

Anti-thrombotic treatment after TAVR: insights from the FRANCE-TAVI Registry

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Management of antithrombotics in patients with TAVI

Bioprosthesis	Class	Level
Anticoagulation		
DAPT should be considered for the first 3–6 months after TAVI, followed by lifelong SAPT in patients who do not need OAC for other reasons.	IIa	C

Management of antithrombotics in patients with TAVI

Bioprosthesis	Class	Level
Anticoagulation		
SAPT may be considered after TAVI in the case of high bleeding risk.	IIb	C
OAC may be considered for the first 3 months after surgical implantation of an aortic bioprosthesis.	IIb	C

DETERMINANTS OF ANTITHROMBOTIC Tx?

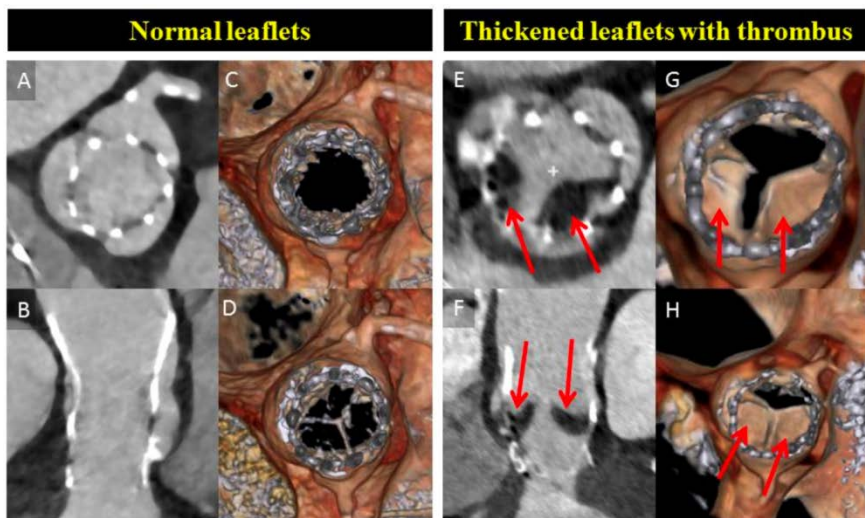
- 1/3 → SCAD or stent PCI
- 1/3 → Secondary prevention for stroke
- 2/5 → Permanent AF or NOAF



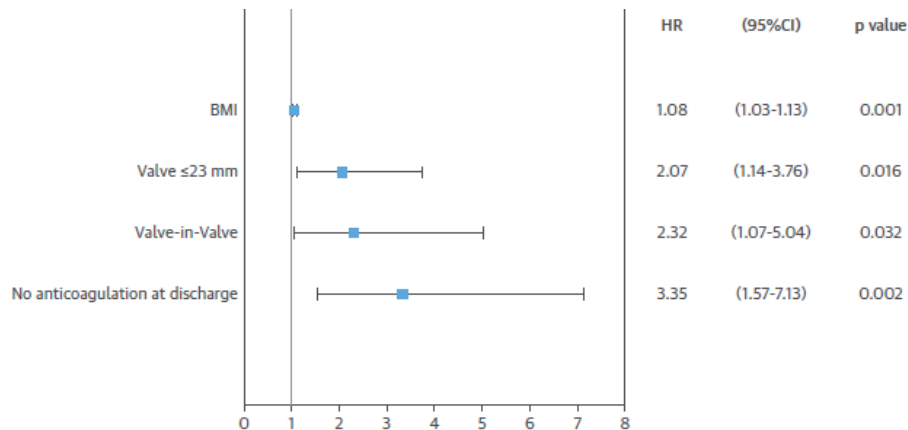
- 30% → Antiplatelet Therapy alone
- 50% → Oral Anticoagulation alone
- 25% → OAC + APT

BIOPROSTHETIC VALVE DYSFUNCTION

- \nearrow in mean gradient (MG) ≥ 10 mmHg or new MG ≥ 20 mmHg
- Prevalence of 4.5% post-TAVR



Makkar et al, NEJM, 2015



Del trigo et al, JACC, 2016

OBJECTIVES

- To investigate whether **anti-thrombotic treatment** influences **long-term mortality and early bioprosthetic valve dysfunction*** (↗ prosthetic gradient ≥ 10 mmHg or new gradient ≥ 20 mmHg)
- To explore **independent correlates** of long-term mortality and early BVD after TAVI.

