



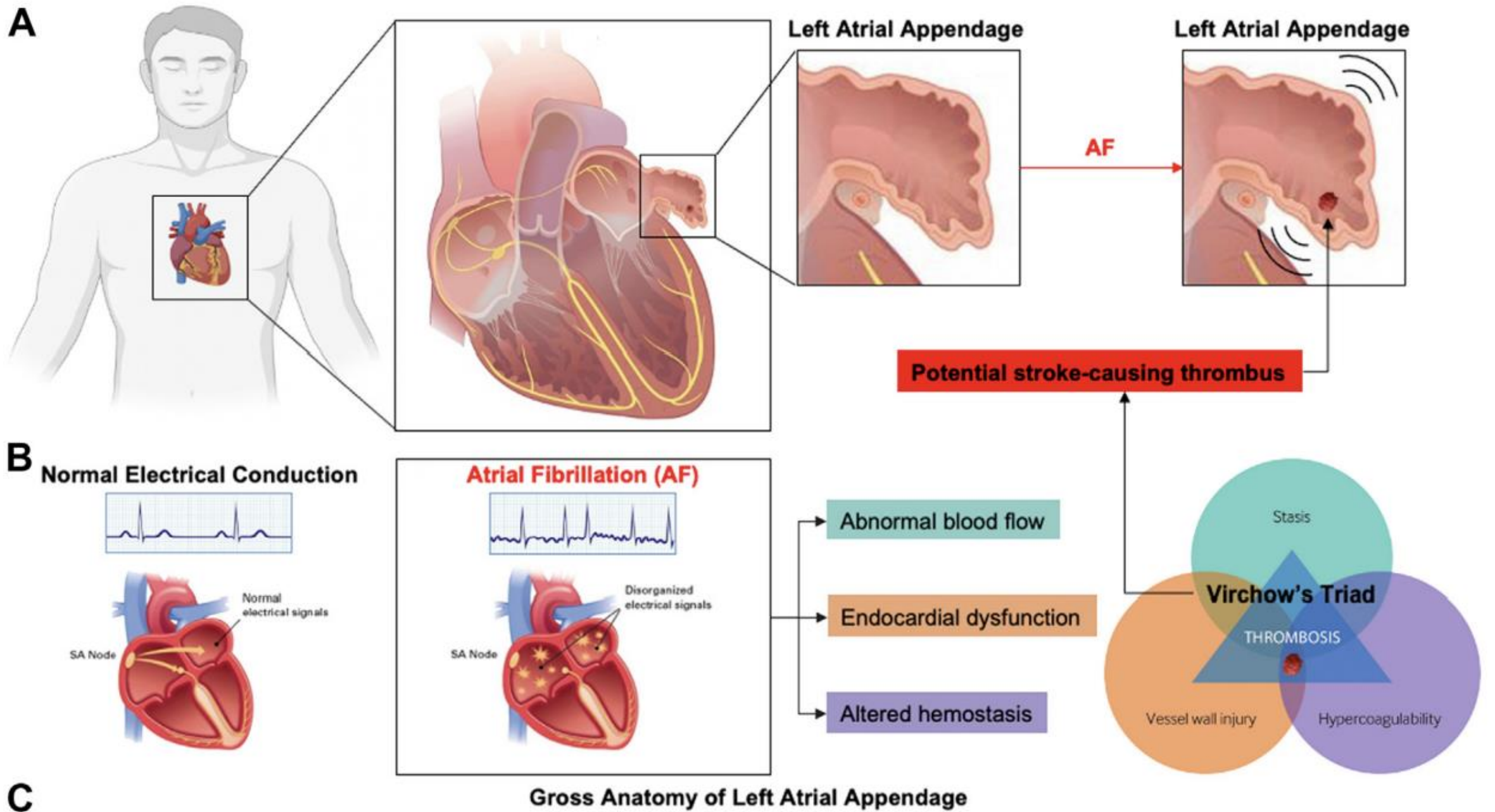
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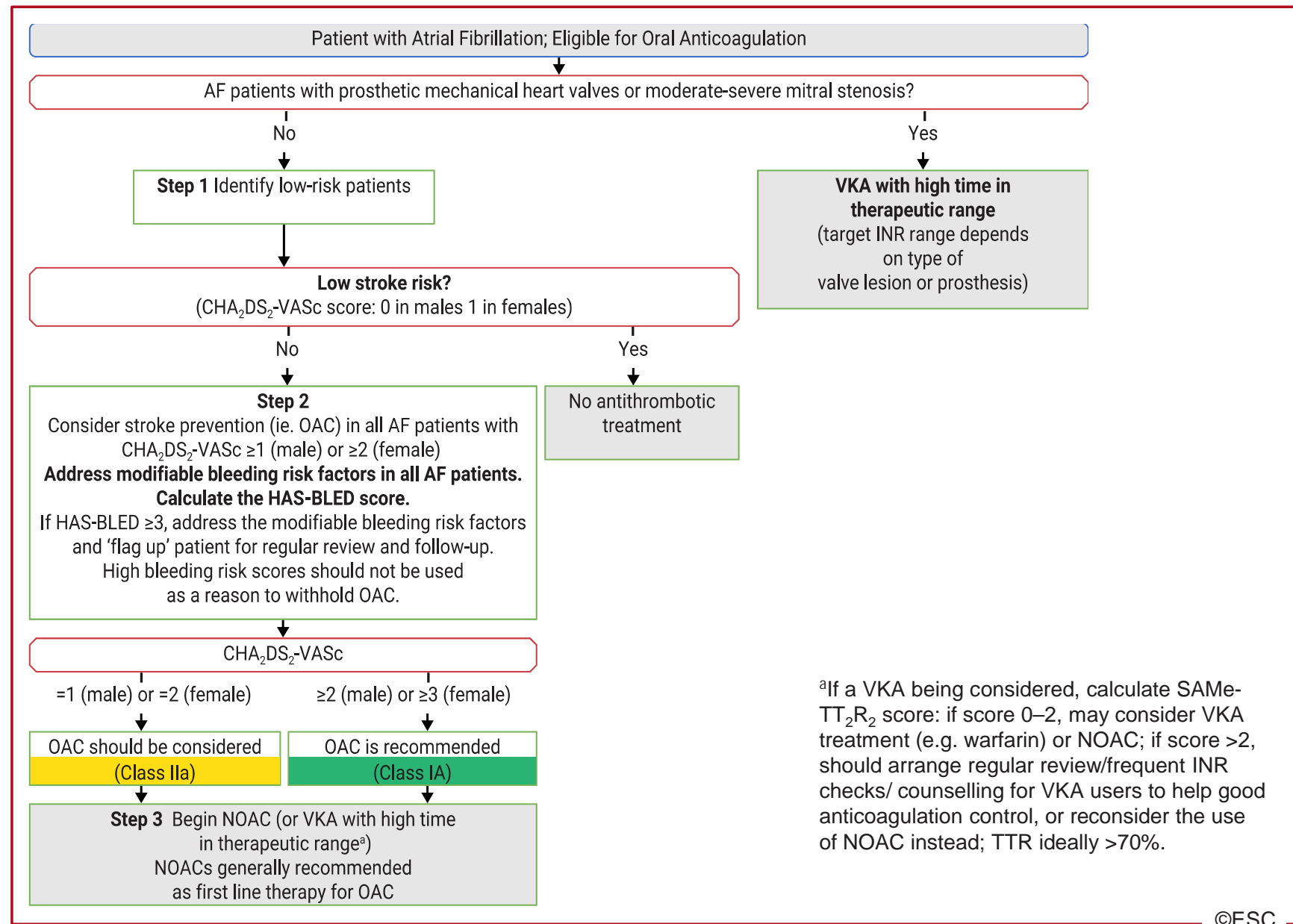


