

FRACTIONATED STEREOTACTIC BODY RADIOSURGERY AT RADIOSURGERY NEW YORK

Over the years, stereotactic radiosurgery for brain tumors has become a state-of-the-art treatment for those with benign and malignant tumors. One of the most common questions asked of researchers, however, is when can this technique be used for tumors beyond the head.

New techniques are now available that allow focused or precision radiation to be delivered exactly to tumors most anywhere in the body - chest, abdomen or pelvis - while minimizing radiation exposure to healthy, normal surrounding tissues. Work done at medical centers in Japan, Stockholm and New York have shown that fractionated or divided high dose, precision radiation can be delivered accurately with high rates of tumor control.

Who are candidates for fractionated stereotactic radiosurgery of the body and what kind of diseases do they have?

Many cancers fit into this category. Some patients have localized cancers but are not surgical candidates. They cannot safely undergo surgery or the surgeon believes that open surgery would not produce a desirable result. Other patients had prior surgery and the tumor has returned to occupy the same space.

Similar analogies are true for those having had chemotherapy. Some tumors are appropriate because of poor response rates to chemotherapy. Other cancers have returned despite extensive use of chemotherapy. Both situations are considered for fractionated body radiosurgery.

Body radiosurgery can even be contemplated if standard radiation results have been inadequate, incomplete or if the cancer has progressed despite standard radiation. Of course, more than one site can be treated, if indicated.

Another category appropriate for fractionated body radiosurgery consideration is metastases. Metastases are cancers that have spread from the original site - either through local extension, lymphatic or blood vessel routes. The most common metastatic sites appropriate for fractionated body radiosurgery include cancers having spread to organs of the body including the lungs, mediastinum, liver, kidney, adrenal glands, retroperitoneum, spine, bone or other primaries.

What are other examples of patients to be considered for body radiosurgery? The patient with metastases to the lung that hasn't been fully responsive to chemotherapy or is unresectable by surgical means can be considered a candidate. Some patients decline chemotherapy or surgery but still desire effective treatment.

Liver metastases are similar with high success rates in controlling these nodules of cancer in the liver. Pancreatic cancers show promise in this regard.

Using body radiosurgery to boost the dose of tumors previously treated should give a much greater control rate while avoiding toxicity of traditional therapy.

By precisely delivering the radiation to the tumor, systemic effects of chemotherapy are avoided. Additionally, by avoiding invasion, the consequences and convalescence associated with open surgery might - for appropriate patients - be a thing of the past.

What does being a patient for fractionated body radiosurgery entail? All patients' records (pathology, x-rays, CT scans and/or MRI) are reviewed by a multi-disciplinary panel consisting of expert physicians. Once fractionated body radiosurgery has been offered to and accepted by the patient, a custom radiosurgery frame is contoured to the patient. Inside the frame are fiducial markers - markers that can be read via CT scan or MRI evaluation and subsequently computerized. Three-dimensional coordinates are produced using the contour or shape of the tumor in relationship to the patient's body and associated stereotactic body frame. Yet, body radiosurgery is well beyond 3D conformal radiation. It is more accurate and stable.

Experienced radiation oncologists, radiation physicists and dosimetrists produce a 3-dimensional plan using non-coplaner beams. Non-coplaner beam means that beams are not opposed to each other. This, therefore, assists to limit normal tissue exposure to radiation. A great number of beams are used, as well, to maximize the convergence on the tumor by the shaped beams while minimizing radiation to the surrounding structures. The entire technique is non-invasive. Multiple quality assurance steps are performed to assure accuracy of set-up prior to institution to any therapy.

For a variety of tumors (both primary and metastatic, small and large) high control rates - about 90% - have been presented and published. Size of tumors, in general, has not been a limitation.

This treatment option certainly may hold appeal for those unwilling to go through further surgery, standard radiation, and chemotherapy or for whom further traditional therapy is not appropriate or likely to result in a beneficial effect.

For whom should fractionated body radiosurgery be considered? Many patients with cancer will benefit from this new technology.

Having performed thousands of fractionated stereotactic radiosurgery procedures, experience and quality assurance is high with professionals comfortable with the principles and practices of sophisticated radiosurgery delivery. Our data using fractionated stereotactic radiosurgery has been presented at national and international medical meetings and now, as well, appears in the major textbooks of medicine as state-of-the-art care. These developments took place in the hands of the staff of Radiosurgery New York.

Stereotactic body radiosurgery has created many opportunities and many questions from patients and their families. To help clarify matters we have established a hot line at 212-CHOICES and e-mail address: gil.lederman@rsny.org. We also will ask that you send in copies of films, reports, pathology for review by our panel of experts. There are also monthly seminars on brain, body and prostate cancer treatment. We invite your participation.