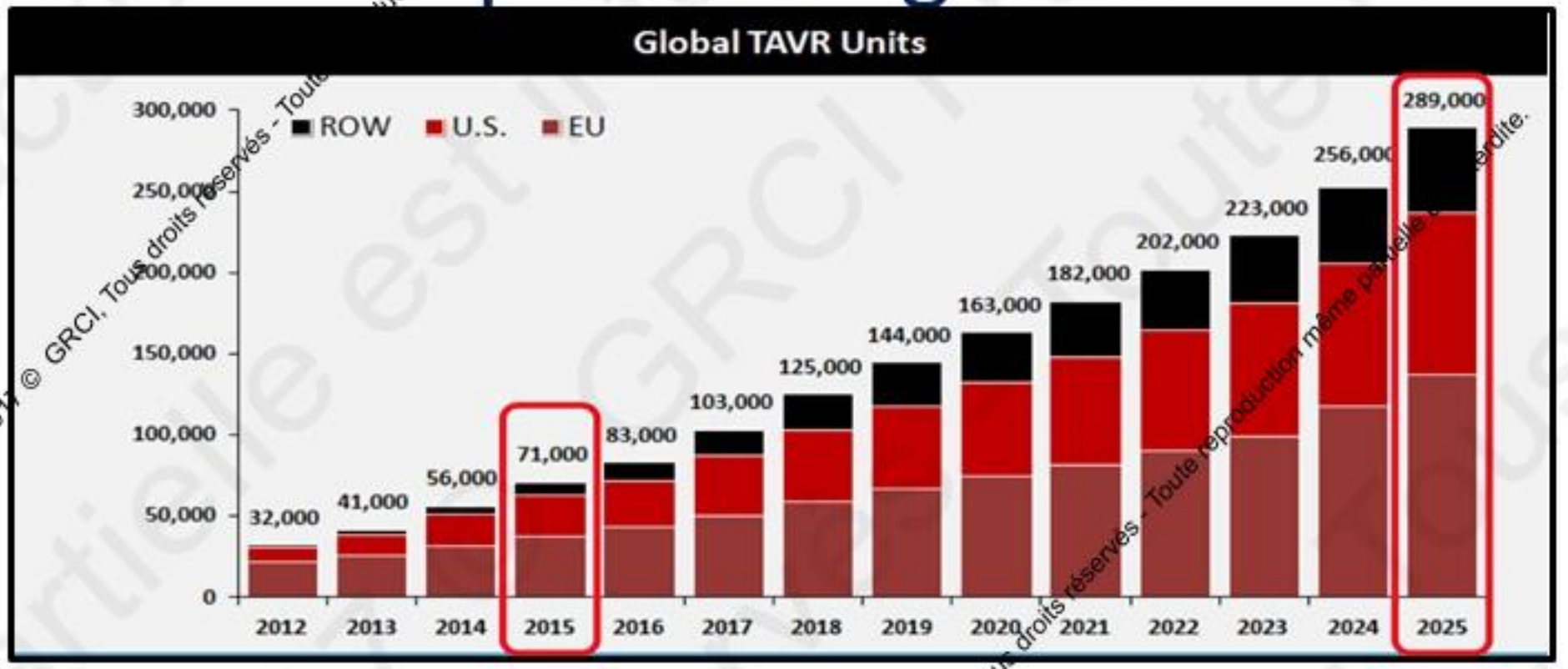
TAVI penetration continues to increase



*Includes all AVR: surgical isolated, combined with CABG and multiple valve procedures and TAVI.

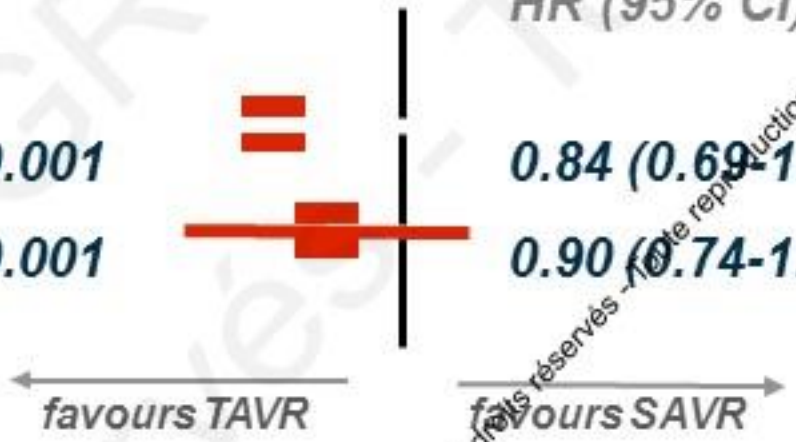
Estimated global TAVI market procedure growth



In the next 10 years, TAVI procedures are predicted to increase 4-fold

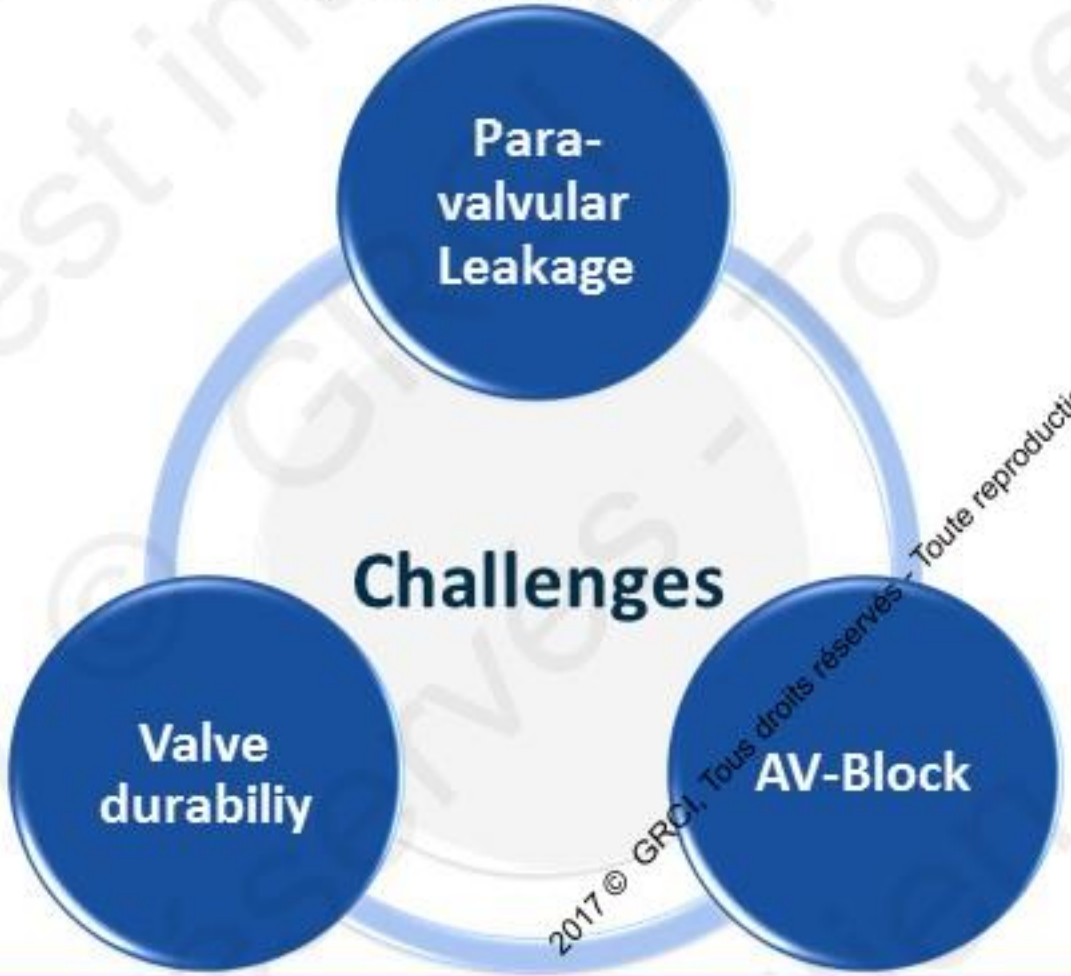
The effect of TAVI vs SAVR appears consistent across Risk Groups

Surgical risk	Trials	T^2	HR (95% CI)	$P_{interaction}$
High-risk	2	<0.001	0.84 (0.69-1.02)	0.610
Non high-risk	2	<0.001	0.90 (0.74-1.11)	



2017 © Siontis GM et al, Eur Heart J. 2016;37(47):3503-3512

Expansion of TAVR to *Young* Low Risk Patients



What is required to expand TAVI to moderate/low risk and younger patients?

- **Outcomes** need to be equal or better than SAVR
  - Mortality
    - Acute i.e. in-hospital/30-day
    - Long-term i.e. 1-2 years
  - Stroke
- **Patient preference** for TAVI
  - Morbidity, recovery time, patient experience
- **Valve durability** comparable to surgery
- **Affordable**
  - Cheaper and/or more cost-effective

