

Contents

Preface	vii
Acknowledgments	xi
Contributors	xix

Section I Original Principles

1 The Use of Homograft Valves: Historical Perspective	3
<i>Richard A. Hopkins</i>	

Section II Major Clinical Series of Homograft Valve Transplants: Left Ventricular Outflow Tract

2 Mayo Clinic Series	17
<i>Robert B. Wallace and Thomas A. Orszulak</i>	
3 University of Alabama at Birmingham Series	23
<i>David C. McGiffin and James K. Kirklin</i>	
4 Modified Root Replacement Concept: Influence of Implant Technique on Allograft Durability	30
<i>William W. Angell and Aubyn Marath</i>	

Section III Major Clinical Series of Homograft Valve Transplants: Right Ventricular Outflow Tract

5 Great Ormond Street Series	43
<i>Jaroslav Stark and Mila Stajevic-Popovic</i>	
6 Denver Series	50
<i>David R. Clarke and Deborah A. Bishop</i>	
7 Toronto Series	63
<i>William G. Williams</i>	

Section IV Cryopreserved Allograft Tissue for Cardiac Reconstruction

8 Cryopreserved Cardiac Valves: Initial Experiences and Theories	77
<i>Richard A. Hopkins</i>	
9 Surgery for Infections	85
<i>David C. McGiffin and James K. Kirklin</i>	
10 Pulmonary Valve Autotransplant Procedure: Clinical Results Compared with Other Methods for Aortic Valve Replacement	95
<i>Erle H. Austin, III</i>	
11 In Vivo Pulsatile Hemodynamics of Homografts	100
<i>Jeff L. Myers and Richard A. Hopkins</i>	

Section V Cell Biology of Heart Valve Leaflets

12 Leaflet Endothelium	107
<i>Flavian M. Lupinetti</i>	
13 Leaflet Interstitial Cells	114
<i>Robert H. Messier, Jr., Patrick W. Domkowski, and Richard A. Hopkins</i>	
14 Leaflet Interstitial Cell Growth and Recovery	118
<i>Robert H. Messier, Jr., Diane Hoffman-Kim, and Richard A. Hopkins</i>	
15 Activation of the Immune System by Cardiac Valve Allografts	123
<i>Franciska Hoekstra, Christiaan Knoop, Ad Bogers, and Willem Weimar</i>	

Section VI Cryobiology of Heart Valve Preservation

16 Application of Cryopreservation to Heart Valves	133
<i>Lloyd Wolfenbarger, Jr., Kelvin G.M. Brockbank, and Richard A. Hopkins</i>	
17 Cell Viability and Problems with Its Quantification	161
<i>Diane Hoffman-Kim and Richard A. Hopkins</i>	
18 Factors Affecting Cellular Viability During Preimplantation Processing	165
<i>Richard A. Hopkins, Diane Hoffman-Kim, Robert H. Messier, Jr., and Patrick W. Domkowski</i>	
19 Cell Origins and Fates Following Transplantation of Cryopreserved Allografts	175
<i>M.G. Hazekamp, D.R. Koolbergen, J. Braun, J.A. Bruin, C.J. Cornelisse, Y.A. Goffin, and J.A. Huysmans</i>	

20 Resolution of the Conflicting Theories of Prolonged Cell Viability	184
<i>Richard A. Hopkins</i>	
Section VII Allograft Heart Valves: Morphologic, Biochemical, and Explant Pathology Studies	
21 Overview: Allograft Heart Valves	193
<i>Stephen L. Hilbert, Frederick J. Schöen, and Victor J. Ferrans</i>	
22 Morphology: Allograft Heart Valves	200
<i>Stephen L. Hilbert, Frederick J. Schöen, and Victor J. Ferrans</i>	
23 Biomechanics: Allograft Heart Valves	210
<i>Stephen L. Hilbert, Frederick J. Schöen, and Victor J. Ferrans</i>	
24 Effects of Preimplantation Processing on Allograft Valves	213
<i>Stephen L. Hilbert, Frederick J. Schöen, and Victor J. Ferrans</i>	
25 Explant Pathology Studies	216
<i>Stephen L. Hilbert, Frederick J. Schöen, and Victor J. Ferrans</i>	
26 Implications of Explant Pathology Studies	231
<i>Stephen L. Hilbert, Frederick J. Schöen, and Victor J. Ferrans</i>	
Section VIII Allograft Valve Banking: Harvesting and Cryopreservation Techniques	
27 Cryopreservation and Tissue Banking	237
<i>Perry L. Lange and Richard A. Hopkins</i>	
28 Donor Suitability and Heart Procurement	239
<i>Scott A. Brubaker</i>	
29 Techniques and Technology: Dissection, Examination, Sterilization, and Cryopreservation	244
<i>Mark VanAllman and Kelvin G.M. Brockbank</i>	
30 Techniques and Technology: Storage, Transportation and Distribution, Thawing, Dilution, and Quality Systems	259
<i>Perry L. Lange and Kelvin G.M. Brockbank</i>	
Section IX Surgical Techniques: Valve and Root Methods for Left Ventricular Outflow Tract Reconstructions	
31 Indications and Contraindications: Valve and Root Methods	271
<i>Richard A. Hopkins</i>	
32 “Freehand” Aortic Valve Replacement with Aortic Allograft Valve Transplant Aortotomy	275
<i>Richard A. Hopkins</i>	

