

CURRENT

Obstetric & Gynecologic Diagnosis & Treatment

Seventh Edition

a **LANGE** medical book

CURRENT

Obstetric & Gynecologic Diagnosis & Treatment

Seventh Edition

Edited by

Martin L. Pernoll, MD

Formerly Executive Dean

University of Kansas School of Medicine

Kansas City



APPLETON & LANGE

Norwalk, Connecticut/San Mateo, California

CURRENT

Obstetric & Gynecologic

Notice: Our knowledge in clinical sciences is constantly changing. As new information becomes available, changes in treatment and in the use of drugs become necessary. The authors and the publisher of this volume have taken care to make certain that the doses of drugs and schedules of treatment are correct and compatible with the standards generally accepted at the time of publication. The reader is advised to consult carefully the instruction and information material included in the package insert of each drug or therapeutic agent before administration. This advice is especially important when using new or infrequently used drugs.



Copyright © 1991 by Appleton & Lange
A Publishing Division of Prentice Hall
Copyright © 1987 by Appleton & Lange
Copyright © 1984, 1982, 1980, 1978, 1976 by Lange Medical Publications

Spanish Edition: Editorial El Manual Moderno, S.A. de C.V.,
Av. Sonora 206, Col. Hipodromo, 06100-Mexico, D.F.

Portuguese Edition: Editora Guanabara Koogan S.A., Travessa do
Ouvidor, 11, 20,040 Rio de Janeiro - RJ, Brazil

Italian Edition: Piccin Nuova Libreria, S.p.A., Via Altilinate, 107,
35121 Padua, Italy

All rights reserved. This book, or any parts thereof, may not be used or reproduced in any manner without written permission. For information, address Appleton & Lange, 25 Van Zant Street, East Norwalk, Connecticut 06855.

91 92 93 94 / 10 9 8 7 6 5 4 3 2 1

Prentice Hall International (UK) Limited, *London*
Prentice Hall of Australia Pty. Limited, *Sydney*
Prentice Hall Canada, Inc., *Toronto*
Prentice Hall Hispanoamericana, S.A., *Mexico*
Prentice Hall of India Private Limited, *New Delhi*
Prentice Hall of Japan, Inc., *Tokyo*
Simon & Schuster Asia Pte. Ltd., *Singapore*
Editora Prentice Hall do Brasil Ltda., *Rio de Janeiro*
Prentice Hall, *Englewood Cliffs, New Jersey*

ISBN: 0-8385-1424-3
ISSN: 0197-582X

PRINTED IN THE UNITED STATES OF AMERICA

Seventh Edition

Edited by

Martin I. Pernell, MD
Formerly Executive Dean
University of Kansas School of Medicine
Kansas City



APPLETON & LANGE

Norwalk, Connecticut 06855, U.S.A.

The Authors

Darla I. Bakersmith-Hess, MD

Assistant Professor of Medicine and Obstetrics and Gynecology, Division of Cardiovascular Diseases, University of Mississippi Medical Center, Jackson.

David L. Barclay, MD

Clinical Professor of Obstetrics and Gynecology, University of Arkansas for Medical Sciences, Little Rock.

David E. Barnard, MD

Associate Clinical Professor, Department of Obstetrics and Gynecology, Tulane University School of Medicine, New Orleans.

Joseph D. Bast, PhD

Associate Professor of Anatomy and Cell Biology and Gynecology and Obstetrics, University of Kansas School of Medicine, Kansas City.

Ralph C. Benson, MD

Professor Emeritus, Department of Obstetrics and Gynecology, Oregon Health Sciences University, Portland.

Manoj K. Biswas, MD

Associate Professor of Clinical Obstetrics and Gynecology, Tulane University School of Medicine, New Orleans.

Joseph V. Collela, MD

Associate Professor, Department of Obstetrics and Gynecology, Georgetown University School of Medicine, and Director of Antenatal Testing Unit, Georgetown University Hospital, Washington, D.C.

David B. Cotton, MD

Professor, Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston.

David N. Danforth, PhD, MD¹

Formerly Thomas J. Watkins Professor Emeritus of Obstetrics and Gynecology, Northwestern University School of Medicine, Chicago.

Simie Degefu, MD

Associate Professor, Department of Obstetrics and Gynecology, Section of Gynecologic Oncology, Tulane University School of Medicine, New Orleans.

Raphael B. Durfee, MD

Formerly Professor of Reproductive Medicine, University of California School of Medicine, San Diego.

Carol Gagliardi, MD

Instructor of Obstetrics and Gynecology, Reproductive Medicine Section, University of Medicine and Dentistry of New Jersey, Newark.

William F. Ganong, MD

Lange Professor of Physiology, University of California School of Medicine, San Francisco.

Melvin D. Gerbie, MD

Associate Professor of Clinical Obstetrics and Gynecology, Northwestern University School of Medicine, Chicago.

William L. Gill, MD

Professor of Clinical Pediatrics, Tulane University School of Medicine, New Orleans.

Armando E. Giuliano, MD

Professor of Surgery, University of California School of Medicine, Los Angeles.

Victor Gomel, MD

Professor of Obstetrics and Gynecology and Chairman of Department of Obstetrics and Gynecology, University of British Columbia School of Medicine, Vancouver, British Columbia.

Robert C. Goodlin, MD

Clinical Professor of Obstetrics and Gynecology, University of Colorado, Denver.

Ralph W. Hale, MD

Professor and Chairman, Department of Obstetrics and Gynecology, John A. Burns School of Medicine, University of Hawaii, Honolulu.

¹Deceased.

