

**Cierre del Foramen Oval
Permeable
para la Prevención Secundaria
del Ictus**

David Martí Sánchez y Sergio García Ortego

Hospital Viamed Virgen de la Paloma

Madrid

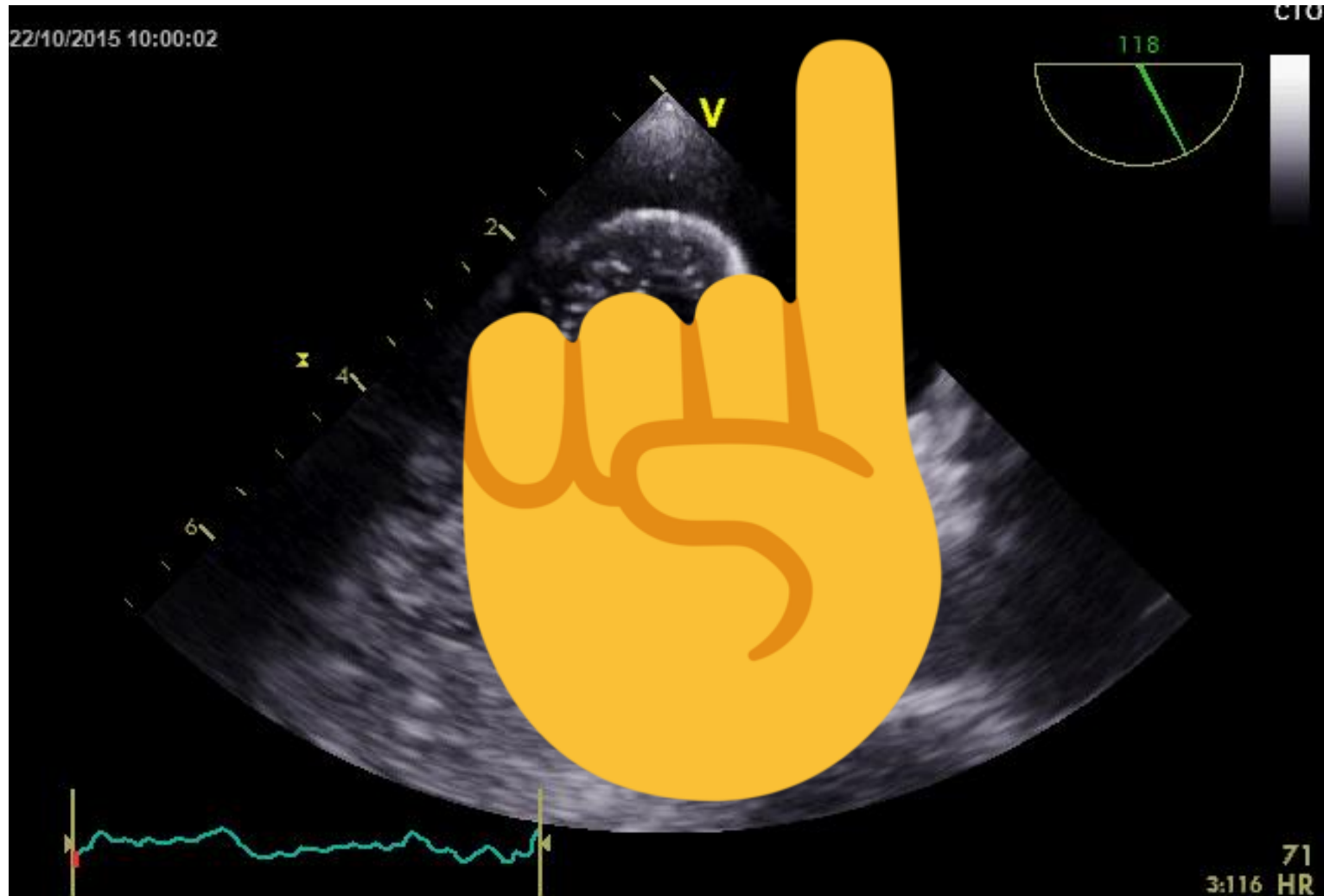
JING, varón, 42 años

- **Cabo** de fragata.
- **Fumador** 5-6 cig/d. No otros FRCV.
- 2 episodios autolimitados de ***hormigueo*** en hemicara-MSD-MID.
- **ECG:** RS a 70 lpm, AQRS -30° , sin alteraciones del ST.

JING, varón, 42 años

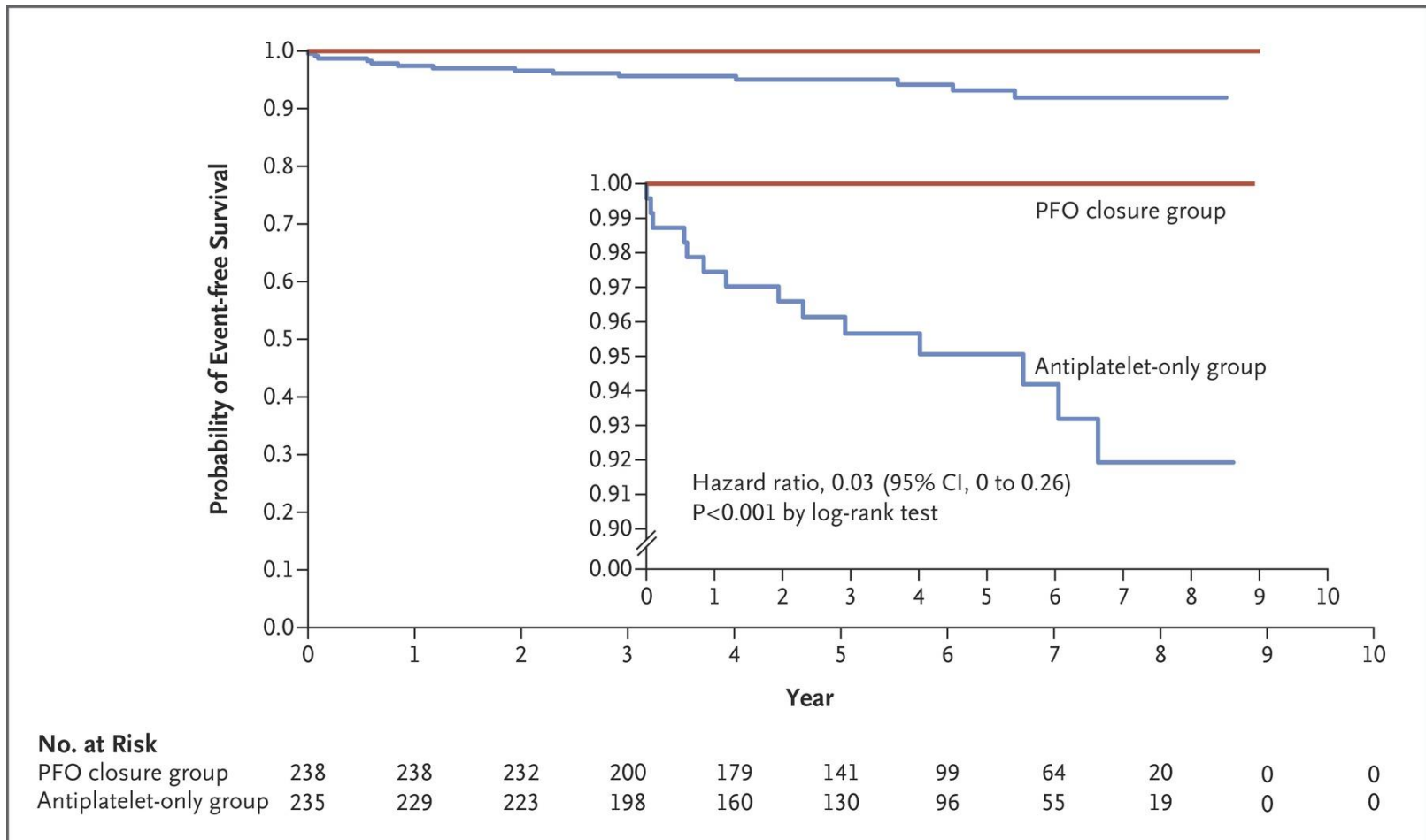
- **TC/RM craneal** anodinos.
- **EEF** normal.
- **Holter ECG** normal.
- **Estudio de trombofilia** normal.
- **Doppler transcraneal:**
Cortocircuito I-D 14 hits

