## Contents

1.	Real-Time Three-Dimensional Echocardiography R Alagesan, V Amuthan	1
	Off-Line 3D Reconstructio 1; Image Processing and Analysis 3; Real-Time 3D Echocardiography or Live 3D Echocardiography 3; Clinical Applications 4; Valvular Heart Disease 5; Congenital Heart Disease 5; Coronary Artery Disease 5; Cardiomyopathy 5; Cardiac Masses 5; Aortic Diseases 5; Planning Cardiac Surgery 5; Training a Patient Education 6	and
2.	How to Perform the 3D Echocardiography  V Amuthan	7
	Technical Development of 3D Echocardiography to Date 7; The Procedure of 3D Echocardiography 7; Tools for 3D Echocardiography—Color Coding 8; The Procedure of 3D TEE 13; Clinical Implications of RT3D-TEE 21	
3.	Three-Dimensional Echocardiographic Evaluation of Patients with Rheumatic Mitral Stenosis	23
	V Amuthan, GS Siva Kumar	23
	3D Topography of the Mitral Valve 23; Mitral Stenosis 23; Assessment of Mitral Valve Area 23	
4.	Three-Dimensional Echocardiography in Mitral Valve Regurgitation  V Amuthan, R Aravazhi, A Jegadeeswari, SR Veeramani	31
	Mitral Regurgitation 3D TEE Reconstruction Method 31; Transthoracic Real-Time 3D Echocardiography 32; Color Doppler 3D Echocardiography 33; Quantitative 3D Echocardiography 36; Functional and Ischemic Mitral Regurgitation 37; Mitral Valve Prolapse 37; Flail Mitral Leaflet 37; Rheumatic Mitral Regurgitation 38	
5.	Three-Dimensional Echocardiography in Aortic and Tricuspid Valve Disease V Amuthan, A Jegadeeswari	40
	Aortic Valve Disease 40; Biplane and Full-Volume Three-Dimensional Echocardiography 40; Three-Dimensional Color Doppler Echocardiography 40; Pitfalls in the Assessment of the Aortic Valve by Real-Time 3D Echo 40; Tricuspid Valve 41; Tricuspid Regurgitation and Geometry of the Tricuspid Valve 42	or
6.	Three-Dimensional Echocardiography in Coronary Artery Disease  V Amuthan, R Aravazhi	43
	Evaluation of Heart Chambers: Size, Function and Mass 43; Stress Echo 46; Complications of Myocardial Infarction: Ischemic Mitral Regurgitation 48	
7.	Three-Dimensional Echocardiography in Congenital Heart Defects  Girish S Shirali	53
	3DE Technology 53; Matrix Transducers 53; Three-Dimensional Beam Forming and Steering 54; Display of 3DE 54; Software for Quantification 55; Modes of 3DE 56; Clinical Applications in Congenital Heart Disease 57; Visualization of Morphology 57; The Atrioventricular Valves 57; Atrioventricular Septal Defect 57; The Atrial and Ventricular Septa 57; The Aortic Arch, Pulmonary Arteries and Aortopulmonary Shunts 58; The Aortic Valve and Outflow Tract 59; Characterization of Left Ventricular Noncompaction 59; Quantitation of Chamber Dimensions, Valve Apparatus, Function and Flows 59; Image-Guided Interventions 60; Learning Curve 60; Limitations 60; Future Directions 61	