



# IN GOOD HANDS

An ATV accident turned a family vacation into a journey to save a young girl's arm

BY CHRISTINA ORLOVSKY

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When the Ward family set off on a vacation to Northern California for the Independence Day holiday in 2021, they had no idea that the trip would take a terrifying turn.

On July 3, Ella Ward was a passenger in a six-seat ATV being driven by her father, Sam, when the ATV unexpectedly overturned, pinning the 8-year-old's arm underneath the roll bar. While the rest of the vehicle's occupants escaped unscathed, the ATV slid, injuring Ella's arm even further, until three adults were able to turn it upright and get Ella to safety. What happened next was a whirlwind for the little girl and her parents, who were vacationing on a ranch an hour's drive from the nearest children's hospital.

"Ella's arm was broken in between her wrist and elbow," Sam recalls. "Not only that, but because of the movement of the ATV, she lost 50 percent of the muscle and 75 percent of the skin on her right forearm. So, along with the open broken bones, her arm was full of dirt, rocks and bacteria. It was mangled."

An ambulance transported the family to a hospital in Fresno. When they arrived, Sam says, "there was a flood of doctors and they were all extremely concerned—they didn't know how they were going to address it."

Ella was rushed into surgery. The surgeon, who'd been in the military, told the Wards that his plan was to treat Ella as if she were a soldier with a war

wound.

"That's how bad it was," Sam says. "He said, 'I know how dangerous this is and I'm going to hit it hard and treat it for infection.' That's how they started—cleaning the arm, treating infection and performing lifesaving measures."

At this point, the Wards and Ella's doctors were unsure if they would be able to save her life, let alone her arm.

"I am certain that if this accident had happened in many other states, Ella would have died from the severity of her injury," her mother, Lindsey, says. "In most places, her arm would have been immediately amputated. We didn't know for a while if hers would have to be—it was always a possibility."

Ella underwent several surgeries in Fresno while her medical team decided on the best course of action. Doctors cleaned her wound and put her bones together with titanium rods. Then, they searched for another team of experts to take

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**LEFT:**  
Child Life  
Specialists  
helped  
make Ella's  
stay more  
fun

**RIGHT:**  
Ella  
with her  
piggy pal  
following  
skin graft  
surgery

over the remainder of the extensive care Ella was going to need to repair her nerves, muscle and skin.

### SEARCHING FOR SUCCESS IN SAN DIEGO

A week after the accident, the Wards left Fresno to head home to San Diego and meet with Katharine Hinchcliff, MD, a plastic surgeon at Rady Children's and an assistant clinical professor at the UC San Diego School of Medicine who specializes in reconstructive surgery, pediatric and adult upper extremity surgery and peripheral nerve surgery.

"They originally wanted us to go to Stanford, but when we told them we lived in San Diego, they found Dr. Hinchcliff. They interviewed her and felt that she would be even better at getting Ella's hand to work again," Sam explains.

The family drove back to San Diego with Ella medicated and with a special vacuum to drain the open wound on her splinted arm.

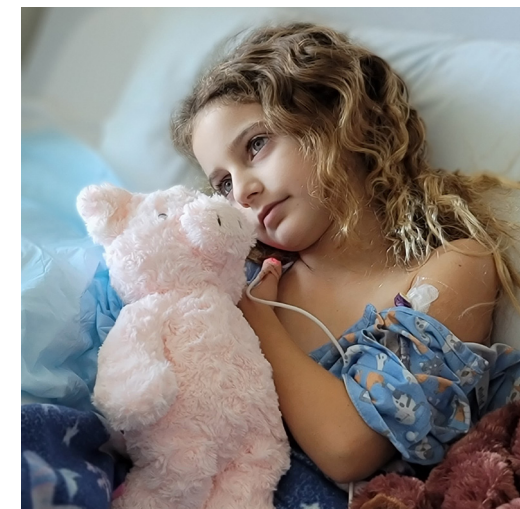
"She was like a china doll, she was so fragile," Sam says. "We left without them being able to find her radial artery. She still had 50 percent muscle loss and most of her skin missing. But they said she had an 80 percent chance of keeping her arm."

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Still, Lindsey adds, "We were told that even if she kept her arm, there wouldn't be any function."

The Wards arrived at Rady Children's with hope that Dr. Hinchcliff would have a plan not only to save Ella's arm, but to help her regain as much function as possible. They quickly learned that with an injury as severe as Ella's, with such a high risk of infection, the best plan is to have no plan at all.

"The most difficult thing for a kid with this type of injury is trying to give them and their family a realistic idea of the prognosis and picture ahead when you don't know for sure what that's going to be," Dr. Hinchcliff says. "Trying to tell a concerned family what to expect is a skill we all develop and are continually working on as trauma surgeons."



