Antithrombotic Treatment after LAAO: Aspirin or Low Dose NOAC?

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COI Disclosure

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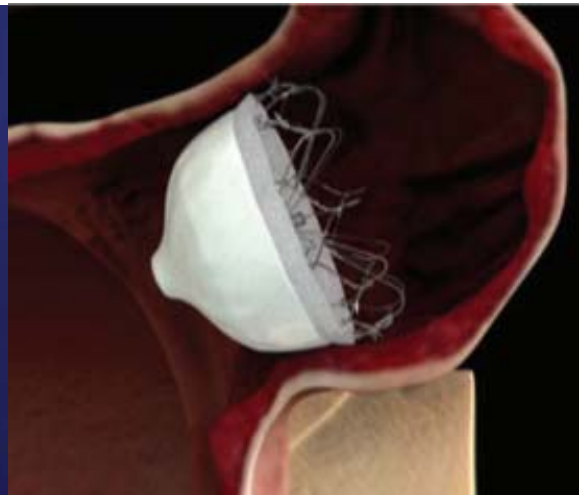
The authors have no financial conflicts of interest to disclose concerning the presentation.

Left Atrial Appendage Occlusion

- Left atrial appendage occlusion (LAAO) has become an established therapeutic option for stroke prevention in patients with AF and contraindications to oral anticoagulation.

Watchman
LAA occlusion device

Amplatzer Cardiac Plug



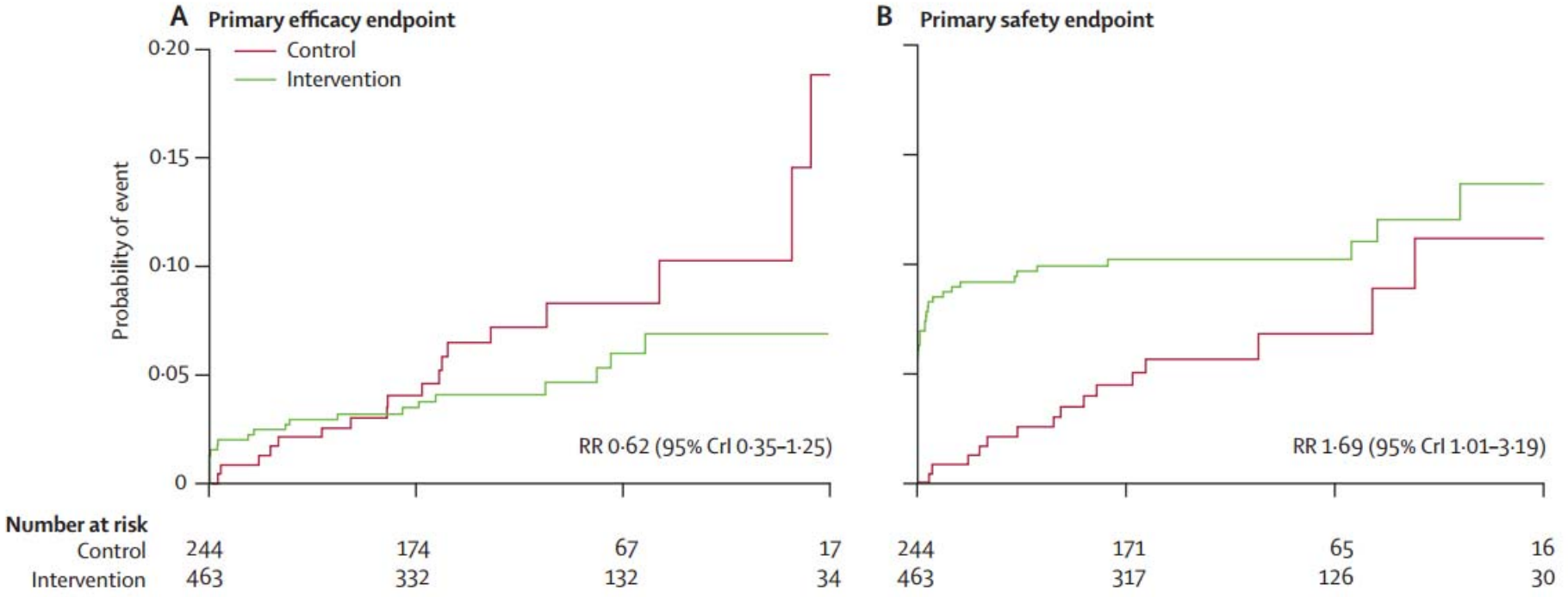
WaveCrest device.