Foramen Oval Permeable

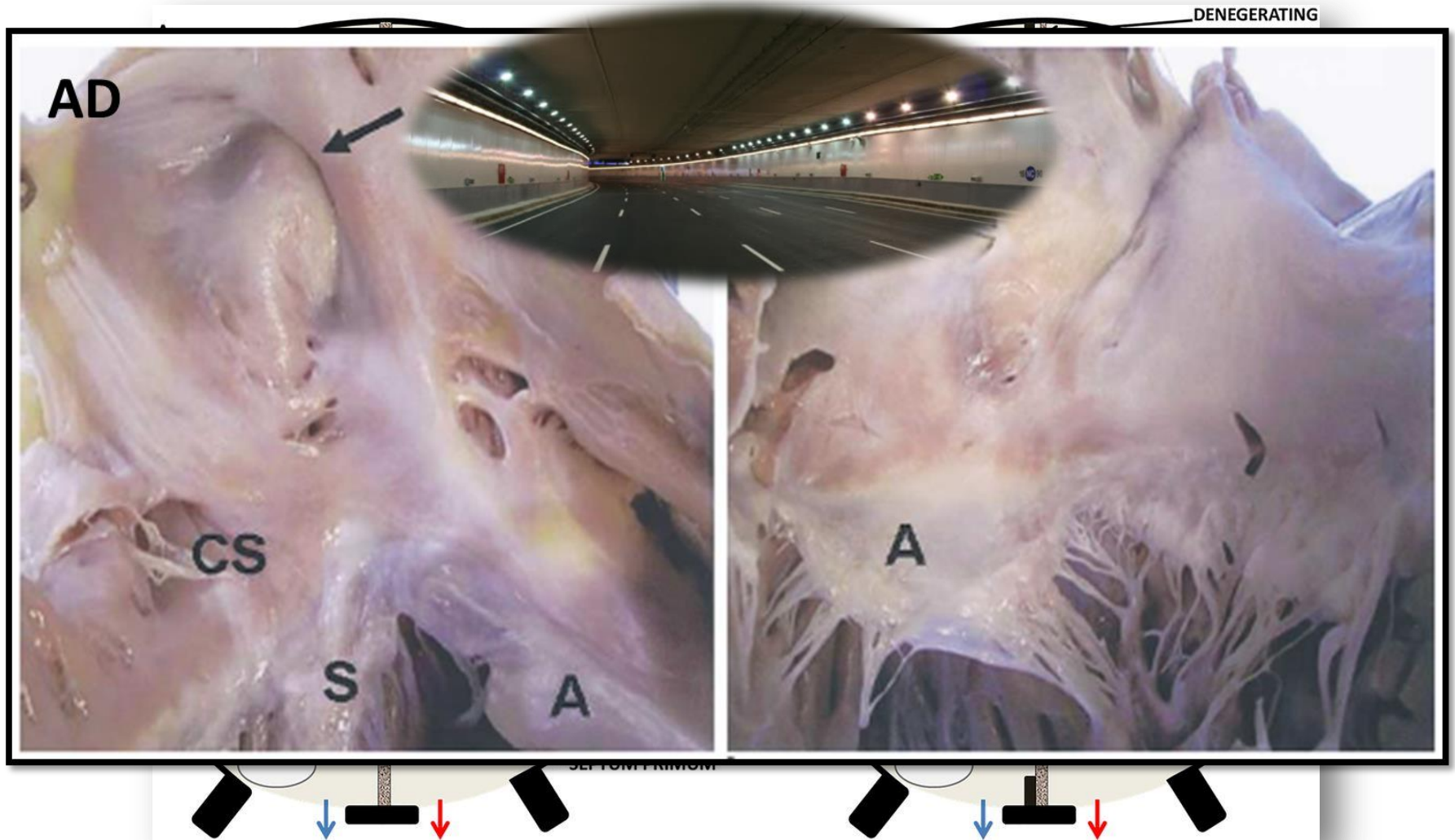


Estudio CLOSE

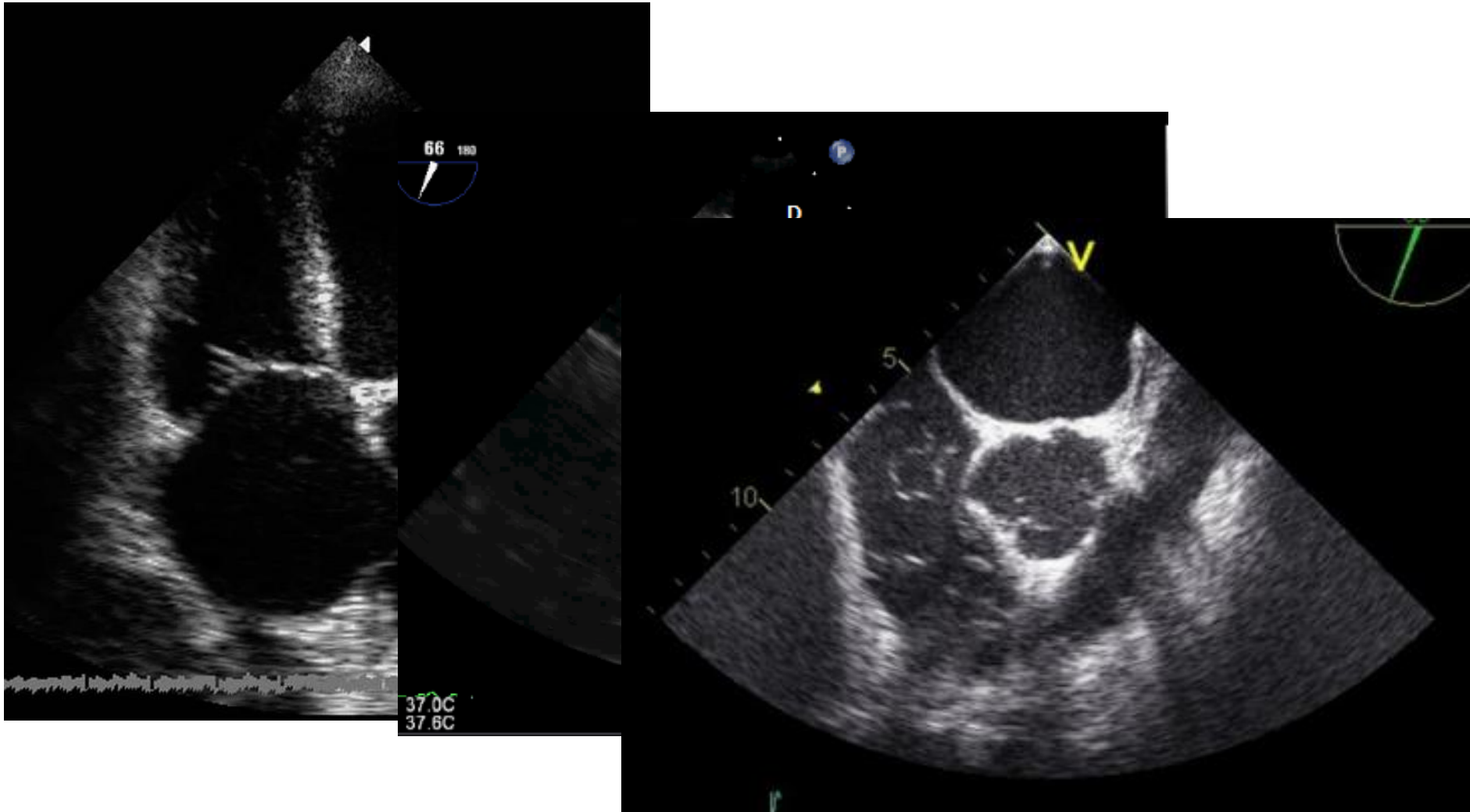
Eficacia a largo plazo



Recuerdo Anatómico



Recuerdo Anatómico



Foramen Oval Permeable

Algunas Cifras

Prevalencia FOP en población general
(autopsia, ETE, militares) **25-30%**

Prevalencia FOP en ictus criptogénico
(tanto jovenes como mayores) **39-46%**

Prevalencia FOP en ASA, Chiari,
