Left atrial appendage occlusion

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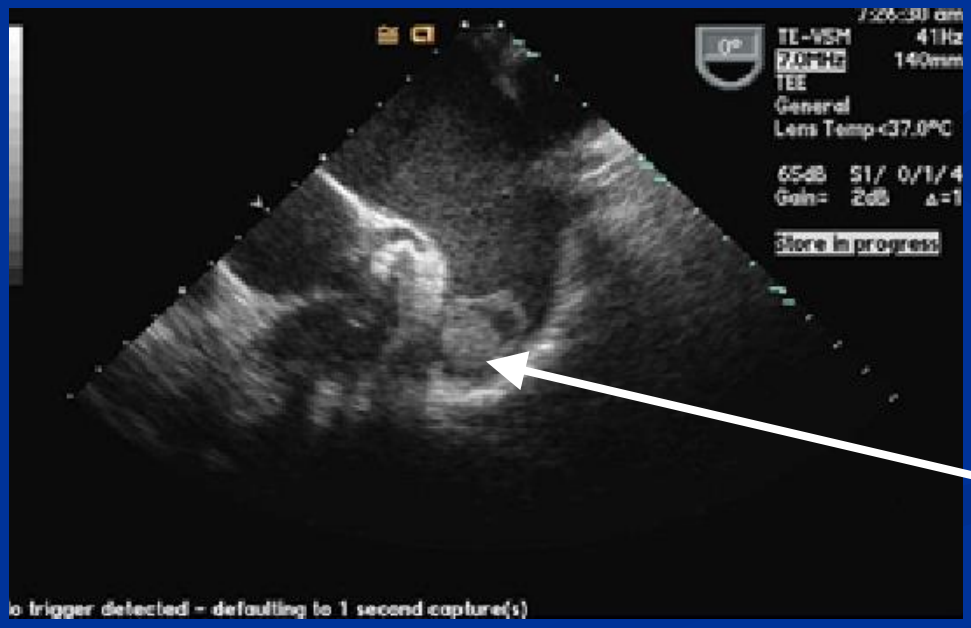
AF and thromboembolism risk

- AF Patients have a higher risk of stroke
- Stroke in AF are due to clot coming from the LAA in 90% of cases

