Contents

1. Basics of Fetal Echocardiography 1

PV Suresh, Sejal Shah

- Cardiac Embryology 1 • Physiology of Fetal Heart 13 • Pathogenesis of Congenital Heart Disease 17

2. General Guidelines for Performing Fetal Echocardiogram 19

Prashant Bobhate, Snehal Kulkarni

- Equipment and Fine-tuning of the Images 19 • B-Flow Imaging and Power Doppler 22

3. Indications and Timing of Fetal Echocardiography 33

Anita Saxena

- Risk Factors for Congenital Heart Disease in the Fetus 34
- Indications for Fetal Echocardiography 35 • Significance of Intracardiac Echogenic Focus on Fetal Echocardiography 37 • Timing of Fetal Echocardiography 37

4. How to Perform a Normal Fetal Echocardiogram: A Practical Guide 41

Balu Vaidyanathan 41

- Basic Considerations and Technical Factors 42 • Components of the Screening: Extended Basic Scan 42 • Steps in Fetal Heart Screening 43 • Color Doppler Imaging 49 • Heart Rate and Rhythm Assessment 50 • Cardiac Biometry 51
- Cardiac Function Assessment 51 • Complementary Imaging Strategies 52
- Reporting and Documentation 52

5. Fetal Cardiac Defects 55

BS Ramamurthy

6. Pitfalls in Fetal Echocardiography 91

Reeth Sahana, Aayush Jain, Prathima Radhakrishnan

- Equipment to Perform Fetal Echocardiography 92
- Timing of Fetal Echocardiography 92 • Pitfalls in Fetal Echocardiography 92
- Technical Limitations 93 • Pitfalls Associated with Individual Defects 95
- Progression of Lesions in Utero, Leading to Late-onset Cardiac Malformations Leading to Late Detection 99 • Delayed or Missed Diagnosis due to Limited Resolution 101
- Erroneous Diagnosis 101 • Conditions that are Evident only after Birth 101

7. Fetal Arrhythmias: Evaluation and Management 104

Shardha Srinivasan

- Incidence and Presentation 105 • Classification 105
- Diagnosis and Monitoring of Fetal Arrhythmia 105
- Types of Arrhythmias: Evaluation and Basic Management Strategy 112

8. Fetal Heart Failure 130

Sejal Shah

- Is Fetal Heart Different from Adult Heart? 130 • Pathophysiology 131
- Etiology 131 • Diagnosis 132 • Management 143 • Prognosis 143

9. Fetal Cardiac Interventions 146
Sweta Bakaru, Nageswara Rao Koneti
- Progression of Cardiac Lesions in Utero 147
- Pulmonary Atresia with Intact Ventricular Septum 148
- Development of Fetal Cardiac Interventional Program 148 • Procedure 148
- Complications of Fetal Cardiac Interventions 153 • Outcome and Prognosis 154

10. Genetics and Congenital Heart Disease 156
Pradeep S, SJ Patil, Meenakshi Bhat

Approach: To Evaluate for Extracardiac Malformations and Chromosome Anomalies after Diagnosis of Fetal Congenital Heart Disease
Pradeep S
- Cardiac Anomalies and Genetic Syndromes 157 • Extracardiac Anomalies and Chromosomal Aberration in Cardiac Malformations 168 • Invasive Procedures in Cardiac Anomaly Cases for Aneuploidy Exclusion 184

Genetic Contribution to Origin of Congenital Heart Disease
SJ Patil
- Classification of Congenital Heart Disease in Genetic Clinic 192
- Chromosomal Congenital Heart Disease 192 • Single Gene Disorder Congenital Heart Disease 197 • Other Causes of Congenital Heart Disease 202

Genetic Counseling after the Diagnosis of Fetal Congenital Heart Disease
Meenakshi Bhat
- Family History 205 • Pregnancy 205 • Fetal Ultrasound and Echo Findings 205
- Genetic Testing 205 • Counseling in Common Genetic Syndromes with a Congenital Heart Defect 206 • Genetic Counseling in Nonsyndromic Isolated CHD 210
- Recurrence Risks and Counseling for Isolated CHD 212

11. Management of Pregnancy after Prenatal Diagnosis of Congenital Heart Disease 214
Sunita Maheshwari
- Management of the Mother and Baby 214 • Counseling 215
- Future Pregnancy Counseling 216

12. Does Prenatal Detection of Heart Disease Improve the Outcome? 218
Sejal Shah
- Counseling 219 • Perinatal Interventions 220 • Overall Outcome and Individual Congenital Heart Disease-Based Outcome 222

13. Quiz Time 226
Pradeep S, Sejal Shah
Kindly scan the QR code to access the Quiz

Index 227