

INFERTILITY

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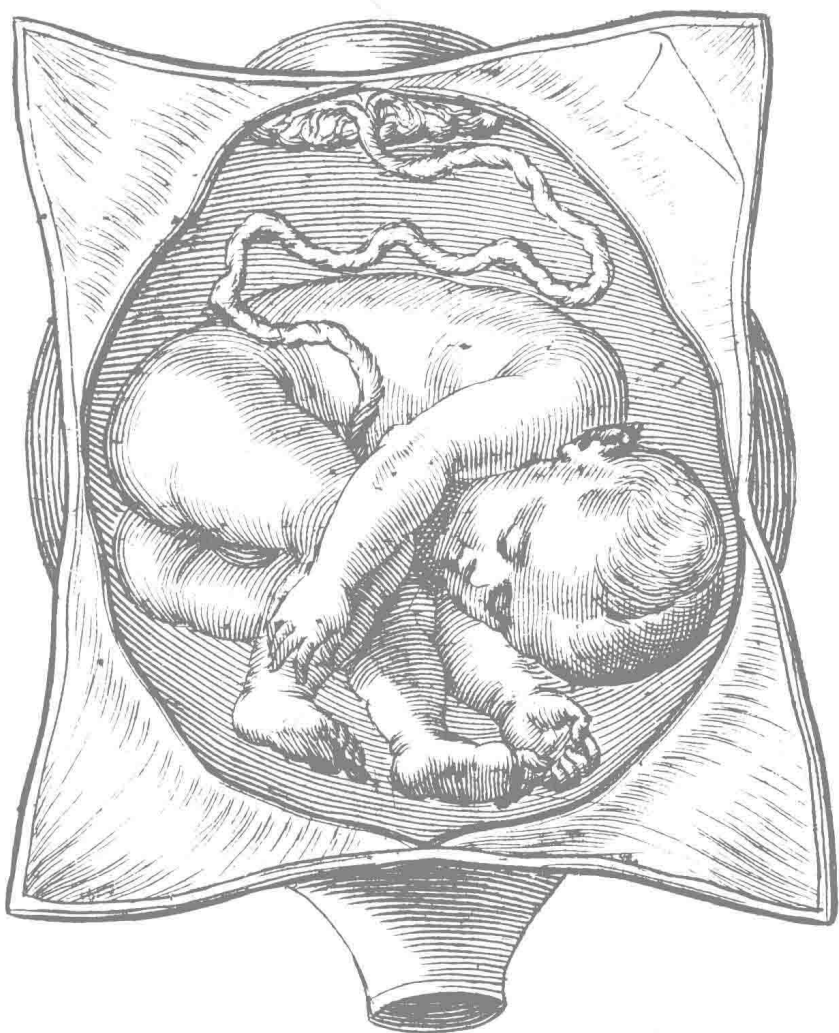
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An artist's conception of a normal fetus at term.

Woodcut from "Traites des Maladies des Femmes Grosses" by Francois Mauriceau, Paris, 1681.

PREFACE

During the past fifteen years considerable progress has been made in the field of infertility diagnosis and management. It is perhaps a paradox that much of this increased knowledge has come about because of Western medicine's preoccupation with the search for a means to control reproduction. As a result, we have achieved new insights into the physiologic mechanisms involved in reproduction, and we have found better methods for measuring physiologic changes in reproductive health and disease. To these advances can be added improvements in the utilization of endoscopic and surgical techniques, in the diagnosis and treatment of infections and endometriosis, and in the treatment of hormonal disorders.

During this period, too, through workshops and conferences and in journals and texts, these latest advances have been made available to physicians; an outstanding example being the two volumes of *Progress in Infertility*, edited by Drs. Jan Behrman and Robert Kistner. Much-needed as these publications are, they do not offer an overall view of infertility diagnosis and management. Although the articles are usually written by the outstanding specialists in the field, who set forth their particular interest with scientific precision, for those primarily interested in the *practice* of infertility, there is often more fine detail than can be absorbed or utilized. The causes of infertility are often treated as single, isolated units and the physician-reader's view tends to become fragmented.

The main purpose of this book is to provide the practicing physician, the resident, and the interested medical student with an overview that will help guide him or her in caring for patients. This text combines the new with the old. I have attempted to evaluate the significance and potential of some new achievements in the light of the perspective of older literature. I hope not only to provide a sequential unity to the recent advances in the field, but to synthesize this progress with the many significant accomplishments of the past.

