

Proton Therapy Shows Survival Benefit in Phase III Trial for Patients With Mouth and Throat Cancers

Proton therapy also showed benefits in quality of life, such as less feeding tube dependence, less difficulty swallowing and less dry mouth.

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- At five years, 90.9% of proton patients were alive compared to 81% with traditional radiation.
- Proton therapy also showed benefits in quality of life, such as less feeding tube dependence, less difficulty swallowing, less dry mouth, and higher immune cell counts.
- Study represents the largest randomized Phase III trial comparing proton to traditional radiation with photons for oropharyngeal cancer patients.

A new study published today [December 11] in [The Lancet](#) showed a significant survival benefit for patients with [oropharyngeal cancers](#) who were treated with [proton therapy](#) (IMPT) compared to those treated with traditional radiation therapy (IMRT). The study, led by researchers at The University of Texas MD Anderson Cancer Center, is the first to demonstrate a survival benefit for proton therapy.

“This is important, level one evidence that proton therapy has both a survival benefit and quality-of-life improvement for these patients and should be the standard of care for advanced cases of oropharyngeal cancer,” said [Steven Frank, MD](#), executive director of technology and innovation and deputy division head of strategic programs for [Radiation Oncology](#). “These results demonstrate the advantages of proton therapy for head and neck cancer patients, and this study could lay the foundation for increased accessibility for patients who may benefit.”

Oropharyngeal cancers, which are head and neck cancers, are among the most commonly treated with proton therapy because of their proximity to sensitive organs and tissues, making them a good option for this type of large, randomized Phase III trial.

What are the key takeaways from this study comparing proton therapy to traditional

radiation therapy?

In this study, patients with oropharyngeal cancers who had proton therapy (IMPT) were more likely to be alive after five years than the patients receiving traditional radiation therapy (IMRT).

In 440 patients with Stage III or IV disease who were treated at multiple proton sites in the U.S., overall survival among the proton group was 90.9% at five years compared to 81% treated with traditional radiation, which was a statistically significant difference.

Additional key takeaways from this study are that proton patients were less likely to experience difficulty swallowing (34% to 49%), feeding tube dependence (26.8% to 40.2%), dry mouth (33% to 45%) or severe lymphopenia – a decrease in a specific type of white blood cell (76% to 89%) – compared to traditional radiation therapy.

What does this study add to current research comparing proton therapy to traditional radiation?

“The primary thing for patients to understand is these trials overwhelmingly show that both proton therapy and traditional radiation are great treatment options,” Frank said. “That said, these results indicate a survival benefit for proton therapy in oropharyngeal cancer patients as well as reduced high grade toxicities during treatment and less feeding tube dependence. These results, along with other recent data, highlight the importance of continuing to identify which patients are most likely to benefit from proton therapy both in the short term and the long term.”

How is proton therapy different from traditional radiation therapy?

Traditional radiation therapy, or intensity-modulated radiation therapy (IMRT), uses photons which pass through the body without stopping. This leaves both an entry and exit dose of radiation in non-targeted areas and can result in collateral damage to normal tissues.

Proton therapy, also known as intensity-modulated proton therapy (IMPT), has unique physical and biological properties which reduce radiation exposure and collateral damage to normal tissues.

How was this study designed?

This is the largest randomized Phase III trial to date comparing proton therapy to traditional radiation therapy. The study randomized 440 patients at 21 sites across the U.S. into the two arms of the trial, and stratified based on HPV status, smoking status, and whether patients had received induction chemotherapy.

The primary endpoint of the non-inferiority study was the three-year progression-free survival (PFS) rate. The three-year PFS rate was 82.5% with the proton arm and 83% with the traditional arm, a difference that was not statistically different. Five-year PFS rates were 81.3% with proton therapy and 76.2% with radiation therapy.

Previous updates:

- Initial progression-free survival and adverse effect data were presented at the [2024 ASCO Annual Meeting](#).

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