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UCLA surgeons use minimally invasive procedure to cure boy with rare form of seizures

Doctors discovered a benign mass was causing the 9-year-old's giggling fits

Justin Cho is an engaging 9-year-old. Although he's somewhat shy, he is quick to smile and has an infectious laugh.

"Justin has always been a happy child — very energetic and bubbly," said his father, Robert Cho. "We assumed that giggling was just part of his personality."

What Robert and his wife, So, didn't know was that the laughing fits he often had before bedtime were actually seizures and signs of a serious medical problem. One morning as Justin was waking up, the couple saw him go into a full seizure.

"We were terrified," Robert Cho said. "Had we not witnessed it ourselves, who knows how long these would have gone on?"

The Chos brought Justin to Mattel Children's Hospital UCLA, where he was treated by Dr. Aria Fallah, a pediatric neurosurgeon.

"Justin had what's known as gelastic epilepsy, which was caused by a benign mass called a hypothalamic hamartoma, deep inside his brain," Fallah said.

Hypothalamic hamartomas are extremely rare, but left untreated they can affect a child's IQ and ability to learn, and can cause premature puberty and death.

The condition rarely responds to medication, which makes surgery the only treatment option. But the surgery most often used to correct the problem is particularly difficult because the masses are located deep inside the hypothalamus, the part of the brain that regulates hunger, thirst, body temperature and hormones.

"You couldn't find a more challenging spot to treat in the human body," Fallah said. "The hypothalamus is difficult to access and surrounded by critical nerves, arteries, veins and neurological tissue that are vital to everyday functions."

Removing a hypothalamic hamartoma typically requires open-brain surgery: Surgeons remove a large section of the skull and slice open the brain to reach the lesion. The surgery leaves a large scar on the patient's head and, because the procedure is so invasive, patients generally remain in intensive care for up to a week and require months to fully recover. Side effects can include memory loss, hormonal

imbalance and vision problems. Up to 10 percent of patients do not survive the surgery — a high figure compared with more common procedures.

So Fallah and his colleagues used a cutting-edge technique designed to minimize the risks and dramatically speed up Justin's recovery. The approach uses heat from an optical laser to destroy the mass.

Surgeons made a 2 millimeter incision in Justin's skull and, using GPS-like technology, mapped his brain and pinpointed the location and size of the hamartoma. Then, they fed a thin optical laser deep into the brain and penetrated the lesion.

"Essentially, we cook the mass from the inside out," Fallah said. "Once it's destroyed, the epilepsy is gone."

Although preparing for the surgery and mapping the patient's brain can take several hours, the minimally invasive procedure itself takes only a few seconds. And the results last a lifetime.

"The last seizure patients ever have is the one they experience right before surgery," Fallah said. "They wake up and the seizures are completely gone. And the child can go home the next day and resume normal activity almost immediately."

In Justin's case, that meant getting back to playing soccer with his friends and sharing laughs with his family.

"It's a miracle," Robert Cho said. "We're so grateful we learned in time that Justin had this issue and that we found doctors who were able to treat it the way they did."

Now, whenever the Chos hear their son giggling, they'll know it's simply because he's happy.

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Video Courtesy: UCLA Mattel Children's Hospital

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