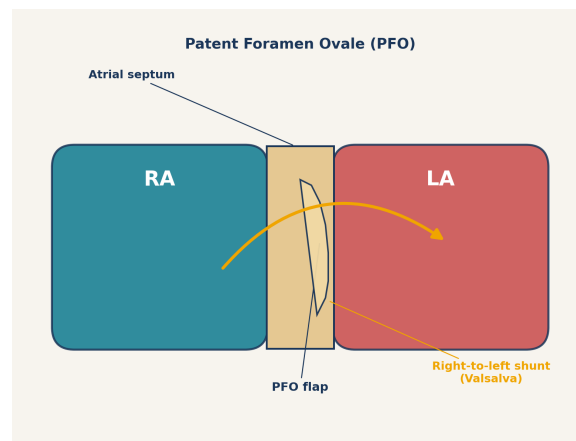


Understanding Patent Foramen Ovale

A common opening between the heart's upper chambers (PFO)

One in four adults has one. Most never know.



Online: <https://go.riasalimd.com/pfo-guide>

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Names & Terms You Will Hear

Term	Meaning
Patent foramen ovale (PFO)	A small flap between the two upper heart chambers. It did not seal after birth.
Foramen ovale	A normal opening in the baby's heart before birth. It lets blood skip the lungs.
Atrial septal defect (ASD)	A larger hole. Not the same as a PFO. ASDs are true holes. PFOs are an unsealed flap.
Right-to-left shunt	Blood (and sometimes clots) cross from the right side to the left side through the PFO.
Cryptogenic stroke	A stroke with no clear cause. PFO is a top suspect in younger adults.
Bubble study	A safe test. The tech injects salt-water bubbles and watches for them to cross to the left side.



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What Is Patent Foramen Ovale?

- Before birth, every baby has a flap (foramen ovale) between the two upper heart chambers. It lets blood skip the lungs.
- After birth, this flap usually seals shut. In about **1 in 4 adults**, it stays slightly open. That is a **PFO**.
- A PFO is **not the same** as an atrial septal defect (ASD). PFOs are small unsealed flaps. ASDs are true holes.
- Most people with a PFO **never have any problem**. Most never need closure or treatment.
- PFOs matter when they may have caused **a stroke with no clear cause**. They can also matter in some cases of **migraine with aura** or **low blood oxygen**.
- A PFO is usually found with an echo and a bubble study. The tech injects salt-water bubbles and watches for them to cross to the left side.

