
Interventional Management of Head and Face Pain

Samer N. Narouze
Editor

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Nerve Blocks and Beyond

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ISBN 978-1-4614-8950-4 ISBN 978-1-4614-8951-1 (eBook)
DOI 10.1007/978-1-4614-8951-1
Springer New York Heidelberg Dordrecht London

Library of Congress Control Number: 2014941921

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Printed on acid-free paper

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To my wife, Mira, and my children, John, Michael, and Emma—the true love and joy of my life. Without their continuous understanding and support, I could have not completed this book.

This book is also dedicated to the memory of my father, who always had faith in me, and to my mother, for her ongoing love and guidance.

Foreword

The overlap between the disciplines of pain management, headache medicine, and surgery allows for the opportunity to optimize treatment for patients with head and face pain. Dr. Samer Narouze was the first pain management anesthesiologist specialist in the United States to become board-certified in headache medicine by the United Council of Neurologic Subspecialists (UCNS). It is therefore fitting that he decided to put together a textbook on blocks, interventions, injections, and neuromodulation possibilities in this integrated interdisciplinary area of treatment for head and facial pain.

Dr. Narouze collected a constellation of superb physicians who practice regularly in the treatment of head and face disorders to write on the options for these patients. Dr. Alexander Feoktistov MD, PhD works at the Diamond Headache Center in Chicago, and is the perfect seasoned clinician to cover diagnostic and classification aspects of patients with refractory head pain. Armed with these diagnostic pearls, Dr. Narouze offers an algorithm as to how to slot interventions in the targeted patient groups. This leads to the body of the textbook with its iteration of the actual blocks, injections, procedures, and considerations for neuromodulation.

The triad of Doctors Dmitri Souzdalnitski, John Costandi, and Sherif Costandi provide an overview of peripheral nerve blocks. Dr. MaryAnn Mays runs the Neurology Residency Training program at the Cleveland Clinic and is board-certified in both Headache Medicine and Neuromuscular Neurology, so is perfectly situated to write about occipital nerve blocks.

For years, Dr. Narouze was the Fellowship Director for Pain Management at the Cleveland Clinic and taught countless doctors the “how-to” of more complex interventions, such as trigeminal, sphenopalatine, gasserian, third occipital, glossopharyngeal nerve and medial branch blocks, atlanto-occipital, atlanto-axial, and facet joint injections, and epidural blood patches. He also instructed the highest level procedures for pain management, such as radiofrequency ablations (RFA) and neurostimulation evaluation and placement.

Dr. Andrew Blumenfeld wrote the seminal article on methods of injection for onabotulinumtoxinA (onabot) in chronic migraine. Along with Dr. Steven Silberstein, Past-President of the American Headache Society, the two men have co-authored many of the pivotal trials on onabot for headache and have taught innumerable doctors the nuts and bolts on the practical use of onabot.

This textbook also includes chapters from national and international experts on crucial topics in headache and face pain management. These include Sameh Michel Hakim on epidural blood patching, Jan van Zundert and Maarten van Kleef on facet blocks and RFA, Magdalena Anitescu on headache infusion therapy, Van Buyten on trigeminal ganglion blocks, and Konstantin Slavin and Sami Al-Nafi’ on occipital nerve stimulation.

Dr. Ali Rezai is the Director of the Ohio State University Wexner Medical Center Neuroscience Program and one of the giants in pioneering neuromodulation. He and his colleague Chima Oluigbo describe advances in sphenopalatine ganglion stimulation options for primary headache disorders, an area of profound paradigm change, awesome potential, and rapid change.

Finally, Dr. Andre Machado is the Director of the Center for Neurological Restoration at the Cleveland Clinic. His insights, studies and publications on deep brain stimulation are at the forefront of this frontier of treatment for head and facial pain, including both primary

headache disorders and secondary, devastating conditions such as post-stroke pain. His chapter is co-written with his collaborator Scott Lempka.

Taken together, this constellation of authors and topics should offer a comprehensive roadmap for interventions to contemplate beyond conventional medications in both primary and secondary head and face pain disorders. The chapters are precise, concise, and immensely readable, and I am honored to have been offered the chance to introduce them and encourage my colleagues to read them.

Cleveland, OH, USA

Stewart J. Tepper, MD

Preface

Nearly 20 % of headache patients are suffering from “medically resistant” headaches, which by definition do not respond to available pharmacological management.

The rise of effective interventions has provided treatment options for individuals with this otherwise intractable headache. Over the past few years, interest in interventional headache management has quickly increased, as evidenced by the plethora of published papers in peer-reviewed journals as well as presentations at major national and international meetings. This prompted the creation of a special interest group on interventional headache management within the American Headache Society, which I am honored to have established in 2006. This special interest group is fast-growing, attracting the interest of many physicians with different backgrounds who are caring for headache patients.

