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Pulse Field Ablation

A newer way to treat atrial fibrillation that uses very brief electrical pulses, in place of heat or cold, to create scar.

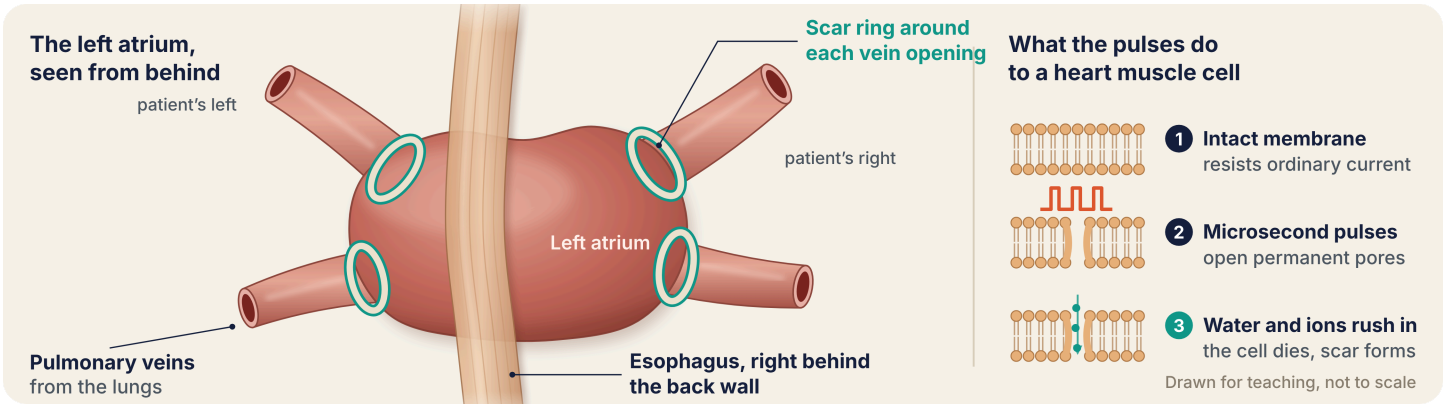
73.3%
met ADVENT's main one-year goal with PFA, vs 71.3% with heat or cold

Zero
esophageal complications reported in the largest PFA registries to date

1 to 2 hours
for most procedures, depending on your anatomy and the device

HOW IT WORKS

Scar made by electrical pulses



Ablation creates permanent scar in the left atrium, usually around the pulmonary veins, to block the chaotic signals behind AFib. Heat and cold damage tissue indiscriminately and can injure the esophagus right behind it. PFA uses very brief, very high-voltage pulses that punch holes in the membranes of heart muscle cells. The cells die and scar down at much lower temperatures than heat ablation, with far less damage to nearby structures.

THE DAY OF THE PROCEDURE

What the procedure day looks like

1 Before
You arrive fasting in the morning. An IV is started, and you receive sedation.

2 During
Catheters go up your groin veins to the heart. Live X-ray and 3D mapping guide the pulses to the tissue causing your AFib.

3 After
Several hours in recovery while sedation wears off and the groin sites are watched. Most go home the same day or stay overnight.

Decide together

If ablation is the right choice for you, PFA is absolutely worth discussing with your electrophysiologist. The final decision depends on your anatomy, your symptoms, what you have already tried and your preferences.

AFTER YOUR ABLATION

Recovery, results and risks

RECOVERY AND ACTIVITY

your electrophysiologist will give you specific guidance

First few days	Rest for a few days, avoid heavy lifting and protect the groin puncture sites. Light activity like walking can resume within days.
Weeks one to four	Avoid heavy lifting or strenuous activity for one to two weeks to protect the groin sites. High-intensity exercise is typically cleared at two to four weeks.
How you feel	Most patients feel back to normal within a week. Some have a healing period with short irregular rhythms before the heart settles. That is normal and expected.

YOUR CHANCE OF STAYING IN NORMAL RHYTHM

depends on AFib type, device and what is counted

Paroxysmal AFib (comes and goes)	Around 73% met ADVENT's main goal (freedom from treatment failure), 75% in admIRE and 82% in MANIFEST-PF.
Persistent AFib (lasts over a week)	Lower, around 55% in PULSED AF and 72% in MANIFEST-PF.
Over time	Rates trend down over years two and three. Recurrence runs roughly 20 to 40% at two years, depending on what is counted.
If AFib comes back	Many have a successful repeat procedure. Rhythm-control drugs, or AV nodal ablation with a pacemaker, may also be options.

RISKS

serious complication well under 1% for most patients

Esophagus	With thermal ablation, a hole between the atrium and esophagus (fistula) occurs in roughly 0.02 to 0.1% of cases. The largest PFA registries have reported zero esophageal complications.
Diaphragm nerve	Phrenic nerve injury can paralyze the diaphragm for a time, usually recovering over weeks to months. In MANIFEST-PF it was temporary in 0.46% and persistent in 0.06%.
Pulmonary vein narrowing	Every major PFA registry has reported zero narrowing of clinical importance. In ADVENT, average narrowing was 0.9% with PFA versus 12.0% with thermal ablation.
Heart wall or groin	A rare puncture of the heart wall can bleed into the sac around the heart. Groin bleeding, clotting or a pseudoaneurysm happens occasionally and is usually minor.

CALL 911

a small stable bruise or mild groin soreness is an office call

Right after	Stroke signs, chest pain, sudden breathlessness, fainting, or groin bleeding that won't stop after 10 minutes of firm pressure.
1 to 4 weeks later	Trouble or pain swallowing, fever, vomiting blood or new neurologic symptoms.

WHO IS A GOOD CANDIDATE

PFA suits most people who are candidates for any ablation. You may be a strong candidate if you have paroxysmal or persistent AFib, symptoms that affect your quality of life, AFib that has not responded to or is not tolerated on drugs like flecainide, sotalol or amiodarone, or AFib that came back after a prior ablation.

READ THE FULL ARTICLE

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pulse-field-ablation

For education only, and not a substitute for advice from your own physician. Sources include the ADVENT trial (NEJM 2023), the MANIFEST-PF registry (Circulation 2023), the PULSED AF trial (Circulation 2023), the admIRE trial (Circulation 2024) and the 2023 ACC/AHA/ACCP/HRS atrial fibrillation guideline.

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