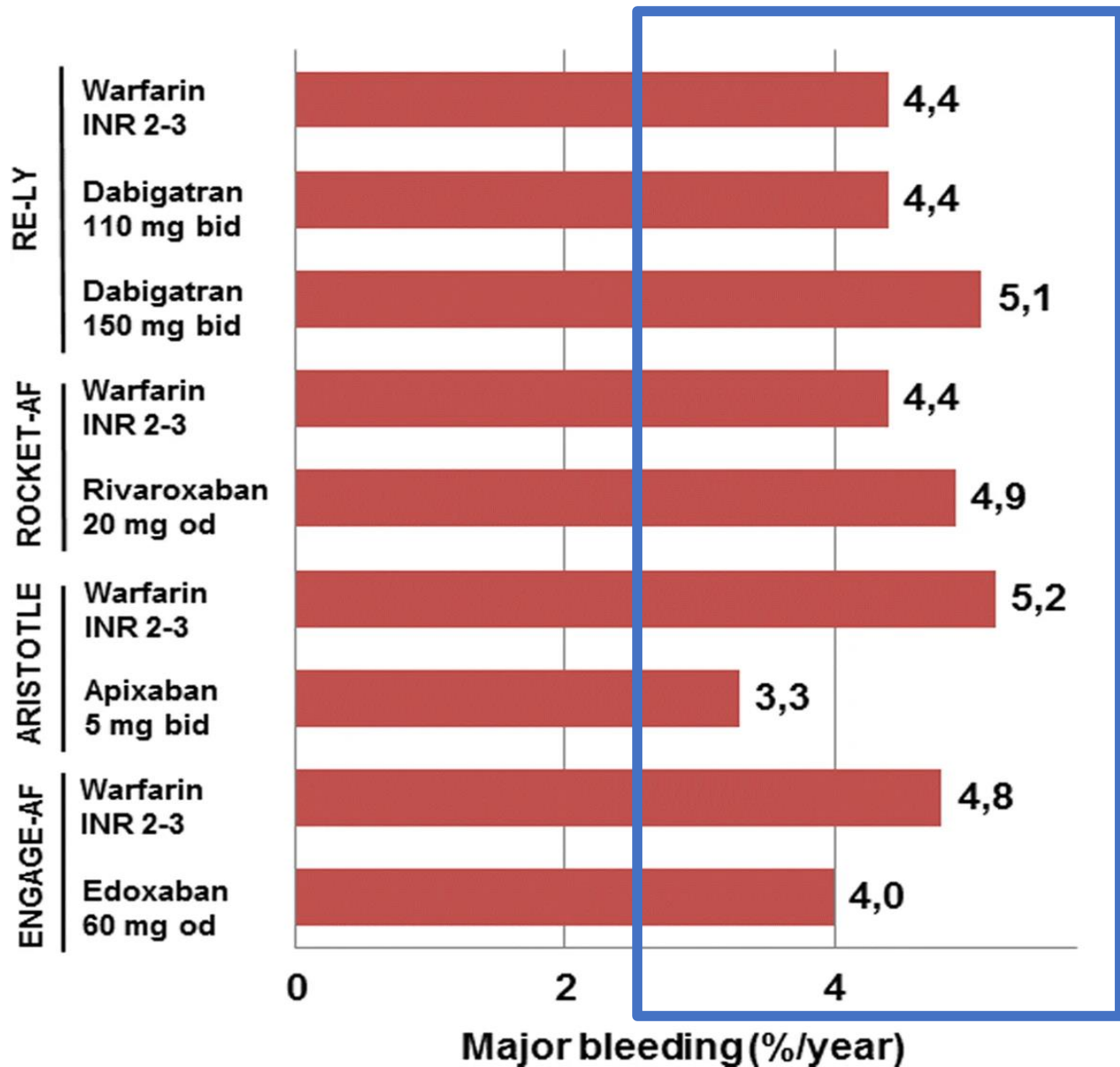
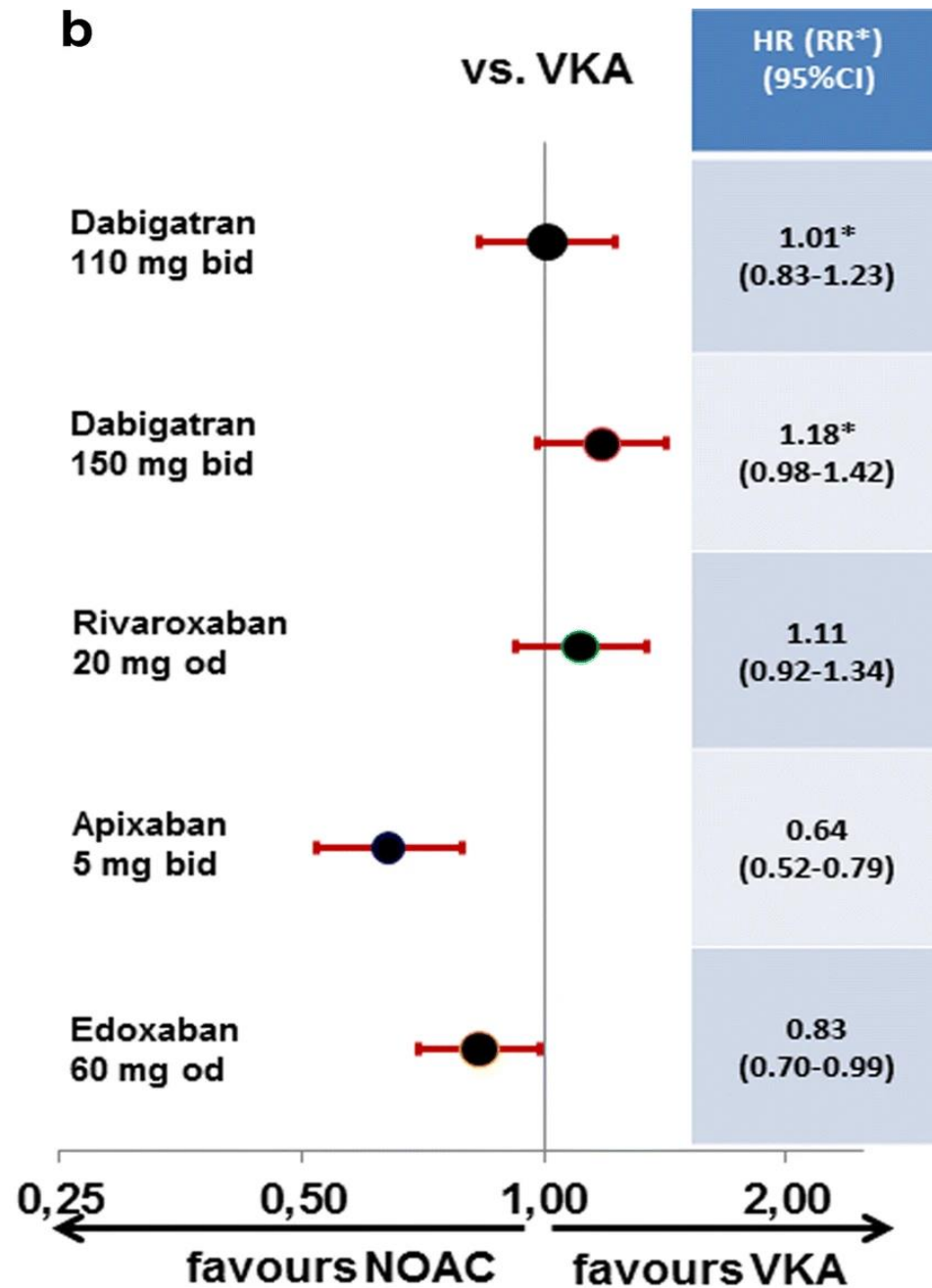
Impact of Preexisting Left Atrial Appendage Occluder on Subsequent Pulmonary Vein Isolation

