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LAA occluders: for whom?

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Disclosures

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- **None related to this talk.**
- General disclosures:
 - Lecture fees from AstraZeneca, Baxter, Bayer, Boehringer Ingelheim, Bristol-Myers Squibb, MSD, Sysmex, and Pfizer.
 - Advisory board meetings for AstraZeneca, Bayer, Boehringer Ingelheim, and Bristol-Myers Squibb.

Outline of talk: LAA occluders

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- **Why? An intriguing concept.**
- **How?**
- **Evidence**
- **Guideline recommendations**
- **When?**

- **Conclusions & gaps in evidence**

Percutaneous Left Atrial Appendage Occlusion: An intriguing concept

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- Oral anticoagulant treatment reduces the risk of ischaemic stroke in pts with AF with >60% and is the main strategy for stroke prevention – but OAC have inherent challenges, e.g. compliance, surgery, drug interactions, adverse events including GI & IC bleeding.
- Concerns over bleeding contribute to significant *under treatment* and leave a substantial proportion of patients at risk of stroke.
- Therefore, LAAO is an increasingly used alternative to OAC.
- The concept of LAAO is based on the understanding that in non-valvular AF, the majority of thrombi form in the LAA – so closing the LAA can prevent stroke & peripheral arterial embolization.

Percutaneous Left Atrial Appendage Occlusion: An intriguing concept

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Table 1. Review of Published Reports Detailing the Frequency and Site of Thrombus Location in Patients With Nonrheumatic Atrial Fibrillation

Setting	No. of Patients	Thrombus Location	
		LA Appendage	LA Cavity
TEE ^a	317	66	1
TEE	233	34	1
Autopsy	506	35	12
TEE	52	2	2
TEE	48	12	1
TEE and Operation	171	8	3
SPAF III TEE Study	359	19	1
TEE	272	19	0
TEE	60	6	0
Total	1,288	201	21

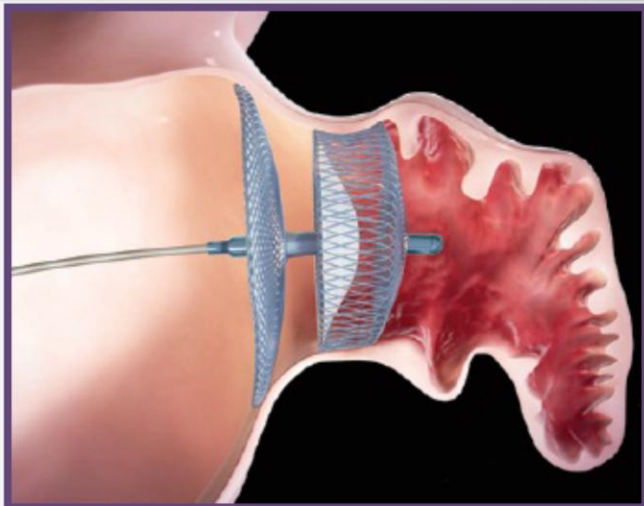
- In pts with AF, up to 91%* of thrombi are localized in the LAA.
- Closing the LAA will prevent >90% of ischaemic strokes?

*Blackshear & Odell, Ann Thorac Surg 1996.

LAAO techniques

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Other options include: WaveCrest,
Occlutech, Lariat, LAmbre etc.