STUDY OVERSIGHT

- **Nation-wide France-Tavi Registry***
- **Sponsors** → Société Française de Cardiologie
- **Fundings** → Edwards Life Science, Medtronic, Action-Coeur
- **Statistical Analysis** → StatEthic and Action-Coeur

METHODS

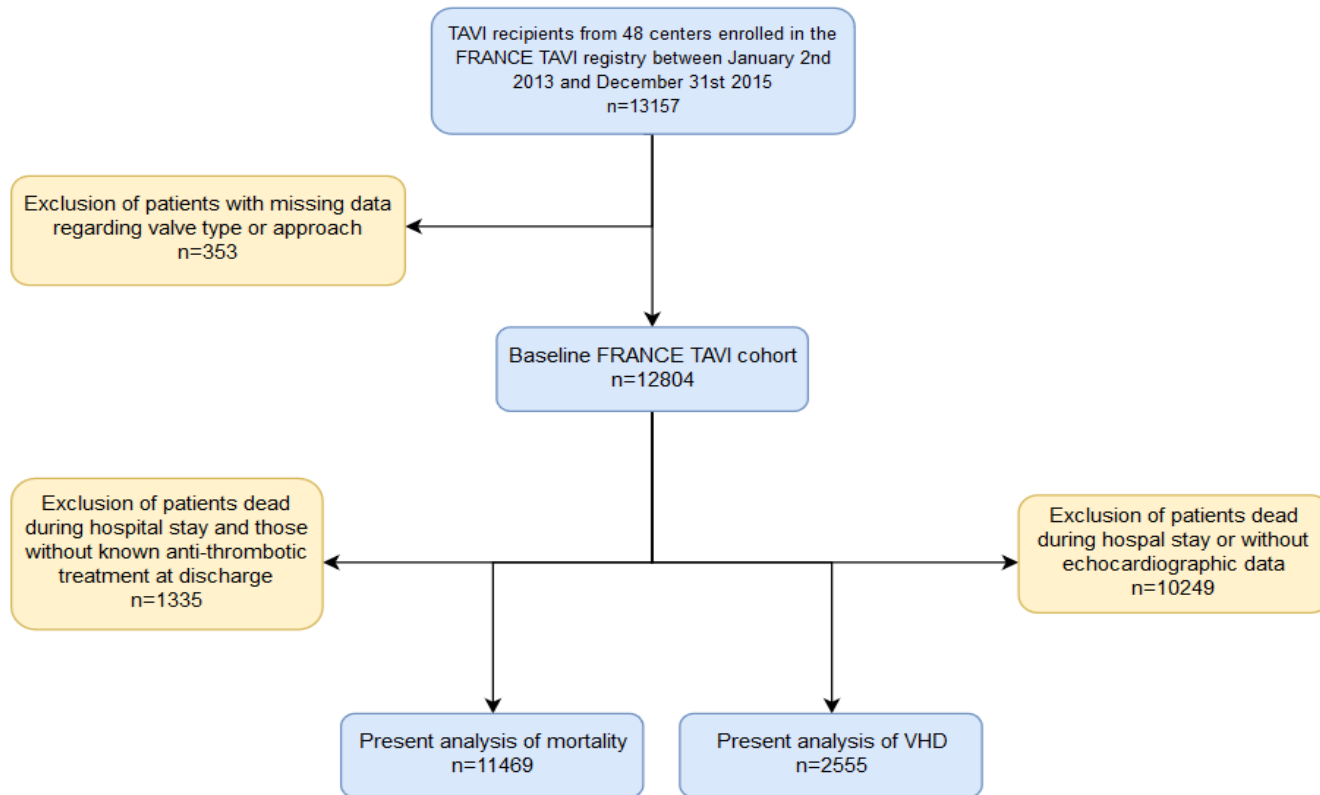
Database: FRANCE TAVI

- **Inclusion** → multi-centre, French, prospective, registry
- **Period** → January 2013 and December 2015
- **Mortality outcome** → INSEE query on April 12th 2016
- **BVD** → Echocardiographic follow-up to May 9th, 2016

Statistical analysis

- **Missing values** → multiple imputation (sensitivity analysis and complete cases)
- **Multivariable Cox regression** for mortality
- **Multivariable logistic regression** for Bioprosthetic Valve Dysfunction
- IBM SPSS Version 23.0 (Armonk, NY: IBM Corp) software

