

SECOND EDITION

英文影印版

BROWNER ▼ JUPITER ▼ LEVINE ▼ TRAFTON

第 2 版

骨 创 伤

SKELETAL TRAUMA

Fractures ▼ Dislocations ▼ Ligamentous Injuries

(上册)

VOLUME ONE



科学出版社 ★ Harcourt Asia ★ W.B.Saunders

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Second Edition • Volume one

Bruce D. Browner, MD, FACS

Jesse B. Jupiter, MD

Alan M. Levine, MD

Peter G. Trafton, MD, FACS

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VOLUME ONE



Bruce D. Browner, M.D., F.A.C.S.

Gray-Gossling Professor and Chairman
Department of Orthopaedic Surgery
University of Connecticut Health Center
Farmington, Connecticut
Director, Department of Orthopaedics
Hartford Hospital
Hartford, Connecticut



Alan M. Levine, M.D.

Associate Chief of Orthopaedic Surgery
Professor of Orthopaedic Surgery and Oncology
Division of Orthopaedic Surgery
University of Maryland School of Medicine
Consultant in Spinal Injury
Maryland Shock Trauma Unit
Baltimore, Maryland

Jesse B. Jupiter, M.D.

Associate Professor of Orthopaedic Surgery
Harvard Medical School
Director, Orthopaedic Hand Service
Massachusetts General Hospital
Boston, Massachusetts



Peter G. Trafton, M.D., F.A.C.S.

Professor/Vice Chairman of Orthopaedic Surgery
Brown University School of Medicine
Surgeon-in-Charge, Orthopaedic Trauma
Rhode Island Hospital
Providence, Rhode Island

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The Editors Dedicate the Second Edition to Their Families

Barbara Thea Browner

Jeremy Todd Browner

Nicole Shannan Browner

In memory of Mona Alexander Browner

In appreciation of my father's support and encouragement

Irwin Eric Browner

Beryl Stephanie Abrams Jupiter

Stacy Deborah Jupiter

Benjamin Scott Jupiter

In memory of Miriam and Samuel Jupiter

Barbara Portnoy Levine

Dana Ari Levine

Alissa Leigh Levine

Andrea Naomi Levine

In appreciation of my parents' support and encouragement

Felice P. Levine and Leon Levine, M.D.

Frances Conkey Trafton

Katherine Shane Trafton

Theodore Grier Trafton

Elizabeth Fairbank Trafton

In memory of Virginia Grier Trafton and Willis A. Trafton, Jr.

Contributors

Jean-Jacques Abitbol, M.D.

Clinical Instructor, Department of Orthopaedic Surgery, State University of New York Health Science Center at Syracuse, Syracuse, New York

Thoracic and Upper Lumbar Spine Injuries

Jesse R. Ada, M.D.

Orthopaedic Surgeon, Private Practice, First Settlement Orthopaedics, Marietta, Ohio

Injuries to the Shoulder Girdle

Annunziato Amendola, M.D., F.R.C.S.(C.)

Associate Professor, Department of Orthopaedic Surgery, University of Western Ontario, London, Ontario, Canada

Compartment Syndromes

Paul A. Anderson, M.D.

Clinical Associate Professor, Department of Orthopaedics, University of Washington, Seattle, Washington

Lower Cervical Spine Injuries

Terry S. Axelrod, M.D.

Assistant Professor, Division of Orthopaedics, Department of Surgery, University of Toronto; Chief, Division of Orthopaedic Surgery, Sunnybrook Health Science Centre, Toronto, Ontario, Canada

Fractures and Dislocations of the Hand

Richard Barth, M.D.

Clinical Instructor, Georgetown University and George Washington University; Attending Physician, Orthopaedic Department, Sibley Memorial Hospital, Washington, District of Columbia

Pathologic Fractures—Metabolic Bone Disease

Craig S. Bartlett III, M.D.

Fellow, Orthopaedic Traumatology, Hospital for Special Surgery, New York, New York

Fractures of the Tibial Pilon

Michael R. Baumgaertner, M.D.

Associate Professor, Department of Orthopaedics and Rehabilitation, and Chief of Orthopaedic Trauma Service, Yale University School of Medicine, New Haven, Connecticut

Intertrochanteric Hip Fractures

Fred F. Behrens, M.D.

Professor and Chairman, Department of Orthopaedics, New Jersey Medical School; Chairman of Orthopaedics, University Hospital, Newark, New Jersey

Fractures With Soft Tissue Injuries

Mark R. Belsky, M.D.

Associate Clinical Professor of Orthopaedic Surgery, Tufts University School of Medicine, Boston; Chief of Orthopaedic Surgery, Newton-Wellesley Hospital, Newton, Massachusetts

Fractures and Dislocations of the Hand

Daniel R. Benson, M.D.

