



Is CHA₂DS₂-VASc score appropriate after AF ablation ?

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Disclosure

Speaker name: Gabriel Lațcu

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I have the following potential conflicts of interest to report:

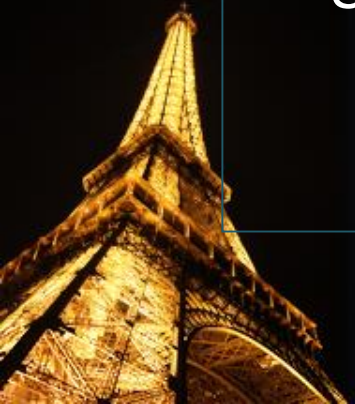
Consulting: Boston Scientific, Livanova, Stereotaxis

Employment in industry: no

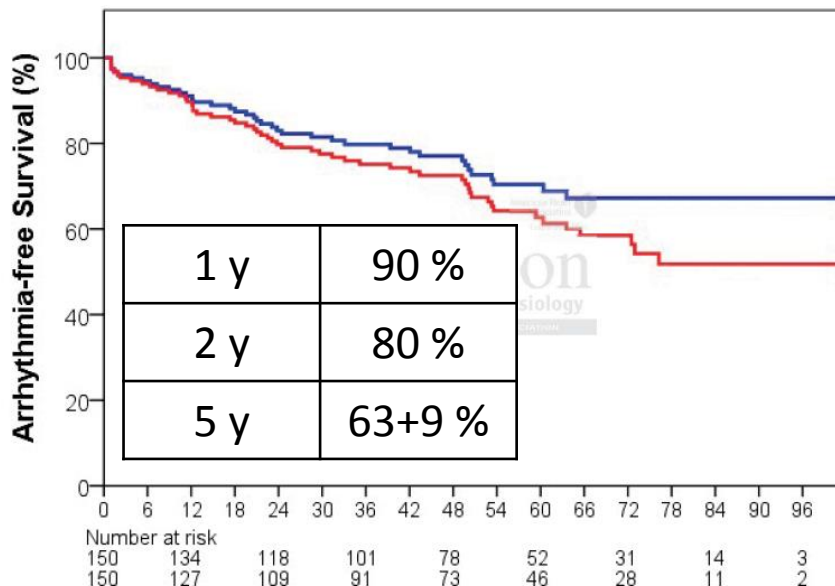
Shareholder in a healthcare company: no

Owner of a healthcare company: no

Speaking honoraria: Biosense-Webster



Who has an ischemic stroke after an AF ablation ?



N = 150	
Age (years)	57 ± 10
History of AF (months)	60 (36-120)
Continuous AF duration (months)	13 (7-24)
LA diameter (mm)	48 ± 7
Structural heart disease	64 (42.7%)
CHADS ₂ score = 0	59 (39.3%)
CHADS ₂ score = 1	54 (36%)
CHADS ₂ ≥ 2	37 (24.7%)

4 ischemic strokes:

1. ablation failure, warfarine with suboptimal INR, CHA₂DS₂VASc = 2
2. ablation failure, warfarine with suboptimal INR, CHA₂DS₂VASc = 3
3. ablation failure, warfarine with optimal INR, CHA₂DS₂VASc = 4
4. SR, stopped anticoagulation, CHA₂DS₂VASc = 0, stroke 49 months post procedure

Postablation anticoagulation – guidelines

2012 HRS/EHRA/ECAS Expert Consensus

Post Abl

- In patients who are not therapeutically anticoagulated with warfarin at the time of AF ablation, low molecular weight heparin or intravenous heparin should be used as a bridge to resumption of systemic anticoagulation with warfarin following AF ablation.
- Initiation of a direct thrombin or Factor Xa inhibitor after ablation may be considered as an alternative post procedure anticoagulation strategy.
- Because of the increased risk of post procedure bleeding on full dose low molecular weight heparin (1 mg/kg bid) a reduction of the dose to 0.5 mg/kg should be considered.
- Systemic anticoagulation with warfarin or a direct thrombin or Factor Xa inhibitor is recommended for at least two months following an AF ablation procedure.
- Decisions regarding the continuation of systemic anticoagulation agents more than two months following ablation should be based on the patient's risk factors for stroke and not on the presence or type of AF.
- Discontinuation of systemic anticoagulation therapy post ablation is not recommended in patients who are at high risk of stroke as estimated by currently recommended schemes (CHADS₂ or CHA₂DS₂-VASc)^{e3}.