FLOW CHART



PATIENTS CHARACTERISTICS

Characteristics *	Total (n=11469)	No OAC (n=7633)	OAC (n=3836)	P value
Age	82.8 (0.068)	82.7 (0.085)	82.9 (0.111)	0.6
BMI (kg/m ²)	26.7 (0.056)	26.6 (0.070)	26.9 (0.094)	<0.001
Gender (male)	5683 (49.6)	3712 (48.6)	1971 (51.4)	0.005
NYHA class III-IV	7941 (68.9)	5214 (68.2)	2727 (71)	0.002
Logistic Euroscore I	17.8 (0.114)	17.3 (0.139)	18.9 (0.198)	<0.001
Prior CABG	1327 (11.6)	906 (11.9)	421 (11)	0.34
Prior TAVR	114 (1.0)	71 (0.9)	43 (1.1)	0.17
Prior non-CABG surgery	798 (6.9)	457 (6.0)	341 (8.9)	<0.001

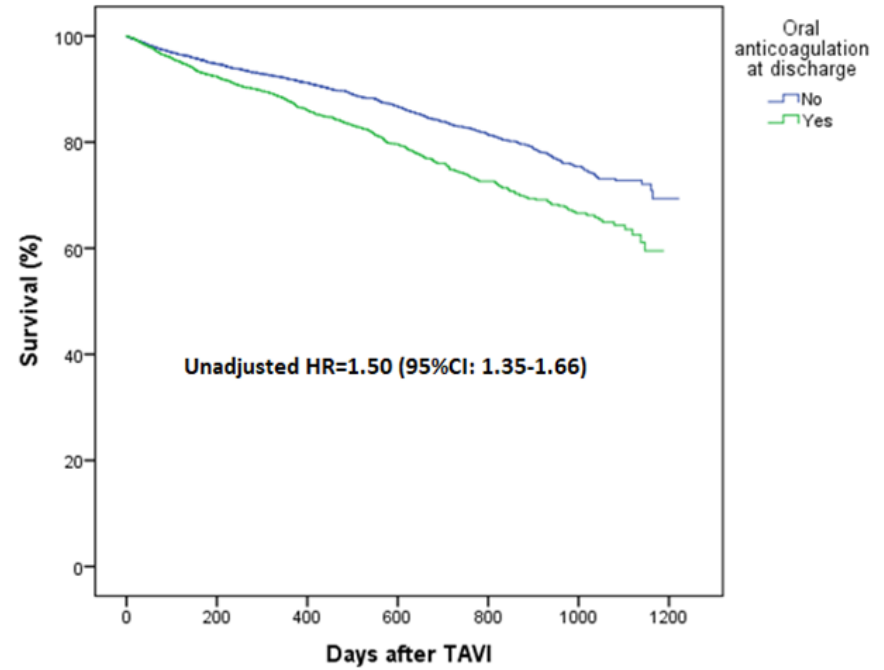
PATIENTS CHARACTERISTICS

Characteristics	Total (n=11469)	No OAC (n=7633)	OAC (n=3836)	
Chronic renal failure (eGFR<60mL/min)	5069 (44.2)	3232 (42.3)	1837 (47.9)	<0.001
Atrial fibrillation	3789 (33.0)	1066 (14.0)	2723 (70.8)	<0.001
LVEF (%)	55.4 (0.128)	56.1 (0.150)	53.8 (0.217)	<0.001
Non-femoral access	1895 (16.5)	1194 (15.6)	701 (18.3)	<0.001
Self-expandable (vs balloon) valve	4045 (35.3)	2714 (35.6)	1331 (34.7)	0.37
Prosthesis diameter ≤23 mm	3215 (28.2)	2258 (29.6)	957 (24.9)	<0.001
AR moderate to severe post-TAVR	1151 (10.0)	758 (10)	393 (10.3)	0.6
Aspirin at discharge	9554 (83.3)	7123 (93.3)	2431 (63.4)	<0.001
Dual therapy	2100 (18.3)	0	2100 (54.7)	<0.001
Triple Therapy	331 (2.9)	0	331 (8.6)	<0.001

