



PRACTICE

PRACTICE POINTER

Ablation therapy in atrial fibrillation

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What you need to know

- Ablation is a management option for those experiencing symptoms of atrial fibrillation who have not responded to, or wish to avoid, anti-arrhythmic medication, or for whom such medication is contraindicated
- Ablation has been shown to improve quality of life but has not yet been shown to reduce stroke risk or mortality. Long term anticoagulation is still indicated after ablation, according to the pre-ablation stroke risk
- The success rate in returning to sinus rhythm is around 80% at three years, but up to a third of patients need more than one procedure to achieve this

Atrial fibrillation has a prevalence of 1% in the general population and 6% in those aged over 60 years. It increases the risk of stroke fivefold and doubles the risk of death.¹ Although it is often asymptomatic, symptoms may include palpitations, breathlessness, dizziness, and exercise intolerance and lead to a reduced quality of life.²

Atrial fibrillation can be managed with pharmacotherapy, but ablation therapy (catheter ablation) is an option for symptomatic patients who wish to avoid or cannot tolerate medication. Once a cardiologist has assessed that the patient is a suitable candidate for the procedure, patients may have further questions to put to their general practitioner or other care provider. To aid these discussions, this practice pointer outlines what ablation therapy entails, the potential risks, the likelihood of success, and postoperative advice.

When is ablation therapy offered to patients with atrial fibrillation?

The number of catheter ablation procedures carried out for atrial fibrillation has risen, with over 6000 procedures being performed annually in the UK (approximately 100/million population).³ The National Institute for Health and Care Excellence (NICE) recommends the use of percutaneous radiofrequency ablation for those whose atrial fibrillation is causing symptoms and who

have not responded to, or wish to avoid, anti-arrhythmic medication or in whom such medication is contraindicated.⁴

What is the evidence for ablation therapy? Normalising arrhythmia

In a meta-analysis of 11 randomised trials comparing catheter ablation versus anti-arrhythmic therapy in atrial fibrillation, ablation demonstrated superior efficacy in reducing atrial fibrillation recurrence (relative risk reduction of 53%, absolute risk reduction of 29%).⁵ In drug-refractory paroxysmal atrial fibrillation, cryotherapy and radiofrequency ablation demonstrate similar efficacy.⁶

Up to half of patients experience "early recurrence" of atrial fibrillation, atrial flutter, or atrial tachycardia in the first three months after the ablation procedure.⁷ This is usually due to irritability in the heart from the ablation procedure; it often resolves spontaneously and does not necessarily mean that the procedure has been unsuccessful. Repeat ablation procedures may be considered three months after the initial procedure in those with ongoing symptoms affecting quality of life. Approximately 20-40% of patients will require more than one procedure.⁸

Three years after a single ablation, 53.1% of patients were in sinus rhythm, according to a meta-analysis of 19 studies.⁹ This increased to 79.8% for patients undergoing multiple procedures.

Recurrence of atrial fibrillation is more likely in older patients and in those with persistent atrial fibrillation or comorbidities such as high blood pressure, diabetes, obesity, heart failure, and sleep apnoea.¹⁰ Optimising comorbidities may maximise the likelihood of a successful ablation procedure.

Mortality

The landmark randomised controlled trial CABANA reported its findings in 2018. The trial randomised 2204 patients with

symptomatic atrial fibrillation to ablation or medical therapy. After a mean follow up of 48 months, ablation failed to reduce the primary composite endpoint of mortality, disabling stroke, major bleeding, and cardiac arrest (8.0% v 9.2%; P=0.30). The secondary endpoint of mortality wasn't significantly different (5.2% v 6.1%; P=0.38), but the composite endpoint of death or cardiovascular hospitalisation was lower with ablation (51.7% v 58.1%; P=0.001).¹¹ Overall, the study did confirm that atrial fibrillation ablation has a good safety profile and, by reducing hospitalisations, may have financial benefits that are particularly welcome in the current NHS climate.

Atrial fibrillation in patients with heart failure is associated with higher morbidity and mortality.^{12,13} The CASTLE-AF trial found the risk of death or hospitalisation for worsening heart failure was lower in patients with symptomatic atrial fibrillation and heart failure who were randomised to catheter ablation compared with those randomised to medical therapy (28.5% v 44.6%; P=0.007).¹⁴

Quality of life

The CABANA trial also reported a clinically relevant improvement in quality of life at 12 months' follow-up in patients with symptomatic atrial fibrillation.¹⁵ These findings support the results of previous smaller scale trials.^{16,17}

What does ablation therapy entail?

Atrial fibrillation is due to aberrant electrical activity at the junction between the pulmonary veins and the left atrium. Ablation therapy aims to isolate and destroy these foci of aberrant electrical activity to help restore and maintain sinus rhythm. The procedure is described in the infographic. Ablation is achieved through either heating (radiofrequency ablation) or freezing (cryoablation) the heart tissue.

What are the risks of the procedure?

Common side effects include bruising around the groin, where tubes have been inserted, or chest pain during the procedure, which may last intermittently for a week.

The risks of serious complications are less than one in 50 (1.6%), and these risks are reducing as techniques improve.⁷ Serious complications include:

- Cardiac tamponade (1 in 100)
- Stroke (1 in 100)
- Pulmonary vein stenosis (<1 in 100)
- Nerve damage (<1 in 100)
- Atrio-oesophageal fistula (<1 in 1000)
- Death (<1 in 1000).

