AFib ablation: Stop assuming success based on AFib type alone

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Atrial fibrillation (AFib) remains a pervasive arrhythmia, driving significant morbidity, mortality, and healthcare costs across Europe.1 While pharmacological strategies offer symptomatic control and stroke prevention, they often fall short in maintaining sinus rhythm or alleviating the debilitating symptoms many patients experience. For those failing antiarrhythmic drugs, or with specific AFib phenotypes, catheter ablation offers a procedural alternative.

The critical question for clinicians is not whether ablation works, but for whom it works best. Identifying the optimal patient profile for this invasive procedure, balancing efficacy against procedural risks, dictates its appropriate integration into AFib management algorithms.

KEY TAKEAWAYS

- The Pivot: Patient selection for catheter ablation has evolved beyond simple paroxysmal vs. persistent AFib, now incorporating factors like left atrial size, fibrosis, and comorbidity burden.
- The Data: Patients with paroxysmal AFib consistently show higher rates of freedom from arrhythmia recurrence (typically 70-80% at one year) compared to those with long-standing persistent AFib (often 30-50%).
- The Action: Prioritise catheter ablation in younger patients with paroxysmal AFib, minimal left atrial remodelling, and fewer comorbidities, as these individuals derive the greatest and most durable benefit.

Atrial fibrillation, the most common sustained arrhythmia, affects millions across Europe, presenting a complex management challenge for general practitioners and specialists alike. Its prevalence increases with age and the presence of cardiovascular comorbidities, including hypertension, heart failure, and obesity. While anticoagulation addresses stroke risk, rhythm control strategies aim to alleviate symptoms and prevent AFib-related cardiomyopathy. Antiarrhythmic drugs (AADs) are a first-line option, but their efficacy is limited by side effects and often modest success rates in maintaining sinus rhythm. Catheter ablation emerged as a more aggressive, but potentially more effective, rhythm control strategy for selected patients.

The procedure involves creating lesions in the left atrium, typically around the pulmonary veins, to isolate arrhythmogenic foci and prevent their propagation. Early techniques focused on pulmonary vein isolation (PVI), which remains the cornerstone of most ablation strategies. Subsequent refinements have explored additional lesion sets, such as posterior wall isolation, linear lesions, or targeting complex fractionated atrial electrograms (CFAE), particularly for persistent forms of AFib. The goal is to eliminate triggers and modify the atrial substrate that sustains the arrhythmia.

The success of these interventions, however, varies considerably depending on patient characteristics and the type of AFib.

Defining the Ideal Candidate

Patients with paroxysmal atrial fibrillation (AFib episodes terminating spontaneously within seven days) consistently demonstrate the highest success rates with catheter ablation. Multiple registries and randomised controlled trials have shown that PVI alone can achieve freedom from AFib in 70-80% of these patients after a single procedure, often requiring a touch-up procedure to reach 85-90% success at one year. These patients typically have less atrial remodelling, smaller left atrial volumes, and fewer underlying structural heart abnormalities, making their AFib primarily driven by pulmonary vein triggers. The Oxford Handbook of Cardiology provides a concise overview of these patient selection criteria.

But the picture changes significantly for patients with persistent AFib (AFib lasting more than seven days) and long-standing persistent AFib (AFib lasting more than one year). For these groups, the atrial substrate is often more extensively remodelled, with greater fibrosis and electrical heterogeneity, making PVI alone less effective. Initial success rates for persistent AFib often hover around 50-60% after a single procedure, and for long-standing persistent AFib, they can drop to 30-50%. These lower rates frequently necessitate multiple procedures and more extensive ablation strategies beyond PVI, which carry their own increased risks.

The Impact of Atrial Remodelling and Fibrosis

Left atrial size is a well-established predictor of ablation success. Patients with a left atrial diameter (LAD) of less than 4.5 cm generally fare better than those with significant left atrial enlargement (LAD > 5.0 cm). The presence and extent of left atrial fibrosis, often assessed non-invasively by cardiac magnetic resonance imaging (CMR), also strongly correlate with outcomes. Patients with minimal or no atrial fibrosis (less than 10% of the left atrial wall) have significantly higher rates of freedom from AFib compared to those with extensive fibrosis (greater than 20-25%). This is because fibrotic tissue acts as a substrate for re-entry circuits, making it resistant to ablation and more prone to arrhythmia recurrence.

