CONTENTS

Volume 1

Section 1: Neonatology
M Levene, MRG Carrapato

1. **Transition at Birth** ---- 3
   OD Saugstad
2. **Neonatal Jundice** ---- 17
   F Rubaltelli, C Dani
3. **Management of Hypotension in the Neonatal Period** ---- 24
   SJ English
4. **Cytokines and Neonatal Disease** ---- 29
   L Cornette, H Logghe
5. **Neonatal Sepsis** ---- 36
   A Papageorgiou, E Pelausa, L Kovacs
6. **Advances in Neonatal Ventilation** ---- 46
   SM Donn, SK Sinha
7. **Clinical Care of the Very Preterm Infant** ---- 54
   L Hellström-Westas, LJ Bjorklund, M Lindroth
8. **Can We Establish a Universal Lower Limit of Viability?** ---- 65
   MRG Carrapato
9. **The Offspring of Maternal Diabetes** ---- 72
   MRG Carrapato, S Tavares, C Prior
10. **Neonatal Seizures** ---- 81
    A Beke, Z Papp
11. **Oxygen Toxicity** ---- 98
    R Bracci
12. **Pathology of the Neonate** ---- 111
    B Hargitai, T Marton, Z Papp
13. **Medical Management of Newborn with Severe Malformations—Ethical Aspects** ---- 123
    M Stanojevic

Section 2: Ethical and Legal Dimensions
FA Chervenak, LB McCullough

14. **Ethics: An Essential Dimension of Perinatal Medicine** ---- 133
    FA Chervenak, LB McCullough
15. **Ethical Committees** ---- 142
    JG Schenker
16. **Education in Perinatal Ethics** ---- 148
    GM Stirrat

17. **Words Matter: Nomenclature and Communication in Perinatal Medicine ----158**
L de Crespigny

18. **The Beginning of Human Life—Scientific and Religious Controversies----163**
A Kurjak, JM Carrera

19. **Preimplantation Diagnosis----177**
LJ Nelson

20. **Genetic Counseling----186**
A Csaba, Z Papp

21. **Selective Reduction ----195**
MI Evans, DW Britt, D Ciorica

22. **Neonatal Ethics ----202**
KNS Subramanian

23. **Medicolegal Aspects of Perinatal Medicine: European Perspective----209**
J Walker

24. **Malpractice Issues in Perinatal Medicine: The United States Perspective ----215**
BS Schifrin, MR Lebed, J McCauley

Section 3: Evidence-based Medicine and Epidemiology
Z Alfirevic, L Cabero-Roura

25. **Epidemiology in Perinatal Medicine ----239**
LS Bakketeig

26. **Structure of Perinatal Care Systems ----242**
GA Little

27. **Perinatal Quality Indicators and Perinatal Audit ----248**
G Lindmark, J Langhoff-Roos

28. **Audit in Perinatal Medicine ----254**
JM Thomas, S Paranjothy

29. **Systematic Reviews in Perinatal Medicine----259**
Z Alfirevic

30. **Cost-benefit in Perinatal Medicine----261**
Z Stembera

Section 4: Ultrasound
A Kurjak, Y Ville

31. **3D-4D Ultrasound Evaluation of the Embryo and the Early Fetus ----269**
F Bonilla-Musoles, LE Machado, F Raga

32. **Malformations of the Gastrointestinal System----295**
V D'Addario, L Di Cagno

33. **Ultrasound Diagnosis of Urinary Tract Anomalies ----302**
P Prats, N Maiz, A Rodriguez

34. **Fetal Echocardiography----325**
C Mortera, JM Carrera

35. **Three-dimensional Ultrasound in Prenatal Medicine ----338**
E Merz

36. **Ultrasound-guided Fetal Invasive Procedures: Current Status ----345**
JM Troyano, M Alvarez de la Rosa, I Martinez-Wallin

37. **The Role of Ultrasound Examination of the Cervix in Pregnancy ----355**
P Rozenberg, Y Ville

38. Labor and Puerperium ----------361
A Mulic-Lutvica, O Axelsson

39. Safety of Diagnostic Ultrasound in Obstetrics----------376
B Breyer, A Kurjak, K Maeda

40. Behavioral Perinatology Asessed by Four-dimensional Sonography ----------384
A Kurjak, U Honemeyer, P Antsaklis

41. Fetal Central Nervous System ----------414
RK Pooh, K Pooh

42. Ultrasound of the Fetal Thorax----------442
A Khurana

43. Three-dimensional Ultrasound of Blood Flow in the Fetal Cardiovascular System----------452
R Chaoui

44. Specific Aspects of Ultrasound Examination in Twin Pregnancies----------460
E Quarello, Y Ville

45. Echocardiography in Early Pregnancy: A New Challenge in Prenatal Diagnosis ----------466
C Comas, JM Martinez, A Galindo