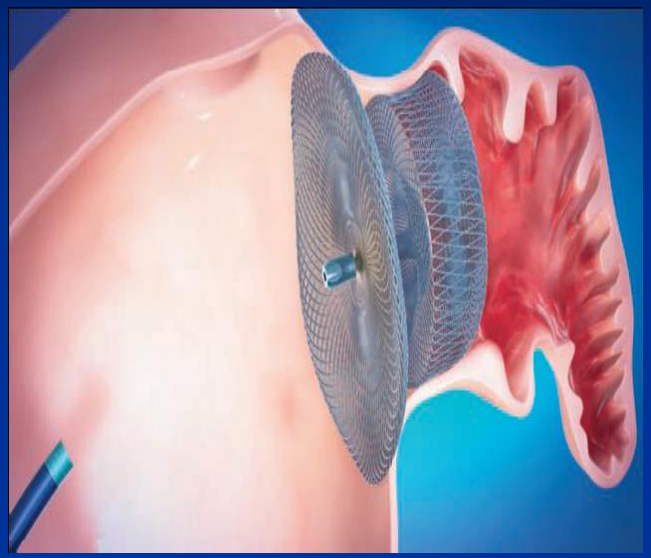


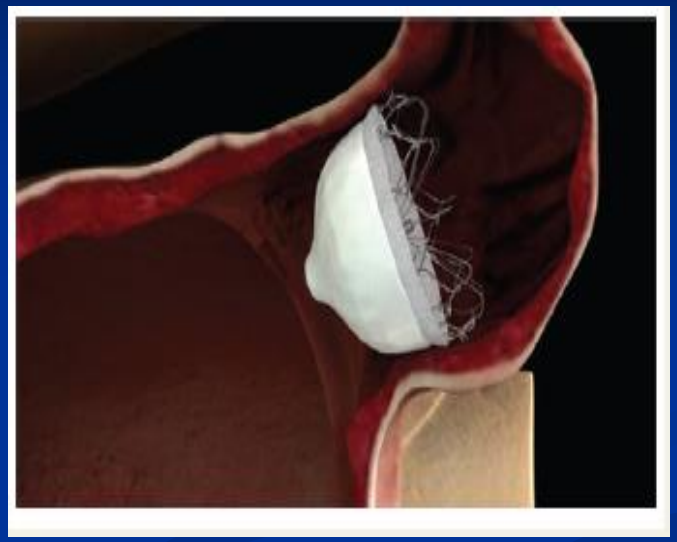
Thrombus dans l'auricule gauche

Even with new oral anticoagulants hemorragic risks still persist

Event	Dabigatran, 110 mg		Dabigatran, 150 mg		Warfarin	
	no. of patients	%/yr	*no. of patients*	%/yr	*no. of patients*	%/yr
Major bleeding	322	2.71	375	3.11	397	3.36
Life threatening	145	1.22	175	1.45	212	1.80
Non–life threatening	198	1.66	226	1.88	208	1.76

Principle of transcatheter approach





EHRA/EAPCI expert consensus statement on catheter-based left atrial appendage occlusion

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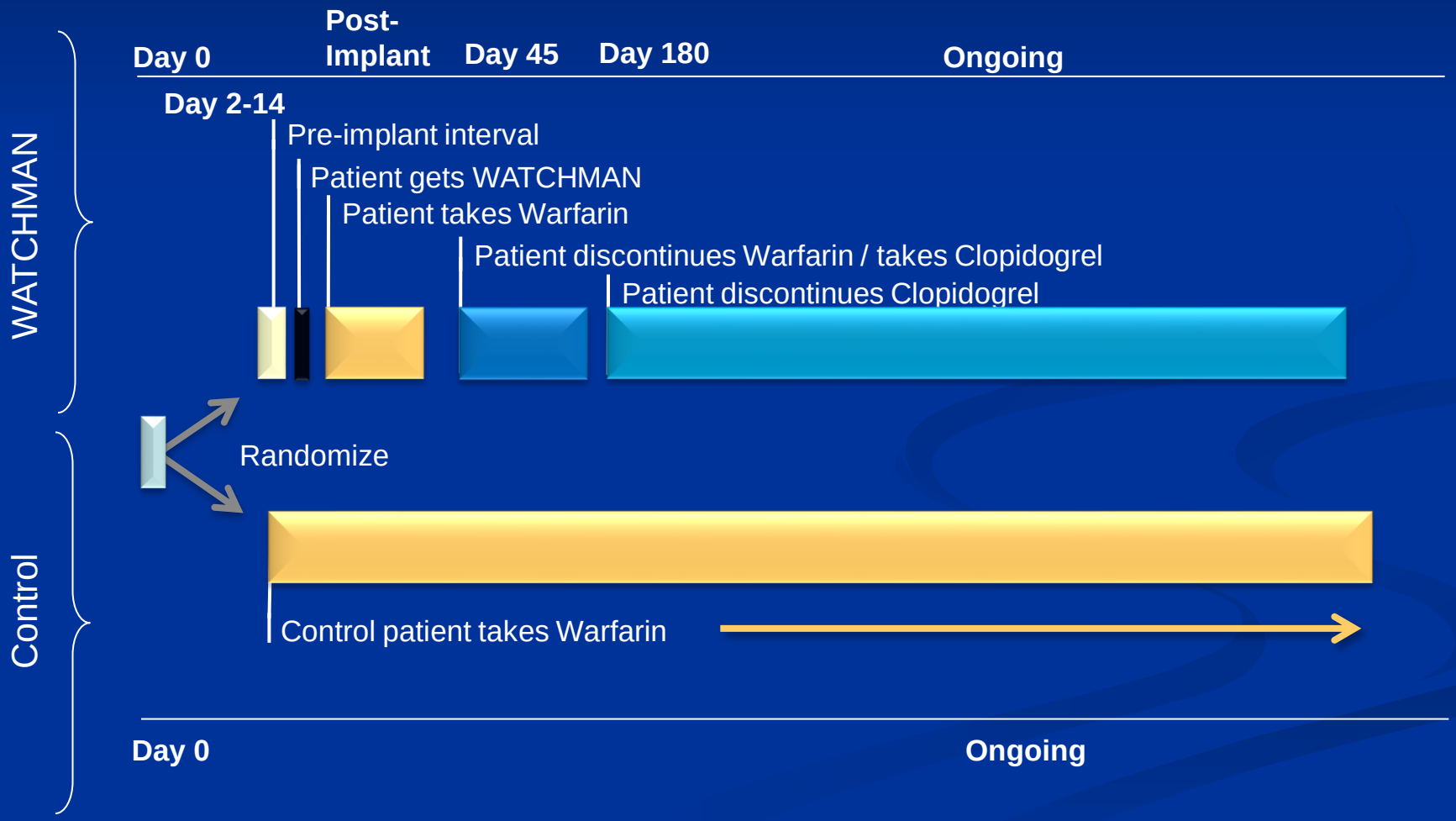
PROTECT AF