David B. Hebert, MD

Clinical Assistant Professor, Department of Obstetrics and Gynecology, Tulane University School of Medicine, New Orleans.

David L. Hemsell, MD

Professor of Obstetrics and Gynecology and Director of Division of Gynecology, University of Texas Southwestern Medical Center, Dallas.

Eduardo Herrera, MD

Assistant Professor, Department of Obstetrics and Gynecology, Tulane University School of Medicine, New Orleans.

L. Wayne Hess, MD

Assistant Professor of Obstetrics and Gynecology, Division of Maternal-Fetal Medicine, University of Mississippi Medical Center, Jackson.

Edward C. Hill, MD

Professor of Obstetrics and Gynecology, University of California School of Medicine, San Francisco.

Ernest Jawetz, MD, PhD

Professor Emeritus of Microbiology and Medicine, University of California School of Medicine, San Francisco.

Howard W. Jones, Jr., MD

Professor Emeritus of Gynecology and Obstetrics, Johns Hopkins University School of Medicine, Baltimore, and Professor of Obstetrics and Gynecology, Eastern Virginia Medical School, Norfolk.

Howard L. Judd, MD

Professor, Department of Obstetrics and Gynecology, and Executive Director of Division of Reproductive Endocrinology, University of California School of Medicine and Cedars-Sinai Medical Centers, Los Angeles.

Peter S. Kapernick, MD

Clinical Assistant Professor of Obstetrics and Gynecology, University of Minnesota Medical School, Minneapolis.

Robert A. Knuppel, MD, MPH

Professor and Chairman, Department of Obstetrics and Gynecology, University of Medicine and Dentistry of New Jersey, Robert Wood Johnson Medical School, New Brunswick.

Kermit E. Krantz, MD, LittD

University Distinguished Professor and Professor of Obstetrics and Gynecology and Anatomy, University of Kansas School of Medicine, Kansas City.

Daniel H. Labby, MD

Professor of Psychiatry and Medicine, Oregon Health Sciences University, Portland.

Conley G. Lacey, MD

Director of Gynecologic Oncology, Scripps Clinic and Research Foundation, La Jolla, California.

Helain J. Landy, MD

Assistant Professor, Department of Obstetrics and Gynecology, George Washington University School of Medicine and Health Sciences, Washington, D.C.

John W. Larsen, Jr., MD

Professor, Department of Obstetrics and Gynecology, George Washington University School of Medicine and Health Sciences, Washington, D.C.

Wesley Lee, MD

Staff Obstetrician, William Beaumont Hospital, Royal Oak, Michigan, and Clinical Assistant Professor of Obstetrics and Gynecology, University of Michigan Medical School, Ann Arbor.

Deborah Lehmann, MD

Gynecologist, Department of Gynecology, Carswell Air Force Base, Fort Worth, Texas.

William C. Mabie, MD

Associate Professor, Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, University of Tennessee School of Medicine, Memphis.

I. Russell Malinak, MD

Professor, Department of Obstetrics and Gynecology, Baylor College of Medicine, and Medical Director, The Center for Reproductive Medicine and Surgery, The Methodist Hospital/Baylor College of Medicine, Houston.

James N. Martin, Jr., MD

Professor, Department of Obstetrics and Gynecology, University of Mississippi School of Medicine, Jackson.

Mary C. Martin, MD

Associate Professor, Department of Obstetrics, Gynecology, and Reproductive Sciences, Uni-

versity of California Medical Center, San Francisco.

Rick W. Martin, MD

Assistant Professor, Department of Obstetrics and Gynecology, University of Mississippi School of Medicine, Jackson.

John S. McDonald, MD

Professor and Chairman, Department of Anesthesiology, and Professor of Obstetrics and Gynecology, Ohio State University, Columbus.

Abe Mickal, MD

Professor Emeritus and Chairman, Department of Obstetrics and Gynecology, Louisiana State University Medical Center, New Orleans.

Pamela J. Moore, PhD

Associate Professor, Department of Obstetrics and Gynecology, Tulane University School of Medicine, New Orleans.

John C. Morrison, MD

Professor and Director, Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, University of Mississippi Medical Center, Jackson.

David Muram, MD

Assistant Professor and Chief, Section of Pediatric and Adolescent Gynecology, University of Tennessee School of Medicine, Memphis.

Kenneth N. Muse, Jr., MD

Associate Professor, Department of Obstetrics and Gynecology, University of Kentucky College of Medicine, Lexington.

Stuart E. Niles, Jr., JD

Senior Partner, Jones, Walker, Waechter, Poitevent, Carrere & Denegre, Attorneys-at-Law, New Orleans.

Miles J. Novy, MD

Professor of Obstetrics and Gynecology, Oregon Health Sciences University, Portland.

Edward S. Ogata, MD

Professor of Pediatrics and Obstetrics and Gynecology; Vice Chairman, Department of Pediatrics, Northwestern University School of Medicine; and Head, Division of Neonatology, Children's Memorial Hospital, Chicago.

April Gale O'Quinn, MD

Maxwell E. Lapham Professor and Chairman, Department of Obstetrics and Gynecology, Tulane University School of Medicine, New Orleans.

Sue Palmer, MD

Associate Professor, Department of Obstetrics and Gynecology, University of Texas Medical School, Houston.

Jack W. Pearson, MD

Professor, Department of Obstetrics and Gynecology, and Director of Division of Gynecology, University of Arizona College of Medicine, Tucson.

Dorothee Perloff, MD

Clinical Professor of Medicine, Division of Cardiology, and Director, Hypertension Clinic, University of California School of Medicine, San Francisco.

