PREOPERATIVE AND POSTOPERATIVE TREATMENT

Edited by

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Second Edition, Illustrated

PHILADELPHIA AND LONDON
W. B. SAUNDERS COMPANY
1947

Reprinted November, 1946, and June, 1947

MADE IN U. S. A.

PRESS OF
W. B. SAUNDERS COMPANY
PHILADELPHIA

"Surgery has been made safe for the patient; we must now make the patient safe for surgery."

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PREFACE TO SECOND EDITION

Many important advances in surgery have been made since this book was first published in 1937. These advances have been accompanied by a significant change in the philosophy of surgical treatment. An outstanding characteristic of this change has been the greatly increased utilization of applied physiology, biochemistry, bacteriology and pharmacology in all the various phases of the management of surgical conditions. A natural development of such a basic trend has been a greatly increased emphasis upon the importance of carefully planned and rationally applied pre- and postoperative treatment.

To follow the remarkable and rapid advances in surgery and to record the parallel changes in preoperative and postoperative treatment has been most interesting, although at times difficult. It has again been my privilege and good fortune to have the assistance of many of my friends and colleagues who have written chapters dealing with subjects which lay within their special fields of interest. This assistance is even more highly appreciated in view of the fact that many of these contributors wrote their chapters while serving with the Armed Forces and since have revised them to date of publication. Those who remained at home merit equal appreciation for having completed theirs while carrying an unusual burden of work. I am deeply indebted to Dr. Harold A. Zintel who, after I entered the Service, went over the manuscript with a critical eye, as well as contributing the chapter dealing with the stomach and duodenum.

It has been necessary to rewrite in its entirety nearly every chapter that appeared in the previous edition. This has, in turn, required that the book be completely reset. Several chapters and sections of chapters have been added by new contributors. This material includes: Physical Medicine in Surgical Practice; Pre- and Postoperative Care in Gynecology; Pre- and Postoperative Care in Surgery of the Stomach and Duodenum; Intestinal Obstruction; Nutrition in Surgery; Surgical Risk in Pregnancy; Thrombophlebitis; Vitamin K Therapy; and Emergency Care of Cranial Injuries.

To the publishers I wish to express my most sincere appreciation and thanks for their never-failing cooperation and courtesy and, above all, for their great patience.

ROBERT L. MASON

Framingham, Massachusetts

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CHAPTER I

INTRODUCTION

Successful surgical treatment has come to mean not only the removal of diseased structures, but also the restoration of normal function. Such a concept requires, on the part of the surgeon, an understanding of the pathologic physiology which the surgical condition occasions. With the benefit of this knowledge, he is not only able to plan operative procedures which will restore normal function, but, equally important, he is able partially to overcome, before operation, the ill effects which the condition has brought upon the organism as a whole. Likewise, he is able to institute measures, following the operation, which will more speedily return the patient to normal physiologic equilibrium. In this way, morbidity and mortality may be reduced to a minimum.

PRELIMINARY CONSIDERATIONS

The classification of operations into "emergency" and "elective" has undergone considerable modification during recent years. Strictly speaking, there are now few emergency operations in the sense that the patient must be rushed to the operating room and subjected to immediate surgery. From the viewpoint of the time at which operation should be performed, Blalock has comprehensively divided surgical cases into four groups:

"(1) True emergencies in which immediate operation is advisable, such as uncontrolled and massive internal or external hemorrhage; (2) patients in whom an early operation is indicated, but in whom dehydration, peripheral circulatory failure or other systemic disturbances should be corrected before operation is undertaken (some of the instances of acute appendicitis and of intestinal obstruction with strangulation belong to this group); (3) patients in whom an operation is necessary but in whom there is no immediate emergency and all the time that is required may be used in preparing the patient properly; and (4) patients in whom an operation is considered advisable but is not absolutely necessary, a so-called operation of election."*

With respect to their capacity to withstand proposed operative procedures, patients may be placed, generally speaking, in two large groups, (1) the good risk, and (2) the poor risk.

