During the past 25 years, gynecologic endoscopy has evolved into a major surgical tool used to treat a multitude of gynecologic indications. Laparoscopy and hysteroscopy are the most common surgical procedures performed by gynecologists today.

This book catalogs the full spectrum of laparoscopic and hysteroscopic procedures in gynecology, oncology, and infertility treatment. The authors describe different techniques in minimally invasive surgery and review the evidence-based medical literature supporting these techniques. The book includes sections on the management of complications during laparoscopy, ranging from vascular injury to bladder or bowel injury. It contains expanded chapters on laparoscopic anatomy, infertility procedures, operative hysteroscopy, pelvic floor repair, and laparoscopic management of gynecologic malignancy. High-quality color pictures supplement many of the presentations.

The three editors have pioneered some of the most important laparoscopic procedures used today. Their work has opened up the field of operative endoscopy for surgeons worldwide. The contributors have extensive experience in laparoscopy and hysteroscopy, and many of them have established some of the surgical techniques discussed.

Dr. Camran Nezhat is Clinical Professor of Obstetrics and Gynecology at the University of California, San Francisco, and Stanford University Medical Schools and Fellowship Director of the Center for Special Minimally Invasive and Robotic Surgery. He has served as president of the Society of Laparoendoscopic Surgeons. He is coauthor of *Endometriosis: Advanced Management and Surgical Techniques* (1995) and has published articles in numerous journals.

Dr. Farr Nezhat is Professor and Director of the Gynecologic Minimally Invasive Surgery, Robotic, and Gynecologic Oncology Fellowship Program in the Department of Obstetrics and Gynecology at Mount Sinai School of Medicine. He is coauthor of *Endometriosis: Advanced Management and Surgical Techniques* (1995) and has published extensively.

Dr. Ceana Nezhat is Director of the Nezhat Medical Center in Atlanta and Associate Clinical Professor of Obstetrics and Gynecology at the Stanford University School of Medicine. He is coauthor of *Endometriosis: Advanced Management and Surgical Techniques* (1995) and has published articles in multiple journals.
NEZHAT’S OPERATIVE GYNECOLOGIC LAPAROSCOPY AND HYSTEROSCOPY

Third Edition

EDITED BY

Camran Nezhat
Stanford University Medical School, Palo Alto

Farr Nezhat
Mount Sinai Hospital, New York

Ceana Nezhat
Nezhat Medical Center, Atlanta
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Contributing Authors

OSCAR J. ABILEZ, MD
Postdoctoral Fellow
Department of Vascular Surgery
Division of Vascular Surgery
Stanford University Medical Center
Palo Alto, CA

NADEEM R. ABU-RUSTUM, MD, FACOG
Associate Professor
Department of Obstetrics and Gynecology
Weill Medical College of Cornell University
Director, Minimally Invasive Surgery
Gynecology Service, Department of Surgery
Memorial Sloan-Kettering Cancer Center
New York, NY

ARNOLD P. ADVINCUA, MD
Associate Professor
Director, Minimally Invasive Surgery Program & Fellowship
Department of Obstetrics and Gynecology
University of Michigan Medical Center
Ann Arbor, MI

CRAIG T. ALBANESE, MD, MBA
Professor and Chief
Department of Surgery, Division of Pediatric Surgery
Stanford University Medical Center
John A. and Cynthia Fry Gunn Director of
Surgical Services
Lucile Packard Children’s Hospital
Stanford, CA

CHANDRAKANT ARE, MD, FRCS, FACS
Assistant Professor
Department of General Surgery
University of Nebraska Medical Center
Omaha, NE

CHARLES J. ASCHER-WALSH, MD
Assistant Professor
Department of Obstetrics, Gynecology, and Reproductive Science
Mount Sinai School of Medicine
New York, NY

AMR M. A. AZIM, MD, MSc, FACOG
Fellow
Center for Reproductive Medicine and Infertility
Weill Medical College of Cornell University
New York, NY

BULENT BERKER, MD
Associate Professor
Department of Obstetrics & Gynecology
Ankara University School of Medicine
Ankara, Turkey

NICOLA BERLANDA, MD
Department of Obstetrics and Gynecology
San Paolo Hospital
University of Milan
Milan, Italy

STEFANO BIANCHI, MD
Department of Obstetrics and Gynecology
San Paolo Hospital
University of Milan
Milan, Italy