Martin L. Pernoll, MD

Formerly Executive Dean, University of Kansas School of Medicine, Kansas City.

Miriam B. Rosenthal, MD

Associate Professor of Reproductive Biology and Psychiatry, Case Western Reserve University School of Medicine and University MacDonald Hospital for Women, Cleveland.

Timothy C. Rowe, MD

Associate Professor, Department of Obstetrics and Gynecology, University of British Columbia School of Medicine, Vancouver, British Columbia.

Keith P. Russell, MD

Clinical Professor of Obstetrics and Gynecology, University of California School of Medicine, and Medical Director of Perinatal Services, California Medical Center, Los Angeles.

Joseph V. Schlosser, MD†

Formerly Associate Director of Radiation Oncology, Charity Hospital of New Orleans.

Jack M. Schneider, MD

Medical Director, Women's Center, Sharp Memorial Hospital, San Diego.

Baha M. Sibai, MD

Professor and Chief, Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, University of Tennessee School of Medicine, Memphis.

Robert J. Sokol, MD

Professor, Department of Obstetrics and Gynecology, and Dean, Wayne State University School of Medicine, Detroit.

†Deceased.

Morton A. Stenchever, MD

Professor and Chairman, Department of Obstetrics and Gynecology, University of Washington School of Medicine, Seattle.

Paul Summers, MD

Associate Professor, Department of Obstetrics and Gynecology, Tulane University School of Medicine, New Orleans.

Richard E. Symmonds, MD

Professor Emeritus, Division of Gynecologic Surgery, Mayo Clinic, Rochester, Minnesota.

Howard J. Tatum, MD, PhD

Professor of Gynecology and Obstetrics, Emory University School of Medicine, and Director of Research, Family Planning Program, Emory University and Grady Memorial Hospital, Atlanta.

Cathy M. Taylor, MD

Obstetrician and Gynecologist, Olathe, Kansas.

Ian H. Thorneycroft, PhD, MD

Professor and Chairman, Department of Obstetrics and Gynecology, University of South Alabama College of Medicine, Mobile.

Michael W. Varner, MD

Associate Professor of Obstetrics and Gynecology, University of Utah School of Medicine, Salt Lake City.

Benny Waxman, MD*

Formerly Professor, Department of Obstetrics and Gynecology, George Washington Univer-

sity School of Medicine and Health Sciences, Washington, D.C.

George D. Wendel, MD

Assistant Professor of Obstetrics and Gynecology, University of Texas Health Science Center, Dallas.

Carol A. Wheeler, MD

Assistant Professor, Department of Obstetrics and Gynecology, Brown University, Women and Infants' Hospital, Providence.

James M. Wheeler, MD

Assistant Professor, Department of Obstetrics and Gynecology, and Director of In Vitro Fertilization, Baylor College of Medicine, Houston.

Emery A. Wilson, MD

Vice Chancellor for Clinical Professional Services and Dean, College of Medicine, University of Kentucky, Lexington.

J. Donald Woodruff, MD

Professor Emeritus of Gynecology and Obstetrics, and Associate Professor Emeritus of Pathology, Johns Hopkins University School of Medicine, Baltimore.

Sarah Schlater Yavorski, MD, MPH

Obstetrician and Gynecologist, Westminster, Colorado.

Preface

The 7th Edition of *Current Obstetric & Gynecologic Diagnosis & Treatment* offers the health care provider a comprehensive digest of the knowledge necessary for the modern health care of women. In addition to the most up-to-date, clinically relevant information available, *COGDT* provides an incisive look at areas of rapid change in women's health care.

AUDIENCE

Like all Lange books, *COGDT* provides a concise, yet comprehensive source of current, clear, and correct information. Medical students will find it an authoritative introduction to the specialty, and an excellent source for reference and review. House officers will welcome the concise, practical information on commonly encountered health problems. Practicing obstetricians and gynecologists, family physicians, internists, and other health care providers whose practice includes women's health care will find *COGDT* a useful reference on all aspects of the subject.

SCOPE

Sixty-one chapters encompass a wide range of topics, progressing from the basics of health care for women to complicated sub-specialty problems. Information is organized in a logical progression from basic to clinical, simple to complex, and from common to uncommon. Discussions are amplified by detailed anatomic drawings, diagrams, and imaging studies, more than 500 illustrations in all. References at the end of each chapter have been carefully chosen to emphasize current developments in the clinical literature.

NEW TO THIS EDITION

The 7th edition of *COGDT* reflects greater consumer sensitivity throughout by emphasizing the following themes: **the patient as a person, communication and counseling techniques, and the patient as participant in decisions about her own health care.**

To better serve the needs of our readers, this new edition has been **reorganized into seven sections**, separating fundamental, specialty, and subspecialty information and grouping information likely to be useful to a given level of expertise. This new organization results in essentially a series of books within a book.

Section I details the basic material necessary to understand the anatomic and physiologic features unique to the female and to reproduction. Section II is devoted to normal obstetrics. Section III, **Pregnancy at Risk**, describes methods of fetal assessment, reviews early and late pregnancy risks, and details diagnosis and therapy of the maternal or fetal states creating perinatal jeopardy.

Section IV, **General Gynecology**, comprehensively reviews benign gynecology, continuing the format of basic to increasingly complex issues concerning each topic. Section V is devoted to gynecologic oncology. Section VI discusses reproductive endocrinology and infertility, while Section VII deals with topics not traditionally found in obstetrics and gynecology texts but of obvious importance to the patient and physician—critical care, psychologic aspects of obstetrics and gynecology, sexual assault, the breast, and medicolegal aspects.

