

Indications for catheter and surgical ablation of atrial fibrillation

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Introduction

The indications for catheter ablation of atrial fibrillation have been defined by three major documents. The first is the 2012 HRS Consensus Document on Catheter and Surgical Ablation of Atrial Fibrillation [1], the second is the European Society of Cardiology 2010 Guidelines for the Management of Atrial Fibrillation [2,3], and the third are the ACC/AHA/HRS Guideline for the Management of the Patients with Atrial Fibrillation [4]. In this chapter, we will review, compare, and contrast the indications for AF ablation, as defined in each of these three documents. We will also discuss areas of controversy.

The 2012 HRS/EHRA/ECAS consensus document on Catheter ablation of atrial fibrillation

The 2012 HRS/EHRA/ESC Expert Consensus Document on Catheter and Surgical Ablation of Atrial Fibrillation was an update on the original Expert Consensus Document that was published in 2007. The recommendations concerning the indications for catheter and surgical ablation of atrial fibrillation as defined by the 2012 HRS/EHRA/ECAS Consensus Document are as follows:

Symptomatic AF refractory of intolerant to at least one class 1 or 3 antiarrhythmic medication

Paroxysmal AF: Catheter ablation is recommended. Class 1, LOE A.

Persistent AF: Catheter ablation is reasonable. Class 2A, LOE B.

Long-standing Persistent AF: Catheter ablation may be considered class 2B, LOE B.

Symptomatic AF prior to initiation of antiarrhythmic drug therapy with a class 1 or 3 antiarrhythmic agent

Paroxysmal: Catheter ablation is reasonable. Class 2A, LOE B.

Persistent: Catheter ablation may be considered. Class 2A, LOE C.

Long-standing persistent: Catheter ablation may be considered. Class 2A, LOE C.

Concomitant surgical ablation of atrial fibrillation

Symptomatic AF refractory of intolerant to at least one class 1 or 3 antiarrhythmic medication.

Paroxysmal AF: Concomitant surgical ablation is recommended. Class 2A, LOE C.

Persistent AF: Concomitant surgical ablation is reasonable. Class 2A, LOE C.

Long-standing Persistent AF: Concomitant surgical ablation may be considered class 2A, LOE C.

Symptomatic AF prior to initiation of antiarrhythmic drug therapy with a class 1 or 3 antiarrhythmic agent

Paroxysmal: Concomitant surgical ablation is reasonable. Class 2A, LOE C.

Persistent: Concomitant surgical ablation may be considered. Class 2A, LOE C.

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Long-standing persistent: Concomitant surgical ablation may be considered. Class 2B, LOE C.

Stand-alone surgical ablation of atrial fibrillation

Symptomatic AF refractory of intolerant to at least one class 1 or 3 antiarrhythmic medication.

Paroxysmal AF: Stand-alone surgical ablation is recommended. Class 2A, LOE C.

Persistent AF: Stand-alone surgical ablation is reasonable. Class 2A, LOE C.

Long-standing Persistent AF: Stand-alone surgical ablation may be considered class 2A, LOE C.

Symptomatic AF prior to initiation of antiarrhythmic drug therapy with a class 1 or 3 antiarrhythmic agent

Paroxysmal: Stand-alone surgical ablation is reasonable. Class 2A, LOE C.

Persistent: Stand-alone surgical ablation may be considered. Class 2A, LOE C.

Long-standing persistent: Stand-alone surgical ablation may be considered. Class 2B, LOE C.

Indications for catheter ablation of atrial fibrillation as defined by the 2010 European Society of Cardiology guidelines for atrial fibrillation management

The most recent document on AF management put forth by the European Society of Cardiology was published in 2012 [3]. This document is an update of the 2010 European Society of Cardiology AF Guidelines [2].

The updated 2012 indications are as follows:

1 Catheter ablation of symptomatic paroxysmal AF is recommended in patients who have symptomatic recurrences of AF on antiarrhythmic drug therapy and who prefer further rhythm control therapy, when performed by an electrophysiologist who has received appropriate training and is performing the procedure in an experienced center. Class 1, LOE A.

2 Catheter ablation of AF should be considered as first-line therapy in selected patients with symptomatic paroxysmal AF as an alternative to antiarrhythmic drug therapy, considering patient choice, benefit, and risk. Class 2A, LOE B.

The indications that remain unchanged from the 2010 document are as follows:

3 Ablation of persistent symptomatic AF that is refractory to antiarrhythmic therapy should be considered as a treatment option. Class 2a, LOE B.

4 Catheter ablation of AF in patients with heart failure may be considered when antiarrhythmic medication, including amiodarone, fails to control symptoms. Class 2b, LOE B.

5 Catheter ablation of AF may be considered in patients with symptomatic long-standing persistent AF refractory to antiarrhythmic drugs. Class 2b, LOE C. Indications for catheter ablation of atrial fibrillation as defined by the 2014 ACC/EHRA/ECAS AF Management Guidelines.

