
Surgical Anatomy and Exposures of the Knee

Bertram Zarins • Robert Śmigielski

Surgical Anatomy and Exposures of the Knee

A Surgical Atlas

 Springer

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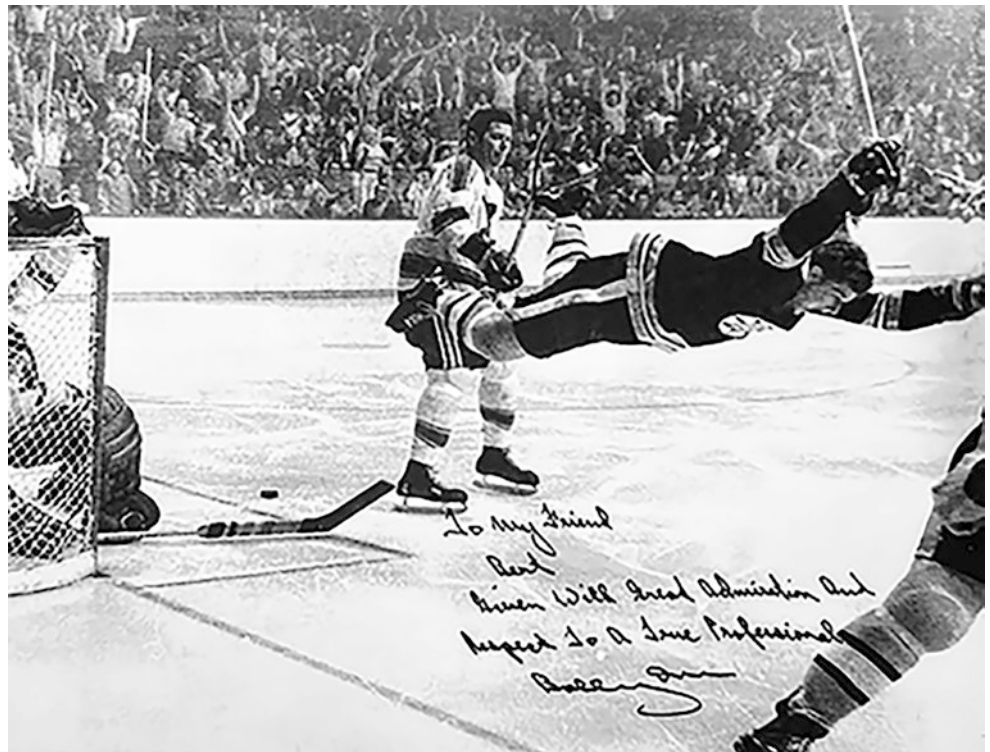
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This book is dedicated to Bobby Orr, the greatest hockey player of all time, whose brilliant career was cut short by knee injuries.



Foreword

I was so pleased to be asked to provide a Foreword for *Surgical Anatomy and Exposures of the Knee* by authors Bertram Zarins, MD, and Robert Śmigielski, MD, PhD, as this book represents a significant contribution.

The study of human anatomy, in this book dedicated to the knee joint, is an adventure in human creation, beauty, and function and the most rewarding endeavor.

“What spirit is so empty and blind, that it cannot recognize the fact that the foot is more noble than the shoe, and skin more beautiful than the garment with which it is clothed?”
Michelangelo. 1475–1564

In the spirit of this quote, the same statement may be made for the human knee joint. Surgeons by necessity are required to be masters of anatomy; one questions, however, if we ever truly reach a master’s designation. Over the years of dissecting the human knee, in an academic setting, there has not been one time I have finished a dissection without an added appreciation and knowledge of anatomic structures. Over the years, many authors have published anatomic descriptions on the complexity of knee anatomic structures and this book builds on this knowledge base. I had the opportunity to publish our anatomic dissections on the human knee and hopefully added additional insights [1, 2].

It has been said that no anatomic rendering of the human body, in this case the knee joint, is ever finished or able to be described in a single textbook. The authors of this book have selected a logical flow in the contents by providing structural knee renderings, proceeding through anatomy by regions of the knee and then providing a perspective of knee anatomy related to surgical procedures. The photographic dissections of knee anatomy are truly beautiful and enjoyable to review. The knee arterial structures utilize a novel dissection technique that is among the most revealing and remarkable ever published.

The anatomic photographs and illustrations are highly artistic and noteworthy. A special mention of the professional medical illustrator for this book. The authors were prized to engage Joe Chovan from Cincinnati. I worked closely with Joe Chovan for over 2 years as the medical illustrator for the *Noyes’ Knee Disorders* textbook, producing many anatomic renderings and illustrations, and I am so grateful for his contribution. I remember a number of times he attended anatomic dissections to understand and provide precise anatomical illustrations. In this book, the anatomic illustrations and photographic presentations are outstanding and a tribute to Joe and the authors.