2 months after ablation:
anticoagulation mandatory

Afterwards:
thromboembolic risk ?
(not ablation success !)

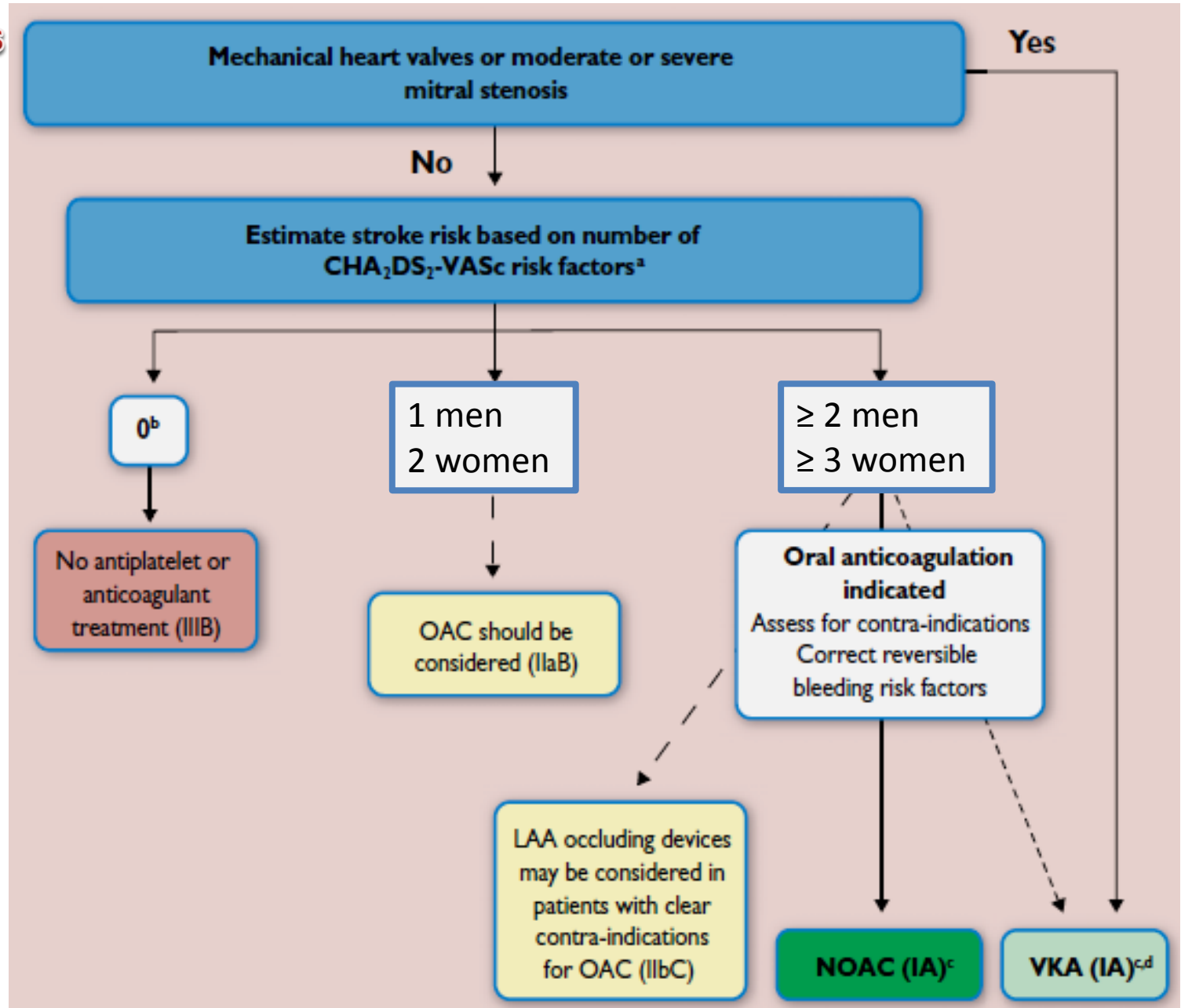
« If CHADS₂/CHA₂DS₂-VASc ≥ 1
– do not discontinue »

ESC Guidelines 2016

“ Anticoagulation should be maintained for at least 8 weeks after ablation for all patients.”
« OAC after catheter ablation should follow general anticoagulation recommendations, regardless of the presumed rhythm outcome.”