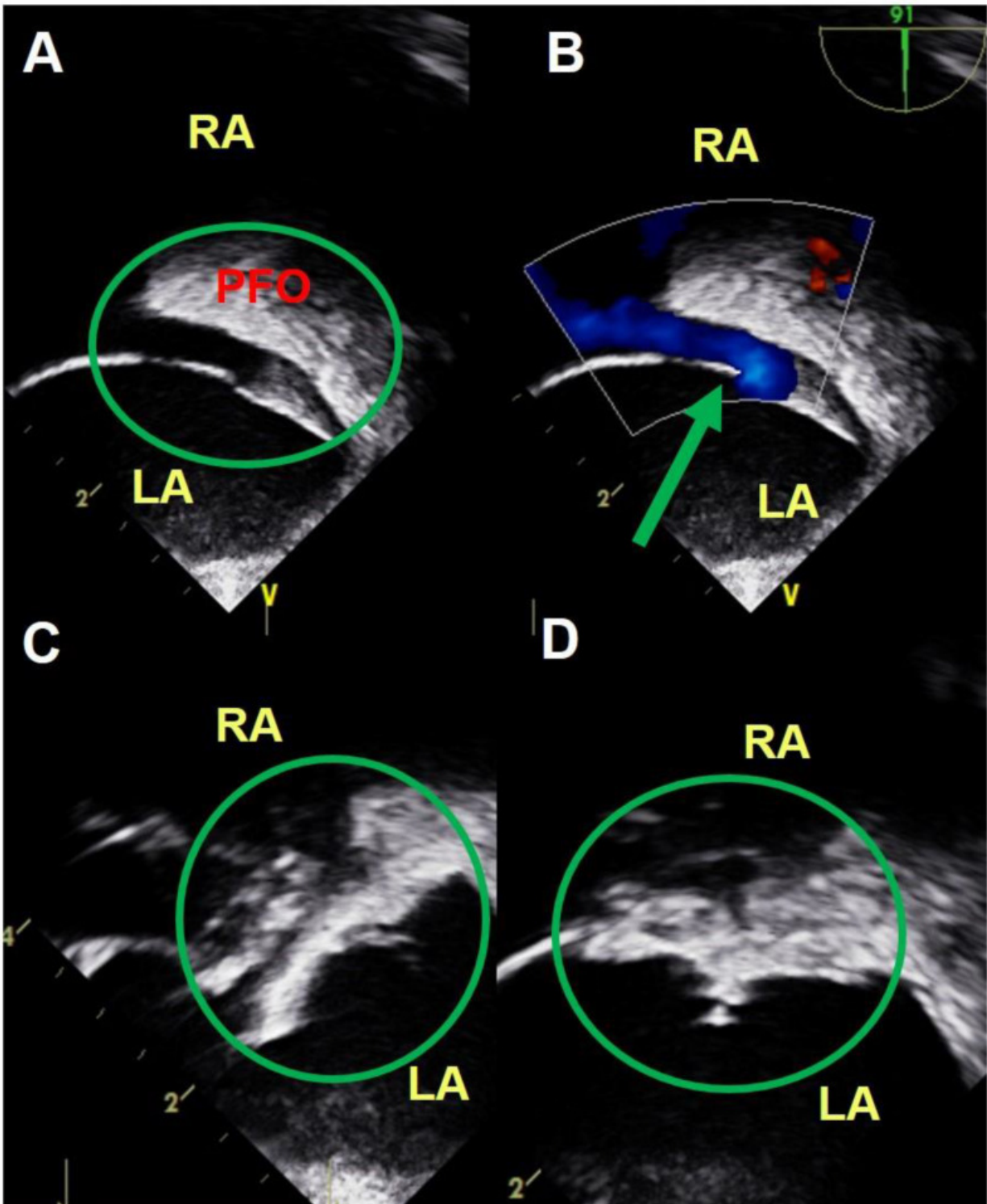


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A real transesophageal echo (TEE) study of a PFO. A: the flap between the right atrium (RA) and left atrium (LA), circled. B: color Doppler shows the right-to-left shunt (blue jet, arrow) crossing the flap. C-D: the closure device seated across the flap after the procedure. Image: Moon et al., *Medicina* 2020 (CC BY 4.0).



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Why It Matters

- A clot in a leg vein (DVT) normally goes to the lungs. With a PFO, that clot can slip to the left side and cause a stroke. This is called a **paradoxical embolism**.
- In adults under 60 with a high-risk PFO and a stroke of unclear cause, **closing the PFO lowers the risk of a repeat stroke**. This was shown in the CLOSE, RESPECT, and REDUCE trials.
- Not every PFO needs to be closed. The **RoPE score** helps show how likely the PFO caused a given stroke.
- Most PFOs are found by chance and need no treatment. Just awareness.
- Some people with PFO have **migraine with aura**. Closure for migraine alone is not advised in most cases.



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Risk Factors

Some patients are more likely to develop this condition. Knowing your risk helps your care team take extra precautions.

Risk Factor	Why It Increases Risk
Stroke of unclear cause under age 60	Best-studied reason for PFO closure. Trials show it helps high-risk PFO with this kind of stroke.
Atrial septal aneurysm (ASA)	A floppy septum makes it much more likely the PFO caused the stroke.
Large right-to-left shunt	More bubbles on the bubble test means the PFO is more likely to matter.
Past DVT or pulmonary embolism	These clots can cross through a PFO and cause stroke.
Long-haul travel + sitting still	Higher risk of DVT, which raises the chance of clot crossing the PFO.
Migraine with aura	Linked, but cause and benefit of closure are not clear.
Scuba diving	PFO may raise the risk of nerve injury from decompression sickness. Some divers choose closure.
Platypnea-orthodeoxia syndrome	A rare cause of low oxygen when sitting up. PFO closure can cure it.