The *poor risk* patient may be so classified for the following reasons: the effects of disordered function brought about by the surgical condition for which he seeks relief, a naturally poor physical equipment, impaired function resulting from previous disease, or a combination of these circumstances. To guide him safely through a serious operation requires careful and thorough preparation as prophylaxis against postoperative derangement of organs and systems already damaged, the institution of protective measures during the operation, judicious choice of anesthesia, careful

* Blalock, Alfred, Operative Surgery (Bancroft). D. Appleton-Century Company, 1941, p. 157.

judgment in determining the type and extent of the surgical procedure, and painstaking postoperative care.

The *good risk* patient, on the other hand, is one who presents himself for treatment of a condition which as yet has had but little general debilitating effect and who, otherwise, gives every evidence of being in good physical condition.

Exact classification of these patients is not always easy. Many appear to be good risks at first; but on further examination prove to have coincident conditions which place them in the handicapped group. Others require special care or departure from the usual procedure of preparation. Infants and children demand individual attention. Old people require particular consideration. Only after careful examination and a survey of the evidence can a true estimate be formed of the patient's condition and his capacity to withstand the proposed operation. A surgeon of sound judgment will visualize the disturbed physiology which the operation will occasion, match this against the preoperative status; and, finally, in the light of his conclusions, proceed in a manner that will best conform to the specific needs of the individual.

Obviously, the preparation of the patient for operation cannot be discussed as a general topic. It will vary with the nature and the type of operation; the general status of the patient—good or poor risk; and whether or not particular handicaps exist.

GENERAL INVESTIGATION

Every patient about to undergo a major operation, whether he is regarded as a good risk or a poor risk, is entitled to thorough study and examination. It is not enough to diagnose qualitatively, as it were, the lesion from which he suffers. It is necessary to determine its extent and the damage that may have been brought about by perversion of normal function. The more complete the picture, both clinically and from the standpoint of pathologic physiology, the greater the probability of averting postoperative complications.

In the majority of instances, a carefully taken history, a thorough physical examination and routine laboratory studies afford adequate information. If these data demonstrate no significant departure from the normal, and if the patient's condition shows that he does not require special preparation, further delay of the operation is to no purpose.

If special preparation is required, it should be carried out in as short a period as possible and in a manner which does not disturb radically the patient's personal routine of living. Complicated, time-consuming tests are for the most part unnecessary; and prolonged periods of investigation are to be avoided. The ability to select intelligently the proper laboratory tests necessary for biochemical and physiologic evaluation of the patient is a coefficient of the surgeon's clinical ability. The practice of ordering routinely a number of laboratory procedures, x-ray examinations, and similar tests with the hope that in the "sifting" of the results, a positive picture will shape itself, is to be deprecated. In the case of the handicapped patient, especially, it is necessary to avoid the wear and tear of exhausting investigations and vaguely indicated therapy.

Clinical History.—The importance of a complete and accurate history, both in the diagnosis of surgical conditions and the evaluation of operative

risk, cannot be overemphasized. A detailed account of the *present illness* is first secured. This is followed by a systematic survey of all the systems. In recording the latter information, a printed history form may be used to advantage. However, the filling-in of such a form must not be taken as an end in itself. In the evaluation of the patient's general condition and operative risk, the information secured from "a review of the systems" is indispensable and should carefully be reviewed when the final summary of the case is made.

The details of any *previous operative procedure* are of importance. If possible, a copy of the original description of the operation should be secured. The occurrence of any postoperative complications following a previous operation should be ascertained. The history of any past illness is of value. Habits, including the character of the diet, amount of sleep, use of alcohol, tobacco, and so on s hould be carefully recorded. An abnormal tendency to bleed, either in the p atient or in other members of his family, sensitivity to various foods, idio syncrasy to morphine or other drugs, and other such are further details w hich, although not included in a survey of the systems, are significant in anticipating postoperative difficulty.

Physical Examination.—Surgical diagnosis at times is not difficult and accordingly a purely local examination is too often made. A general physical examination is never to be omitted, regardless of how obvious the surgical condition may appear. Coincident conditions, often surgical, are discovered in this way, but what is more important, departures from normal in the various systems are brought to light. These findings may change the entire management of the case.