Study Objective:	Evaluate the efficacy and safety of the WATCHMAN LAA Closure Device as compared to long-term warfarin therapy in patients with non-valvular atrial fibrillation and $CHADS_2$ score $\geq$ 1
Study Design:	Prospective, randomized (2 Device: 1 Control), non-inferiority study of the Watchman device compared to long-term warfarin therapy
Primary Endpoint:	Non-inferiority of the WATCHMAN device to warfarin therapy for the composite of ischemic stroke, hemorrhagic stroke, systemic embolism and cardiovascular/unexplained death
Additional Endpoints:	Life-threatening events including device embolization requiring retrieval, pericardial effusion requiring intervention, cranial and GI bleeding, and bleeding requiring transfusion $\geq$ 2 units PRBCs
Patient Population:	WATCHMAN n=463 Control n=244 Roll-in n=93
Number of Sites:	59 (55 U.S., 4 EU)

Design of the study



Long term Protect AF follow-up

Importance While effective in preventing stroke in patients with atrial fibrillation (AF), warfarin is limited by a narrow therapeutic profile, a need for lifelong coagulation monitoring, and multiple drug and diet interactions.

Objective To determine whether a local strategy of mechanical left atrial appendage (LAA) closure was noninferior to warfarin.

Design, Setting, and Participants PROTECT AF was a multicenter, randomized (2:1), unblinded, Bayesian-designed study conducted at 59 hospitals of 707 patients with nonvalvular AF and at least 1 additional stroke risk factor ($CHADS_2$ score ≥1). Enrollment occurred between February 2005 and June 2008 and included 4-year follow-up through October 2012. Noninferiority required a posterior probability greater than 97.5% and superiority a probability of 95% or greater; the noninferiority margin was a rate ratio of 2.0 comparing event rates between treatment groups.

Interventions Left atrial appendage closure with the device (n=00000059) farin (n=244; target international normalized ratio, 2-3).

Main Outcomes and Measures A composite efficacy end point including stroke, systemic embolism, and cardiovascular/unexplained death, analyzed by intention-to-treat.