CHIA-TI TSAI, MD, PhD

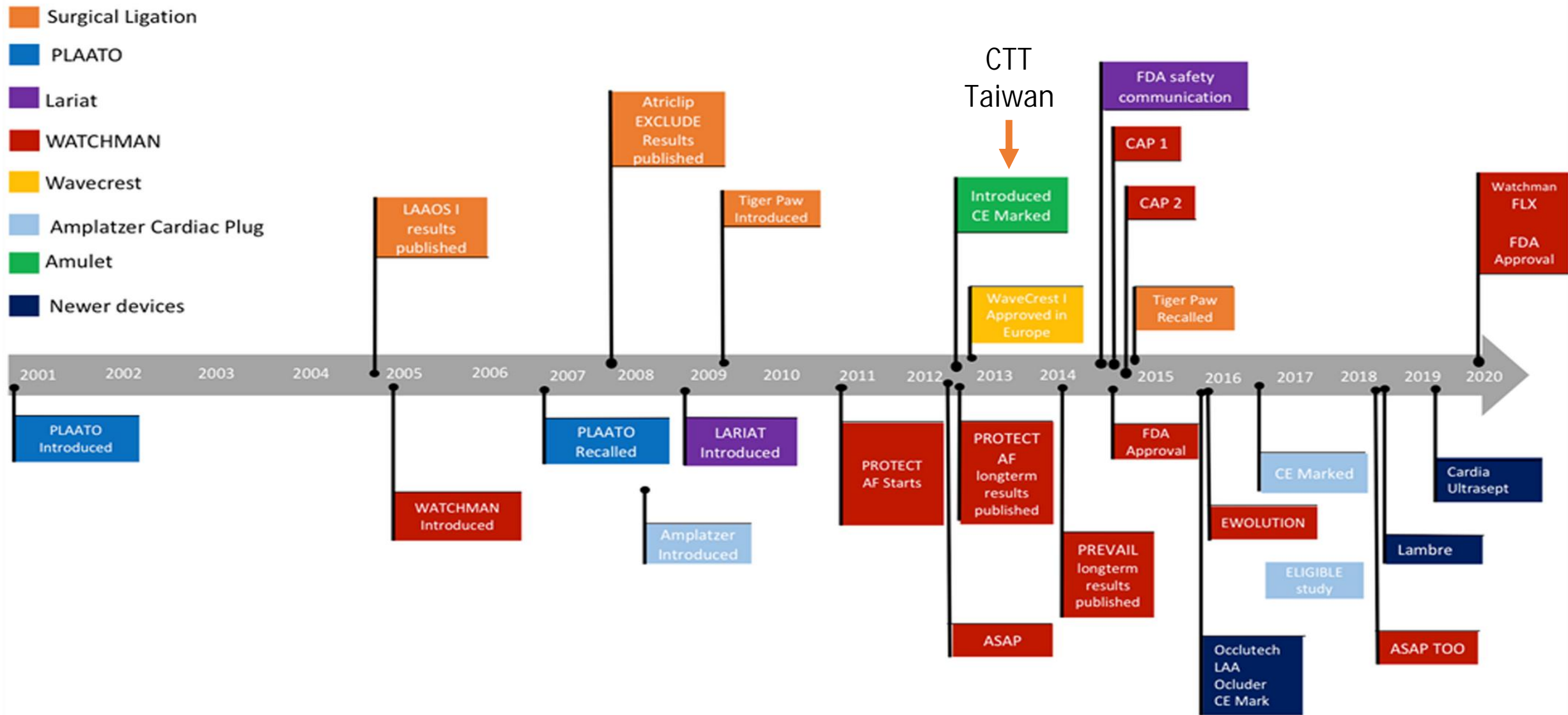
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a**b**

Timeline showing important dates of left atrial appendage occlusion trials and US FDA milestones in the United States.





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Original Article

Long-term outcomes of percutaneous left atrial appendage closure for the prevention of stroke in patients with atrial fibrillation: Asia-Pacific experience

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Patients with AF Frequently Need PVI Sequence of LAAO and PVI

- Concomitant/combine procedures:

Advantages: single procedure, single sheath, keep previous same OAC for 4-6 weeks

Using a single steerable sheath for simultaneous left atrial appendage occluder implantation and pulmonary vein isolation

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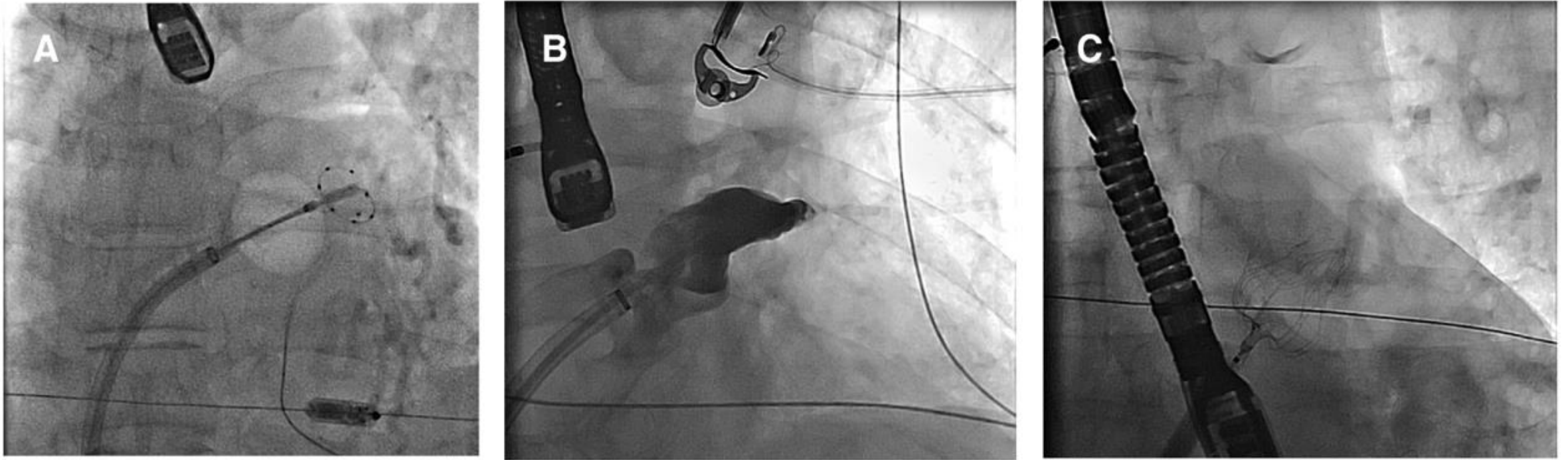


Figure 1 Use of a single steerable sheath for pulmonary vein (PV) cryoablation and Watchman implantation. **A:** Inflation of cryoballoon and cryoablation in the left superior PV. **B:** After cryoablation of 4 PVs, a pigtail catheter was inserted into the same sheath for left atrial appendage (LAA) angiography. **C:** Watchman device was implanted into the LAA through the same sheath.

Concomitant/Combined LAAO and PVI

- Disadvantages:

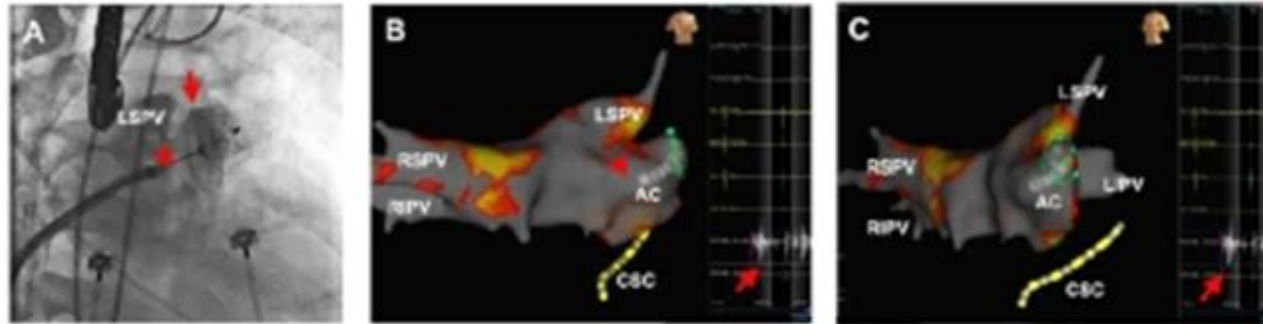
LAAO ostium/landing zone size discrepancy if PVI done first

LAAO damage, moved, dislodged, acute DRT or ridge/carina difficult to ablate, if LAAO done first.

STUDY POPULATION

- From the multi-center LAAO registry of 310 patients, there were 10 symptomatic and drug-refractory AF patients but with anticoagulant resistant LAA thrombus asked for ultimate treatment.

These 10 patients finally received a bailout procedure of LAAO implantation first to occlude the “thrombus” and then cardioversion and CPVI.



The occluder should cover the whole ostium to trap the thrombus in LAA (A). The upper part of occluder should be within LAA (arrow in A) to expose Coumadin ridge (arrowhead in A and B) to facilitate left side PVI. Occluder is registered in 3D mapping (green circle in B and C) and ablation catheter should not touch it during PVI. When touching occluder, there is an alarm of signal noise (arrows in B and C).