Outcomes of TAVI versus SAVR in High-risk patients

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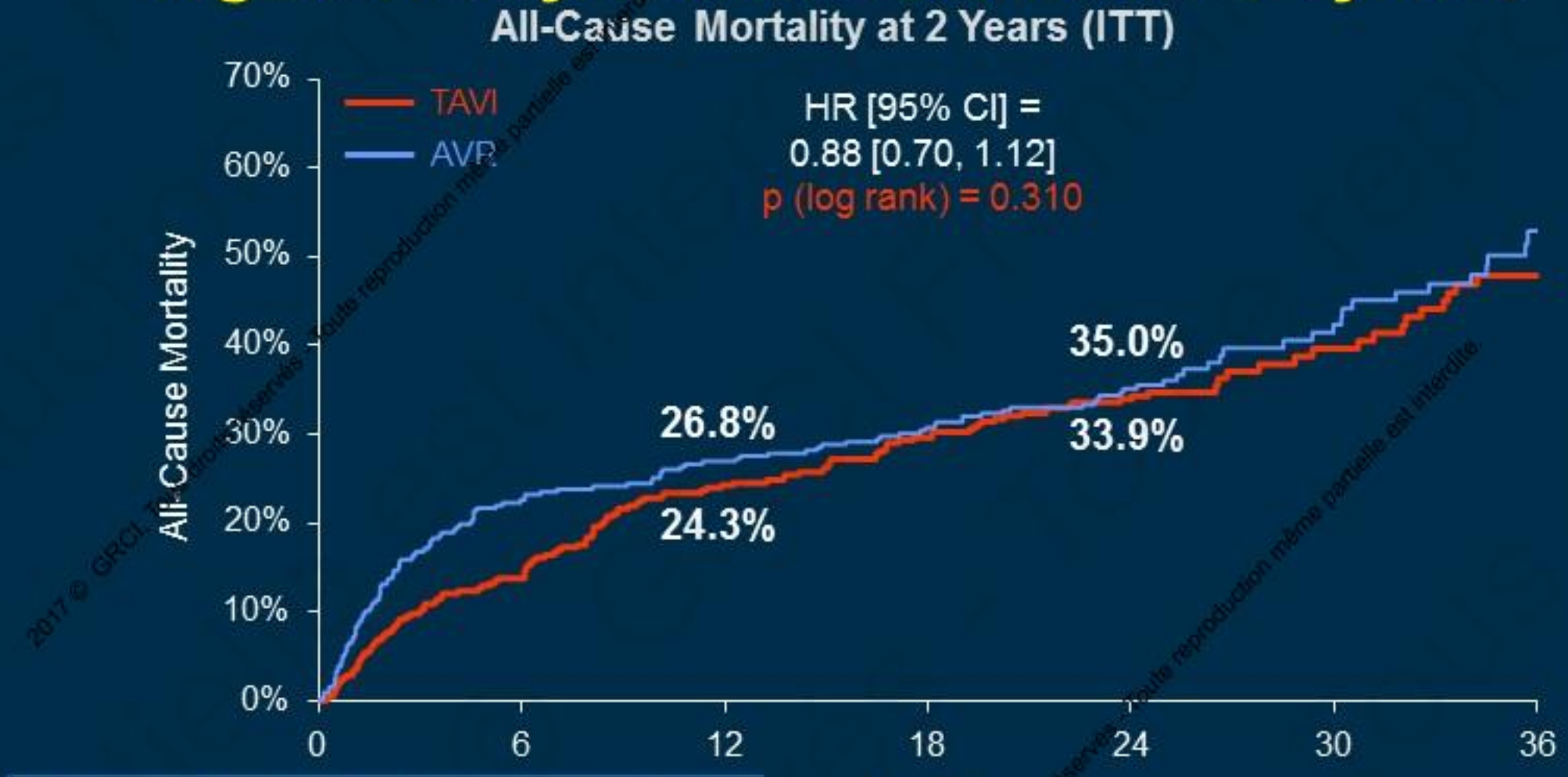
PARTNER A: Survival With TAVI Not Significantly Different to AVR at 2 years

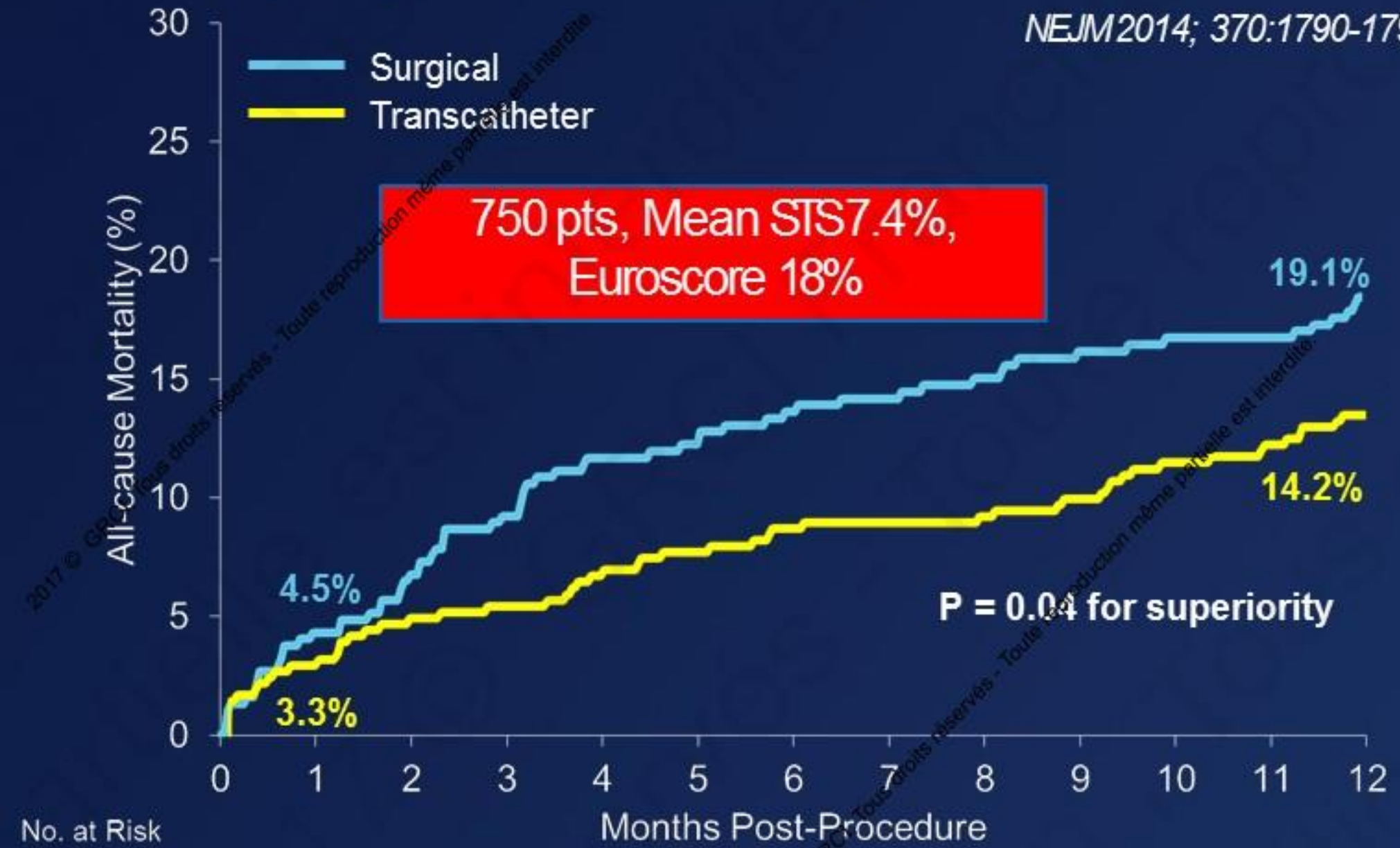


Mean STS 11.8%, Euroscore 29%

TAVI	348	298	260	234	172	70	31
AVR	351	252	236	217	165	65	32

Primary Endpoint: 1 Year All-cause Mortality

NEJM2014; 370:1790-1798



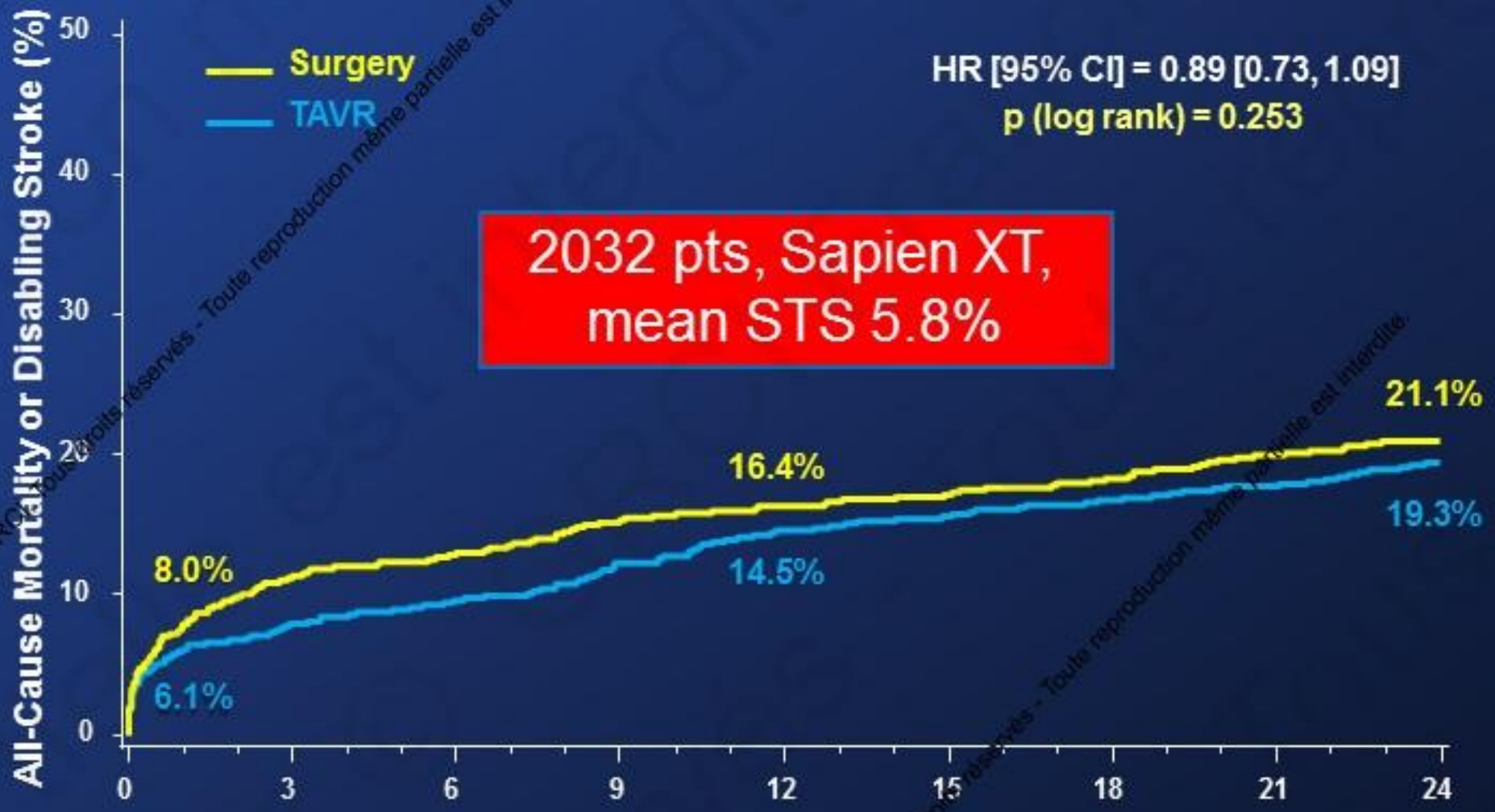
No. at Risk					
Surgical	357	341	297		274
Transcatheter	390	377	353		329

TAVI versus SAVR in Intermediate-risk patients

Primary Endpoint (ITT)

All-Cause Mortality or Disabling Stroke

THE PARTNER II TRIAL



Number at risk:

Surgery	1021	838	812	783	770	747	735	717	695
TAVR	1011	918	901	870	842	825	811	801	774

