GYNECOLOGY

PRINCIPLES AND PRACTICE

FOURTH EDITION

ROBERT W. KISTNER, M.D.

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Preface to First Edition

THIS WORK is designed both as a textbook and as a general reference book of gynecology to meet the needs of undergraduate medical students, young practitioners of gynecology, and specialists in this field. The format of each chapter is similar, the purpose being to provide a uniform and organized approach to the understanding of multiple disease processes of each organ of the female genital tract. Thus, in each chapter the embryology, anatomy, and histology are correlated with specific malformations. Morphologic variations are correlated with physiologic alterations. Recent advances in the diagnosis and therapy of infectious processes are described in detail. Particular emphasis has been given to the relationship of premalignant to malignant neoplasms, and methods for the prophylaxis of certain tumors are suggested. Because of the importance and increasing incidence of endometriosis a separate chapter on this disease is included. Particular emphasis has been placed on hormonal therapy, and details of management outlined.

Because of my interest in the practical endocrinologic aspects of gynecology, a chapter is devoted to steroid therapy. In this chapter an attempt is made to obviate many of the difficulties of administration associated with the new synthetic preparations. I have included (1) a brief résumé of basic steroid chemistry, (2) a summation of the pharmacology and physiology of androgens, estrogens, and progesterone, together with a similar discussion of the synthetic progestins, and (3) a discussion of proved and proposed indications for the use of these steroids, with specific contraindications and optimum dosage.

The observations and opinions expressed in this text summarize the sum and substance of the teaching and practice at the Free Hospital for Women during the past 15 years. This hospital was opened on November 2, 1875, and has been in continuous operation since that time. It is the only remaining specialty hospital in the United States whose primary objective is the diagnosis and treatment of medical and surgical diseases of the female.

The Free Hospital for Women became internationally known because of the *Textbook of Gynecology* written by Dr. William P. Graves, formerly Professor of Gynecology at Harvard Medical School. Although the fourth and last edition of Graves' textbook appeared in 1928, since that time a multiplicity of original and important contributions has been published by the members of the staff. Outstanding among these have been the innumerable works of Drs. George and Olive Smith concerning the measurement and metabolism of ovarian steroids and gonadotropic hormones during the menstrual cycle, the period of conception, and subsequent pregnancy. During the years 1938 through 1957 Drs. John Rock and Arthur T. Hertig accomplished their monumental studies on the earliest stages of human growth following fertilization. From 1928 through 1958 Dr. Rock directed intensive study and research projects relating to the etiologic factors in infertility. The pathogenesis of carcinoma in situ of the cervix and its relationship to invasive carci-

noma have undergone thorough investigation and evaluation by Drs. Paul Younge, Arthur T. Hertig, and Donald G. MacKay. During the past seven years the synthetic progestational agents have been subjected to extensive clinical investigation in specific gynecologic disorders such as endometriosis and endometrial carcinoma.

In preparing a work of this type, material must be gathered not only from the author's personal experience, but to a still greater extent from the work of others. I have, therefore, attempted to include the important observations of numerous authors who have published data concerning the clinical material at the Free Hospital for Women. From the great number of publications consulted there have been several to which I have had frequent recourse, both for new material and for corroboration of personal observations. I must, therefore, express a general acknowledgment of indebtedness to Drs. George and Olive Smith, Arthur T. Hertig, Christopher J. Duncan, Paul A. Younge, Donald G. MacKay, and John Rock. I have also drawn on the writings of the late Joe V. Meigs and Langdon Parsons, both former residents at the Free Hospital for Women. In writing the sections on the relationship of endocrinology to gynecology I have received the greatest assistance from the excellent works, *Endocrine and Metabolic Aspects of Gynecology* by Joseph Rogers, *Human Endocrinology* by Herbert S. Kupperman, and *The Endocrinology of Reproduction*, edited by Joseph T. Velardo. The reader is referred to these publications for additional and specific details.

I am indebted to Mrs. Edith Tagrin for the excellent illustrations and to Mr. Leo Goodman and Dr. Robert Ehrmann for the photomicrographs. Dr. Arthur T. Hertig and Dr. Hazel M. Gore have also kindly given permission to reproduce many of their excellent photomicrographs previously published in *Tumors of the Female Sex Organs*, published by the Armed Forces Institute of Pathology. The student is advised to refer to these fascicles for a complete survey of the pathology of tumors of the female genital tract.

I also wish to acknowledge a deep indebtedness to the tireless fingers and indefatigable efforts of my secretaries, Mrs. Ann Gregory Metzger, Mrs. Constance M. Rakoske, Mrs. Linda Angelico, and Mrs. Rachel Markiewicz. Valuable assistance has been given to me by the Administrator of the Free Hospital for Women, Miss Lillian Grahn. Finally, the courtesies of the staff of Year Book Medical Publishers have made the final preparation of this manuscript a pleasant task.