Professor, Orthopedic Surgery and Chief, Section of Spinal Surgery, University of California at Davis, Davis, California

Initial Evaluation and Emergency Treatment of the Spine-Injured Patient

Benjamin Blair, M.D.

Department of Orthopaedic Surgery, University of California at San Diego, San Diego, California; Active Staff, Pocatello Orthopaedics and Sports Medicine Institute, Pocatello, Idaho

Thoracic and Upper Lumbar Spine Injuries

Michael J. Bosse, M.D.

Director of Clinical Research and Director of Orthopaedic Clinic, Department of Orthopaedic Surgery, Carolinas Medical Center, Charlotte, North Carolina

Orthopaedic Management Decisions in the Multiple-Trauma Patient

James J. Brakoniecki, M.D.

Assistant Clinical Professor, Department of Surgery, University of Connecticut School of Medicine, Farmington; Associate Staff Anesthesiologist, Department of Anesthesiology; Associate Director, Surgical Critical Care Unit, Hartford Hospital, Hartford, Connecticut

Anesthetic Management of the Trauma Patient With Skeletal Injuries

Bruce D. Browner, M.D., F.A.C.S.

Gray-Gossling Professor and Chairman, Department of Orthopaedic Surgery, University of Connecticut Health Center, Farmington; Director, Department of Orthopaedics, Hartford Hospital, Hartford, Connecticut

Principles of Internal Fixation; Fractures of the Pelvic Ring

Thomas Marshall Brushart, M.D.

Associate Professor of Orthopaedic Surgery, Plastic Surgery, and Neurology, Johns Hopkins University; Research Director, Curtis Hand Center, Baltimore, Maryland

Brachial Plexus and Shoulder Girdle Injuries

Christopher W. Bryan-Brown, B.M., B.Ch., F.R.C.A.

Professor and Vice Chairman, Department of Anesthesiology, Albert Einstein College of Medicine, Yeshiva University; Attending Anesthesiologist and Codirector, Division of Critical Care, Montefiore Medical Center, Bronx, New York

Anesthetic Management of the Trauma Patient With Skeletal Injuries

Aaron Calodney, M.D.

Staff, Longview Anesthesia Associates; Staff, Columbia Longview Medical Center; Staff, Good Shepherd Medical Center, Longview, Texas

Useful Nerve Blocks for Pain Relief and Surgery; Perioperative Pain Management of the Injured; Complex Regional Pain Syndrome (Reflex Sympathetic Dystrophy)

Jeffrey Cannella, M.D.

Attending Anesthesiologist, Memorial Northwest Hospital, Houston, Texas

Useful Nerve Blocks for Pain Relief and Surgery; Perioperative Pain Management of the Injured

Andrew E. Caputo, M.D.

Chief Resident, Department of Orthopaedic Surgery, University of Connecticut Health Center, Farmington, Connecticut

Principles of Internal Fixation

James B. Carr, M.D.

Associate Professor of Orthopedic Surgery, Medical College of Virginia, School of Medicine; Director of Orthopedic Trauma, Medical College of Virginia Hospitals, Virginia Commonwealth University, Richmond, Virginia

Malleolar Fractures and Soft Tissue Injuries of the Ankle

Russell J. Cavallo, M.D.

Chief Resident, Department of Orthopaedic Surgery, The Mount Sinai Medical Center, New York, New York

Enhancement of Skeletal Repair

John H. Chrostowski, M.D.

Assistant Professor, Department of Orthopaedics, University of South Carolina, School of Medicine, Columbia, South Carolina

Intertrochanteric Hip Fractures

David L. Ciraulo, D.O., M.P.H.

Trauma/Critical Care/MPH Fellow, Hartford Hospital, Hartford, Connecticut

Evaluation and Treatment of the Multiple-Injured Patient

Mark S. Cohen, M.D.

Assistant Professor, Director, Hand and Elbow Program, and Director, Orthopaedic Education, Department of Orthopaedic Surgery, Ruth-Presbyterian-St. Luke's Medical Center, Chicago, Illinois

Fractures of the Distal Radius

Christopher L. Colton, M.B., B.S., L.R.C.P., F.R.C.S., F.R.C.S. Ed.

Professor of Orthopaedics and Accident Surgery, Nottingham University; Senior Consultant in Orthopaedic Trauma, Nottingham University Hospital, Nottingham, England

The History of Fracture Treatment

Charles N. Cornell, M.D.

Professor of Orthopaedic Surgery, Cornell University Medical College, New York; Director, Department of Orthopaedics, The New York Hospital Medical Center of Queens, Flushing, New York

Pathologic Fractures—Metabolic Bone Disease

Vernon Cowell, M.D., M.P.H.