Age also plays a role, though less directly than atrial remodelling. Younger patients, typically under 65 years, tend to have less advanced atrial disease and fewer comorbidities, contributing to better ablation outcomes. Older patients, while still benefiting, may have a higher burden of comorbidities and more extensive atrial remodelling, which can limit the durability of rhythm control. However, age alone should not be an absolute contraindication, particularly if the patient is otherwise healthy and symptomatic.

Comorbidities and Procedural Risk

The presence of comorbidities significantly influences both the efficacy and safety of catheter ablation. Hypertension, diabetes, obesity, and obstructive sleep apnoea are all independent risk factors for AFib recurrence post-ablation. Aggressive management of these conditions, including weight loss for obese patients and continuous positive airway pressure (CPAP) for sleep apnoea, can improve ablation success rates. For example, studies have shown that weight loss of >10% in obese AFib patients can reduce AFib recurrence by 30-40%, even before ablation. The overall burden of comorbidities, often quantified by scores like the CHA2DS2-VASc score, also correlates inversely with long-term success.

Procedural risks, while generally low, are not negligible. Major complications, including cardiac tamponade, stroke, oesophageal fistula, and phrenic nerve injury, occur in approximately 1-3% of procedures. Minor complications, such as

vascular access site issues or pericardial effusion, are more common. The risk-benefit ratio must be carefully weighed, especially in patients with multiple comorbidities or advanced heart disease, where the potential for durable rhythm control may be lower and the procedural risk higher. For instance, patients with severe left ventricular dysfunction (ejection fraction <35%) face higher risks and often derive less symptomatic benefit from ablation.

The Role of Early Intervention

Emerging evidence suggests that earlier intervention with catheter ablation, particularly in patients with paroxysmal AFib, may lead to better long-term outcomes and potentially prevent atrial remodelling. The EAST-AFNET 4 trial, for example, demonstrated that early rhythm control, including ablation or AADs, improved cardiovascular outcomes compared to usual care in patients with recently diagnosed AFib. While that trial did not exclusively focus on ablation, it underscored the importance of early rhythm management. For patients with symptomatic paroxysmal AFib who have failed or are intolerant to one AAD, catheter ablation is a Class I recommendation in current European guidelines. Still, the decision to proceed with ablation requires a comprehensive assessment of patient symptoms, AFib type, left atrial characteristics, and comorbidity burden. A shared decision-making approach, where patients understand the potential benefits, risks, and alternatives, is paramount. For some, particularly those with minimal symptoms or extensive atrial remodelling, a rate control strategy may be more appropriate and safer. The long-term impact of ablation on hard endpoints like stroke or mortality, beyond symptom relief and rhythm maintenance, remains an area of ongoing research, especially in populations beyond those with heart failure.

Where it Falls Short

The primary limitation of many ablation studies is their focus on freedom from AFib as the primary endpoint, often defined as no AFib episodes longer than 30 seconds after a 3-month blanking period. This definition does not always translate directly to improved quality of life or a reduction in hard clinical events. Many patients may experience a reduction in AFib burden rather than complete elimination, which can still be clinically meaningful but is not captured by a binary endpoint. The reliance on intermittent ECG monitoring also risks underestimating AFib recurrence, particularly for asymptomatic episodes. Continuous monitoring with devices like the AliveCor KardiaMobile 6L Personal ECG can provide a more accurate picture of AFib burden.

Another caveat is the generalisability of trial results. Many pivotal trials enrolled highly selected patient populations, often younger, with paroxysmal AFib and fewer comorbidities, which may not reflect the broader patient population seen in routine clinical practice. The learning curve for operators and the variability in ablation techniques across centres also contribute to differences in reported success rates. Furthermore, the long-term efficacy beyond five years remains less well-defined, with some studies showing a gradual decline in freedom from AFib over time, even in initially successful patients.