ROBERT W. KISTNER

Preface to Fourth Edition

THE FIRST EDITION of this textbook, published in 1964, was designed to meet the needs of medical students, interns, and residents in obstetric and gynecologic training as well as established specialists in this field. The observations and opinions expressed in the first edition summarized the sum and substance of the teaching and practice at the former Free Hospital for Women, a teaching hospital of the Harvard Medical School. Subsequently, the Free Hospital for Women joined the Boston Lying-In Hospital to form the Boston Hospital for Women. In 1980, a new hospital was constructed, adjacent to the Harvard Medical School, which included the Boston Hospital for Women, the Peter Bent Brigham Hospital, and the Robert Breck Brigham Hospital. Despite this amalgamation, the Department of Obstetrics and Gynecology has retained its unique identity and the fourth edition of this textbook accurately reflects the principles and practice of gynecology in our new institution, The Brigham and Women's Hospital.

Twenty-five years ago I wrote the entire first edition, mostly from lectures given to junior and senior medical students. Mr. Fred Rogers, then Vice President of Year Book Medical Publishers, was responsible for the inception and development of this book since he indicated to me a need for an updated gynecologic textbook. Dr. William P. Graves, formerly Professor of Gynecology at Harvard Medical School, had published a textbook of gynecology but the fourth and last edition appeared in 1928. From 1930 until 1960 numerous original and important contributions had been published by the members of the staff of the Free Hospital for Women. The first edition included all of the important publications of George V. Smith, John Rock, Arthur Hertig, Paul A. Younge, and Donald G. McKay. My own contributions concerning the newly developed oral contraceptive, induction of ovulation, and hormonal therapy for endometriosis received full attention. A major criticism of the first edition was its rather parochial approach. In retrospect, the criticism was accurate.

Therefore, the second edition, published in 1971, was expanded to include advances in the rapidly advancing subspecialty areas of endocrinology and fertility, cytogenetics, conception control, and oncology. For the third edition, published in 1978, each chapter was either thoroughly updated and revised or completely rewritten. Dr. Donald P. Goldstein added new material to his already authoritative chapter on trophoblastic tumors and Dr. C. Thomas Griffiths revised the chapter on the ovary, with particular emphasis on changes in surgical and chemotherapeutic approaches.

The fourth edition of *Gynecology: Principles and Practice* introduces many new authors in an effort to provide the reader with the most authoritative and updated material in the various subspecialties of gynecology. Dr. Thomas Leavitt has revised and rewritten the chapter on diseases of the vulva and Drs. Ross Berkowitz and Donald Goldstein have updated the chapter on trophoblastic tumors. In addition, Dr. C. Thomas Griffiths and Dr. Berkowitz have combined to produce a com-

pletely new chapter on diseases of the ovary.

Dr. Phillip Stubblefield, an authority on conception control, has reviewed the vast amount of new investigation in this field and has written an excellent in-depth chapter providing the clinician with an overview of this controversial and perplexing subject. The chapter on infertility has been rewritten by Dr. Stephen Evans and the chapter on habitual abortion by Dr. Veronica Ravnikar. Both Dr. Evans and Dr. Ravnikar are members of the Section on Endocrinology and Infertility at the Brigham and Women's Hospital and both have contributed important research and clinical advances in this field. Dr. Ravnikar has also rewritten the chapter on endocrine aspects of gynecology.

I asked Dr. Robert Barbieri to write the chapter on endometriosis. Dr. Barbieri, also a member of the Section on Endocrinology and Infertility of the Brigham and Women's Hospital, has contributed important data concerning the hormonal management of this disease, specifically in regard to the physiologic action of Danocrine. He offers new insight into this disease particularly in the field of physiology and therapy. Dr. Barbieri has also revised the chapter on steroid therapy.

Drs. Howard Goodman and Robert Knapp have rewritten the chapter on the cervix, providing the reader with current data concerning diagnosis and treatment of premalignant and malignant diseases. Dr. Robert Shirley has updated his chapter on diseases of the breast in which he describes important diagnostic criteria and suggests methods for selection of appropriate therapy for both benign and malignant lesions.

Drs. Wayne A. Miller and Richard W. Erbe have accomplished the difficult task of placing in proper perspective the relationship of chromosomal abnormalities to gynecologic disorders. They have added significant data that has become available during the past decade to their excellent chapter.

Dr. Isaac Schiff, a member of the Section on Endocrinology and Fertility of the Brigham and Women's Hospital, has conducted extensive research in the pathophysiology of the menopause during the past decade and has initiated several ongoing studies to determine the effects of estrogen on osteoporosis and other degenerative diseases associated with this entity. I asked Dr. Schiff to revise and rewrite the chapter on menopause for the fourth edition.