v. Eustaquio prominente **50-80%**

25%

50%

75%

Foramen Oval Permeable

Ictus Criptogénico

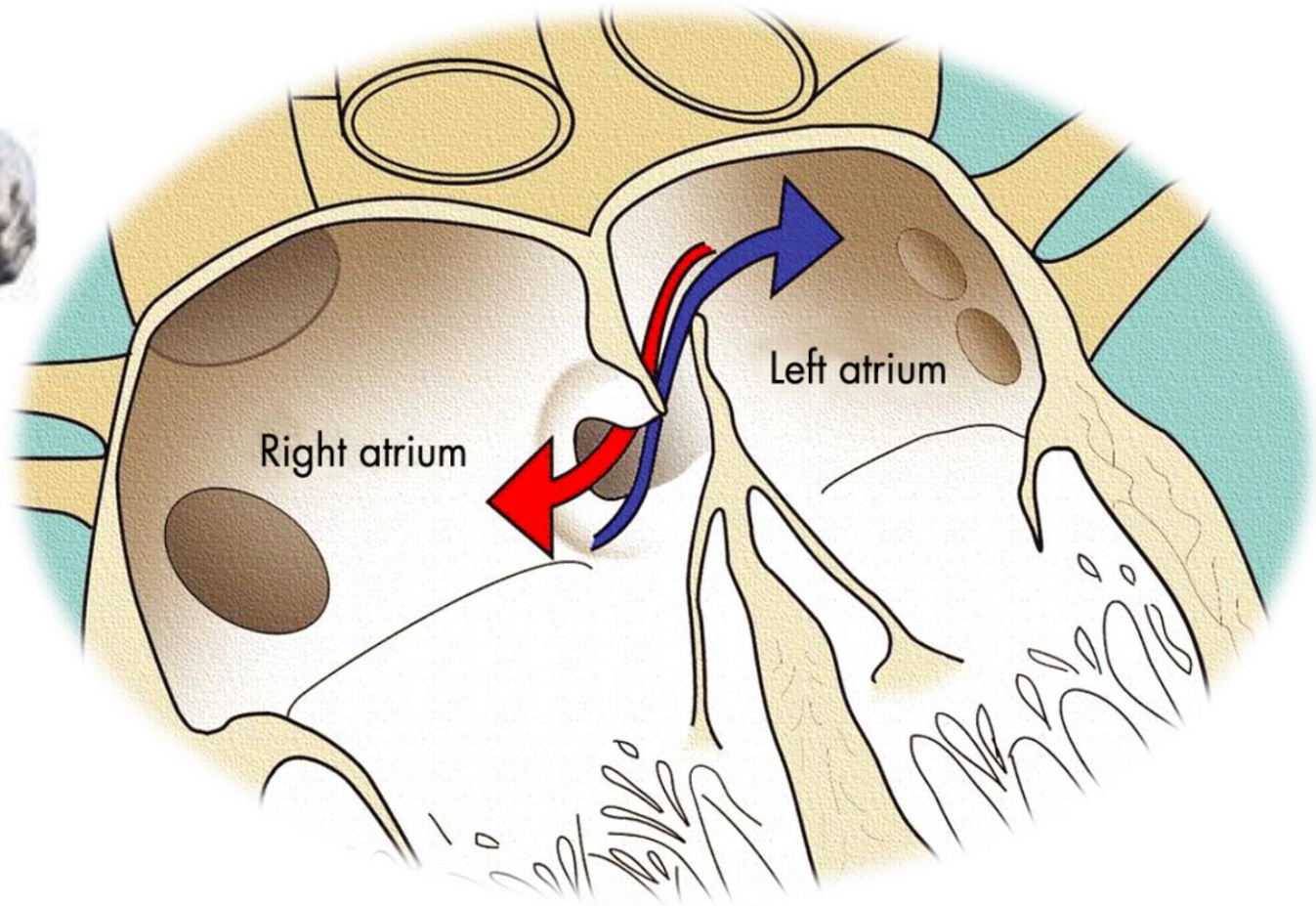
1. **Embolia paradójica clásica**
 - desde sistema venoso central o periférico
 - desde cavidades derechas (i.e. marcapasos)
2. Trombo formado en el **canal del foramen oval**
3. **Arritmias** relacionadas con FOP
4. Estados de **hipercoagulabilidad**

