The field of invasive cardiology, which encompasses interventional cardiology, invasive electrophysiology, interventions in structural heart disease as well as cardiac device therapy has undergone a mammoth transformation in the last 40 years. The advent of balloon angioplasty in the 1970's led to a breakthrough in the treatment of coronary heart disease, paving way to the several milestones we witness today. These include the development of the various techniques for balloon angioplasty, the use of bare-metal stents, drug-eluting stents and the recent bioresorbable scaffolds. In addition to the technological developments in implantable stents, there have also been significant advancements in the understanding of the pathophysiological and pharmacological processes governing coronary artery disease. The consistent refinements to periprocedural anticoagulation strategies as well as the adoption of thienopyridines to optimize post-procedural therapy by circumventing the risk of stent thrombosis have contributed to the increased use of such interventional techniques.

Procedural complications had always served as the Achilles heel of interventional cardiology, however, the greatly improved outcomes and minimal risks associated with these interventions today, have further augmented innovation of techniques, facilitating its use in different and difficult scenarios. These interventional practices have come to serve as the cornerstone in the treatment of coronary heart disease and are an established standard practice in all leading therapy guidelines. This book is an attempt to compile all relevant and current knowledge pertaining to the field of interventional cardiology.

The first chapter elaborates the use of thrombus aspiration in ST-elevation myocardial Infarction, recently classified as a Class III recommendation in the guidelines, while critically analyzing and dissecting the existing data. This chapter also includes a discussion on the three studies researching the practice of therapeutic hypothermia. An additional two chapters have been dedicated to highlight the use of anticoagulant therapy and duration of such treatments in light of the improved outcomes of patients with coronary artery disease.

The second chapter, briefly outlines milestones in the history of coronary stents including the use of bioresorbable scaffolds. Although, the sale of the first generation of these scaffolds have been stopped, it is pertinent to understand the technology leading to their development so as to optimize further innovation in stent engineering. An example of practical success demonstrated by the combined use of a stent, materials applied and techniques adopted can also be found in the treatment of chronic total occlusions. Although this pathology is seen in almost 15%-34% of all PCI-patients, technical limitations as well as a limited understanding of the patho-physiological processes and interventional methods has hindered possibilities for optimal treatment. Interestingly, recent technology has made it possible to re-canalize occluded vessels in either anterograde or retrograde fashion with a success rate of almost 90%.

The chapter describing in-stent restenosis discusses the current evidence and possible treatment strategies. In addition to the use of modern-day stents, specific attention has been drawn to the use of intravascular imaging and its potential in improving stent implantation techniques. Further chapters discuss non-coronary topics like therapeutic anticoagulation for prophylaxis against stroke in atrial fibrillation as well as cardiac support systems.

We hope that this compilation of topics in interventional cardiology, elucidating current data and evidence serves as an interesting viewpoint for the reader.

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