

MRI-guided radiotherapy produces fewer side effects, better quality of life for patients with localized prostate cancer

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For men who undergo radiotherapy for localized prostate cancer, the precise targeting capabilities of MRI guidance resulted in fewer

toxicities and better quality of life, as judged by patients and the doctors treating them, according to new research from UCLA Jonsson Comprehensive Cancer Center.

Results from the first randomized phase III clinical trial to directly compare MRI-guided stereotactic body radiotherapy (SBRT) with the same therapy guided by CT are published in *JAMA Oncology*. They confirm [interim findings](#) presented at the 2022 ASCO Genitourinary (GU) Cancers Symposium in San Francisco.

"MRI guidance offers several advantages over standard CT guidance, most notably the ability to dramatically reduce planning margins, providing more focused treatment with less injury to nearby normal tissues and organs," said Amar Kishan, M.D., a radiation oncologist at the David Geffen School of Medicine at UCLA and the UCLA Jonsson Comprehensive Cancer Center and the study's lead author. "MRI technology is more costly than CT, both in terms of upfront equipment expenses and longer treatment times, which is one reason our study set out to determine if MRI-guided technology offers tangible benefits for [patients](#)."

Stereotactic body radiotherapy for prostate cancer usually delivers radiation in five or fewer precisely targeted doses. It is an established and generally well tolerated form of treatment, but it can cause toxicities resulting in urinary, bowel and sexual dysfunction. This clinical trial, Magnetic Resonance Imaging-Guided Stereotactic Body Radiotherapy for Prostate Cancer (MIRAGE), was led at UCLA and included 154 analyzable patients with prostate [cancer](#) who were randomized to either a CT-guidance arm (76 patients) or an MRI-guidance arm (78 patients).

A unique aspect of the study was its inclusion of outcome measures assessed by patients as well as physicians. From both perspectives, MRI-guided therapy was associated with fewer side effects and better quality

of life over at least three months of follow-up.

"In this trial, we demonstrated that the reduction in treatment volumes facilitated by MRI guidance leads to a significant reduction in moderate physician-scored toxicity and to a reduction in the proportion of patients noting significant decrements in patient-reported outcome metrics in the near term," said Dr. Kishan. "Although additional studies will need to confirm these benefits over time, we're hopeful that these results will lead to better outcomes for men with [prostate cancer](#)."

The 2-millimeter margin used with MRI-guidance in the trial is narrower than has been used in any previous large study. Unlike CT, MRI technology can monitor prostate motion directly, and it offers improved soft tissue contrast, improving the accuracy of alignment prior to radiation.

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More information: Magnetic Resonance Imaging-Guided vs Computed Tomography-Guided Stereotactic Body Radiotherapy for Prostate Cancer: the MIRAGE Randomized Clinical Trial, *JAMA Oncology* (2023). [DOI: 10.1001/jamaoncol.2022.6558](https://doi.org/10.1001/jamaoncol.2022.6558)

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