Foramen Oval Permeable

Otras manifestaciones

- ✓ **Migraña y cefalea vascular**
- ✓ **Síndromes de descompresión**
- ✓ **Platipnea-Ortodesoxia**
- ✓ **Embolismo coronario o periférico**
- ✓ **Carcinoide “izquierdo”**
- ✓ **Disnea inexplicada**

¿Cerrar o No Cerrar?



Foramen Oval Permeable

Recomendaciones previas a 2017

Table 3 Guideline recommendations for patent foramen ovale closure

Guideline	Year	Recommendation
European Society of Cardiology ²⁷	2010	In the case of documented systemic embolism probably caused by paradoxical embolism, isolated device closure of ASD/PFO should be considered (Class IIa; Level of Evidence C)
American College of Chest Physicians (ACCP) ²⁵	2012	In patients with cryptogenic stroke and PFO or atrial septal aneurysm, who experience recurrent events despite aspirin therapy, we suggest treatment with VKA therapy (target INR 2.5; range 2.0–3.0) and consideration of device closure over aspirin therapy (Grade 2C) In patients with cryptogenic stroke and PFO, with evidence of DVT, we recommend VKA therapy for 3 months (target INR 2.5; range 2.0–3.0) (Grade 1B) and consideration of device closure over no VKA therapy or aspirin therapy (Grade 2C)
National Institute for Health and Care Excellence (NICE) ²⁸	2013	Evidence on the safety of percutaneous closure of patent foramen ovale to prevent recurrent cerebral embolic events shows serious but infrequent complications. Evidence on its efficacy is adequate. Therefore this procedure may be used with normal arrangements for clinical governance, consent, and audit.
American Heart Association/ American Stroke Association (AHA/ASA) ²⁴	2014	For patients with a cryptogenic ischaemic stroke or TIA and a PFO without evidence for DVT, available data do not support a benefit for PFO closure (Class III; Level of Evidence A). In the setting of PFO and DVT, PFO closure by a transcatheter device might be considered, depending on the risk of recurrent DVT (Class IIb; Level of Evidence C).
American Academy of Neurology (AAN) ²³	2016	Clinicians should not routinely offer percutaneous PFO closure to patients with cryptogenic ischaemic stroke outside of a research setting (Level R). For recurrent strokes despite adequate medical therapy with no other mechanism identified, clinicians may offer the AMPLATZER PFO Occluder if it is available (Level C)

DVT, deep vein thrombosis; INR, international normalized ratio; TIA, transient ischaemic attack; VKA, vitamin K antagonist.

