UT SOUTHWESTERN MEDICAL CENTER NEWS

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Gamma Knife offers noninvasive treatment for vascular disorders, tumors in the brain

DALLAS – Sept. 8, 2006 – A week after graduating from high school, Katherine Coit had brain surgery to remove an abnormal tangle of blood vessels that were bleeding in her brain.

The potentially life-threatening condition called arterio-venous malformation (AVM) was diagnosed after Ms. Coit woke up one morning with numbness in her mouth and in one of her hands. Her surgeon was able to remove more than 90 percent of the AVM during a craniotomy three years ago, but a small, worm-shaped portion about one-inch long remained. It caused her constant migraine headaches, but was located so deep in her brain that it was too dangerous to remove with conventional brain surgery.

A team of specialists at UT Southwestern Medical Center found a solution using the latest radiation technology to treat inoperable vascular malformations, cancer and benign tumors of the brain – the Gamma Knife. On Aug. 11, doctors used the Gamma Knife to focus 201 beams of cobalt radiation with sub-millimeter precision on the remaining AVM in Ms. Coit's brain.

Patients at UT Southwestern benefit from a breadth of experience and expertise among the physicians of the Gamma Knife team that is unprecedented in North Texas. A group of nationally renowned neurosurgeons, radiation oncologists, radiologists, neuro-interventional radiologists and physicists, supported by a dedicated nursing staff, review each case to devise the optimal treatment plan.

"The Gamma Knife offers a more accurate way to treat smaller and deeper areas in the brain," said Dr. Bruce Mickey, vice chairman of neurological surgery and director of the Annette G. Strauss Center in Neuro-Oncology. "We have the breadth of experience in dealing with all types of vascular malformations within the nervous system and brain tumors. We don't steer patients into one type of treatment.

"By combining our expertise, we look at the best, most promising options for each patient. It may be conventional brain surgery for one patient and the Gamma Knife for another patient."

In Ms. Coit's case, no incision was necessary for the 75-minute treatment in UT Southwestern's new Gamma Knife suite that opened last December. The college student reclined on a

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treatment couch and listened to a boom box playing a mix tape she had made of her favorite songs. Her head was immobilized in a stereotactic head frame whose coordinates provide a reference grid to allow doctors to pinpoint the radiation beams to the target area. It's all done by computer. Ms. Coit was able to go home a few hours after the procedure. Four days later, the Texas Tech University business management senior was celebrating her 21st birthday.

"I hope this will take care of it, and I will no longer have these terrible migraine headaches," she said.

Dr. Robert Timmerman, vice chairman of radiation oncology, supervises most of the Gamma Knife procedures at UT Southwestern. He has treated more than 1,000 patients with the Gamma Knife during his career and is considered one of the top international experts on stereotactic radiosurgery.

"The beauty of the Gamma Knife is that you can treat incredibly small targets with a precision of one-tenth of a millimeter," said Dr. Timmerman. "This minimizes the risk of damage to healthy tissue next to the target. In addition, we can block selected radiation beams to limit exposure to the target and spare other areas, such as the optic nerve."

A few hours before treatment, Ms. Coit underwent an angiogram and a magnetic resonance imaging scan of her brain, giving her team of physicians up-to-date diagnostic data to locate the precise target area for the treatment. The scans are entered into a computer program offering a three-dimensional image of the AVM in her brain and allowing her doctors, assisted by a radiation physicist, to chart the coordinates for the powerful Gamma Knife beams.

"The Gamma Knife was the safest option for her," said Dr. Tony Whitworth, assistant professor of neurological surgery. "Following the treatment, the blood vessels in her AVM will completely clot off during the next two years. No blood will flow through there any longer, and there will be no risk of further bleeding."

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