Alternate Strategies to Antiarrhythmic Therapy: The Role of Ablation

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Program Outline

- Introduction/Classification of Atrial Fibrillation
  - Paroxysmal, Persistent, Chronic/Permanent
- Current treatment strategies
  - Rate control vs. Rhythm Control
  - How to choose
- Antiarrhythmic therapy and drug choice
  - Selecting the appropriate agent, side effects, and monitoring
- Ablation: Radiofrequency vs. Cryoballoon
  - Patient selection, how the procedures are performed, complications, and success rates
- Monitoring following ablation and recurrence of arrhythmia
- AV (atrioventricular) Node Ablation

Classification of Atrial Fibrillation

- Atrial Fibrillation
  - Paroxysmal
  - Persistent
  - Chronic/Permanent

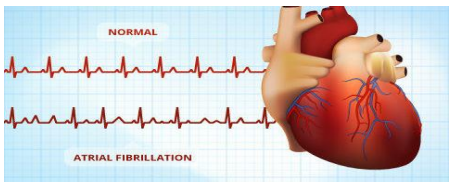


TABLE 3 Definitions of AF: A Simplified Scheme

Term	Definition
Paroxysmal AF	• AF that terminates spontaneously or with intervention within 7 d of onset. • Episodes may recur with variable frequency.
Persistent AF	• Continuous AF that is sustained >7 d.
Long-standing persistent AF	• Continuous AF >12 mo in duration.
Permanent AF	• The term "permanent AF" is used when the patient and clinician make a joint decision to stop further attempts to restore and/or maintain sinus rhythm. • Acceptance of AF represents a therapeutic attitude on the part of the patient and clinician rather than an inherent pathophysiological attribute of AF. • Acceptance of AF may change as symptoms, efficacy of therapeutic interventions, and patient and clinician preferences evolve.
Nonvalvular AF	• AF in the absence of rheumatic mitral stenosis, a mechanical or bioprosthetic heart valve, or mitral valve repair.

Clinical Risk Factors

- Increasing Age
- HTN
- DM
- MI
- HF
- Obesity
- OSA
- CT Surgery
- Smoking
- Exercise
- Alcohol Use
- Hyperthyroidism
- Family History

Medication Therapy

- Rate Controlling Agents
  - Class II: Beta Blockers (Atenolol, Metoprolol, Propranolol, and Nadolol)
  - Class IV: Calcium Channel blockers (Verapamil and Diltiazem)
  - Class V: Digoxin
- Rhythm Controlling Agents: Antiarrhythmics
  - Class Ic: Flecainide and Propafenone
  - Class III: Amiodarone, Sotalol, Ibutilide, Dofetilide, and Dronedarone

How to choose…

- Symptomatic
  - Quality of life
- Asymptomatic
- Heart Failure
- Cardiomyopathy
- Stroke Risk
- Triggers

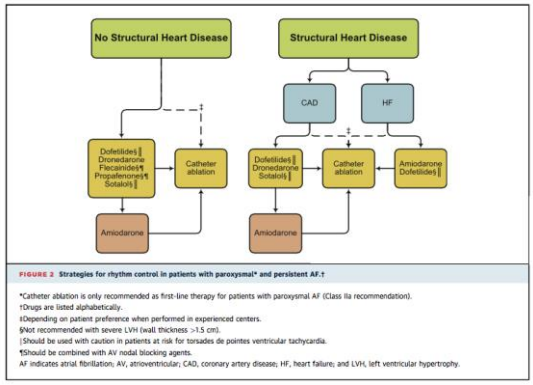


FIGURE 2 Strategies for rhythm control in patients with paroxysmal* and persistent AF.†

*Catheter ablation is only recommended as first-line therapy for patients with paroxysmal AF (Class IIa recommendation).
†Drugs are listed alphabetically.
‡Depending on patient preference when performed in experienced centers.
§Not recommended with severe LVH (wall thickness >1.5 cm).
‖Should be used with caution in patients at risk for torsades de pointes ventricular tachycardia.
¶Should be combined with AV nodal blocking agents.
AF indicates atrial fibrillation; AV, atrioventricular; CAD, coronary artery disease; HF, heart failure; and LVH, left ventricular hypertrophy.