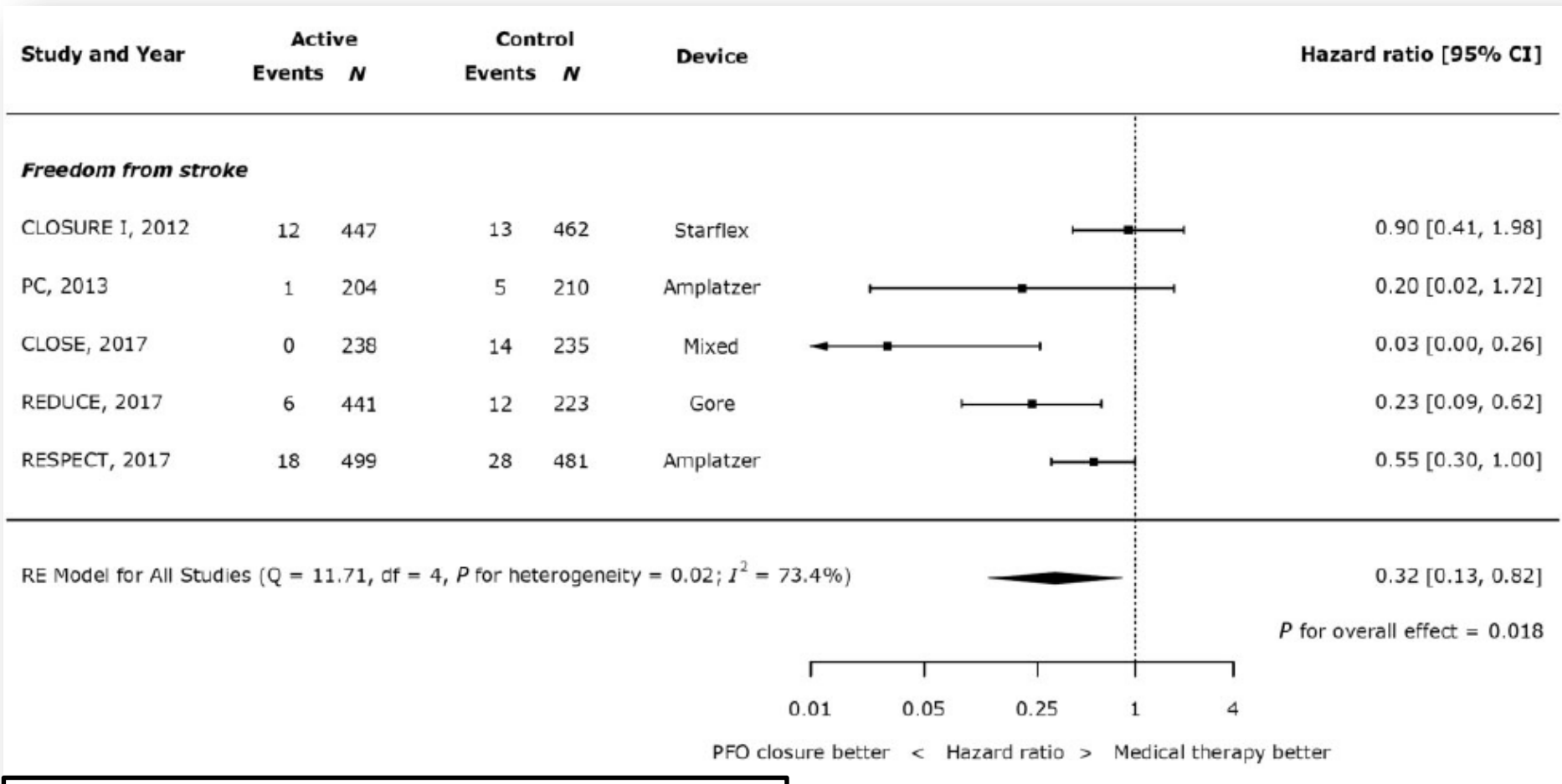
Foramen Oval Permeable

Cierre percutáneo v. Tto. Médico

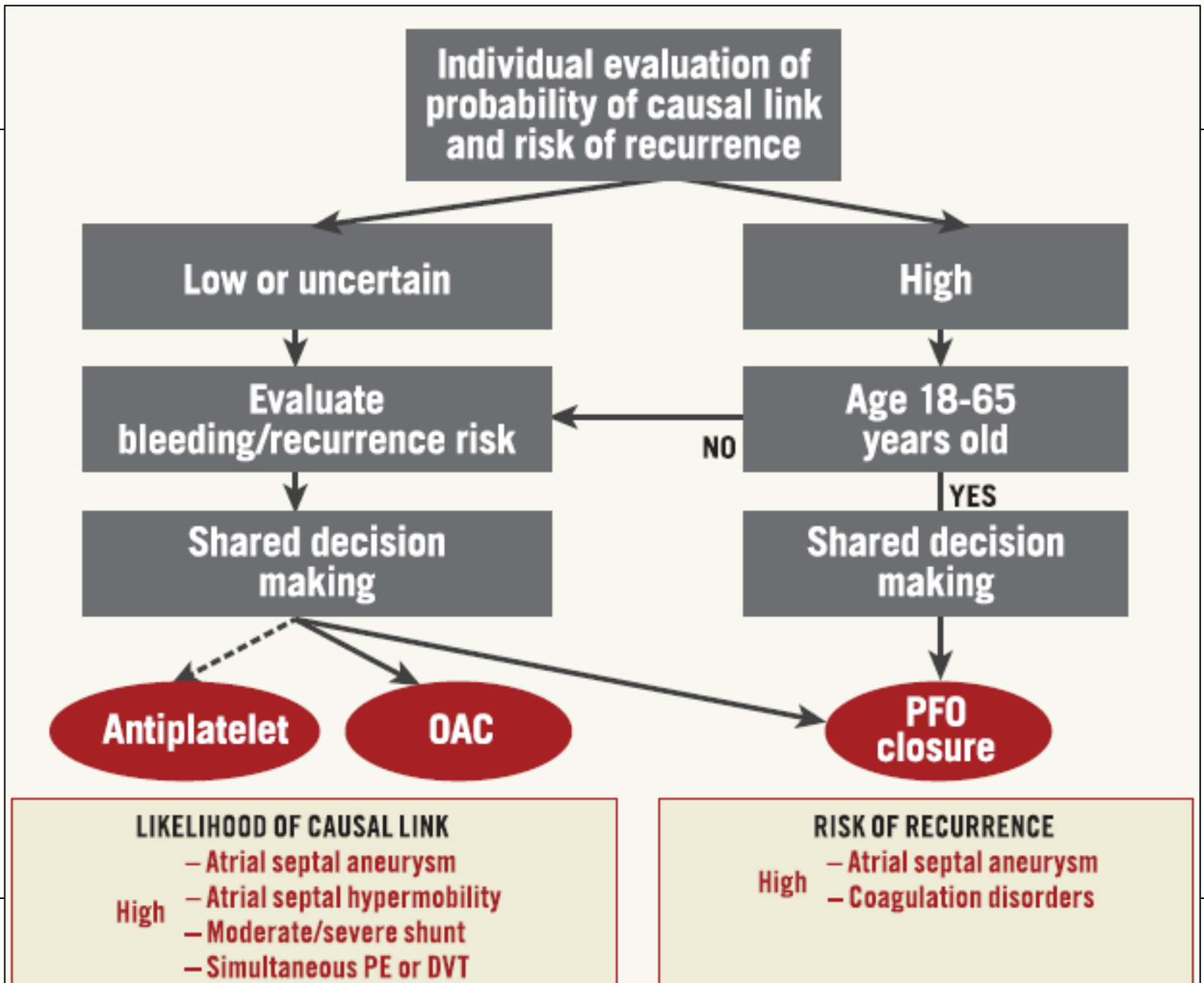
	n	Edad	Dispositivo	F/U	Resultado
CLOSURE I (2012)	909	46	STARFlex	2 yr	5.5% v. 6.8% (p=ns)
PC (2013)	414	44	Amplatzer	4 yr	3.4% v. 5.2% (p=ns)
RESPECT (2017)	980	46	Amplatzer	5.9 yr	3.6% v. 5.8% (p=0.046)
REDUCE (2017)	664	45	Gore	3.2 yr	1.4% v. 5.4% (p=0.002)
CLOSE (2017)	663	44	CE	5.3 yr	0% v. 5.9% (p<0.001)

Cierre de FOP ó Tratamiento Médico

Meta-análisis de RCT



Shunt grande, ASA, causalidad alta HR ≤ 0.30
Shunt mediano, causalidad media HR ≈ 0.50



Practice advisory update summary: Patent foramen ovale and secondary stroke prevention

Report of the Guideline Subcommittee of the American Academy of Neurology

Steven R. Messé, MD, Gary S. Gronseth, MD, David M. Kent, MD, MSc, Jorge R. Kizer, MD, MSc, Shunichi Homma, MD, Lee Rosterman, DO, John D. Carroll, MD, Koto Ishida, MD, Navdeep Sangha, MD, and Scott E. Kasner, MD, MSCE

Neurology® 2020;94:876-885. doi:10.1212/WNL.0000000000009443

Correspondence
American Academy of
Neurology
guidelines@aan.com

Statement 2a

In patients younger than 60 years with a PFO and an embolic-appearing infarct and no other mechanism of stroke identified, clinicians may recommend closure following a discussion of potential benefits (reduction of stroke recurrence) and risks (procedural complication and atrial fibrillation) (level C).

