NEW YORK
PROTON CENTER

Proton Therapy for Head and Neck Tumors

Proton therapy achieves similar or even improved cancer outcomes compared with traditional radiotherapy, but with **significantly less radiation exposure to normal tissues.**

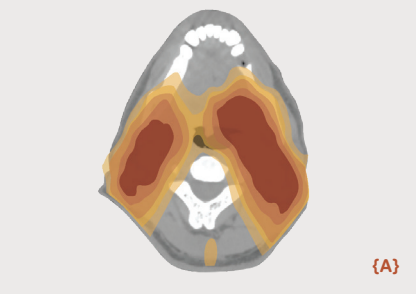
About Proton Therapy

Proton therapy is a highly advanced, ultra-precise form of radiation therapy that can treat many types of cancers. A key benefit is its ability to deliver more radiation to the tumor and less radiation to the surrounding healthy organs, allowing for fewer side effects and better preservation of quality of life.

Proton Therapy for Head and Neck Tumors

FIGURE A
proton therapy treatment

FIGURE B
traditional radiation with photons



Protons are positively charged particles in the nucleus of an atom. They are uniquely suited for cancer treatment because they can be more precisely controlled than photons, which are high energy X-rays used in traditional radiation therapy. Protons enter the body and travel to the tumor site just as photons do. However, unlike traditional radiation, protons have no "exit dose," meaning they do not travel beyond the tumor into healthy tissues.

About pencil beam scanning proton therapy

Pencil beam scanning proton therapy is the most sophisticated and precise type of proton therapy, and every patient at the New York Proton Center is treated with this next-generation technology. It allows our highly experienced clinical team to create a customized treatment plan based on the unique shape, size and location of your tumor, with even greater protection of your nearby healthy tissues.

As the name implies, pencil beam scanning proton therapy uses an extremely narrow beam—just a few millimeters wide—to "dot" protons onto the cancer with pinpoint specificity. The process is repeated, layer by layer, like paint applied by the tip of an incredibly fine brush.

Life during treatment

Most of our patients continue to carry out their regular activities, including work, exercise, hobbies, and other daily activities during the weeks they are receiving proton radiation treatment. The treatment itself is non-invasive and painless. You will not see or feel the radiation and will never emit any radiation from your body.

Questions & Answers

Q. What types of head and neck tumors can be treated with proton therapy?

A. Proton therapy is a noninvasive treatment option for many types of head and neck tumors including:

- Tonsil, base-of-tongue cancer, and other cancers of the oropharynx
- Oral cavity cancers
- Nasopharynx cancers
- Salivary gland cancers
- Nasal cavity and paranasal sinus cancers including esthesioneuroblastoma
- Skin cancers of the head and neck region with perineural invasion or lymph node metastases
- Tumors of the eye/orbit
- Parotid, lacrimal, and other salivary gland cancers
- Thyroid cancers
- Laryngeal cancers
- Recurrent or second primary head and neck tumors after prior radiotherapy treatment

Proton therapy can be a primary treatment for these cancers or may be given in conjunction with surgery and/or chemotherapy.

Patients who receive proton therapy for head and neck tumors are at **lower risk of long-term side effects** than those who receive traditional radiation therapy with photons.

Q. What are the benefits of proton therapy for head and neck tumors?

A. Proton therapy can be an effective treatment for head and neck cancers because it can deliver a high dose of radiation to the tumor with extraordinary precision. Treating these tumors with conventional photon radiation therapy exposes the nearby healthy tissues—such as the oral mucosa, gums, salivary glands, jaw bones, swallowing muscles, voice box, eyes, ear canals, brain, brainstem and spinal cord—to more radiation and can increase the risk of late toxicities or developing a new cancer.

Q. Are there side effects?

A. Side effects of proton therapy depend on the exact area of the body receiving treatment, the tumor size, and the types of healthy tissue near the tumor. The most common side effects of radiation therapy for head and neck tumors are skin reactions, dry mouth, and trouble swallowing. Your doctor will help manage any side effects during and after proton therapy.

Q. Can I have proton therapy if I had previous radiation to the head or neck for another type of cancer?

A. Potentially—In some cases, patients who previously received radiation for a prior head and neck cancer may require a subsequent course of radiation in the same region. In these scenarios, proton therapy can be especially beneficial to significantly reduce the overlap of excess radiation to nearby normal tissues and organs. Reducing the cumulative dose to the normal tissues may reduce the risk of side effects, allowing for more radiation dose to be focused to the tumor, and for a better chance of a cure.

Q. How many treatments are required?

A. The number of treatments varies according to the unique characteristics of your tumor. Treatment is usually administered five days a week for one to seven weeks.

Q. Does the New York Proton Center offer clinical trials for head and neck tumors?

A. With an active research program, we are pleased to offer a growing number of clinical trials for a variety of cancers. We are currently enrolling eligible patients in five head and neck studies including:

- Phase II/III Randomized Trial of Intensity-Modulated Proton Beam Therapy (IMPT) Versus Intensity-Modulated Photon Therapy (IMRT) for the Treatment of Oropharyngeal Cancer of the Head and Neck 2012-0825: NCT01893307
- Phase II Randomized Study of Proton Versus Photon Beam Radiotherapy in the Treatment of Unilateral Head and Neck Cancer: NCT02923570
- Phase II Study of Proton Re-Irradiation for Recurrent Head and Neck Cancer: NCT03217188