PROCEDURE OUTCOME

- No intraprocedural complications
- No device embolization, peri-device leak ≥ 5 mm or stroke event after 1.7 ± 0.7 Y follow-up
- Similar AF recurrence rate compared with those without LAA thrombus.

Sequence of LAAO and PVI (II)

- PVI before LAAO:





The most common scenario, keep previous same OAC and discontinue 4-6 weeks days after LAAO

- LAAO before and PVI done later:

Impact of preexisting LAAO on PVI procedure??

Original research

Impact of pre-existing left atrial appendage occluder on catheter ablation of atrial fibrillation

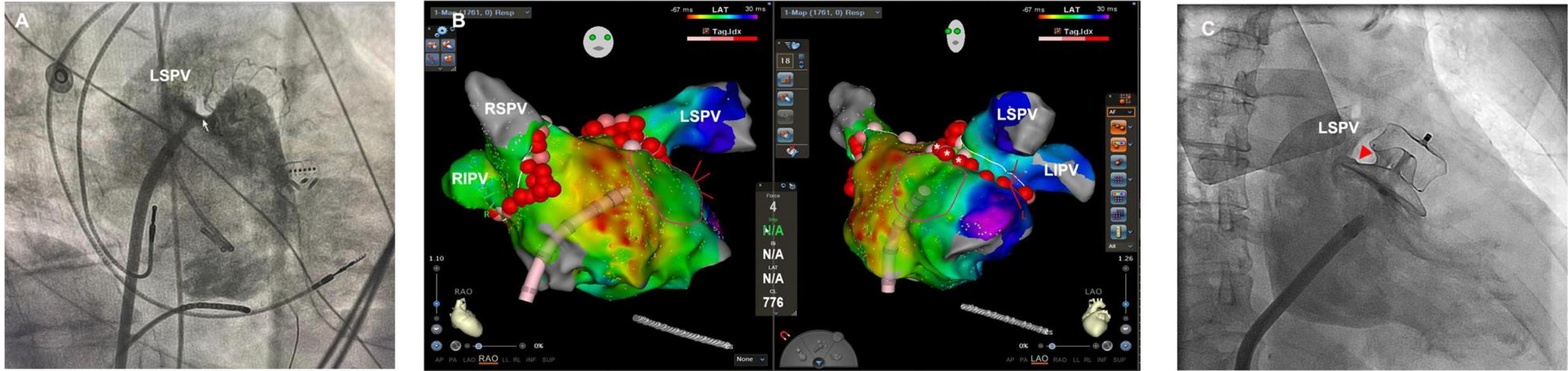
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- Patients with a preexisting Watchman or Amulet and symptomatic AF despite AAD were enrolled
- PVI or cryoablation were done according to current practice
- CFAE might be done per operators' decision in persistent AF

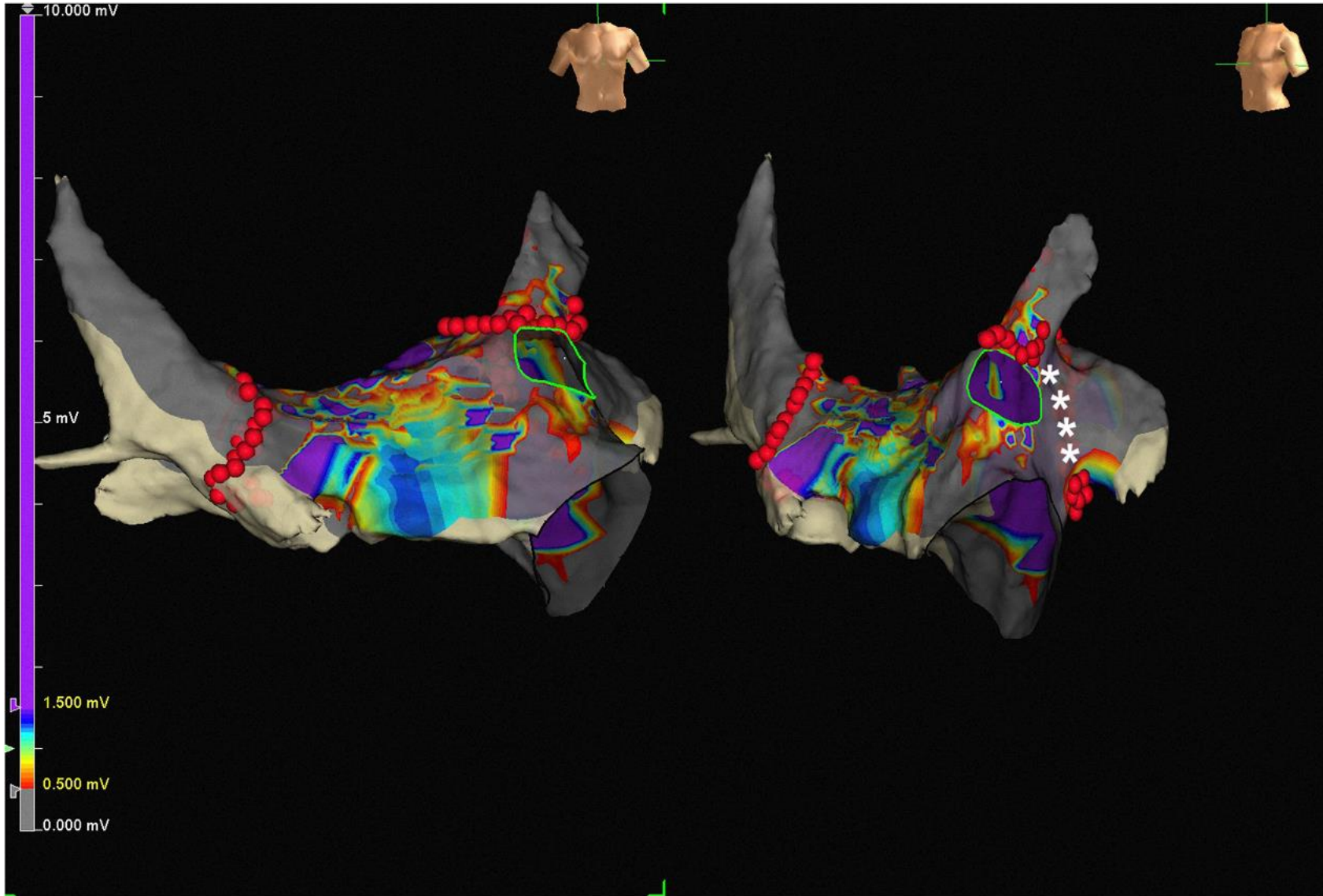
Variable	Patients with LAAO (n = 65)	Patients without LAAO (n = 124)
Clinical parameters		
Age (year)	72.1±11.4	70.9±10.2
Men	32 (58%)	68 (55%)
CHA ₂ DS ₂ -VASc score	3.7±2.1	3.6±1.9
HAS-BLED score	3.6±2.0	3.4±1.5
Diabetes mellitus	13 (20%)	29 (23%)
Hypertension	40 (62%)	74 (60%)
Congestive heart failure	12 (18%)	25 (20%)
History of myocardial infarction	2 (3%)	4 (3%)
Previous history of TIA/stroke	14 (22%)	18 (15%)
Coronary artery disease	18 (28%)	7 (37%)
Procedure parameters		
LAAO Device parameters		
LAA orifice diameter (range, mm)	14-32	13-33
LAA orifice diameter (mean, mm)	24.6±2.9	23.9±3.0
Implant (size range, mm)	18-34	18-34
Implant (mean size, mm)	23.7±3.2	23.2±2.9
PVI mode		
Cryoablation	5	12
Radiofrequency ablation	60	112