ERIC J. BIEBER, MD, MSHCM
Chairman
Department of Obstetrics and Gynecology
Geisinger Health Systems
Danville, PA

WILLIAM H. BRADLEY, MD
Division of Gynecologic Oncology
Department of Obstetrics and Gynecology
Mount Sinai School of Medicine
New York, NY

MICHAEL BRODMAN, MD
Professor and Chairman
Department of Obstetrics, Gynecology, and
Reproductive Science
Mount Sinai School of Medicine
New York, NY

PHILIP G. BROOKS, MD
Clinical Professor
Department of Obstetrics and Gynecology
David Geffen School of Medicine at UCLA
Attending Physician
Department of Obstetrics and Gynecology
Cedars-Sinai Medical Center
Los Angeles, CA
Contributing Authors — ix

LINDA C. GIUDICE, MD, PhD, MSc
The Robert B. Jaffe MD Professor and Chair
Department of Obstetrics, Gynecology, and Reproductive Sciences
University of California, San Francisco
School of Medicine
San Francisco, CA

MARK H. GLASSER, MD
Chief
Department of Obstetrics and Gynecology
Kaiser Permanente Medical Center
San Rafael, CA

OLIVIER GOÉAU-BRissonnière, MD, PhD
Department of Vascular Surgery
Ambrôise Pare University Hospital
Boulogne-Billancourt, France

JEFFREY M. GOLDBERG, MD
Head, Division of Reproductive Endocrinology and Infertility
Department of Obstetrics and Gynecology
Cleveland Clinic
Cleveland, OH

JAMIE A. GRIPO, MD, PhD
Professor
Director, Division of Reproductive Endocrinology
Department of Obstetrics and Gynecology
New York University School of Medicine
Attending Physician
Department of Obstetrics and Gynecology
Tisch Hospital
New York, NY

Wm. LERoy HEINRICHS, MD, PhD
Past Chair
Department of Obstetrics and Gynecology
Stanford University Medical Media and Information Technologies (SUMMIT)
Stanford University School of Medicine
Stanford, CA

THOMAS HERZOG, MD
P & S Alumni Professor of Clinical Obstetrics and Gynecology
Director, Division of Gynecologic Oncology
Department of Obstetrics and Gynecology
Columbia University Medical Center
New York, NY

GEORGIOS E. HILARIS, MD
Clinical Instructor
Department of Obstetrics and Gynecology
Center for Special Minimally Invasive Surgery
(Laparoscopic and Robotic)
Stanford University Medical Center
Palo Alto, CA
Gynecologic and Oncologic Surgery
Paradeisos Amarousion
Athens, Greece

SENZAN HSU, MD
Clinical Fellow
Center for Special Minimally Invasive Surgery
Stanford University Medical Center
Palo Alto, CA

THOMAS H. S. HSU, MD
Assistant Professor
Director, Laparoscopic and Minimally Invasive Surgery
Department of Urology
Stanford University School of Medicine
Palo Alto, CA

KEITH ISAACSON, MD
Director, Minimally Invasive Gynecological Surgery Unit and Infertility
Newton-Wellesley Hospital
Associate Professor of Obstetrics and Gynecology
Harvard Medical School
Boston, MA

MARY JACOBSON, MD
Clinical Assistant Professor
Department of Obstetrics and Gynecology
Stanford University School of Medicine
Palo Alto, CA

THOMAS M. KRUMMEL, MD, FACS
Professor and Chair
Department of Surgery
Stanford University School of Medicine
Susan B. Ford Surgeon in Chief
Lucile Packard Children’s Hospital
Palo Alto, CA

KEITH L. LEE, MD
Resident
Department of Urology
Stanford University Medical Center
Palo Alto, CA

CHARLES LEVENBACK, MD
Professor
Department of Gynecologic Oncology
The University of Texas M. D. Anderson Cancer Center
Houston, TX

SHARYN N. LEWIN, MD
Fellow
Gynecologic Oncology
Memorial Sloan-Kettering Cancer Center
New York, NY

ANTHONY A. LUCIANO, MD
Director of Center for Fertility and Women’s Health, P.C.
Director of Endoscopic Surgery
The Center for Advanced Reproductive Services
Professor, Obstetrics and Gynecology
University of Connecticut School of Medicine
Farmington, CT
Contributing Authors