Fellow in Traumatology and Critical Care Medicine, Hartford Hospital, Hartford, Connecticut

Evaluation and Treatment of the Multiple-Injured Patient

Michael J. D'Amato, M.D.

Orthopaedic Surgery Resident, Lennox Hill Hospital, New York, New York

Fractures of the Tibial Pilon

Jeffrey Ecker, B.Med.Sc.(Hons.), M.B., B.S., F.R.A.C.S., F.A.Orth.A.

University of Western Australia; Austin University; Hand and Upper Limb Microsurgeon, Royal Perth Hospital, West Perth, Australia

Soft Tissue Coverage

Thomas A. Einhorn, M.D.

Professor and Chairman, Department of Orthopaedic Surgery, Boston University School of Medicine; Chief of Orthopaedic Surgery, Boston Medical Center, Boston, Massachusetts

Enhancement of Skeletal Repair

Frank J. Eismont, M.D.

Professor and Vice-Chairman, Department of Orthopedic Surgery, University of Miami School of Medicine; Co-Director, Acute Spinal Cord Injury Unit, Jackson Memorial Hospital, Miami, Florida

Thoracic and Upper Lumbar Spine Injuries; Gunshot Wounds of the Spine

Robert L. Fears, M.D., D.V.M.

Resident in Anesthesiology, Medical University of South Carolina, Charleston, South Carolina

Diagnosis and Treatment of Complications

David V. Feliciano, M.D.

Clinical Professor of Surgery, Uniformed Services University of the Health Sciences, Bethesda, Maryland; Professor of Surgery, Emory University School of Medicine; Chief of Surgery, Grady Memorial Hospital, Atlanta, Georgia

Evaluation and Treatment of Vascular Injuries

F. Barry Florence, M.D.

Instructor, Department of Anesthesiology, University of Texas Medical School at Houston, Houston, Texas

Anesthetic Management of the Trauma Patient With Skeletal Injuries

Bruce E. Fredrickson, M.D.

Professor of Orthopedic and Neurologic Surgery, University Hospital; Staff, University Hospital; Staff, Crouse-Irving Memorial Hospital; Courtesy Staff, St. Joseph's Hospital; Consulting Staff, Veteran's Administration Hospital, Syracuse, New York

Nonoperative Treatment of the Spine: External Immobilization

Steven R. Garfin, M.D.

Professor and Chair, Department of Orthopaedics, University of California at San Diego, San Diego, California

Thoracic and Upper Lumbar Spine Injuries

Harris Gellman, M.D.

Professor of Orthopedic Surgery and Chief of Hand and Upper Extremity Surgery, University of Arkansas for Medical Sciences, Little Rock, Arkansas

Gunshot Wounds to the Musculoskeletal System

Gregory E. Gleis, M.D.

Associate Professor, Department of Orthopaedics, University of Louisville; Attending, University Hospital; Attending, Veterans Hospital, Louisville, Kentucky

Diagnosis and Treatment of Complications

Andrew Green, M.D.

Assistant Professor of Orthopaedic Surgery, Brown University; Attending Orthopaedic Surgeon, Rhode Island Hospital, Providence, Rhode Island

Proximal Humerus Fractures and Glenohumeral Dislocations

Stuart A. Green, M.D.

Clinical Professor, Orthopedic Surgery, University of California at Irvine, Irvine, California

The History of Fracture Treatment—Gavriil A. Ilizarov and the Discovery of Distraction Osteogenesis; The Ilizarov Method

Paul R. Gregory, M.D.

Traumatologist, Florida Orthopaedic Institute, Tampa, Florida

Patella Fractures and Extensor Mechanism Injuries

Edward N. Hanley, Jr., M.D.

Chairman, Department of Orthopaedics, Carolinas Medical Center, Charlotte, North Carolina

Surgical Management of Spinal Injuries

Sigvard T. Hansen, Jr., B.A., M.D.

Professor and Chairman Emeritus, Department of Orthopaedics, University of Washington; Professor and Section Chief: Foot, Ankle, Amputee Service, Harborview Hospital, Seattle, Washington

Foot Injuries

John H. Harris, Jr., M.D., D.Sc.

Professor of Radiology, University of Texas Medical School—Houston; Director of Emergency Radiology, Hermann Hospital, Houston, Texas

Spinal Imaging

Wilson C. Hayes, Ph.D.

Maurice Edmund Mueller Professor of Biomechanics, Harvard Medical School; Director, Orthopedic Biomechanics Laboratory, Beth Israel Deaconess Medical Center, Boston, Massachusetts

Biomechanics of Fractures

David L. Helfet, M.D.

Associate Professor of Orthopaedic Surgery, Cornell University Medical College; Director, Orthopaedic Trauma Service, The Hospital for Special Surgery and New York Hospital, New York, New York

Fractures of the Distal Femur

John A. Hipp, Ph.D.