The increase in the number and variety of venereal diseases during the past decade has necessitated the introduction of a new chapter on pelvic infections. Simultaneously, there has been a surge of new antibiotics and treatment regimens that have rendered previous therapy obsolete. This chapter provides the clinician with a therapeutic approach that is both timely and effective. It has been written by Dr. Ruth Tuomala, a recognized authority in the field of antibiotic therapy.

I wish to acknowledge the cooperation and assistance of the staff of Year Book Medical Publishers, in particular Mr. James Ryan. Finally, I am deeply indebted to my secretary, Mrs. Marlene Selig, for her assistance in the preparation of this edition.

ROBERT W. KISTNER, M.D.

Contents

CHAPTER ONE

Introduction

THE SPECIALTY OF gynecology has rapidly expanded during the past three decades to encompass disciplines of surgical, medical, endocrinologic, and obstetric endeavor. Prior to this time gynecology remained subservient to the field of general surgery—a stepchild with but limited possibilities in both clinical and laboratory investigation. The union of gynecology with obstetrics brought about an awareness of the all-inclusive problem of "femaleness," together with a reawakening of interest in basic scientific principles of human reproduction. It is now not sufficient for the physician to limit his scope to the surgical aspects of pelvic disorders since extirpation, although simple and expedient, may seriously alter the reproductive capacity and physiologic standards of the female.

A medical school gynecology lecture from only a decade and a half ago is already an antiquated exercise by today's standards and knowledge. Like it or not, the modern gynecologist is becoming more and more an endocrinologist.

The rapidly expanding field of reproductive biology and its clinical application to the problems of endocrinology, steroid chemistry, immunology, and gynecology can no longer be contained within the confines of a single subspecialty.

In addition to major advances within the factual foundations of gynecology, there are changes in the character of clinical practice. The modern gynecologist spends less and less time in the operating room and is rapidly becoming engulfed in a wave of relatively healthy patients whose major concerns are cancer prevention, conception control, hormonal replacement, and infertility.

Each of these entities is intrinsically related to, or dependent upon, endocrine homeostasis. Since endocrinologic maneuvers are an integral part of the day-to-day activities of the gynecologist, it is necessary that he be provided with the reasons for his therapeutic approach.

It is imperative, therefore, that medical students and residents appreciate the intimate relatfonships between metabolic disorders or aberrations of endocrine function and the genital tract. The importance of psychosomatic influences on the behavior of woman must be recognized and the intimate correlation of pregnancy, delivery, and the puerperium with both structure and function must be emphasized. An attempt will be made in this text to bring into clear focus the basic anatomic, physiologic, and pathologic facets of most gynecologic disorders, and, perhaps more important, each of these will be considered as alterations of "femaleness." Therapy to preserve, restore, or improve this desideratum will be outlined.

A word of caution regarding the intimacy of gynecology is perhaps in order for the beginner. Many of the problems that bring the patient to the physician concern subjects or body areas that she would rather forget than discuss. The patient who visits her physician frequently for respiratory or intestinal ailments is likely to neglect a vulvar lesion that may be, or develop into, cancer. The gynecologist must at the outset be both sympathetic and understanding but tactfully capable

of eliciting details that might be omitted purposely by the patient. He must be an attentive and interested listener and, in addition, should retain a reassuring and indulgent attitude. A brief explanation of the causes of symptoms together with logical reasons for the performance of diagnostic tests or surgery will help to diminish or dispel fears and misconceptions of most patients. Numerous visits are occasioned by cancerphobia and many more by episodes of vague, fleeting pain for which no explanation is evident. It is in such situations that much may be accomplished by reassurance and frank discussion.

THE HISTORY

Good history-taking is probably more closely related to the art than to the science of medicine. Yet it is important that a methodical approach be utilized so that important omissions may be avoided. A printed form, while sometimes cumbersome and at times inadequate, will serve this purpose in most instances and is essential for the student.

The chief complaint should be stated in the exact words of the patient, and its duration should be included. The present illness, which follows, is merely an expansion of the chief complaint. The account presents a chronologic sequence of events from the onset of illness up to the time of examination. It is not sufficient, however, merely to list such all-inclusive phrases as "irregular periods," "flowing on and off" or "trouble with periods." The clinician should determine the exact dates of the last normal menstrual period and the previous period. Bleeding intermenstrually should be described as to time of occurrence, duration, and the presence or absence of pain and/or clots. It will often be found that the abnormal bleeding complained of is simply staining due to endometrial breakdown at the time of ovulation. Similarly, the skips and delays in periods at the time of menopause may be easily explained on the basis of irregularities in ovulation. Bleeding postcoitally or after a douche suggests a cervical polyp or malignancy. Postmenopausal bleeding is caused by malignancy of the cervix, uterine corpus, or ovary in about one half of all patients. Exacting detail in the description of bleeding is therefore most important.

