

Intensity modulated proton therapy reduces need for feeding tubes by 50 percent

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A new study from researchers at The University of Texas MD Anderson Proton Therapy Center found that the use of feeding tubes in oropharyngeal carcinoma (OPC) cancer patients treated with intensity modulated proton therapy (IMPT) decreased by more than 50 percent compared to patients treated with intensity modulated radiation therapy (IMRT). This suggests that proton therapy may offer vital quality of life benefits for patients with tumors occurring at the back of the throat.

The results, presented today by the lead researcher, Steven J. Frank, M.D., associate professor of Radiation Oncology at MD Anderson at the American Society for Radiation Oncology's 55th Annual Meeting, also indicate that toxicity levels in OPC patients treated with IMPT are much lower than those treated with IMRT.

IMPT, one of the most advanced forms of [proton therapy](#), delivers a precise dose of protons to tumors embedded in the "nooks and crannies" of the head and neck, including the base of tongue and tonsils. MD Anderson treated its first IMPT patient in 2011 and since approximately 150 patients, many with complex head and neck malignancies, have been treated with this form of proton therapy. Unlike IMRT, which destroys both cancerous and healthy cells, IMPT has the ability to destroy [cancer](#) cells while sparing surrounding healthy tissue from damage. Therefore, important quality of life outcomes such as neurocognitive function, vision, swallowing, hearing, taste and speech can be preserved in head and neck patients.

"IMPT is especially well-suited for patients with the most complicated tumors of the head and neck, precisely painting the protons onto the tumor layer by layer," said Frank. "In this way, the treatment team can confine the majority of the tumor-damaging energy to target areas and work to protect normal structures such as the oral cavity and brainstem."

OPC cancer develops in the part of the throat just behind the mouth. The American Cancer Society estimates that 36,000 people in the U.S. are diagnosed with cancer of the oral cavity and oropharynx each year (approximately a 20 percent increase since 2010). OPC cancer in most cases is linked to infection with human papilloma virus (HPV) and it's estimated that nearly 70 percent of OPC cancers are HPV-positive.

MD Anderson researchers evaluated 25 OPC patients treated with IMPT and 25 OPC patients treated with IMRT as part of the study. Five patients treated with IMPT required the use of feeding tubes (20 percent) compared to 12 patients treated with IMRT (48 percent). IMPT patients were spared from other serious side effects caused by the toxicity of IMRT such as vomiting, nausea, hearing problems, and mucositis (inflammation and ulceration of the digestive track). In addition, patients could better sustain their nutrition and hydration levels, often leading to faster recovery during and after treatment.

"With a recent epidemic of HPV-associated head and neck cancer among U.S. adults, there is a critical need to minimize the side effects associated with conventional IMRT that affects the patients' courses of treatments, and, ultimately, the rest of their lives," said Frank. "Since radiation therapy is the main tool to treat the disease in this fairly young group of patients, we must understand if more advanced technologies will provide additional value to this patient population."

Based on the results of this study, a Phase II/III randomized trial of IMPT vs. IMRT for the treatment of oropharyngeal cancer of the head

and neck is underway at MD Anderson. Over the next five years, MD Anderson aims to enroll 360 patients in the trial, evaluating proton's ability to reduce toxicity across a range of known [side effects](#) and enhance long-term cancer survivorship when compared to conformal [radiation therapy](#).

Provided by University of Texas M. D. Anderson Cancer Center

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