Side Effects and Monitoring

- Antiarrythmic drugs are very potent
- Important to points to consider:
  - Hx of CAD, CHF, Long QT
  - Renal Function
  - Electrolytes and Mag++
  - Liver Function
  - Eye Exams
  - PFTs including DLCO
  - ECG
  - Treadmill testing
  - Stress testing
  - Pro-arrhythmia

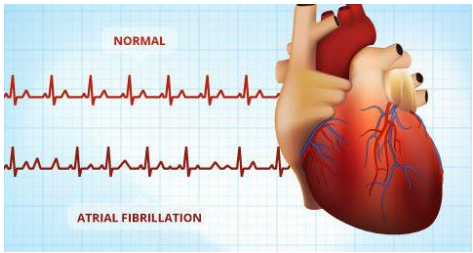
Chemical Cardioversion

Table 2. **Pooled Results for the Efficacy and Adverse Effects of Drugs Used in Acute Conversion of Atrial Fibrillation**

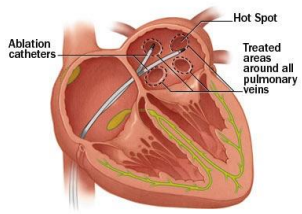
Level of Evidence	Drug	Trials with Control Group				Range of Sustained Ventricular Arrhythmia in All Trials that Reported Side Effects
		Trials	Patients in Drug Group	Odds Ratio of Conversion Compared with Control (95% CI)*	P Value	
		n				%
Strong	Ibutilide	4	552	30.7 (10.9–86)	<0.01	0–9
	Flecainide	5	128	13.2 (6.4–27.4)	<0.01	0–2
	Dofetilide	6	716	6.7 (4.5–10)	<0.01	1–12
	Propafenone	14	680	3.9 (2.3–6.8)	<0.01	0–2
	Amiodarone	15	484	3.2 (2.5–5.1)	<0.01	0
Moderate	Quinidine	3	99	2.9 (1.2–6.9)	0.02	0–12
Inconclusive	Disopyramide	1	13	7.0 (0.3–153)	0.10	Not reported
	Sotalol	3	115	1.1 (0.1–6.9)	>0.2	0–2

* Control indicates placebo, calcium-channel blockers, β-blockers, or digoxin.

The Role of Ablation



The Role of Ablation



Need For Understanding

- There is currently no cure for Afib, but the results of ablation can sometimes last for a long period of time.
- The goal of treatment is to decrease the frequency of afib occurrence as much as possible.
- We can decrease the incidence to where the symptoms aren't nearly as frequent.
- Cannot guarantee that it will not come back
- Do not ablation for the sole purpose of stopping anticoagulation
- End goal: improvement in quality of life

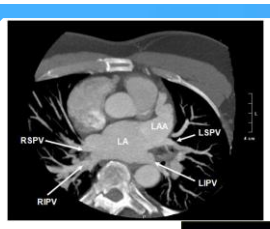
Consensus indications for catheter ablation of AF: 2012

Table 2 Consensus indications for catheter and surgical ablation of AF

Indications for catheter ablation of AF	Class	Level
Symptomatic AF refractory or intolerant to at least one Class 1 or 3 antiarrhythmic medication		
Paroxysmal: Catheter ablation is recommended*	I	A
Persistent: Catheter ablation is reasonable	IIa	B
Longstanding Persistent: Catheter ablation may be considered	IIb	B
Symptomatic AF prior to initiation of antiarrhythmic drug therapy with a Class 1 or 3 antiarrhythmic agent		
Paroxysmal: Catheter ablation is reasonable	IIa	B
Persistent: Catheter ablation may be considered	IIb	C
Longstanding Persistent: Catheter ablation may be considered	IIb	C

Imaging prior to ablation: CT/MRI

- Left atrial anatomy is complex.
- Detailed understanding of this anatomy is essential for a safe and effective procedure
  - Provides detailed anatomic description of the PVs and LA preprocedurally and assists in the detection of postprocedural complications.
  - There is variability in the number, size, and bifurcation of the

