

Contents

Section 1: Imaging Modalities: Basics

1. Chest Radiograph: Basics and Role	3
<i>Tany Chandra, Priyanka Naranje</i>	
– Radiographic Views	3
– Fluoroscopy	5
– Interpretation of Pediatric Chest Radiograph	5
– Localization of Thoracic Mass Lesion	16
2. Ultrasound Chest: Basics and Role	22
<i>Amit Gupta, Priyanka Naranje</i>	
– Indications	22
– Equipment	23
– Technique	23
– Normal Ultrasonography Appearances	24
– Imaging Findings	26
– Limitations	35
3. CT Chest: Basics and Role	38
<i>Devasenathipathy Kandasamy</i>	
– Technique	38
– Radiation Dose	39
– Imaging Protocols	40
4. MRI Chest: Basics and Role	46
<i>Surabhi Vyas, Devasenathipathy Kandasamy</i>	
– Indications	47
– MRI Technique	52
– Building Block Approach	54
– Newer MRI Techniques	55

Section 2: Neonatal and Congenital Disorders

5. Neonatal Respiratory Distress 59

Anmol Bhatia, Ashish Dua, Kushaljit Singh Sodhi

- Medical Causes of Respiratory Distress 59
- Surgical Causes of Respiratory Distress 62
- Miscellaneous Causes of Respiratory Distress 67

6. Congenital Lung Abnormalities 69

Pooja Abbey, Aparna Shyamkumar

- Nomenclature and Classification 69
- Embryological Basis and Etiopathogenesis 70
- Categorization of Congenital Lung Anomalies 70
- Role of Different Imaging Modalities 90

Section 3: Chest Infections

7. Bacterial and Viral Chest Infections 99

Anmol Bhatia, Harshith Gowda, Kushaljit Singh Sodhi, Akshay Kumar Saxena

- Epidemiology 99
- Role of Imaging 100
- Viral Pneumonia 100
- Coronavirus Disease 2019 102
- Bacterial Pneumonia 104
- Round Pneumonia 109

8. Fungal Chest Infections 115

Ashu Seith Bhalla, Kana Ram Jat

- Classification of Fungi 116
- Clinical Features 116
- Aspergillosis 116
- Other Fungal Infections 126

9. Chest Tuberculosis 136

Taruna Yadav, Sushil K Kabra

- Imaging Modalities 137
- Choice of Modality 140
- Imaging Findings 140
- Signs of Activity 153
- Specific Situations 153

10. Chest Infections in Immunocompromised Host 156

Manisha Jana, Nitin Dhochak

- Primary Immunodeficiency Disorders (PIDs) 157
- Classification of PIDs 157
- Infections in Immunodeficiency 158
- Noninfectious Complications 160
- Specific Primary Immunodeficiency Disorders 163
- Secondary Causes of Immunodeficiency 173
- Approach on Imaging 174

Section 4: Diffuse Lung Diseases and Miscellaneous

11. Diffuse Lung Diseases: Part 1 179

Deeksha Bhalla, Priyanka Naranje

- Pattern-based Approach in Infants 179
- Pattern-based Approach to Classification in Older Children 184

12. Diffuse Lung Diseases: Part 2 191

Deeksha Bhalla, Manisha Jana

- Childhood Interstitial Lung Disease Entities More Prevalent in Infancy 192
- Disorders not Specific to Infancy 198

13. Pulmonary Complications in Congenital Heart Diseases 217

Anisha Garg, Amarinder S Malhi

- Complications Involving Airways 218
- Complications Involving Lung Parenchyma 224
- Complications Involving Pulmonary Vasculature 229
- Complications Involving Pleura and Thoracic Cage 233
- Complications Related to Cardiac Surgery 234

Section 5: Airway Imaging

14. Upper Airway Imaging 239

Smita Manchanda, Ankita Aggarwal

- Classification 240
- Etiological Approach 241

15. Central Airway Imaging 258

Iqbal Bashir, Ashu Seith Bhalla

- Classification 258
- Development and Branching Anomalies of Airways 259

- Intrinsic (Intramural) Central Airway Abnormalities 270
- Intraluminal Obstruction 271
- Extrinsic Airway Compression 274

16. Bronchiectasis 279

Stuti Chandola, Smita Manchanda

- Imaging Modalities 279
- Diagnosis 280
- Types of Bronchiectasis 282
- Etiology and Pathogenesis 283
- Complications 284
- Specific Entities 286
- Management 294