WATCHMAN®

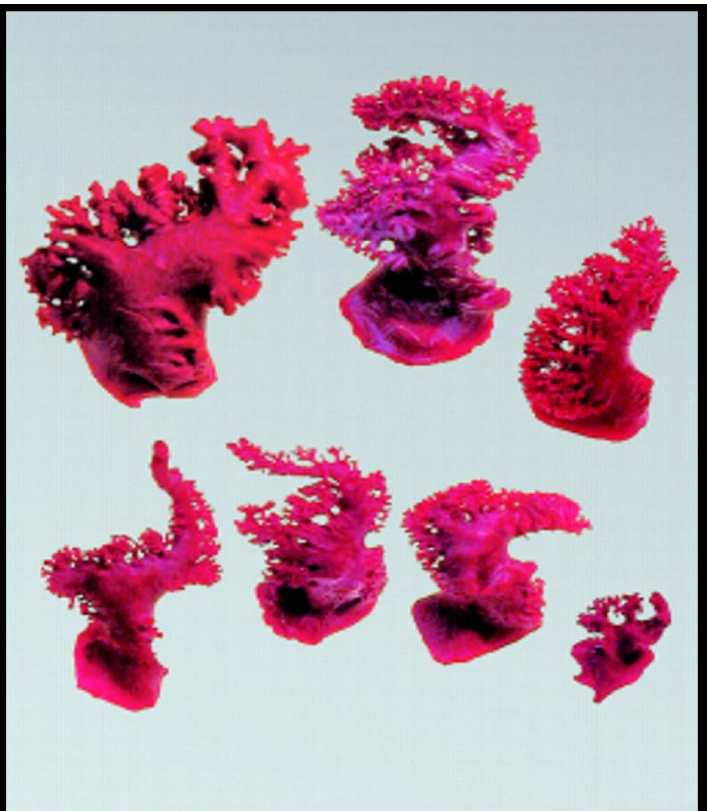
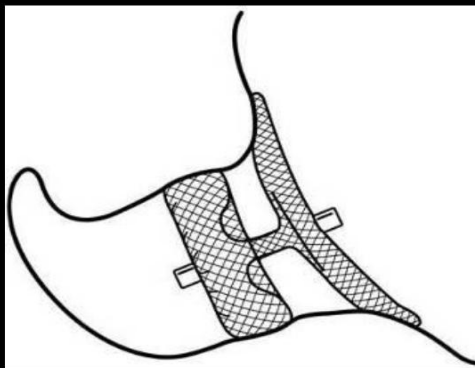
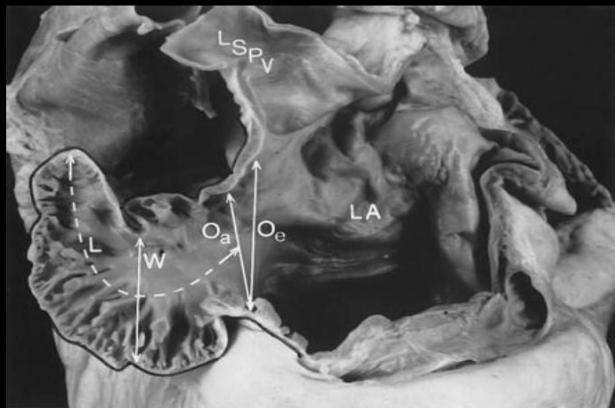


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Cardiac Plug



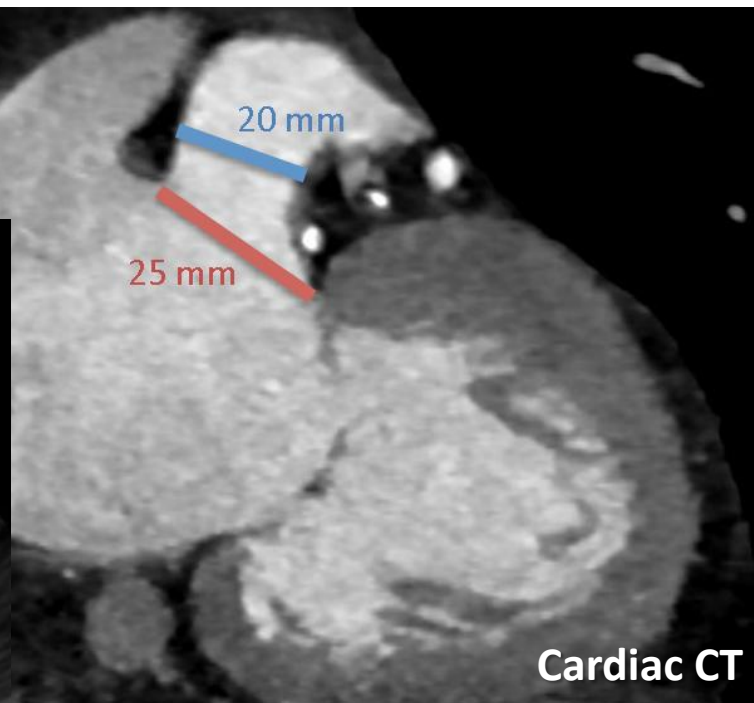
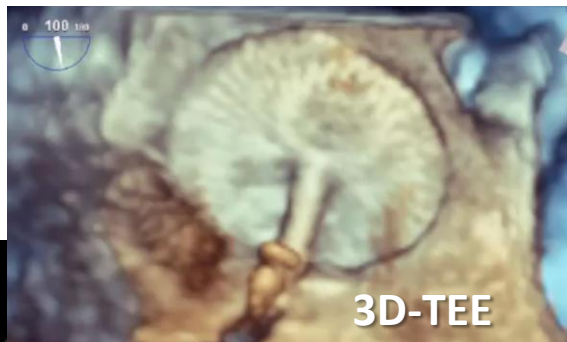
LAA anatomy