JAVIER F. MAGRINA, MD
Professor
Department of Gynecology
Director, Gynecologic Oncology
Barbara Woodward Lips Professor
Mayo Clinic Arizona
Scottsdale, AZ

PAUL M. MAGTIBAY, MD
Assistant Professor and Chairman
Department of Gynecology and Gynecologic Surgery
Mayo Clinic Arizona
Scottsdale, AZ

ALI MAHDAVI, MD
Clinical Fellow and Instructor
Division of Gynecologic Oncology
Department of Obstetrics and Gynecology
University of California at Irvine Medical Center
Orange, CA

ANDREA MARIANI, MD
Assistant Professor
Department of Gynecology
Mayo Clinic Rochester
Rochester, MN

AMIN A. MILKI, MD
Professor
Director, Reproductive Endocrinology and Infertility
Department of Obstetrics and Gynecology
Stanford University School of Medicine
Palo Alto, CA

MIGUEL A. MOGHADAM, MD
Clinical Research Fellow
Reproductive Medicine and Advanced Laparoscopic Surgery
Center for Special Minimally Invasive Surgery
Palo Alto, CA

STEPHANIE N. MORRIS, MD
Clinical Instructor
Harvard Medical School
Associate Medical Director, Minimally Invasive Gynecologic Surgery Center
Newton-Wellesley Hospital
Boston, MA

CAMRAN NEZHA'T, MD, FACOG, FACS
Fellowship Director, Center for Special Minimally Invasive and Robotic Surgery
Stanford University Medical Center
Clinical Professor
Department of Obstetrics and Gynecology
University of California at San Francisco School of Medicine
Departments of Obstetrics and Gynecology and Surgery
Stanford University School of Medicine
San Francisco/Palo Alto, CA

CEANA NEZHA'T, MD, FACOG, FACS
Fellowship Director
Atlanta Center for Special Minimally Invasive Surgery and Reproductive Medicine
Atlanta, GA

FARR NEZHA'T, MD, FACOG, FACS
Professor of Obstetrics and Gynecology
Chief, Minimally Invasive Surgery and Robotics
Fellowship Programs
Division of Gynecologic Oncology
Department of Obstetrics, Gynecology, and Reproductive Science
Mount Sinai School of Medicine
New York, NY

MARIO NUTIS, MD
Clinical Fellow
Center for Special Minimally Invasive Surgery
Stanford University Medical Center
Palo Alto, CA

KUTLUK OKTA'Y, MD, FACOG
Professor of Obstetrics and Gynecology
Medical Director, Institute for Fertility Preservation
Center for Human Reproduction
New York, NY

