# Contents

## SECTION 1: Introduction and History


1. **Introduction** ..... 1
   *Basavaraj S Phulari*

2. **History** ..... 7
   *Basavaraj S Phulari*


## SECTION 2: Growth and Development


3. **General Principles of Growth and Development** ..... 18
   *Rashmi GS, Valentina Tsipova*

4. **Prenatal Growth and Development** ..... 35
   *Rashmi GS*

5. **Postnatal Growth and Development** ..... 44
   *Basavaraj S Phulari, Poorya Naik*

6. **Development of Dentition and Occlusion** ..... 51
   *Basavaraj S Phulari, Rashmi GS*


## SECTION 3: Classification and Etiology


7. **Occlusion—Basic Concepts** ..... 63
   *Basavaraj S Phulari*

8. **Classification of Malocclusions** ..... 71
   *Basavaraj S Phulari, Poorya Naik*

9. **General Etiological Factors of Malocclusion** ..... 89
   *Valentina Tsipova, Rashmi GS*

10. **Local Etiological Factors** ..... 96
    *Rashmi GS*

11. **Genetics in Orthodontics** ..... 105
    *Rashmi GS, Basavaraj S Phulari*

12. **Epidemiology of Malocclusion** ..... 115
    *Basti Risi Kino, Basavaraj S Phulari*


## SECTION 4: Diagnosis and Diagnostic Aids


13. **Orthodontic Diagnosis** ..... 120
    *Aakash Shah, Basavaraj S Phulari*

14. Model Analysis ..... 135
*Basavaraj S Phulari*

15. Cephalometrics ..... 142
*Basavaraj S Phulari*

16. Maturity Indicators ..... 163
*Basavaraj S Phulari*

## SECTION 5: Biomechanics

17. Biology of Tooth Movement ..... 172
*Aakash Shah, Basavaraj S Phulari*

18. Mechanics of Tooth Movement ..... 179
*Aakash Shah, Basavaraj S Phulari*

## SECTION 6: Preventive and Interceptive Orthodontics

19. Preventive Orthodontics ..... 186
*Basavaraj S Phulari, Ohana Gabriel*

20. Interceptive Orthodontics ..... 195
*Basavaraj S Phulari, Aneshwar Roshanlal Bhagwandass*

21. Oral Habits and Their Management ..... 206
*Basavaraj S Phulari*

## SECTION 7: Treatment Planning

22. Orthodontic Treatment Planning ..... 227
*Basavaraj S Phulari*

23. Anchorage in Orthodontics ..... 231
*Aakash Shah, Basavaraj S Phulari*

24. Methods of Gaining Space ..... 239
*Basavaraj S Phulari*

25. Arch Expansion ..... 245
*Valentina Tsipova, Basavaraj S Phulari*

26. Extraction in Orthodontics ..... 255
*Basavaraj S Phulari, Frank Tsahannerr*

## SECTION 8: Orthodontic Instruments

27. Orthodontic Instruments ..... 266
*Basavaraj S Phulari*

## SECTION 9: Pre-clinical Orthodontics

28. Pre-clinical Orthodontics ..... 277
*Basavaraj S Phulari*

## SECTION 10: Orthodontic Appliances

29. General Principles of Orthodontic Appliances ..... 293
*Poorya Naik, Basavaraj S Phulari*

30. Removable Appliances ..... 297
*Basavaraj S Phulari*

31. Fixed Orthodontic Appliances and Techniques ..... 319
*Poorya Naik*

32. Functional Appliances ..... 346
*Aakash Shah, Basavaraj S Phulari*

33. Orthopedic Appliances ..... 362
*Basavaraj S Phulari*

## SECTION 11: Corrective Orthodontics

34. Management of Class I Malocclusion ..... 374
*Basavaraj S Phulari, Aakash Shah*

35. Management of Class II Malocclusion ..... 390
*Basavaraj S Phulari*

36. Management of Class III Malocclusion ..... 400
*Basavaraj S Phulari*

37. Management of Midline Diastema ..... 406
*Desi Modley, Basavaraj S Phulari*

38. Management of Open Bite ..... 413
*Basavaraj S Phulari*

39. Management of Deep Bite ..... 420
*Poorya Naik*

40. Management of Crossbite ..... 428
*Basavaraj S Phulari, Poorya Naik*

41. Management of Cleft Lip and Palate ..... 437
*Poorya Naik, Basavaraj S Phulari*

## SECTION 12: Surgical Orthodontics

42. Surgical Orthodontics ..... 446
*Frank Tsahannerr, Syed Zakaullah, Basavaraj S Phulari*

## SECTION 13: Retention and Relapse

43. Retention and Relapse ..... 459
*Basavaraj S Phulari*

## SECTION 14: Laboratory Procedures in Orthodontics

44. Orthodontic Study Model ..... 468
*Basavaraj S Phulari, Valentina Tsipova*

45. Welding and Soldering ..... 473
*Basavaraj S Phulari*

## SECTION 15: Recent Advances in Orthodontics

46. Adult Orthodontics ..... 478
*Basavaraj S Phulari*

47. Implants in Orthodontics ..... 487
*Mark Donald Vernon*

48. Invisalign Techniques ..... 492
*Basavaraj S Phulari*

49. Laser in Orthodontics ..... 495
*Anil Shah, Naresh Thukral, Mohan Vakade*

50. MCQs in Orthodontics ..... 507
*Basavaraj S Phulari*

Index ..... 623