Cardiac tamponade may result if the heart muscle is perforated during the procedure, causing blood to accumulate around the heart and compromise its pumping action. It needs urgent treatment by inserting a pericardial drain.

Pulmonary vein stenosis—proximity of ablation targets to the pulmonary veins cause their narrowing or complete blockage—may lead to breathlessness or haemoptysis. The vessels may be reopened by angioplasty.

An atrio-oesophageal fistula may develop if an abnormal connection is created between the left atrium and the oesophagus during the ablation procedure. Onset of symptoms may be insidious, resulting in fevers, collapse, and vomiting blood. It is difficult to treat and may necessitate major thoracic surgery.

Do patients need to take medication after ablation therapy?

Thromboembolism prophylaxis

As catheter ablation creates a prothrombotic state, guidelines recommend anticoagulation with either warfarin or a direct oral anticoagulant for all patients for at least four weeks before the procedure and two months after the procedure.⁷ There is currently no randomised trial evidence showing that successful ablation reduces the risk of embolic stroke, with one study reporting a 60% greater risk of stroke or transient ischaemic attack in those with resolved atrial fibrillation compared with people with no history of atrial fibrillation.¹⁸ The exact reason for this is unclear, but may be related to the recurrence of subclinical atrial fibrillation episodes, which are harder to detect.¹⁹ Therefore, even if sinus rhythm is maintained, patients are advised to continue anticoagulation based on the pre-ablation CHA₂DS₂-VASC score for atrial fibrillation stroke risk.⁷

Other medications

A proton pump inhibitor (such as lansoprazole) is commonly prescribed for one month after the ablation procedure to minimise oesophageal inflammation and reduce the risk of an atrio-oesophageal fistula, a rare but potentially fatal complication. This recommendation is based on case reports and expert opinion.²⁰

Anti-arrhythmic medication (such as flecainide) in combination with atrioventricular nodal blocking drugs (such as β blockers, calcium channel blockers, or digoxin) are prescribed for six weeks after ablation. These minimise irritability of the heart, thereby reducing arrhythmia recurrence and arrhythmia-related hospitalisation in the early postoperative period.²¹ However, the effects of anti-arrhythmic medications on long term outcomes is currently unclear.⁷

Monitoring and follow-up

Patients should be followed up by a cardiologist a minimum of three months after the procedure and then be seen by a healthcare professional such as a general practitioner, cardiologist, or electrophysiologist on an annual basis thereafter.⁷ These annual reviews serve to monitor the heart rhythm and stroke risk as well as to allow ongoing management of associated risk factors and comorbidities.

In recent years, a plethora of new technologies have emerged that detect and monitor arrhythmias on ambulatory electrocardiographic recording devices such as smartphones or wristwatches. The potential of such devices to reduce the incidence of delayed diagnosis of atrial fibrillation, and the associated morbidity and mortality, is currently being explored.

Education into practice

- What outcomes are important for your patients, when they are considering ablation therapy for atrial fibrillation?
- For patients undergoing ablation therapy, have you discussed the likelihood of success and the risks associated with the procedure?
- For patients who have had an ablation, do you review their symptoms, heart rhythm, medications, and stroke risk annually?

Questions for further research

- In patients with a high stroke risk profile and recent onset of atrial fibrillation, does early rhythm control therapy reduce cardiovascular complications?
- Are short term corticosteroids an effective and safe option in the prevention of post-ablation recurrence of atrial fibrillation?
- What is the role of newer technologies in earlier detection of atrial fibrillation and what impact do they have on stroke rates and mortality?

Information resources for patients

- Arrhythmia Alliance. Information and advice. (Free resource, no registration required): <http://www.arrhythmiaalliance.org.uk/>
- British Heart Foundation. (Free resource, no registration required): <https://www.bhf.org.uk/>
- Atrial Fibrillation Association. (Free resource, no registration required): <http://www.heartrhythmalliance.org/afa/uk/>
- Patient. Information on atrial fibrillation. (Free resource, no registration required): <https://patient.info/health/atrial-fibrillation-leaflet>

How this article was made

The idea came from a focus group with 12 general practitioners, who suggested that they needed more information to support patients undergoing ablation therapy. We searched PubMed and the Cochrane Library (using terms "atrial fibrillation" and "catheter ablation") for evidence on catheter ablation in atrial fibrillation and identified any additional relevant articles through reference lists. We reviewed recommendations from guidelines published by the National Institute for Health and Care Excellence, European Heart Rhythm Association and European Cardiac Arrhythmia Society. Expert co-author opinion in electrophysiology formed a valuable contribution in detailing technical aspects of the ablation procedure.

How patients were involved in the creation of this article

This Practice Pointer has drawn on experience from a real patient journey which involved a fit and active man undergoing a diagnostic work-up for paroxysmal atrial fibrillation, eventually followed by treatment with ablation. The questions that arose during his patient journey are common to this group of patients and have been addressed in the article.

Contributors: All authors made substantial contributions to the writing, revision, and editing of the article. All authors accept accountability for all aspects of the article. AB is the guarantor.

Competing interests: We have read and understood the BMJ policy on declaration of interests and have no relevant interests to declare.

Provenance and peer review: Commissioned, based on an idea from the author; externally peer reviewed.

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