CORRELATES OF LONG-TERM MORTALITY

N=11469	MI p-value	Adj. HR	95%CI lower	95%CI upper
Gender (male)	<0.001	1.63	1.44	1.84
NYHA III or IV	<0.001	1.28	1.14	1.46
Euroscore I	<0.001	1.01	1.01	1.02
Prior CABG	<0.001	0.64	0.54	0.77
Prior non-CABG cardiac surgery	<0.001	0.59	0.46	0.76
Diabetes	<0.001	1.25	1.12	1.41
Moderate/severe renal failure	<0.001	1.37	1.23	1.53
Atrial fibrillation	<0.001	1.41	1.23	1.62
Non-femoral access for TAVR	0.011	1.18	1.04	1.35
Moderate to severe prosthetic regurgitation	0.001	1.28	1.11	1.50
Anticoagulation at discharge	0.013	1.18	1.04	1.35
Auto-expandable (vs balloon) valve	0.014	1.15	1.03	1.29
Prosthesis diameter 23 mm or less	0.042	1.17	1.01	1.36

KM CURVES ACCORDING TO ANTICOAGULATION



No

OAC 7632 5282 3393 2123 1154 472 1

OAC 3835 2641 1635 1003 519 223 0



CORRELATES OF BIOPROSTHETIC VALVE DYSFUNCTION

N=2555	m=20	Adj. OR	95% CI	
	P-value		upper	lower
BMI	0.002	1.05	1.02	1.09
Prior TAVR	0.025	2.96	1.15	7.64
Moderate/severe renal failure	0.034	1.46	1.03	2.08
Non-femoral access	0.049	0.53	0.28	1.02
Prosthesis ≤ 23 mm	<0.001	3.43	2.41	4.89
OAC at discharge	0.005	0.54	0.35	0.82

DISCUSSION

- Post-TAVI ATT → **Driven by patients characteristics**
- OAC → Less BVD → **Potential clinical benefit?**
- OAC use → Colinear with the indication for AF → **Mortality?**