This holistic approach, reflected through my 25 years of experience in infertility diagnosis and management, is consistent with what I believe to be the very essence of the management of the infertile couple: the need to look at the couple as a whole throughout the course of treatment, and to

avoid concentrating on one partner, or one organ system within one partner. To emphasize further this sense of unity, the chapters are presented, insofar as possible, in the order in which the physician might approach the problem of the infertile couple.

In order to relate many of the concepts to the active practice of the specialty, I have included extensive, hitherto unpublished, data gleaned from the records of 1000 consecutive couples who sought treatment for infertility from 1971 to 1975.

To Joan Biggers I give special thanks for her help in reviewing and evaluating the records of these 1000 infertility couples. To the research fellows who worked with me during the past three years and who helped analyze the data for many of the chapters, I owe a debt of gratitude: Drs. Augusto Chong, William Patton, Elwyn Grimes, Coleman Feore, Shahila Raj, and Walid Idriss. But since this is one man's view of an enormous field, there is necessarily a degree of selection and prejudice, for which the responsibility is completely mine.

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M. L. T.

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PART I

Introduction

1

Historical Review

The problem of infertility has been with us as long as the recorded history of mankind. While the ancient civilizations of Babylonia, Persia and Greece had their goddesses of fertility, fertility rites, and a whole body of superstition surrounding the process of birth, early Western physicians were also cognizant of mechanical barriers to conception. Roman and Byzantine gynecologists related sterility to obesity; they used pessaries to treat sterility associated with retroverted uteri.¹ Soranus of Ephesus, who practiced medicine in first century Rome during the reign of the Emperors Trajan and Hadrian, contributed greatly to our knowledge of obstetrics and gynecology; he described the pelvic organs, the process of labor, the uses of vaginal speculae and methods for contraception.¹ He noted that the most favorable time for conception was shortly after the menstrual period, and he felt that staying in bed after coitus would improve fertility.²

The Middle Ages contributed little new knowledge either to medicine in general or to infertility in particular, since the ancient manuscripts preserved in the monasteries were still being consulted. While the rise of scientific knowledge in the 17th century brought isolated contributions to medicine, little was added to the understanding of the problems of infertility. In the 18th century, artificial insemination with husband's semen was carried out by John Hunter for hypospadias, and Lazzaro Spallanzani showed that spermatozoa were essential to fertilization. In 1827, Carl Ernst Von Baer described the mammalian ovum.

The investigation of late 19th century scientists widened the horizons of embryology, physiology and cellular pathology and established the foundations of modern medicine. But the modern era of infertility may be said to have begun only in this century with the studies of Huhner on sperm survival in the cervical

mucus,³ the test for tubal patency described by Rubin in 1920,⁴ the development of the modern concepts of menstruation by Allen and Doisy in 1924,⁵ and a description by Moench in 1931 of semen characteristics associated with infertility and fertility.⁶ These studies, encompassing the areas of the cervix, the endometrium, the ovulatory factor, and the male factor, remain today the backbone of diagnosis and therapy.

Of still great significance today, although proposed by Meaker in 1934,⁷ is the recognition of the complex nature of infertility diagnosis and treatment. He wrote about the "multiplex nature of causation" and "the division of responsibility between male and female partners." These two principles and their utilization in practice still continue to provide the greatest impetus to success in diagnosis and therapy.

Although the last 35 years have brought improvements in diagnostic techniques with x-ray and endoscopy, in hormonal evaluation and hormone treatment, and in the medical and surgical treatment of endometriosis and surgery for tubal blockage, the problem of infertility still has not been lifted completely out of the realm of magic and superstition. Ancient rituals persist; even today, fertility rites are practiced in many of the developed and underdeveloped countries of the world. Statuettes of pregnant females or of males with outsized phalluses are used as fertility fetishes and symbols in Africa, Central America, Indonesia and Polynesia (Fig. 1-1). Modern endocrinology confirms the folkloric



Fig. 1-1. Fertility dolls from the South Seas and Africa.

practice of Hungarian peasant women who bite their own afterbirth to continue their fertility, and of Chinese women who are given dried placenta to eat to improve their fertility.² In these cases, it is we who have learned from the old mid-wives' practices, for placenta contains chorionic gonadotropin, one of the hormones utilized in the present day treatment of ovulatory failure.

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2

The Speciality of Infertility

Medical articles for the laity, as well as journals of medical education, deplore the modern tendency towards specialization. Much can be said for the criticism that the superspecialist, focusing his attention upon one aspect, or one organ system of his patient, often loses sight of the whole person. But the onus of overspecialization cannot be levelled at the physician who devotes himself or herself to the care of the infertile couple, for this physician is concerned not only with the female organs of reproduction, but with the interplay of other endocrine systems as well as systemic disease upon these organs, with the influences of her emotional state, with the fertility of her husband, and with the all important relationship between the two partners.