New chapters include:

- Approach to the Patient
- Methods of Assessment for Pregnancy at Risk
- The Borderland of Law & Medicine

Among the extensively revised chapters are the following:

- Early Pregnancy Risks
- Late Pregnancy Complications
- General Medical Disorders During Pregnancy
- Surgical Diseases & Disorders in Pregnancy
- Obstetric Analgesia & Anesthesia
- Medical & Surgical Considerations in Gynecology
- Infertility
- Psychologic Aspects of Obstetrics & Gynecology

A number of topics have been examined in more detail due to their increasing importance in women's health care. Included in this category are Premenstrual Syndrome (PMS), Abortion, and AIDS.

ACKNOWLEDGMENTS

COGDT continues to represent the collective efforts of leading experts in obstetrics and gynecology. The editors would like to thank these busy and productive individuals for their time and effort in preparing this new edition. Several of our more senior authors have retired, and their expertise will be sorely missed.

We have lost three contributors, dear friends and colleagues, since the 6th edition. Drs. Danforth, Schlosser, and Waxman have passed away, but their valuable contributions to the 7th edition remain as a memorial to their many achievements. Also this edition marks the end of Dr. Benson's participation as editor. His wisdom, wit, and editorial skills are legendary and contributed much to the text's success. Losing him in this position is mitigated only by knowing he will continue to participate as an author.

We welcome suggestions and comments concerning *Current Obstetric & Gynecologic Diagnosis & Treatment*. Please address communications to us c/o Appleton & Lange, 2755 Campus Drive, Suite 205, San Mateo, CA 94403.

April, 1991

M.L. Pernoll, MD

Table of Contents

The Authors	xiv
Preface	xviii

SECTION I. REPRODUCTIVE BASICS

1. Approach to the Patient.....	1
---------------------------------	---

The Knowledge Base 1	Ethics 3	Mary C. Martin, MD
Communication 2	References 4	

2. Anatomy of the Female Reproductive System.....	5
---	---

Abdominal Wall 5	Contents of the Pelvic Cavity 31	Kermit E. Krantz, MD, LittD
Inguinal Region 14	Structures Lining the Pelvis 49	
Pudendum 16	Placenta 53	
Bony Pelvis 22	References 55	

3. Embryology of the Urogenital System & Congenital Anomalies of the Female Genital Tract.....	56
--	----

Overview of the First Four Weeks of Development 56	The Genital Ducts 69	Joseph D. Bast, PhD
The Urinary System 59	Differentiation of the Urogenital Sinus 74	
The Genital System 66	The External Genitalia 81	
The Gonads 66	References 87	
Subdivision of the Cloaca & Formation of the Urogenital Sinus 69		

4. Genetic Disorders & Sex Chromosome Abnormalities.....	89
--	----

Genetic Disorders 89	Gynecologic Correlates 104	Morton A. Stenchever, MD, & Howard W. Jones, Jr., MD
Mendelian Laws of Inheritance 89	The Chromosomal Basis of Sex	
Cytogenetics 92	Determination 104	
Applied Genetics & Teratology 97	Abnormal Development 106	
Genetic Counseling 101	References 120	

5. Physiology of Reproduction.....	122
------------------------------------	-----

Puberty 122	Relaxin 135	William F. Ganong, MD
Reproductive Function After Sexual Maturity 123	Pituitary Hormones 135	
Menstrual Cycle 123	Control of Ovarian Function 136	
Estrogens 129	Prolactin 139	
Progesterone 133	Menopause 140	
	References 141	

6. Maternal Physiology During Pregnancy 142*Pamela J. Moore, PhD*

Gastrointestinal Tract 142
 Kidneys & Urinary Tract 143
 Hematologic System 144
 Cardiovascular System 146

Pulmonary System 147
 Metabolism 149
 References 150

7. Maternal-Placental-Fetal Unit; Fetal & Early Neonatal Physiology 151*Robert A. Knuppel, MD, MPH, & Robert C. Goodlin, MD*

The Placenta 151
 Development of the Placenta 151
 Functions of the Maternal-Placental-
 Fetal Unit 153
 Anatomic Disorders of the Placenta 158
 The Umbilical Cord 159
 Abnormalities of the Umbilical Cord 160
 The Fetus 161
 Growth & Development 161
 Fetal & Early Neonatal Physiology 161
 Circulatory Function in the Fetus
 & Newborn 167

Respiratory Function in the Fetus
 & Newborn 171
 Gastrointestinal Function in the Fetus
 & Newborn 172
 Renal Function in the Fetus
 & Newborn 173
 Central Nervous System Function
 in the Fetus & Newborn 173
 Intrauterine Nutrition 175
 The Amniotic Fluid 176
 References 178

SECTION II. NORMAL OBSTETRICS**8. Normal Pregnancy & Prenatal Care 179***Cathy M. Taylor, MD, & Martin L. Pernoll, MD*

Normal Pregnancy 179
 Diagnosis 181
 Calculation of Gestational Age &
 Estimated Date of Confinement 186
 Diagnosis of Pregnancy at Term 186
 Diagnosis of Postdates Pregnancy 187
 Diagnosis of Fetal Death 187
 Detection of Previous Pregnancy 187
 Prenatal Care 187
 Initial Office Visit 188
 Subsequent Visits 191
 Maternal Well-Being as a Sign of Fetal
 Well-Being 191

Preparation for Labor 192
 Nutrition in Pregnancy 192
 Weight Gain 192
 Nutritional Requirements 192
 Common Complaints During
 Pregnancy 193
 Drugs, Cigarette Smoking, & Alcohol
 During Pregnancy 195
 Other Matters of Concern During
 Pregnancy 196
 References 197