In 2014, the ACC/AHA/and HRS published a guidelines document focused on atrial fibrillation management [4]. The recommendations put forth in this document concerning the indications for catheter ablation of atrial fibrillation are as follows:

Class I

1 AF ablation is useful for symptomatic paroxysmal AF refractory or intolerant to at least one class 1 or 3 antiarrhythmic medication when a rhythm control strategy is desired (*Level of Evidence: A*)

2 Prior to consideration of ablation of AF, careful assessment of the procedural risks and outcomes relevant to the individual patient is recommended. (*Level of Evidence: C*)

Class IIa

1 AF ablation is reasonable for selected patients with symptomatic persistent AF refractory or intolerant to at least one class 1 or 3 antiarrhythmic medication. (*Level of Evidence: A*)

2 In selected patients with recurrent symptomatic paroxysmal AF, AF ablation is a reasonable initial rhythm control strategy prior to therapeutic trials of antiarrhythmic drug therapy, after carefully weighing risks and outcomes of drug and ablation therapy. (*Level of Evidence: B*)

Class IIb

1 AF ablation may be considered for symptomatic long-standing persistent AF refractory or intolerant to at least one class 1 or 3 antiarrhythmic medication when a rhythm control strategy is desired. (*Level of Evidence: B*)

2 In patients with recurrent symptomatic paroxysmal AF, it is a reasonable initial rhythm control strategy prior to therapeutic trials of antiarrhythmic drug therapy, after weighing the risks and outcomes of drug and ablation therapy (LOE B).

Class III: Harm

1 AF ablation should not be performed in patients who cannot be treated with anticoagulant therapy during and following the procedure. (*Level of Evidence: C*)

2 AF ablation of AF to restore sinus rhythm should not be performed with the sole intent of obviating need for anticoagulation. (*Level of Evidence: C*)

Considerations on the published guidelines for AF ablation

These indications are categorized into class I, class IIa, class IIb, and class III indications. The evidence

supporting these indications is graded as level A through C. In making these recommendations, the writing groups considered the body of literature published that has defined the safety and efficacy of catheter and surgical ablation of AF. Both the number of clinical trials and the quality of these trials were considered. Catheter and surgical ablation of AF are highly complex procedures, and a careful assessment of benefit and risk must be considered for each patient.

As demonstrated in a large number of published studies, the primary clinical benefit from catheter ablation of AF is an improvement in quality of life resulting from elimination of arrhythmia-related symptoms such as palpitations, fatigue, or effort intolerance (see section on Outcomes and Efficacy of Catheter Ablation of AF). Thus, the primary selection criterion for catheter ablation should be the presence of symptomatic AF. As noted above, there are many considerations in patient selection other than type of AF alone. In clinical practice, many patients with AF may be asymptomatic but seek catheter ablation as an alternative to long-term anticoagulation with warfarin or other drugs with similar efficacy. One of the important features of the indications for AF ablation described in these documents is that the guidelines viewed collectively tell us that a desire to stop anticoagulation is not an appropriate indication for AF ablation. This is stated most clearly in the 2014 ACC/AHA/HRS AF guidelines that provide a class 3 indication “harm” for performing AF ablation because of a desire to stop anticoagulation. Although retrospective studies have demonstrated that discontinuation of warfarin therapy after catheter ablation may be safe over medium-term follow-up in some subsets of patients, this has never been confirmed by a large prospective randomized clinical trial and therefore remains unproven. Furthermore, it is well recognized that symptomatic and/or asymptomatic AF may recur during long-term follow-up after an AF ablation procedure. It is for these reasons that Heart Rhythm Society Consensus Document recommends that discontinuation of warfarin or equivalent therapies post-ablation is not recommended in patients who have a high stroke risk as determined by the CHADS₂ or CHA₂DS₂VASc score. Either aspirin or warfarin is appropriate for patients who do not have a high stroke risk. If anticoagulation withdrawal is being considered, additional ECG monitoring may be required, and a detailed discussion of risk versus benefit should be entertained. A patient’s desire to eliminate the need for long-term anticoagulation by itself should not be considered an appropriate selection criterion. In arriving at this recommendation, the Task Force recognizes that patients who have undergone catheter ablation of AF represent a new and previously unstudied

population of patients. Clinical trials, therefore, are needed to define the stroke risk of this patient population and to determine whether the risk factors identified in the CHADS₂ or CHA₂DS₂VASc or other scoring systems apply to these patients.