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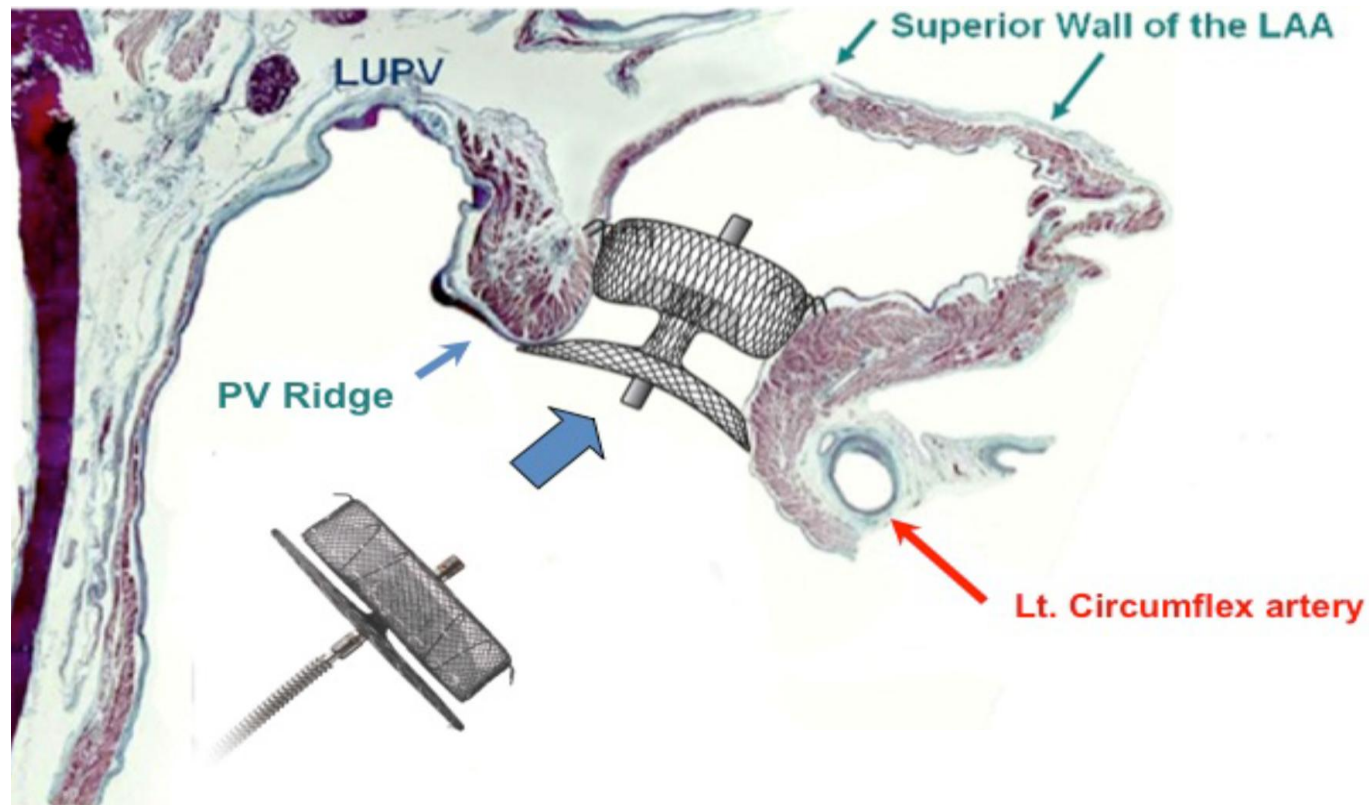


