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978-0-521-51578-8 - Ultrasound-Guided Regional Anesthesia: A Practical Approach to Peripheral Nerve Blocks and Perineural Catheters

Fernando L. Arbona, Babak Khabiri and John A. Norton

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Illustrated by Charles Hamilton and Kelly Warniment



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Fernando L. Arbona

This book is dedicated to my wife, Melissa, and my three beautiful daughters, Olivia, Sophia, and Mia, who provide me with the love, support, and inspiration that help me in all of life's endeavors.

Babak Khabiri

For my parents Badi Khabiri and Mahin Raz Khabiri who instilled in us a love for learning and helping others; and my three older brothers Ramin, Shahriar, and Hooman who showed me the way.

John A. Norton

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Free access website at www.cambridge.org/arbona containing numerous ultrasound loops and video clips showing nerve block and perineural catheter techniques being performed.

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Preface

Ultrasound guidance in regional anesthesia provides real-time imaging during the placement of nerve blocks and perineural catheters, improving patient comfort, decreasing many procedure times, and revealing valuable anatomic information, which may enhance patient safety. It therefore comes as no surprise that the use of ultrasound in regional anesthesia continues to grow in popularity, opening new doors to physicians in their practice where barriers may have once existed. As regional anesthesiologists, we have written this text for residents, fellows, and staff physicians desiring to learn and begin incorporating the use of ultrasound into the scope of their busy practices.

This book introduces the use of ultrasound technology for the placement of peripheral nerve blocks and perineural catheters. Our goal in writing this text was to provide an easy-to-read source of information with particular attention to the steps and detail involved with ultrasound imaging, as well as block and catheter placement.

We have organized the text into four major sections, beginning with chapters to introduce basic concepts in regional anesthesia including local anesthetics, ultrasound physics and imaging, as well as anatomy. The chapter on local anesthetics is written to convey basic pharmacologic concepts about the medications commonly used in peripheral nerve blocks. Multiple, more in-depth sources other than this text are available for review. Our intention here is to introduce agents common to the practice of regional anesthesia with concise, retainable information for anesthesia providers.

The introduction to ultrasound is divided into two separate chapters (Chapters 2 and 3). The first of these chapters discusses basic principles of ultrasound physics and imaging, while the second covers the current utilization of this technology in a regional anesthesia setting. An in-depth discussion of probe manipulation, image optimization, and troubleshooting

techniques is provided. For the beginner, these chapters are important, and they are written to be easy to follow with information and nomenclature that will become commonplace as you implement ultrasound into your practice.

The middle sections of the text (Sections 2 and 3) discuss the placement of ultrasound-guided single-shot regional blocks that can be routinely used in most busy anesthesia practices. Section 2 focuses on upper extremity peripheral nerve blocks, while Section 3 turns to blocks of the lower extremity. Each chapter is introduced with a discussion of pertinent anatomy in the block region. An understanding of anatomical structures and relationships is key when ultrasound imaging is undertaken during scanning and block placement. All chapters provide specific instruction on block selection and set up, needle positioning, local anesthetic injection, and troubleshooting.

Section 4 includes chapters detailing the practical placement and positioning of continuous perineural catheters under ultrasound guidance. We feel this is a unique feature of this text.

While we do summarize procedures for quick, easy reference, portions of each procedural chapter are written as if the instructor were there performing the block with you. Further, our “Key points” or “Additional considerations” paragraphs outlined within the text of each chapter are there to provide additional hints, reminders, or instructions, which may improve block success or enhance safety in your practice.

Much of the information in these chapters we draw from our own experience as instructors at a major academic medical center and a fast-paced ambulatory setting. The “Authors’ clinical practice” sections highlight our own personal practice and opinions regarding topics covered in the preceding chapter. We developed these discussions as a “see how we do it” section for quick, easy reference at the end of each chapter. These are the answers to questions we

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are often asked when teaching these techniques. Though we do not attest that this is always the preferred or best way to achieve a specific desired result, we have found the points made in these discussions to be most efficacious in our own practice.

For those new to ultrasound in regional anesthesia and a particular block approach, we find the best use of this book is in review of the detail-oriented sections prior to undertaking new techniques. Summary sections within each chapter can then be referred to

later for quick and easy review. And just as we teach our residents, we advocate becoming proficient with single-shot peripheral nerve blocks utilizing ultrasound before attempting perineural catheter placement.

This book was written to organize and convey to others the instruction we use and teach in our daily practice. If you are interested in picking up an ultrasound probe to assist with your next peripheral nerve block, this book was written for you.

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