33	The Small Aortic Root: Surgical Techniques for Annulus Enlargement	300
	<i>Richard A. Hopkins</i>	
34	Aortoplastic Techniques for Problematic Aortic Root Geometry	306
	<i>Richard A. Hopkins</i>	
35	Aortic Root Replacement with Aortic Allograft Conduit	318
	<i>Richard A. Hopkins</i>	
36	Aortoventriculoplasty with Aortic Allograft	327
	<i>Richard A. Hopkins</i>	
37	“Miniroot” Replacement Techniques	338
	<i>Neal D. Kon and A. Robert Cordell</i>	
38	Stentless Xenograft Valves	354
	<i>Richard A. Hopkins</i>	
Section X Surgical Techniques: Ross Operation and Variants		
39	Indications: Ross Operation	373
	<i>Richard A. Hopkins</i>	
40	Surgical Anatomy: Ross Operation	375
	<i>Patricia A. Penkoske and Robert H. Anderson</i>	
41	Surgical Technique: Ross Operation	381
	<i>Richard A. Hopkins</i>	
42	The Role of Transesophageal Echocardiography During the Ross Procedure	396
	<i>Arthur A. Bert and Scott F. MacKinnon</i>	
43	Guidelines for Use of Aprotinin with the Ross Procedure . . .	402
	<i>Arthur A. Bert</i>	
44	Ross-Konno Procedure	408
	<i>V. Mohan Reddy, Doff B. McElhinney, and Frank L. Hanley</i>	
45	Methods for Avoiding Technical Errors in Performing the Autograft Pulmonary Valve Transplant	415
	<i>Erle H. Austin, III</i>	
Section XI Surgical Techniques: Complex Reconstructions		
46	Management of Transposition with Complex Systemic Ventricular Outflow Tract Reconstruction: Rastelli’s Operation and Aortic Root Translocation	429
	<i>Pedro J. del Nido</i>	
47	Homograft Variant of the Nikaidoh Procedure	438
	<i>Richard A. Hopkins</i>	

48	Application of the Principle of Creation of Double Outlet Systemic Ventricle for Hypoplastic Aortic Outflow	444
	<i>Richard A. Hopkins and Gary K. Lofland</i>	
Section XII Surgical Techniques: Right Ventricular Outflow Tract Reconstructions		
49	Indications: Right Ventricular Outflow Reconstructions . . .	455
	<i>Richard A. Hopkins</i>	
50	Right Ventricle to Pulmonary Artery Aortic Allograft Conduits in Children and Infants	458
	<i>Richard A. Hopkins</i>	
51	Pulmonary Valve Replacement in Adults	468
	<i>Richard A. Hopkins</i>	
52	Corrected Transposition	474
	<i>Richard A. Hopkins</i>	
53	Reconstruction of Right Ventricular Outflow with Abnormal Pulmonary Arteries	480
	<i>Richard A. Hopkins</i>	
54	Management of Difficult Allograft Alignments: The “Divide and Reapproximate” Principle	496
	<i>Erle H. Austin, III</i>	
55	Pulmonary Valve Allografts in Children	501
	<i>David R. Clarke and Deborah A. Bishop</i>	
56	Truncus Arteriosus Repair	530
	<i>Gary K. Lofland</i>	
57	Pulmonary Atresia with MAPCAs: Staged Unifocalization Techniques	544
	<i>Richard A. Hopkins and Erle H. Austin, III</i>	
58	Pulmonary Atresia with MAPCAs: Repairs in Neonates and Young Infants	552
	<i>Doff B. McElhinney, V. Mohan Reddy, and Frank L. Hanley</i>	
59	Reoperative Right Ventricular Outflow Tract Reconstructions	558
	<i>Richard A. Hopkins</i>	
60	Proximal and Distal Extensions	561
	<i>Kim F. Duncan</i>	
61	Reconstruction with Nonvalved Cryopreserved Cardiovascular Tissues	564
	<i>John L. Myers</i>	
62	Extracardiac Fontan Operation	585
	<i>Ed Petrossian, V. Mohan Reddy, and Frank L. Hanley</i>	

Section XIII Future Directions

63 FDA Regulatory Policy	595
<i>Scott Bottenfield and Margaret Deuel</i>	
64 The Biological Valve Spectrum and a Rationale for Prosthetic Valve Choice	602
<i>Richard A. Hopkins, R. Eric Lilly, and James St. Louis</i>	
65 Tissue Engineered Heart Valves: The Next Challenge	612
<i>Stephen L. Hilbert and Richard A. Hopkins</i>	
Appendix: Valve Diameters	621
Index	623

<http://www.springer.com/978-0-387-94962-8>

Cardiac Reconstructions with Allograft Tissues

Hopkins, R.A.

2005, XXIV, 656 p. 426 illus., 11 illus. in color.,

Hardcover

ISBN: 978-0-387-94962-8