

Third Edition

Progress in Infertility

*Edited by S.J. Behrman, M.D.,
Robert W. Kistner, M.D., and
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Preface

Progress in infertility has been dramatic during the past decade. Change occurred in virtually all aspects of infertility, providing innovative testing in the search for a diagnosis and sophisticated instrumentation for improved treatment, both leading to better pregnancy results. A change in attitude toward infertility also took place. No longer was the typical patient a shy woman inquiring about pregnancy and willing to be put off. Rather, infertile couples, well read in the field of infertility, appeared in the medical office, prepared to do whatever was necessary to have a child of their own. The physician's attitude also changed, by necessity, as he or she offered the couple a thorough investigation in the search for a diagnosis and aggressive treatment with the expectation of success.

The third edition of *Progress in Infertility* is written for residents in obstetrics and gynecology, and in urology. It is meant also for the medical student interested in infertility. Most important, it is designed to offer the practicing physician interested in infertility an up-to-date text in this area. Like the earlier editions, it strives to establish the standard of infertility practice in the 1980s. Levels of care increasingly significant in American medicine have become important in infertility practice, since it is the general practitioner or obstetrician/gynecologist who initiates the discussion and search for a cause in most infertility patients. More complicated testing may require advice from an infertility specialist and use of an andrology laboratory. Should the initial treatment begun by the primary physician not succeed, the patient's care should then be continued by a specialist in reproductive endocrinology or microsurgery. All involved physicians should have an up-to-date perspective of infertility practice. Things have changed! The male with oligospermia does not have to accept artificial insemination donor (AID), nor does the couple with unexplained infertility have to "give up" or adopt.

The woman with oviductal disease must be carefully evaluated and microsurgery balanced against in vitro fertilization (IVF). Laser laparoscopy has altered the surgical approach to endometriosis, and Pergonal has become a household word as well as a successful form of ovarian stimulation. Infertile couples have read about these advances in articles written by physicians in popular magazines, as well as journals designed specifically for infertile individuals. Physicians should be aware; their patients are likely to be well informed.

The 11 sections of the third edition cover four basic areas of infertility. The first involves an increasingly frequent abnormal tubal and uterine factor. Pelvic infection has become epidemic in the United States during the past decade, as it had in Sweden a decade earlier, forcing recognition of the significance of chlamydial infection and the risk of intra-uterine device usage in the younger woman. Its effects called forth a plethora of surgery for fimbrial and cornual disease. The introduction of the operating microscope into gynecology, pioneered by Swolin, completely changed infertility surgery as microsurgical techniques permitted meticulous repair of distorted oviducts and allowed the surgeon to compete with the inflammatory process. Operative laparoscopy and hysteroscopy in an outpatient setting advanced as procedures utilizing the laser became practical and successful. Adhesion prevention matured into a recognized scientific interest providing actual data to support or refute clinical impressions. The carbon dioxide laser was also successfully utilized with the operating microscope and competed with microelectrosurgery. Diethylstilbestrol exposure was found to affect cervix, uterus, and oviduct; all are discussed and treatment is outlined. Ectopic pregnancy became increasingly common as the diagnosis became easier and conservative treatment simpler. Endometriosis persisted, became better classified, and was better treated. Each of these subjects is dealt with separately.

The second area, involving hormonal control of ovulation, acquired new significance as ovarian hyperstimulation was used in nor-

mally ovulating, as well as anovulatory, women. Ovulation induction with clomiphene, human chorionic gonadotropin, human menopausal gonadotropin (Pergonal), and sometimes Parlodel, and gonadotropin releasing hormone (GnRH) became practical considerations. The availability of hormone assays of ovarian and adrenal steroids, as well as hypothalamic and pituitary peptide hormones, permitted careful documentation of abnormalities of the menstrual cycle. This contributed to improved understanding of polycystic ovarian disease and certainly to the ability to detect hyperprolactinemia. The multiple factors contributing to elevated prolactin became astonishing. The clinician also increasingly detected the need for supplemental progesterone in patients with an abnormal luteal phase. Endocrine treatment changed dramatically as normally ovulating females underwent ovarian stimulation with high doses of clomiphene, Pergonal, and GnRH with virtual disappearance of a hyperstimulation syndrome, and careful monitoring with daily ultrasound and serum estradiol became commonplace.

