Preface

Ultrasonography is a very welcome addition to fluoroscopy and other imaging techniques in interventional pain practice. Over the past few years, interest in ultrasonography in pain medicine (USPM) has been fast growing, as evidenced by the plethora of published papers in peer-reviewed journals as well as presentations at major national and international meetings. This has prompted the creation of a special interest group on USPM within the American Society of Regional Anesthesiology and Pain Medicine, of which I am honored to be chair.

The major advantages of ultrasonography (US) over fluoroscopy include the absence of radiation exposure for both patient and operator, and the real-time visualization of soft tissue structures, such as nerves, muscles, tendons, and vessels. The latter is why US guidance of soft tissue and joint injections brings great precision to the procedure and why ultrasound-guided pain nerve blocks improve its safety. That said, USPM is not without flaws. Its major shortcomings are the limited resolution at deep levels, especially in obese patients, and the artifacts created by bone structures.

While the evidence points to the superiority of US over fluoroscopy in peripheral nerves, soft tissue, and joint injections, it also suggests that we should not abandon fluoroscopy in favor of US in spine injections and should instead consider combining both imaging modalities to further enhance the goal of a successful and safer spine injection.

When I first started using US in pain blocks a few years ago, there was no single text on the subject, and that remains true today. Most of my knowledge on the subject was gained from traveling overseas to learn from expert sonographers, radiologists, and anatomists. The rest was worked out by trial and error using dissected cadavers and confirming appropriate needle placement with fluoroscopy or CT scan. When I started teaching courses on USPM, the overwhelmingly enthusiastic response from students persuaded me of the need for a comprehensive and easy-to-follow atlas of US-guided pain blocks. That is how this book – the first to cover this exciting new field – was born.

Not surprisingly, an extensive learning curve is associated with US-guided pain blocks. The main objective of this atlas is to enable physicians managing acute and chronic pain syndromes who are beginning to use US-guided pain procedures to shorten their learning curve and to make their learning experience as enjoyable as possible. Among the target groups are pain physicians, anesthesiologists, physiatrists, rheumatologists, neurologists, orthopedists, sports medicine physicians, spine specialists, and interventional radiologists.

I was fortunate to gather almost all of the international experts in US-guided pain blocks to contribute to this book, each one writing about his or her area of subspecialty expertise, and for this reason, I am very proud of the book. Its central focus is on anatomy and sonoanatomy. The clinical section begins with a chapter devoted to anatomy and
sinoanatomy of the spine written by a dear friend, Professor Dr. Moriggl, who is a world-
classanatomist from Innsbruck, Austria, with special expertise in sinoanatomy. He is the
only one who could have written such a chapter. Each clinical chapter follows this format:
description of sinoanatomy accompanied by illustrations; detailed description of how to
perform the procedure, beginning with the choice and application of the transducer, to
how the needle is introduced, and finally, to how to confirm appropriate needle place-
ment. This stepwise description of the technique is enhanced by sonograms both without
labels and – to better understand the images – with labels.

The book comprises 30 chapters, organized into 6 parts, covering US-guided pain
blocks in the acute perioperative and chronic pain clinic settings as well as US-guided
MSK applications.

Part I reviews the imaging modalities available to perform pain procedures and the
basics of ultrasound imaging. Two important clinical chapters cover the essential knobol-
ogy of the ultrasound machine and how to improve needle visibility under US.

Part II is also the largest and covers the sinoanatomy of the entire spine and spine
injection techniques in the cervical, thoracic, lumbar, and sacral areas. All the different
applications are well documented with simple illustrations and labeled sonograms to make
it easy to follow the text.

Part III focuses on abdominal and pelvic blocks. It covers the now famous transversus
abdominis plane (TAP) block, celiac plexus block, and various pelvic and perineal
blocks.

Part IV addresses peripheral nerve blocks and catheters in the acute perioperative
period as well as peripheral applications in chronic pain medicine. Ultrasound-guided stel-
late and cervical sympathetic ganglion blocks are presented, as are peripheral nerve blocks
commonly performed in chronic pain patients (e.g., intercostals, suprascapular, ilioinguinal,
iliohypogastric, and pudendal).

Part V is devoted to the most common joint and bursa injections and MSK applica-
tions in pain practice. The chapters are written by world experts in the area of MSK
ultrasound.

Part VI covers advanced and new applications of ultrasound in neuromodulation and
pain medicine and looks ahead to its future. Ultrasound-guided stellate and cervical sympathetic ganglion blocks are presented, as are peripheral nerve blocks
commonly performed in chronic pain patients (e.g., intercostals, suprascapular, ilioinguinal, iliohypogastric, and pudendal).

A couple of notes about the book: the text has been kept to a minimum to allow for a
maximal number of instructive illustrations and sonograms, and the procedures described
here are based on a review of the techniques described in the literature as well as the
authors’ experience.

The advancement of ultrasound technology and the range of possible clinical circum-
stances may give rise to other, more appropriate approaches in USPM. Until then, master-
ing the current approaches will take preparation, practice, and appropriate mentoring
before the physician can comfortably perform the procedures independently. It is my hope
that this book will encourage and stimulate all physicians interested in interventional
pain management.

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