A review of the above guidelines reveals that there is a remarkable consistency among the three published guidelines. This is not surprising given that the same worldwide body of evidence was reviewed in order to create these guidelines. These guidelines, taken as a whole, remind us that the outcomes of catheter ablation are superior in patients with paroxysmal atrial fibrillation compared to persistent or particularly long-standing persistent AF. They also remind us of the importance of patient preference. In my experience, patients fall into two main groups. For some patients, the notion of an AF ablation procedure, that is a lengthy procedure performed usually under general anesthesia with measureable risks, is an unattractive option unless all attempts at pharmacologic therapy have failed. Other patients view this decision from a very different stand point and would gladly undergo an invasive procedure to avoid anti-arrhythmic drug therapy. These guidelines also reflect the body of literature that informs us of the outcomes and safety of AF ablation. In the case of paroxysmal AF, more than eight prospective randomized trials have been performed. In contrast, remarkably little literature is available to inform us of the safety and efficacy of AF ablation in patients with long-standing persistent AF. This is particularly the case for patients who have been in continuous AF for many years.

A reader of this chapter cannot help but wonder that there is no mention in any of the three guideline documents on what the role of AF ablation is in the truly asymptomatic patient. Although none of these documents provides a clear indication for ablation in this patient group, one of these documents states that catheter ablation is inappropriate. This silence on the part of the experts reflects a number of subtle issues concerning the field of AF ablation. The first issue concerns how symptoms are defined. In my experience, many patients with AF when asked if they have symptoms will reply that they are symptom free. And yet, if the effort is made to restore the sinus rhythm in a particular patient, the patient will recognize that they feel much better with improved sinus rhythm. It is for this reason that it is becoming an increasingly common practice for cardiologists and electrophysiologists to give a patient a “trial of sinus rhythm” before declaring they have permanent AF and abandoning all attempts at rhythm control. This is particularly the case for young individuals. The next issue concerns how a truly asymptomatic young patient with AF should be

handled. We all recognize that there are the “proven” and also the “unproven” benefits of restoration of sinus rhythm. The proven benefits of a rhythm control strategy are the improvement in quality of life and reduction of symptoms. But there are also many “unproven” and “theoretical” benefits of a rhythm control strategy. AF has been shown to increase mortality, increase the risk of heart failure, and increase the risk of dementia. And there is some data suggesting that stroke risk is higher in AF patients persistent AF than those with paroxysmal AF. Although studies have not been completed to prove that the elimination of AF reduces these risks, this may be the case. Some might argue that the AFFIRM study resolved this issue in demonstrating that “rate” and “rhythm” control did not differ in terms of stroke risk and mortality, this is really not the case. Not only was antiarrhythmic therapy ineffective in maintaining rhythm control in many patients and many patients in the rate control arm were in sinus rhythm but also the duration of follow-up was less than 5 years. So, can we really apply these findings when having a detailed discussion with a 50-year-old man recently diagnosed with persistent AF on a routine physical examination? I do not believe this is the case. We also need to be aware of the important issue of atrial remodeling. It is well established that the longer a patient is in atrial fibrillation, the harder it is to restore and maintain sinus rhythm. Because of this when one chooses to pursue a rate control strategy in a 50-year-old with persistent AF, the opportunity to change direction and pursue a rhythm control strategy 5 years later, perhaps when new data proves that rhythm control lowers stroke risk, will be lost.

Considerations on discussions of the risks and benefits of AF ablation with patients

A physician plays an important role in a patient’s decision whether to proceed with catheter ablation or pursue further attempts at antiarrhythmic drug therapy. In my experience, many physicians “oversell” AF ablation, informing patients that the “success of AF ablation is approximately 90%, with up to 50% of patients needing a second procedure.” What such physicians mean to explain to the patient is that the single procedure success rate of AF ablation, defined as being AF free of antiarrhythmic drug therapy 12 months postablation, is 50 to 60%. And among patients doing well 12 months postablation, AF recurs in about one in four after 5 years postablation. In my experience, it is a mistake to oversell the procedure. I always explain to the patients that AF ablation continues to evolve, and if we can control

their AF with an antiarrhythmic medication the AF ablation procedure they will get in the future will have higher safety and efficacy than the AF ablation they undergo now. Some patients feel an urgency to have their AF ablation procedure sooner than later because they are getting “older.” My response to this concern is that they are getting older more slowly that the procedure is getting better. In my opinion, the only situation where it is a mistake not to proceed with AF ablation now is when a patient is in continuous AF despite drug therapy on an antiarrhythmic medication. The importance of continuous AF as a major determinant of poor outcomes of AF ablation is so powerful that the concept of deferring the procedure in a patient in continuous AF never pays off, especially when viewed in the long term.

Conclusions

In conclusion, the indications for AF ablation have been spelled out in three major documents. These documents, although different in some minor respects, are remarkably similar and consistent. Although it is important for electrophysiologists to be aware of these documents and their indications, the final decision will always rest with the patient. It is important to take the time and effort to fully inform the patient so that an informed and thoughtful decision can be made. In most situations, the patient faces the question “should I undergo AF ablation now or should I wait and defer this decision to a later point?” Many well-informed patients will defer the procedure only to decide to proceed months or years later.

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