46. Prenatal Diagnosis of Fetal Cytomegalovirus Infection ----------482
Y Ville, O Picone, G Makridemas

47. Fetal Hydrops ----------492
T Marton, PM Cox

Section 5: Doppler Ultrasound
S Weiner, AK Ertan

48. 3D/4D Color and Power Doppler in Obstetrics ----------499
G Bega, S Weiner

49. Noninvasive Detection of Fetal Anemia by Doppler Ultrasonography----------507
L Pereira

50. Doppler Ultrasound Studies in the Fetal Pulmonary Circulation ----------513
DC Wood Jr, JP Räsänen

51. Uteroplacental and Umbilical Circulation: Physiologic Changes in Pregnancy----------527
AK Ertan, HA Tanriverdi, W Schmidt

52. Doppler Sonography in High-risk Pregnancy----------535
AK Ertan, HA Tanriverdi, W Schmidt

53. Effect of Exercise on Fetoplacental Doppler Flow----------546
HA Tanriverdi, AK Ertan, W Schmidt

54. Doppler Velocimetry in Intrauterine Growth Restriction: A Practical Clinical Approach----------553
GP Mandruzzato, YJ Meir, G Maso

55. Doppler Evaluation of Fetal Venous System ----------556
G Maso, G Conoscenti, GP Mandruzzato

Section 6: Basic Science
H Nakano, Y Murata

56. Immunological Basic Aspects during Pregnancy Implantation ----------569
S Saito

57. Placenta and Trophoblasts: Endocrinological Aspect ----------573
N Sagawa

58. Regulation of Extravillous Trophoblast Differentiation ----------580
K Fukushima, K Tsukimori, H Nakano

59. Trophoblast Dysfunction and Maternal Endothelial Cell Dysfunction in the Pathogenesis of Preeclampsia ---586
K Tsukimori, K Fukushima, H Nakano

60. Basic Aspects of Trophoblastic Disease----------595
N Wake, K Asanoma, T Matsuda

61. The Placenta----------601
K Benirschke

62. Clinically Significant Pathology of the Placenta ----------613
B Hargitai, T Marton

Section 7: Fetal Diagnosis and Therapy
W Holzgreve, M Evans

63. Noninvasive Prenatal Diagnosis: Maternal Blood ----------623
O Lapaire, B Zimmermann, X Yan Zhong

64. Multiple Gestations: Pregnancy Evaluation by Ultrasonography----------628
S Tercanli, DV Surbek, R Zanetti-Dallenbach

65. Chromosomal Abnormality Screening----------639
MI Evans, JN Macri, R Snijders

66. Amniocentesis ----------646
S Tercanli, P Miny, W Holzgreve

67. Cordocentesis----------649
CP Weiner

68. Perinatal Rh Hemolytic Disease and Other Alloimmunizations: Screening and Treatment ----------655
LS Voto

69. Preinatal Therapy of Endocrine and Metabolic Disorders----------663
G Rosner, SB Shachar, Y Yaron

70. Fetal Surgical Interventions ----------671
MR Harrison, MI Evans

Section 8: Screening and Risk Assessment
G Monni, S Chasen

71. First Trimester Ultrasound Screening for Fetal Malformations ----------679
ST Chasen

72. Fetal Nasal Bone in Screening for Down's Syndrome----------683
S Cicero, JD Sonek, G Rembouskos

73. Second Trimester Ultrasound Screening of Fetal Anomalies----------694
L Yeo, AM Vintzileos

74. First Trimester Maternal Serum Markers of Fetal Anomalies----------706
DA Krantz, TW Hallahan, JN Macri

75. Influence of Ethnicity on Prenatal Screening ----------715
F Sethna, B Thilaganathan

76. Ultrasound Screening of Congenital Heart Defects----------723
R Chaoui

77. Ultrasound Screening of Chromosomal Abnormalities by Nuchal Translucency----------731
MA Zoppi, G Monnia

78. First Trimester Ultrasound Screening for Down's Syndrome in Multiple Gestations ----------740
G Monni, MA Zoppi

Section 9: Fetal and Maternal Physiology
B Arabin, DW Skupski

79. Maternal Hemodynamic Changes in Pregnancy ----------749
J Nizard

80. Pathophysiology of Preeclampsia ----------753
T Podymow, P August, D Skupski

81. Physiological Changes of the Uterine Cervix in Pregnancy and Delivery----------760
VNA Breeveld-Dwarkasing, FK Lotgering