9. The Course & Conduct of Normal Labor & Delivery 198*Keith P. Russell, MD, & Manoj K. Biswas, MD*

Fetal Presentation, Position, & Lie 199
 Essential Factors of Labor 200
 Mechanism of Initiation of Labor 204
 The Course of Normal Labor 206
 Mechanism of Labor 206
 Management of Early Labor 210
 Management of the Second Stage
 of Labor 215
 Management of the Third Stage
 of Labor 216

Aids to Normal Delivery 218
 Episiotomy (Perineotomy) 218
 Induction of Labor 220
 Natural Childbirth 222
 Psychoprophylaxis: The Lamaze Technique
 for Prepared Childbirth 222
 References 223

10. Essentials of Normal Newborn Assessment & Care 225*William L. Gill, MD*

The Infant Immediately After Birth 225
 The Infant During the First Few Hours After
 Birth 226
 Clinical Estimation of Gestational Age 227

Complete Physical Examination of the
 Newborn 227
 Care of the Normal Newborn 232
 References 235

11. The Normal Puerperium.....	237
<i>Miles J. Novy, MD</i>	
Anatomic & Physiologic Changes During the Puerperium 237	Antenatal Preparation for Breast-Feeding 261
Complications During the Puerperium 247	Principles & Techniques of Breast-Feeding 262
Conduct of the Puerperium 252	Milk Yield 263
Lactation 258	Disorders of Lactation 264
Physiology 258	Inhibition & Suppression of Lactation 267
Synthesis of Human Milk 259	References 268
Immunologic Significance of Human Milk 259	
Advantages & Disadvantages of Breast-Feeding 260	
 SECTION III. THE PREGNANCY AT RISK	
12. Methods of Assessment for Pregnancy at Risk.....	269
<i>Robert J. Sokol, MD, John W. Larson, Jr., MD, Helain J. Landy, MD, & Martin L. Pernoll, MD</i>	
High-Risk Pregnancy 269	Pulmonary Maturity Testing 281
Maternal Assessment for Potential Fetal or Perinatal Risk 270	Biometric Evaluation of Fetal Well-Being 281
Uniform Perinatal Record 270	Accuracy of Antepartum Fetal Surveillance 287
Initial Screening 270	Summary 288
Course of Pregnancy 274	Intrapartum Assessment of Fetal Well-Being 288
Course of Labor 275	Course of Labor 288
Delivery 276	Fetal Heart Rate Monitoring 289
Postpartum Period 277	Fetal Scalp Blood Sampling 297
Neonatal Period 277	Umbilical Cord Blood Sampling at Delivery 298
Summary & Conclusions 278	References 298
Antepartum Testing in Pregnancies at Risk 278	
Ultrasound 278	
Prenatal Diagnosis 279	
 13. Early Pregnancy Risks	300
<i>Raphael B. Durfee, MD, & Martin L. Pernoll, MD</i>	
Spontaneous Abortion 300	Extrauterine Pregnancy 308
Missed Abortion 304	Exposure to Fetotoxic Agents 320
Habitual Abortion 305	References 324
Septic Abortion 307	
 14. Late Pregnancy Complications.....	326
<i>Martin L. Pernoll, MD</i>	
Premature Labor 326	ABO Hemolytic Disease 338
Premature Rupture of Membranes 332	References 338
Prolonged Pregnancy 334	
Rh Isoimmunization & Other Blood Group Incompatibilities 334	
 15. Disproportionate Fetal Growth.....	340
<i>Michael W. Varner, MD</i>	
Small-For-Gestational-Age Pregnancy 340	References 351
Large-For-Gestational-Age Pregnancy 348	
Future Diagnosis of SGA & LGA Pregnancies 351	
 16. Multiple Pregnancy.....	352
<i>Ralph C. Benson, MD</i>	
References 362	