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Treatment Options

- **No treatment** is needed for a PFO with no symptoms or stroke. Most patients fall here.
- **Aspirin or clopidogrel** is often used for a PFO plus stroke of unclear cause, especially when closure is not done.
- **Blood thinners** (warfarin or a DOAC) may be used when a clear vein clot has been found.
- **PFO closure through a catheter** — a small device is slid up through a leg vein to seal the flap. Done under sedation. Most people go home the same day.
- **Open surgery closure** — rarely needed. Used for hard anatomy or during another heart surgery.
- **Diving and pilot review** — some divers and pilots choose closure for job reasons.
- **After closure:** aspirin or clopidogrel for 6 months. Follow-up scan at 6-12 months. Antibiotics before dental work for 6 months.



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Risks, Benefits, and Alternatives

Every choice has trade-offs. Use this table to start the shared decision conversation.

Option	Risks	Benefits	Alternatives
No treatment (watch only)	Some stroke risk left if the PFO caused the stroke and is not treated.	No procedure. No daily pill. No follow-up burden.	Aspirin or clopidogrel. Closure.
Aspirin or clopidogrel only	Small bleed risk. Some stomach upset.	Lowers repeat stroke risk. Can be stopped. No procedure.	PFO closure plus aspirin. Blood thinner.
PFO closure (catheter)	New irregular heartbeat in the first month (about 5%). Rare device erosion. Small leak. Rare infection. Cath risks.	Cuts repeat stroke risk by about half in the right patients (CLOSE, RESPECT, REDUCE). Lowers long-term risk of clot crossing.	Aspirin only. Blood thinner.
Blood thinner	Bleed risk. Warfarin needs blood checks.	Treats both the vein clot and any clot risk.	Aspirin. PFO closure.



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Common Misconceptions

Myth	Reality
"My PFO means I will have a stroke."	Most PFOs cause no problem. 1 in 4 adults has one. Most never have any related event.
"I had a stroke and have a PFO, so my PFO caused it."	Not always true. The RoPE score and the stroke type matter. Many strokes with PFO had another cause.
"PFO closure will cure my migraines."	Trial results are mixed. Closure for migraine alone is not advised in most cases.
"PFO closure is open-heart surgery."	Almost always it is done through a small tube in the groin. Most patients go home the same day.
"A PFO and an ASD are the same thing."	They are not. An ASD is a true hole. A PFO is an unsealed flap. The rules differ.
"Once my PFO is closed, I cannot have a stroke."	Closure fixes one cause. Other risks like high BP, AFib, high cholesterol, and smoking still need control.



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Possible Complications

Knowing what can go wrong helps you spot problems early. Most complications are uncommon, especially with treatment.

Where / What	What Can Happen
Stroke of unclear cause	A clot crosses from the right to the left side. This is called paradoxical embolism.
Mini-stroke (TIA)	Same cause. Shorter symptoms.
Migraine with aura	Linked. The cause is not clear.
Platypnea-orthodeoxia syndrome	Rare. Low oxygen when sitting up.
Decompression sickness	In divers, it can be more severe.
After closure — irregular heartbeat	About 5% in the first month. Usually short-lived.
After closure — small leak	Sometimes a small leak stays. Rarely a problem.
After closure — device clot or erosion	Rare. Reported. Follow-up scans matter.



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Points to Know

If you remember nothing else, remember these key points.