"You don't want to paint too rosy a picture and get a family's hopes up," she adds. "And you don't want to paint too bleak a picture and have them give up hope. You have to put all the pieces of the puzzle and come up with a summation that's not going to overwhelm them."

Dr. Hinchcliff wasn't able to devise a plan for reconstruction until she could evaluate Ella's arm in the operating room. But despite the stress of not knowing what the future held, the Wards trusted that they were in the best hands with Dr. Hinchcliff and the team at Rady Children's.

"Even before meeting her, we knew she was an incredible person just based on her experience—and she was," Lindsey says. "She was incredible with her communication with us—we were able

to reach her at any time—and treating us not just as patients, but as parents.”

Dr. Hinchcliff’s empathy made an impression on them, Lindsay says. “When you meet a lot of doctors, you realize some have empathy and some don’t. Dr. Hinchcliff does.”

Sam adds: “The first day we met her, she spent at least two hours with us. Then she came every day, for at least an hour, sometimes three hours. I asked her a million questions, and she answered every single one until I couldn’t think of any more to ask.

“Her bedside manner was absolutely over the top,” he continues. “She was candid about what happened, she was incredible at describing what she was going to do, and she told me to let her know the level at which I wanted to hear or see what Ella’s arm was like. I told her I couldn’t stomach it and I couldn’t mentally handle it, but if my kid had to handle it, I would, too.”

#### ENDURING THE EXTREME

Over the next month that Ella was a patient at Rady Children’s, there was, in fact, a lot to handle. The first step was to find Ella’s radial artery, which sends oxygenated blood to the lower arm and the hand.

“That first surgery was supposed to be a basic surgery, but it ended up being one of the most important,” Sam recalls.

Dr. Hinchcliff found the radial artery, which was fortunately still intact. She also evaluated the remaining muscles and tendons, debriding those that were not viable and connecting others to set the groundwork for future function.

“She gave that a 50/50 chance of succeeding,” Sam says, “and at the time we didn’t know how significant it would be.”

Finding the radial artery improved Ella’s candidacy for a muscle and skin transplant surgery, called a free tissue transfer, which could be used to replace the missing tissue in her arm. In this reconstructive technique, surgeons remove a piece of tissue from one



site where it has a blood supply and connect the vessels feeding that muscle and skin to a blood vessel at another site. In Ella’s case, the donor site was the muscle in her upper left back, which was removed and attached to the injured area of her arm.

“The human body is nice in that it has a lot of spare parts and a lot of redundancies, so there are certain muscles you can do this with,” Dr. Hinchcliff explains. “The muscle we took from Ella’s back is a workhorse muscle in that it’s often used in scenarios like this where you don’t need them as intended.”

Dr. Hinchcliff performed Ella’s surgery in conjunction with

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**TOP:** Ella works to get her strength back up

**BOTTOM:** Ella’s family dubbed her injured arm her “tough arm”



## A Helping Hand

**Denise Hoover, OTR/L, CHT, did not set out to be a hand therapist.** In fact, she didn’t even intend to be an occupational therapist. She started as a physical therapy major and then switched to occupational therapy—a profession, she says, she found compelling.

“You have to be creative to find activities that will motivate someone, specifically a kid, who experienced a traumatic injury,” she explains.

After working at Rady Children’s for nearly two decades, treating kids with autism, handwriting difficulties and a variety of other therapeutic needs, Hoover was encouraged to seek specialized training in hand therapy.

“It seemed like the perfect combination of occupational therapy and physical therapy,” she says.

So, 13 years ago, she decided to go for it, which meant five years of training for a certification. Hoover is now the only practicing pediatric certified hand therapist in San Diego and is currently training four others.

“That’s a unique thing about Rady Children’s in general—they are the only place in

Southern California with pediatric hand therapists,” says Dr. Hinchcliff.

Because a hand therapy certification is so time-intensive, not many people opt to pursue it, Dr. Hinchcliff says.

“But it’s very subspecialized care that Rady Children’s offers, and it’s really important, because if you send these kids to adult hand therapists, they’re not going to get the same result that they will from someone who is trained in pediatrics,” she says.

Without a specialist like Hoover, Ella’s case may have had a different outcome.

“Plus, the personality of a hand therapist and a hand surgeon overlaps a lot,” Dr. Hinchcliff says. “People who go for hand therapy, they’re interested in complicated therapy that results in high-level function. That’s our goal: to try to get patients back to functioning at a high level.”

To achieve this high level of function, Hoover relies on splinting—using thermoplastic splints she creates herself—to set the hand and adapt to growth and changes in function. It’s a special skill that she honed while getting her certification.

“In OT school we have a lab, and they teach us basic splinting where we draw a pattern using the landmarks of the hand and then we cut it out of a thermoplastic and custom mold it to a patient,” she explains. “We are

taught those basic things, but when you go out in the field, you’re never going to be making splints. You get the education, but you probably don’t get that practice. That’s where the hand therapist comes in. Now, I spend 40 percent of my day making splints.”

