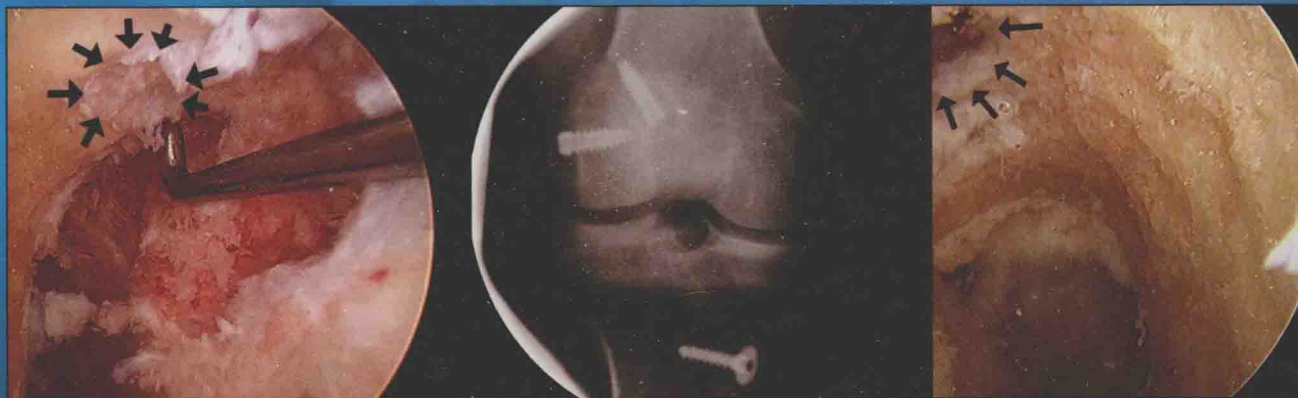


ACL Surgery

How to Get it Right the First Time
and What to Do if it Fails



Bernard R. Bach, Jr
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SLACK Incorporated

ACL Surgery

How to Get it Right the First Time
and What to Do if it Fails

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ACL Surgery

**How to Get it Right the First Time
and What to Do if it Fails**

DEDICATION

This textbook is dedicated to:

- (1) The residents and fellows I have trained at RUSH University Medical Center since 1986. The curiosity and excellence of these young surgeons has kept me “on my toes,” motivated me to stay “current,” and provided me with the privilege and responsibilities to teach and educate the next generation of leaders.
- (2) My guardian angels Drs. Art Boland, Russ Warren and Bill Grana—
all of whom have imprinted their professional DNA into the “making of the surgeon.”
- (3) My family: my parents, who showed me the way, and my wife, Elizabeth, and children, David and Laura, who have watched me grow professionally and supported me in ways they will never understand.

Bernard R. Bach, Jr, MD

This book is dedicated to my family, including my wife, Melissa; four children, Connor, Brody, Caroline, and Catherine; and my loving and supportive parents who taught me the value of hard work and perseverance.

CDR Matthew T. Provencher, MD, MC, USN

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Bernard R. Bach, Jr, MD, graduated from Harvard University (BA), the University of Cincinnati College of Medicine (MD), the Harvard Combined Orthopedic Residency Program, and the Hospital for Special Surgery Sports Medicine Fellowship. He became director of the Section of Sports Medicine at RUSH University Medical Center in 1986 and has risen to the Professor level. He is currently the director of the Division of Sports Medicine, has been the Director of the RUSH Sports Medicine Fellowship program since 1988, and is currently the Claude N. Lambert-Helen S. Thomson Professor of Orthopedic Surgery. Dr. Bach has helped develop a world-class sports medicine program that is currently comprised of 7 sports orthopedists and 4 primary care sports attendings; has trained 54 sports fellows; helps care for the Chicago White Sox and Chicago Bulls; has served as President of the Quigley and Herodicus Sports Medicine Societies and the American Orthopaedic Society for Sports Medicine; has served on the board of directors for the Orthopaedic Research and Education Foundation, Illinois Special Olympics, and the AOSSM; and has been inducted into the Illinois Athletic Trainers' Hall of Fame and the National Athletic Trainers Physicians' Hall of Fame. He has authored or coauthored more than 500 peer-reviewed manuscripts, book chapters, abstracts, monographs, books, and posters.