The first impact



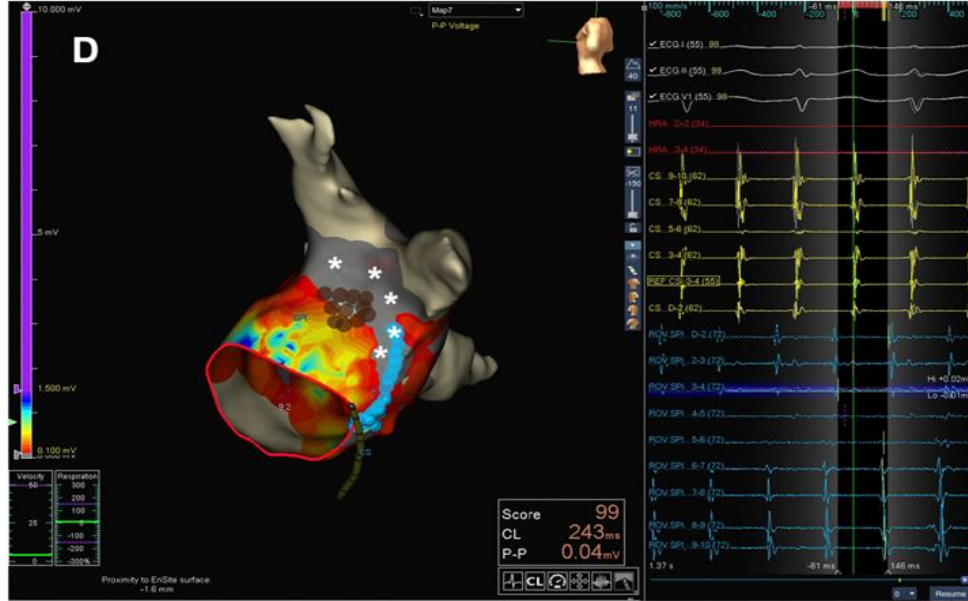
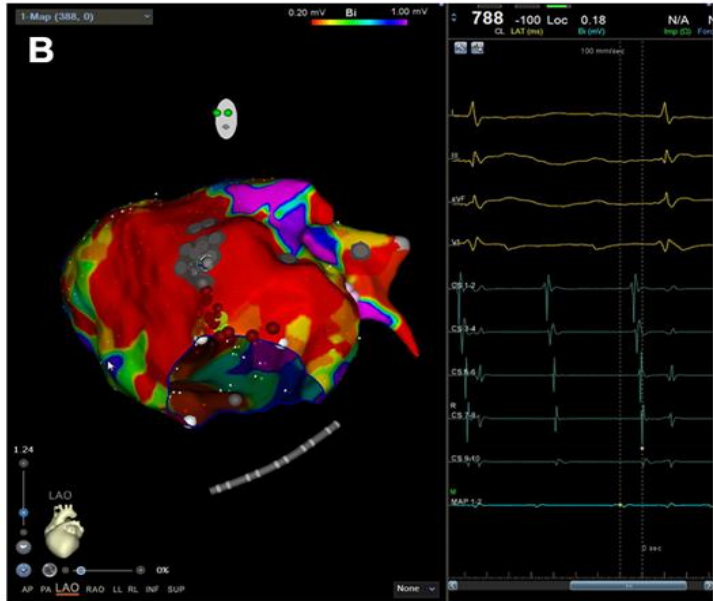
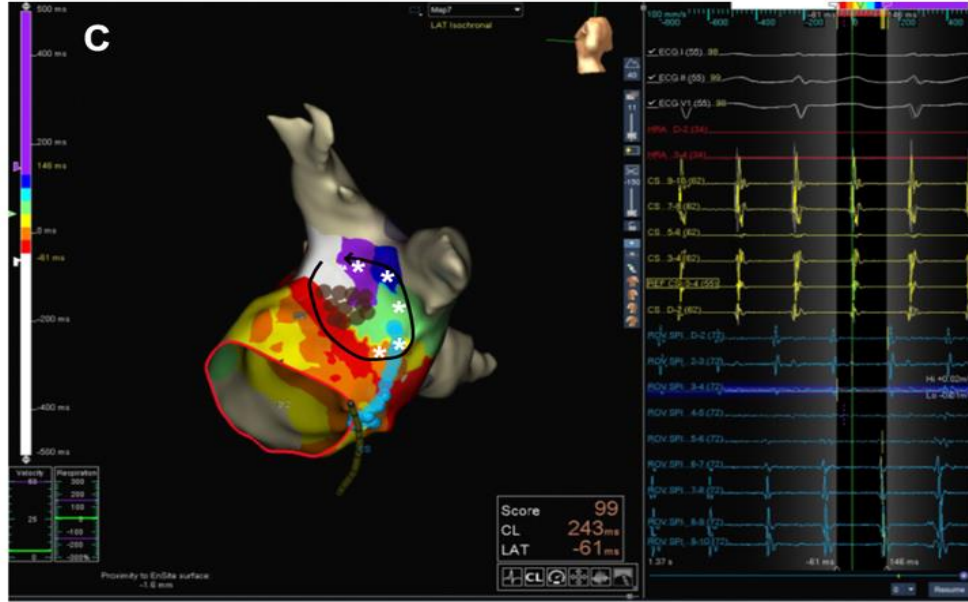
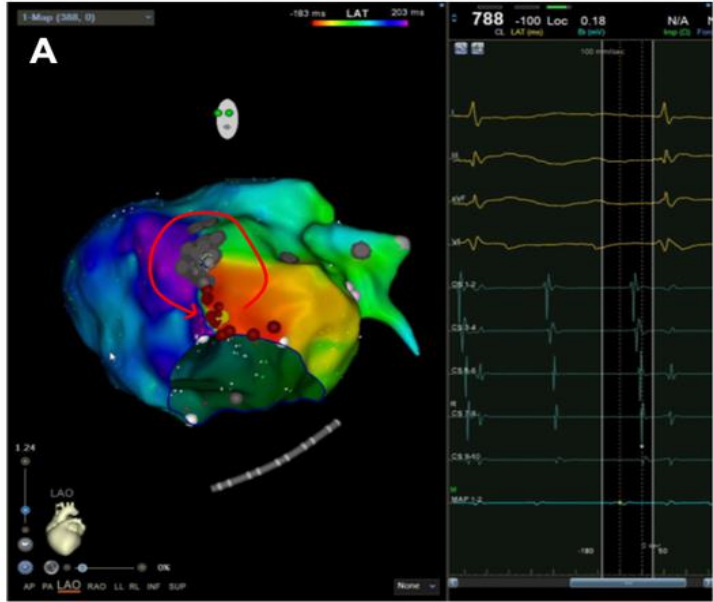
In 4 (13%) of 31 patients, complete left-sided PVI could not be achieved in patients with ACP/Amulet because the Amulet disc covered the Coumadin ridge.

