

ADVANCES IN RADIOSURGERY

LETTER FROM THE DIRECTOR



In past issues of this newsletter, we have discussed the general concepts of radiosurgery and recent technological advances aimed at more targeted treatment. I believe the right use of radiosurgery combined with the correct indication and clinical decision is far more important than simply using the available equipment. This fact is important to share with patients and families who tend to believe that the new equipment will provide the best chance of tumor cure. Clinical application of radiosurgery requires experience in using the treatment technologies, and also meticulous planning to determine how the treatment can be individualized most effectively.

In this issue, I address the clinical application of radiosurgery for treatment of spine metastasis which is a common situation that many clinicians encounter with cancer patients. It is frequently combined with spinal cord compression, and causes severe back pain and neurological deficits. The goal of treatment for these patients is to provide pain control and prevent neurological problems.

Radiosurgery is a non-invasive procedure and has become an important treatment option. We pioneered spine radiosurgery for treatment of spine metastasis and spinal cord compression at Henry Ford Hospital. Based on our experience, the Henry Ford team is leading a national radiosurgery clinical trial involving a randomized study for spine metastasis in the Radiation Therapy Oncology Group with approval of the National Institutes of Health.

I am most proud of how our research translates to excellent outcomes and a better quality of life for our patients. I hope you find the information on treatment options of spine metastasis informative.

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**JOSEPHINE FORD
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Radiosurgery

RADIOSURGERY FOR SPINE METASTASIS WITH SPINAL CORD COMPRESSION

One of the most common sites for cancer to spread is the spine. It poses a clinical dilemma because patients almost invariably have debilitating back pain. In addition, spine metastasis can lead to spinal cord compression causing neurological deficits such as walking difficulty, sensory changes and incontinence. Once the tumor has progressed to the spine, the patient's general condition can deteriorate rapidly.



The treatment of spine metastasis has evolved over time. Conventional radiotherapy (usually consisting of 10-15 treatments with daily clinic visits) combined with steroid treatment has been the most common approach. Since a wide area can be treated with this method, it is useful when there are multiple contiguous spine involvements. It is also an effective treatment with good pain control, and hence, it has been called palliative therapy.



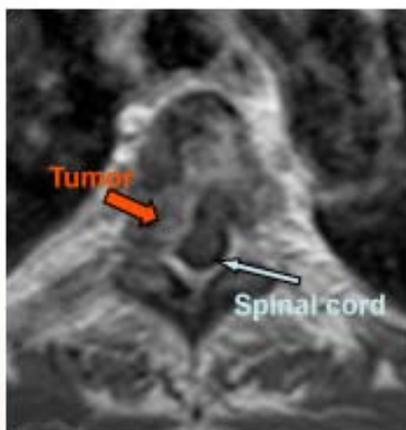
Recent studies indicate that the functional outcome and tumor control of spine metastasis and spinal cord compression can be improved by more individualized treatments. Useful clinical parameters for the decision-making process include the number and size of metastatic lesions in the spine, systemic tumor status, rapidity and duration of neurological symptom development, as well as patient's performance status and general condition. Various combinations of treatments with radiotherapy, surgery or radiosurgery can be used. Depending on the patient's wishes and institutional preference, the treatment approach may vary.

Open surgical resection is an important treatment, particularly when there is spinal cord compression causing rapid neurological progression or when spinal instability is present. Obviously, the patient should be in a condition stable enough to undergo the invasive surgery and anesthesia. Prompt decompression increases the chance of patients becoming ambulatory after surgery. Whenever possible, external beam radiotherapy should be used in addition to surgery.

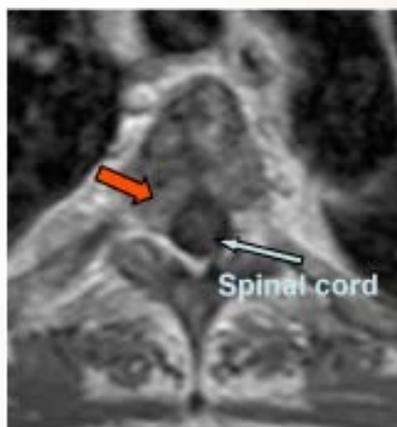
RADIOSURGERY

Radiosurgery of the spine has been shown to produce excellent control of metastatic tumors. It provides rapid and durable pain control. Since it uses a high dose of focused radiation, the treatment is given only to the involved spine. In addition, radiosurgery effectively reduces the spinal cord compression and improves the neurologic function. We have analyzed our treatment result of spinal cord compression in 85 patients who were treated with radiosurgery. Epidural decompression was achieved in more than 85 percent of individuals with excellent neurologic outcome. An example case of spinal cord compression is shown with the MRI scan in the Figure below.

Before Radiosurgery



2 Months After Radiosurgery



Radiosurgery can be combined with other treatments including surgery, kyphoplasty (vertebroplasty) or chemotherapy. The merit of radiosurgery is that it is a non-invasive procedure performed on an outpatient basis. Indeed, radiosurgery does not alter the chemotherapy schedule since it is given in one or a few sessions only. Because no incision is required with radiosurgery, patients resume their normal activities the same day. At Henry Ford Hospital, radiosurgery has become a main modality for localized spine metastasis and/or spinal cord compression. The Henry Ford team regularly discusses the treatment options for spine tumors at the multidisciplinary spine tumor board. This unique tumor board meets each Wednesday to collaborate on comprehensive spine care in cancer patients.