

Introduction



Operative techniques in adult and pediatric spinal surgery have changed radically in the past decades and will continue to advance in coming years. These changes have improved patient outcomes and made increasingly complex spinal surgery safer. Some of this progress has been due to technological advancements; however, most has been about refining and expanding a surgical tool kit.

Most of the techniques currently performed by practicing spinal surgeons will not be in place 20 years from now, nonetheless the principles of thoughtful surgical care will persist. In an increasingly cost sensitive and austere medical environment, maximizing and creating surgical value is essential.

Despite known best practices in spinal surgery, there remains significant heterogeneity in spinal surgery performed in North America and worldwide. In this special issue of *Operative Techniques in Orthopaedics*, we have set out to highlight not only novel surgical methods to tackle challenging clinical situations, but also advances in surgically relevant medical care which can improve operative practice and outcomes.

While this special issue details techniques largely designed for adult spinal surgery, the concepts are broadly applicable and are a useful adjunct to a pediatric practice. With knowledge of these articles, we hope to empower clinicians to do

more with less. Articles in this issue were carefully curated and include contributions from notable orthopaedic and neurologic spine surgeons in North America.

The issue begins with an overview of patient-reported outcomes and shows how existing scores and metrics will be used going forward. Using artificial intelligence, deep learning, and predictive analytics, surgeons will optimize patient and surgical selection in the future. While promising, artificial intelligence will not replace rational surgical decision-making by a well-trained provider. In subsequent chapters, authors detail how to safely plan for and navigate complex spinal surgeries while minimizing complications. Closing chapters describe novel methods to utilize existing technologies in order to maximize safety, quality, outcomes, and value.

The time and expertise of our authors is apparent in the high quality of their work. I hope you enjoy this collection of articles gathered from experts in the field of spinal surgery from all over North America.

Jeremy D. Shaw, MD, MS

Department of Orthopaedic Surgery, University of Pittsburgh,
Pittsburgh, PA

E-mail address: shawj5@upmc.edu