Europace. 2014 Oct;16(10):1397–1416
EuroIntervention. 2016 May 17;12(1):103–111.

In PROTECT AF study (vs warfarin)

Percutaneous closure of the left atrial appendage versus warfarin therapy for prevention of stroke in patients with atrial fibrillation: a randomised non-inferiority trial

*David R Holmes, Vivek Y Reddy, Zoltan G Turi, Shephal K Doshi, Horst Sievert, Maurice Buchbinder, Christopher M Mullin, Peter Sick, for the PROTECT AF Investigators**



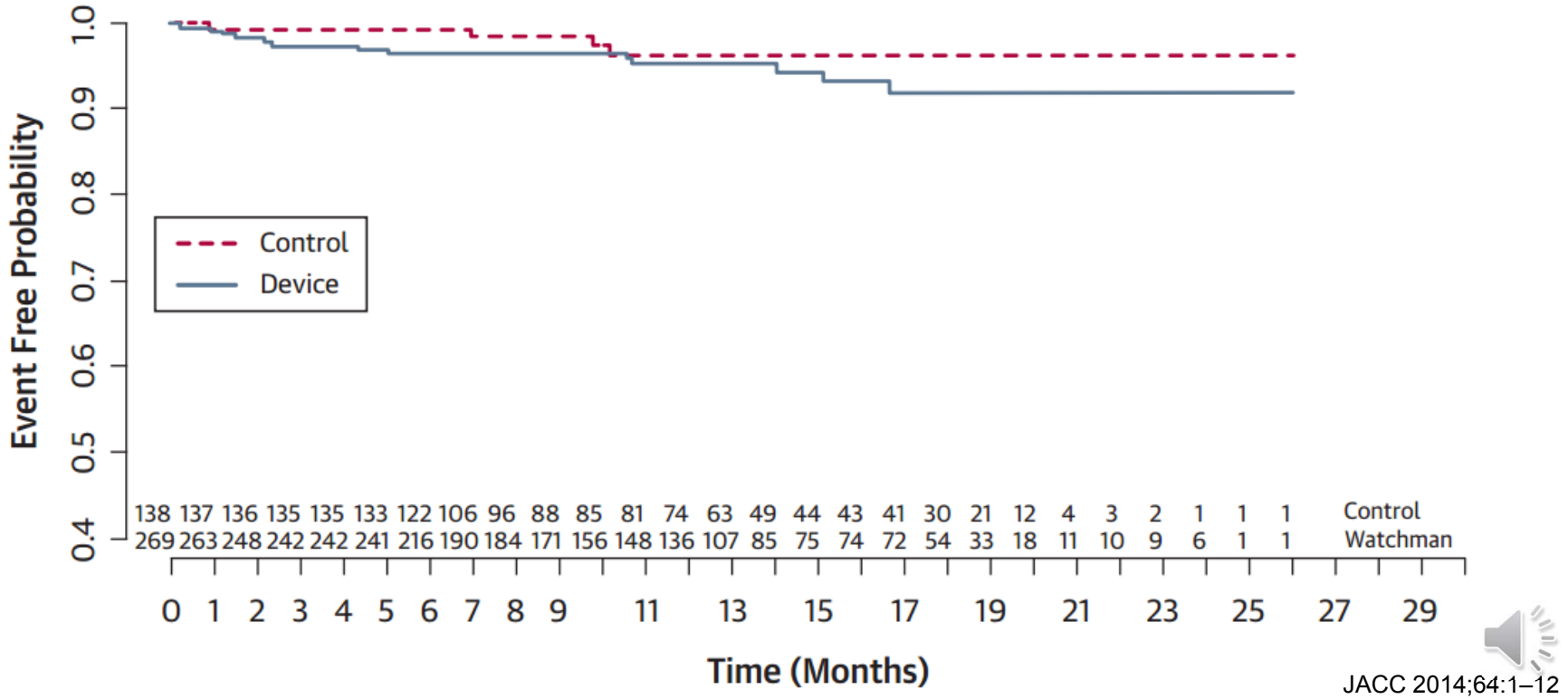
Lancet 2009; 374: 534–42

In PREVAIL study, (vs warfarin)