TANJA PEJOVIC, MD, PHD
Assistant Professor
Department of Obstetrics and Gynecology
Oregon Health & Science University
Portland, OR
<table>
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<tr>
<td>Jean Picquet, MD</td>
<td>Division of Vascular and Thoracic Surgery University Hospital of Angers Angers, France</td>
</tr>
<tr>
<td>Mark R. Preston, MD</td>
<td>Director, Center for Female Continence and Minimally Invasive Pelvic Surgery The GYN Center for Women's Health Waterbury, CT Clinical Instructor Department of Obstetrics and Gynecology University of Connecticut School of Medicine Farmington, CT</td>
</tr>
<tr>
<td>Pedro T. Ramirez, MD</td>
<td>Associate Professor Director of Surgical Research and Education Department of Gynecologic Oncology The University of Texas M. D. Anderson Cancer Center Houston, TX</td>
</tr>
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<td>Mahmood K. Razavi, MD</td>
<td>Director, Center for Clinical Trials and Research St. Joseph Vascular Institute Orange, CA</td>
</tr>
<tr>
<td>Jim W. Ross, MD, PhD</td>
<td>Director, Center for Female Continence Salinas, CA Clinical Professor Department of Obstetrics and Gynecology David Geffen School of Medicine University of California, Los Angeles Los Angeles, CA</td>
</tr>
<tr>
<td>Sophia Rothberger, MD</td>
<td>Resident Department of Obstetrics and Gynecology Oregon Health and Science University Portland, OR</td>
</tr>
<tr>
<td>Naghme Saberi, MD</td>
<td>Assistant Clinical Professor Department of Obstetrics and Gynecology University of California at Irvine School of Medicine Irvine, CA</td>
</tr>
<tr>
<td>Daniel S. Seidman, MD</td>
<td>Professor Department of Obstetrics and Gynecology Sackler School of Medicine, Tel-Aviv University Tel-Aviv, Israel</td>
</tr>
<tr>
<td>Babac ShahMohamady, MD</td>
<td>Clinical Assistant Professor Department of Obstetrics and Gynecology University of Miami School of Medicine Miami, FL</td>
</tr>
<tr>
<td>Andrew A. Shelton, MD</td>
<td>Assistant Professor Department of Surgery Stanford University School of Medicine Palo Alto, CA</td>
</tr>
<tr>
<td>Yukio Sonoda</td>
<td>Assistant Attending Surgeon Gynecology Service, Department of Surgery Memorial Sloan-Kettering Cancer Center New York, NY</td>
</tr>
<tr>
<td>Tatum Tarin, MD</td>
<td>Resident Department of Urology Stanford University Medical Center Palo Alto, CA</td>
</tr>
<tr>
<td>Salli Tazuke, MD</td>
<td>Department of Obstetrics and Gynecology Palo Alto Medical Foundation Portola Valley, CA</td>
</tr>
<tr>
<td>Maureen M. Tedesco, MD</td>
<td>Resident Department of Surgery Stanford University School of Medicine Stanford, CA</td>
</tr>
<tr>
<td>Michelle Tham, MD</td>
<td>Obstetrics and Gynecology Attending Physician New York University Medical Center New York, NY</td>
</tr>
<tr>
<td>Toegas Tulandi, MD, MHCM</td>
<td>Professor and Milton Leong Chair in Reproductive Medicine Department of Obstetrics and Gynecology McGill University Montreal, Canada</td>
</tr>
<tr>
<td>Rafael F. Valle, MD</td>
<td>Professor Emeritus Department of Obstetrics and Gynecology Northwestern University Feinberg School of Medicine Chicago, IL</td>
</tr>
</tbody>
</table>
Contributing Authors

LINDSEY VOKACH-BRODSKY, MB, CHB
Clinical Associate Professor
Department of Anesthesia
Stanford University School of Medicine
Palo Alto, CA

JYOTI YADAV, MD
Department of Obstetrics and Gynecology
Our Lady of Mercy Medical Center
Bronx, NY

PATRICK YEUNG, MD
Clinical Fellow
Department of Obstetrics and Gynecology
University of Louisville School of Medicine
Louisville, KY

CHRISTOPHER K. ZARINS, MD
Professor
Director, Division of Vascular Surgery
Department of Surgery
Stanford University School of Medicine
Palo Alto, CA
Forewords

Progress in surgical science has been characterized by a continuous cycle of innovation from bedside to bench and back to bedside. Beginning 30,000 years ago with the first bone needles to the current armamentarium today, each quantum leap has resulted from the convergence of technical advances and creative surgeons.

Some surgical capability has been enhanced by relatively simple or more complex tool manufacture or modification, usually for a single purpose. Kocher’s addition of a tooth to a straight clamp facilitated the grasping of a thyroid goiter; the more modern fixed-ring retractors have added considerable utility in abdominal retraction.

A few very special tools or techniques revolutionize our work. The development of the simple balloon catheter by Fogarty was the seminal event in initiating the concept of all endovascular procedures, beginning with the procedure of intra-luminal thrombectomy. It has expanded to balloon dilatation, angioplasty, stent placement, and now drug delivery systems in the form of drug-eluting stents.

Dr. Camran Nezhat’s creative and ingenious contribution to the field of laparoscopic surgery has been similarly revolutionary. Operating off the video monitor during endoscopic surgery by the addition of a video camera to the laparoscope as developed by Camran Nezhat was a critical step in facilitating the entire field of minimal access surgery, moving it out of its initial realm in gynecologic and pelvic surgery to the entire abdomen, the chest, and beyond. He further demonstrated for the first time that even the most advanced pathology, including bowel, bladder, and ureter diseases, can successfully be managed laparoscopically. (Surgical treatment of endometriosis via laser laparoscopy, Fertility & Sterility 1986; Safe laser and endoscopic excision or vaporization of peritoneal endometriosis, Fertility & Sterility 1989; Operative laparoscopy (minimally invasive surgery): state of the art, Journal of Gynecological Surgery, 1992.)