- A PFO is common. 1 in 4 adults has one.
- Most PFOs cause no problem and need no treatment.
- PFO closure helps most when a stroke of unclear cause happens under 60 with a high-risk PFO.
- The RoPE score shows how likely a PFO caused a given stroke.
- Bubble studies on echo or head ultrasound find a PFO.
- Other stroke risks (BP, AFib, cholesterol, smoking) still need control. The PFO is just one factor.
- After closure: aspirin or clopidogrel for 6 months. Follow-up scan. Antibiotics before dental work for 6 months.
- A PFO is not the same as an ASD. The choices differ.



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When to Call Us - and When to Call 911

If you are not sure, call. We would rather hear from you twice than miss a real problem.

- **Call 911** for signs of stroke. Watch for face droop, arm weakness, slurred speech, vision loss, or a sudden severe headache.
- **Call 911** for chest pain, severe trouble breathing, or fainting.
- **Call our office** within 24 hours after a mini-stroke. Call even if symptoms go away.
- **Call our office** if you have a leg DVT or a lung clot. Your PFO may need a second look.
- **Call our office** before scuba diving or going to high altitude with a known PFO.
- **Call our office** before any dental work in the first 6 months after PFO closure. You may need antibiotics.
- **Call our office** if you feel new palpitations after PFO closure. Brief AFib is common.

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Trusted Resources

The links below are the trusted resources Dr. Ali used to write this guide and that he recommends you visit for more information. Each is a clickable link in the digital version and a Short.io tracked URL on the printed version.

- [American Stroke Association — PFO + Cryptogenic Stroke](#) - Stroke-prevention framing of PFO closure.
- [Mayo Clinic — PFO](#) - Plain-language overview of anatomy, symptoms, and closure decision.
- [Cleveland Clinic — PFO](#) - Comprehensive patient overview.
- [AHA/AAN PFO Closure Guidance \(2020\)](#) - Joint cardiology + neurology guideline.
- [Brain Aneurysm Foundation — Stroke Resources](#) - Patient and family support after stroke.



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Sources Used to Build This Guide

Every recommendation in this guide is grounded in one or more of the studies, guidelines, or trusted resources below. Short links are tracked so Dr. Ali can see which references patients are reading; nothing personally identifying is captured.

- [AHA/AAN PFO Closure Guidance \(2020\)](#) *[Guideline / Consensus]*
Joint cardiology + neurology framework for PFO closure decision-making after cryptogenic stroke.
- [CLOSE trial \(PFO closure for cryptogenic stroke\)](#) *[Randomized Trial]*
Pivotal RCT showing PFO closure benefit for selected cryptogenic stroke patients.
- [RESPECT trial \(PFO closure long-term follow-up\)](#) *[Randomized Trial]*
Long-term outcomes data supporting closure for high-risk PFO + cryptogenic stroke.
- [REDUCE trial \(PFO closure with antiplatelet\)](#) *[Randomized Trial]*
Closure plus antiplatelet vs antiplatelet alone for cryptogenic stroke.
- [Mayo Clinic — Patent Foramen Ovale](#) *[Patient Education]*
Plain-language overview of anatomy, symptoms, and closure decision.
- [Cleveland Clinic — PFO](#) *[Patient Education]*
Comprehensive patient overview.
- [American Stroke Association — PFO and Stroke](#) *[Patient Education]*
Stroke-prevention framing of PFO closure.
- [RoPE score for cryptogenic stroke + PFO](#) *[Decision Tool]*
Quantifies probability that a given PFO is the cause of a cryptogenic stroke — directly informs closure decisions.



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About This Guide

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Reviewer note: Reviewed against Mayo Clinic, Cleveland Clinic, AHA/AAN, and American Stroke Association PFO pages. Ours adds: explicit RoPE-score framing for cryptogenic stroke decisions, the four pivotal closure trials in plain language, and a careful 'when to close vs medical therapy' framework.

Disclaimer

This guide is for educational purposes only and does not replace medical advice from your physician. Recommendations may not apply to every patient. Always follow the specific instructions of Dr. Ali and your care team. In an emergency call 911 or go to the nearest emergency department.



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