Prospective Randomized Evaluation of the Watchman Left Atrial Appendage Closure Device in Patients With Atrial Fibrillation Versus Long-Term Warfarin Therapy

The PREVAIL Trial

David R. Holmes Jr, MD,* Saibal Kar, MD,† Matthew J. Price, MD,‡ Brian Whisenant, MD,§ Horst Sievert, MD,‖
Shephal K. Doshi, MD,¶ Kenneth Huber, MD,# Vivek Y. Reddy, MD**

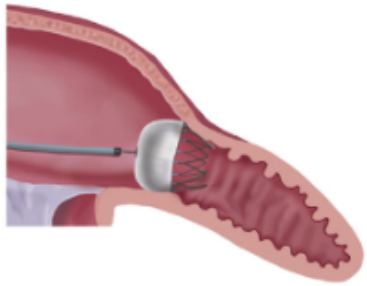


JACC 2014;64:1–12

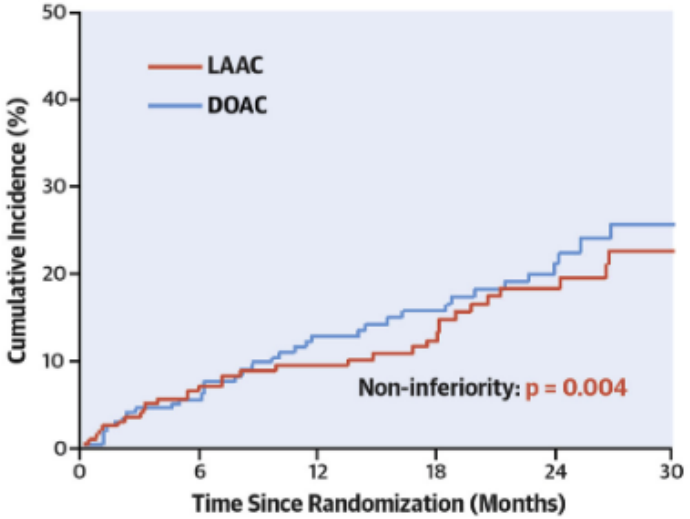
In DOAC era, PRAGUE-17 study

PRAGUE-17 Randomized Clinical Trial

- 402 High-Risk AF Pts ➡ Randomized
  - CHA_2DS_2-VASc = 4.7 ± 1.5
  - HAS-BLED = 3.1 ± 0.9
- Follow-up: 20.8 ± 10.8 mo (695 pt-year)