82. Physiology of Maternal Sleep in Pregnancy----------770
K Biedermann, R Huch

83. Immunology at the Maternal-Fetal Interface ----------780
S Scherjon, F Class

84. Fetal Behavior----------788
JG Nijhuis

85. Fetal and Neonatal Hearing----------794
B Arabin, HLM van Straaten

86. Fetal Responses to Placental Insufficiency ----------810
ML Kush, AA Baschat

Section 10: Nutrition and Metabolism
PD Gluckman, HN Winn

87. The Role of Essential Fatty Acids and Antioxidants in Neurovascular Development and Complications of Prematurity----------829
K Ghebremeskel, Y Min, B Thomas

88. Maternal Inherited Metabolic Disease----------837
R Floyd, F Cockburn, BJ Clark

89. Fetal and Neonatal Nutrition—Lipid and Carbohydrate Requirements and Adaptations to Altered Supply at Birth----------843
H Budge, ME Symonds

Section 11: Early Pregnancy
LT Merce, S Kupesic

90. Contributions of 3D Ultrasonography to the Study of Embryonic Development ----------855
RM Sabatel López, L Martinez-Cortes, JC Prados Salazar

91. 2D and 3D Power Doppler Ultrasound from Ovulation to Implantation----------861
LT Merce, MJ Barco, S Kupesic

92. Implantation and Yolk Sac----------871
S Kupesic, A Kurjak

93. First Trimester Ultrasound----------883
N Montenegro, A Matias

94. Hemodynamic Assessment of Early Pregnancy ----------890
LT Merce, MJ Barco, S Kupesic

95. Ultrasonographic Signs of Miscarriage ---- 899
JM Bajo Arenas, T Perez-Medina

96. 2D and 3D Doppler Assessment of Abnormal Early Intrauterine Pregnancy ---- 910
JL Alcazar, LT Merce, M Garcia-Manero

97. Ultrasonography of Ectopic Pregnancy ---- 916
S Iniesta, F Salazar, JM Bajo

Volume 2

Section 12: Prenatal Diagnosis and Therapy
K Nicolaides, A Antsaklis

98. Chorionic Villus Sampling ---- 931
B Brambati, L Tului

99. Amniocentesis ---- 940
A Tabor

100. Cordocentesis: Indications ---- 947
F Daffos

101. Fetal Pharmacological Therapy ---- 951
MI Evans, Y Yaron, P Lewis

102 Management of the Red Cell Isoimmunized Pregnancies ---- 957
KH Nicolaides, NJ Sebire

103. Management of Fetal and Neonatal Alloimmune Thrombocytopenia ---- 964
MF Murphy

104. Severe Twin-to-Twin Transfusion Syndrome: Diagnosis and Endoscopic Laser Coagulation ---- 970
NJ Sebire, J Hyett, KH Nicolaides

105. Fetal Stem-Cell and Gene Therapy ---- 974
Y Yaron, AW Flake, MP Johnson

106. Treatment of Fetal Arrhythmias ---- 983
S Maheshwari, JA Copel, CS Kleinman

107. Prenatal Diagnosis and Therapy: Animal Studies ---- 993
JL Graf, MR Harrison

108. Fetal Cells in Maternal Blood: Diagnostic and Clinical Aspects ---- 998
W Holzgreve, R Zanetti-Dallenbach, C De Geyter

109. Ultrasonographic Soft Markers for Chromosomal Abnormalities ---- 1004
A Antsaklis

110. Fetal Anatomy in the First Trimester of Pregnancy ---- 1013
A Antsaklis, A Souka

Section 13: Intrauterine Growth
JM Carrera, GP Mandruzzato

111. Fetal Growth Characteristics ---- 1029
JM Carrera, B Serra, R Devesa

112. Regulating Factors ---- 1032
JM Carrera, B Serra, E Scazzochio

113. Dynamics of Fetal Growth ---- 1042
JM Carrera, F Figueras, B Serra

114. Intrauterine Growth Restriction: Concept and Epidemiology ---- 1050
E Fabre, R González de Agüero, JL de Agustin

115. Etiology and Pathogenesis of Intrauterine Growth Restriction ---- 1058
JM Carrera, B Serra, J Mallafre

116. Classification of Intrauterine Growth Restriction ---- 1079
JM Carrera, B Serra, P Prats

117. Natural History of Fetal Compromise in Intrauterine Growth Retardation ---- 1087
JM Carrera, C Comas, M Torrents

118. Management of Small-for-Gestational-Age Fetuses: Antenatal and Intrapartum Strategies ---- 1102
JM Carrera, F Figueras, R Devesa