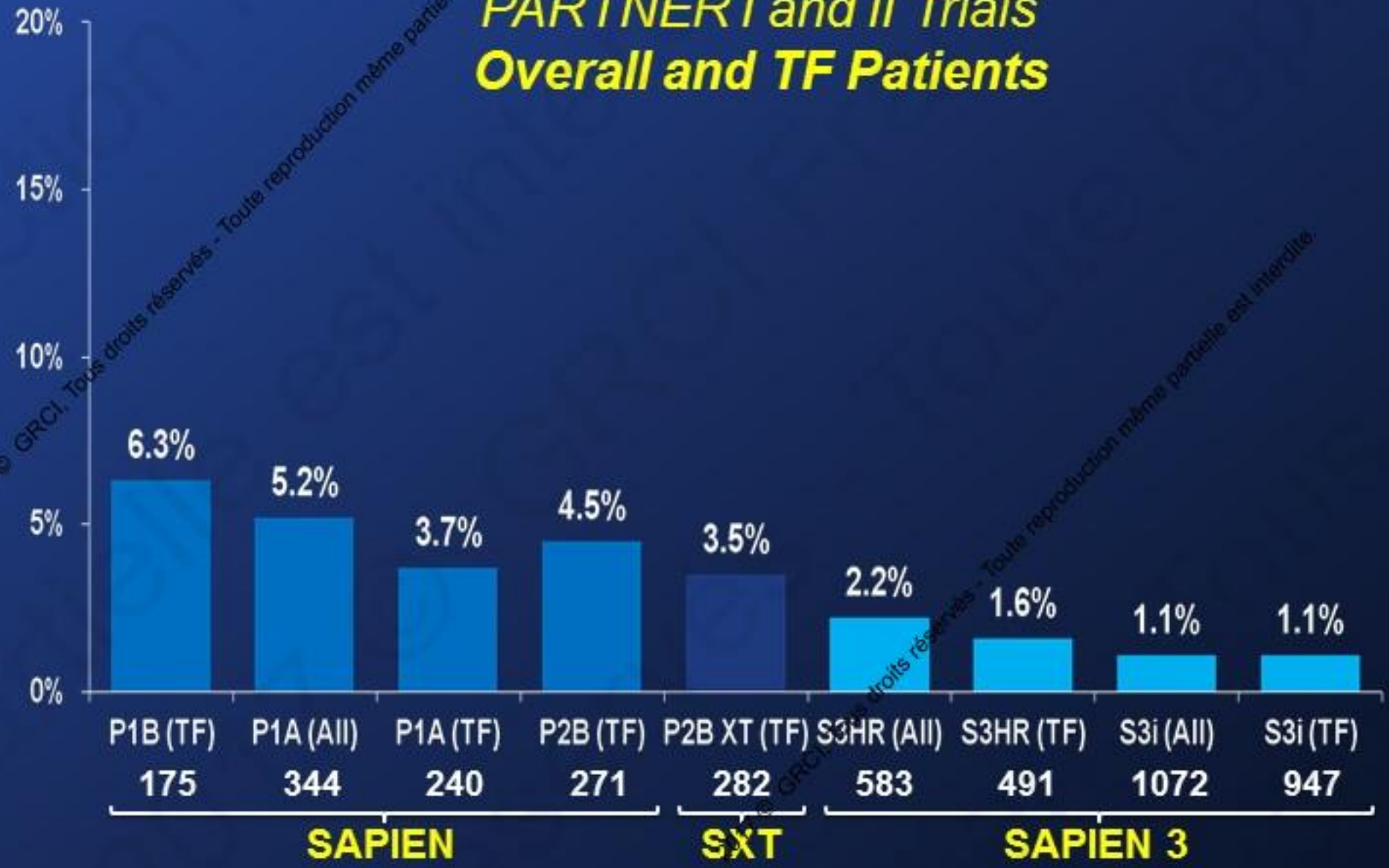
All-Cause Mortality at 30 Days

Edwards SAPIEN Valves (As Treated Patients)

THE PARTNER II TRIAL

PARTNER I and II Trials

Overall and TF Patients



TAVI versus SAVR in Low-risk

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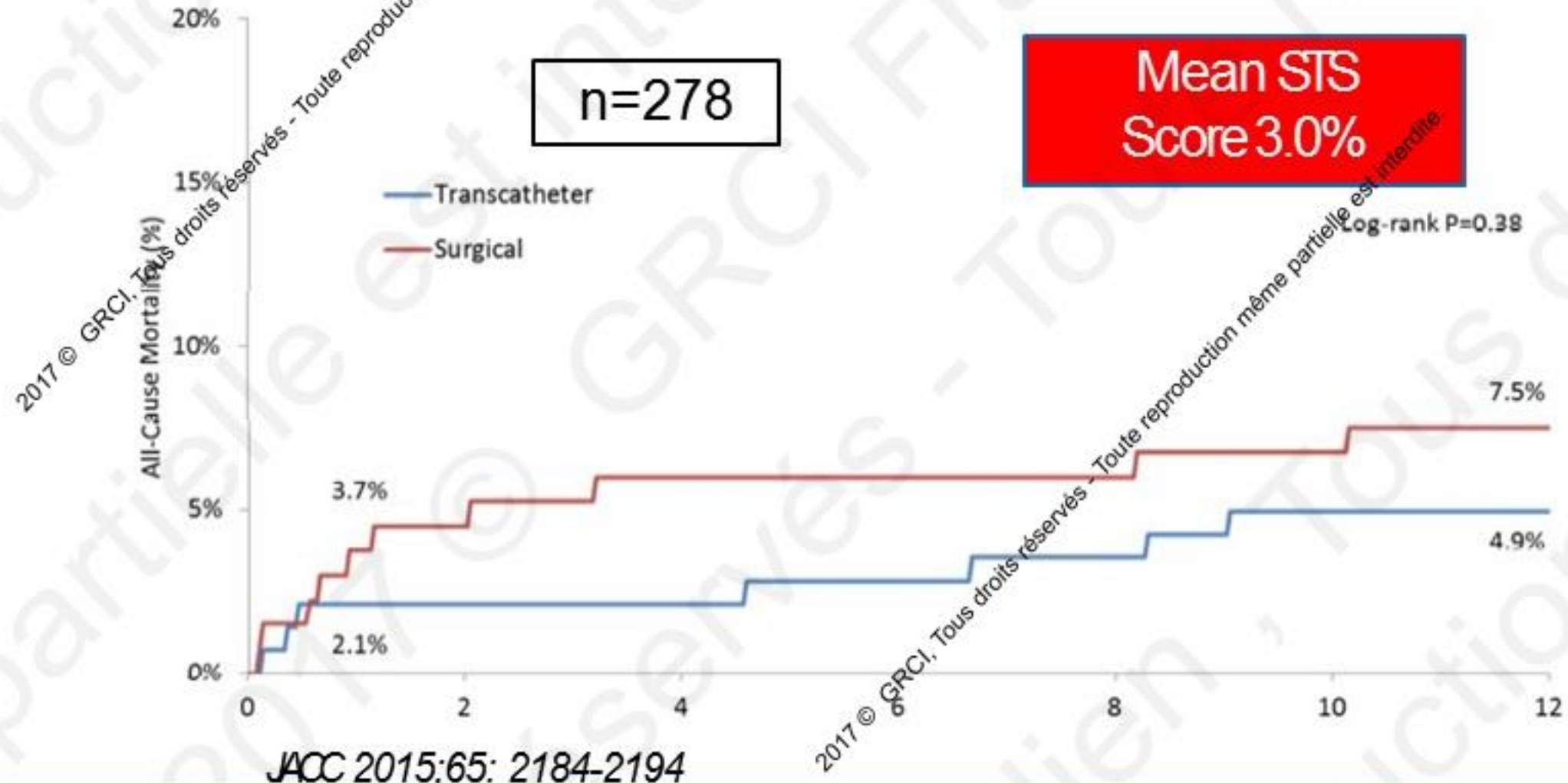
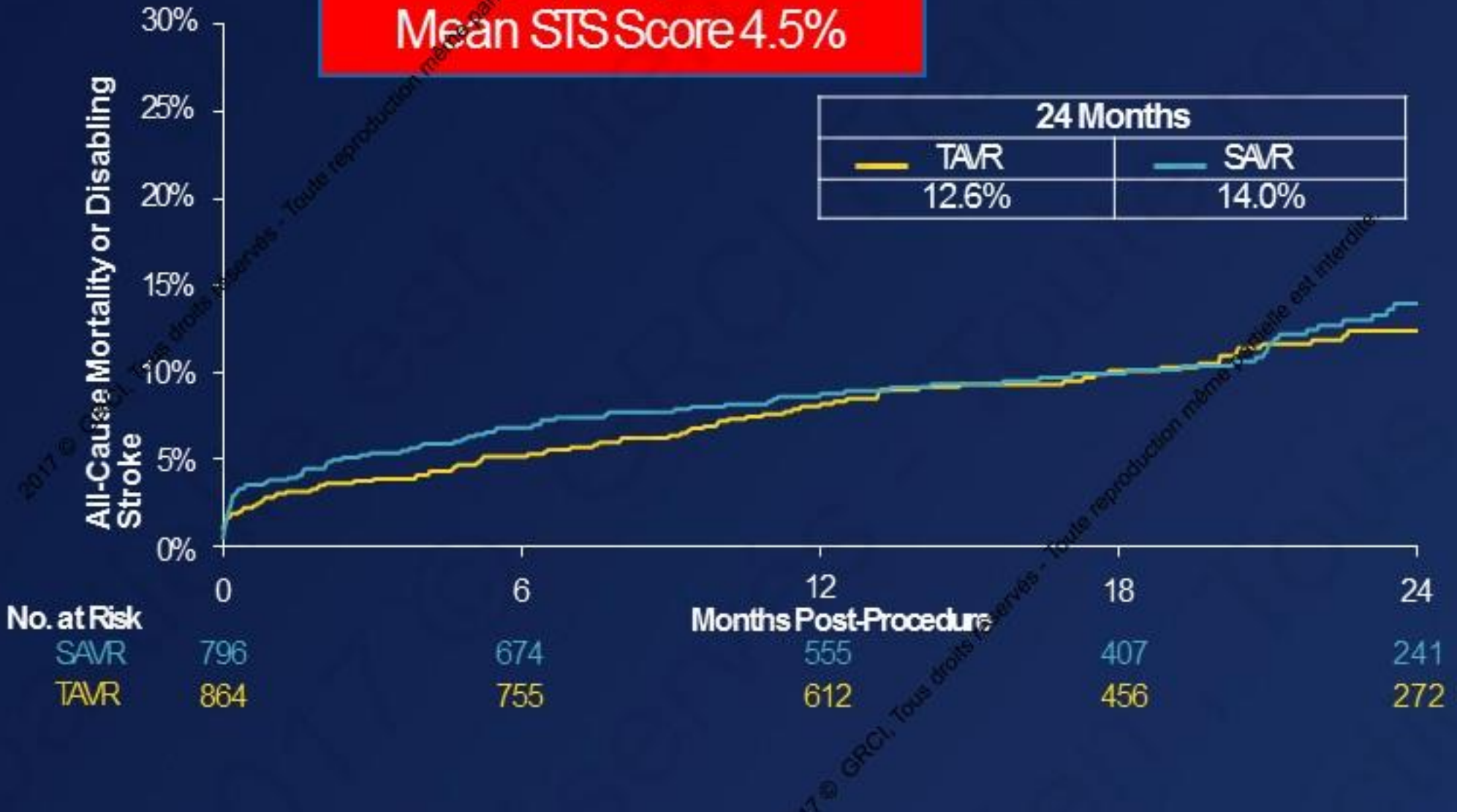
NOTION Trial – All-comers



