

# Atlas of Surgical Techniques in Trauma





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To my parents, my wife Elizabeth, my daughters Alexis and Stefanie, and my son Nicky.

D. Demetriades

To my parents, wife Susie and son Koji, thank you for all of your support. *K. Inaba* 

To those who inspired me and those who allowed me to become a trauma surgeon: my teachers and my parents.

G. Velmahos





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# **Preface**

The aim of this *Atlas of Surgical Techniques in Trauma* is to provide a valuable companion in the operating room to the surgeons who provide care to the injured. It is designed to be a rapid, highly visual summary of the critical anatomy, procedural sequencing, and pitfalls associated with these procedures, ideal for trainees as well as for those in practice, as a rapid review of both common and uncommonly performed procedures prior to proceeding to the operating room.

The atlas is organized into chapters and sections according to anatomical areas. It includes more than 630 high-quality photographs and illustrations and is written in a reader-friendly format, which includes practical surgical anatomy, general principles, exposure, definitive management, and technical tips and pitfalls. It guides the surgeon, step by step, through the entire procedure, from incision to closure.

What makes this atlas unique is the use of images obtained from fresh, perfused, and ventilated human cadavers. Many hundreds of hours were spent in the USC Fresh Tissue Dissection Lab for this project. The critical aspects of each surgical exposure and procedure are clearly demonstrated in these high-fidelity models, allowing the reader to rapidly understand the technical key points, which are often difficult to convey using words alone. The extensive real-world clinical experience of the editors and senior authors in managing complex injuries at large trauma centers, combined with these high-quality operative photos and technical illustrations make this atlas an important tool in the armamentarium of the practicing surgeon.

Demetrios Demetriades, Kenji Inaba, and George Velmahos



# Acknowledgments

The editors and authors greatly acknowledge the major contributions of Alexis Demetriades, Scientific Illustrator; Michael Minneti and Andrew Cervantes for coordinating and helping

with the anatomical dissections and photos in the Fresh Tissue Dissection Lab.

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# Introduction

A contemporary focused *Atlas* of surgical techniques in trauma has been a much needed adjunct to the didactic text-books, conferences and symposia, and other instructional material available in the field of acute care surgery and trauma. Although adjunctive descriptors have been part of many monographs and formal textbooks on the subject of trauma techniques, this unique atlas will significantly aid all who care for injured patients.

This book is *Unique* in a number of aspects. It is a work product of a single group of physicians who are, or have been in the past, in the faculty of a single institution with a singular approach to most operative techniques in this field. The surgeons in this institution, Los Angeles County & Southern California Medical Center in Los Angeles, also have integrated their educational material using human cadaver material in a standardized and innovative approach. The cadaver anatomic material is correlated in a standardized manner, facilitating an appreciation of the dynamics of exposure, control, and management. Anatomic drawings benefit the detailed learner during course instruction as well as the surgeon seeking rapid review at the time of an urgent operation. Once the reader recognizes the standardized approach to teaching, progressing through any chapter or subject in the atlas is quick and easy. This atlas material is also very amenable to small portable electronic devices, allowing a ready source for anatomy correlations, exposure recommendations, and reconstruction details - anywhere and at any time.

This *Atlas* is *Not* simply a collection of drawings. It is an Atlas textbook of techniques. It is a philosophy of surgical approaches – "a recipe." It is the type of book that would/ should have been shared with the learner by his/her mentor very early on. It is like bedtime reading – to be enthusiastically rendered to an enthusiastic recipient. It is the type of

standardized material that is easily remembered and recalled because of its unique presentation.

Finally, any user of this atlas must grant me some moments of historic reflection and confession. Although I spent much of my medical school days trying to impress by taking detailed lecture notes, subscribing to and "fake reading" the New England Journal of Medicine, buying the recommended detailed long textbooks on the subject de jour, and trying to remain awake in my usual seat in the third row of the lecture room, my medical school and residency life suddenly became productively alive when I discovered the Surgical Technique atlases in the library. I avidly consumed these books. They were always huge and could not easily be carried around, but I managed to do just that. Becoming a surgical resident, I purchased and still own the ("big names") popular surgical technique atlases of the day (1967-1971). As the big names stopped producing new atlases with their wonderful artwork, they became historic memories on the shelves of my office. For decades, I could find no quality renewals or replacements. Now, with this well-organized, standardized, focused Atlas of Surgical Techniques in Trauma, those experiences no longer will be mere memories. Thank you, Demetrios and your wonderful team of artists, pathologists, and surgeons for this beautiful and innovative atlas and for the incredible learning experience it will give all caring for injured patients.

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