Frequently a diagnosis is suggested by the first few sentences of the chief complaint. This may be misleading since "snap" diagnoses are likely to result. Subsequent complaints are glossed over, or a careful review of other systems is not completed. Should the physical and pelvic examination be equally sketchy, the gynecologist often becomes the victim of embarrassing "surprises" at the operating table. A common situation is the discovery of carcinoma or diverticulitis of the sigmoid colon when a fibroid or left ovarian mass was expected. The era of the master surgical technician has passed, and for the complete and successful treatment of the patient a combination of judgment, reason, skill, and humanity is desirable. An unnecessary operation by the most adept surgeon may still result in death from infection, pulmonary embolism, or unrecognized cardiac disease.

Previous hospitalizations are of interest, especially if pelvic surgery has been performed or radium and/or x-ray therapy has been administered. The location of the hospital, the name of the surgeon, and the date of surgery should be noted and a transcript of the patient's chart obtained. This will avoid misinterpretation of what the patient says was done or what was removed.

The past history merits consideration because of its bearing on the choice of anesthesia and on the advisability of certain surgical procedures. Obviously a patient with chronic bronchitis and a persistent cough should not be hurried to the hospital for an operation to cure stress incontinence until her pulmonary difficulties have improved. A simple checklist of serious infectious, pulmonary, cardiac, and renal diseases seems adequate in most cases, with elaboration when necessary.

The family history is recorded primarily to determine the incidence of diseases such as

diabetes, cancer (especially breast), hypertension, or coronary occlusion. Occasionally, important entities such as a familial polyposis will be discovered in this fashion.

A history of the patient's social background is important. It should include her birthplace, national descent, religion, occupation, and previous marriages, if any. The age, occupation, religion, and health of the husband should also be obtained.

The systems review should include all pregnancies, listed in order by year, with the length of gestation, type of delivery, fetal weight, and complications, if any. Long periods of infertility, either primary or secondary, suggest endometriosis or pelvic inflammatory disease. In the patient who has been pregnant five or six times in the same number of years there may be a history of pelvic pain, sacral backache, dyspareunia, and vaginal discharge. This suggests a diagnosis of "married women's complaint" and is usually causally related to a uterine retroversion with pelvic vascular congestion and a diseased cervix.

The dates and normality of the last and previous menstrual periods should be accurately recorded. If this is neglected, intrauterine pregnancies, tubal pregnancies, and threatened or incomplete abortions will not be given serious consideration in the differential diagnosis. On occasion, the patient will deliberately falsify a recent period or neglect to describe its true length or character. A careful pelvic examination and visualization of the cervix will usually aid the examiner in recognizing these deceptions.

Pain associated with the menstrual flow should be classified as to site, duration, intensity, and nature. Midline, suprapubic, first day (or 24 hours before flow), dull, crampy pain is characteristic of primary (idiopathic) dysmenorrhea. The pain of endometriosis is, by contrast, sharp, aching, constant, lateral or deep in the pelvis around the rectum and seems to get progressively worse month after month. Pain on defecation or dyspareunia suggests cul-de-sac or rectosigmoid endometriosis or possibly blood or pus in the pelvic cavity due to ectopic pregnancy or pelvic inflammation.

The review of systems is frequently of aid in establishing a gynecologic diagnosis or in the elimination of bowel or urinary tract disease. The proximity of bladder, uterus, and rectosigmoid and the inability of most patients to pinpoint their symptoms make this survey worthwhile.

The usual data regarding age of onset and interval and duration of menstrual periods are necessary requisites of every gynecologic history. The age of onset of the menses will vary, depending on climate and genetic background. In the United States the first period usually occurs between ages 11 and 16 years, the average about 13 years. The clinician should not become alarmed, however, if menses occur two years earlier or later than these extremes. Thus it has been noted that Jewish women menstruate sooner than Gentiles, and brunettes usually start about a year or so before blondes. Vaginal bleeding occurring in a child aged 6 or 8 years should, however, be investigated with the same thoroughness as amenorrhea in a woman of 20 years. An extensive endocrinologic survey is not indicated for primary amenorrhea before age 18 years.

An interval of 28 days between periods is time-honored but not exact, and in normal women the interval will vary between 26 and 32 days. The singular characteristic of menstrual (i.e., postovulatory) bleeding is rhythmicity. This distinguishes it from the marked irregular flowing of anovular origin. Patients who have maintained rhythmic cycles of 21 days, 35 days, or even 60 days should not be considered abnormal, although they cannot be called "average."

The average duration of menstruation is between three and four days with an average blood loss of 25 to 70 ml. A good deal of variation is noted in both of these variables since some normal women bleed for one or two days and others six to seven days, with extremes of blood loss from 10 to 200 ml. The presence of clots may mean the absence of a fibrinolysin (found normally in menstrual dis-