Assistant Professor, Department of Orthopaedics, Baylor College of Medicine, Houston, Texas

Biomechanics of Fractures

James L. Hughes, Jr., M.D.

Professor of Orthopaedic Surgery, University of Mississippi School of Medicine; Chairman, Department of Orthopaedic Surgery, University of Mississippi Medical Center; Attending Faculty, Mississippi Methodist Rehabilitation Center/Hospital, Jackson, Mississippi

Fractures of the Diaphyseal Humerus

Lenworth M. Jacobs, M.D., M.P.H., F.A.C.S.

Professor of Surgery, University of Connecticut School of Medicine, Farmington; Director, Emergency Medicine/Trauma Program, Hartford Hospital, Hartford, Connecticut

Evaluation and Treatment of the Multiple-Injured Patient

Tom Janisse, M.D.

Assistant Regional Medical Director, Liaison to Health Plan and Human Resources, Kaiser Permanente Northwest; Editor-in-Chief, The Permanente Journal, Portland, Oregon

Perioperative Pain Management of the Injured

Kenneth D. Johnson, M.D.

Professor, Department of Orthopaedic Surgery; Director, Trauma Division, Vanderbilt University Medical Center, Nashville, Tennessee

Femoral Shaft Fractures

Jesse B. Jupiter, M.D.

Associate Professor of Orthopaedic Surgery, Harvard Medical School; Director, Orthopaedic Hand Service, Massachusetts General Hospital, Boston, Massachusetts

Fractures and Dislocations of the Hand; Fractures of the Distal Radius; Diaphyseal Fractures of the Forearm; Trauma to the Adult Elbow and Fractures of the Distal Humerus; Injuries to the Shoulder Girdle—Fractures of the Clavicle

Timothy L. Keenen, M.D.

Adjunct Associate Professor, Department of Orthopaedics and Rehabilitation, Oregon Health Sciences University, Portland, Oregon

Initial Evaluation and Emergency Treatment of the Spine-Injured Patient

James F. Kellam, B.Sc., M.D., F.A.C.S., F.R.C.S.(C.)

Director of Orthopedic Trauma, Carolinas Health Care System, and Vice Chairman, Department of Orthopedic Surgery, Carolinas Medical Center, Charlotte, North Carolina

Orthopaedic Management Decisions in the Multiple-Trauma Patient; Fractures of the Pelvic Ring; Diaphyseal Fractures of the Forearm

Joseph M. Lane, M.D.

Professor of Orthopaedic Surgery, Cornell University Medical College; Orthopaedic Attending Physician, Hospital for Special Surgery, New York, New York

Pathologic Fractures—Metabolic Bone Disease

Loren L. Latta, P.E., Ph.D.

Professor and Director of Research, Department of Orthopaedics and Rehabilitation, University of Miami, School of Medicine; Associate Professor, Department of Biomedical Engineering, University of Miami, School of Engineering, Miami, Florida

Principles of Nonoperative Fracture Treatment

Sebastian Lattuga, M.D.

Attending Spine Surgeon, Mercy Medical Center, Rockville Center, New York

Gunshot Wounds of the Spine

David Leffers, M.D.

Associate Professor, University of Southwest Florida; Orthopaedic Surgeon, Tampa General Hospital, Tampa, Florida

Dislocations and Soft Tissue Injuries of the Knee

Paul E. Levin, M.D.

Assistant Clinical Professor, Department of Orthopaedics, State University of New York at Stony Brook, Stony Brook, New York

Hip Dislocations

Alan M. Levine, B.A., M.A., M.D.

Associate Chief of Orthopaedic Surgery, Professor of Orthopaedic Surgery and Oncology, Division of Orthopaedic Surgery, University of Maryland School of Medicine; Consultant in Spinal Injury, Maryland Shock Trauma Unit, Baltimore, Maryland

Pathologic Fractures—Neoplasia; Lumbar and Sacral Spine Trauma

Roger N. Levy, M.D.

Clinical Professor of Orthopaedics, Mount Sinai School of Medicine; Chief of Arthritis Surgery, Mount Sinai Medical Center, New York, New York

Intertrochanteric Hip Fractures

Dean G. Lorch, M.D.

Assistant Professor of Orthopaedic Surgery, University of Hawaii; Attending Orthopaedic Surgeon, Queens Medical Center, St. Francis Medical Center, and Surgicare, Honolulu, Hawaii

Fractures of the Distal Femur

Jeffrey W. Mast, M.D.

Professor, Department of Orthopaedic Surgery, Wayne State University School of Medicine; Staff Orthopaedic Surgeon, Hutzel Hospital and Detroit Receiving Hospital, Detroit, Michigan

Principles of Internal Fixation

Joel M. Matta, M.D.

