

Fast response time and microsurgery save boy's facial expression

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Surgeons at Packard Children’s Hospital repaired facial nerve damage that two-year-old Jax Cannon had suffered in an accident. Today his expression can beam his joy, thanks to the operation in September. Photo: Norbert von der Groeben

Two-year-old Jax Cannon is giving his dad high-fives.

“Ow!” says Jon Cannon, wiggling his hand and pretending to be hurt. Proud of his strength, Jax grins — a huge, baby-toothed grin that extends to the corners of his eyes.

Jax’s delighted expression has special significance for his parents, who last year were grappling with the possibility that their son had forever lost the ability to blink, squint or smile.

In September, when Jax was 17 months old, a household accident severed three branches of his [facial nerve](#) and paralyzed part of his face. A clock started ticking: Damaged nerves can best be reconnected if the problem is treated within about 72 hours.

“If you wait too long, the ends of the nerve don’t match up properly, and there is a much less favorable outcome,” said James Chang, MD, an expert in pediatric microsurgery at Lucile Packard Children’s Hospital and a professor of plastic and reconstructive surgery at the School of Medicine.

“Once you lose those nerves, there is no way to introduce new nerves into the face to jump-start the muscles again,” added craniofacial surgeon Rohit Khosla, MD, an assistant professor of plastic and reconstructive surgery.

Khosla and Chang use their complementary expertise to treat patients in the facial paralysis program at Packard Children’s, where they see children born with facial paralysis and those who acquire it through injury, as Jax did. “For injured children, the most critical issue is to identify the injury and get the patient into surgery right away,” said Khosla.

Jax’s accident occurred on what began as an ordinary Saturday evening for the [Cannon](#) family. Jax, his parents, Jon and Kristi, and his big brother, 3-year-old Jace, were relaxing in their living room in Redwood City, Calif. Jax clambered onto an ottoman.

Suddenly, in gung-ho toddler fashion, he launched himself like a torpedo toward his father on the couch. Jon didn’t have enough warning to catch him properly, and Jax collided with a drinking glass Jon was holding. The glass shattered. Large shards made two deep gashes under the left side of Jax’s jaw.

“There was blood everywhere,” Kristi said. “We didn’t know if he had cut an artery. We were really scared.” For a few terrible minutes, Jon and Kristi thought Jax could bleed to death. To the family’s relief, the paramedics quickly arrived and controlled the bleeding.

Jax was rushed to nearby Sequoia Hospital for stitches. Although the on-call physician, Steven Struck, MD, easily repaired Jax’s skin wound, he was worried when he realized the left side of the little boy’s face was motionless. Recognizing that Jax needed the help of facial-paralysis experts, Struck referred the Cannons to Packard Children’s.

When Khosla and Chang assessed Jax’s injury on Monday, they immediately scheduled surgery.

“The nerves start to disintegrate after 72 hours,” Khosla said. Jax’s surgery began about 60 hours after his injury.

In the operating room, Chang and Khosla gingerly re-opened Jax’s wound. With a nerve stimulator, they tested the function of the facial nerve, which runs from the brain under the ear and along the underside of the jaw, splitting into five branches that control different facial muscles. Two branches of Jax’s left facial nerve were bruised but intact. Three nerve branches were cut. The tube that carries saliva from the left parotid salivary gland into the mouth was also torn.

Using a microscope, a curved needle the size of an eyelash and sutures thinner than a human hair, Chang stitched together the severed nerves.

Chang compared the nerves to insulated electrical wires. “We sew the outside insulation back together so the wire can grow back into the original tube,” he said. The surgeons also fixed the torn salivary tube. Then Khosla repaired the external injury. The entire surgery took about four hours, which is typical of the six to 10 facial-paralysis operations

that Chang and Khosla tackle each year.

“We were lucky that Dr. Struck told us there could be nerve damage,” said Jon. “And we’re fortunate that Stanford’s at our doorstep. You can’t really duplicate the experts they have.”

After two nights, Jax left the hospital to continue his recovery at home. The severed nerves leading to the area around his left eye are still healing. For several weeks after the surgery, Jon and Kristi had to use eye drops to keep Jax’s left eye moist because he couldn’t move his eyelid. But as the nerves have regenerated, Jax is gradually regaining control of the muscles that help him squint, blink and raise his eyebrows.

“Even though he had a traumatic injury, his brain still perceives that he’s able to communicate to those muscles,” Khosla said. “He’ll make a full recovery. He’s showing good signs of that already.”

Indeed, Jax’s bruised nerves, which control his smile, regained function a few weeks after the surgery.

“His smile is completely back,” said Kristi with relief. “He has the hugest smile that lights up the room.”

With characteristic enthusiasm, Jax finishes high-fiving his dad and moves on to the next thing he can think of to smile about. Reaching for Jon’s keys, he says, “Drive Daddy’s car?”

Provided by Stanford University Medical Center

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