

Hard search for less invasive brain surgery leads to eyelid

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In this photo taken Jan. 13, 2015, Pamela Shavaun Scott holds a 3D printer model of her skull after her brain tumor was removed from behind her eye, in Morro Bay, Calif. Doctor after doctor said removing the tumor causing Pamela Shavaun Scott's unrelenting headaches would require cutting open the top of her skull and pushing aside her brain. Then one doctor offered a startling shortcut -- operating through her eyelid to get into the hard-to-reach center of the head. A big benefit: "We have to saw off much less of your head." (AP Photo/Phil Klein)

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Scott's unrelenting headaches would require cutting open the top of her skull and pushing aside her brain. Then one offered a startling shortcut—operating through her eyelid.

The idea: Make a small incision right in the crease and sneak past the eyeball into the hard-to-reach center of the head.

"The nice thing about it is, we have to saw off much less of your head," is how Dr. S. Tonya Stefko of the University of Pittsburgh Medical Center explains it.

Less invasive brain surgery is not common but surgeons are working out different ways to get to tumors, aneurysms and other problems without as much trauma in hopes that patients recover faster. But Scott's experience shows how difficult it can be for patients to learn about alternative options like the eyelid approach—performed by a small number of highly specialized surgical teams—or even to know what to ask.

Scott knew that major medical centers often offer second-opinion consultations for long-distance patients, and started hunting—aided when her husband used a 3D printer to create a life-size model of her skull with her tumor, a meningioma growing behind her left eye, for surgeons to examine.

"The sad thing is that people don't know there are other options than what their small-town doctor is telling them," said Scott, 56, who traveled from her home in Morro Bay, California, to Pittsburgh for the surgery. "I feel like a walking miracle."

Reaching that spot above and behind the eyes, the underside of the brain, is a challenge. Traditional surgery means a large opening in the skull to give doctors plenty of room to maneuver. But they must move

painstakingly past sections of healthy brain, and Scott was warned that because her tumor was in such a tough location, vision or even cognitive damage was a risk of that top-down surgery.

Sometimes, surgeons can snake their tools through the nasal passages instead, a straighter shot through a natural opening.

Now the eye is offering some paths into this difficult region, too.

Think of the eye socket like an ice cream cone, with the tip pointing back toward the brain's center, said Dr. Paul Gardner, director of UPMC's Center for Skull Base Surgery. Entering through the eyelid crease, surgeons can follow that cone to just the right spot to access the brain—removing a bit of bone about the size of two postage stamps from the inside.

Entering the socket at a different angle, doctors also can make a cut in the crow's feet at the corner of the eye. Or they can hide an incision in the eyebrow, making a small hole in the skull just above the eye.

Dr. Robert Harbaugh, president of the American Association of Neurological Surgeons, cautioned that transorbital approaches haven't been formally studied to compare ultimate outcomes, including safety, to [traditional open surgery](#).

"This is worth exploring," he said. But, "because it's new doesn't mean it's necessarily better."

The surgery is only for carefully selected patients, stressed Dr Alfredo Quinones-Hinojosa, a John Hopkins University neurosurgeon who co-authored one of the first medical journal reports on the eyelid method a few years ago.

Tumors can't be too big. No important nerves can be in the way; he also turns away people with large sinuses, to be sure there's room to get by. He calls infection the main risk.

And it can only be done by a specialized team with experience in both the eye and the brain, added Gardner, who will present some of Pittsburgh's cases at a medical meeting next month. Stefko, UPMC's director of orbital and oculoplastic surgery, has the job of protecting the eyeball, making the corridor for the neurosurgeons to work.

Those kinds of multidisciplinary teams are rare, limiting wider adoption of these techniques, said Quinones-Hinojosa.

"You really have to learn how to be co-captains. Medicine and surgery hasn't been, traditionally, like that," he said.

For California's Scott, it took a few hours longer to remove her meningioma—a benign tumor that started in the brain's protective covering and grew into the bone and near her optic nerve—through the small opening. But she awoke with essentially a black eye, and was back at work in her psychotherapy practice in two weeks, wearing sunglasses.

In Indianapolis, dentist Deborah Boyer underwent a similar months-long search to treat a meningioma growing around critical nerves and blood vessels, threatening her vision and motor function. She wanted both a brain and an eye specialist. So she read medical journals online and hunted designated "centers of excellence."

Pittsburgh's Gardner initially planned to cut through the side of her skull, a smaller operation than other doctors offered, but later decided the corner of her eye offered a good path. Boyer said it took twice as long as regular surgery, but she was discharged in four days pain-free.

"People need help to try to get connected more quickly, and to know what those options are," she said.

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