

HERSHENSON • OBSTETRICAL ANESTHESIA

THOMAS



# Obstetrical Anesthesia

## ITS PRINCIPLES and PRACTICE

*By*

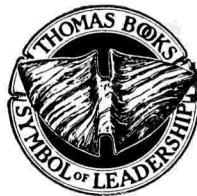
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# **Obstetrical Anesthesia**

**ITS PRINCIPLES AND PRACTICE**

*This work is affectionately  
dedicated to*

*Judith S. and David B.  
Hershenson*

## Foreword

*"In this very hour while I am speaking how many human creatures are cheated of pangs which seemed inevitable as the common doom of mortality; and lulled by the strange magic of the enchanted goblet, held for a moment to their lips, into a repose which has something of ecstasy in its dreamy slumbers. The knife is searching for disease, the pulleys are dragging back dislocated limbs. Nature herself is working out the primal curse which doomed the tenderest of her creatures to the sharpest of her trials, but the fierce extremity of suffering has been steeped in the waters of forgetfulness, and the deepest furrow in the knotted brow of agony has been smoothed forever."*

**S**O WROTE Oliver Wendell Holmes in his characteristically flowery phraseology; but verbiage aside, there can be no doubt that surgical anesthesia still transcends the many gifts that medicine has bestowed upon mankind. To "the tenderest of her creatures" general anesthesia has been a particular blessing, but it has also presented a special problem, for at the time of birth not only does it influence the mother but it affects the infant also. Moreover, most women in labor suffer no disease; they are performing a natural function; however, a catastrophe at such a time is outstandingly bitter. The author has dealt with these situations in a sympathetic and thorough manner. He has set forth criteria covering in each case the selection of the anesthetic agent, its pharmacological action, its method of administration, and how each possible emergency should be met. In particular he has laid stress upon cooperation between the obstetrician and the anesthetist, a point which is too often neglected.

This book is scholarly, scientific and complete. Not only is it the most significant treatise upon obstetrical anesthesia that has yet appeared, but it is also of equal value as a textbook on surgical anesthesia in general.

FREDERICK C. IRVING, M.D.  
William Lambert Richardson  
Professor of Obstetrics, Emeritus  
Harvard University

## Preface

**T**HERE IS a growing awareness on the part of the medical profession as to its responsibilities in nurturing the science and art of anesthesiology. The interest in the applications of the discipline of anesthesiology to the development of surgery has grown steadily in recent decades. The role of the anesthetist's part in the medical and hospital teams during World War I, and especially during World War II and the recent Korean War, has emphasized the importance of his contribution as an integral member of the surgical team. The potential applications of the scientific anesthetist to the solution of the many problems presented in the field of obstetrics, in particular, is receiving increasing interest and attention.

This book is an attempt to present the fundamental facts underlying careful clinical observation during the conduct of anesthesia for the purposes of safer obstetrical practice. The agents that are used to produce pain relief, unconsciousness, and muscle relaxation are among the most powerful drugs known in clinical pharmacology. It is the author's hope that this volume may stimulate greater interest in the study and the better solution of the many problems confronting the anesthesiologist and the obstetrician.

*Obstetrical Anesthesia* has been designed for the student of medicine, the practicing physician, and the obstetrician in order to clarify the purposes of the anesthesiologist. At the present time, the medical student, the general practitioner, the obstetrician-in-training, the occasional anesthetist, and others are called upon to administer anesthetics to the obstetrical patient. Inasmuch as there are very few well-trained obstetrical anesthesiologists, in terms of the number of other clinicians, much of the practice of this segment of anesthesiology is carried on by various individuals who are often not cognizant of the principles underlying sound practice in this medical field. It is hoped that this book will be able to offer a rational answer to many of the problems presented to all of those persons who have the responsibility of improving the practice of anesthesiology as applied to the obstetrical patient.