The laparoscopic revolution has been startlingly rapid. In the early days of my surgical career, I heard three quotations that described surgeons’ views of themselves.

“If it’s easy for me, it’s easy for the patient.”

“Incisions heal side-to-side, not end-to-end.”

“Big hole, big surgeon.”

In other words, the collateral damage of incisions for access was either not relevant to the surgeon or even defined the surgeon. Dr. Nezhat’s contributions began a revolution, where bigger is no longer better, and what is easy for the patient dominates our thinking. The entire field of minimal access surgery and its application is not just a set of tools and technologies but a new way of thinking. No longer is the default procedure an open one; it is fair to say that the current state of the art in most surgical arenas makes the default procedure one done with scopes.

Accordingly, this textbook, written and edited by the genius pioneers in the field, reflects that way of thinking. As such, it is both a masterpiece and a treasure.

Thomas M. Krummel, MD, FACS
Professor and Chair
Department of Surgery
Stanford University School of Medicine
Susan B. Ford Surgeon in Chief
Lucile Packard Children’s Hospital
Palo Alto, CA

Laparoscopic surgery has revolutionized medicine – in gynecology and in multiple other disciplines – and offers additional opportunities to address surgical conditions through a minimally invasive approach. Camran Nezhat and his brothers, Farr and Ceana, have been and continue to be the pioneers in this effort, and this edition of Nezhat’s Operative Gynecologic Laparoscopy and Hysteroscopy has advanced applications of the laparoscope and the hysteroscope in surgical therapies to new heights. In particular, the title and text have added hysteroscopy – a valuable approach to evaluate the uterine cavity and for surgical correction of abnormalities contained therein. In addition to the detailed and beautiful illustrations and clear and precise text, new sections have been added, such as the role of the laparoscope and hysteroscope in fertility evaluation and treatment, management of adnexal masses, pathogenesis and treatment of endometriosis, uterine fibroid embolization, and multiple procedures to address pelvic floor disorders. Furthermore, as experience has been derived in the minimally invasive approach to treat gynecologic malignancies, the section on gynecologic cancer has been expanded to include a comprehensive presentation...
of the laparoscopic approach to lymph node dissection, radical hysterectomy, and endometrial and ovarian cancer. Furthermore, the issue of trocar metastases has a dedicated section for this relatively uncommon complication of surgery. Other pioneering applications of laparoscopic surgery are discussed in detail and with accompanying informative illustrations, including laparoscopic surgery during pregnancy and in the pediatric patient and the use of the laparoscope in vascular surgery. Experience derived from performing laparoscopic procedures can, in well-trained and well-experienced surgeons, be expanded to a minimally invasive approach to gastrointestinal and genitourinary disorders. The sections on these procedures are also detailed and well illustrated. The book also includes a unique chapter on the use of simulators in laparoscopy and a visionary, multidisciplinary approach to the use of robotics and computer-assisted surgery in the treatment of surgically amenable disorders.

Laparoscopy has come a long way from the operator looking through the laparoscope. It now uses adjunctive surgical approaches and new technologies and instruments. This book says it all and says it well!

Linda C. Giudice, MD, PhD, MSc
The Robert B. Jaffe Professor and Chair
Department of Obstetrics, Gynecology and Reproductive Sciences
University of California, San Francisco
School of Medicine
San Francisco, CA

In his foreword to the first edition of Operative Gynecologic Laparoscopy: Principles and Techniques, Alan DeCherney predicted that because of its then encyclopedic scope and the skill and experience of the authors, the volume would “become a classic.” The first edition was essentially a family affair, arranged as a tabulation of the vast experience of three Nezhats, led by Camran, the senior pioneer in the group. At the time of publication of the original edition, the Nezhats had been either primary innovators or major contributors to most aspects of the progressively evolving field of minimally invasive abdominal surgery. This ranged from the introduction of video-laparoscopy through instrument design, and extension of the minimally invasive technique to include applications conventionally considered contraindicated or at best reserved for open laparotomy. They wisely archived their video recordings of each procedure for their own analysis and personal education, and ultimately, for teaching others. They also documented their observations, outcomes, and modification of techniques to recommend best practices. Alan DeCherney was prescient!