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PREFACE

ACL Surgery: How to Get it Right the First Time and What to Do if it Fails is designed to be a user-friendly, clinically relevant text containing up-to-date information on how to treat an ACL injury and obtain optimal results. This textbook is dedicated to the care of the injured ACL patient and is designed for orthopedic surgeons who desire an efficient way in which to review the surgical treatment of a torn ACL, offering valuable technical pearls on how to perform ACL surgery with reliable and tested results. Patient selection, indications, and preoperative workup are discussed in an easily readable format and are accompanied by numerous illustrations and pictures of how to perform ACL graft harvest, allograft preparation, and both single- and double-bundle repair constructs. In addition, nearly half of the book is dedicated to discussing principles of evaluating and treating the failed ACL reconstruction. This includes chapters on how to work up and manage pain and stiffness after ACL surgery in addition to numerous chapters on recurrent instability. Some examples are treating the failed ACL surgery in association with meniscus deficiency, malalignment, and associated ligamentous injuries (ie, chronic MCL insufficiency and injury to the posterolateral corner). The aim of the book is to provide insight into not only how to perform an ACL surgery correctly the first time, but also how to evaluate and manage a failed ACL reconstruction. All chapter topics were written by notable experts in their field and serve as a blueprint of how to provide a reliable primary ACL reconstruction with an emphasis on addressing associated conditions when necessary. Our expert contributors were also singled out for their expertise in the field of revision ACL surgery, each providing a comprehensive approach on how to work up from the initial encounter a potentially failed ACL surgery, but then how to correct and optimally address each underlying problem.

Every chapter has been formatted to contain the most important aspects of patient evaluation, imaging, and treatment, with the focus on the surgical procedure. The surgical techniques are all extensively illustrated with original artwork and clinical photographs in order to clearly demonstrate important aspects of each procedure. Before describing the surgical technique under consideration, guidelines for arriving at the associated diagnosis and the indications for surgery are reviewed. Although the authors describe every step of the procedures in a logical and methodical manner, they also intersperse clinical and technical pearls to share with the reader their personal experience. We hope that these pearls will enable the surgeon to make informed decisions about surgical management of ACL injuries.

From patient positioning to exact dissection and surgical guidelines, we hope that you will find this text easy to follow with step-by-step instructions, in order to completely understand the indications and surgical management of ACL injuries—both isolated as well as complex associated conditions. Organized, written, and published over a short time period, our goal was to provide the most up-to-date surgical recommendations and techniques for your surgical textbook library.

It is our hope that this text will further educate sports medicine orthopedists (attending, fellows, and residents) so that we may continue to refine the care of our patients' ACL injured knee. We are deeply indebted to our expert contributors for their outstanding efforts in assembling a comprehensive textbook on ACL surgery. The success of this project would not have been possible without their authoritative contributions.

FOREWORD

An entire book about the anterior cruciate ligament! Forty years ago, few orthopedic surgeons could imagine such a work lasting more than a few dozen pages or attracting more than a handful of readers. That situation has changed dramatically. The ACL has held the attention of the orthopedic sports medicine community for the past 4 decades, although the focus of that interest has continually evolved.

Beginning in the 1970s, a passionate group of orthopedic surgeons, invoking the earlier publications of Swedish authors, proclaimed the injured ACL to be the source of much of the unexplained knee disability that plagued athletes of the era. Other surgeons just as fervently disagreed, declaring that injury to the peripheral knee restraints was a far more fundamental cause of knee malfunction than any incidental damage to the ACL. This controversy spawned one of the most important contributions of sports medicine to the scientific basis of orthopedic surgery: controlled laboratory studies of the mechanical function of the component structures of the knee, produced by collaborating orthopedic surgeons and bioengineers.