Associate Clinical Professor, Department of Orthopaedic Surgery, Department of Medicine, University of Southern California at Los Angeles; John C. Wilson, Jr.—Chair of Orthopaedic Surgery, Good Samaritan Hospital, Los Angeles, California

Surgical Treatment of Acetabulum Fractures

Augustus D. Mazzocca, M.D.

Resident, Department of Orthopaedic Surgery, University of Connecticut Health Center, Farmington, Connecticut

Principles of Internal Fixation

Michael D. McKee, M.D., F.R.C.S.(C.)

Assistant Professor, Division of Orthopaedics, Department of Surgery, University of Toronto; Active Staff, Division of Orthopaedics, Department of Surgery, St. Michael's Hospital, Toronto, Ontario, Canada

Trauma to the Adult Elbow and Fractures of the Distal Humerus

Robert Y. McMurtry, M.D.

Professor of Medicine and Surgery, and Dean of Medicine and Dentistry, University of Western Ontario; Consultant in Orthopaedics, Hand and Upper Limb Center, St. Joseph's Health Centre, London, Ontario, Canada

Fractures of the Distal Radius

David K. Mehne, M.D.

Medical Director, Orthopedic Ministries of the Caribbean, Hospital General Menonita, Aibonito, Puerto Rico

Trauma to the Adult Elbow and Fractures of the Distal Humerus—Fractures of the Distal Humerus

Michael W. Mendes, M.D.

Orthopaedic Trauma Surgeon, Pee Dee Orthopedic Associates, Florence, South Carolina

Principles of Internal Fixation

Laurence E. Mermelstein, M.D.

Attending Staff, Department of Orthopedic Surgery, Long Island Spine Specialists, Commack; Attending Staff, Department of Orthopedic Surgery, Huntington Hospital, Huntington; St. Johns Episcopal Hospital, Smithtown, New York

Initial Evaluation and Emergency Treatment of the Spine-Injured Patient

Michael E. Miller, M.D.

Clinical Associate Professor, University of Alabama Medical Center; Attending Physician, Medical Center East, Carraway Methodist Medical Center, Birmingham, Alabama

Injuries to the Shoulder Girdle

Stuart E. Mirvis, M.D.

Professor of Radiology, University of Maryland School of Medicine; Professor of Radiology and Chief-of-Diagnosis, Department of Radiology; Director of Radiology, Maryland Shock-Trauma Center, University of Maryland Medical System, Baltimore, Maryland

Spinal Imaging

Todd D. Moldawer, M.D.

Director of Spinal Surgery, Southern California Orthopedic Institute, Van Nuys, California

Gunshot Wounds to the Musculoskeletal System

Michael L. Nerlich, M.D.

Professor and Chairman, Department of Trauma Surgery, University of Regensburg, Medical School; Chairman, Department of Trauma/Surgery, University of Regensburg Hospital, Regensburg Emergency Services Centre of the University (RESCU), University of Regensburg, Germany

Biology of Soft Tissue Injuries

Tom R. Norris, M.D.

Attending Orthopaedic Surgeon, California Pacific Medical Center, San Francisco, California

Proximal Humerus Fractures and Glenohumeral Dislocations

Steven A. Olson, M.D.

Assistant Professor and Chief of Orthopaedic Trauma, Department of Orthopaedic Surgery, University of California at Davis Medical Center, Sacramento, California

Surgical Treatment of Acetabulum Fractures

Andrew N. Pollak, M.D.

Assistant Professor of Surgery, University of Maryland School of Medicine; Attending Orthopaedic Traumatologist and Physician Director of Development, R. Adams Cowley Shock Trauma Center, Baltimore, Maryland

Principles of External Fixation

P. Prithvi Raj, M.D., F.A.C.A., D.A.B.P.M.

Professor and Codirector, University Pain Service, University Medical Center, Texas Tech University, Lubbock, Texas

Useful Nerve Blocks for Pain Relief and Surgery; Perioperative Pain Management of the Injured; Complex Regional Pain Syndrome (Reflex Sympathetic Dystrophy)

David Ring, M.D.

Resident, Harvard Combined Orthopaedic Residency, Harvard Medical School; Resident in Orthopaedic Surgery, Massachusetts General Hospital, Boston, Massachusetts

Injuries to the Shoulder Girdle—Fractures of the Clavicle

Howard Rosen, M.D.

Clinical Professor of Orthopaedics, New York University School of Medicine; Chief of the Problem Trauma Service, Hospital for Joint Diseases Orthopaedic Institute, New York, New York

Nonunion and Malunion

Leonard K. Ruby, M.D.

Professor of Orthopedic Surgery, Tufts University School of Medicine; Director, Division of Hand Surgery, New England Medical Center Hospital, Boston, Massachusetts

Fractures and Dislocations of the Carpus

Thomas A. Russell, M.D., B.S.