Primary Endpoint
Stroke, TIA, SE, CV Death, Bleeding, or Complications

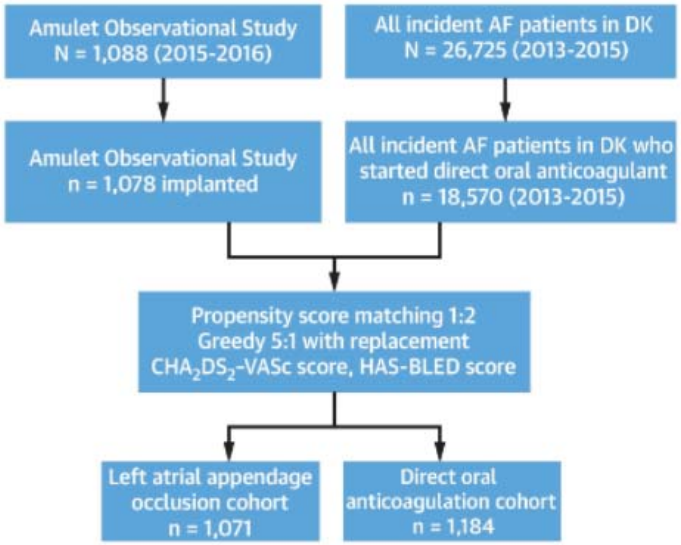


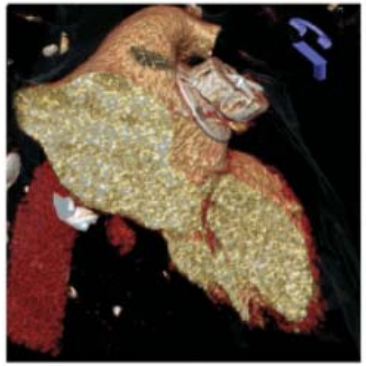
	sHR (95% CI)	p value
Primary Endpoint		
mITT	0.84 (0.53-1.31)	0.44
Per Protocol	0.82 (0.52-1.30)	0.40
On-Treatment	0.79 (0.49-1.25)	0.31
All-Stroke/TIA	1.00 (0.40-2.51)	0.99
CV Death	0.75 (0.34-1.62)	0.46
Major + NMCR Bleeding		
All	0.81 (0.44-1.52)	0.51
Nonprocedural	0.53 (0.26-1.06)	0.07

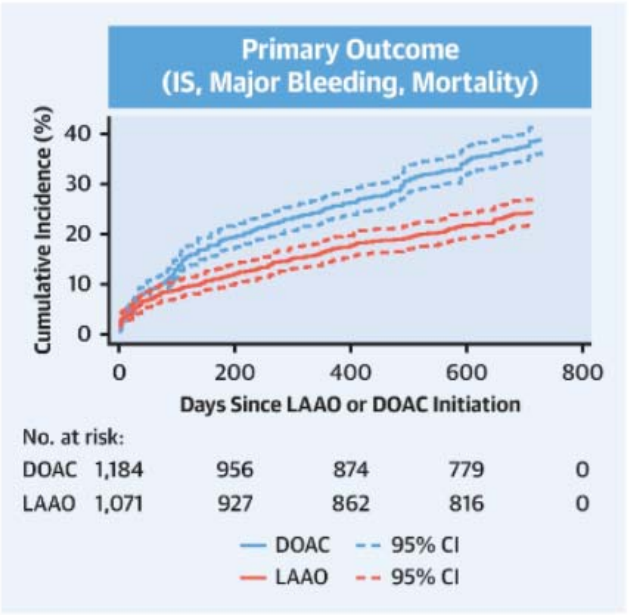
JACC. 2020;75(25):3122–35.

In Registry data

CENTRAL ILLUSTRATION: LAAO Versus DOACs: A Propensity Score-Matched Study







Clinical Outcomes	Hazard Ratio (95% CI)
IS, major bleeding, mortality	0.57 (0.49-0.67)
Ischemic stroke	1.11 (0.71-1.75)
Major bleeding	0.62 (0.49-0.79)
All-cause mortality	0.53 (0.43-0.64)
Cardiovascular mortality	0.51 (0.37-0.70)

