

PREFACE

From its beginnings, the field of interventional cardiology has been defined by coronary interventions. Today, percutaneous coronary intervention with balloon angioplasty, bare metal, and drug-eluting stents has become the predominant form of coronary revascularization and the most frequent therapeutic intervention in the modern cardiac catheterization laboratory. However, as this field has matured, cardiologists have found novel ways to apply their expertise with wires, guide catheters, balloons, and stents to a number of other vascular beds and structural cardiac diseases.

Specifically, in the area of valvular heart disease, percutaneous noncoronary intervention began with the pioneering work of Jean Kan and Kanji Inoue, who demonstrated the usefulness of balloon valvuloplasty for stenotic valvular heart disease. Part I of *Interventional Cardiology: Percutaneous Noncoronary Intervention* focuses on valvular heart disease and is introduced by reviews of balloon valvuloplasty for mitral stenosis (Chapter 1) and for aortic and pulmonary valve stenosis (Chapter 2). In this regard, one of the most exciting current areas of clinical investigation in valvular heart disease involves a new treatment for aortic stenosis with a stented percutaneously inserted aortic valve as described in Chapter 6. Advancements are also being made in the treatment of regurgitant valvular disease, particularly mitral regurgitation. Chapters 3–5 describe the pathophysiology of mitral regurgitation, and percutaneous approaches either through the coronary sinus or by direct leaflet modification.

Part II describes new interventions for structural heart disease focusing on septal defects at both the atrial and ventricular level. These chapters include descriptions by experts in the field on the use of closure devices for atrial and ventricular septal defects. Although no one would dispute the value of closing a large, hemodynamically significant atrial or ventricular septal defect, the use of devices for closure of patent foramen ovale and to exclude the left atrial appendage in order to reduce the risk of stroke is more controversial. In this regard, Chapter 7 describes the neurologic considerations in PFO closure prior to a discussion of closure devices in Chapters 8, 9, and 12.

Although one goal of this book was to avoid discussion of conventional coronary revascularization, many new and novel devices are being developed as adjunctive therapies during coronary interventions. Nowhere is this more apparent than in the area of myocardial infarction (Chapter 13) and for cardiogenic shock where new percutaneous mechanical assist devices are being utilized (Chapter 14). The use of alcohol septal ablation to modify hypertrophic obstructive cardiomyopathy is another example of a coronary intervention that falls outside of the usual revascularization procedure (Chapter 15). Finally, the last chapter in this section describes myocardial regeneration and therapeutic angiogenesis via both coronary and myocardial approaches.

Probably the most frequent and successful of the noncoronary interventions to date involves the use of angioplasty techniques to treat extracardiac vascular disease. Chapters 17 and 18 describe peripheral intervention in the renal, iliac, and carotid territories. Aortic stent grafting is currently a mostly surgical field as described in Chapter 19, but it is likely that technologic advancements in the future will allow diseases of the aorta to be treated percutaneously in the cardiac catheterization laboratory.

The last section of the book deals with the important adjunctive imaging modalities utilized in these new percutaneous noncoronary interventions. Echocardiography, whether transthoracic, transesophageal, or intracardiac, is more and more frequently being utilized during interventional procedures and is well described in Chapter 20. Improvements in angiography such as 3-dimensional reconstruction, as well as the use of magnetic resonance, round out this section on associated imaging modalities.

Percutaneous coronary intervention will remain the mainstay of most cardiac catheterization laboratories for the foreseeable future. However, percutaneous noncoronary intervention is occupying an ever-increasing niche in many laboratories and for many interventionalists. I am hopeful that *Interventional Cardiology: Percutaneous Noncoronary Intervention* will help to expand this field and provide a forum for future advances and discussion of these modalities. I am grateful to all of the contributors for their expertise and effort in making their knowledge available on a widespread basis. I would also like to thank my wife Deborah and our children Stephanie, Jessica, and Jason for their support and understanding as I completed the editorial process.

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