Associate Professor of Orthopaedic Surgery, Department of Orthopaedic Surgery, University of Tennessee; Russell Orthopaedic Center, Memphis, Tennessee

Subtrochanteric Fractures of the Femur

Roy Sanders, M.D.

Professor of Clinical Orthopaedics, University of South Florida; Chief, Department of Orthopaedic Surgery, Tampa General Hospital, Tampa, Florida

Patella Fractures and Extensor Mechanism Injuries

Augusto Sarmiento, M.D.

Professor and Chairman Emeritus, Department of Orthopaedics and Rehabilitation, University of Miami, School of Medicine, Miami; Director, The Arthritis and Joint Replacement Institute, Health South Medical Building, Coral Gables, Florida

Principles of Nonoperative Fracture Treatment

Richard A. Saunders, M.D.

Orthopedic Surgeon in private practice, Glens Falls Hospital, Glens Falls, New York

Physical Impairment Ratings for Fractures

Felix H. Savoie III, M.D.

Clinical Associate Professor of Orthopaedic Surgery, University of Mississippi Medical Center; Co-Director, Upper Extremity Service, Mississippi Sports Medicine and Orthopaedic Center, Jackson, Mississippi

Fractures of the Diaphyseal Humerus

Joseph Schatzker, M.D.

Professor of Surgery, University of Toronto; Orthopaedic Surgeon, Sunnybrook Health Science Center, Toronto, Ontario, Canada

Tibial Plateau Fractures

Robert K. Schenk, M.D., Professor Emeritus

Former Professor of Anatomy, Histology, and Embryology; Head of Bone Research Laboratory, Department of Oral Surgery, University of Berne, Berne, Switzerland

Biology of Fracture Repair

David Seligson, M.D.

Professor, Department of Orthopedics, University of Louisville;
Chief of Fracture Service, University of Louisville Hospital,
Louisville, Kentucky

Diagnosis and Treatment of Complications

E. F. Shaw Wilgis, M.D.

Associate Professor of Orthopaedic Surgery and Associate Professor of Plastic Surgery, The Johns Hopkins School of Medicine; Chief of Hand Surgery and Director of Raymond Curtis Hand Center, Union Memorial Hospital, Baltimore, Maryland

Brachial Plexus and Shoulder Girdle Injuries

Randy Sherman, M.D.

Professor and Chief, Plastic and Reconstructive Surgery, University of Southern California, Los Angeles, California

Soft Tissue Coverage

D. Hal Silcox III, M.D.

Assistant Professor of Orthopaedic Surgery, Emory University School of Medicine; Chief of Spinal Surgery, Veterans Administration Medical Center; Active Staff, Crawford W. Long Hospital, Emory University Hospital, Atlanta, Georgia

Injuries of the Cervicocranium

John M. Siliski, M.D.

Reconstructive Knee Unit, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts

Dislocations and Soft Tissue Injuries of the Knee

Gray C. Stahlman, M.D.

Spine Fellow, Department of Orthopaedics, Carolinas Medical Center, Charlotte, North Carolina

Surgical Management of Spinal Injuries

Marc F. Swiontkowski, M.D.

Professor and Chairman, Department of Orthopaedics, University of Minnesota, Minneapolis, Minnesota

Evaluation of Outcomes for Musculoskeletal Injury; Intracapsular Hip Fractures

J. Charles Taylor, M.D.

Memphis Orthopedic Associates; St. Francis Hospital, Memphis, Tennessee

Subtrochanteric Fractures of the Femur

Peter G. Trafton, M.D., F.A.C.S.

Professor/Vice Chairman of Orthopaedic Surgery, Brown University School of Medicine; Surgeon-in-Charge, Orthopaedic Trauma, Rhode Island Hospital, Providence, Rhode Island

Tibial Shaft Fractures; Malleolar Fractures and Soft Tissue Injuries of the Ankle

Harald Tscherne, M.D.

Professor and Chairman, Department of Trauma Surgery, Hannover Medical School; Chairman, Department of Trauma Surgery, Hannover Medical School Hospital Trauma Center, Hannover, Germany

Biology of Soft Tissue Injuries

Bruce C. Twaddle, B.H.B., M.B., Ch.B., F.R.A.C.S.

Orthopaedic Traumatologist, Department of Orthopaedics, Auckland Hospital, Grafton, Auckland, New Zealand

Compartment Syndromes

E. Frazier Ward, M.D.

Associate Professor of Orthopedic Surgery, Department of Orthopaedic Surgery and Rehabilitation, University of Mississippi School of Medicine and Medical School; Staff Orthopedist, Jackson Veterans Administration Medical Center and Mississippi Methodist Rehabilitation Center, Jackson, Mississippi

Fractures of the Diaphyseal Humerus

J. Tracy Watson, B.S.(Hon.), M.D.

Senior Staff Traumatologist, Division of Orthopaedic Traumatology, Department of Orthopaedic Surgery, Bone and Joint Center, Henry Ford Health System, Detroit, Michigan

Tibial Plateau Fractures

Lon S. Weiner, M.D.