The second edition, with somewhat expanded but only jointly attributed authorship, broadened the scope and offered the reader an expert review of new developments. This remained a reliable standard for the ensuing seven years.

The new title retains the Nezhat imprimatur but is dramatically enlarged in scope, so that the encyclopedic character embraces not only history, details of equipment, power sources, and clearly illustrated surgical technique with profit for both the novice and the senior surgeon, but there are now chapters and sections that include the patho-physiology and surgical remedy for anatomic, endocrine, and neoplastic disorders that can reasonably stand alone as reliable and eloquent treatises. By further expanding authorship and including experts who are authoritative and scholarly, this edition has become an even more essential resource.

Ever mindful of the responsibility of the complete educator, the Nezhats have included excellent chapters on the skills and disciplines ancillary but essential to successful surgical adventures, even including specialized anesthesia. They have also addressed the issues of training and have expanded the section dealing with complications, their prevalence, causes, prevention, and remedies. While all of the chapters dealing with surgical procedures are careful to describe and beautifully illustrate approaches and engagements designed to reduce risk, special emphasis in a section on complications is wise.

Discrete sections dealing with special populations, namely the pediatric or pregnant patient, or the patient with chronic and often unexplained pelvic pain, extend the scope of this edition, further informing the consultant who will certainly be called upon for opinion or intervention in these circumstances.

Finally, the new edition, typical of the authors, addresses the most recent driving trend: computer-assisted surgery, thus bridging the gap between the frontiers of accomplishment and the promise of larger unrealized achievement.

It is a pleasure to read this remarkable resource. Its design, style, and content will certainly evoke the same satisfaction for anyone considering surgical intervention as part of the remedy for any gynecologic disorder.

Carmel J. Cohen, MD
Professor of Clinical Obstetrics and Gynecology
Division of Gynecologic Oncology
Department of Obstetrics and Gynecology
Columbia University Medical Center
New York, NY

The surgical discipline of gynecologic endoscopy has progressed substantially in the seventy years since the development of the first laparoscope for gynecology. The technology has evolved to include sophisticated innovations that dramatically improve its utility. As the knowledge of the advantages and limitations of these operations has grown, the application of these surgical tools has been progressively improved. Therefore, it is appropriate to dedicate a textbook to the thorough description of the standard practice, indications, and techniques of these operations.

As with any surgical instrument, a thorough understanding of the requisite operative principals governing the use of the
laparoscope is essential. The surgeon’s goal is to apply those tenets in the most careful manner to ensure that the operations are truly “minimally invasive.” Laparoscopy is still major surgery and must be offered judiciously in those circumstances where it is clearly necessary and appropriate.

The editors have made important contributions to our understanding of the principles and techniques for endoscopic operations in gynecology. Nezhat’s Operative Gynecologic Laparoscopy and Hysteroscopy provides gynecologic surgeons with a current and extraordinarily clear summary of the topic.

The purpose of any contributed medical text is to bring together highly qualified experts in the field and deliver a consensus report that permits a greater understanding of the topical issues. This book accomplishes that goal. It helps us to refine our technique, to make wise use of our skills, and to provide the best possible care to our patients.

Jonathan S. Berek, MD, MMS
Professor and Chair
Department of Obstetrics and Gynecology
Stanford University School of Medicine
Palo Alto, CA
Forewords to the Second Edition

Once again the Nezhats have provided, in their second edition, an excellent text in operative gynecologic laparoscopy. Not only has this group been clinically active and leaders in the field for many years, but the fact that they document their experiences and techniques is extremely laudatory. They have been not only innovators, demonstrating great creativity and imagination, but also have studied their patients prospectively and retrospectively to draw conclusions based on experience and numbers of cases. Their knowledge of the technology that they employ, that is, lasers, electrosurgery, and Harmonic scalpel instrumentation, is profound and they freely share it in this text.

The scope of the book covers all aspects of the leading surgical procedure in gynecology that can be carried out by endoscopy. Areas covered include adhesiolysis, ovarian cystectomy, ectopic pregnancy, and operations on the uterus, but there are also portions on anesthesia and office microlaparoscopy, to cite a few. The authors have made a tremendous number of revisions, demonstrating their care to detail, their awareness of this rapidly changing and developing field.