Results At a mean (SD) follow-up of 3.8 (1.7) years (2621 patient-years), there were 39 events among 463 patients (8.4%) in the device group for a primary event rate of 2.3 events per 100 patient-years, compared with 34 events among 244 patients (13.9%) for a primary event rate of 3.8 events per 100 patient-years with warfarin (rate ratio, 0.60; 95% credible interval, 0.41-1.05), meeting prespecified criteria for both noninferiority (posterior probability, >99.9%) and superiority (posterior probability, 96.0%). Patients in the device group demonstrated lower rates of both cardiovascular mortality (1.0 events per 100 patient-years for the device group [17/463 patients, 3.7%] vs 2.4 events per 100 patient-years with warfarin [22/244 patients, 9.0%]; hazard ratio [HR], 0.40; 95% CI, 0.21-0.75; *P*= .005) and all-cause mortality (3.2 events per 100 patient-years for the device group [57/466 patients, 12.3%] vs 4.8 events per 100 patient-years with warfarin [44/244 patients, 18.0%]; HR, 0.66; 95% CI, 0.45-0.98; *P*= .04).

Conclusions and Relevance After 3.8 years of follow-up among patients with nonvalvular AF at elevated risk for stroke, percutaneous LAA closure met criteria for both noninferiority and superiority, compared with warfarin, for preventing the combined outcome of stroke, systemic embolism, and cardiovascular death, as well as superiority for cardiovascular and all-cause mortality.

Device/Procedure Related Safety Events

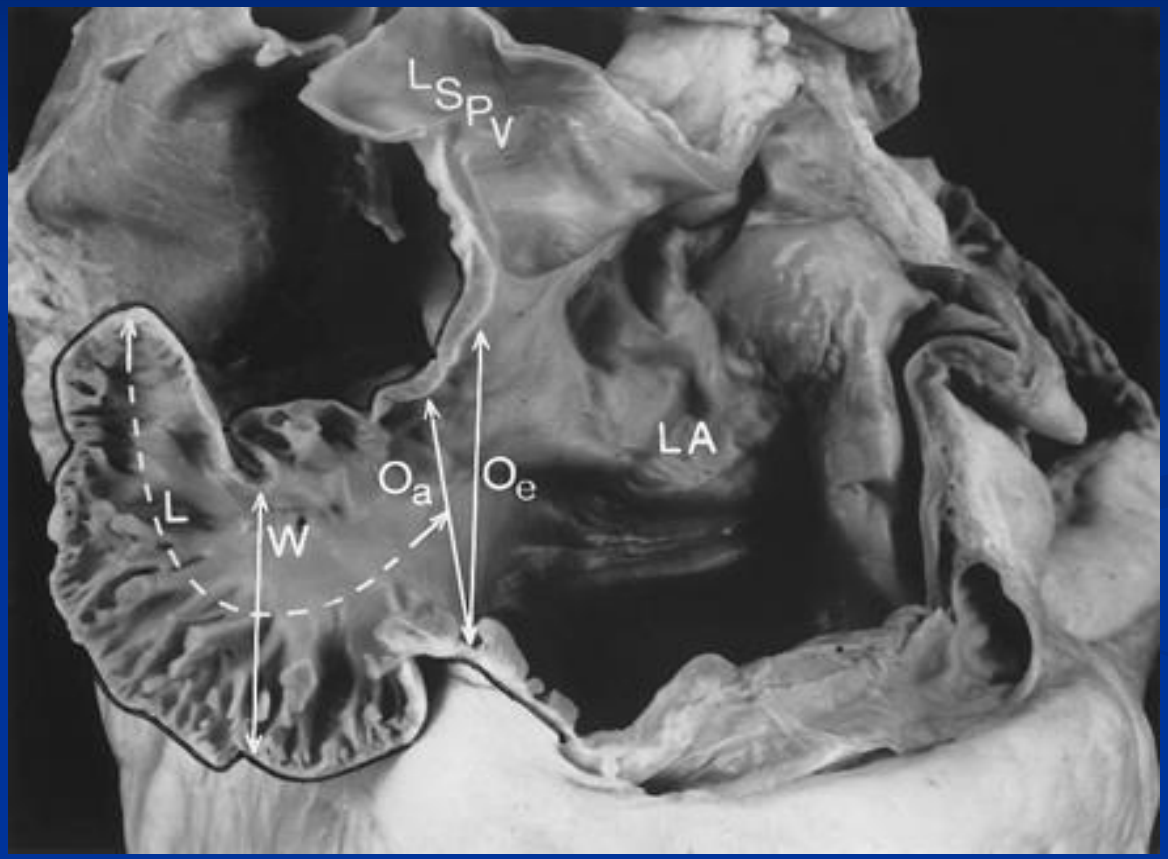
	≤7 Days Post Procedure	>7 days Post Procedure	Total
Peri-procedural Stroke / TIA*	0 (0.0%)	0 (0.0%)	0 (0.0%)
Serious Pericardial Effusion	3 (1.5%)	0 (0.0%)	3 (1.5%)
Device Embolization	3 (1.5%)	0 (0.0%)	3 (1.5%)
Device Related Thrombus	0 (0.0%)	5 (2.4%)	5 (2.4%)
Total Safety Events	**6 (2.9%)**	**5 (2.4%)**	**11 (5.4%)**