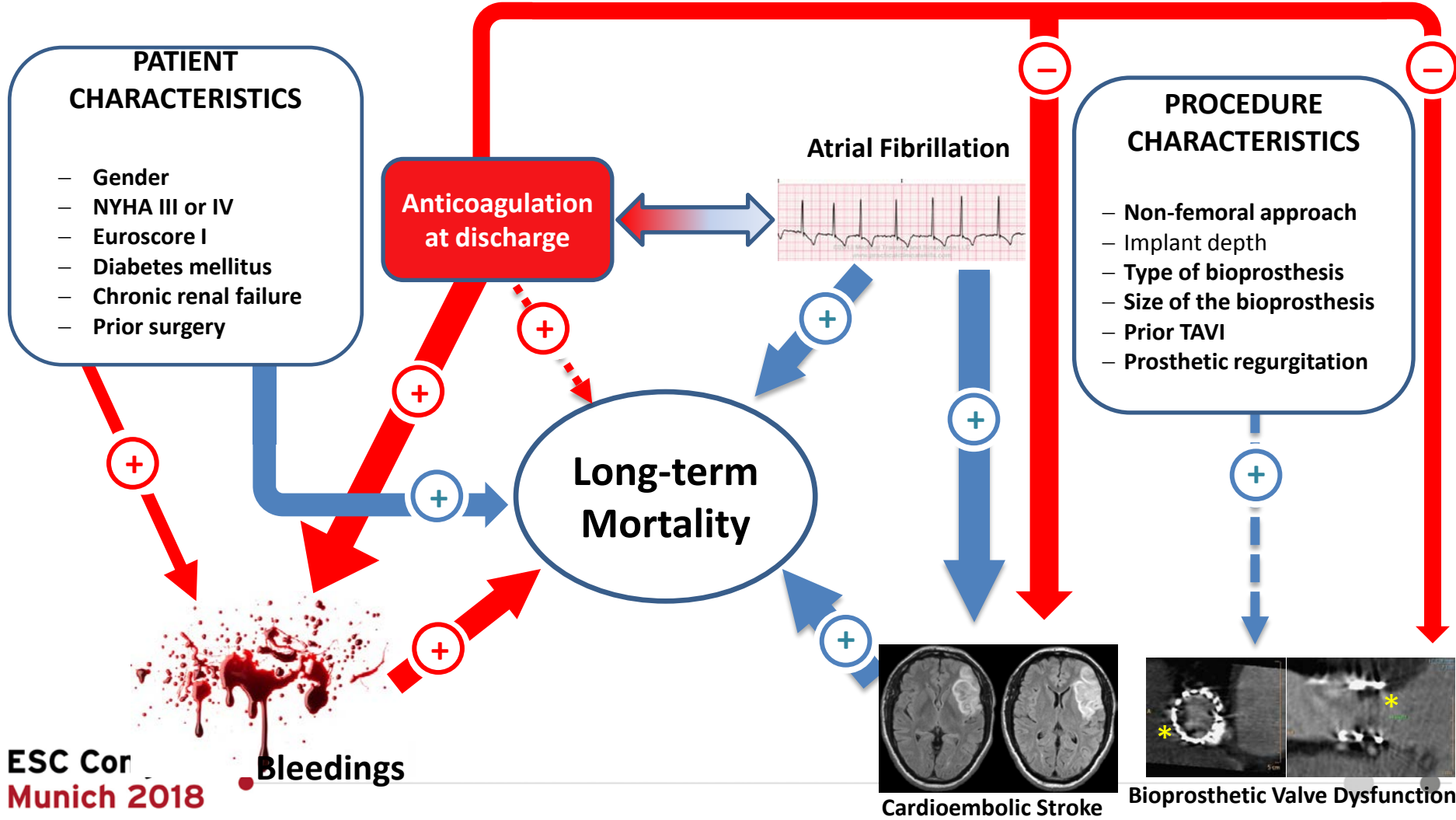
70% patients were on OAC due to AF

LIMITATIONS

- **Not randomized → unknown confounders**
- **Declarative clinical outcome reporting**
- **Treatment Cross-over → An issue in this elderly population**
- **Identification of BVD* with MSCT** → Different predictors?**

MAJOR ONGOING TRIALS

	Treatment comparison	Number of patients	NVAF	Status
GALILEO	RIVA vs DAPT/SAPT	1520	Excluded	Enrolment completed
ATLANTIS	VKA vs Apixaban DAPT/SAPT vs Apixaban	1510	Included (stratified)	Enrolment almost done
ENVISAGE	EDOxaban	1400	only	Ongoing
POPULAR	VKA vs VKA+clopi DAPT vs ASA	1510	Included and stratified	Ongoing
AVATAR	VKA vs VKA+APT	170	Included (stratified)	Ongoing
AUREA	VKA vs DAPT	124	Excluded	Ongoing



ESC Cor
Munich 2018

Accepted in JACC

Long-Term Mortality and Early Valve Dysfunction According to Anticoagulation Use: The FRANCE-TAVI registry

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ABSTRACT

BACKGROUND The optimal anti-thrombotic treatment after transcatheter aortic valve replacement (TAVR) remains a matter of debate. Dual antiplatelet therapy (DAPT) is recommended but single antiplatelet therapy or oral anticoagulation (OAC) are frequently used according to the patient profile. Whether this may impact clinical outcome is unknown.

METHOD and objectives: FRANCE-TAVI is a prospective multicenter nation-wide French registry. Our objectives were to identify independent correlates of long-term all-cause mortality and early bioprosthetic valve dysfunction (BVD, defined as increased prosthetic gradient ≥ 10 mmHg or new gradient ≥ 20 mmHg).

RESULTS Of 12,804 patients included between January 1, 2013 and December 31, 2015, 11,469 (age 82.8 ± 0.07 years old [mean \pm SE], logistic Euroscore $17.8 \pm 0.1\%$, mean duration follow-up was 495 ± 3.5 days) were alive at discharge with known antithrombotic treatment and were analyzed for mortality. 2555 had at least 2 echocardiographic evaluations and were eligible of BVD assessment. One third of patients had a history of atrial fibrillation and the same proportion had OAC at discharge (n=3836). Neither aspirin nor clopidogrel were independently associated with mortality. Male gender (adj. HR 1.63 [1.44-1.84], $p < 0.001$), history of atrial fibrillation (adj. HR 1.41 [1.23-1.62], $p < 0.001$) and chronic renal failure (adj. HR 1.37 [1.23-1.53], $p < 0.001$) were the strongest independent correlates of mortality. Anticoagulation at discharge (adj. OR 0.54 [0.35-0.82], $p = 0.005$) and a non-femoral approach (adj. OR 0.53 [0.28-1.02], $p = 0.049$) were independently associated with lower rates of BVD, while chronic renal failure (adj. OR 1.46 [1.03-2.08], $p = 0.034$) and prosthesis size ≤ 23 mm (adj. OR 3.43 [2.41-4.89], $p < 0.001$) yielded higher risk of BVD.

CONCLUSIONS Gender, renal failure and atrial fibrillation, impacted the most mortality at 3-year follow-up. In contrast anticoagulation (mostly given for atrial fibrillation) decreased the risk of BVD after TAVR. (J Am Coll Cardiol 2018;1:1) © 2018 Published by Elsevier on behalf of the American College of Cardiology Foundation.

The presentation can be downloaded at action-cœur.org