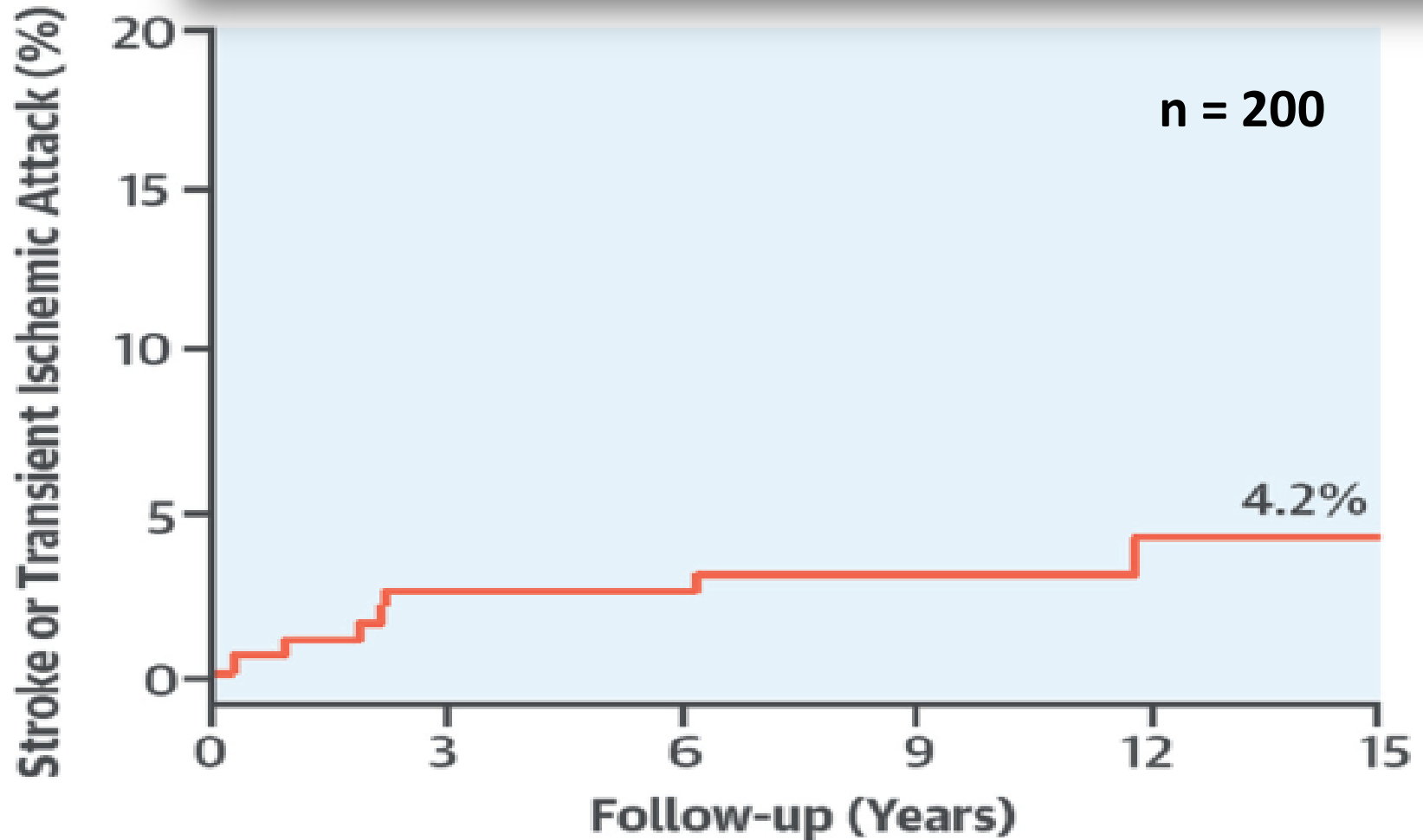
Statement 2c

PFO closure may be offered in other populations, such as for a patient who is aged 60–65 years with a very limited degree of traditional vascular risk factors (i.e., hypertension, diabetes, hyperlipidemia, or smoking) and no other mechanism of stroke detected following a thorough evaluation, including prolonged monitoring for atrial fibrillation (level C).

Device Closure of the Patent Foramen

The Longer You Look, the More You Like It*

Bernhard Meier, MD,^a Fabian Nietlispach, MD, PhD^b



Aspectos Prácticos

#1. Diagnóstico del FOP



Valsalva **INEFECTIVO**
(sonda transglótica, sedación)