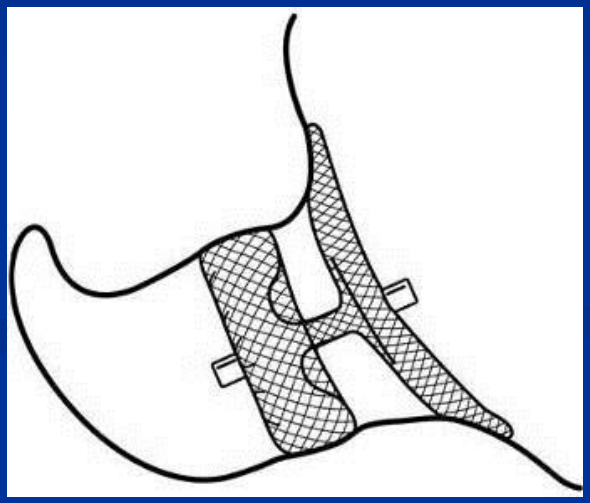
* The stroke/TIA is reference to device or procedure related strokes as adjudicated by the AE Review Committee.

Learning curve confirmed

	Initial European Registry[1]	**EU Prospective Observational Study**
Number of patients (Follow-up period)	N = 143 (Discharge or < 24 hrs)	N = 204 (< 7 days)
Enrollment Period	December 2008 – December 2009	August 2009 – September 2011
Stroke	N = 3 (2.1%)	N = 0 (0.0%)
Serious Pericardial Effusion	N = 5 (3.5%)	N = 3 (1.5%)
Device Embolization	N = 2 (1.4%)	N = 3 (1.5%)
Device Related Thrombus	N= 0 (0.0%)	N = 0 (0.0%)
Total reported Safety Events	**N = 10 (7%)**	**N = 6 (2.9%)**