Indeed, the specialty of infertility may be unique in medicine, because in no other medical situation does a combination of factors in two individual human beings—each essentially healthy and each perhaps capable of producing children with another partner—produce a pathologic condition. A physician interested and trained in all aspects of this complex human and medical situation is best qualified to unravel the causes, to institute indicated therapy, and to bring the problem to a successful solution.

Because the defect in one organ system is usually not a straight forward black-and-white situation, and because of the frequent occurrence of multiple factors, a fertility specialist must constantly weigh the significance of findings in one system against the findings in another. This is especially true in the evaluation of the male factor, where a sharp line of normality does not exist.

It is ideal if one physician can so develop a relationship with both husband and wife that the concept of a “partnership” is established. In investigating and treating the important aspects of sexual adjustment such co-operation is

especially vital. In the management of therapy, as well, one physician is also more effective. Multiple deficiencies or defects in both partners can be treated simultaneously; this not only increases the chances of bringing the problem to a successful solution, but insures that a thorough workup and course of therapy have been undertaken within a shorter period of time and with a minimum of emotional and economic strain.

Few physicians have had the opportunity to receive comprehensive training in endocrinology, surgery, psychiatry, marriage counseling, and male infertility; or even with such training, often do not have the time to devote to all of these aspects of the infertile couple. A fertility clinic, where specialists pool their particular knowledge for diagnosis and therapy, is an improvement over the independent obstetrician-gynecologist working with a urologist. Even in a clinic, however, the concept of the couple as a whole can be lost unless one of the specialists is considered the *personal* physician of the couple.

The fertility specialist or the clinic may be the ideal, but most patients with an infertility problem will seek help from an obstetrician-gynecologist. In addition to being acquainted with the usual infertility tests, he or she should be competent in the field of gyn-endocrinology. He or she should be aware of the emotional implications of what the patient reveals, and of what he or she tells the patient. If the obstetrician-gynecologist cannot care for the male, a close liaison should be maintained with a urologist who is interested and trained in male fertility.

When two physicians are taking care of the separate partners, both physicians must understand the relative nature of individual fertility conclusions. They should have a good working relationship and consult each other frequently. This will avoid a situation where the urologist, who considers a twenty million sperm count the lower limit of normal, may report independently to the husband that all is well. The gynecologist, noting a poor postcoital test, may report to the wife that her husband is "at fault." The husband, who has no way of judging the relative significance of findings, is all too ready to accept the favorable opinion of his own doctor rather than that of his wife's physician, who, in addition to disputing his manhood, is also possibly sending him the bills! Such a "rivalry" between husband and wife, each with his or her own physician, can be avoided by the physicians sharing their findings and their implications. By pooling the results of their therapy, the two can insure that when the relative fertility of the two individual partners can be increased simultaneously, the overall fertility of the couple will be augmented.

3

The Science and Art of Infertility

To start off with the observation of facts, to draw from them predictions which are verifiable by other facts; that is the modest endeavor of scientists today.

So wrote Bernfeld about scientific objectivity.¹ In infertility management, in addition to the many verifiable scientific advances, of which Bernfeld would have approved, many empirical approaches have been utilized by physicians for decades. They have been employed so extensively that they are now an integral part of the physicians' armamentarium, so culturally ingrained that it is extremely difficult to eradicate them. When Buxton and Southam evaluated fertility practices in 1958, they were rightfully skeptical of many procedures they felt lacked scientific objectivity.² Yet, I feel there are still areas of fertility investigation and treatment which are of value despite the fact that they appear to be beyond the scope of precise scientific evaluation. I agree that some practices do need to be discarded, but others I would place in the category of the *art of infertility* management.

One form of art, I feel, is to utilize approaches in diagnosis or therapy which appear to be effective, but which as yet do not conform to the rigidities of statistical evaluation. Into this category fall such procedures as: the evaluation of immune factors; the relative importance of a mycoplasma infection; the use of homologous insemination; and the diagnosis and treatment of the inadequate luteal phase. While these methods appear to be effective in individual cases, the complex nature of infertility often makes it difficult to set up objective studies which will give statistically valid answers. *In rejecting methods just because they do not conform to statistical evaluation, we may be rejecting approaches which may be of some benefit.*

Art in the management of infertility also brings us far beyond where pure science can take us—to a consideration of emotional factors, particularly the relationship between the patient and the fact of his or her infertility, how this affects him or her as an individual and, ultimately, how this affects the outcome of the problem, itself.

Our management of the couple, as we help them work their way through these problems, makes up the very essence of the art of infertility.

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