JACC Intv. 2021 Jan, 14 (1) 69–78

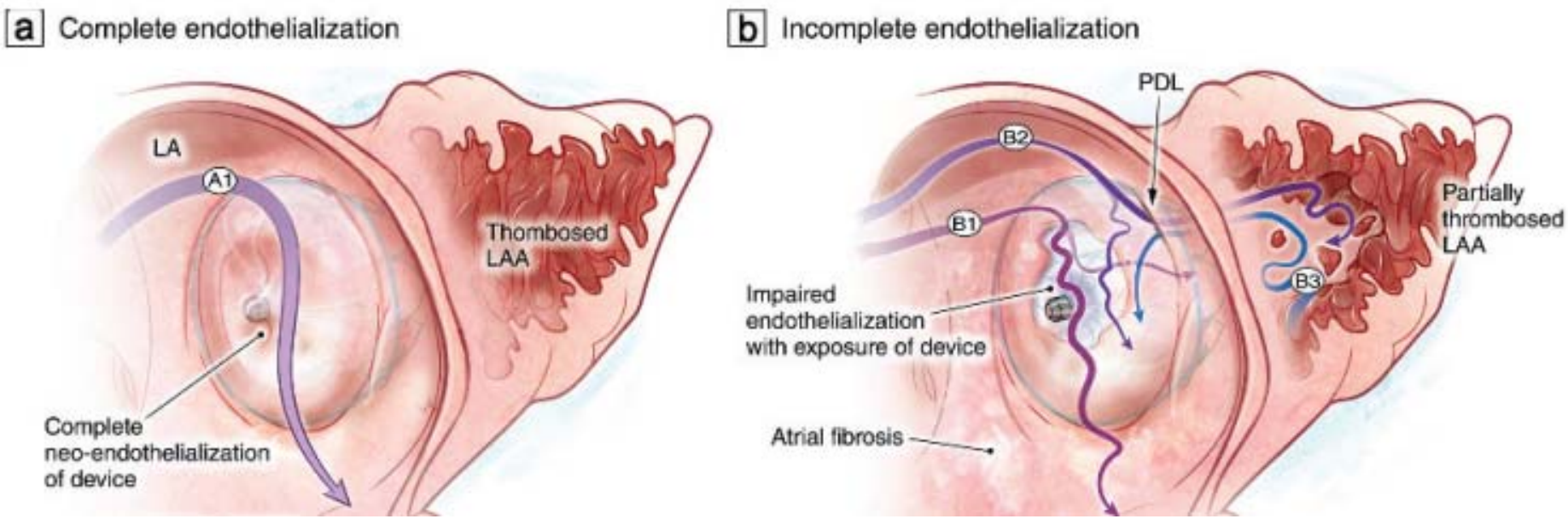
Recent trend of LAA occlusion

- As the use of DOAC is more common, the bleeding risk decreased compared to warfarin using era.

- The effectiveness of LAAO has been proven in many clinical studies, but the clinical indication of procedure has changed from general AF patients to high bleeding risk patients.