The second impact

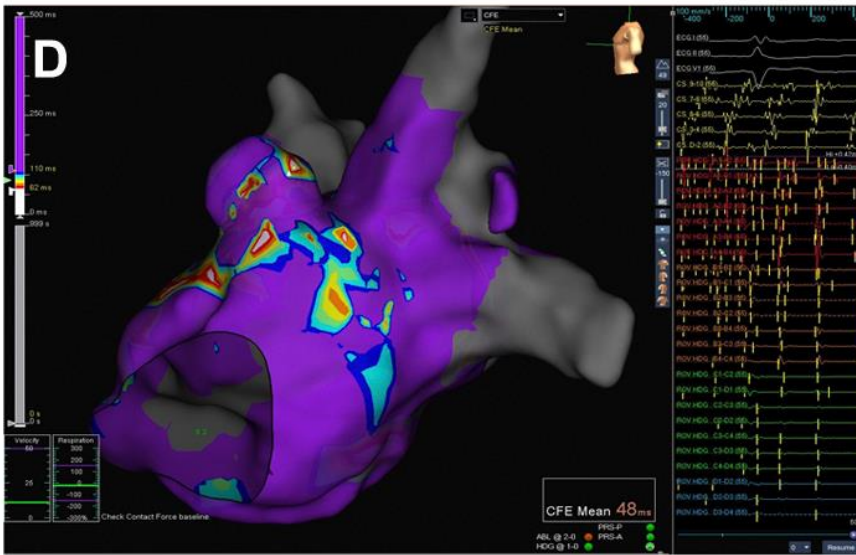
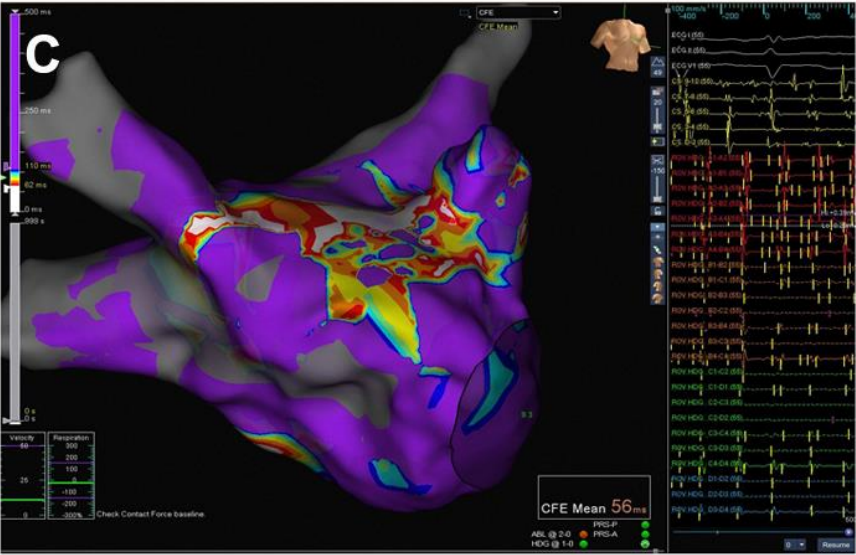
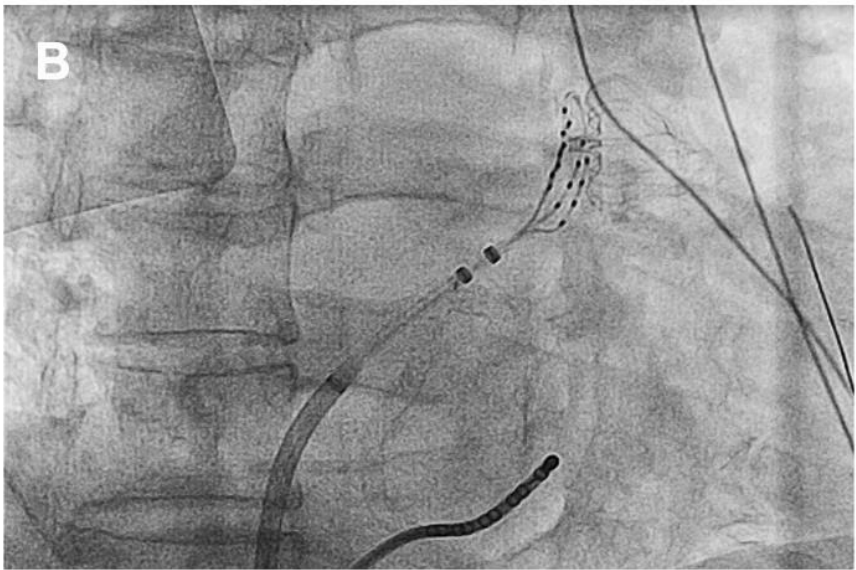
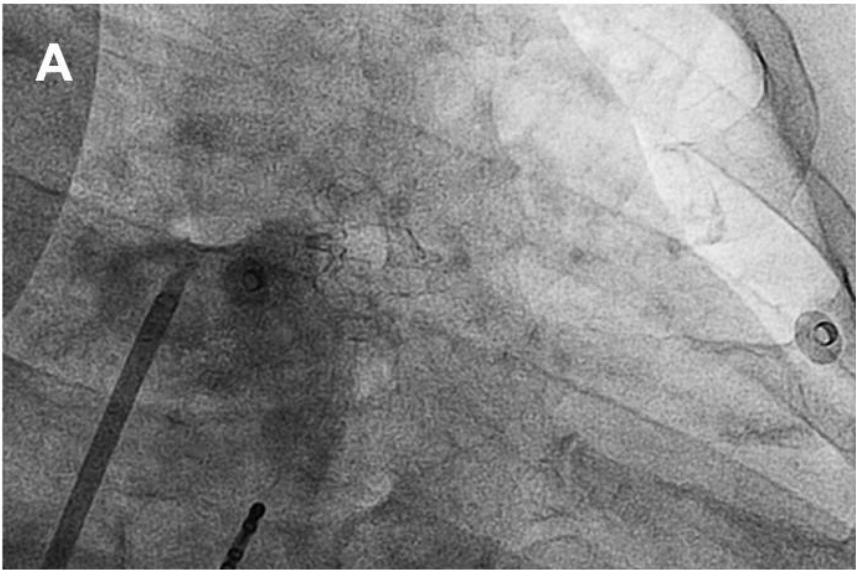


The mean voltage was 2.80 ± 1.55 mV, which was significantly lower than that of LAA without occluder (5.65 ± 1.96 mV) ($P=0.038$).

