Contents

Contributors, ix
Preface, xvi
Acknowledgments, xviii

Section 1: Basic Principles
1 Intrauterine growth and development, 3
   Timothy J.M. Moss, Cheryl A. Albuquerque & Richard Harding
2 Maternal physiological adaptations to pregnancy, 19
   Julie Phillips, Melissa Covington & George Osol
3 Placental respiratory gas exchange, 25
   Lowell Davis
4 The fetal circulation, 32
   Loren P. Thompson & Kazumasa Hashimoto
5 Fetal responses to hypoxia, 39
   Tania L. Kasdaglis & Ahmet A. Baschat
6 Pharmacokinetics in pregnancy, 53
   Janine R. Hutson, Chagit Klieger & Gideon Koren
7 The first few breaths: normal transition from intra- to extra-uterine life, 63
   Smadar Eventov-Friedman & Benjamin Bar-Oz

Section 2: Endpoint Variables: Assessments of Fetal Wellbeing and Neonatal Outcome
8 Validity of endpoint measurement, 75
   Pamela J. Angle, Stephen Halpern, Marcos Silva Restrepo & Alexander J. Kiss

Section 2.1: Antenatal and Intrapartum Assessment of the Fetus
9 Imaging of the fetus and the uteroplacental blood supply: ultrasound, 89
   Kypros Nicolaides
10 Imaging of the fetus and the uteroplacental blood supply: MRI, 97
    Caroline Wright & Philip Baker
11 Fetal heart rate monitoring, 104
    Alison M. Premo & Sarah J. Kilpatrick
12 Fetal acid-base monitoring, 114
    Lennart Nordström
13 Fetal pulse oximetry, 123
Paul B. Colditz & Christine East

14 Neonatal assessment and prediction of neonatal outcome, 129
Vadivelam Murthy & Anne Greenough

Section 3: Interventions: Anesthesia, Analgesia, and Their Effects on the Fetus

15 Environmental exposure to anesthetic agents, 141
Asher Ornoy

16 Anesthesia and analgesia for assisted reproduction techniques and other procedures during the first trimester, 147
Arvind Palanisamy & Lawrence C. Tsen

17 The effect of anesthetic drugs on the developing fetus: considerations in non-obstetric surgery, 156
Richard S. Gist & Yaakov Beilin

18 Substance abuse and pregnancy, 165
Donald H. Penning & Allison J. Lee

19 Intrauterine fetal procedures for congenital anomalies, 173
Amar Nijagal, Hanmin Lee & Mark Rosen

20 The EXIT procedure, 183
Sheldon M. Stohl, Hindi E. Stohl, Ari Y. Weintraub & Kha M. Tran

21 Mechanisms and consequences of anesthetic-induced neuroapoptosis in the developing brain, 192
Zhaowei Zhou, Adam P. Januszewski, Mervyn Maze & Daqing Ma

22 Relevance to clinical anesthesia of anesthetic-induced neurotoxicity in developing animals, 200
Catherine E. Creeley, Mervyn Maze & John W. Olney

23 External cephalic version, 210
Carolyn F. Weiniger & Yossef Ezra

Section 3.1: Anesthesia for Cesarean Delivery

24 Effects on the fetus of general versus regional anesthesia, 217
Sharon Orbach-Zinger & Yehuda Ginosar

25 Anesthesia for cesarean delivery: effects on the fetus of maternal blood pressure control, 235
Warwick D. Ngan Kee

26 Effects on the fetus of maternal oxygen administration, 244
Neeti Sadana & Scott Segal

27 Effects on the fetus of maternal position during cesarean delivery, 251
Robin Russell
Section 3.2: Analgesia for Labor
28 Effects on the fetus of systemic vs. neuraxial analgesia, 263
  Stephen H. Halpern & Marcos Silva Restrepo
29 The effects on the fetus of early versus late regional analgesia, 270
  Cynthia A. Wong
30 Regional analgesia, maternal fever, and its effect on the fetus and neonate, 277
  Tabitha A. Tanqueray, Philip J. Steer & Steve M. Yentis
31 Effects on the fetus of major maternal anesthetic complications, 285
  Felicity Plaat & Ruth Bedson

Section 4: Confounding Variables: The Compromised Fetus, the Compromised Mother
32 Multiple pregnancy, 297
  Yehuda Habaz, Jon Barrett & Eric S. Shinwell
33 Preeclampsia: the compromised fetus, the compromised mother, 303
  Todd R. Lovgren & Henry L. Galan
34 Fetal distress, 315
  Robert A. Dyer & Leann K. Schoeman

Section 5: Trauma and Resuscitation
35 Maternal trauma, 327
  Yuval Meroz, Uriel Elchalal & Avraham I. Rivkind
36 Maternal resuscitation and perimortem cesarean delivery, 335
  Sharon Einav, Sorina Grisaru-Granovsky & Joseph Varon
37 Intrauterine fetal resuscitation, 345
  Stephen Michael Kinsella & Andrew Shennan
38 Neonatal resuscitation and immediate neonatal emergencies, 352
  Ritu Chitkara, Anand K. Rajani & Louis P. Halamek

Section 6: Medicine, Ethics, and the Law
39 Fetal beneficence and maternal autonomy: ethics and the law, 365
  William J. Sullivan & M. Joanne Douglas
40 Maternal-fetal research in pregnancy, 374
  Frank A. Chervenak & Laurence B. McCullough

Index, 381
Color plates are found facing page 46