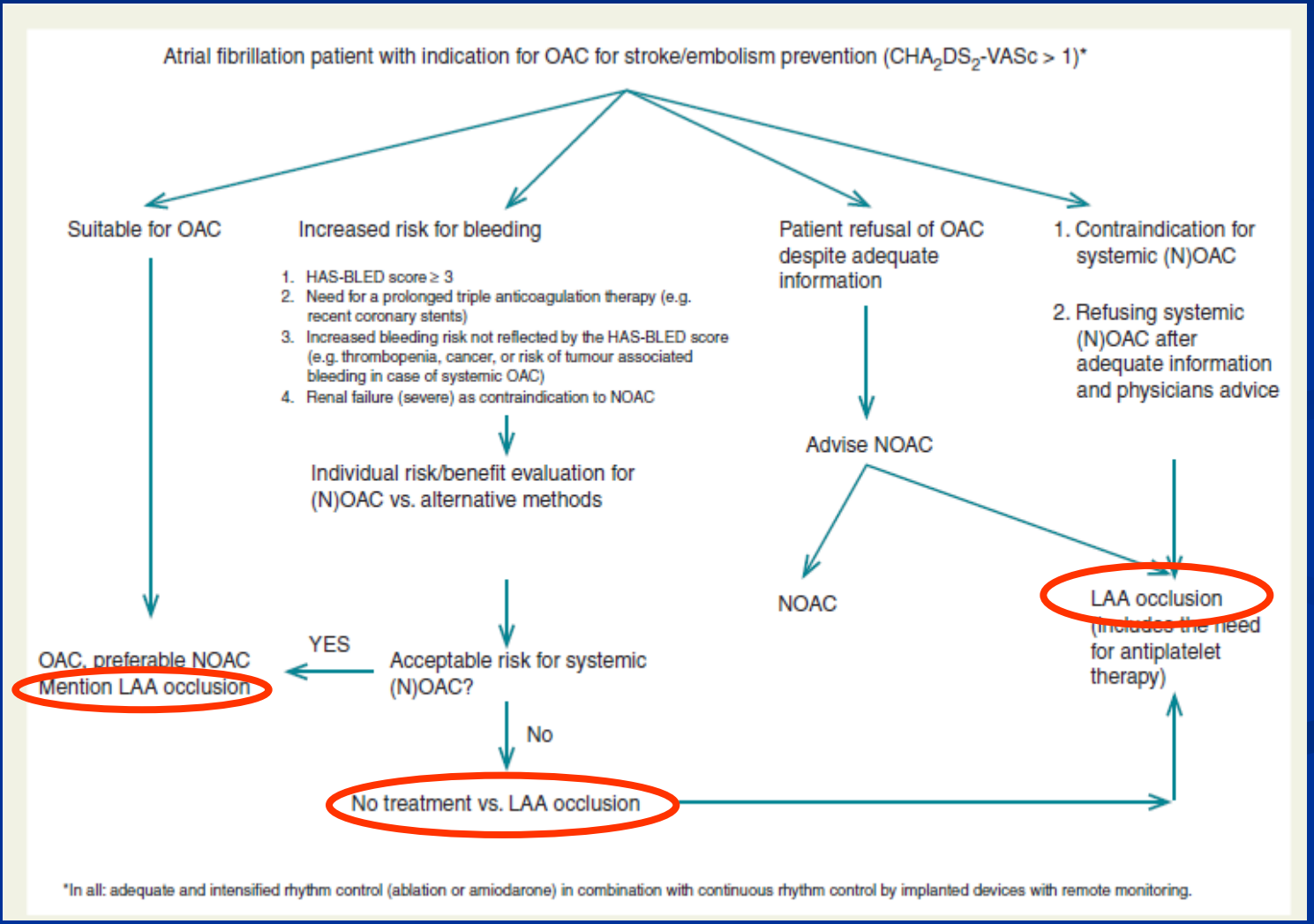
Anatomy of the Normal LAA





Veinot JP, et al: Anatomy of the Normal Left Atrial Appendage A Quantitative Study of Age-Related Changes in 500 Autopsy Hearts: Implications for Echocardiographic Examination. Circulation 1997;96:3112