The general interest in obstetrical anesthesia does not lie in its purely scientific aspects but in its relation to safe deliverance. The concentration of an anesthetic drug in the tissues depends essentially upon the dose administered; however, this is influenced by the rate of absorption, the rate of excretion, or the rate of conversion into some neutral derivative. The basic objective in anesthesia is to cause optimal concentration of the agent in the nervous system without involving the cardiocirculatory and respiratory functions. The clinical observation of the potency, toxicity, effect on tissue irritability, and specific pharmacological actions of a drug upon the various body functions is essentially a form of clinical biological assay. It is obvious that in the management of the pregnant patient, the skill and judgment of the obstetrician and anesthesiologist are of more significance than the anesthetic agent employed.

Most drugs administered to the mother are transmitted transplacentally to the fetus. Drug transmission from mother to the fetus may take place also by way of the amniotic fluid and the umbilical vessels. These facts are to be borne in mind since a dose of a drug that is insufficient to be toxic to the mother may have serious effects upon uterine activity and the fetus. Drugs inhibiting uterine function during labor, or inducing uterine hypotension, are to be avoided because they lead to the production of fetal hypoxia.

General principles of clinical physiology and clinical pharmacology have been stressed wherever possible. Efforts have been made to indicate what appears to be safe clinical practice in obstetrical anesthesia. The object is to assist good obstetrics in bringing every gravid woman effectively through her labor, delivery, and post-partum period with a living and healthy child.

The bibliographic reference lists at the end of each chapter do not purport to be exhaustive. They do not include all the sources that I have consulted, but only those that were found enlightening on some particular matter or contained more comprehensive bibliographic references. An effort has been made to include those references that would permit a student to further extend his information. The form in which the references appear, the author's name, title, source, volume, page, and year are adequate to identify the original sources without difficulty.

Many excellent publications provide a rational discussion of the various agents and technics that are used for obstetrical anes-



thetia. Some of these discussions are found in anesthesiological and obstetrical journals, others are reported in general medical, biological, chemical and many other publications. No matter how extensive the study of the literature, the beginner in obstetrical anesthesiology cannot accomplish much without the personal contact of a good teacher. The author hopes that this work may supplement good bedside teaching of obstetrical anesthesia.

B.B.H.

## Acknowledgments

**I**T is a pleasure to record my indebtedness and gratitude to many friends who have helped in the preparation of this book. I am grateful to Dr. Duncan E. Reid, Obstetrician-in-Chief at the Boston Lying-in Hospital and the William Lambert Richardson Professor of Obstetrics at Harvard University for his encouragement to undertake this work and for his valuable suggestions. Whatever may be of value in this work has been derived from the stimulating instruction of three of my teachers, Dr. Frederick C. Irving, Dr. Ralph M. Waters and Dr. E. A. Rovenstine.

I claim responsibility for any deficiencies in this work and would welcome any corrections and constructive comments. It is a pleasure to express my appreciation to Dr. F. C. Irving for having read the manuscript and for his helpful criticisms. Dr. Arthur E. Guedel kindly permitted me to use his data which he established during earlier work of his own.

I am happy to have this opportunity to express my appreciation of the help of the staff at the Boston Lying-in Hospital. This work gave me an opportunity to have had pleasant discussions with many of my colleagues at the Boston Lying-in Hospital and the Harvard Medical School. Dr. Franklin F. Snyder, Dr. Clement A. Smith, Dr. Stewart H. Clifford, Dr. Edward A. Edwards, Dr. Charles C. Roby, and Dr. George W. Curtis are to be mentioned particularly. The author desires to convey his appreciation to Dr. William B. Ober for having read the manuscript and for the preparation of the illustrations on pulmonary pathology in Chapter VII. The author wishes to thank Dr. Herbert G. Peterson, Jr. for having read the roentgenologic films on aspiration pneumonitis.

I am grateful to Miss Shirley B. Lamson for the secretarial work performed in the preparation of the manuscript. The majority of the illustrations are the work of Mrs. E. Tagrin, medical illustrator, and her artistry is obvious. The staff of Charles C Thomas, Publisher, has been helpful in many ways. Mr. Payne E. L. Thomas, has been particularly helpful, patient, and encouraging in the preparation of this work for publication.

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