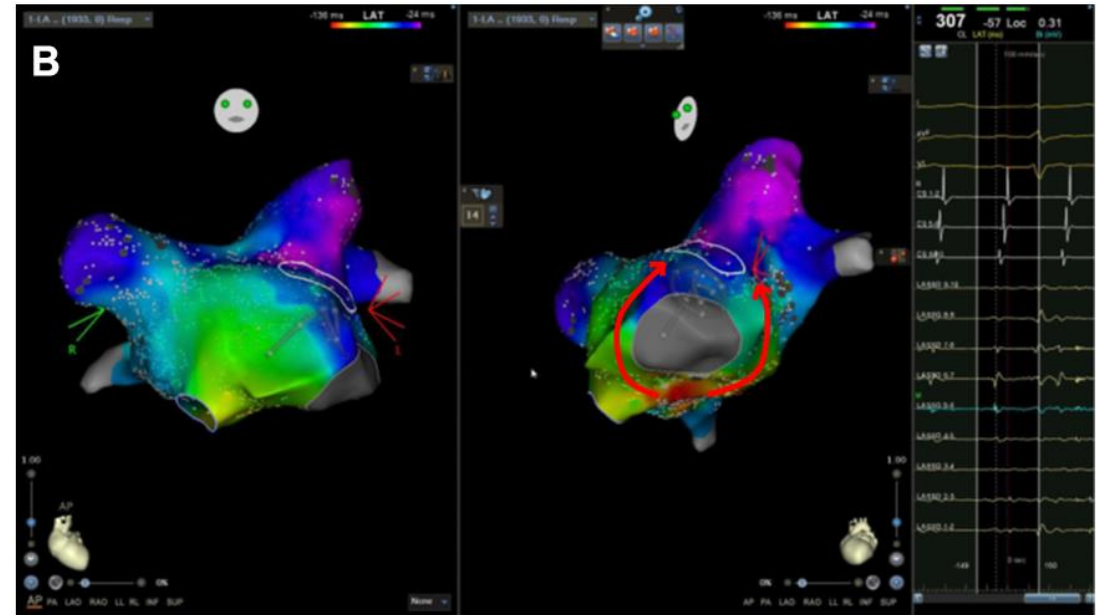
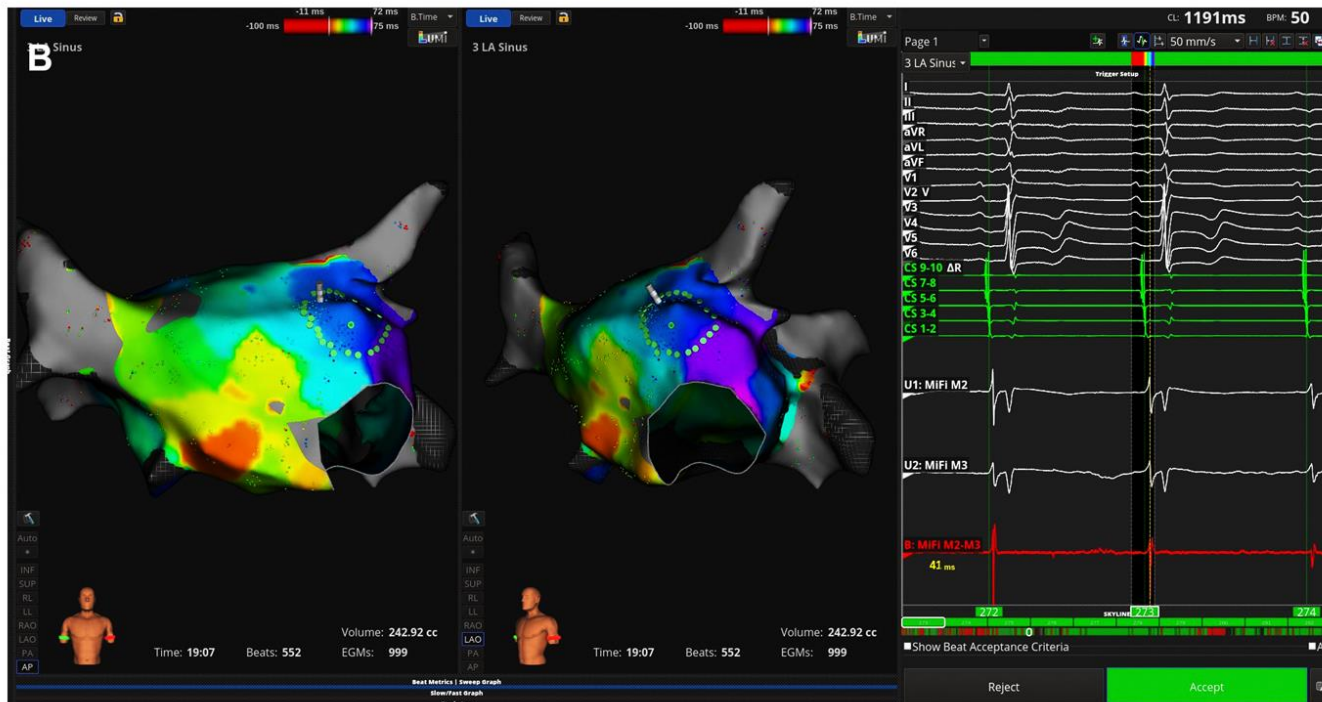
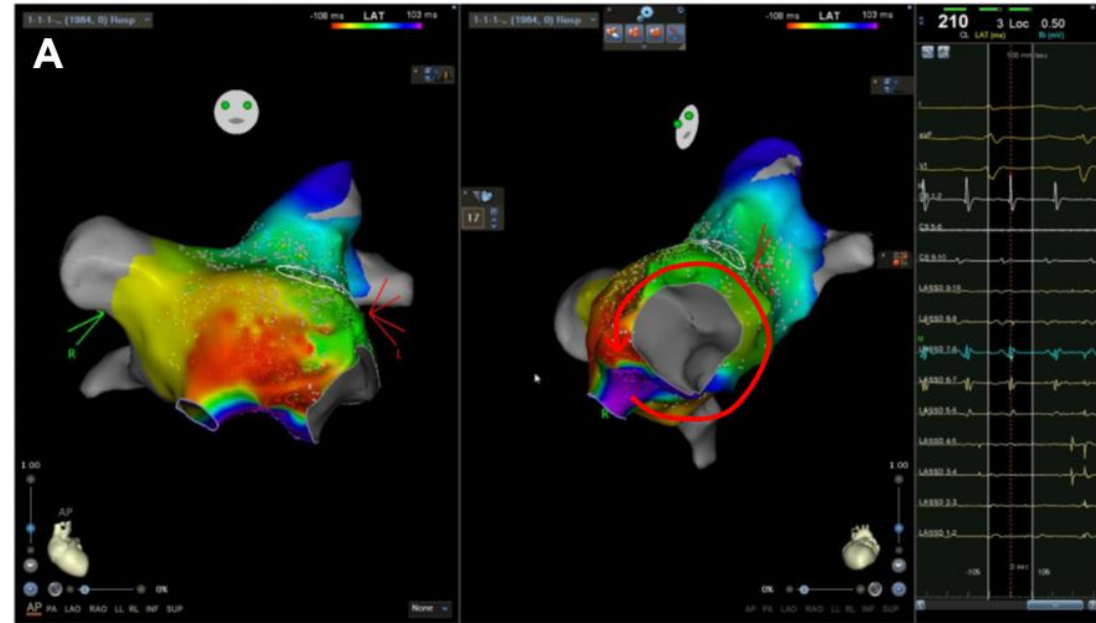
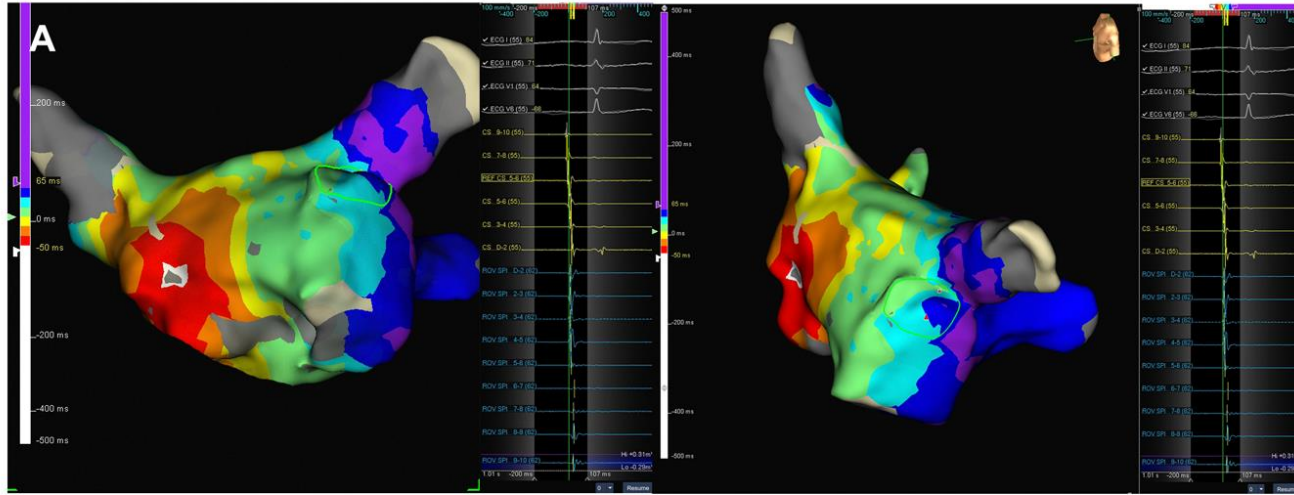
The third impact