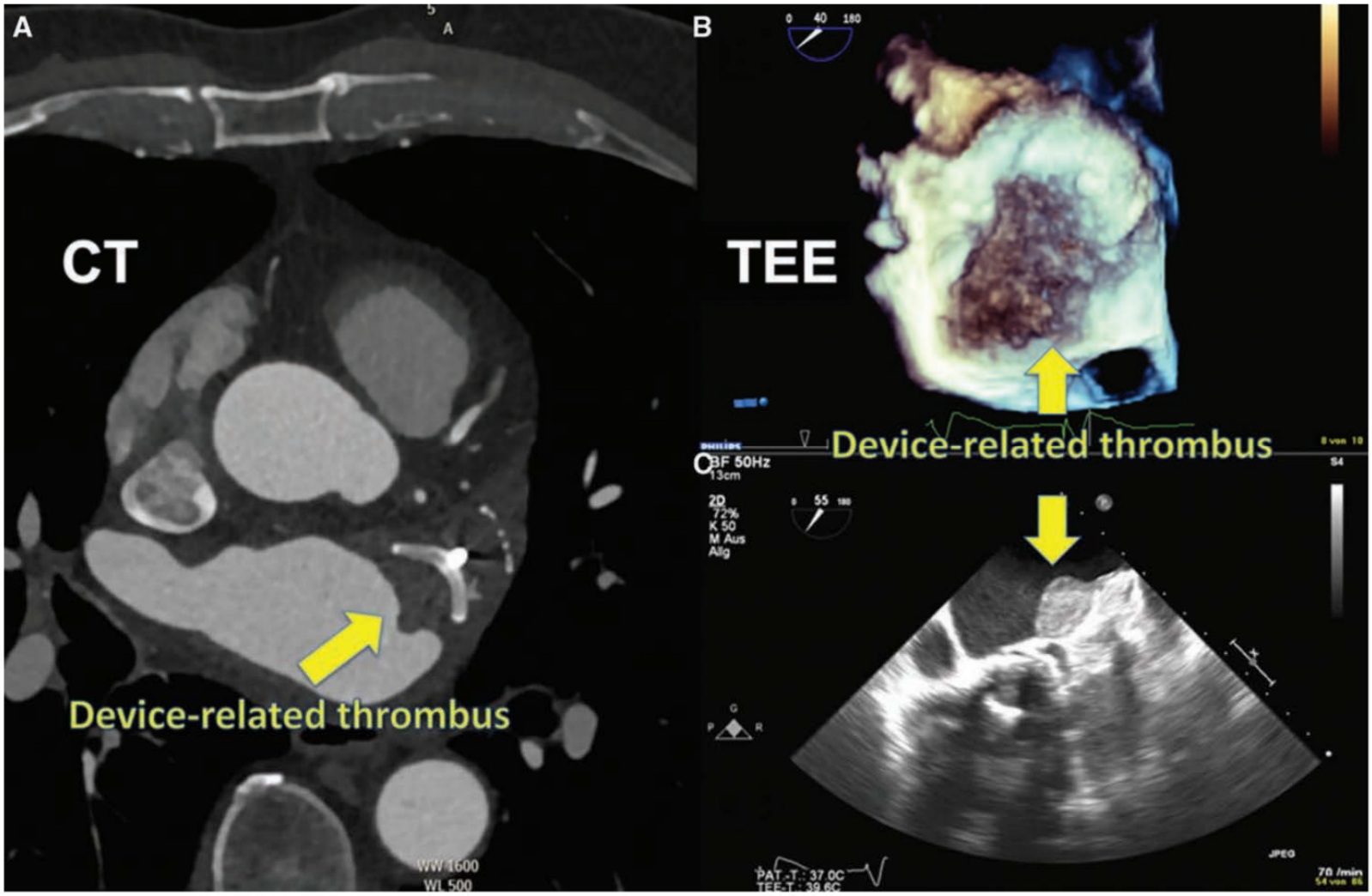
- LAAO showed similar or better outcomes compared to warfarin or DOAC.

Endothelialization after LAAO



- Antithrombotics should be taken for sometime or continuously after LAAO.

Device-related thrombus (DRT)



Cardiovascular Interventions. 2021;14:e010195

Antithrombotic therapy following implantation of the Watchman device

- PROTECT AF and PREVAIL studies

- The patients eligible for OAC using warfarin were enrolled.
- The post-implant antithrombotic drug regimen
  I. For 6 wks: warfarin (target INR 2–3) + aspirin
  II. In case of complete sealing and in the absence of device related thrombus (DRT): DAPT including clopidogrel (75 mg) + aspirin (81–325 mg) until completion of the 6m f/up
  III. Thereafter aspirin was continued lifelong.
- The DRT rate was approximately 4% in both studies.

Antithrombotic therapy following implantation of the Watchman device

Left Atrial Appendage Closure With the Watchman Device in Patients With a Contraindication for Oral Anticoagulation

The ASAP Study (ASA Plavix Feasibility Study With Watchman Left Atrial Appendage Closure Technology)

- 6 months of thienopyridine antiplatelet agent (clopidogrel or ticlopidine)
- lifelong aspirin

Table 3 Procedure and Device-Related Serious Adverse Events (N = 150)

Device embolization	2 (1.3%)
Pericardial effusion with tamponade (percutaneous drainage)	2 (1.3%)
Pericardial effusion, no tamponade (no intervention required)	3 (2.0%)
Device thrombus with ischemic stroke*	1 (0.7%)
Femoral pseudoaneurysm (surgically repaired)	1 (0.7%)
Femoral hematoma/bleeding	2 (1.3%)
Other†	3 (2.0%)
Total patients with procedure- and device-related SAEs	13 (8.7%)

Antithrombotic therapy following implantation of the Watchman device

Implant success and safety of left atrial appendage closure with the WATCHMAN device: peri-procedural outcomes from the EWOLUTION registry

Lucas V.A. Boersma[1]*, Boris Schmidt[2], Timothy R. Betts[3], Horst Sievert[4], Corrado Tamburino[5], Emmanuel Teiger[6], Evgeny Pokushalov[7], Stephan Kische[8], Thomas Schmitz[9], Kenneth M. Stein[10] and Martin W. Bergmann[11], on behalf of the EWOLUTION investigators

- 1/3 of patients had a history of major bleeding
- 2/3 were ineligible for long-term OAC.
- Only 11 and 16% of patients were treated with DOAC or VKA, respectively.