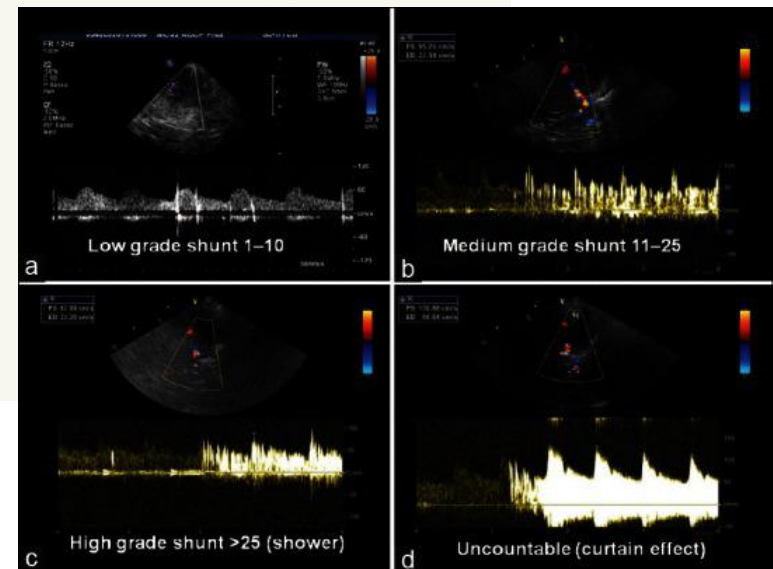
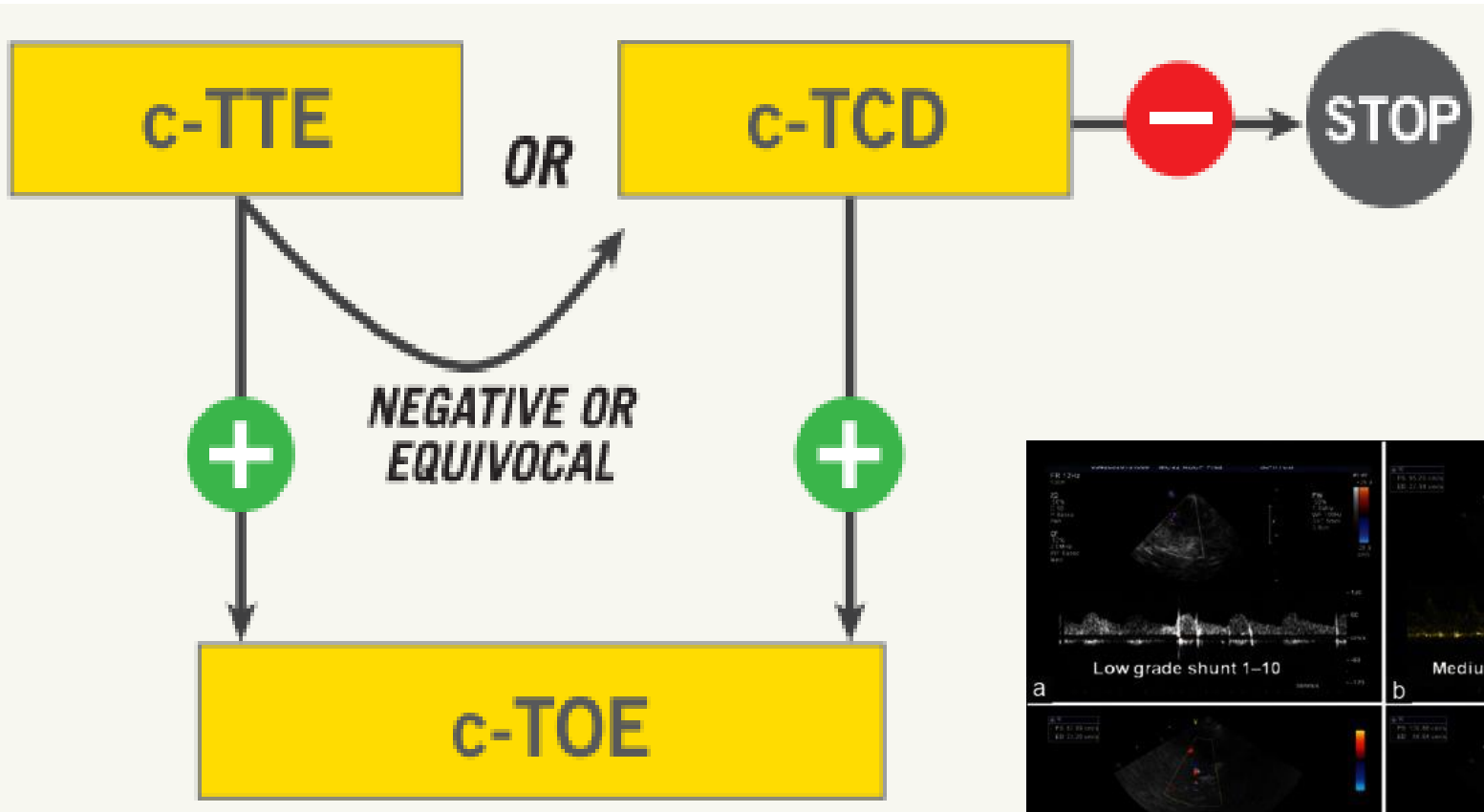


Anatomía **VÁLVULA VENOSA**
(mayor sensibilidad MMII)