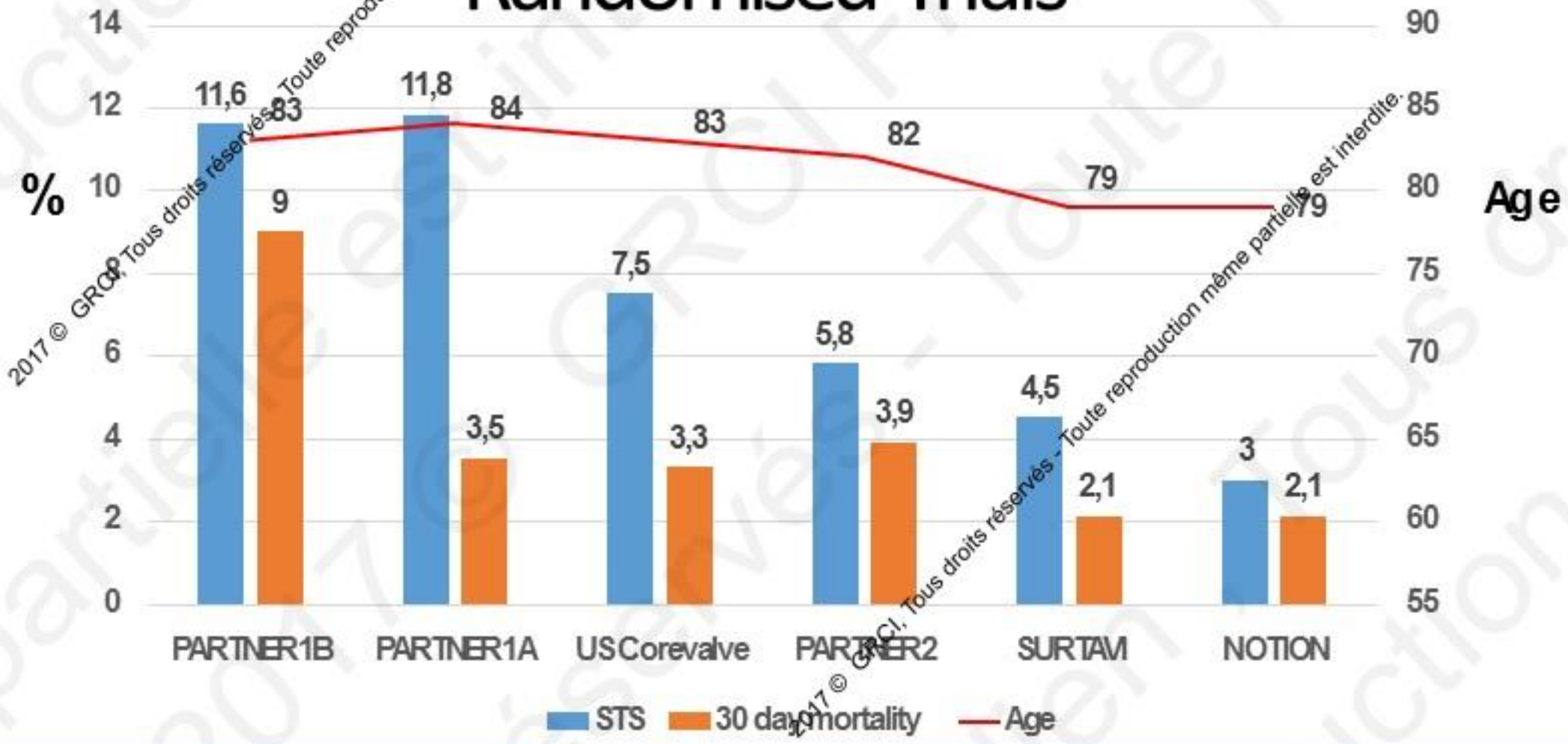
JACC 2015;65: 2184-2194

2 year All-Cause Mortality or Disabling Stroke

1,746 pts
Mean STS Score 4.5%



Evolving Risk Profile in TAVI Randomised Trials



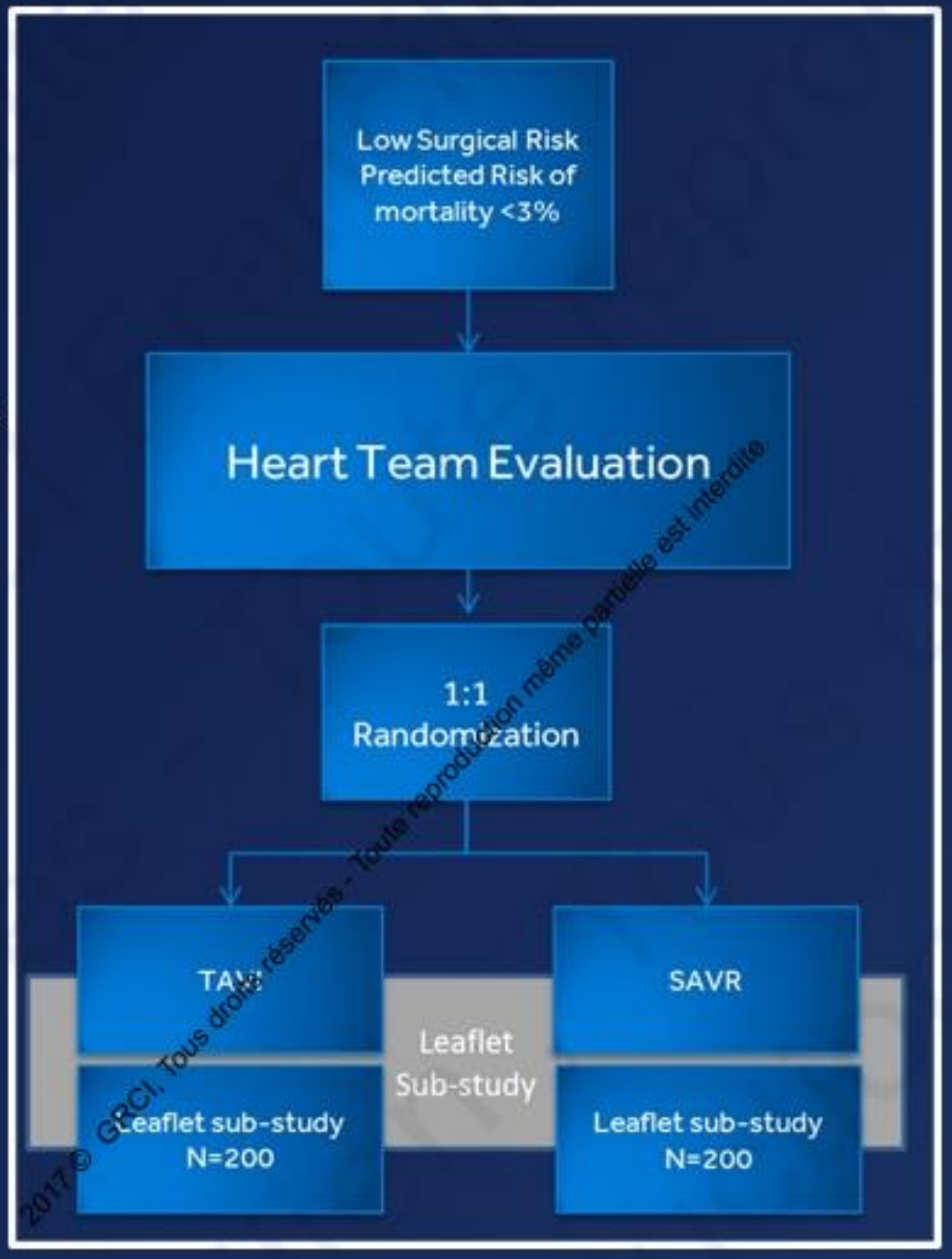
Comparative trials of CE TAVI Devices

Edwards Sapien 3	Medtronic Evolut R	Abbott Portico	Symetis Acurate Neo	Boston Lotus	JFM Direct Flow
	PORTICO IDE				
				SALUS (Halted)	
				REPRISE 3	
				REBOOT	
	SCOPE 1				
		SCOPE 2			

Medtronic TAVR in Low Risk Patients

Trial Design

- **Patient Population: Low Risk Cohort**
  - Determined by Heart Team to be low surgical risk
- **Primary Endpoint:**
  - Safety: Death, all stroke, life-threatening bleeding, major vascular complications, or AKI at 30 days
  - Efficacy: Death or major stroke at 2 years
  - (One year analysis for early FDA submission)
- **Sample Size: ~1200 Subjects**
- **Follow-up Evaluations:**
  - 30-days, 6-month , 18-month, and 1 Through 5 years
- **Number of Sites: Up to 80**



The PARTNER 3 Trial
Study Design

THE PARTNER 3 TRIAL

Symptomatic Severe Calcific Aortic Stenosis

Low Risk ASSESSMENT by Heart Team
(STS < 4%, TF only)

1:1 Randomization
(n=1228)

TF-TAVR (SAPIEN 3)	Surgery (Bioprosthetic Valve)
CT Imaging Sub-Study (n200)	CT Imaging Sub-Study (n=200)
Actigraphy/QoI Sub-Study (n=100)	Actigraphy/QoI Sub-Study (n=100)

PARTNER 3 Registries

- **Alternative Access (n=100) (TA/TAo/Subclavian)**
- **Bicuspid Valves (n=100)**
- **ViV (AV and MV) (n=100)**

PRIMARY ENDPOINT:
Composite of all-cause mortality, all strokes, or re-hospitalization at 1 year post-procedure

Follow-up: 30 days, 6 mos, 1 year and annually through 10 years

Patient Experience

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PARTNER II
Morbidity

THE PARTNER II TRIAL

Events (%)	30 Days			2 Years		
	TAVR (n = 1011)	Surgery (n = 1021)	p-value*	TAVR (n = 1011)	Surgery (n = 1021)	p-value*
Rehospitalization	6.5	6.5	0.99	19.6	17.3	0.22
MI	1.2	1.9	0.22	3.6	4.1	0.56
Major Vascular Complications	7.9	5.0	0.008	8.6	5.5	0.006
Life-Threatening / Disabling Bleeding	10.4	43.4	<0.001	17.3	47.0	<0.001
AKI (Stage III)	1.3	3.1	0.006	3.8	6.2	0.02
New Atrial Fibrillation	9.1	26.4	<0.001	11.3	27.3	<0.001
New Permanent Pacemaker	8.5	6.9	0.17	11.8	10.3	0.29
Re-intervention	0.4	0.0	0.05	1.4	0.6	0.09
Endocarditis	0.0	0.0	NA	1.2	0.7	0.22

*Event rates are KM estimates, p-values are point in time

PARTNER II: Hospital stay

THE PARTNER II TRIAL

Characteristic	TAVR (n = 994)	Surgery (n = 944)	p-value
Anesthesia Time (min)	207	333	< 0.001
Procedure Time (min)	103	237	< 0.001
Fluoroscopy Time (min)	20	NA	NA
Aortic Cross-clamp Time (min)	NA	75	NA
Total CPB Time (min)	NA	104	NA
Median ICU Stay (days)	2.0 [2, 4]	4.0 [3, 6]	< 0.001
Median Total Length of Stay (days)	6.0 [4, 9]	9.0 [8, 14]	< 0.001

Median [IQR]

Patient experience

TAVI

- 90-95% percutaneous
- 85-90% LA
- Lower morbidity
- No ICU stay
- Median stay 2-4 days
- Recovery 0-2 weeks
- More pacemakers and vascular complications

SAVR

- Sternotomy
- GA; Ventilation; CPB
- Higher morbidity
- 1-2 days ICU
- Median stay 5-10 days
- Recovery 2-3 months

Some Remaining Questions

of particular relevance in younger, lower-risk patients!