When I first started performing head and neck blocks more than a decade ago, there was no single text on the subject, and that remains true today. There are many volumes on headache, but none addresses interventional approaches, and although pain medicine texts cover head pain, they do so in a very limited way. Most of my knowledge of the subject was gained from my senior mentors at The Cleveland Clinic and in the course of traveling overseas to learn from expert 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 interventional procedures for headache management, the overwhelmingly enthusiastic response from students persuaded me of the need for a comprehensive and easy-to-follow atlas of interventional headache blocks and procedures. That is how this book – the first to cover this exciting field – was born.

Some procedures are quite simple and easy to adopt in an office setting to help relieve otherwise medically resistant headaches. However, other procedures are associated with an extensive learning curve. The main objective of this atlas is to enable physicians who manage different face and head pain syndromes and are beginning to use interventional headache procedures to shorten the learning curve and to make the learning experience as enjoyable as possible. Among the target groups are neurologists, primary care physicians, internists, pain physicians, anesthesiologists, physiatrists, neurosurgeons, and interventional radiologists.

I was fortunate to gather almost all of the experts in interventional headache management to contribute to the 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 indications and techniques of different nerve blocks and interventional procedures for headache and face pain management.

The book comprises 20 chapters, organized into five sections, covering the whole spectrum from simple superficial nerve blocks to deep head and neck blocks, cervical spine injections and radiofrequency ablation, and advanced neuromodulation techniques.

The first section reviews the definition of intractable and medically resistant headaches, thus helping physicians to identify appropriate candidates for interventional procedures. It also includes a unique chapter devoted to suggested algorithms for different headache and face pain syndromes. The algorithms are based on the best available clinical outcome data as well as the experience of the editor and various authors.

The second section is also the largest and covers peripheral nerve, trigeminal nerve and ganglion, glossopharyngeal nerve, occipital nerve and sphenopalatine ganglion interventions.

All the different applications are well documented with simple illustrations and labeled sonograms and X-ray images to make it easy to follow the text.

The third section focuses on cervicogenic headaches. It starts with a chapter devoted to the clinical approach to the diagnosis and management of this much debated headache disorder and is followed by chapters on potential sources of cervicogenic headache and indications for radiofrequency ablation.

The fourth section addresses other common interventions for intractable headaches such as IV infusion therapy, Botox injections, as well as epidural blood patch. The fifth and final section covers advanced and new applications of neuromodulation in headache management and looks ahead to its future.

A couple of notes about the book – text has been kept to a minimum to allow for a maximal number of instructive illustrations, X-ray images, 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 our understanding of headache disorders and the range of possible clinical circumstances may give rise to other, more appropriate indications or applications for interventional headache management. Until then, mastering 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 headache management.

Akron, OH, USA

Samer N. Narouze, MD, PhD

Acknowledgments

In preparing *Atlas of Interventional Headache Management: Nerve Blocks and Beyond*, I had the privilege of gathering highly respected national and international experts in the field of Headache Medicine. I wish to thank Dr. Tepper, Professor of Neurology at The Cleveland Clinic and Associate Editor-in-Chief of the journal *Headache* for agreeing to contribute a chapter to the book and to write the foreword.

My sincere thanks to the world renowned Dr. Blumenfeld (Professor of Neurology, California) and Dr. Silberstein (Professor of Neurology, Philadelphia) for contributing the chapter on botulinum toxin injections to the book despite their busy schedules. I would also like to acknowledge my esteemed colleagues from The Cleveland Clinic for their help and support: Drs. Mays, Anitescu, Souzdalnitski, and Costandi. Special thanks to my long-time friend and college roommate, Prof. Dr. Hakim (Egypt), who honored me with his valuable contribution.

I cannot thank enough my friends Prof. Dr. van Kleef (The Netherlands), Prof. Dr. van Buyten (The Netherlands), and Prof. Dr. van Zundert (Belgium) for agreeing to contribute essential chapters on trigeminal neuralgia and cervicogenic headache.

A special thank you to my wonderful colleagues Dr. Slavin (Professor of Neurological Surgery, Chicago) and Dr. Macahdo (Professor of Neurological Surgery, Cleveland) for their help with the section on neurosurgical techniques. This book would not be complete without the innovative chapter on sphenopalatine ganglion interventions written by my friend Dr. Rezai (Professor of Neurological Surgery, OSU), the president of the North American Neuromodulation Society.

I am very blessed that these experts agreed to contribute to my book, and I am very grateful to everyone.

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Interventional Management of Head and Face Pain

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Narouze, S.N. (Ed.)

2014, XVI, 154 p. 113 illus., 64 illus. in color., Hardcover

ISBN: 978-1-4614-8950-4