


In summary, catheter ablation is the preferred secondary strategy for treatment of symptomatic AF after initial attempts at medical therapy have failed. Simple pulmonary vein isolation has a high success rate for the management of patients with paroxysmal AF. Success rates for all ablative techniques are lower for persistent AF, especially for long-term AF. As in the case of surgical ablation, multiple techniques are used at various centers, and the different strategies for follow-up and definitions of response have made it difficult to ascertain the relative efficacy of the various approaches in common use.

Catheter Ablation of the Atrioventricular Node

Although less commonly used today than in the past, the older technique of catheter ablation of the AV node resulting in complete heart block followed by placement of a ventricular pacemaker to maintain physiologic heart rates remains an option for patients when rate control cannot be achieved medically. This technique continues to have an important role in the management of patients who are too infirm to safely undergo AF ablation or in patients for whom ablative techniques have failed to control the arrhythmia.

 For a deeper discussion on this topic, please see Chapter 64, “Cardiac Arrhythmias with Supraventricular Origin,” in Goldman-Cecil Medicine, 25th Edition.

SYNCOPE

Syncope is a sudden loss of consciousness that is transient. Syncope has cardiac causes (e.g., low cerebral blood pressure) and noncardiac causes. Common causes and categories of syncope are outlined in Table 9-4. Cerebrovascular disease or stroke uncommonly manifests as syncope unless a large cerebral territory is involved. Syncope is a common reason for emergency room or hospital admission.

The diagnostic approach to a patient with syncope is given in Figure 9-8. Most causes can be identified by the medical history and physical examination alone. Conditions surrounding the syncopal episode often suggest a cause. For example, vasovagal episodes often occur during stress, pain, straining, coughing, or urination. Exercise-induced syncope may indicate obstructive coronary disease, channelopathies such as long QT or CPVT, obstructive cardiomyopathy, aortic stenosis, or arrhythmia. A history of palpitations or syncope with no warning may be related to cardiac arrhythmias. Very long episodes of syncope (>5 minutes) suggest noncardiac causes. A recent change in medications or dizziness with position changes suggests orthostatic hypotension. Witnessed limb movements or posturing is not specific for neurologic causes and can result from any type of cerebral hypoperfusion, even from cardiac causes.

Beyond the history, physical examination, and routine ECG, further testing has little diagnostic utility. Holter or loop recorders may be useful. Implantable loop recorders may have utility in cases of recurrent, infrequent syncope. Electrophysiologic testing may be useful in some patients with other abnormalities suggesting an arrhythmic cause.

Despite thorough evaluations, more than 30% of patients with syncope have no identifiable cause. Cardiac causes of syncope have the highest morbidity and mortality rates. Because patients

TABLE 9-4 CAUSES OF SYNCOPE

CAUSE	FEATURES
PERIPHERAL VASCULAR OR CIRCULATORY	
Vasovagal syncope (neurally mediated)	Prodrome of pallor, yawning, nausea, diaphoresis; precipitated by stress or pain; occurs when patient is upright, aborted by recumbency; fall in blood pressure with or without a decrease in heart rate
Micturition syncope	Syncope with urination (probably vagal)
Post-tussive syncope	Syncope after paroxysm of coughing
Hypersensitive carotid sinus syndrome	Vasodepressor and/or cardioinhibitory responses with light carotid sinus massage
Drugs	Orthostasis; occurs with antihypertensive drugs, tricyclic antidepressants, phenothiazines
Volume depletion	Orthostasis; occurs with hemorrhage, excessive vomiting or diarrhea, Addison's disease
Autonomic dysfunction	Orthostasis; occurs in diabetes, alcoholism, Parkinson's disease, deconditioning after a prolonged illness
CENTRAL NERVOUS SYSTEM	
Cerebrovascular	Transient ischemic attacks and strokes are unusual causes of syncope; associated neurologic abnormalities are usually identified
Seizures	Warning aura sometimes present, jerking of extremities, tongue biting, urinary incontinence, postictal confusion
METABOLIC	
Hypoglycemia	Confusion, tachycardia, jitteriness before syncope; patient may be taking insulin
CARDIAC	
Obstructive	Syncope is often exertional; physical findings consistent with aortic stenosis, hypertrophic obstructive cardiomyopathy, cardiac tamponade, atrial myxoma, prosthetic valve malfunction, Eisenmenger's syndrome, tetralogy of Fallot, primary pulmonary hypertension, pulmonary stenosis, massive pulmonary embolism
Arrhythmias	Syncope may be sudden and occurs in any position; episodes of dizziness or palpitations; may be history of heart disease; bradyarrhythmias or tachyarrhythmias may be responsible—check for hypersensitive carotid sinus

with unknown causes of syncope have long-term outcomes similar to those with noncardiac syncope, and the major goal of an evaluation is to identify cardiac causes of syncope.

VENTRICULAR ARRHYTHMIAS AND SUDDEN CARDIAC DEATH

Ventricular ectopy is defined as cardiac beats that originate from within the right or left ventricular muscle or conduction system. Premature ventricular contractions (PVCs) can occur singly or as ventricular couplets or triplets. VT is four or more consecutive beats that originate from the ventricle at a rate of at least 100 beats per minute. VT is classified as *sustained* if it lasts longer than 30 seconds or requires termination due to hemodynamic instability; otherwise, it is classified as *nonsustained* VT (NSVT).

Ventricular ectopy also may be classified based on maintenance of a similar electrocardiographic morphology. The beats of monomorphic VT (MMVT) appear to be identical and usually originate from the same area of the heart. *Ventricular flutter* is a term that may be used to describe MMVT with rates of more than 300 beats per minute. Polymorphic VT (PMVT) has a more