Imaging: cardiac CT, TEE, intra-cardiac echo

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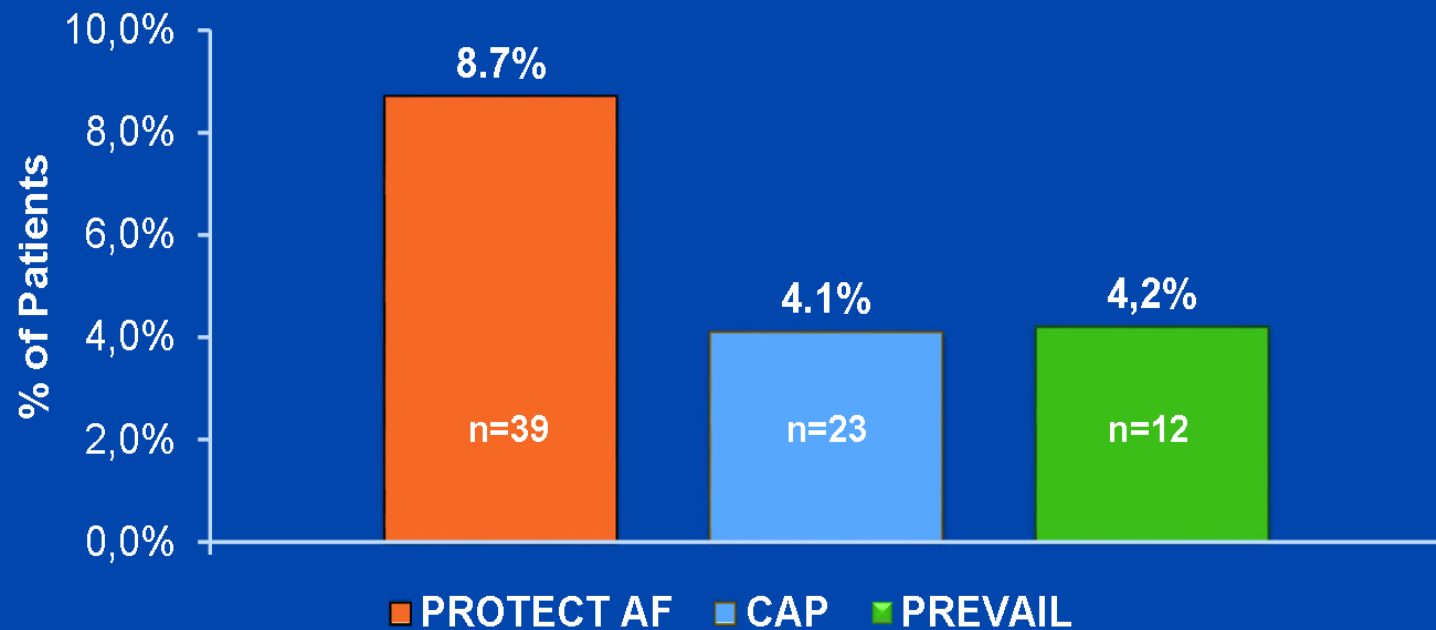
LAAO technique: sizing



