

Study shows multiple-dose, targeted radiation more effective for treating pituitary tumors

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A recent patient study at Houston Methodist Hospital proved that multiple small doses of highly focused radiation therapy is safer and more effective than a single larger dose of radiation at destroying pituitary gland tumors.

The findings on the use of fractionated stereotactic radiotherapy (FSRT) are in the online issue of *Neurosurgery*.

The pituitary gland, a pea-sized structure at the base of the brain, is known as the "master gland" because the hormones it secretes control the functions of many endocrine glands (such as the thyroid and the adrenals). While pituitary adenomas are slow-growing and usually benign, the growth causes the pituitary to produce excess hormones or block hormone production altogether. This can disrupt the regulation of critical body functions, including heart function, blood pressure, glucose regulation, fertility and sexual function, and metabolism.

"Even using pinpoint techniques, a single dose of [radiation](#) may not be enough to kill the residual tumor," said David S. Baskin, M.D., vice chair of the department of neurosurgery at Houston Methodist Hospital and corresponding author on the *Neurosurgery* paper. "Our radiation oncologists strategized on using fractionated stereotactic radiotherapy as the best way to kill these slow growing masses."

FSRT is a treatment given in multiple small doses over a period of time. Considered a variation of the traditional stereotactic radiosurgery (SRS), FSRT can treat the pituitary adenomas more aggressively than a single dose and with less complications than SRS.

The Houston Methodist study not only supported

this, Baskin said, but demonstrated that FSRT actually beat both SRT and conventional radiotherapy at long-term effectiveness.

Surgery is the primary treatment for pituitary adenomas, followed by [radiation therapy](#), but too much radiation can affect the optic system and damage vision.

"We treated and followed 75 patients who underwent FSRT for a residual pituitary adenoma between 2004 and 2013," said Bin Teh, M.D., vice chair of Houston Methodist's Department of Radiation Oncology and co-author on the *Neurosurgery* paper. "None of them experienced any tumor recurrence during our monitoring period and nearly 70 percent of those with hormonal imbalances caused by the adenomas returned to normal levels."

Further studies will investigate the long-term (10 years or greater) safety and efficacy of FSRT in larger groups of patients.

"We also plan to conduct prospective research that will evaluate FSRT and SRT so that the benefits and limitations of both therapies in treating pituitary adenomas can be directly compared," said Baskin, director of the Kenneth R. Peak Brain and Pituitary Tumor Center at Houston Methodist Hospital.

More information: Sean M. Barber et al. Fractionated Stereotactic Radiotherapy for Pituitary Adenomas, *Neurosurgery* (2015). DOI: [10.1227/NEU.0000000000001155](https://doi.org/10.1227/NEU.0000000000001155)

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