

A helping hand

Astoria boy is first to receive a 3-D-printed prosthetic arm from an Oregon hospital

By EDWARD STRATTON
EO Media Group

PORTLAND — Jude Rochon sat patiently in Dr. Albert Chi's office at Oregon Health & Science University Thursday morning while the prosthetics expert performed surgery on Jude's right hand and forearm with scissors, metal snaps and a lighter.

The 6-year-old Astoria boy, who was born without a right forearm and hand, recently became the first patient to receive 3-D-printed prosthetics from an Oregon hospital, part of Chi's quest to help provide low-cost, upper-body limbs.

The two prosthetics he received for free from Chi, one with the hand open and another with the hand closed, are made from 20 to 30 3-D-printed biodegradable plastic parts, colored orange and black for Jude's favorite college team, the Oregon State Beavers. Each cost about \$50 in materials.

The arms are connected by a nylon harness on Jude's left shoulder. When he reaches with his upper-right arm forward, a pulley system opens or closes the hand, depending on which prosthetic he's wearing. The elbows have full range of motion, along with a rotating wrist.

After being fitted for an improved harness on his closed hand and cupping a can of San Pellegrino Thursday, Jude shook the hands of older brother Sawyer, father Mike, doctor's assistant Isaac Womack and Chi.

A hand up

Jude, who practices about an hour a day with his new arms, is short on words about how the prosthetics will affect his life. He used one of the prosthetics last week to ride a scooter gifted by OHSU down the hall.

"This has helped me with writing," Jude said, adding his new arm helps hold papers while he writes with his left hand. Asked what the hands might now enable him to do, Jude answered excitedly, "Wrap presents."

Jude is the youngest child of Alivia and Mike Rochon, along with Sawyer and sister Mia. The couple adopted Jude from a special needs group in Shanghai when he was a year old.



Jude Rochon, right, clutches a juice box in his new prosthetic, while being fitted for a new harness by Dr. Albert Chi, left, and assistant Isaac Womack.

Edward Stratton/The Daily Astorian



LEFT: Jude Rochon demonstrates how he can grasp items with his new 3D-printed prosthetic arm. Rochon can open and close the hand with the aid of a special harness he wears. RIGHT: Jude's mother, Alivia Rochon, helps adjust the prosthetic arm that works in conjunction with a harness that helps him control the hand.

Alivia said she initially wondered what she should do to accommodate Jude's disability, but he has always found a way to get things done; be it riding a bike and playing on his youth baseball team to writing and tying his shoes. But Jude recently was bullied by another child, she said, which sapped his confidence and led them to start looking into prosthetics.

"It's hard to see your child lose that confidence," she said. "In addition to Dr. Chi giving this to Jude to help him physically, what we've already seen in him emotionally and in his confidence, it's already helped him so much."

Alivia's sister, who works at OHSU, connected the family with Chi, a trauma surgeon, professor

and nationally renowned expert in prosthetics, who relocated last year from Johns Hopkins University. By the time Jude received his first prosthetic last week, he and his family were being interviewed by at least two television stations and *The Oregonian*.

"We don't like the interviews, and the TV, and the hoopla," Mike

"There's this huge need for children who have congenital limb loss. It doesn't make sense to build them an expensive device they'll grow out of in one to two years."

— Dr. Albert Chi

said. "It's for Jude. But it's sure comforting when you go up there and you realize this guy (Chi) is all about Jude and this tool."

Enabling the Future

Chi is a member of Enabling the Future, a global network of volunteers using 3-D printers to create free prosthetic tools.

"There's this huge need for children who have congenital limb loss," Chi said. "It doesn't make sense to build them an expensive device they'll grow out of in one to two years."

Chi said the budget prosthetics are meant more as tools than fully functional limbs, which can cost hundreds of thousands of dollars. He is developing more advanced 3-D-printed prosthetics incorporating electronics, and hopes to have a new one available for Jude in the coming year.

At Johns Hopkins, Chi was the medical director of the targeted muscle reinnervation program, where doctors have reassigned nerves so amputees can move prosthetics by merely thinking about which actions they want to perform. At OHSU, he focuses on improved motor control of prosthetics, including by eyesight.

Chi said his work in advanced and budget prosthetics is equally important to him.

"My goal is to really involve the community," he said. "Anyone in need, I can build them something. I'm hoping we can create a volunteer group, to provide this to anyone in need. We can have printing clubs in schools."

He said anyone needing an upper body prosthetic or wanting to help make them can contact him directly at chia@ohsu.edu



Colin Murphey/The Daily Astorian



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