- Thrombosis/ Durability/ Leaflet thickening
- Stroke
- Permanent Pacing
- Future coronary access
- Bicuspid valves

- (PVL)
- (Endocarditis)
- (Cost)

Long-term outcome and valve durability

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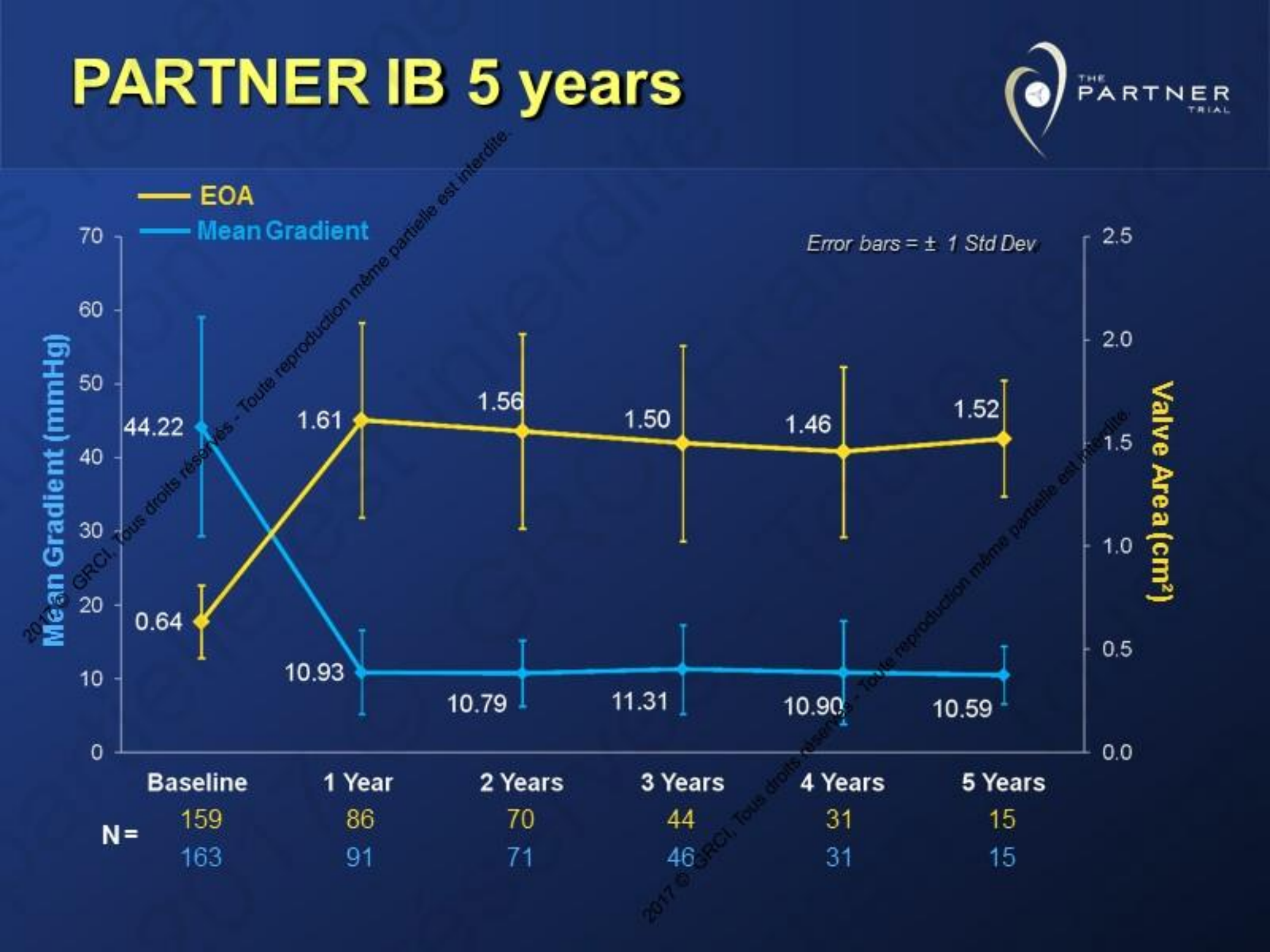
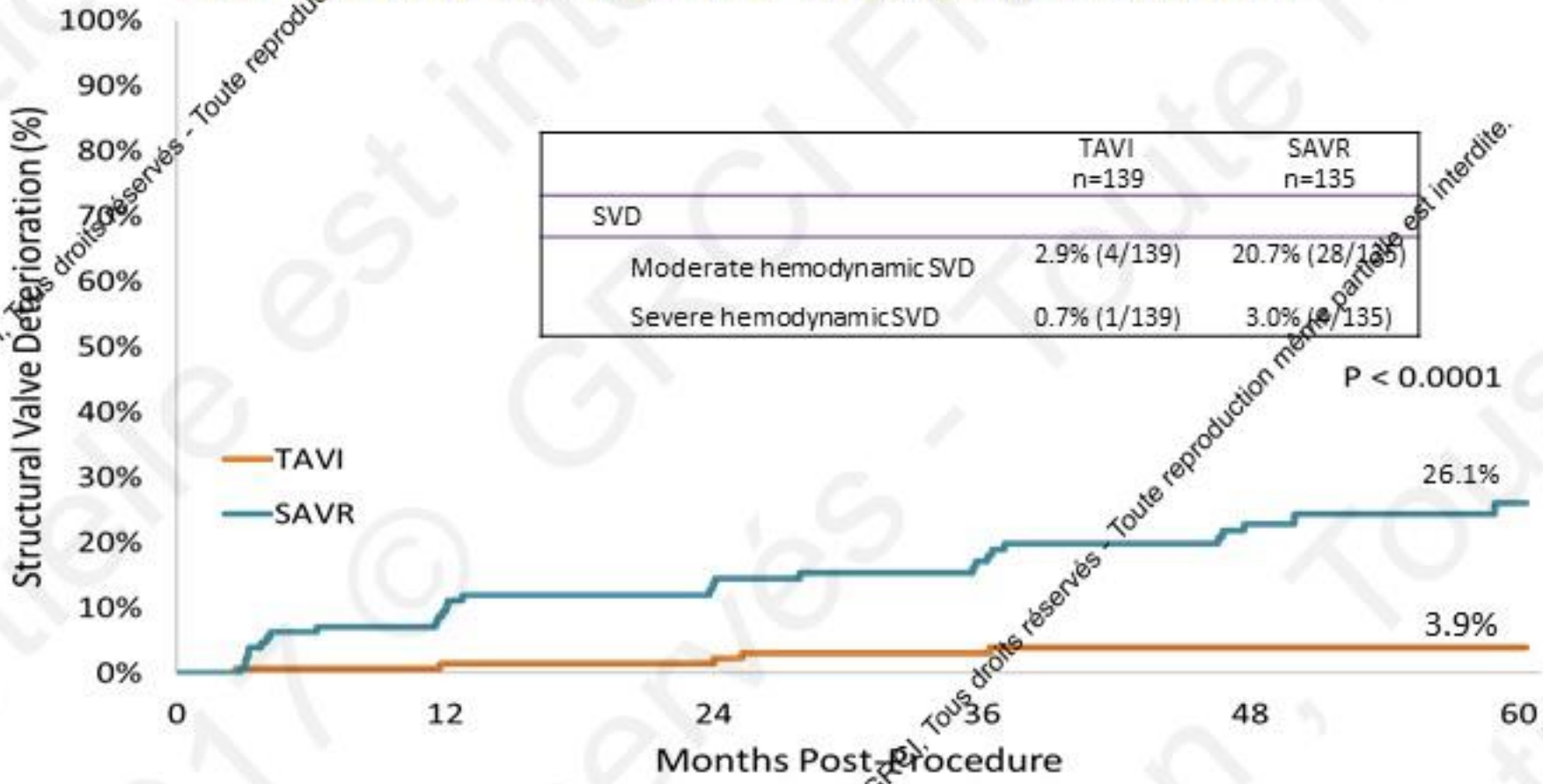
PARTNER IB 5 years



