

Tile-Based Radiation Therapy Lowers Risk of Recurrence in Brain Metastases

Radioactive tiles inserted during surgery reduced recurrence and improved survival in patients whose cancer had spread to the brain.

May 31, 2026 By MD Anderson Cancer Center

- A type of radiation treatment implanted during surgery significantly lowers risk of recurrence and may help patients with brain metastases live longer.
- Tile-based radiation therapy outperformed standard of care for patients with no new side effects in a multicenter Phase III trial.
- Immediate placement of radioactive tiles during surgery significantly lowered recurrences and improved recurrence-free survival and overall survival.
- Researchers suggest this approach could be the new standard of care for patients with brain metastases requiring surgery.

ABSTRACT: [LBA2000](#)

Chicago — A multicenter clinical trial led by researchers at [The University of Texas MD Anderson Cancer Center](#) has found that implanting collagen tiles during brain surgery to deliver targeted [radiation therapy](#) dramatically improved tumor control, lowered the risk of recurrence and improved overall survival compared to current standard of care for patients with newly diagnosed brain metastases in need of surgical resection.

The ROADS trial, co-led by [Jeffrey Weinberg, MD](#), professor of [Neurosurgery](#), and [Thomas Beckham, MD, PhD](#), assistant professor of [CNS Radiation Oncology](#), is the first randomized controlled Phase III trial comparing cesium-131 collagen tile-based radiation therapy (TBRT) against standard-of-care postoperative [stereotactic radiation therapy](#) (SRT). Weinberg presented the trial results [May 30] at the [2026 American Society of Clinical Oncology \(ASCO\) Annual Meeting](#).

After one year, patients treated with TBRT had a 1.3% rate of recurrence at the surgical site

compared to 15.4% of patients in the SRT arm, a dramatic improvement meaning patients and their doctors were much less likely to face the challenges of salvage procedures such as additional surgery or radiation. Median overall survival, a key secondary endpoint of the trial, was 42.5 months with TBRT – more than double the 17.6 months seen with standard SRT.

“Implanting the radioactive tiles at the time of surgery guarantees that patients receive their treatment immediately, along with focal dose escalation, thereby having meaningful impact on local tumor control,” Weinberg said. “From a patient standpoint, we’re showing that there’s almost four times the length of local control and an increase in overall survival. It’s not just a little difference. It’s a massive difference.”

What is tile-based radiation therapy and how does it work?

TBRT uses a Food and Drug Administration (FDA)-cleared low-dose [brachytherapy](#) device developed by GT Medical Technologies, Inc. The small tiles, about the size of a postage stamp, contain evenly spaced seeds filled with cesium-131 embedded in a collagen matrix that essentially gets “wallpapered” to the surrounding cavity left after surgery.

This ensures that radiation is evenly distributed across the cavity surface, where most remaining microscopic tumor cells are located. The seeds disperse low-dose therapeutic radiation over the course of several weeks while limiting exposure to healthy tissue. The dose fall-off from brachytherapy is very fast, meaning very little healthy brain is exposed to significant amounts of radiation.

What happened to patients treated with TBRT during the ROADS trial?

There were no differences in serious treatment-related side effects between TBRT and SRT, confirming that improved outcomes did not come at the cost of increased toxicity. Importantly, the rate of radiation necrosis, an important late risk for patients treated with radiation for brain metastases, was nearly identical between the two groups, further highlighting the safety of TBRT.

Notably, patients receiving TBRT were able to complete cranial radiation faster, most in just one day, compared with a median of 32 days for those needing to schedule postoperative SRT, potentially allowing for an earlier return to systemic cancer treatments.

“These results are dramatically better than the current alternatives and provide improved patient convenience by getting them over the roadblock of a brain metastasis diagnosis more quickly,” Beckham said. “At the end of the day, being able to get them over that roadblock and back to managing their cancer overall seems to positively impact more than just their surgical outcome, which is really exciting and something we weren’t expecting to this magnitude.”

The researchers hope these results will accelerate TBRT guideline adoption and establish broader clinical rollout. Future work can determine how widely TBRT reshapes metastasis care and explore its potential for treating other tumor types.

What is the current standard of care for brain metastases?

Many patients with different advanced solid tumors can develop brain metastasis, which can significantly impact their treatment and prognosis. The current standard treatment for patients who need surgery (typically due to larger or symptomatic brain metastases) is SRT following surgical resection due to the risk that microscopic tumor cells in the resulting cavity will lead to recurrence. Without any radiation, recurrence in the cavity occurs 50-60% of the time.

Therefore, SRT is used as a highly focused, dose-escalated treatment to destroy those remaining tumor cells while sparing healthy tissue. Studies have shown that SRT should occur within four weeks after treatment to maximize its effectiveness, but many patients can face complications after surgery, logistical and scheduling challenges, and interruptions to systemic therapy. In addition to causing delays, these issues result in approximately 20% of patients failing to receive planned postoperative SRT, with observable compromise in outcomes.

The current results suggest that TBRT could offer a new standard of care for the patients that improves upon logistical challenges with SRT and boosts disease control in the brain, the authors explained.

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The study was sponsored by GT Medical Technologies, Inc.

This [news release](#) was published by the University of Texas MD Anderson Cancer Center on May 30, 2026.

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