Postablation anticoagulation – guidelines

ESC Guidelines
2016



CHA₂DS₂-VASc

Risk factor	Score
Congestive heart failure/LV dysfunction	1
Hypertension	1
Age ≥ 75	2
Diabetes mellitus	1
Stroke/TIA/thrombo-embolism	2
Vascular disease ^a	1
Age 65–74	1
Sex category (i.e. female sex)	1
Maximum score	9

CHA ₂ DS ₂ -VASc score	Patients (n=7329)	Adjusted stroke rate (%/year) ^b
0	1	0%
1	422	1.3%
2	1230	2.2%
3	1730	3.2%
4	1718	4.0%
5	1159	6.7%
6	679	9.8%
7	294	9.6%
8	82	6.7%
9	14	15.2%

Lip GY et al, Stroke. 2010 Dec;41(12):2731-8.

Lip GY et al, Chest 2010;137:263–272.

ESC 2016

“True incidence of thromboembolic events after catheter ablation has never been systematically studied and the expected stroke risk has been adopted from nonablation AF cohorts. Although observational studies suggest a **relatively low stroke rate in the first few years after catheter ablation of AF...** »

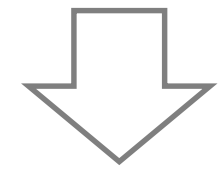
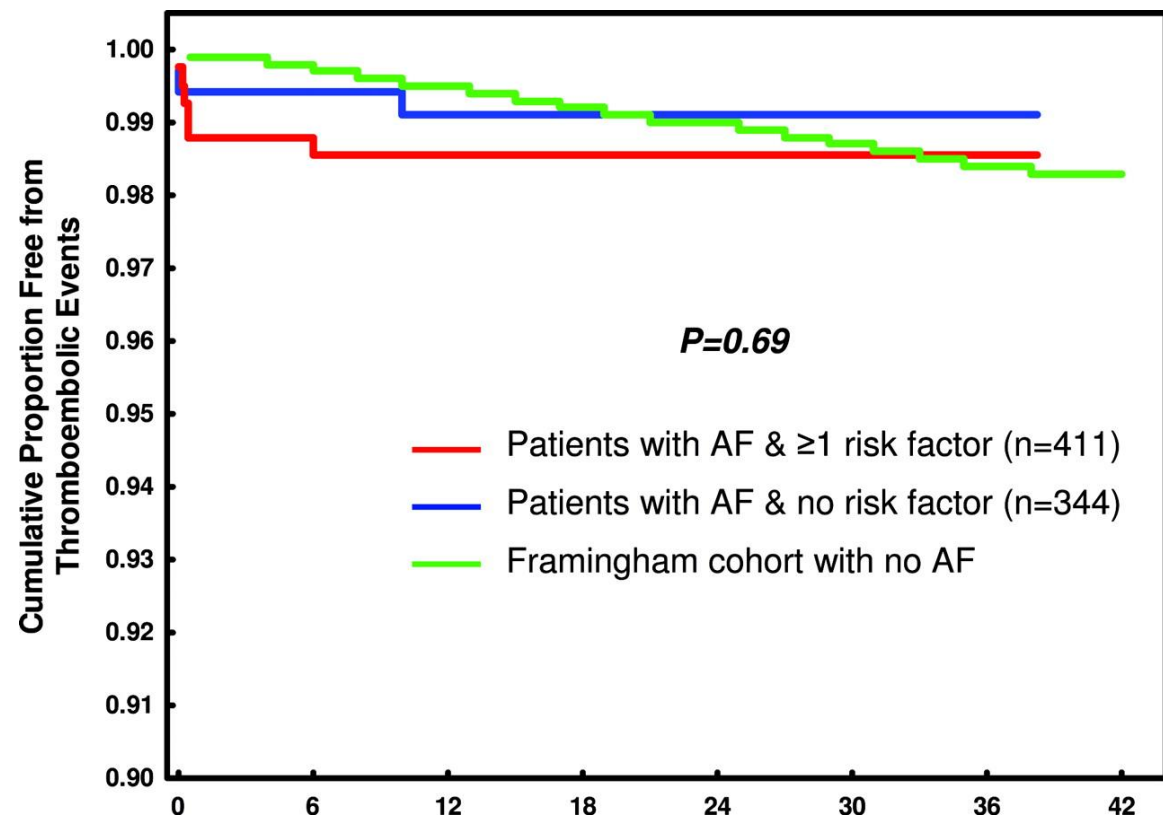
What is the thromboembolic risk after AF ablation?