The NOTION Trial
structural valve deterioration

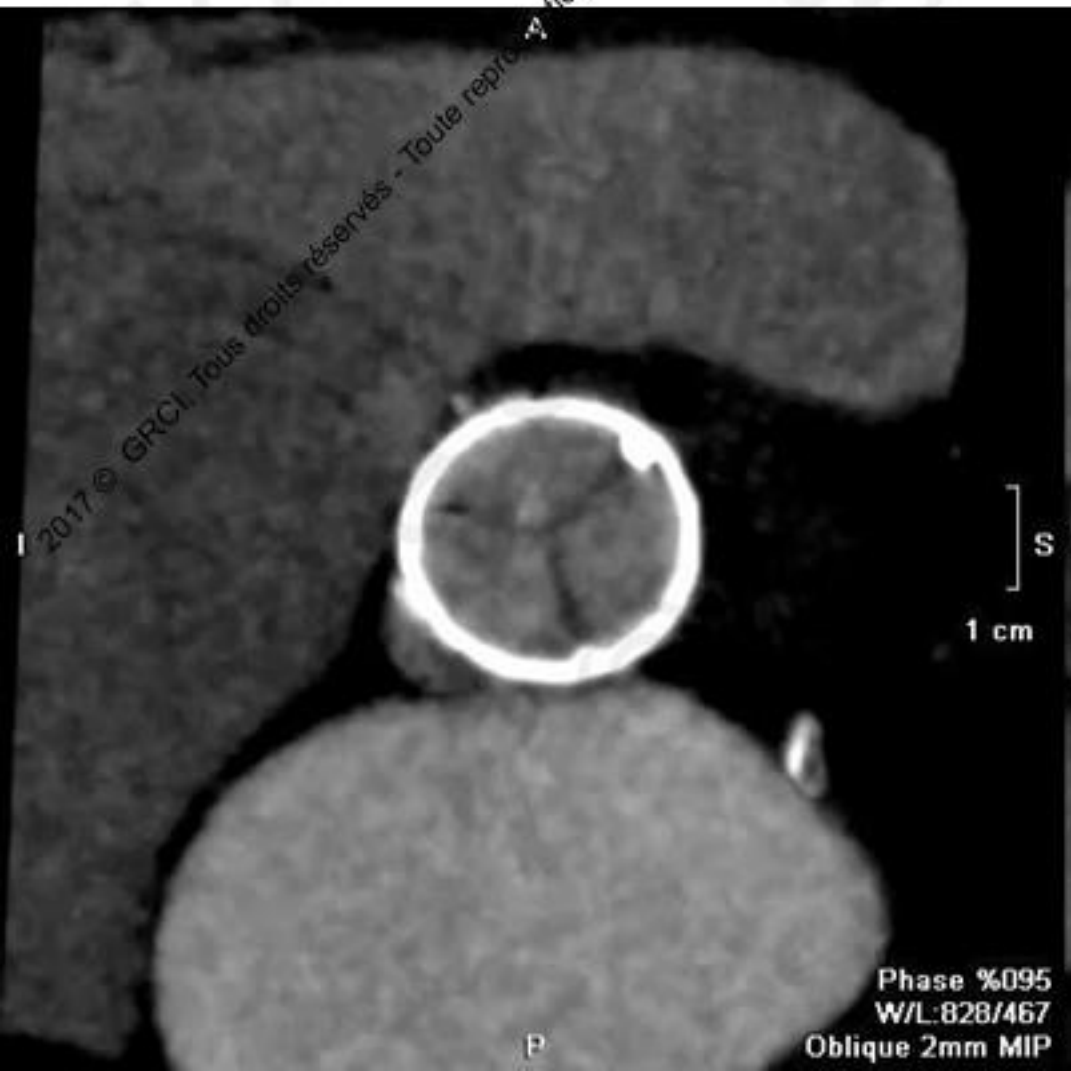
	TAVI n=139	SAVR n=135
SVD		
Moderate hemodynamic SVD	2.9% (4/139)	20.7% (28/135)
Severe hemodynamic SVD	0.7% (1/139)	3.0% (4/135)