Assistant Clinical Professor, Mount Sinai School of Medicine; Section Chief, Trauma, Lennox Hill Hospital, New York, New York

Fractures of the Tibial Pilon

Joanne R. Werntz, M.D.

Clinical Instructor of Hand Surgery and Hand Surgeon, Orlando Regional Medical Center, Orlando, Florida

Pathologic Fractures—Metabolic Bone Disease

Thomas E. Whitesides, Jr., B.S., M.D.

Professor of Orthopaedics, Department of Orthopaedics, Emory University School of Medicine, Atlanta, Georgia

Injuries of the Cervicocranium

Sam W. Wiesel, M.D.

Professor and Chairman, Department of Orthopaedic Surgery, Georgetown University Medical Center, Washington, District of Columbia

Physical Impairment Ratings for Fractures

Donald A. Wiss, M.D.

Southern California Orthopedic Institute, Van Nuys, California

Gunshot Wounds to the Musculoskeletal System

Philip R. Wolinsky, M.D.

Assistant Professor of Orthopaedic Surgery, Department of Orthopaedic Surgery, Vanderbilt University Medical Center—Trauma Division, Nashville, Tennessee

Femoral Shaft Fractures

Hansen A. Yuan, M.D.

Professor, Department of Orthopaedic and Neurological Surgery, State University of New York Health Science Center at Syracuse; Active Staff, Crouse Irving Memorial Hospital; Consultant, Veterans Administration Hospital; Consultant, St. Joseph's Hospital Health Center, Syracuse, New York

Nonoperative Treatment of the Spine: External Immobilization

Bruce H. Ziran, M.D.

Assistant Professor, Department of Orthopaedic Surgery, Division of Orthopaedic Traumatology, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania

Principles of External Fixation

Gregory A. Zych, D.O.

Associate Professor and Associate Chairman for Clinical Affairs, and Chief, Orthopaedics Trauma, University of Miami, School of Medicine, Miami, Florida

Principles of Nonoperative Fracture Treatment

Foreword

Every busy, practicing orthopaedic surgeon needs textbooks that will help him or her solve immediate problems at hand. The second edition of *Skeletal Trauma: Fractures, Dislocations, Ligamentous Injuries* meets that need as editors Bruce D. Browner, Jesse B. Jupiter, Alan M. Levine, and Peter G. Trafton have focused the text on the day-to-day needs of orthopaedic surgeons treating trauma. They have retained the strongest chapters and authors from the first edition and have added new authors who are nationally and internationally recognized as experts in their area of special interest. More importantly, they are surgeons involved in the day-to-day practice of orthopaedic trauma, providing the readers with practical advice based on substantial experience.

The first edition was distinguished by its contemporary approach to the treatment of fractures, dislocations, and associated soft tissue trauma. The second edition retains that contemporary approach, providing the surgeon with problem-oriented chapters that are practical; extensive use of algorithms, tables, and figures permits the surgeon to quickly gain the knowledge necessary to solve immediate problems. Most importantly, there is sufficient focus on the technical aspects of surgery that the orthopaedist can depend on being led through the surgical treatment in a logical, stepwise, easy-to-understand approach. This textbook not only provides solid, comprehensive education in orthopaedic trauma with appropriate references but also tells you how to do it.

Since the first edition was published in 1992, the United States has experienced an explosive expansion in managed health care. In the most highly penetrated, hypercompetitive markets, such as Sacramento, California, and Minneapolis, Minnesota, nearly 90% of all patients are in some type of managed health care plan. This has had significant impact on patterns of practice and the need for ready reference works such as *Skeletal Trauma*. Managed health care restricts the mobility of patients,

and in many cases requires that all of a patient's care take place within a given network of physicians, clinics, and hospitals. This is particularly true if the health care plan is capitated. The result of this is that many community-based orthopaedic surgeons find they are taking much more trauma calls and must care for a wide range of traumatic injuries that in prior times were referred to city/county facilities, trauma centers, or academic medical centers. In the past, trauma care was seen as an undesirable part of orthopaedic practice, as it demanded much nighttime and weekend work, disrupted office hours and elective surgery schedules, and was difficult to be prepared for because of its urgent nature. Equally as important from the standpoint of influencing health care provider behavior, trauma victim's care was often uncompensated. On the other hand, in this world of managed health care, compensation for routine and elective surgery has declined so much that compensation for trauma care is now attractive, particularly in view of the fact that many other sources may be available to pay for trauma care, such as automobile insurance and industrial accident insurance. As a result, provider networks are now finding that trauma care can be economically rewarding and is very expensive to pay for when provided out-of-network. Therefore, they are requiring the providers in their network to provide comprehensive trauma care for their enrollees. For orthopaedic surgeons finding themselves in this situation, there will be an ever-increasing need in the future to be better educated in trauma care and to have a readily available, practical and useful reference on the care of trauma. *Skeletal Trauma* meets that need.