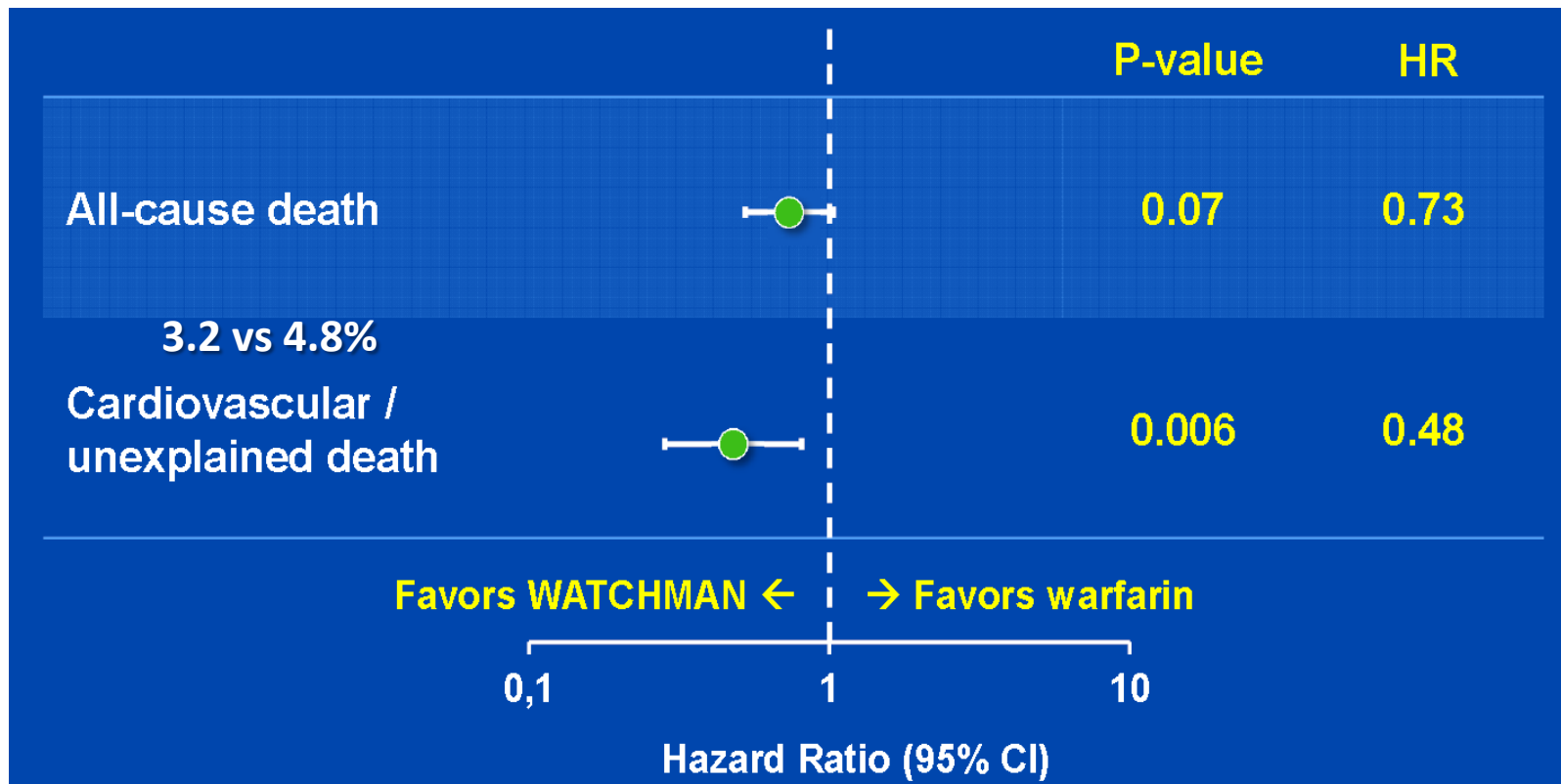
Periprocedural complications (Watchman®)

