Benson and Pernoll's

Handbook of Obstetrics and Gynecology

Ninth Edition

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McGraw-Hill, Inc.
Health Professions Division
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2 3 4 5 6 7 8 9 0 DOCDOC 9 9 8 7 6 5 4

ISBN 0-07-105405-7

ISSN 1070-731X

The editors were Gail Gavert and Patricia M. Bolger.
The production supervisor was Clara B. Stanley.
The indexer was Irving Condé Tullar.
R.R. Donnelley & Sons was printer and binder.

Publisher's Note: A new paper was used in this reprint to create a more portable size. The content was not altered.

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Special thanks are extended to Laurel V. Schaubert of Biomed Arts Associates, Inc., San Francisco, for her patience and help with the art program.

OBSTETRIC CALENDAR

January	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	January
October	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	**November**
February	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28				February
November	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5				**December**
March	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	March
December	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	**January**
April	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		April
January	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4		**February**
May	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	May
February	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	5	6	7	**March**
June	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		June
March	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6		**April**
July	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	July
April	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	**May**
August	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	August
May	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	**June**
September	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		September
June	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7		**July**
October	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	October
July	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	**August**
November	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		November
August	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6		**September**
December	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	December
September	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	**October**

Locate the date of the first day of the last menstrual period in the top line of any of the above pair of lines. The date directly below is the expected date of confinement.

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NOTICE

Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required. The authors, editor, and publisher of this work have checked with sources believed to be reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication. However, in view of the possibility of human error or changes in medical sciences, neither the editors nor the publisher nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from use of such information. Readers are encouraged to confirm the information contained herein with other sources. For example and in particular, readers are advised to check the product information sheet included in the package of each drug they plan to administer to be certain that the information contained in this book is accurate and that changes have not been made in the recommended dose or in the contraindications for administration. This recommendation is of particular importance in connection with new or infrequently used drugs.

Preface

The ninth edition of this text, while still evolving, has been so totally rewritten that it is essentially a new book. The new size, cover, and extraordinary amount of new material suggest the transition of both the book and the field; while the retention of classic and timeless material from previous editions, the use of some of the ageless illustrations, and the title reflect the book's rich heritage.

This edition includes newer aspects of the diagnosis and treatment of genetic abnormalities, hormonal aberrations, obstetric complications, sexually transmitted diseases, and gynecologic neoplasia. Over half of the chapters are new, including The Female Patient, Development and Maldevelopment, Maternal Physiologic Adjustments to Pregnancy, High-Risk Pregnancy, The Infant, Early Pregnancy Complications, Late Pregnancy Complications, Operative Obstetrics, Sexually Transmitted Diseases, Menstrual Abnormalities and Complications, Contraception, The Nonreproductive Years, Endometriosis and Adenomyosis, Infertility and Related Issues, Gynecologic Procedures and Surgery, and Sexual Assault. The remaining chapters have been extensively revised, reorganized, and infused with new material. Uniting the new and previous portions of the book is the overall philosophy of previous editions: Present material that is timely, practical, and clinically useful. While this handbook is not a substitute for a primary textbook, it does contain the essentials of diagnosis and treatment for obstetric and gynecologic disorders. Procedures and medications (with dosages and routes of administration, together with alternatives) are presented, but remember that the choice is rarely inclusive or absolute.

We would like to dedicate this edition to our wives and to our readers.

Jean B. Benson, R.N., wife of Dr. Benson, died of endometrial carcinoma during preparations of this book. She was a warm, compassionate health care provider, a matchless wife, and a loving, devoted mother. For us and so many others, her life and untimely death make the need for correct diagnosis and

effective treatment of gynecologic cancer especially poignant and important.

Marcia J.B. Pernoll, M.D., was meticulous in her critique and provided thoughtful as well as painstaking proofreading of the manuscript. Her perspectives as a neonatologist were only slightly less valuable than the woman's perspective she added to all the text.

The readers are truly responsible for the existence of this handbook. Their extraordinary support of its predecessor and their continued demand for another edition led us through three publishers, innumerable editors, and several years of work. We thank you and hope the effort justifies your continued confidence.

Martin L. Pernoll, M.D.
Ralph C. Benson, M.D.

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Contents

Chapter 1

The Female Patient

Each female patient presents a unique set of circumstances, beliefs, and expectations. Her sexual and reproductive experiences and organ function are quite individual. She may be fearful of the gynecologic examination or may be uncomfortable confiding things that she considers private or embarrassing. Alternatively, she may be totally matter of fact about her body and its problems. Occasionally, a patient may behave in an overtly sexual manner toward the physician, making him or her uncomfortable. Each patient at every visit is a whole person. She should not be regarded as an assemblage of parts, some of which are more interesting—pregnant or more apt to become cystic or cancerous—than others.