17. Pregnancy Complicated by Diabetes Mellitus	364
<i>Jack M. Schneider, MD</i>	
Pathogenesis & Classification 364	Pregnancy-Induced Glucose Intolerance 367
Pathophysiology 364	Management of Insulin-Dependent Diabetes
Metabolism in Normal & Diabetic	During Pregnancy 368
Pregnancy 365	Complications 370
Planning for Pregnancy in Diabetic	Intrapartum & Postpartum Management 371
Women 366	Neonatal Outcome 371
Counseling Regarding Pregnancy Outcome	References 371
in Diabetes 367	
18. Hypertensive States of Pregnancy	373
<i>William C. Mabie, MD, & Baha M. Sibai, MD</i>	
Preeclampsia 373	Chronic Hypertension 382
Eclampsia 380	References 386
19. Third-Trimester Hemorrhage	388
<i>Martin L. Pernoll, MD</i>	
Initial Evaluation 388	Rupture of the Uterus 397
Premature Separation of the Placenta 390	References 399
Placenta Previa 394	
20. Malpresentation & Cord Prolapse	401
<i>Joseph V. Colle, MD</i>	
Breech Presentation 401	Compound Presentation 413
Version 411	Shoulder Dystocia 414
External Cephalic Version 411	Umbilical Cord Prolapse 416
Internal Podalic Version 413	References 418
21. Cardiac, Hematologic, Pulmonary, Renal, & Urinary Tract Disorders	420
in Pregnancy	<i>Manoj K. Biswas, MD, & Dorothee Perloff, MD</i>
Cardiovascular Disorders 420	Sickle Cell Disease 439
Cardiovascular Changes in Normal	Thalassemia 441
Pregnancy 420	Leukemia & Lymphoma 441
Heart Disease 421	Hemorrhagic Disorders 442
Rheumatic Heart Disease 424	Thromboembolization 443
Infective Endocarditis 426	Septic Pelvic Thrombophlebitis 445
Pericardial Disease 428	Pulmonary Disorders 445
Cardiomyopathy 428	Aspiration Pneumonitis 445
Myocarditis 428	Bronchial Asthma 446
Coronary Artery Disease 429	Tuberculosis 448
Aortic Dissection 429	Renal & Urinary Tract Disorders 449
Congenital Heart Disease 429	Urinary Tract Infection 449
Arrhythmias 433	Urinary Calculi 450
Cardiovascular Drugs in Pregnancy 434	Acute Renal Failure 451
General Management of Heart Disease	Glomerulonephritis 452
in Pregnancy 434	Solitary Kidney 452
Varicose Veins 436	Renal Transplantation 452
Hematologic Disorders 436	Ectopic Kidney 452
Anemia 436	References 452
22. General Medical Disorders During Pregnancy	456
<i>L. Wayne Hess, MD, Darla I. Bakersmith-Hess, MD, & John C. Morrison, MD</i>	
Disorders of the Nervous System 456	Porphyria 461
Cerebrovascular Disorders 456	Spinal Cord Disorders 462
Cerebral Neoplasms 457	Amyotrophic Lateral Sclerosis 462
Migraine Headache 458	Wilson's Disease 462
Seizure Disorders 458	Disorders of Cranial & Peripheral Nerves
Multiple Sclerosis 459	462
Choreic Disorders 460	Guillain-Barre Syndrome 462
Organic Mental Syndromes 460	Peripheral Neuropathies 463
Myasthenia Gravis 461	Disorders of the Skin 463

Papular Dermatitis of Pregnancy	464
Pruritic Urticarial Papules & Plaques of Pregnancy	464
Herpes Gestationis	465
Impetigo Herpetiformis	465
Disorders of the Gastrointestinal Tract	466
Peptic Ulcer Disease	466
Inflammatory Bowel Disease	466
Cholecystitis	467
Intrahepatic Cholecystitis	467
Acute Fatty Liver of Pregnancy	467
Hepp Syndrome	468
Viral Hepatitis	468
Disorders of the Thyroid	469
Hypothyroidism	470
Thyroiditis	470
Hyperthyroidism	471
Disorders of the Parathyroid	473

Hyperparathyroidism	473
Hypoparathyroidism	474
Disorders of Adrenocortical Function	474
Adrenocortical Insufficiency	474
Cushing's Syndrome	476
Congenital Adrenal Hyperplasia	476
Pheochromocytoma	476
Disorders of the Pituitary	476
Pituitary Tumors	477
Acromegaly	477
Sheehan's Syndrome	477
Diabetes Insipidus	477
Autoimmune Disorders	477
Rheumatoid Arthritis	477
Systemic Lupus Erythematosus	478
Scleroderma Dermatomyositis	478
References	478

23. Surgical Diseases & Disorders in Pregnancy..... 480

James N. Martin, Jr., MD, Rick W. Martin, MD, & John C. Morrison, MD

Maternal Considerations	480
Fetal Considerations	480
Diagnostic Considerations	481
Principles of Surgical Management	481
Upper Abdominal Diseases & Disorders	482
Appendicitis	482
Cholecystitis & Cholelithiasis	483
Acute Pancreatitis	484
Peptic Ulcer Disease	485
Acute Intestinal Obstruction	486
Spontaneous Hepatic & Splenic Rupture	487
Splenic Artery Aneurysm	487

Pelvic Diseases & Disorders	488
Ovarian Masses	488
Leiomyomas	489
Other Pelvic Disorders	489
Breast Cancer	489
Bone Tumors	490
Cardiac Disease	490
Neurologic Disease	490
Aortic Aneurysm	491
Pheochromocytoma	491
Hemorrhoids	491
References	491

24. Complications of Labor & Delivery..... 493

Eduardo Herrera, MD, & Martin L. Pernoll, MD

Fetal Blood Loss in Pregnancy	493
Trauma to the Placenta	493
Velamentous Cord Insertion & Vasa Previa	493
Dystocia	494
Definition & Classification	494
Incidence	494

Abnormal Patterns of Labor	494
Pathogenesis & Treatment	497
Fetal Distress	504
Chronic Fetal Distress	504
Acute Fetal Distress	504
Management of Fetal Distress	505
References	506

25. Obstetric Analgesia & Anesthesia..... 508

John S. McDonald, MD

Anatomy of Pain	508
Techniques of Analgesia Without the Use of Drugs	509
Analgesic, Amnestic, & Anesthetic Agents	510
Regional Analgesics	515
Analgesia for Intrapartum Obstetrics	523
Anesthesia for the Fetus at Risk	524

Analgesia for Abnormal Obstetrics	527
Anesthesia for Nonobstetric Complications	530
Treatment of Complications of Anesthetics	532
Anesthesia for Cesarean Section	532
References	534