I congratulate the authors in producing this very fine work of art as the study of human knee anatomy is truly an art form. The expert surgical dissections produced in this book take an enormous amount of time, talent, and dedication. I know orthopaedic surgeons will enjoy the anatomic dissections and take away an added perspective and knowledge of anatomy that will be applied to their surgical practice.

On a personal note, I have had a close friendship with Bert Zarins for over four decades and have marveled at all his professional achievements. I have respected his enormous talents and professional appointments: a gifted surgeon providing expert care for his patients for decades, a teacher, educator, and Chief of the Sports Medicine Service at the Massachusetts General Hospital, Professor at Harvard Medical School, Head Team Physician for three Boston professional teams and the US Olympics, first Consulting Editor for Sports Medicine of the *Journal*

of Bone and Joint Surgery, and a mentor to students and residents for these many decades. He was awarded the *Order of the Three Stars* medal of honor for his volunteer work in Latvia. Bert set his professional aims at the highest level and how satisfying it is to see his achievements. He also set his personal aims to be a caring and devoted husband and father that are among his most cherished achievements.

Again, thank you for the honor of reviewing this most noteworthy contribution to our understanding of knee anatomy.

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Preface

This book was written for orthopaedic surgeons, radiologists, vascular surgeons, and other health professionals to demonstrate surgically important knee anatomy.

Operations come and go, but anatomy does not change. Recent trends in medical education have reduced the teaching of anatomy. Minimally invasive surgical techniques, such as arthroscopic surgery, have largely replaced open knee operations. This book addresses the knowledge gap.

“Surgical anatomy” is not the same as “anatomical anatomy.” Anatomical anatomy is presented in the “anatomical position” with the body upright, feet flat and facing forward, and the arms by the sides of the body with the palms facing forward. However, the relative positions of various anatomical structures change as the knee goes from flexion to extension. In this book, we demonstrate knee anatomy in the position in which surgery is typically performed. Since medial and lateral surgical approaches to the knee are usually performed with the knee in the flexed position, we show anatomy in the flexed as well as in the extended knee.

Most anatomy books give equal weight to all structures, regardless of clinical significance. Tissues can be dissected into minor parts and shown out of context, distorting their importance. We emphasize structures that are surgically important. Anatomical details that have little clinical bearing are mentioned, but not stressed.

In the third part of this book, we apply this anatomical knowledge to demonstrate surgical exposures of the knee.

We use standard medical terminology. *Gray’s Anatomy* [1] and *Terminologia Anatomica II (TA2)* [2] are our references. Muscles have “origins” (proximal) and “insertions” (distal). Ligaments have “attachments.”

We hope the reader will use the information in this book to safely navigate through the knee.

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The meticulous dissections of the knee were done by Dr. Robert Śmigielski in Warsaw, Poland. Drs. Bartosz Kargol and Jongmin Chai assisted him. Professor Bogdan Ciszek (Medical University of Warsaw) injected the arteries and veins to demonstrate vascular anatomy and assisted in the dissections.

A special thanks to Władysław Śmigielski, who supported the team and made photographs for the book himself. Dr. Beata Ciszewska-Łysoń demonstrated the anatomy with radiographic images. Jakub Piękoś (MedDev Engineering) created three-dimensional images from CT scans of anatomic specimens. Jānis Savlovskis and Kristaps Raits in Latvia [*Anatomy Standard*] created three-dimensional models of the bones from CT scans.

Piotr Wójcik (Picture Doc Foundation) and Maciej Śmiarowski captured the anatomy with spectacular photographs and videos. Artist Joseph Chovan in Cincinnati drew beautiful medical illustrations to accompany the photographs.

Aleksandra Zielińska provided the editorial and technical expertise to pull everything together. She assisted both Robert Śmigielski and Bogdan Ciszek in dissections and organized the space and resources.

MIRAI Clinic in Otwock (<https://miraclinic.pl>) granted access to their radiology department. Medical Education Centre a.k.a CEM in Warsaw (<https://www.cem-med.pl>) provided space at their laboratory for cadaver dissections.

Financial resources to create the book came from Dr. Zarins' Massachusetts General Hospital Research and Education Fund and the Latvian Medical Foundation. Contributions came from the Joseph M. Hamilburg Fund, the Muriel GS Lewis Fund for Sports Medicine, the Edythe/Paul Mannos Endowment Fund, Bobby Orr, Michael Grossman, Madeline and Edward Redstone, Andronico Luksic, and other grateful patients.



Professors Bogdan Ciszek and Bertram Zarins (left) assist Robert Śmigielski (right) dissect a knee specimen

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