To assist in establishing rapport early in the doctor–patient relationship, ascertain how she prefers to be addressed. Some women prefer the use of their first name, whereas others prefer to be addressed using the formal salutation of Miss, Ms., or Mrs. Make a notation of her preference, since she will recall the inquiry and expect her response to be remembered.

In addition to possessing competence and skill, the care provider must be able to instill confidence about the privacy of all discussions. Above all, the patient must sense that medical personnel truly care about her. A major step toward achieving this goal during the initial visit is to obtain the history in a quiet office with no sense of haste and with the patient fully clothed. Information not readily volunteered early may be disclosed when the patient becomes more comfortable as the interview progresses in a nonjudgmental fashion. Review pertinent episodes in her past medical history, family history, social history, and the review of systems, perhaps using a standardized questionnaire completed by the patient before seeing the care provider. Focusing on details of the patient's concern early in the process may be helpful, since leaving the genitourinary system discussion until last may cause her to believe that you are avoiding her problem. Information about the number of pregnancies, deliveries, abortions, contraception, sexually transmitted diseases, drug usage, sexual practices,

and marital status is essential. Current medications and any allergies should be prominent in the review of past history. Ascertain whether or not she has a family doctor, since the physician providing reproductive care may be the only one to examine the patient routinely and must, therefore, provide primary care.

The patient's answers to personal questions may not coincide with the caregiver's personal moral standards, religious beliefs, sexual practices, or experience. However, he or she must not judge but assist with the patient's problems within her frame of reference. Nonetheless, do not neglect to give information about safe sexual practices, proper therapy, and potential consequences of her or her partner's actions. Occasionally, one must stress that certain behaviors may affect not only the patient herself but also her offspring (e.g., drug use, infection). The caregiver must be prepared to consider marital difficulties, sexual dysfunction, or AIDS.

The intitial examination should be a general physical examination, including a breast examination and the gynecologic examination. If the patient is not performing breast self-examination regularly and properly, plans should be made for her to receive instruction in the correct method.

Arrange the examining room to reassure the patient that her privacy is not being invaded via the doors or windows. For example, even the view of a beautiful garden can be distressing to the patient who fears that a gardener may suddenly appear during the examination.

The patient should be undressed completely and draped for examination. Sensitivity to the patient mandates the she not be placed in the dorsal lithotomy position to await the caregiver's arrival. This position may soon become uncomfortable and may leave her feeling vulnerable.

When performing the pelvic examination, have a female nurse or attendant present, if possible, for assistance and to provide a measure of comfort and reassurance to the patient. Explain the procedure before performing any maneuver, and give advance warning of any procedure that may be uncomfortable or even painful. Use instruments deftly. Warn the patient that you will be doing a vaginal or rectal examination before insertion of fingers or instruments. Warming the hands and instruments is a small act that indicates interest in the patient's comfort.

The teenage patient responds to open, honest dialogue. Parent(s), if present, should be asked to wait in the reception room unless the patient (not the parent) insists otherwise. It may be difficult to obtain an accurate history from the teenager because there may be a high degree of misinformation or misunderstanding of the function of sexual organs and the ter-

minology. However, open-ended questions should provide the examiner with a fairly accurate estimate of the patient's knowledge and understanding. Never underestimate the ability of a teenager to deny reality—for example, she may not believe that she is pregnant despite amenorrhea, gross weight gain, and a protuberant abdomen.

Although the elderly patient may no longer be concerned with reproductive function, she may be faced with residual genitourinary problems as a result of pregnancies and aging. Her risk of cancer of the breast and reproductive organs is increased. She is at risk for osteoporosis and fractures. She may still enjoy an active sexual life or may have little or no interest in sexual activity. She may have lost her mate and be lonely and regard the visit to the health care provider as a social event. Alternatively, she may have financial worries that cause her to delay seeking medical help in hope that the problem will go away. Since a higher percentage of the female population is living 20, 30, and even 40 years past menopause, the percentage of gynecologic care required by these patients has increased dramatically. Thus, it is essential to be knowledgeable about the many problems that arise in the geriatric patient.