European Heart Journal (2016) 37, 2465–2474

Antithrombotic therapy following implantation of the Watchman device

– EWOULTION registry

- The majority of patients received single or dual antiplatelet therapy following device implantation.

- No significant differences in DRT between the different drug regimens were detected during f/up.

DOAC + ASPIRIN vs DAPT

- In 2017, Dual antiplatelet therapy (DAPT) as well as DOAC plus aspirin were approved for at least 3 months following Watchman implantation.

- However, the optimal duration of DAPT is uncertain.

Eurointervention 2018 Apr 20;13(17):2003-2011.

The duration of Using DAPT

INTERVENTIONS FOR VALVULAR DISEASE AND HEART FAILURE

Real-world safety and efficacy of WATCHMAN LAA closure at one year in patients on dual antiplatelet therapy: results of the DAPT subgroup from the EWOLUTION all-comers study

- The incidence of major bleeding after LAAO with Watchman and demonstrated that most of the events occur during the initial treatment phase with DAPT.

- In a most recent study, short-term DAPT for 6 weeks was not associated with increased rates of thromboembolic complications and may therefore be considered as a alternative.

The predictors of Device-related Thromboembolism

Device Thrombosis After Percutaneous Left Atrial Appendage Occlusion Is Related to Patient and Procedural Characteristics but Not to Duration of Postimplantation Dual Antiplatelet Therapy

Radoslaw Pracon, MD, PhD; Sripal Bangalore, MD, MHA; Zofia Dzielinska, MD, PhD; Marek Konka, MD, PhD; Cezary Kepka, MD, PhD; Mariusz Kruk, PhD; Edyta Kaczmarska-Dyrda, MD, PhD; Joanna Petryka-Mazurkiewicz, MD, PhD; Sebastian Bujak, MD; Mateusz Solecki, MD; Agnieszka Pskit, MD; Agnieszka Dabrowska, MD; Bartosz Sieradzki, MD; Andrzej Plonski, MD; Witold Ruzyllo, MD, PhD; Adam Witkowski, MD, PhD; Marcin Demkow, MD, PhD

- In this real-world series, DRT was observed early, late, and very late after LAAO.
- It was related to patient and procedural characteristics but not to post-implantation DAPT duration.