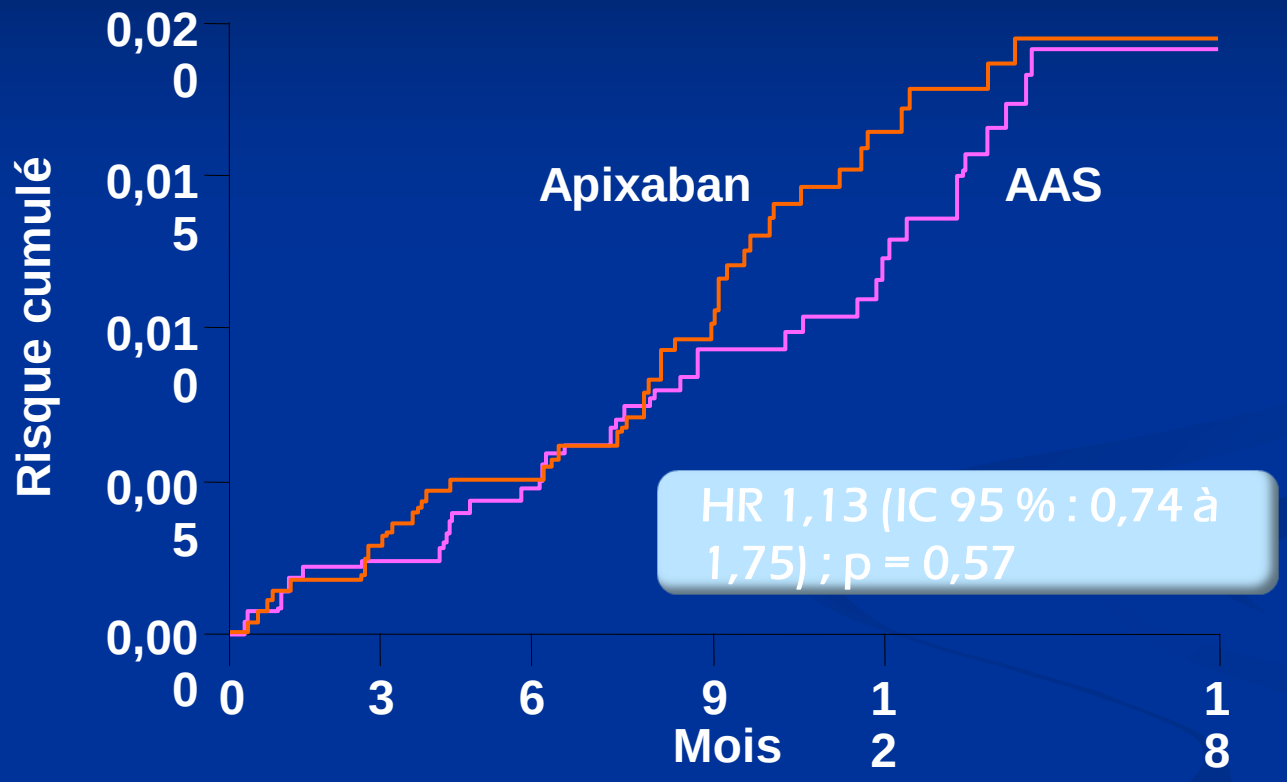
LAA Closure Indication



POST PROCEDURAL TREATMENT

- If possible OAC for 6 weeks
- Otherwise Aspirin+Plavix for 1-6 mois
- Otherwise Aspirin alone or nothing (depending on clinical situation)
- Follow-up with TTE before discharge and CT scan at 3, 6, 12 months
- Same bleeding risk with aspirin than apixaban?
- Place of NOAC following the procedure?