Splints, plus motivational activities like darts, therapy putty and rubber-band shooting that she customizes to each child are what help Hoover’s patients, like Ella, achieve extraordinary success.

“Therapy is an art. Everyone is different and you have to tap into what motivates them,” she says. “Overall, cases like Ella’s are why I love what I do. Working with the families and seeing the progress. Coming up with fun things for the kids to do and seeing their excitement and how much they use their extremity even with their limitations. And finally, seeing

how excited they get to be able to use their hand the same way they did before. People amaze me every day with what they’re able to achieve and overcome.”

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**Denise Hoover, OTR/L, CHT**

one of her partners from UC San Diego to ensure the surgery was safe and efficient. After surgery, Ella was transferred to the intensive care unit because the new muscle—which was completely exposed with only a small paddle of overlying skin—had to be continuously monitored.

“The ICU nurses were listening to her heartbeat for hours, making sure the transplanted muscle was receiving blood. If the blood flow to the muscle stopped, she would have had to go immediately back to the OR—it was critical to keep that muscle alive,” Sam says. “Essentially, for the next four days in the ICU, the job was to monitor that muscle.”

Ella also needed a blood transfusion. She was on a PICC line and an IV for medication, nutrition and liquids.

“She was a wreck,” Sam says. “Even though it was a successful surgery, we weren’t through the woods yet. We knew things could go south at any minute.”

Luckily, the muscle transplant took, and Ella could move forward to the next step: a skin graft that involved removing skin from her upper thighs and transplanting it to her arm. Once the graft was complete, the surgeons’ work was nearly done, but Ella’s was just beginning.

#### ON TO OCCUPATIONAL THERAPY

The week after the skin graft was trying for Ella. She wouldn’t eat. She was sick. And she still had a long journey ahead of her to get her newly repaired arm back to normal functioning.

“We got her arm fixed but at what cost?” says Sam. “It was scary for us because we still didn’t know what to expect. With the arm, it’s not just a procedural or medical fix; it’s also functional. So, I had questions: Will she be able to write again? It wasn’t promising. Will she be able to turn a doorknob? Possibly. Will she be able to ride a bike? Maybe. You just keep listing things in the hopes of hearing yes. We were told they thought Ella’s hand would likely be more like a helper hand. There was still this black cloud hanging overhead.”

That’s when occupational therapist and

certified hand therapist Denise Hoover entered the picture. Hoover, who has been with Rady Children’s for 31 years, is one of just three pediatric certified hand therapists in San Diego and the only one still in practice. She’s also a key to Ella’s success story.

“One thing I’d emphasize about Ella is that she has a really good outcome and it’s in large part due to her therapist,” Dr. Hinchcliff says.

“When we met Denise, Ella couldn’t use her hand at all,” Sam recalls. “Denise said, ‘I’ve been prepared to see her. She’s going to be one of the biggest challenges I’ve ever faced, and I’m ready to take it on.’”

At that point, Ella wasn’t able to pick up anything or move her elbow. She could barely move her fingers.

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LEFT: Ella’s friends and family show their support with signs

RIGHT: After treatment, Ella is back to doing what she loves—dancing



“As recently as a few months ago, she couldn’t touch her face with her palm, only the back of her hand,” Sam says. “Now, speeding through to today, she has 90-percent function in her hand. She can write. She can do handstands! Seeing where she’s been to where she is now is incredible.”

#### DANCING DOWN THE ROAD TO RECOVERY

Ella, who is a dancer, is now back to practicing

four days a week—a feat that her mother says was unexpected. Lindsey credits Denise’s hard work and passion, and the powerful one-two punch she provided after Dr. Hinchcliff’s surgical work.

**THE GROWTH IS ONGOING, BUT THE HEAVY, HORRIBLE, LIFESAVING, LIFE-CHANGING STUFF IS BEHIND US NOW.**

“We are so beyond blessed that we’re from San Diego and that we got to stay in San Diego throughout

all of this,” Lindsey says.

“I truly believe that if we were somewhere else, we wouldn’t have gotten this result. Denise Hoover deserves a lot of credit for the function Ella got back. If Denise hadn’t been her occupational therapist, I don’t know if we would have the recovery we had. The doctor can only do so much.”

Lindsey describes Denise and Dr. Hinchcliff as “probably the best hand team in America.”

“I don’t know any other hand teams,” she laughs, “but I’m sure of it!”

While Ella continues to improve, her healing journey isn’t complete. She still does not like to look at her arm—especially after she has surgery. She has undergone trauma therapy at the Chadwick Center for Children & Families at Rady Children’s. After 13 surgeries—10 of which were at Rady Children’s—she will still need to undergo procedures with Dr. Hinchcliff to improve the skin’s appearance. But, according to her grateful parents, her hand function is back and, best of all, so is her quality of life.