It is great that this group has produced a second edition because there are many changes that have occurred since the first edition, including work on stress incontinence and the revisiting of presacral neurectomy. Each chapter is well referenced. Any surgical text must have excellent illustrations, as this one does. This text is an excellent atlas as well.

I found this a comprehensive text for its knowledge, informative because of its insight and imagination, and practical because of its illustrations and explanations. This is a proud testimony to a well done.

Alan H. DeCherney, MD
Professor and Chairman
Department of Obstetrics and Gynecology
UCLA School of Medicine
Los Angeles, CA

Drs. Nezhat embody the entire spectrum of current knowledge regarding laparoscopy. This book is a reference book in laparoscopy for advanced surgeons and beginners alike. The Nezhats' genius in the operating room is reflected in the writing of this book, especially in descriptions of new techniques and the lucid explanations of the advantages of laparoscopy over laparotomy in a growing list of gynecologic procedures.

As a gynecologist from Germany, I began promoting laparoscopy in 1963. At that time the thinking was that laparoscopy was only performed by gastroenterologists and hepatologists under local anesthesia, and was a procedure to be avoided by all gynecologists. It was believed that turning the laparoscope toward the lower pelvis instead of the upper abdomen would be too dangerous. Structures such as the aorta, common iliac veins, intestines, and ureters were of great concern. There were fatal complications in early gynecologic laparoscopy cases, rendering the procedure obsolete in gynecology at the beginning of the 1960s. Because of these negative connotations and in order to market this innovative technology, I changed the name to ‘Pelviscopy.’ My scientific publications and my books were printed under this name.

Dr. Camran Nezhat never criticized any of my elaborate endoscopic procedures. Instead, with his genius, he widened the operative field, creating new techniques, employing new instruments and apparatuses. In my opinion, with the cooperation of his two brothers, Camran Nezhat has enlivened and enriched the entire field of surgical laparoscopy.

Since its inception, endoscopy has changed and the authors have written about a new endoscopic world. The general surgeons have now accepted surgical laparoscopy completely. Years ago, if a gynecologist was unlucky in a pelviscopic procedure, the surgeons condemned this person as an unethical surgeon who used techniques which were as yet unproven and against the current surgical rules.

This book is indeed a bible in surgical laparoscopy. At the end of each chapter an extended bibliography is included. A lengthy chapter is dedicated to complications and how they can be avoided. This is invaluable to all: Everybody can use it: the clinician, student, scientist, and lawyer. This manual should not be missed in any library.

On June 30, 1980, I performed a laparoscopic appendectomy, which ultimately opened the door for general surgeons to perform endoscopic surgery, especially since the appendix was a holy grail of surgery. Today this book opens a new door to a whole new era of endoscopic surgery.

Prof. Dr. H. C. Mult Kurt Semm
Forewords to the First Edition

This textbook on endoscopic surgery is a timely contribution and has all the trappings of being extremely successful. The competition is keen at this point in time with regards to textbooks and atlases on endoscopic surgery but none will rival this one.

In the past decade, gynecologic surgery, because of endoscopic surgery, has undergone a tremendous revolution. There are few cases now remaining in the gynecologist’s surgical armamentarium that cannot be carried out through an endoscopic approach. Many of these changes are due to the courage, innovativeness, and technical skill of Dr. Camran Nezhat. Just as in Star Trek, he dared to go where no man went before and, by doing this, he opened up unimagined vistas to endoscopic surgeons all over the world. For his courage, Camran has over the years suffered, but he has persevered.

This book brings to a culmination many of Dr. Nezhat’s techniques, innovations, and, most importantly, thought processes. All of the characteristics necessary for an excellent textbook of surgery are included. The text is well written, provocative, and clear, and it demonstrates editorial consistency. The illustrations are superb and would provide the novice in endoscopic surgery enough information to carry out many of the procedures proposed.

I have chosen as an illustrative chapter the chapter on endometriosis. It demonstrates many of the things that have been conjured up by Dr. Nezhat and have become part of what we do as endoscopic surgeons. These include hydrodissection, ureteric resection, and reanastomosis with a stapler. If one could learn all of the techniques suggested in the chapter on endometriosis, one could become, as Dr. Nezhat has, a master endoscopic surgeon.

The book is encyclopedic in that it covers not only all surgical techniques, but also various kinds of equipment, laser and electrosurgical physics, adhesion formation, and, most importantly, complications.