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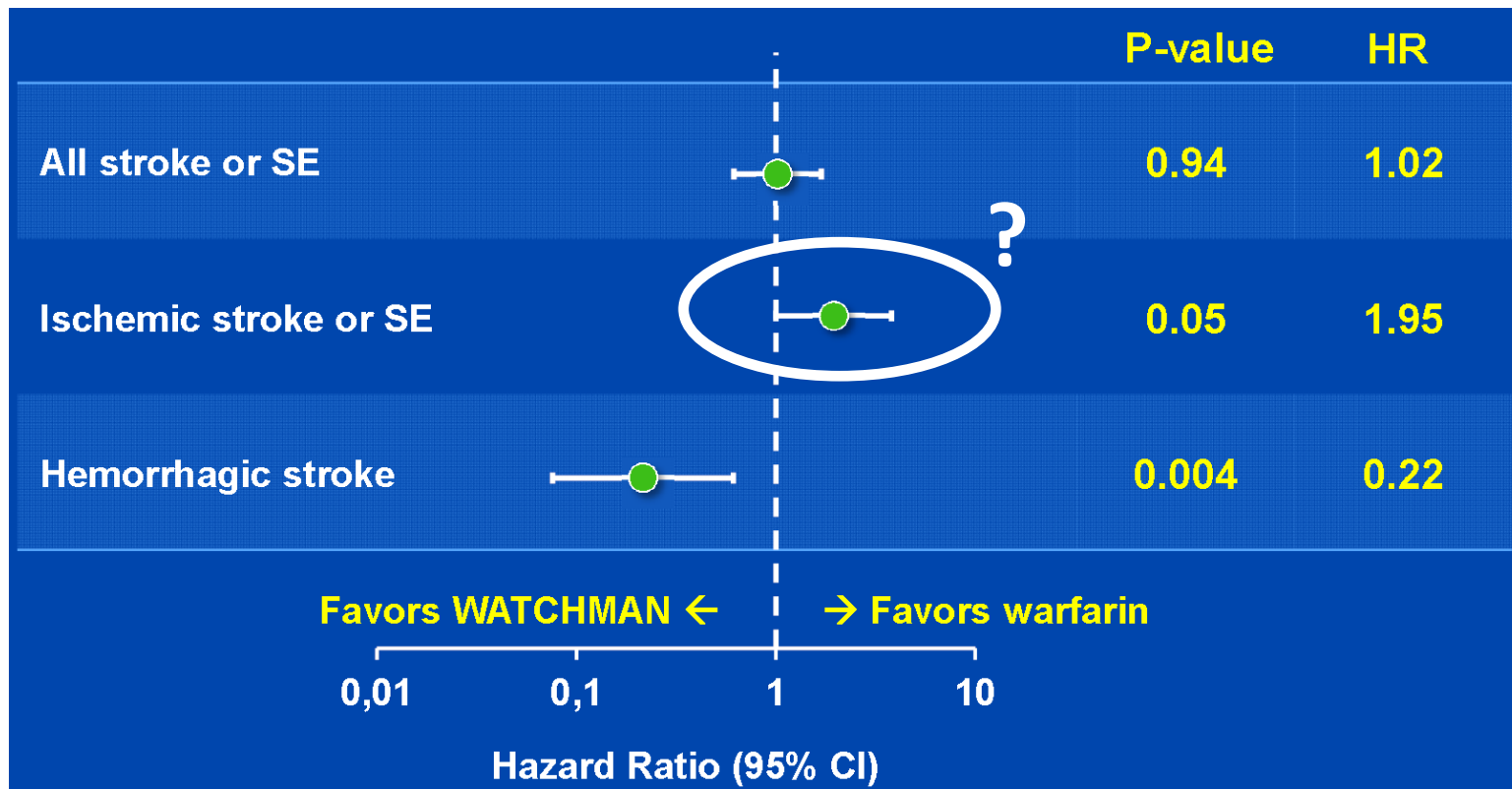
Composite cardiac perforation, pericardial effusion with tamponade, ischaemic stroke, device embolization, and other vascular complications