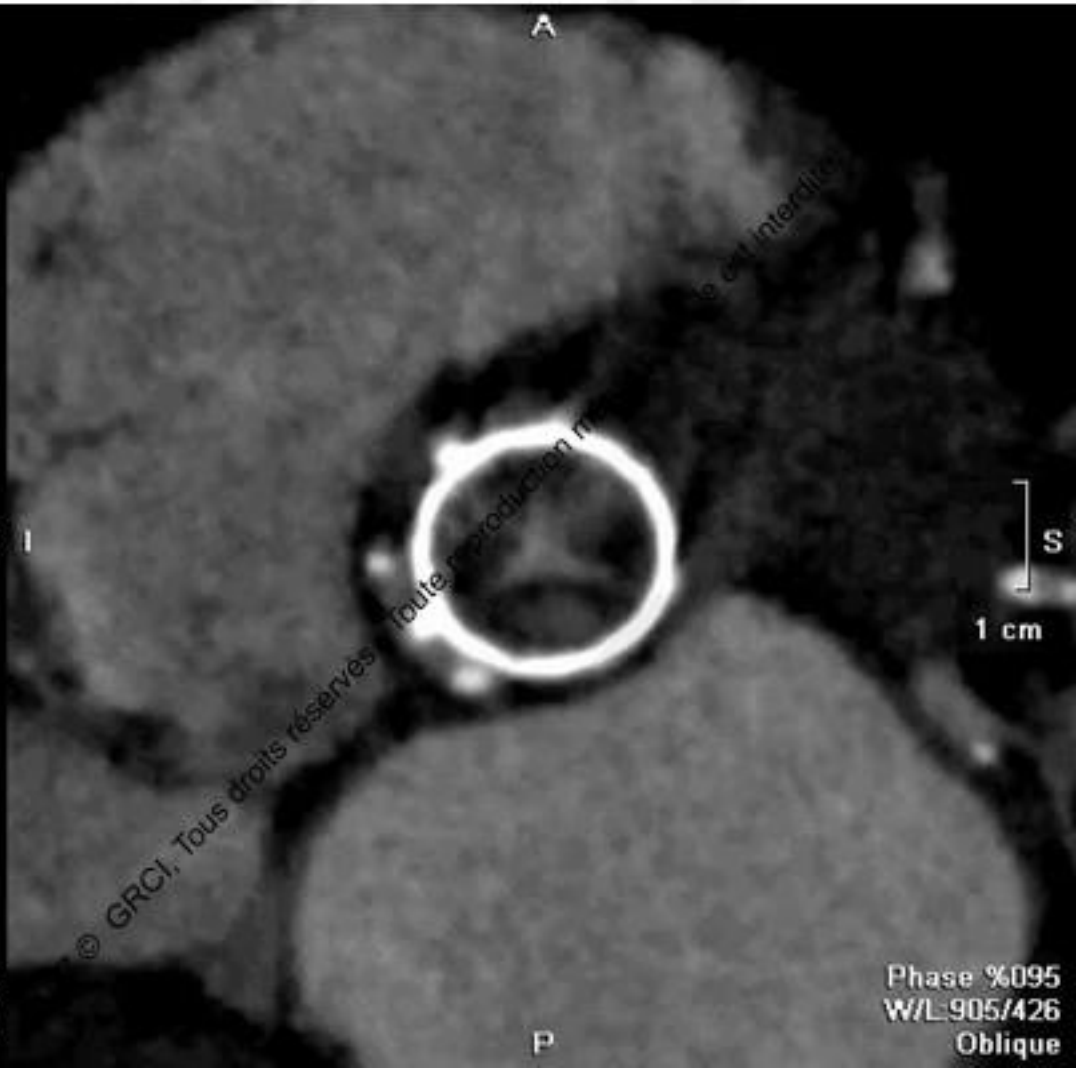
Sondergaard et al. EuroPCR 2017

Subclinical leaflet thrombosis

Normal leaflet motion



Reduced leaflet motion



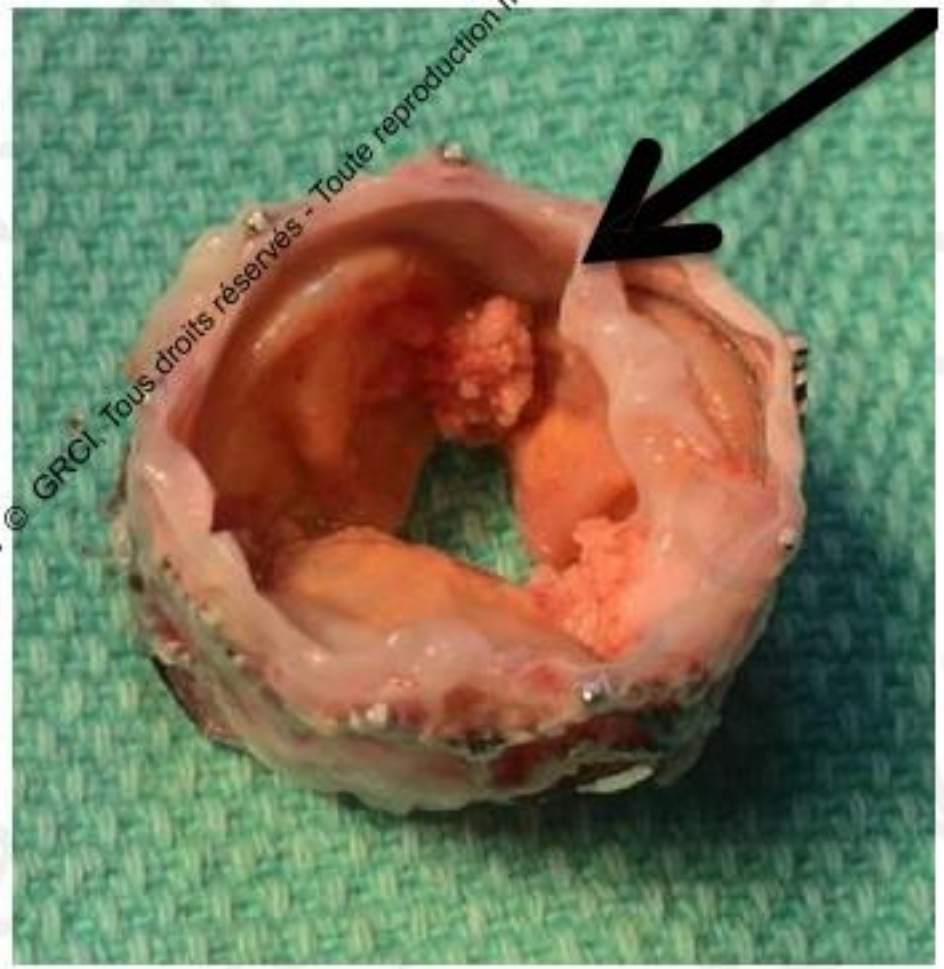
Leaflet thrombosis

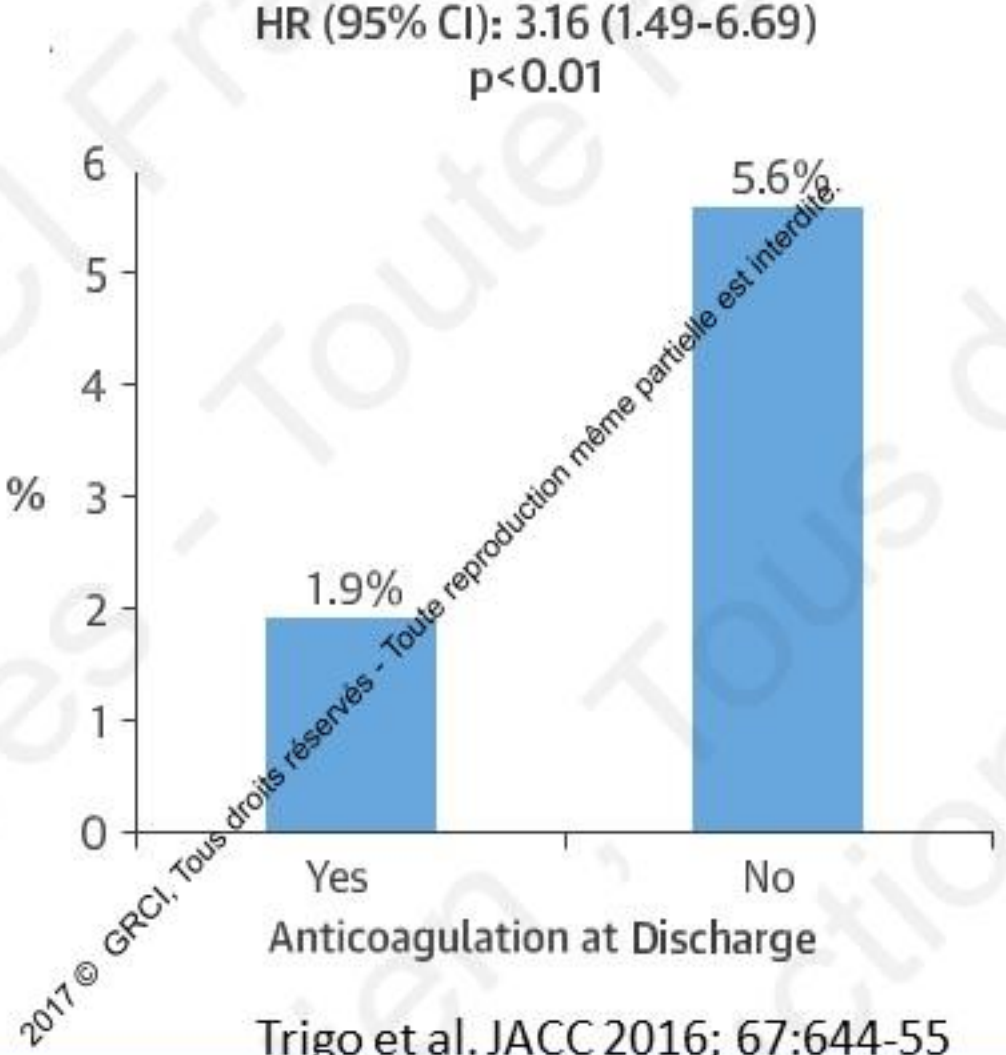
Clinical outcomes

	Normal leaflet motion (N=784)		Reduced leaflet motion (N=106)			
	n/N (%)	Rate per 100 person-years	n/N (%)	Rate per 100 person-years	Hazard ratio (95% CI)	p-value
Non-procedural events						
Death	34/784 (4.3%)	2.91	4/106 (3.8%)	2.66	0.96 (0.34-2.72)	0.94
Myocardial infarction	4/784 (0.5%)	0.34	1/106 (0.9%)	0.67	1.91 (0.21-17.08)	0.56
Strokes/TIAs	20/784 (2.6%)	1.75	8/106 (7.6%)	5.71	3.30 (1.45-7.50)	0.004
All strokes*	15/784 (1.9%)	1.31	4/106 (3.8%)	2.75	2.14 (0.71-6.44)	0.18
Ischemic strokes	14/784 (1.8%)	1.22	4/106 (3.8%)	2.75	2.29 (0.75-6.97)	0.14
TIAs	7/784 (0.9%)	0.60	5/106 (4.7%)	3.48	5.89 (1.87-18.6)	0.002

Chakravarty, Sondergaard et al. Lancet 2017 March

Structural valve deterioration

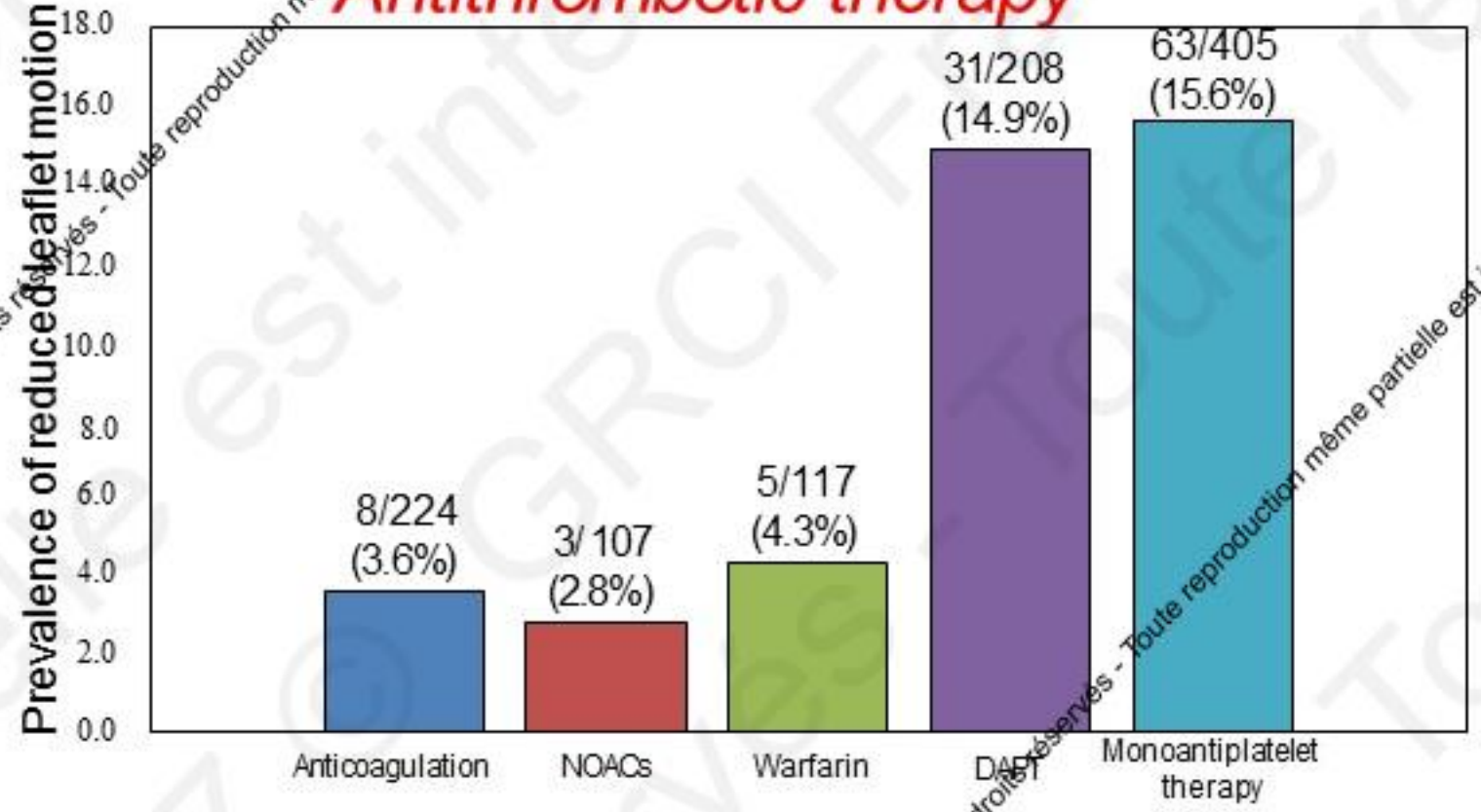




Trigo et al. JACC 2016; 67:644-55

Reduced leaflet motion

Antithrombotic therapy

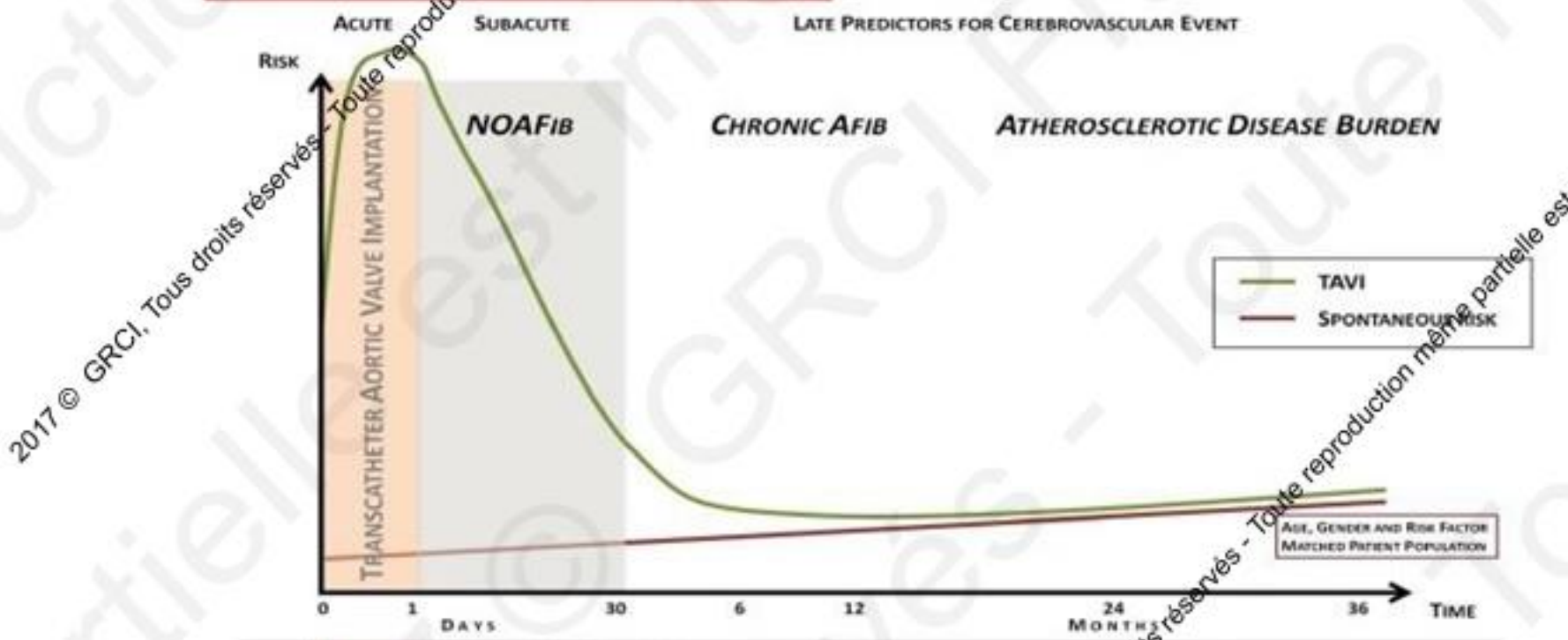


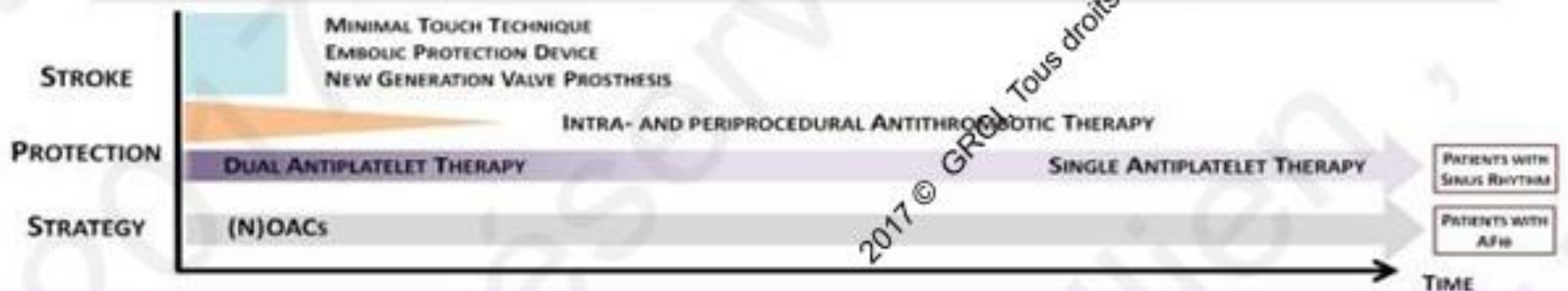
Anticoagulation vs. DAPT: p<0.0001
Anticoagulation vs. monoantiplatelet therapy: p<0.0001