Dr. Nezhat has synthesized his years of experience in this text. It will become a classic in the field and is a testimony to his skill, intelligence, and perseverance.

Alan H. DeCherney, MD
Louis E. Phaneuf Professor and Chairman
Department of Obstetrics and Gynecology
Tufts University
Boston, MA

Excellence in any human activity always commands admiration and respect. In the case of surgical techniques, excellence commands not only the admiration and respect of professional colleagues, but the gratitude of patients as well. Those who have had the opportunity to see the “Nezhat Orchestra” operate and simultaneously conduct the endoscopic operating team, recognize that they have seen a performance of excellence. It is a unique combination of manual dexterity, innovation, creativity, and teamwork.

The rapid proliferation of laparoscopic procedures in the last two decades originated in gynecology, but crossed the borders of this discipline to several other applications below and above the diaphragm. Many new devices have been introduced into the armamentarium of the endoscopic operating room. However, if there was a single factor that contributed to the increased interest, quality of patient care, and education of new generations of surgeons, it was the incorporation of video equipment as an integral part of the standard endoscopic set. This was promulgated and pioneered by Dr. Camran Nezhat. In so doing, the secrets behind the curtain of the “single eye–single hand” procedures were revealed and broadened the horizons of operative laparoscopy.

In this book, “the Nezhats” review the instrumentation and general principles of laparoscopy and elucidate the management of various procedures in gynecology and gastrointestinal and genitourinary surgery. The uniformity of text and illustration format of this book contribute to the clear message that comes from the “Nezhat School of Laparoscopic Surgery,” and is complementary to the high-quality educational video library that originated in the same school.

I regard it as an honor to have this opportunity to be associated with this special project that will find an important place in the literature of our specialty.

Yona Tadir, MD
Department of Surgery
Beckman Laser Institute & Medical Clinic
Irvine, CA
Preface

This is an exciting time to be a surgeon. The field of reproductive medicine has undergone many changes over the past three decades. Gynecologic endoscopic surgery, in particular, has seen tremendous advances during this period. Breakthroughs in video technology, instrumentation, adhesion prevention, and computer-enhanced technology have certainly allowed surgeons to routinely perform a number of procedures endoscopically rather than by laparotomies. These innovations have contributed to faster recovery time, smaller scars, less adhesion formation, fewer complications, lower cost, and, most importantly, better results.

The editors deemed it necessary to update their previous edition due to popular demand and to reflect the rapid advancement in this field. With the contributions of authoritative figures in their respective areas of expertise, many new additions can be found in this book. The inclusion of hysteroscopy in the title and the dedication of a new section on hysteroscopy are meant to emphasize the importance of such surgery in the gynecologic practice today. A new section on fertility treatment and procedures reflects the rapid development in this area. As minimally invasive surgery and natural orifice surgery are becoming more and more accepted and applied in the management of gynecologic malignancy, a significant portion of the book is devoted to this topic to bring the latest information and controversies to our readers. New chapters have also been added on the emerging advanced laparoscopic procedures, which originated in gynecology, and the dedication of a new section on hysteroscopy are meant to highlight the thought-provoking changes to the practice of surgery in general.

As predicted by the editors more than two decades ago, advanced laparoscopic procedures, which originated in gynecology, have now proliferated into other disciplines such as general surgery, urology, and cardiothoracic surgery. The expansion of such boundaries into the use of laparoscopy in pediatric and vascular surgery arenas is featured in this edition.

The compilation of Nezhat's Operative Gynecologic Laparoscopy and Hysteroscopy would certainly not have been possible without the tremendous enthusiasm and support of the contributors. The editors are deeply indebted to them for making this project successful. It is the editors’ hope that this book would be able to impart to our readers both the depth and breadth of the experts’ knowledge in the exciting field of minimally invasive gynecologic procedures.

Progress in medicine is made when different disciplines collaborate. The work of the editors would not have been possible without the selfless, dedicated support of the following friends and colleagues at Stanford University Medical Center:

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- Drs. Myriam Curet and John Morton from the Department of General Surgery;
- Drs. Amin Milki and Ruth Lathi of the Department of Obstetrics and Gynecology; and
- Drs. Mary Lake Polan and Jonathan Berek, past and present Chairmen of the Department of Obstetrics and Gynecology, respectively.

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