Patient-level meta-analysis: Mortality

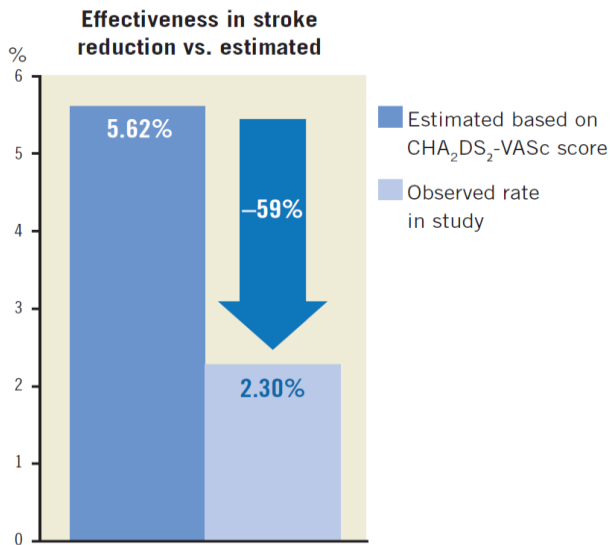


Patient-level meta-analysis: Stroke

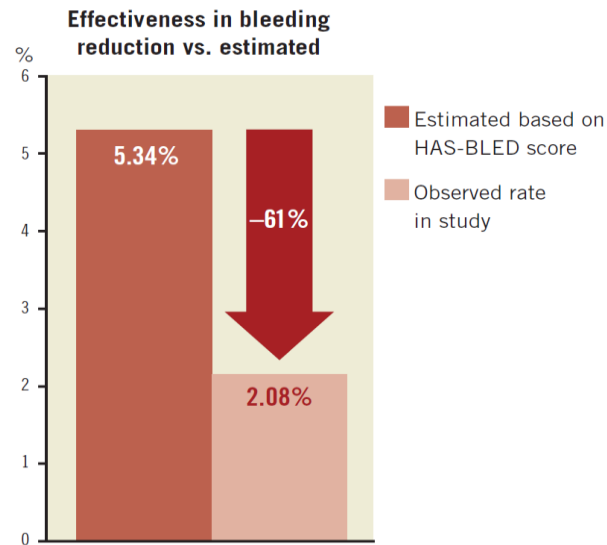


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Total patients	Total patient-years	CHA ₂ DS ₂ -VASc score
1,001	1,349	4.43
Estimated stroke rate per CHA ₂ DS ₂ -VASc		Actual annual stroke rate (No. strokes+TIA)
5.62%		2.30% (31)



Total patients	Total patient-years	HAS-BLED score
1,001	1,349	3.12
Estimated bleeding rate per HAS-BLED		Actual annual bleeding rate (No. major bleeds)
5.34%		2.08% (28)

LAAO guidelines recommendations

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- Consensus statements/guidelines from ACC/HRS/SCAI + EHRA/EAPCI – and, most recently, from the ESC (AF guidelines, august 2016) provide *some* guidance on the use of LAAO in selected patients:

LAA occlusion may be considered for stroke prevention in patients with AF and contra-indications for long-term anticoagulant treatment (e.g. those with a previous life-threatening bleed without a reversible cause).	IIb	B
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LAAO guidelines recommendations: ESC

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Patient with AF suffering from an intracranial bleed on OAC
If acute event: establish intensity of anticoagulation (see bleeding flow chart)

Contra-indication
for OAC

Consider further information to allow Informed judgement

Factors supporting withholding of OAC:

Factors supporting resumption of OAC:

LAA occlusion may be considered for stroke prevention in patients with AF and contra-indications for long-term anticoagulant treatment (e.g. those with a previous life-threatening bleed without a reversible cause).

IIb

B

by multidisciplinary team advice

No stroke
protection
(no evidence)

LAA
occlusion
(IIbC)

Initiate or resume OAC, choosing
an agent with low intracranial bleeding risk,
after 4–8 weeks (IIbB)