755 patients
AF ablation
2003-2005
(Michigan)

490: paroxysmal
265: FA persistent
56% → CHADS₂ ≥ 1

7/755 (0,9%) TE events < 2 weeks post-ablation (INR = 1.6)
2/755 (0,3%) late TE events:

8 CAF	55	M	180 d	Left hemiparesis	AF	3.2	Residual weakness	3 mo
9 CAF	40	M	300 d	Renal infarct	SR	2.6	No	No clinical events



Global TE risk = 1.1 %, Especially the 2 first weeks postablation (follow-up 25± 8 months)

What is the thromboembolic risk after AF ablation?

831 patients
FA ablation (31% persistent)
2005
(Texas)

527: SR at 1 year

449 (76.5%)
CHA₂DS₂-VASc ≤ 2

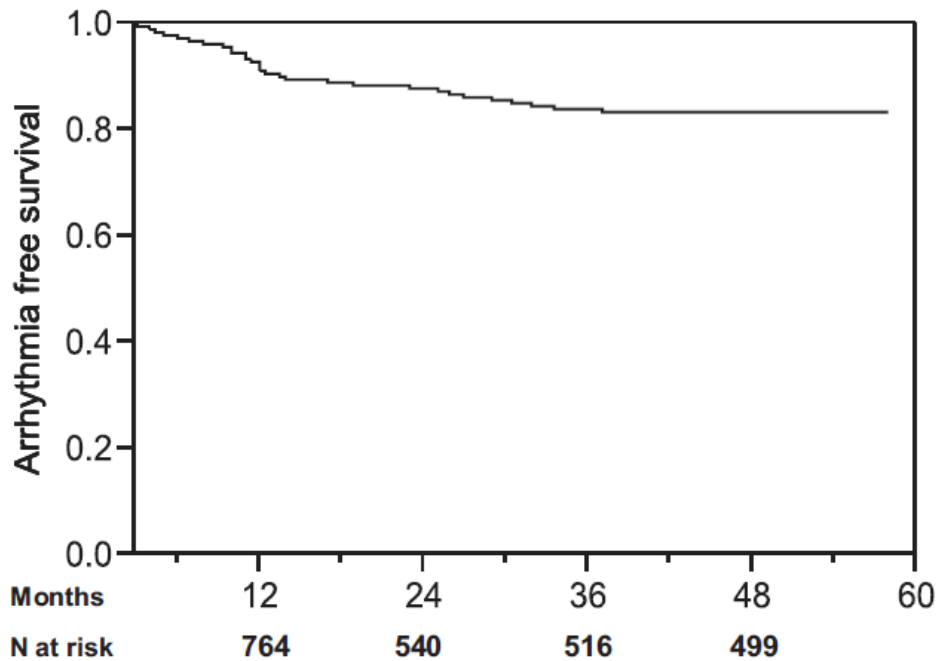
0: 46%
1: 43%
2: 11%

Stop warfarin

FU: median 44 months (35-46)

1 ischemic stroke with minimal sequelae
(woman 70 y, HTN, no recurrence)

TE risk if CHADS₂-VASc ≤ 2
= 0.06 % / year



What is the thromboembolic risk after AF ablation (vs control group) ?

4212 patients
AF ablation

vs

16,848 age-/sex-matched
Controls with AF (no ablation)

vs

16,848 age-/sex-matched
Controls without AF

FU \geq 3 ans: “ AF patients with ablation had a lower long-term risk of stroke compared to patients without ablation.”

“ AF ablation patients had similar long-term risks of stroke across all CHADS₂ profiles and ages compared to patients with no history of AF.”

Bunch T J et al, Heart Rhythm 2013, 10:1272–1277.

327 patients
ablation de FA

CHADS₂ = 1.89 \pm 0.95

2: 45.4 %

3: 23.2 %

Continued anticoagulation
6-12 months post-ablation,
than aspirine



FU: 46 \pm 17 mois \rightarrow 82% remained AF free (off AADs)

“No symptomatic ischemic cerebrovascular events were detected during follow-up despite interruption of OAC in 298 (91%) patients and AADs in 293 (89%) patients.”

