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The evolving role of stereotactic radiosurgery and stereotactic radiation therapy for patients with spine tumors.

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Traditional management strategies for patients with spinal tumors have undergone considerable changes during the last 15 years. Significant improvements in digital imaging, computer processing, and treatment planning have provided the basis for the application of stereotactic techniques, now the standard of care for intracranial pathology, to spinal pathology. In addition, certain of these improvements have also allowed us to progress from frame-based to frameless systems which now act to accurately assure the delivery of high doses of radiation to a precisely defined target volume while sparing injury to adjacent normal tissues. In this article we will describe the evolution from yesterday's standards for radiation therapy to the current state of the art for the treatment of patients with spinal tumors. This presentation will include a discussion of radiation dosing and toxicity, the overall process of extracranial radiation delivery, and the current state of the art regarding Cyberknife, Novalis, and tomotherapy. Additional discussion relating current research protocols and future directions for the management of benign tumors of the spine will also be presented.

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