Chakravarty, Sondergaard et al. Lancet 2017 March

TAVI and Cerebral Events

Early 'High Peak' Hazard



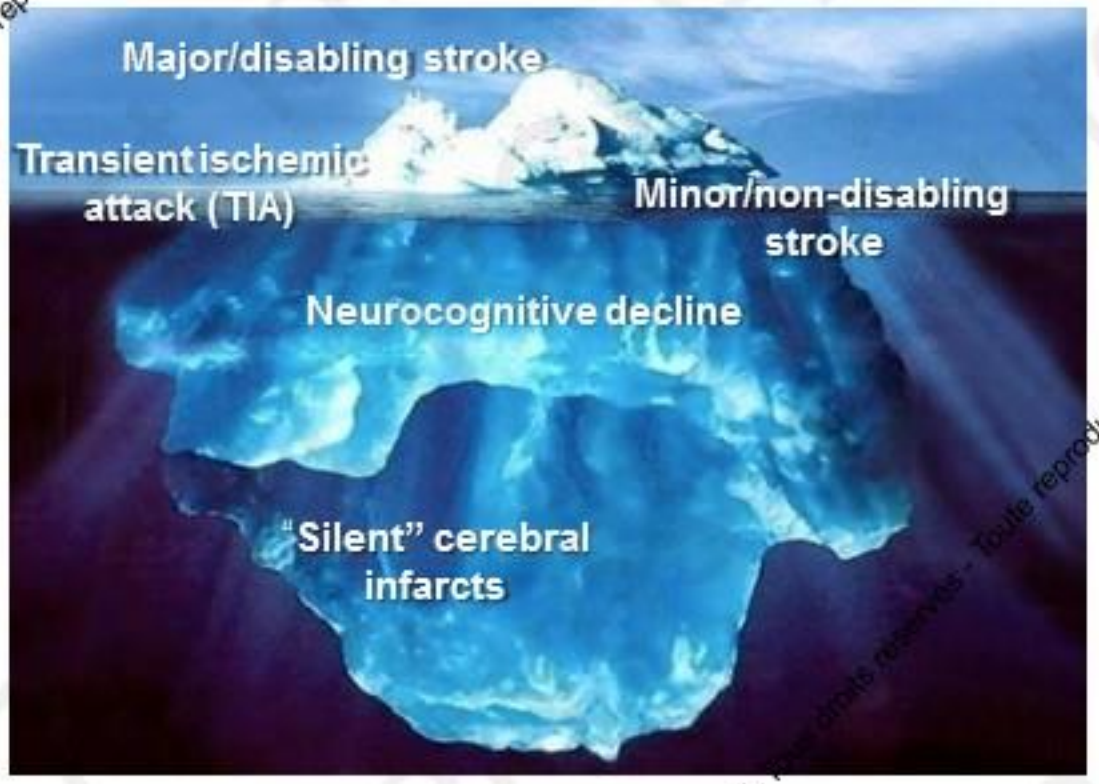


Most cerebral damage in TAVI is unseen

Clinically apparent

Subtle and often undetected

Clinically unrecognized



Clinical exam, NIHSS, mRS

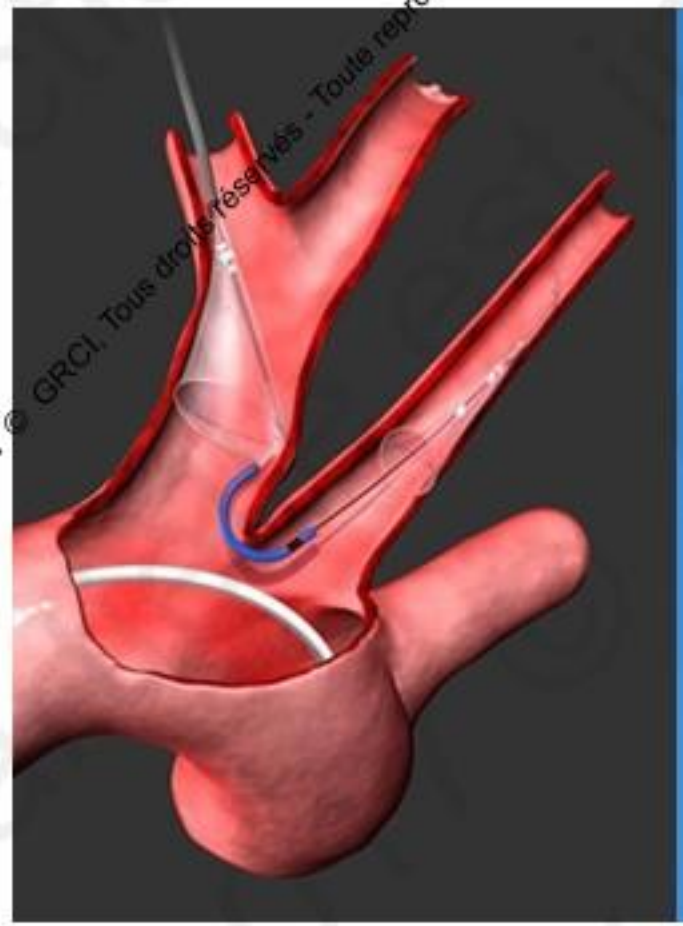
MMSE, MoCA

Neurocognitive test batteries

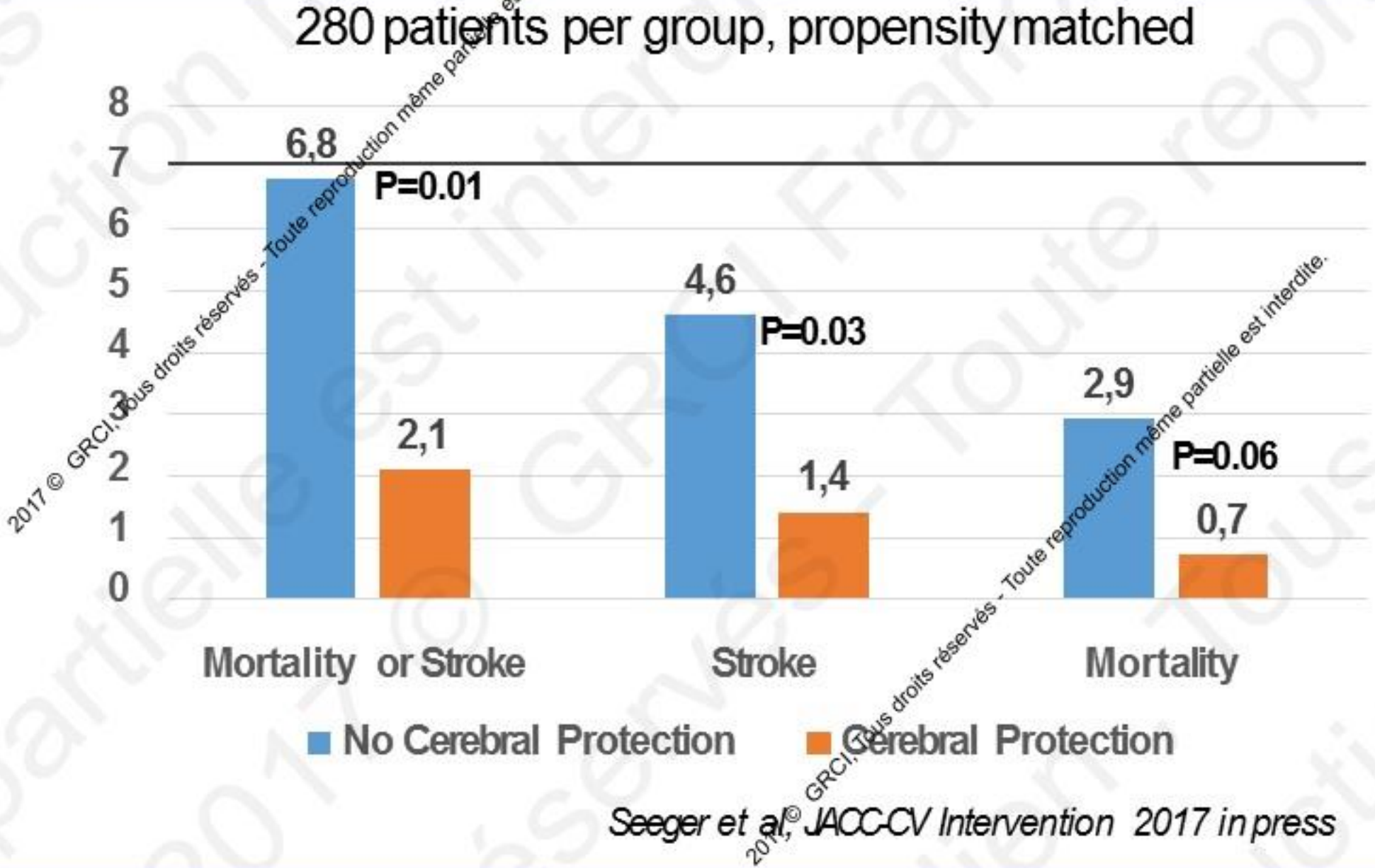
Neuroimaging

….but can have far-reaching effects

Embolic Protection: Claret



Cerebral Protection During TFTAVI



Seeger et al, JACC-CV Intervention 2017 in press

Same Day Discharge!!

Featured Case Reports

CCI 2016

Same Day Discharge after Transcatheter Aortic Valve Replacement: Are We There yet?

Philippe Généreux,[1,2*] MD, Philippe Demers,[1] MD, and Frédérick Poulin,[1] MD

Early discharge after transcatheter aortic valve replacement (TAVR) has been increasingly reported, and is now becoming routinely performed in experienced TAVR centers. However, to the best of our knowledge, no case has been described where a patient was safely discharged on the same the day of the procedure. This report will present the case of a patient who underwent a successful transfemoral TAVR and was safely discharged home the same day. Specific requirements and criteria are proposed to ensure the safety of this approach.

Key words: TAVR; TAVI; discharge

Conclusions

- TAVI is here to stay – an evidence-based clinical success story!
- TF TAVI is equivalent and possibly superior to SAVR in high and intermediate-risk patients with respect to mortality and stroke
- TAVI is associated with
  - far lower morbidity than SAVR
- TAVI should be the treatment of choice **NOW** for all old (>80) and younger high/intermediate-risk patients (70-80)
- More durability data with TAVI are needed before TAVI supplants SAVR in younger low-risk patients
- Heart valve centres?

All for ONE and ONE for All