As the importance of a functioning ACL became more indisputably established, surgeons proposed different solutions to the conundrum of the ACL-deficient knee. Early efforts focused on resurrecting the damaged structure through meticulous repair techniques. At first promising, these methods proved unreliable after longer follow-up, an experience that served to emphasize the importance of extended observation in clinical studies of surgical techniques. Some surgeons felt that the best solution to the apparently unfixable ACL was a reconstruction or re-enforcement of the medial or lateral peripheral restraints, while others brought autogenous tendons into the knee joint itself to augment the primary repair. As surgeons became convinced that the augmentation was more essential to the success of the procedure than preserving the remnants of the ruptured ligament, they stopped worrying about repairing the ACL and began replacing it with the strongest material at hand, a strip of patellar tendon. The success of these techniques led many to declare the problem of the torn ACL to be solved; the patellar tendon reconstruction technique was popularly anointed the “gold standard” in ACL surgery.

Now that the challenge of reconstructing the ACL seemed to be conquered, attention turned to fine-tuning the surgery to reduce its morbidity. Traditional techniques of open arthrotomy, followed by weeks of immobilization, produced a prolonged convalescence that made the procedure prohibitive for most patients past the age of 30. Some innovators questioned the need for severe postoperative activity restrictions and promoted a more aggressive rehabilitation that streamlined the recovery with no apparent detriment to the ultimate outcome of the operation. Other surgeons devised ingenious methods of performing the surgery arthroscopically, which further decreased its morbidity, and made the procedure available to a much wider patient population. Still others challenged the supremacy of the patellar tendon graft by suggesting other options such as allografts or autogenous hamstring tendons. A burgeoning interest in soft tissue alternatives to patellar tendon grafts led to the introduction of an abundance of devices for anchoring them in place, which, in turn, allowed them to challenge for the title of “gold standard” of ACL substitutes.

Just when it appeared that orthopedic innovators would abandon the ACL for more challenging subjects, some surgeons declared that the results of ACL reconstruction could be further improved by making the procedure more anatomic. One group felt that this goal would best be served by employing a graft with 2 distinct bundles of tissue. Their work has inspired a number of others to adopt these demanding techniques, while prompting the entire orthopedic sports medicine community to reexamine the optimum placement of the ACL graft, whether 1 bundle or 2. Although the long-term clinical benefit of recent innovations has yet to be determined, one thing is clear: as the 21st century enters its second decade, the ACL remains a focus of interest and controversy in orthopedic sports medicine.

In this volume, Drs. Bach and Provencher provide the orthopedic sports medicine specialist with a compendium of the essential knowledge distilled from the past 4 decades of clinical and laboratory investigation of the ACL. In addition to their broad experience as surgeons and researchers, they bring to the work their considerable talents as thinkers, educators, and writers. Starting with the basic anatomy and biology, they proceed systematically through the scientific and practical information that a surgeon requires in order to care for the patient with this common injury. With language that is concise and easy to understand, they and their co-authors review the landscape of modern techniques available for ACL reconstruction. A substantial portion of the text is devoted to methods for analyzing and addressing surgical failures. The authors thoroughly discuss an extensive series of problematic eventualities that might complicate revision surgery. Any surgeon undertaking the care of patients with ACL injuries will find this book to be an invaluable, trusted companion in the quest to restore normalcy to the traumatized knee joint.

Bruce Reider, MD
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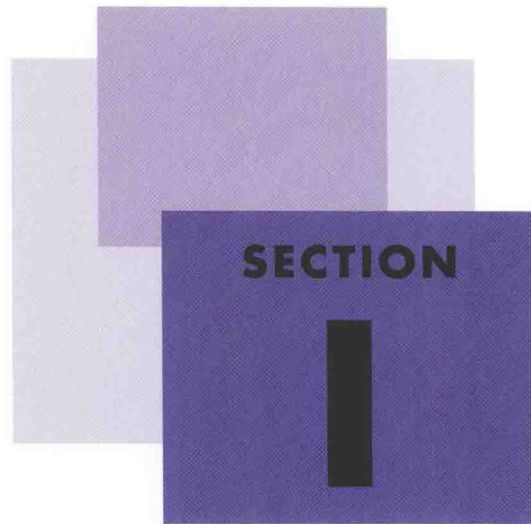
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