26. Operative Delivery.....	536
<i>Ralph W. Hale, MD, & David N. Danforth, PhD, MD</i>	
Forceps Operations 536	Midforceps Delivery 543
The Obstetric Forceps 536	Dangers & Complications of Forceps Deliveries 550
Indications & Conditions for Forceps Delivery 537	The Vacuum Extractor 551
Classification & Definitions of Forceps Deliveries 538	Repair of Lacerations 552
Choice & Application of Forceps 539	Cesarean Section 554
Preparation of the Patient for Forceps Delivery 540	Vaginal Delivery Following Previous Cesarean Section 564
Forceps Delivery: Position Occiput Anterior 541	References 565
27. Postpartum Hemorrhage & the Abnormal Puerperium	568
<i>Peter S. Kapernick, MD</i>	
Postpartum Hemorrhage 568	Disorders of Lactation 583
Placenta Accreta 573	Postpartum Monitoring 584
Uterine Inversion 574	Postpartum Complications 584
Abnormalities of the Puerperium 576	References 587
Postpartum & Puerperal Infections 576	
28. Neonatal Resuscitation & Care of the Newborn at Risk	589
<i>Edward S. Ogata, MD</i>	
Perinatal Resuscitation 589	Renal Failure 601
The Preterm Infant 594	Central Nervous System Disorders 601
Diseases of the Premature Neonate 595	Infections 602
Respiratory Distress Syndrome 595	Drug & Alcohol Addiction 603
Heart Disease 597	The Infant With Developmental Abnormalities 603
Hyperbilirubinemia 598	References 605
Hematologic Disorders 599	
Gastrointestinal Disorders 599	

SECTION IV. GENERAL GYNECOLOGY

29. Gynecologic History, Examination, & Diagnostic Procedures.....	607
<i>Benny Waxman, MD</i>	
The Periodic Health Screening Examination 607	Diagnostic Office Procedures 617
History 607	Diagnostic Laboratory Procedures 619
Physical Examination 610	References 628
30. Pediatric & Adolescent Gynecology	629
<i>David Muram, MD</i>	
Anatomic & Physiologic Considerations 629	Vaginal Discharge & Bleeding 641
Gynecologic Examination of Infants, Children, & Young Adolescents 631	Injuries to the Genitalia 643
Congenital Anomalies of the Female Genital Tract 635	Genital Tumors 645
Anomalies of the Vulva & Labia 635	Vulvar Pruritus 646
Anomalies of the Hymen 636	Disorders of Sexual Maturation 648
Anomalies of the Vagina 637	Accelerated Sexual Maturation 648
Anomalies of the Uterus 639	Delayed Sexual Maturation 650
Anomalies of the Ovaries 639	Pregnancy in Children & Adolescents 654
Anomalies of the Urethra & Anus 640	Precocious (Juvenile) Pregnancy 654
Gynecologic Disorders in Premenarcheal Children 641	Adolescent Pregnancy 654
	References 655

31. Complications of Menstruation; Abnormal Uterine Bleeding	657
<i>Melvin D. Gerbie, MD</i>	
Complications of Menstruation 657	Abnormal Uterine Bleeding During
Premenstrual Syndrome 657	Pregnancy 662
Mastodynia 658	Abnormal Bleeding Due to Nongynecologic
Dysmenorrhea 659	Diseases & Disorders 662
Abnormal Uterine Bleeding 660	Dysfunctional Uterine Bleeding 662
Evaluation of Abnormal Uterine	Postmenopausal Bleeding 663
Bleeding 660	References 664
Abnormal Uterine Bleeding Due to	
Gynecologic Diseases & Disorders 662	
32. Contraception & Family Planning	665
<i>Howard J. Tatum, MD, PhD</i>	
Contraception 665	Oral Hormonal Contraceptives 670
Methods of Contraception 666	Hormonal Contraception By
Coitus Interruptus 666	Injection 674
Postcoital Douche 667	Nonmedicated Intrauterine Contraceptive
Prolongation of Lactation 667	Devices 674
Condom 667	Medicated Intrauterine Contraceptive
Vaginal Diaphragm 667	Devices 679
Spermicidal Preparations 668	Pelvic Actinomycosis & the IUD 683
Contraceptive Sponge 668	Therapeutic Induced Abortion 684
"Rhythm" Method 668	References 690
33. Benign Disorders of the Vulva & Vagina	692
<i>David L. Barclay, MD</i>	
Leukorrhea 692	Mycotic Infections of the Female Genital
Principles of Diagnosis of Vulvar	Tract 711
Diseases 703	Other Infections of the Vulva & Vagina 711
Vascular & Lymphatic Diseases of the Vulva	Vulvar Dystrophies 712
& Vagina 705	Benign Cystic Tumors 714
Disorders of Other Systems With Vulvar	Bartholin's Duct Cyst & Abscess 714
Manifestations 706	Benign Solid Tumors 715
Viral Infections of the Vulva & Vagina 707	References 716
Infestations of the Vulva & Vagina 710	
34. Benign Disorders of the Uterine Cervix	719
<i>Edward C. Hill, MD</i>	
Cervical Injuries 719	Cervical Stenosis 726
Cervicitis 720	Cervical Changes Related to Diethylstilbestrol
Granulomatous Infections of the Cervix 725	Exposure in Utero 727
Rare Infectious Diseases of the Cervix 726	Benign Neoplasms of the Cervix 728
Cystic Abnormalities of the Cervix 726	References 731
35. Benign Disorders of the Uterine Corpus	732
<i>Conley G. Lacey, MD</i>	
Myoma of the Uterus 732	Endometrial Polyps 740
Adenomyosis 738	References 745