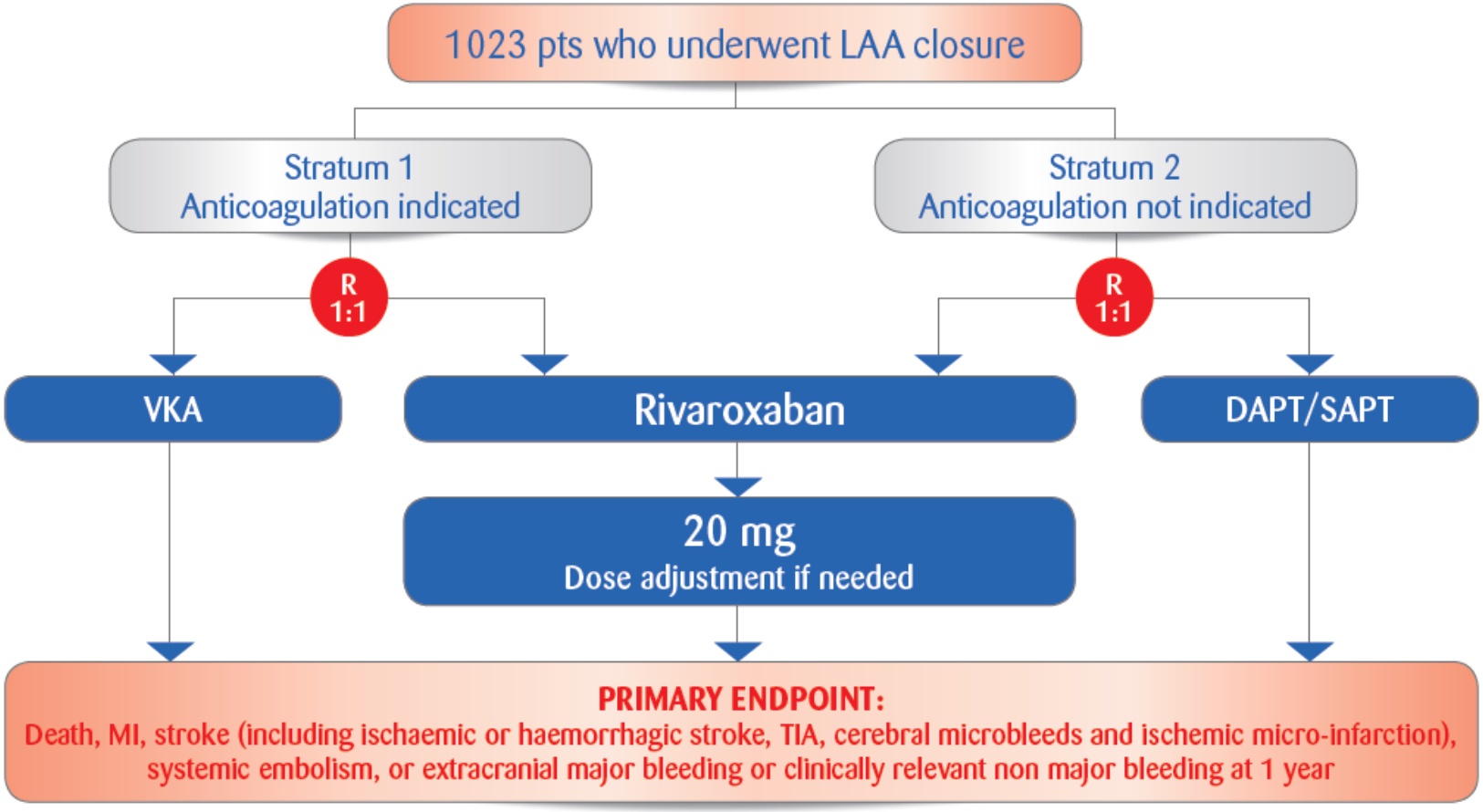
AVERROES STUDY: NO DIFFRENCE BETWEEN APIXABAN AND ASPIRIN IN HEMORRAGIC RISK IN AF PATIENTS



Nb. à risque						
Apixaban	2 808	2 759	2 566	2 120	1 521	622
AAS	2 791	2 738	2 557	2 140	1 571	642

Anticoagulation with Rivaroxaban versus **D**ual or single antiplatelet therapy to **R**educe **I**schemic and bleeding events in **A**trial fibrillation patients **T**reated with **I**nvasive **C**losure of the left atrial appendage:

The randomized ADRIATIC Study



Design :

- PROBE study design (Prospective Randomised Open, Blinded End-point).
- 80 high volume centers, International

Activity in France

- More centers are practicing this procedure in France: 35
- Reimbursement of the prosthesis this year
- National registry with actually 550 patients included

In US

- Watchman just FDA approved

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CONCLUSION

- New technology with promising future
- In France only for patients with CI for oral anticoagulation
- Multidisciplary approach for patients selection and implantation (Heart team)
- More data are needed to completely validate the efficacy and safety of the technique
- Post operative anticoagulation/ antiagregants best strategy still need to be assessed

Thank you for your attention!!!!