The third area has been the most exciting: in vitro fertilization. Thought to be a figment of Aldous Huxley's imagination, the test-tube baby became a reality during the early 1980s. Georgeanna and Howard Jones pioneered the advance in the United States, and their program is discussed in Chapter 23. Indeed, a complete section of chapters involving IVF has been presented. The basic IVF program, clinical approach to ovarian hyperstimulation, and laboratory aspects are taken up individually. Major research involving ovarian stimulation appeared to explain the ability to recruit and select multiple mature oocytes. This is discussed as is the future of cryopreservation of embryos outlined by an Australian pioneer.

Last is the area of andrology. The sperm laboratory and subsequent treatment of the sperm factor has finally become a recognized specialty. In vitro fertilization has forced the gynecologic surgeon (laparoscopist), endocrinologist, and andrologist to work together closely. It is now common to find a Ph.D. con-

sulting room next to the physician's office. The andrology laboratory is usually immediately adjacent to the infertility clinic. Closer communication has been necessary to permit success in intrauterine insemination, gamete intrafallopian transfer (GIFT), and IVF procedures and has permitted better selection of sperm testing, including sperm antibody, hamster, and mucus penetration assays. The importance of modern techniques of sperm analysis is now accepted with closer attention to sperm kinetics. The concept of capacitation took on new meaning as sperm washing and incubation in a carbon dioxide incubator became commonplace. Increased interest in AID and early success with intrauterine insemination (IUI) permitted a choice of treatment in oligospermia, as did the success of IVF in the affected patients. Sperm antibodies in both men and women finally became a recognized cause of infertility and were treated. Finally, microsurgical technique was found to be successful in treating male as well as female infertility.

A few subjects, such as genetic defects and unexplained infertility, seem to be orphans but are nonetheless significant. In fact, the concept of treating couples with unexplained infertility by IUI and IVF is one of the major advances since the second edition of this text appeared.

The editors wish to thank all the contributors to this text for the thoroughness of their manuscripts. All are recognized authorities in their specific fields; their observations reflect both personal and clinical experience and an appreciation of advances in basic science. Opinions of the editors have been sparsely added and are identified.

The advances in infertility since the second edition have been truly astonishing. It is our hope that this trend will continue.

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Notice

The indications and dosages of all drugs in this book have been recommended in the medical literature and conform to the practices of the general medical community. The medications described do not necessarily have specific approval by the Food and Drug Administration for use in the diseases and dosages for which they are recommended. The package insert for each drug should be consulted for use and dosage as approved by the FDA. Because standards for usage change, it is advisable to keep abreast of revised recommendations, particularly those concerning new drugs.

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Evaluation of Infertility in the 1980s

S. J. BEHRMAN
GRANT W. PATTON, JR.

The number of married couples unable to conceive has climbed from 15 percent to 18 to 20 percent in the past decade. The infertility specialist now encounters the results of inflammatory disease of the oviduct far more often than in the past. Low sperm counts have become commonplace, and abnormal semen-mucus interaction is a frequent consideration. Increasingly, the infertile couple may both be highly productive members of society, successful in all but their ability to conceive. In spite of a different emphasis in the 1980s, however, the approach to the infertile couple has not changed. More than ever, the approach to infertility should involve evaluation of the couple as a unit. Rarely will a successful pregnancy be achieved when one focuses on a single etiologic factor.

A different American lifestyle has contributed to the increased number of infertility patients seen by the physician in this decade. Foremost is the change in society's attitude toward sex and marriage. Restraints on sexual intercourse outside of marriage all but disappeared during the late 1970s as use of the birth control pill and intrauterine device (IUD) became commonplace in teenage women. Legalization of abortion also contributed to this freedom. Coincident with that change was a virtual epidemic of venereal disease, often unrecognized, resulting in increased pelvic inflammatory disease and subsequent tubal sterility. This pattern of sexual freedom, increased pelvic inflammatory disease, and subsequent infertility had occurred a decade earlier in Europe and had been well documented by gynecologic specialists in Lund, Sweden, but it went unheeded in the United States.

Marital patterns also changed during the past decade as women entered the work force in large numbers. The number of families in which both members work has recently been estimated to be 65 percent. These couples have often delayed childbearing, and more