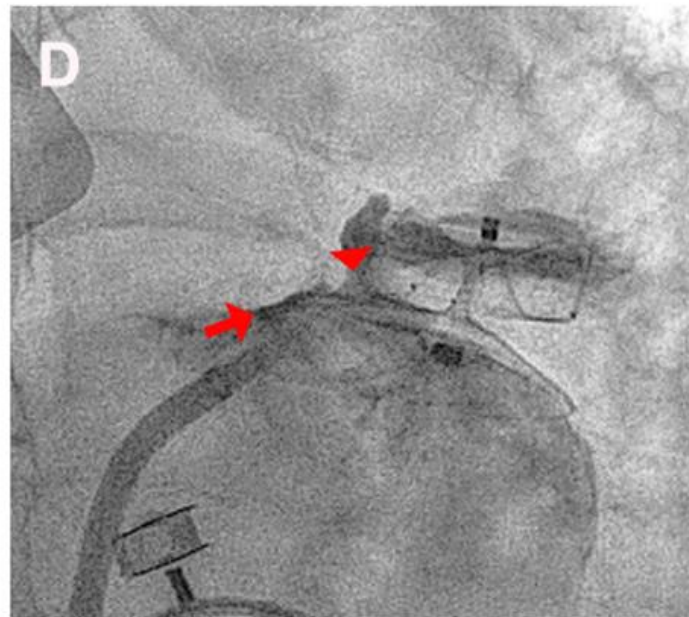
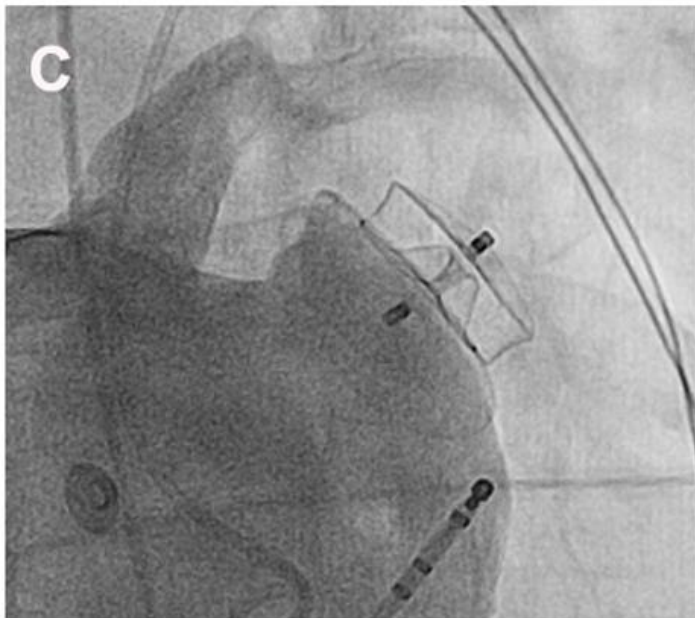
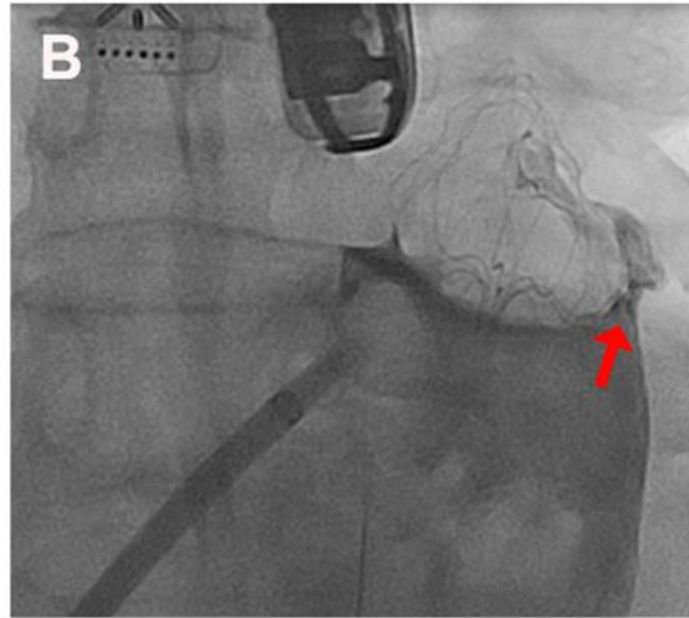
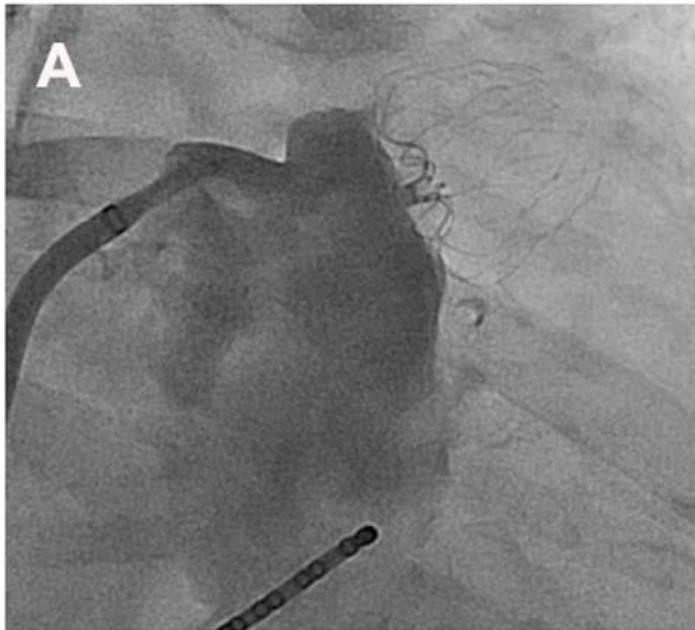


The fourth impact



Homogeneous conduction over LAAO surface



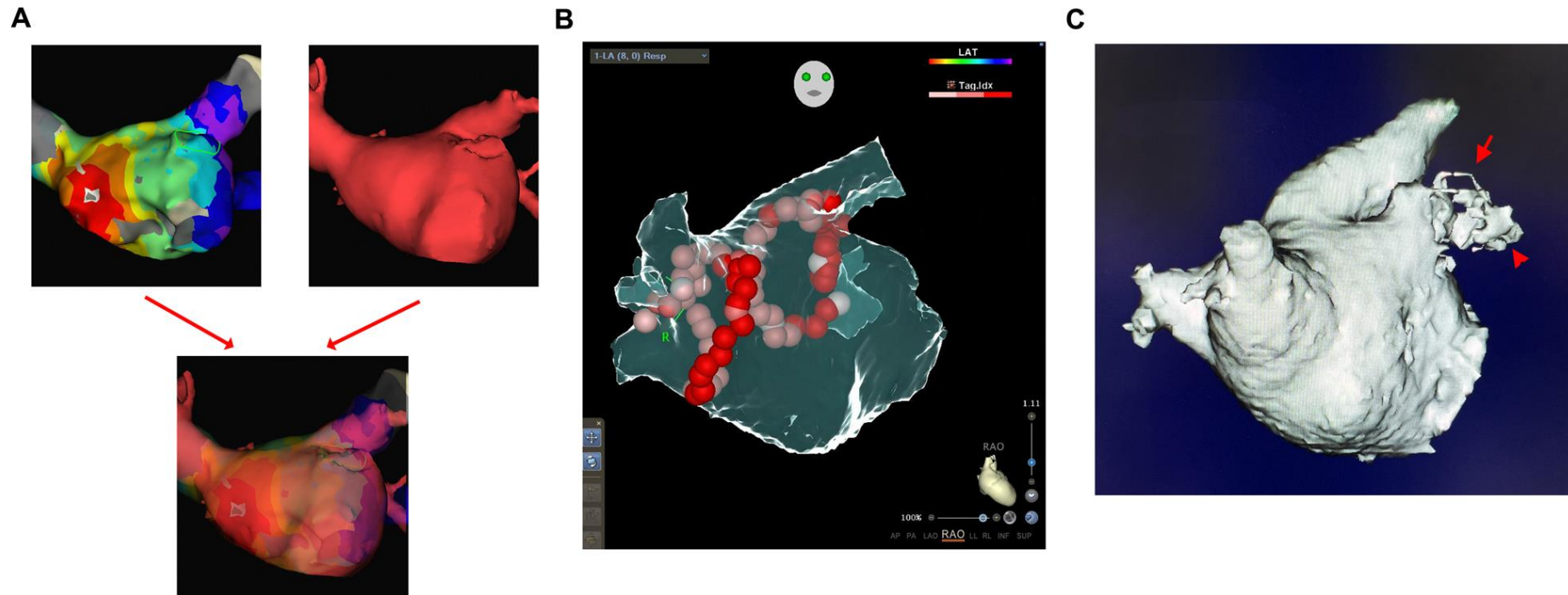


Sixteen patients (33%) had LAA leakage demonstrated by LAA angiography, 4 (13%) in Amulet and 12 (35%) in Watchman group (figure 7). The leak rate detected by LA angiogram was significantly higher than that by preprocedural TEE (16/49 vs 7/58, $p=0.047$).

Procedure outcomes

- Pericardial effusion : 3/124 vs 2/65, P=0.562
- **Periprocedural stroke : 2/65 vs 1/124, P=0.272**

No-touch technique



- AF recurrence: 6/65 (9.2%) vs 11/124 (8.8%) in mean f/u 2.5 years

Conclusions

- (1) PVI is feasible in AF patients with preexisting Watchman or ACP/Amulet without new peri-device leak, **but associated with a numerically higher rate of pre-procedural stroke.**
- (2) Complete isolation of left-sided pulmonary veins might not be achieved if the device covered the Coumadin ridge
- (3) LAAO might modulate LA substrate and induce peri-device fibrosis, peri-device LA flutter and CFAE.
- (4) We demonstrate homogeneous wavefront conduction over the occluder under sinus rhythm or even under atrial arrhythmia.
- (5) Incomplete endothelialization of LAAO device could be detected by impedance measurement of the mapping catheter and/or presence of local bipolar electrocardiogram on the LAA device.
- (6) LAA leak could be detected by LAA angiogram concomitantly during PVI which was more sensitive than pre-procedural TEE.
- (7) Combination of CT image and electromagnetic 3D mapping with registration of the LAAO location could guide the ablation catheter not to touch and damage the LAAO device.

Thanks for your attention
Comments or questions ??