Saad EB et al, Circ Arrhythm Electrophysiol. 2011;4:615-621.

Does AF ablation diminish the thromboembolic risk ?

International multicentrique registry

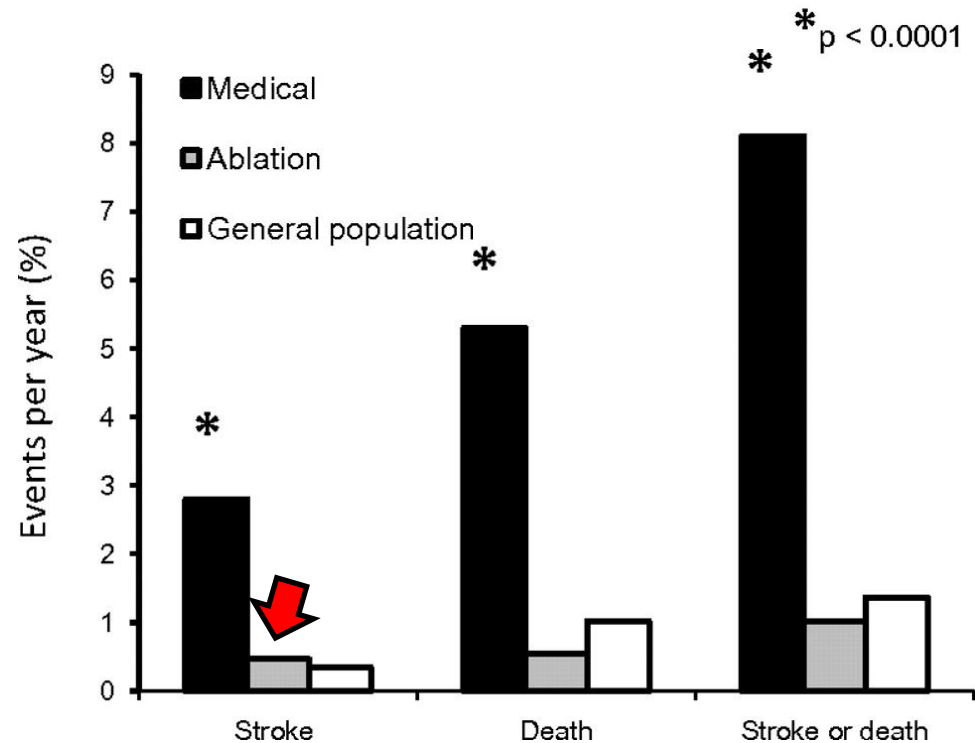
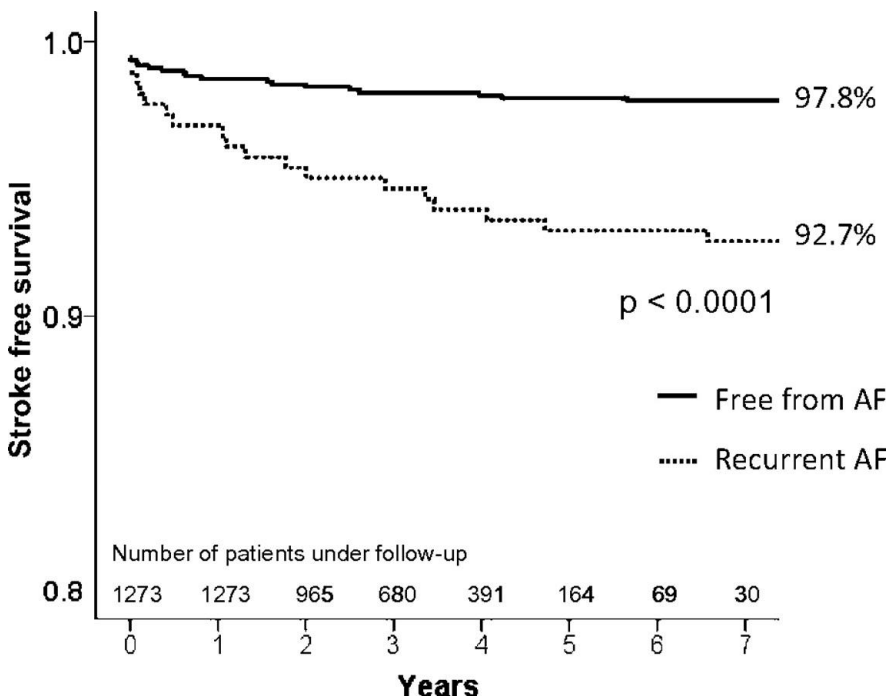
U.K. + Australia : 1273 patients