36. Benign Disorders of the Ovaries & Oviducts	746
<i>J. Donald Woodruff, MD</i>	
Development of Benign Adnexal Disorders 746	Germ Cell Tumors 764
Diagnosis of Ovarian Tumors 746	Benign Tumors of the Oviduct 767
Treatment of Ovarian Tumors 747	Cystic Tumors 767
Physiologic Enlargement 748	Epithelial Tumors 767
Functional Cysts 748	Metaplastic Tumors 767
Thecosis 749	Adenomatoid Tumors 768
Polycystic Ovarian Disease 749	Leiomyomas 768
Neoplastic Lesions 750	Teratomas 768
Epithelial (Mesothelial) Tumors 750	References 768
Stromoepithelial Tumors, Primarily Stromal 754	
37. Sexually Transmitted Diseases & Pelvic Infections	770
<i>David L. Hemsell, MD, George D. Wendel, MD, & Abe Mickal, MD</i>	
Sexually Transmitted Diseases 770	Pelvic Tuberculosis 796
Pelvic Infections 783	Toxic Shock Syndrome 797
Pelvic Inflammatory Disease 785	References 798
Postoperative Pelvic Infections 793	
38. Antimicrobial Chemotherapy	801
<i>Ernest Jawetz, MD, PhD</i>	
Antimicrobial Chemotherapy 801	Trimethoprim 815
Principles of Selection of Antimicrobial Drugs 801	Specialized Drugs Against Gram-Positive Bacteria 815
Antimicrobial Drugs 804	Urinary Antiseptics 816
Penicillins 804	Systemically Active Drugs in Urinary Tract Infections 817
Cephalosporins 807	Antifungal Drugs 817
Adverse Effects of Cephalosporins 809	Antimicrobial Drugs Used in Combination 817
New Beta-Lactam Drugs 809	Antimicrobial Chemoprophylaxis in Surgery 818
Erythromycin Group 810	Antiviral Chemoprophylaxis & Therapy 819
Tetracycline Group 810	References 819
Chloramphenicol 811	
Aminoglycosides 812	
Spectinomycin 814	
Polymyxins 814	
Sulfonamides 814	
39. Endometriosis	821
<i>Kenneth N. Muse, Jr., MD, & Emery A. Wilson, MD</i>	
References 828	
40. Relaxation of Pelvic Supports	830
<i>Richard E. Symmonds, MD</i>	
Cystocele & Urethrocele 830	Malpositions of the Uterus 844
Rectocele 834	Fitting of Pessaries 848
Enterocoele 836	References 849
Uterine Prolapse 840	
41. Gynecologic Urology	851
<i>Jack R. Robertson, MD, & David B. Hebert, MD</i>	
Anatomy & Physiology 851	Urinary Incontinence 855
History & Physical Examination 851	References 864
Urinary Tract Infection 854	

42. Medical & Surgical Considerations in Gynecology	866
Acute Abdomen 866	
Nongynecologic Causes of Acute Abdomen 868	
Preoperative Care 872	
General Considerations in Preoperative Evaluation & Counseling 872	
Disorders Affecting Operative Risk 874	
Postoperative Care 877	
Immediate Postoperative Care 877	
Recovery From Major Surgery 878	
Outpatient Surgery 878	
Postoperative Counseling & Release From the Hospital 879	
Postoperative Complications 879	
Shock 879	
Pulmonary & Cardiovascular Complications 880	
Urinary Tract Complications 885	
Gastrointestinal Tract Complications 887	
Wound Complications 889	
Anesthetic Complications 890	
Obstetric Complications 890	
Injury During Gynecologic Procedures 891	
Chronic Medical & Surgical Disorders of Gynecologic Significance 892	
Chronic Pelvic Pain 892	
Gastrointestinal System 893	
Urinary System 894	
Endocrine System 895	
Hematologic System 896	
Orthopedic System 897	
References 898	
43. Therapeutic Gynecologic Procedures	900
<i>L. Russell Malinak, MD, James M. Wheeler, MD, & Carol A. Wheeler, MD</i>	
Dilation & Curettage (D&C) 900	
Hysteroscopy 902	
Laparoscopy 904	
Operations for Sterilization of Women & Men 908	
Tubal Sterilization 908	
Other Methods of Female Sterilization 910	
Vasectomy 910	
Hysterectomy 910	
Technique 915	
References 921	
SECTION V. GYNECOLOGIC ONCOLOGY	
44. Premalignant & Malignant Disorders of the Vulva & Vagina	922
Cancer of the Vulva 922	
Cancer of the Vagina 932	
References 936	
45. Premalignant & Malignant Disorders of the Uterine Cervix	937
<i>Edward C. Hill, MD</i>	
Dysplasia & Carcinoma in Situ of the Cervix 937	
Cancer of the Cervix 942	
Sarcoma of the Cervix 952	
References 953	
46. Premalignant & Malignant Disorders of the Uterine Corpus	955
<i>Conley G. Lacey, MD</i>	
Endometrial Hyperplasia & Carcinoma 955	
Sarcoma of the Uterus 965	
References 971	
47. Premalignant & Malignant Disorders of the Ovaries & Oviducts	974
<i>J. Donald Woodruff, MD</i>	
Diagnosis of Ovarian Cancer 975	
Treatment 977	
Neoplastic Lesions 978	
Epithelial (Mesothelial) Tumors 978	
Ovarian Sarcomas 984	
Mixed Mesodermal Tumors 985	
Germ Cell Tumors 985	
Dysgerminoma 985	
Teratomas 987	
Dysgenetic Gonad & Allied Conditions 987	
Multifocal Neoplasia & Metastatic Tumors 988	
Ovarian Neoplasia Associated With Other Types of Genital Canal Cancer 989	
Metastatic Tumors From an Extragenital Primary Malignant Tumor 990	
Malignant Tumors of the Oviduct 991	
Mixed Mesodermal Tumor 993	
Choriocarcinoma 993	
Mesonephroma 993	
References 994	