119. Growth-restricted Newborns: Characteristics and Management ---- 1118
R Baraibar, L Sánchez

120. Macrosomia: Concept and Epidemiology ---- 1130
E Fabre, R Gonzalez de Aguero, JL De Augustin

121. Etiology and Pathogenesis of Fetal Macrosomia ---- 1135
F Carmona, V Cararach

122. Macrosomia: Obstetric Management ---- 1144
B Serra, JM Carrera, J Mallafre

123. Macrosomia: Neonatal Aspects ---- 1146
E Doménech, N Marta Díaz-Gómez

Section 14: Preterm Delivery
GC di Renzo, R Romero

124. Mechanisms of the Initiation of Human Parturition ---- 1159
LF Gonçalves, R Romero, JP Kusanovic

125. Mechanisms of Preterm Labor and Preterm Premature Rupture of the Membranes ---- 1173
R Romero, LF Gonçalves, T Chaiworapongsa

126. Management of Preterm Labor: Pharmacological and Non-pharmacological Aspects ---- 1187
GC di Renzo, A Cutuli, L Liotta

127. Efficient and Simple Program Including Community-based Activities for Prevention of Very Early Premature Birth ---- 1193
E Saling, J Lüthje, M Schreiber

128. Operative Early Total Cervix Occlusion for Prevention of Late Abortion and Early Prematurity ---- 1201
E Saling, M Schreiber, J Lüthje

129. Assessment of Risk for Preterm Birth in Asymptomatic Patients and Those with Preterm Labor ---- 1205
J Espinoza, R Romero, LF Gonçalves

130. Prevention of Fetal and Neonatal Lung Immaturity ---- 1217
MM Anceschi, L Maranghi, EV Cosmi

131. Route of Delivering and Monitoring of the Preterm Fetus ---- 1228
R Luzietti, GC di Renzo

132. Resuscitation of Newborn Infants ---- 1233
OD Saugstad

Section 15: Fetal Monitoring
K Maeda, HP van Geijn

133. Intrapartum Fetal Asphyxia: Prediction and Diagnosis ---- 1245
JA Low

134. Cardiotocography ---- 1253
HP van Geijn

135. Intrapartum Fetal Heart Rate Monitoring ---- 1257
T Ikeda, H Sameshima, M Kaneko

136. Quantitative Fetal Heart Rate Evaluation without Pattern Classification: FHR Score and Artificial Neural Network Analysis ---- 1265
K Maeda, Y Noguchi, F Matumoto

137. The Fetal Electrocardiogram ---- 1272
WJ van Wijngaarden

138. Fetal Magnetocardiography and Fetal Magnetoencephalography ---- 1286
T Hosono, Y Chiba

139. Fetal Pulse Oximetry ---- 1292
PP van den Berg, HW Jongsma

140. Intrapartum Fetal Monitoring: Objective and Subjective Assessment of the Main Methods ---- 1300
E Saling, S Schmidt

Section 16: Multiple Pregnancy and Delivery
JW Dudenhausen, I Blickstein

141. The Epidemiology of Multiple Births ---- 1307
R Derom, J Orlebeke, A Eriksson

142. Monozygosity ---- 1321
I Blickstein

143. Population-based Risk of Perinatal Mortality and Morbidity among Multiple Births ---- 1328
MSl Wingate, GR Alexander, S Boulet