When the health care provider recommends a particular course of therapy, she or he must be prepared to offer alternatives, to accept a second opinion, and, above all, to allow the patient the opportunity to participate in decision making. There may be instances when financial concerns dictate the best course of action under the circumstances without compromising care. Care providers must recognize, without affront, that what they would choose for themselves may be unacceptable to the patient because of her lifestyle or financial and social situation.

Thus, the patient must be respected as an individual. The expression of that respect must continue through the development of a partnership with the patient to improve her health and well-being.

NORMAL DEVELOPMENT OF THE UROGENITAL SYSTEM

The female generative and urinary systems develop in close association. However, clarity requires a description of the evolution of each system separately, with mention of important relationships and incorporations during development.

The development of the female urogenital system is well

under way by the *fourth week after implantation*, following the sequence shown in Figures 1-1, 1-2, 1-3, and 1-4. The external female genitalia evolve after about the seventh week.

Origin of the Ovaries

During the *fifth to sixth week*, primitive sex cells migrate from the yolk sac into the dorsal mesodermal genital ridge, destined to become the ovary. The sex cells, each likely to develop into a *primordial ovum*, then occupy the outer portion (*cortex*). Soon they are surrounded by smaller, moderately differentiated cells that will develop into *granulosa cells*. Cells just peripheral to the granulosa cells, which appear less differentiated but have otherwise similar stromal elements, will evolve into *theca cells*. Nondescript fibroblasts support a delicate vasculature. Coarse connective tissue and large blood vessels characterize the *medulla*. By the *eighth week*, the ovary is a recognizable organ (Fig. 1-5).

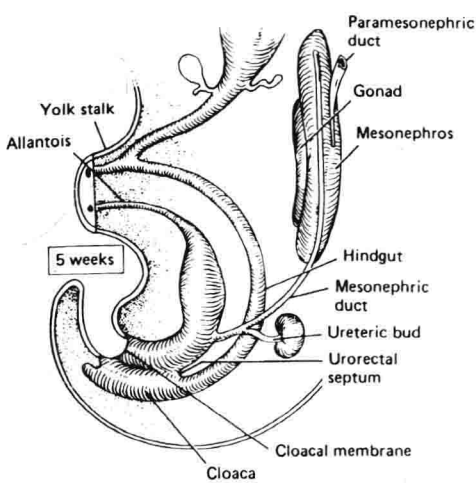

Figure 1-1. Left-side view of urogenital system and cloacal region before subdivision of cloaca by urorectal septum. Position of future paramesonephric duct is shown (begins in the sixth week). Gonad is in the indifferent stage (sexually undifferentiated).

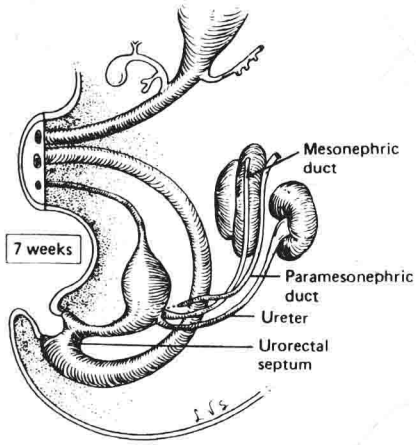

Figure 1-2. Left-side view of urogenital system. Urorectal septum nearly subdivides the cloaca into the urogenital sinus and the anorectal canal. Paramesonephric ducts do not reach the sinus until the ninth week. Gonad is sexually undifferentiated. Note incorporation of caudal segment of mesonephric duct into urogenital sinus (compare with Fig. 2-6).

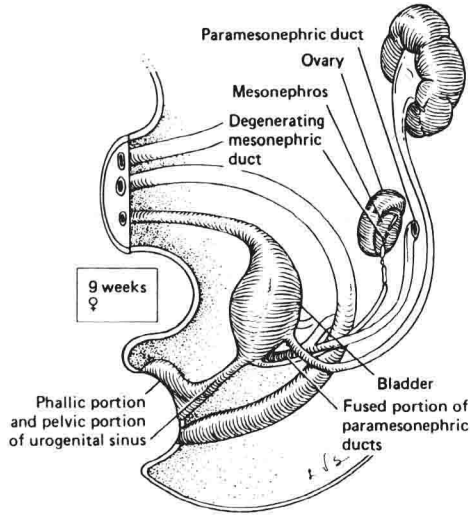

Figure 1-3. Left-side view of urogenital system at an early stage of female sexual differentiation. Paramesonephric (mullerian) ducts have fused caudally (to form uterovaginal primordium) and contacted the pelvic part of the urogenital sinus.