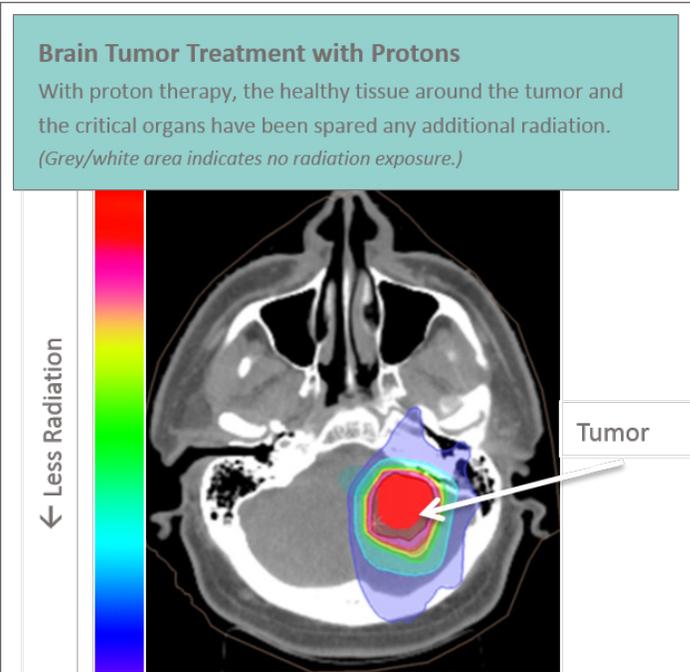


A GUIDE for Proton Therapy Patients with Brain Cancer

Tumors of the brain may be benign (non-cancerous) or malignant (cancerous). Benign brain tumors need to be treated because they can cause serious health problems by pressing on sensitive areas of the brain. Additionally, some benign tumors can become malignant over time. Malignant tumors are classified as brain cancer whether they originate in the brain or have spread to the brain from cancers in other parts of the body. Because the brain is so complex, treatment to this area might have long-term implications to the nervous system or other organs. If you or someone you love has been diagnosed with a brain tumor, we recommend learning about all your treatment options before making a decision.

Brain Tumors Most Appropriate for Proton Therapy

- Low-grade gliomas and grade III gliomas
- Meningiomas
- Acoustic neuroma
- Ependymomas
- Medulloblastomas
- Pineoblastomas
- Supratentorial PNET
- Germ cell tumors
- Craniopharyngioma
- Pituitary adenoma
- Almost all pediatric brain tumors



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Advantages of Proton Therapy over Standard X-ray Radiation

Too much radiation to the brain has been known to cause neurological dysfunction and even death. Compared with X-ray radiation therapy, proton therapy results in less exposure to normal brain tissue, eyes, and the optic nerve. This is because protons precisely target a tumor and do not continue beyond it the way X-rays do. Less healthy brain tissue is irradiated with proton therapy than with X-ray/intensity-modulated radiation therapy (IMRT), therefore patients experience fewer side effects.

Compared to other forms of radiation therapy, proton therapy delivers less radiation to normal brain tissue. The extra exposure to healthy tissue that X-rays/IMRT deliver can be as much as getting 75,000 to 450,000 dental X-rays. This additional radiation increases the risk of side effects. Compared with X-ray radiation therapy, proton therapy results in less exposure to normal brain tissue, eyes, and the optic nerve.

Treatment Options at a Glance

Proton therapy

Proton therapy is a non-invasive treatment that uses proton radiation to kill cancer cells by preventing them from dividing and growing.

Considerations: Proton therapy delivers less radiation to the non-target brain (defined as the normal brain minus the tumor area) than X-ray radiation. This decrease in dose to normal brain tissues may retain better overall brain function and reduce the likelihood of secondary tumors in the future.

Standard X-ray radiation

Standard radiation is a commonly used radiation treatment to kill cancer cells by preventing them from dividing and growing. Common options include: IMRT, Gamma Knife, and CyberKnife.

Considerations: Tissues in the brain are very sensitive. Radiating healthy brain tissue can result in loss of memory, cognitive skills, and mobility.

Surgery

Surgery to the brain requires the removal of a part of the skull. This procedure is called a craniotomy. After the surgeon has removed the tumor and affected cells, the patient's own bone will be used to cover the opening in the skull.

Considerations: Depending on the size and location of the tumor, risks include infection, bleeding, and nerve damage.

Chemotherapy

Chemotherapy is the use of drugs to kill or alter the cancer cells in the brain, often used in combination with other therapies.

Considerations: Chemotherapy drugs have limited effectiveness in treating brain tumors. However, when used in combination with other treatments, their effectiveness increases.

When treating tumors in the brain, a combination of treatments is often used.

Brain Specialists

Jason K. Rockhill, Ph.D., M.D.

"Being diagnosed with a brain tumor strikes at the very core of an individual. My role is to provide the best possible support so they do not have to journey alone."

Lia Moriguchi Halasz, M.D.

"To me, being a physician means not only treating the disease, but supporting my patients' strength, hope, and recovery."

Yolanda Tseng, M.D.

"I feel privileged to be part of a team that provides the best care for our patients. I'm always impressed by my patients' strength during a stressful and uncertain period of their lives. The care we provide—clinical, emotional, and personal—is one of the most gratifying aspects of being an oncologist."

Contact Us

To learn more about proton therapy or to request a consultation, please call the SCCA Proton Therapy Center at 877-897-7628 or email info@seattleprotons.org.

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