INTRODUCTION

Treatment of spinal cord and spinal axial tumors

Mark H. Bilsky, MD,¹ Ziya Gokaslan, MD,² John H. Shin, MD,³ Nicolas Dea, MD, MSc,⁴ and Fabio Ynoe de Moraes, MD⁵

¹Department of Neurosurgery, Memorial Sloan Kettering Cancer Center, New York, New York; ²Department of Neurosurgery, Brown University, Providence, Rhode Island; ³Department of Neurosurgery, Massachusetts General Hospital, Boston, Massachusetts; ⁴Department of Surgery, University of British Columbia, Vancouver, British Columbia, Canada; and ⁵Department of Oncology, Queen's University, Kingston, Ontario, Canada

THE treatment of metastatic and primary malignant and benign spine tumors is evolving at a rapid pace, with the integration of new technologies and evidence-based medicine leading to significantly improved outcomes in this very complicated patient population. This issue of *Neurosurgical Focus* covers major advances that have fundamentally impacted and will continue to impact international practice patterns. Decision-making for metastatic spine tumors often occurs in emergency situations. Numerous frameworks, e.g., the neurologic, oncologic, mechanical, systemic (NOMS) decision framework, have been developed to facilitate decision-making, but gaps remain in the creation of a complete assessment of risk and expected outcomes. The initial papers in this issue address critical components of decision-making, including the treatment of myelopathy in patients with unknown primary tumor, risk of interhospital transfers, indeterminate Spine Instability Neoplastic Score (SINS), and use of a novel frailty index to assess surgical risk. Whereas surgical morbidity has been reduced with the integration of separation surgery followed by stereotactic radiosurgery rather than with gross-total or en bloc resection, numerous centers are reporting a further reduction in morbidity by using minimally invasive approaches and short-segment, fenestrated, cement-augmented screws. Additionally, polyetheretherketone (PEEK)–carbon fiber screw-rod constructs have been specifically developed to address unique spine-tumor issues, such as imaging for recurrence and proton beam

radiation. For primary tumors, the major focus of the past decade has been to refine techniques for en bloc resection, which continues to be an avenue of active investigation. Whereas spine stereotactic radiosurgery continues to have the greatest impact on the treatment of metastatic spine disease and to some degree primary tumors, proton beam radiation has had a major resurgence in the treatment of primary tumors owing to the proliferation of facilities and improved pencil-beam technology. Finally, in the domain of intradural tumors, both extramedullary and intramedullary, advances have been somewhat more incremental than with bone tumors, but both new approaches and the integration of neural monitoring, specifically with D-wave motor assessment, have improved the safety of these relatively high-risk surgical procedures.

<https://thejns.org/doi/abs/10.3171/2021.2.FOCUS21113>

Disclosures

Dr. Dea is a consultant for Medtronic and Baxter and owns stock in Medtronic.

Correspondence

Mark H. Bilsky: bilskym@mskcc.org.