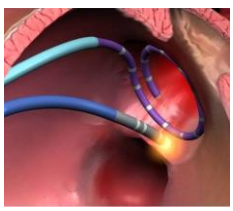


Contraindications to ablation

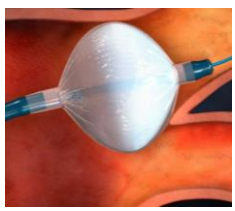
- Left atrial thrombus
- Intolerant to full strength anticoagulation

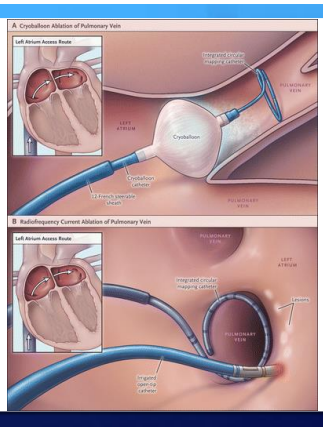
Fire vs. Ice

Radiofrequency Ablation



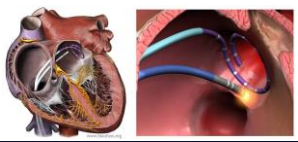
Cryoballon Ablation





Ablation technique

- Ablation strategies that target the PVs and/or PV antrum are the cornerstone for most AF ablation procedures.
- If the PVs are targeted, electrical isolation should be the goal.
- Achievement of electrical isolation requires, at a minimum, assessment and demonstration of entrance block into the PV.



Complications during/after

- Atrio Esophageal Fistula
- Bleeding
- Cardiac preformation
- Cardiac tamponed
- Esophageal Injury
- Gastric Motility/Pyloric Spasm Disorder
- Myocardial Infraction
- Pericarditis
- Phrenic nerve paralysis
- Pulmonary vein stenosis
- Silent Cerebral Embolism
- Stroke or TIA
- Vagal nerve injury
- Vascular access complication such a psuedoaneurysm or aneurysm

Anticoagulation following ablation

- Decisions regarding the continuation of systemic anticoagulation agents more than two months following ablation should be based on the patient's risk factors for stroke and not on the presence or type of AF.
- Discontinuation of systemic anticoagulation therapy post ablation is not recommended in patients who are at high risk of stroke as estimated by currently recommended schemes (CHADSVASC)

CHADSVASC

Congestive HF	1	0	0
Hypertension	1	1	1.3
Age ≥75 y	2	2	2.2
Diabetes mellitus	1	3	3.2
Stroke/TIA/TE	2	4	4.0
Vascular disease (prior MI, PAD, or aortic plaque)	1	5	6.7
Age 65–74 y	1	6	9.8
Sex category (i.e., female sex)	1	7	9.6
Maximum score	9	8	6.7

Monitoring and Follow-up

- Institution/Practice based
  - Typically 3 months and 9 months out
- Modalities to assess for recurrence
  - Event monitor
  - Loop recorder

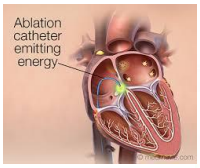
Early Recurrence

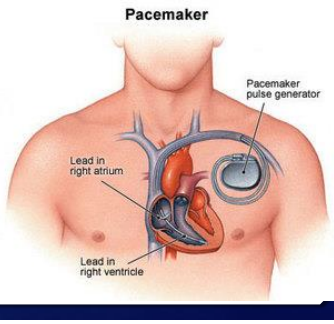
- Early recurrence should not prompt immediate re-ablation attempts.
- Cardioversion is advised to assist with atrial remodeling.
  - Freedom from afib was higher when cardioversion was performed within 30 days if a patient had recurrence

Success Rates

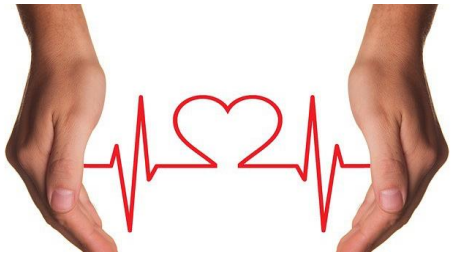
- How do we define success?
- Vary based on classification of afib
  - Paroxysmal
  - Persistent
- Vary institution to institution and physician to physician

AV Node Ablation





Questions???



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