Age (years)	58±11
Paroxysmal AF (%)	56
Months since AF diagnosed	36 (24–70)
Left atrial diameter (mm)	41±8
Mean CHADS ₂ score	0.7±0.9



AF ablation
vs medical treatment (EuroHeart Survey)
vs general population (UK national statistics)



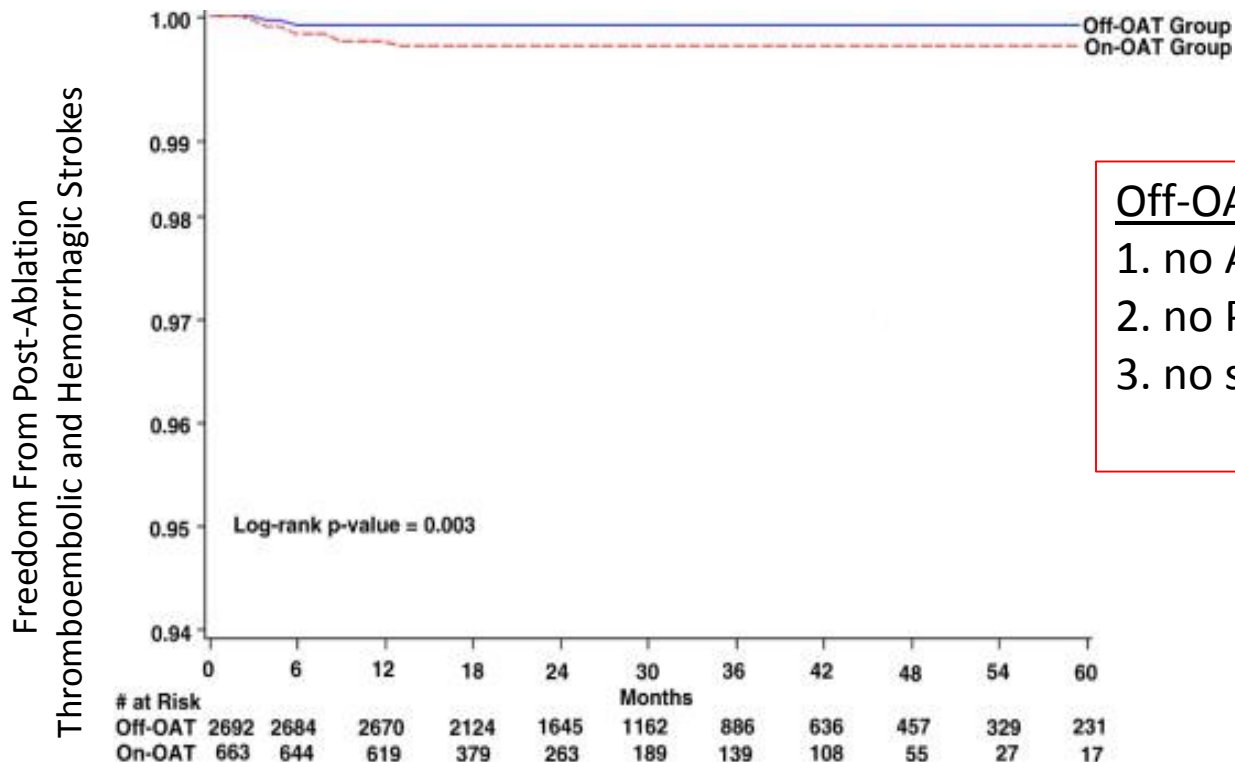
Does AF ablation diminish the thromboembolic risk ?