The complete general physical examination is best made at the time of the original examination. If for any reason it is incomplete, or if a considerable period has elapsed before admission to the hospital for operation, a second thorough examination should be made. Although it is not necessary at this point to describe at length the conduct of a general physical examination, a few important methods of procedure may be emphasized. The patient must be completely disrobed. In the interests of modesty a sheet or suitable loose garment is provided, and the various regions of the body exposed successively as the examination proceeds. Good lighting (preferably daylight) is essential. Much can be learned from inspection.

The general appearance, the state of nutrition and hydration, color of skin and mucous membranes, evidences of loss of weight, and so on are carefully noted. The pulse rate and blood pressure are recorded. The examiner should develop a routine method which will prevent overlooking any detail. The usual and most satisfactory method is to proceed by regions, that is, to begin with the head and neck, including the mouth and pharynx, followed by examination of the thorax, abdomen, extremities and genitalia. A general examination is then made of the nervous system and sense organs in order to locate any lesions or disturbances. The findings are recorded as the examination proceeds, and elaborated upon later, if necessary. Again a printed form is convenient for the purpose. Adequate space must be provided, however, for description of abnormal findings.

Laboratory Procedures.—In every surgical case adequate preoperative investigation requires a certain amount of laboratory study quite apart from the tests necessary to establish the diagnosis. "Routine laboratory work," as it is called, is so often regarded as an end in itself that the phrase

has come to have an unfortunate connotation. However, when correlated with the clinical history and physical findings, the data derived from the various tests form an indispensable part of the general preoperative survey.

Urinalysis.—The urine is examined for the presence of sugar, acetone, diacetic acid and albumin, and a microscopic examination is made of the sediment. If these tests show certain departures from normal, further examinations are indicated. If, for example, sugar is found in the urine in quantities of more than a trace, a quantitative examination of a twenty-four hour specimen, a determination of the fasting blood sugar content, and a glucose tolerance test are in order. When the examination of the urinary sediment from a female patient suggests urinary infection, another specimen should be obtained by catheter (with the usual aseptic precautions), since the presence of vaginal secretion in the ordinary specimen may lead to erroneous interpretation. When the history, together with the urinary findings (albumin, casts, red or white cells in sediment) suggests renal damage, and in all cases in which hypertension is present, the efficiency of the kidney function is evaluated by a urinary concentration test, a phenolsulphonephthalein two-hour test, and by determination of the non-protein or urea content of the blood.

Blood.—Examination of the blood includes a determination of the percentage of hemoglobin, a red cell count, a white cell count, and an examination of the blood smear, noting the presence or absence of achromia, the size and shape of the erythrocytes, the presence of any abnormal white cells and a differential count. The bleeding and coagulation time are determined if there is a history of easy bruising, prolonged bleeding from trivial wounds, a familial tendency to bleed, and so on.

In patients chronically ill, especially those with a gastro-intestinal disorder, in the undernourished or those with a history of dietary inadequacy, and in most aged persons, a determination of the serum protein level should be done. If the patient is dehydrated, however, the level of the blood protein should not be determined until after the dehydration has been overcome.

A Wassermann or other blood test for the presence of syphilis should be made routinely. With the many facilities now available for making these tests, the procedure is inexpensive and the results reliable.

Ordinarily, blood chemistry determinations are not necessary in the preliminary routine examination except as indicated above. More extensive blood chemistry investigation is, of course, indispensable in the diagnostic study and preoperative preparation of patients with jaundice, obstruction of any portion of the gastro-intestinal tract, genito-urinary conditions, and so on. These conditions will be discussed under appropriate chapter headings.

Summary of Findings.—When the history and physical examination have been completed, and the reports of the laboratory procedures have been received, the surgeon writes a summary of the case including his impression of the patient, and his positive findings, both from the history and the physical examination. This is followed by a diagnosis, final or tentative, the proposed treatment, and a careful estimation of the patient's operative risk. Suggestions for further examination and for additional laboratory work, if indicated, complete the summary.