17. Small Airway Diseases 296

Priyanka Naranje, Rajendra K Behera

- Introduction/Terminology 296
- Imaging Modalities and Signs 296
- Classification 297
- Asthma versus Small Airway Disease 303

Section 6: Vascular and Lymphatic Disorders

18. Pulmonary Artery Imaging 307

Sneha Goswami, Ashu Seith Bhalla

- Classification 307
- Imaging Modalities 308
- Congenital Anomalies 309
- Acquired Abnormalities 313

19. Pulmonary Veins Imaging 323

Manisha Jana, Ashu Seith Bhalla

- Normal Anatomy 323
- Disorders of Pulmonary Veins 324
- Classification Based on Morphological Changes 324
- Classification Based on Etiology 325
- Congenital Pulmonary Vein Anomalies 325
- Acquired Pulmonary Vein Anomalies 334

20. Lymphatic Anomalies: Imaging and Interventions 337

Ishan Gupta, Priyanka Naranje

- Normal Anatomy 338
- Imaging 340
- Management in Lymphatic Malformations in Chest 350

Section 7: Mediastinum Imaging

21. Approach to Mediastinal Lesions: Part 1 357

Shruti Badkhane, Manisha Jana

- Compartments of Mediastinum 357
- Role of Imaging 359
- Mediastinal Masses 362

22. Approach to Mediastinal Lesions: Part 2 369

Ashu Seith Bhalla, Manisha Jana

- Middle Mediastinal Masses (Visceral Compartment) 369
- Posterior Mediastinal Masses (Paravertebral Compartment) 372
- Multicompartmental Masses 373
- Masses Where Biopsy is not Indicated 375
- Specific Entities 376
- Fibrosing Mediastinitis 379

Section 8: Tumors and Mimics

23. Thoracic Tumors and Mimics: Part 1 385

Deeksha Bhalla, Akshay Baheti

- Spectrum of Pediatric Chest Tumors 385
- Unique Pediatric Tumors 385
- Thoracic Tumors with Syndromic Association 386
- Tumors Presenting in Neonates 387
- Imaging of Region-specific Tumors in Children 388

24. Thoracic Tumors and Mimics: Part 2 405

Ashu Seith Bhalla, Vasundhara Patil

- Primary Pulmonary Tumors 405
- Airway Tumors 413
- Chest Wall Tumors 417

Section 9: Chest Wall and Pleural Disorders

25. Chest Wall Imaging 425

Poonam Sherwani, Ashu Seith Bhalla

- Imaging Modalities 425
- Classification 425
- Specific Entities 426

26. Pleural Disorders: Imaging 443

Poonam Sherwani, Manisha Jana

- Imaging Modalities 443
- Pleural Pathologies 444
- Nonexpandable Lung After Drainage 460

Section 10: Respiratory Emergencies

27. Hemoptysis: Imaging and Interventions 465

Priyanka Naranje, Ayush Jain, Ashu Seith Bhalla

- Etiology 465
- Imaging Evaluation 466
- Specific Etiologies 469
- Interventional Radiology Management of Hemoptysis 476

28. Thoracic Imaging in Intensive Care Unit 479

Surabhi Vyas, Rakesh Lodha

- Imaging Modalities 479
- Parenchymal Abnormalities 480
- Pleural Abnormalities 489
- Airway Abnormalities 491
- Ventilator-associated Air Leak 493
- Lines and Tubes 493

Section 11: Reporting Formats Illustrative Cases and Self-assessment

29. Reporting Formats and Illustrative Cases 501

Anuradha Singh

- Case 1: Reporting Format for Bronchiectasis 501
- Case 2: Reporting Format for Congenital Lung Abnormalities: Vascular Anomalies 503

- Case 3: Reporting Format for Tuberculosis (TB) 505
- Case 4: Reporting Format for Pediatric Diffuse Lung Diseases (DLD) 507
- Case 5: Reporting Format for Hemoptysis 507

30. Self-assessment Module

513*Anuradha Singh*

- Imaging Modalities 513
- Congenital Anomalies 516
- Neonatal Respiratory Distress 520
- Infections 524
- Airways 528
- Interstitial Lung Diseases 530
- Tumors Including Chest Wall and Pleura 534
- Interventions 540

Index

541