

paradoxical effect of shortening the wavelength of tachycardia compared to the anatomic circuit length, resulting in a larger excitable gap. This explains much of the proarrhythmic effect of many antiarrhythmic medications. Therefore, for these agents, which typically include Na channel blockers, sufficient dosing is required to slow conduction velocity to the point of extinguishing meaningful arrhythmia circuit conduction.

A major aspect of clinical cardiac electrophysiology that has evolved over several decades is the ability to mechanically disrupt arrhythmic substrates through catheter-based (or rarely surgical) ablation. For automaticity-based arrhythmias, precise localization and elimination through ablation of the site of focal automaticity is effective in eliminating arrhythmia. For anatomic reentrant circuits, identifying a critical zone of slow conduction that both sustains reentry and is amenable to focused ablation and damaging that zone through ablation is effective for most reentrant arrhythmias. In contrast, given the lack of a fixed anatomic circuit, and perhaps also due to the presence of multiple, often migratory, circuits, it appears that mechanical disruption, typically through catheter-based ablation, of identified sites of functional reentry appears to be ineffective in eliminating arrhythmia.

CARE OF THE ARRHYTHMIA PATIENT

■ Evaluation and Diagnosis

The evaluation of a patient with suspected arrhythmia begins with a directed history and physical examination, which must include an ECG. The history and examination should focus on determining the nature of symptoms attributable to the arrhythmia itself and clues to potential underlying cardiac, medical, or metabolic conditions that may predispose to specific arrhythmias, and hence direct further studies and evaluations, ultimately directing appropriate therapy, prognosis, and counseling. Family history may also provide clues toward possible inherited arrhythmia syndromes. Symptoms attributable to arrhythmia can vary from vague sensation of fatigue, chest pain, dyspnea, or lightheadedness to more specific sensation of rapid, slow, or irregular heart rate. Premature contractions,