3355 patients
AF ablation
(5 centers, case-records)

Off-OAT: 2692 – stop OAC after 3-6 months

On-OAT: 663 – OAC continued

CHADS ₂	1	≥2
Off-OAT	27%	13%
On-OAT	39%	37%



Off-OAT:

1. no AF recurrence without AA drug
2. no PV stenosis
3. no severe systolic atrial dysfunction (A wave still present)

	Off-OAT	On-OAT	p
AVCI	0,07%	0,45%	0,06
Major bleeding	0,04%	2%	p <0,0001

Does AF ablation diminish the thromboembolic risk ?

108 pts with a history of **ischemic stroke**
AF ablation 2003-2010
(California)

71 patients
AF free postablation

55 pts
OAC discontinuation
at 7.3 months

Clinical variable	Entire group (n=108)	AF free postablation (n=71)
Left atrial size (cm)	4.36±0.65	4.32±0.68
Age (years)	66.2±9.0	66.1±8.6
Average CHADS ₂ score	3.0±0.9	3.1±0.9
Average CHA ₂ DS ₂ -VAS _C score	4.1±1.4	4.1±1.3
Hypertension	62.9 %	69.0 %
Diabetes	14.5 %	15.1 %
Coronary artery disease	26.8 %	22.5 %
Body mass index	28.6±5.0	28.4±4.7
Paroxysmal AF	37.0 %	43.6 %
Persistent AF	46.3 %	43.6 %
Longstanding AF	16.7 %	12.7 %

FU after OAC discontinuation
= 2.2 ± 1.3 years

TE events = 0
Bleeding events = 0

- In patients staying on OAC:*
- 1 ischemic stroke (mechanic valve prosthesis, therapeutic INR)
 - 9 bleeding events

Thromboembolic risk after AF ablation vs bleeding risk

HAS-BLED

Risk Factors/Score	No.	No. of Bleeds	Bleeds Per 100 Patient-Years
0	798	9	1.13
1	1,286	13	1.02
2	744	14	1.88
3	187	7	3.74
4	46	4	8.70
5	8	1	12.50
6	2	0	0.0
7	0
8	0
9	0
Any score	3,071	48	1.56
<i>P</i> value for trend			0.007

TE global risk = **1.1 %**,
especially 2 firsts weeks
postablation
(FU 25 ± 8 months)

Oral H et al, Circulation. 2006

TE risk if CHADS₂ ≤ 2
= **0.06 % / year** (FU 44 months)

Hussein A A et al. Circ AE 2011

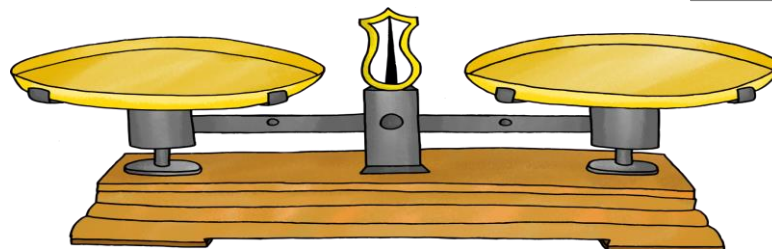
Major bleeding risk on OAC = **1.75 % / year**

Pisters R et al, CHEST 2010; 138(5):1093–1100

ESC 2016

Metaanalysis 47 studies: major
bleeding risk under VKA:
2.0÷2.1 / 100 patients-years

Roskell NS et al, Europace
2013;15:787–797



Does AF ablation diminish the thromboembolic risk ?

4 ongoing randomized studies

Optimal Anticoagulation for Higher Risk Patients Post-Catheter Ablation for Atrial Fibrillation Trial (OCEAN) **Rivaroxaban 20/15 vs Aspirine 81/75**

Prevention of Silent Cerebral Thromboembolism by Oral Anticoagulation With Dabigatran After Pulmonary Vein Isolation for Atrial Fibrillation (ODIn-AF) **Dabigatran 300/220 vs placebo**

Investigation on Appropriate Duration of Dabigatran Use After Catheter Ablation for Paroxysmal Atrial Fibrillation in Patients With Low Thromboembolic Risk **Dabigatran vs placebo**

Oral Anticoagulation Therapy Pilot Study (OAT) **OAT vs placebo**

Follow the guidelines !

AF ablation

→ Stop OAC ≥ 2 months if:

- no AF/AT recurrence
- $CHA_2DS_2-VASc = 0$ or $1 (\pm 2)$
- what's in the score ? (ex: heart failure – considerable risk)
- preserved atrial systole
- ask the patient to take part to the decision