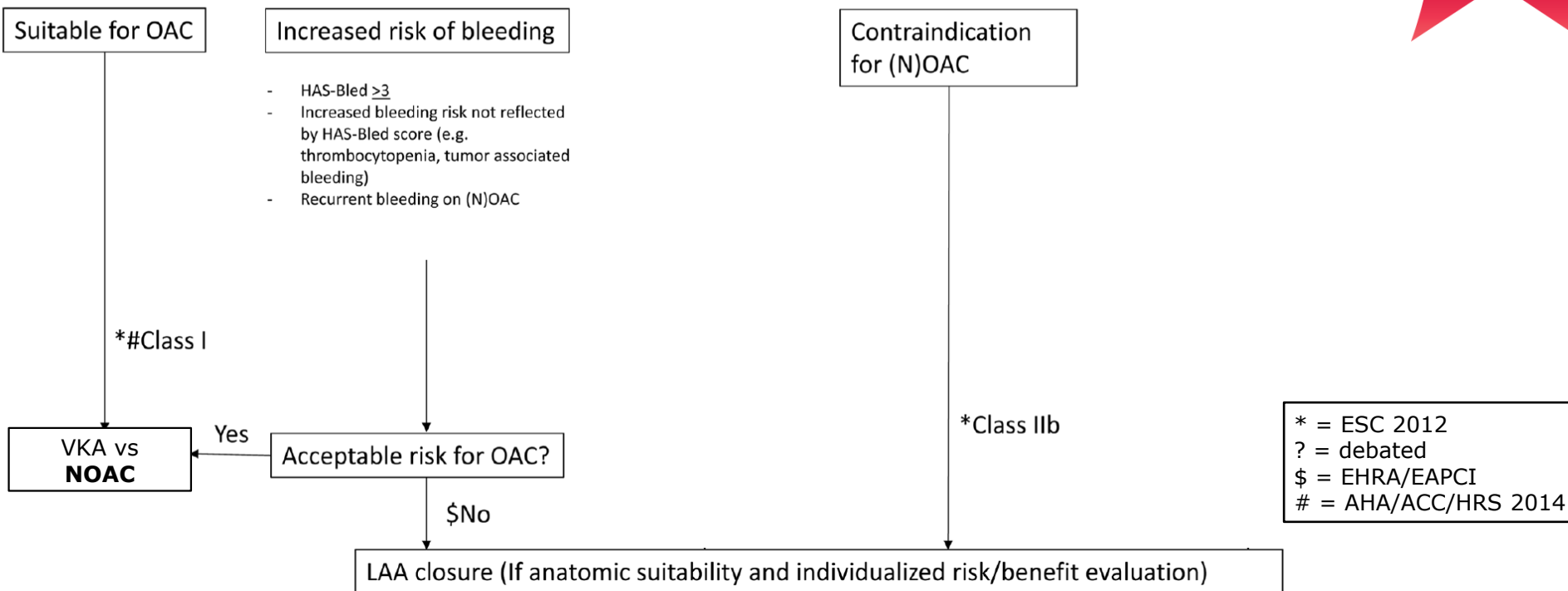


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LAAO – for whom?

Non-valvular atrial fibrillation with increased thromboembolic risk (CHA2DS2-VASc ≥ 2)

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Based on recommendations from ESC, AHA/ACC/HRS, EHRA/EAPCI & Suradi et al 2017.

LAAO contraindications

- AF with low risk of stroke, e.g. CHA2DS2-VASc ≤ 1
- Valvular heart disease, e.g. mitral stenosis
- Other indications for long-term OAC: VTE, mechanical prosthetic valve, thrombi in left atrium or ventricle.
- Contraindications for transseptal puncture, e.g. thrombus/tumour/infection, (atrial septum closure device).

LAAO: Conclusions & gaps in evidence

- An intriguing concept, but more evidence is warranted.
 - Refinement of techniques & improved patient selection.
 - Post-procedural antithrombotic treatment?
 - Importance & management of device-related thrombi and peri-device flow?
 - Role of LAA in neurohormonal regulation & arrhythmia propagation?
 - Follow-up & choice of imaging (cardiac CT, TEE etc)?
 - LAAO vs NOAC in AF pts eligible for OAC? (PRAGUE-17)
-
- LAAO may be considered in pts with non-valvular AF *ineligible* for OAC (IIb,B). Particularly in AF pts *eligible* for OAC, LAAO should preferably be performed as a part of a clinical trial!

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