As in all fields of medicine, the care of general trauma and fractures and dislocations has changed significantly since the first edition. The editors and contributors bring to the reader 5 new chapters and 53 previously existing, but now extensively rewritten, chapters providing current, cutting-edge material. There have been many

interesting controversies in intramedullary nailing over the past 3 to 4 years. The authors provide updates on the current status of reamed and nonreamed intramedullary nailing for long bone fractures and address current practice and controversies. There have been significant advances in the treatment of intraarticular and periarticular fractures with particular emphasis on avoiding complications by utilizing percutaneous fixation techniques and external fixation, often in interesting, innovative combinations. Complex fractures of the tibial plafond, often known as pilon fractures, provide unique challenges that are recognized in their own chapter, separated from routine ankle fractures. There is expanded coverage of injuries of the spine. Reflecting contemporary knowledge, a new chapter on the enhancement of skeletal repair

emphasizes many of the new advances that have been made in physical and molecular biologic and cellular approaches to enhancing bone repair. Last, in recognition of the impact of managed health care, a chapter on the evaluation of outcomes provides the reader with tools that will be of increasing importance in our medical economic environment as the necessity for proving the efficacy of the way we treat patients will be required for the survival of our practices and health care systems.

This second edition of *Skeletal Trauma* is custom-written to fit the needs of our times and is a valuable reference work and practical guide to trauma treatment for orthopaedic surgeons and other traumatologists involved in the management of musculoskeletal injuries.

MICHAEL W. CHAPMAN, M.D.
Professor and Chair
Department of Orthopaedic Surgery
University of California at Davis
Sacramento, California

Preface

The first edition of *Skeletal Trauma: Fractures, Dislocations, Ligamentous Injuries* was written between 1988 and 1991. This represented a unique window for the creation of this text, coinciding with the increased recognition of the special needs of trauma victims. By the mid 1980s, more than 500 regional trauma centers had been established throughout the United States and Canada. Since the mid-1980s, the volume and acuity of blunt trauma and associated musculoskeletal injuries reached a high-water mark. The editors and contributing authors for *Skeletal Trauma* had been on the front lines working in the major trauma centers throughout this period. They helped to develop a new operative approach to the treatment of these injuries that stressed early skeletal fixation and rapid mobilization. The incomparable first-hand experience that they gained helped shape their contributions to the text. Since the early 1990s, the widespread adoption of child restraint and seat belt legislation and successful initiatives to control driving under the influence have significantly lowered incidence of motor vehicle accidents. Improvements in automotive design, such as airbags and side rails, continue to reduce the incidence and severity of blunt trauma and complex musculoskeletal injuries. Although there has been an alarming increase in injuries and deaths owing to gunshots in our major cities, penetrating trauma does not result in the multiplicity and complexity of skeletal injuries that trauma from vehicular accidents does. In addition, the managed care contracting practices have resulted in the dispersion of trauma patients to community hospitals, often reducing the number of injuries seen in trauma

centers. In retrospect, the 1980s provided a unique opportunity for the creation of this text.

The excellent manuscripts provided by our contributing authors and the beautiful illustrations created by the artists were assembled into an outstanding three-color text by the W.B. Saunders production department. In the year of its publication, 1992, it won first prize in medical sciences from the Association of American Publishers as the best new medical book. The text has been widely embraced by orthopaedic and trauma surgeons throughout the world for its clarity and its utility. They have consistently expressed their appreciation of our approach, which stressed the discussion of problem-focused clinical judgment and proven surgical techniques. The textbook has been regarded by surgeons in training and practicing physicians to be a practical resource that can help guide them through the management of the musculoskeletal injuries with which they are confronted. We have retained and strengthened this basic philosophy and organization in the second edition. We have added new chapters to cover important subjects that were not addressed adequately in the first edition. We are grateful to our contributing authors, who have approached their tasks with the highest level of scholarship and attention to detail. They have made an extensive effort to seek constructive criticism from the readers of the first edition, and have used it to enhance the treatment of these subjects in the second edition. We are confident that the second edition of *Skeletal Trauma* exceeds the high level of quality established by the first and that it will meet our readers' needs as they care for injured patients.

BRUCE D. BROWNER, M.D.
JESSE B. JUPITER, M.D.
ALAN M. LEVINE, M.D.
PETER G. TRAFTON, M.D.