Circ Cardiovasc Interv. 2018;11:e005997

Antithrombotic therapy following implantation of the ACP/AMULET device

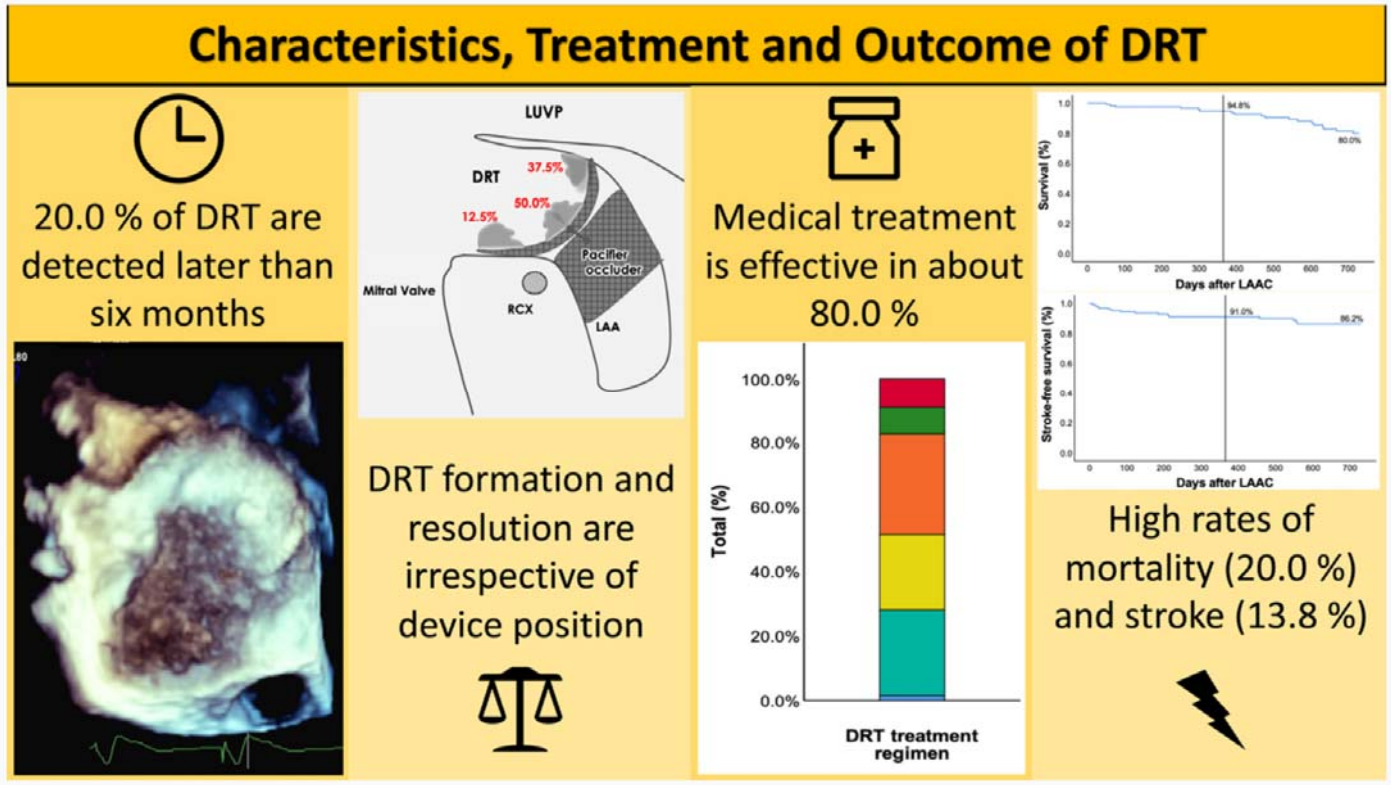
- 2014 EHRA/EAPCI guideline recommended using DAPT for 1–6 month following the implantation of an ACP/AMULET device.

ACP International Experience

- DRT was detected in only 4.4% of patients using this regimen.

- There were 0.9% strokes and 0.9% transient ischemic attacks during follow-up.

EUROC-DRT-Registry



Patients with DRT were at high ischemic and bleeding risk (CHA_2DS_2-VASc 4.5±1.7, HAS-BLED 3.3±1.2) and previous stroke (53.8%), and spontaneous echo contrast (50.6%).

Cardiovascular Interventions. 2021;14:e010195

The Results of Real-World Registry

- The large real-world registries on Watchman and Amulet demonstrate abroad spectrum

  (from ‘no therapy’ to ‘oral anticoagulation with or without antiplatelet therapy’ following LAAO)

- Finally, physicians will choose the optimal therapy after weighing the patient’s individual risk for bleeding and thromboembolism until compelling evidence is generated

Individualized antithrombotic therapies

- In patients with peri-device leaks or recurrent DRT

  → resuming OAC

- In patients with a major bleeding history

  → minimizing antithrombotic therapy

Summary

1. For patients without contraindications to OAC and receiving a Watchman device, the post-implant antithrombotic therapy includes warfarin + aspirin for 45 days → DAPT for 6 months → a lifelong aspirin or 3 months of NOAC therapy → aspirin.
2. In real-world, most patients are treated with DAPT for 3–6 months.
3. Since major bleeding has become the predominant complication following LAAO, short-term DAPT or aspirin alone may be a viable option.

Thank you for listening!