144. Prevention of Preterm Births in Single and Multiple Pregnancies ---- 1336
E Papiernik

145. The Vanishing Fetus in Multiple Pregnancy ---- 1351
HJ Landy, LG Keith

146. Sonographic Evaluation of Multiple Pregnancies ---- 1356
A Matias, N Montenegro, I Blickstein

147. Genetic Diagnosis in Multiple Pregnancies ---- 1368
Z Appelman, B Furman

148. Intrauterine Behavior of Multiples ---- 1375
B Arabin, J van Eyck

149. Invasive Antenatal Interventions in Complicated Multiple Pregnancies ---- 1396
L Lewi, E Gratacos, J Deprest

150. Route of Delivery ---- 1408
JW Dudenhausen, JAS Dimer

151. Delayed Interval Delivery in Multiple Pregnancy ---- 1412
J van Eyck, B Arabin, RA van Lingen

152. Cerebral Palsy in Multiple Pregnancy ---- 1425
POD Pharoah

Section 17: Infectious Disease
JG Schenker, C Sen

153. Infectious Disease in Pregnancy ---- 1435
JG Schenker

154. Sexually Transmitted Diseases in Women, with Special Reference to Pregnancy ---- 1437
M Dan

155. Human Immunodeficiency Virus/AIDS in Pregnancy and Delivery ---- 1464
K Olshtain-Pops, S Maayan

156. Pneumonia in Pregnancy ---- 1469
D Miron, R Raz

157. Prevention of Infection in Cesarean Section ---- 1473
A Drazancic

158. Septicemia and Septic Shock ---- 1478
SJ Fasouloitis, JG Schenker

159. Gastrointestinal Infections in Pregnancy and Neonates ---- 1484
I Krause, S Ashkenazi

160. Central Nervous System Infections in Pregnancy ---- 1494
E Rubinstein, B Rubinovitch

161. Anaerobic Infections in Pregnancy ---- 1502
Y Schlesinger

162. Malaria in Pregnancy ---- 1506
I Kassis, M Giladi, M Efrat

163. Toxoplasmosis: Pregnancy, Delivery, and the Effect on the Fetus and the Newborn ---- 1512
DT Spira

164. Fungal Infections Presenting Particular Features during Pregnancy ---- 1515
M Dan

165. Mumps in Pregnancy ---- 1523
A Morag

166. Measles in Pregnancy ---- 1526
A Morag

167. Antimicrobial Drugs in Obstetrics and Gynecology ---- 1528
M Shapiro

168. Preterm Delivery and Infections ---- 1542
Y Baytur, C Şen

169. Perinatal Infectious Morbidity in Multiple Pregnancies ---- 1549
I Blickstein, EL Yashphe

Section 18: Labor and Delivery
WR Cohen, D Weinstein

170. The Assessment of Labor ---- 1557
WR Cohen, EA Friedman

171. Induction of Labor ---- 1565
IZ MacKenzie, K Duckitt

172. Electronic Fetal Monitoring ---- 1579
BS Schifrin, S Myers, WR Cohen

173. Pain Relief during Labor ---- 1597
DJ Birnbach, EM Davidson

174. Instrumental Delivery ---- **1616**
H Hopp, P Husslein

175. Cesarean Delivery ---- **1625**
M Pajntar

176. Transverse Lie, Brow and Face Presentations ---- **1635**
Z Novak-Antolic

177. Breech Presentation ---- **1640**
M Foley, M Alarab

178. Shoulder Dystocia ---- **1648**
F Goffinet, D Cabrol

179. Third Stage of Labor and Puerperium ---- **1655**
G Sylvestre, YS Thornton

180. Postpartum Hemorrhage ---- **1663**
J Herczeg

181. Resuscitation and Immediate Care of the Newborn ---- **1672**
J Babnik

182. Childbirth and the Pelvic Floor ---- **1691**
WR Cohen, R Romero

183. Effects of Labor and Delivery on the Fetus ---- **1700**
EA Friedman

184. Maternal Stress and Labor ---- **1707**
KM Paarlberg, AJJM Vingerhoets, HP van Geijn

185. Intrapartum Decision Making: A Computational Approach ---- **1715**
JE Deaver

Section 19: Maternal Disease
A Grunebaum, LS Voto

186. Periconception Care ---- **1729**
A Grunebaum

187. Maternal Issues in Thrombosis and Thrombophilia ---- **1738**
BE Grand, LS Voto

188. Hypertension in Pregnancy ---- **1744**
LS Voto, J Orti

189. Diabetes and Pregnancy ---- **1757**
FA van Assche

190. Disorders of the Respiratory System in Pregnancy ---- **1763**
C Nelson-Piercy, J Moore-Gillon

191. Cardiac Disease in Pregnancy ---- **1771**
DJ Williams, M de Swiet

192. Disorders of the Musculoskeletal System in Pregnancy ---- **1785**
C Gordon

193. Thyroid Function in Pregnancy ---- **1793**
C Paul

194. Management of Severe Preeclampsia and Eclampsia ---- **1803**
C Sen

Section 20: The Challenge Facing Developing Countries
JJ Sciarra, A Adra

195. Maternal Mortality in Developing Countries ---------- 1811
JA Fortney, JB Smith, PE Bailey

196. Developing Countries: The Goals of Safe Motherhood ---------- 1821
G Benagiano, B Thomas

197. Vesicovaginal Fistulas in Developing Countries ---------- 1830
P Hilton

198. Traditional Birth Attendant Training ---------- 1838
P Buekens

199. Collaborative Perinatal Neonatal Networking in the Eastern Mediterranean Region ---------- 1841
KA Yunis, G Mumtaz, H Tamim

200. Perinatal Genetics: Preliminary Experience from a Developing Country ---------- 1845
P Zalloua, A Adra

201. Surgical Management of Postpartum Hemorrhage: Lessons Learned ---------- 1851
M Seoud, A Adra