No esperar un paso “brutal”
Con sólo 3 burbujas ya es criterio de positividad

Aspectos Prácticos

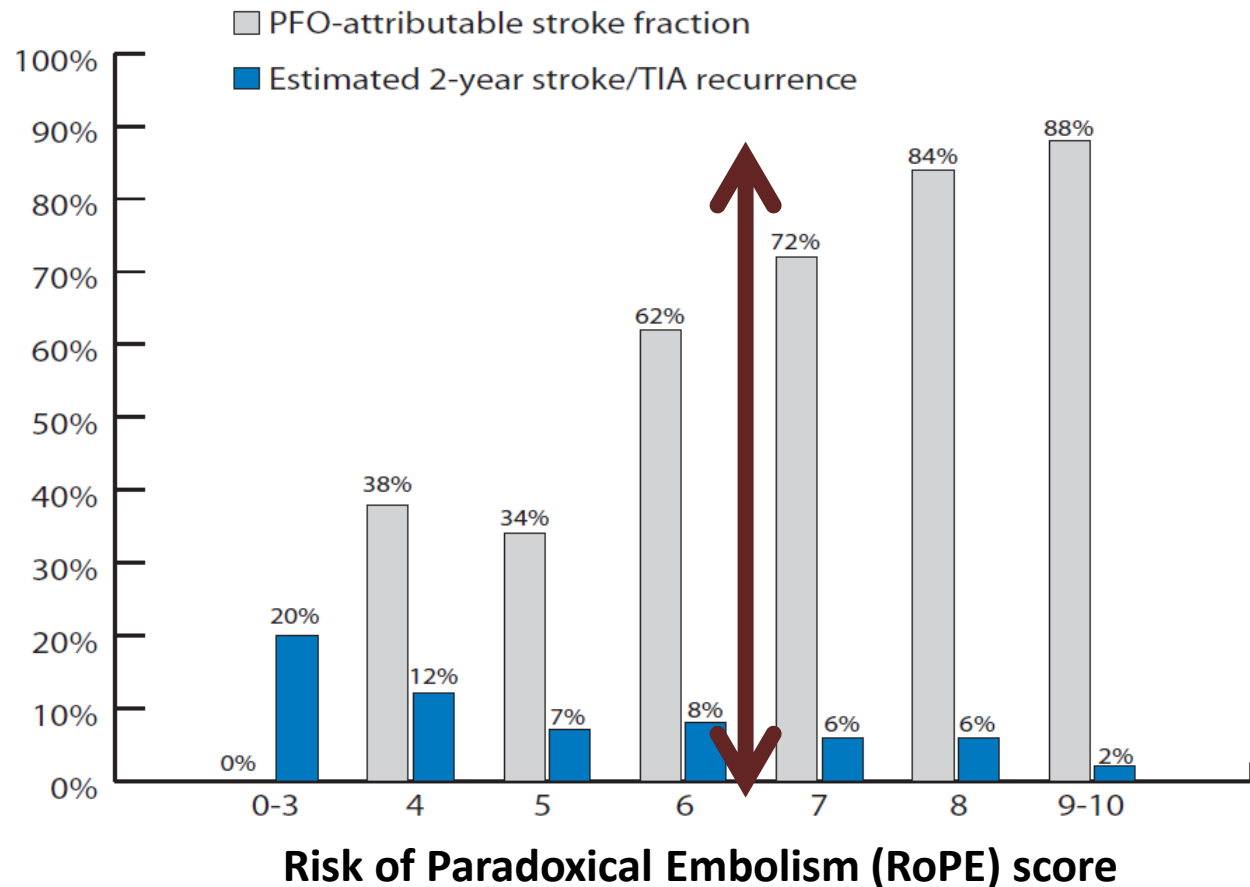
#1. Diagnóstico del FOP



Aspectos Prácticos

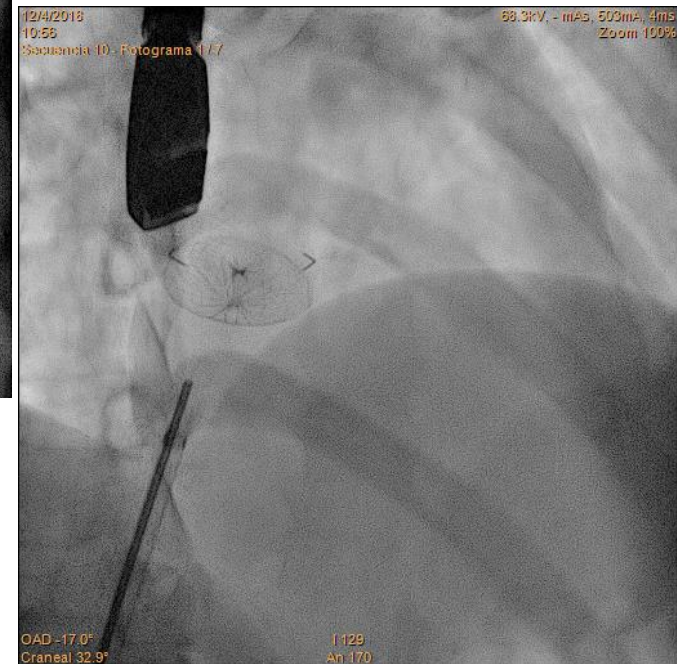
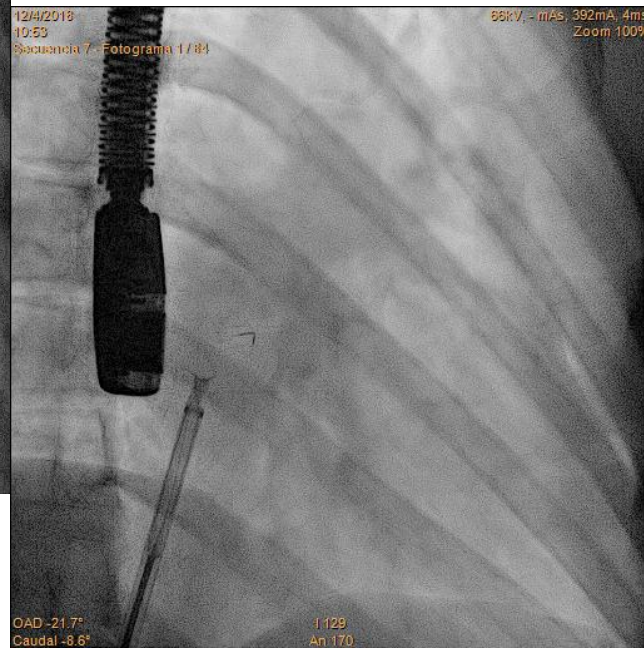
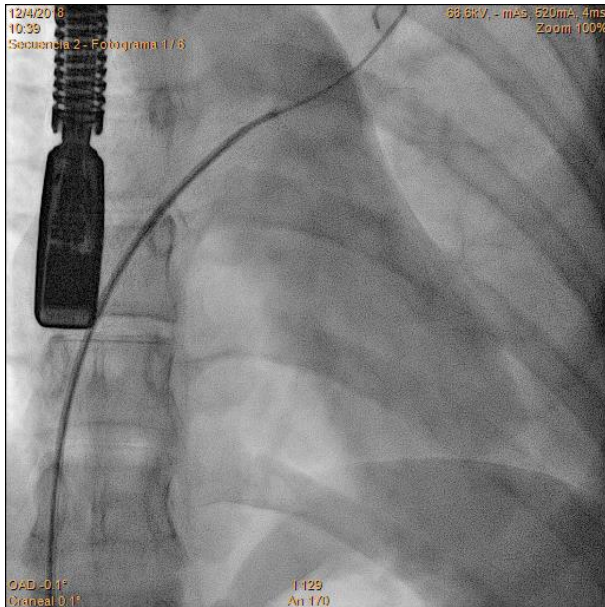
#2. Atribución del Ictus Criptogénico

Patient Characteristic	Points
No history of hypertension	+1
No history of diabetes	+1
No history of stroke or TIA	+1
Nonsmoker	+1
Cortical infarct on imaging	+1
Age (y)	
18-29	+5
30-39	+4
40-49	+3
50-59	+2
69-69	+1
≥ 70	+0
Total RoPE score	0-10



Aspectos Prácticos

#3. Cierre Percutáneo



Tras el cierre

- **Complicaciones: leves e infrecuentes**
 - Riesgo FA: 5% a 5 años, mayoría sin TAO crónico
 - Vasculares <1%
 - Erosión, embolización: anecdótica con ECO
- **RESPECT**

DAP 1 m + SAP 5 meses, después a criterio MT
- **PRISTIPINO**

DAP 6 m + SAP 5 años, después a criterio MT

Take-Home Messages



La manera más coste-efectiva y segura de reducir ictus