

Chris Rowles: Osseointegration Changes the Game

By Maria St. Louis-Sanchez



Chris Rowles' life isn't that much different now than before his leg was amputated above the knee eight years ago. He can scramble over rocks when he's fly fishing, he can walk on the beach, and, most important to him, he says he can sit and cross his legs. Even donning and doffing his new prosthesis is easier.

"It takes about 30 seconds and I'm off to the races," he says.

This new lifestyle for the former police officer is a result of osseointegration, a surgical procedure that implants a rod into the residual limb on which the user's prosthesis is attached.

Rowles underwent a transfemoral amputation after a three-year battle with an infection in his knee following replacement surgery.

"I had knee replacement surgery seven times and the infection kept attacking that joint," Rowles says. "They couldn't figure it out. It became

a soft tissue issue because they couldn't open the tissue anymore after so many surgeries."

He says his physician fought to save the leg, but after years of struggling, they both decided amputation would be best. After that tough decision, Rowles had to learn how to adjust to his new prosthetic leg.

Although the infection never returned, he soon found he couldn't enjoy his former lifestyle. Knee surgery on his other leg and a previous back surgery often resulted in a gait that never felt right to him.

"I had a good prosthetist, but no matter what device I got, the gait was →

just off,” he says.

The main problem, however, was his socket. He could never keep suction the way he needed.

“I would lose suction in the socket,” he says. “I’d be walking and all of a sudden my leg would be three feet behind me and I’d fall down.”

After years of trying to make it work, he began cutting back on his use of his prosthesis. It was often easier to get by without it, he says. He initially met his future surgeon, Daniel Allison, MD, to discuss issues he had with his intact knee. It was Allison who suggested osseointegration surgery.

“I said, ‘Let’s go for it,’” Rowles says of the procedure.

Since Rowles was hurt on the job and had workman’s compensation, he has lifetime medical coverage for his knees and back—coverage that paid for the surgery and new devices.

Osseointegration is relatively new in the United States but has been used for many years in Australia, Sweden, and Germany. In July 2015, the U.S. Food and Drug Administration (FDA) approved the humanitarian use of the procedure for patients with transfemoral amputations.

Rowles was the first patient in Southern California to undergo the procedure, and Allison had to seek FDA approval for the operation. Surgeons are still studying the best system for the procedure, but so far the one most widely researched, and the only one approved by the FDA is called Osseoanchored Prostheses for the Rehabilitation of Amputees (OPRA).

With the OPRA system, patients have two surgeries before they can use their prosthetic devices. In the first surgery, a hollow tube is inserted into the bone of the residual limb. Then, the patient must wait several months before bearing weight on the leg, with



the idea that with time the bone will attach to the tube. After that, a second surgery fits a rod inside the tube that will connect the bone to the prosthetic device.

Rowles says he was on crutches for five months before he had his second surgery. After years of discomfort with his socket, he says it was worth the wait.

“I can take [my prosthesis] off and on in 30 seconds; this is fantastic,” he says. “It gives me much more mobility.”

Not only that, but he says he trusts his new configuration more than his former socket system.

“My wife and I are expecting our first grandchild, so I’m up on a step stool and ladder painting, and I don’t think I would have trusted the socket system to do that. I know this thing is totally attached to my leg and it won’t fall off.”

Rowles isn’t the only one who has had to get used to the new technology. His physical therapist, Vicky Graham, PT, DPT, OCS, NCS, says she had to study the procedure and change her previous methods to be able to best help Rowles.

“This is new to all of us, but we were all on the same page,” says Graham. “I was familiar with the procedure, but I hadn’t expected a patient so soon.”

So, she found she had to adjust some of her therapeutic techniques to fit Rowles. “I hadn’t realized how much I had a socket-specific training protocol,” she says. “I had to re-tool my training techniques a little bit. But it made it easier, not harder.”

The first eye-opener for her came when she asked Rowles to sit on a mat. She normally asks patients to keep their devices on for the mat exercises because it takes too long to don and doff them. Rowles had already removed the prosthesis by the time Graham started to ask him to keep it on.

“I thought, ‘Wow, this is really a whole new level,’” she says.

Because of the osseointegrated prosthetic system he uses, Graham says Rowles was able to catch on quickly.

“He could really feel the ground up through his leg in a way that is typically much harder for my patients to experience,” she says.

Rowles was fitted with Össur’s RHEO KNEE XC and Pro-Flex foot, a combination that is ideal for people who have undergone osseointegration, says Merredith Gonzalez, area manager of prosthetics for Össur Americas, Foothill Ranch, California. Rowles’ prosthetist connected the knee and foot to the adapter cemented into Rowles’ femur and then completed standard alignment and automatic knee programming to customize the knee to his walking style, Gonzalez →

says. "Basically, the same process that a traditional socket suspension amputee would go through," she says.

The RHEO KNEE XC automatically adapts and adjusts to different conditions and activities while the Pro-Flex foot has 27 degrees of ankle motion, says Russ Marable, product marketing manager for Össur Americas. Having a smooth knee and foot is important for osseointegration patients, he says.

"In traditional socket suspension, you usually have a soft silicone cushion between the hard socket and amputee's limb," he says. "Osseointegration patients are exquisitely sensitive to impact on their limb since the prosthesis is directly connected to their bone. They typically want a leg that is both dynamic and smooth, not hard and bone-jarring."

Graham says she helped assess Rowles with an older knee and then with the newer, proposed RHEO KNEE XC so they could get it approved by his

insurance.

"I did repeated work with the old knee and the new knee, and it was such a dramatic difference," she says. "They spent so much on the surgery that the price of a new knee and foot was a drop in the bucket."

When Rowles received the new device, he says it took his prosthetist about 20 minutes to adjust for his height. Then it was snapped in and hasn't given him any trouble since.

The main care necessary for his residual limb with the osseointegrated implant is keeping it clean with peroxide and betadine daily. The connection means he will have a semi-open wound on his leg for the rest of his life, which can be prone to infection if he's not careful.

"I might have to do this for the rest of my life but it's well worth it," he says.

While it has been a good solution for Rowles, experts caution that osseointegration is not for everyone.

Patients with diabetes and neurovascular disease tend to have compromised immune systems or vascular problems that wouldn't make it a good choice for the time being.

The best candidates for osseointegration are those who don't have those issues and who may have struggled with sockets for a while, Graham says.

"The first people who get this surgery will be those who have had multiple failures with sockets over the years," she says. "Despite skilled and wonderful prosthetists, some legs are just tricky, through no fault of anyone.

"It's obviously not for every patient. We will still have traditional sockets, but I think it's a game changer for a lot of patients." **O&P EDGE**

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