> **CLINICAL IMPLICATIONS**
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> For clinicians managing AFib, the data on catheter ablation is clear: patient selection is everything. We should prioritise this invasive therapy for symptomatic patients with paroxysmal AFib, minimal left atrial enlargement, and a well-controlled comorbidity profile. These are the individuals who will see the most durable rhythm control and symptomatic improvement, justifying the procedural risks.

> But for those with long-standing persistent AFib, significant atrial remodelling, or a high burden of uncontrolled comorbidities, the enthusiasm for ablation must be tempered. The lower success rates and increased procedural complexity mean that a rate control strategy, coupled with aggressive comorbidity management, may offer a more pragmatic and safer approach. Pushing for rhythm control in these patients often leads to repeat procedures, diminishing returns, and increased patient frustration.
> The industry must continue to innovate, developing technologies that can more effectively ablate fibrotic atrial tissue and better predict individual patient response to therapy. Until then, our role is to apply the existing evidence judiciously, ensuring that we offer the right treatment to the right patient, rather than a one-size-fits-all approach to AFib management.

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REFERENCES

1. 1. Mujovi N, et al. Catheter Ablation of Atrial Fibrillation: An Overview for Clinicians. Adv Ther. 2017;34(8):1897-1917. doi:10.1007/s12325-017-0590-z
2. 2. Kirchhof P, et al. Catheter ablation in patients with persistent atrial fibrillation. Eur Heart J. 2017;38(1):20-26. doi:10.1093/eurheartj/ehw260
3. 3. Prabhu S, et al. Catheter Ablation Versus Medical Rate Control in Atrial Fibrillation and Systolic Dysfunction: The CAMERA-MRI Study. J Am Coll Cardiol. 2017;70(16):1949-1961. doi:10.1016/j.jacc.2017.08.041
4. 4. Reddy VY, et al. Pulsed Field Ablation in Patients With Persistent Atrial Fibrillation. J Am Coll Cardiol. 2020;76(9):1068-1080. doi:10.1016/j.jacc.2020.07.007
5. 5. Nery PB, et al. Scar-based catheter ablation for persistent atrial fibrillation. Curr Opin Cardiol. 2017;32(1):1-9. doi:10.1097/HCO.0000000000000349
6. 6. Passman R. Catheter Ablation for Persistent Atrial Fibrillation. JAMA. 2023;329(2):125-126. doi:10.1001/jama.2022.23953
7. 7. Bennett RG, et al. Catheter Ablation of Persistent Atrial Fibrillation: Are We Better Than We Think?. JACC Clin Electrophysiol. 2023;9(10):2082-2084. doi:10.1016/j.jacep.2023.07.014
8. 8. Floria M, et al. Left Atrial Structural Remodelling in Non-Valvular Atrial Fibrillation: What Have We Learnt from CMR?. Diagnostics (Basel). 2020;10(3). doi:10.3390/diagnostics10030137
9. 9. Hopman LHGA, et al. Right atrial function and fibrosis in relation to successful atrial fibrillation ablation. Eur Heart J Cardiovasc Imaging. 2023;24(3):336-345. doi:10.1093/ehjci/jeac152
10. 10. Filiberti G, et al. The use of cardiac imaging in patients undergoing atrial fibrillation ablation. J Interv Card Electrophysiol. 2025;68(8):1719-1738. doi:10.1007/s10840-025-02035-6
11. 11. M rgulescu AD, et al. Reproducibility and accuracy of late gadolinium enhancement cardiac magnetic resonance measurements for the detection of left atrial fibrosis in patients undergoing atrial fibrillation ablation procedures. Europace. 2019;21(5):724-731. doi:10.1093/europace/euy314
12. 12. Hu Z, et al. Atrial fibrillation: mechanism and clinical management. Chin Med J (Engl). 2023;136(22):2668-2676. doi:10.1097/CM9.0000000000002906

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