

SKATE OF GRACE

Constance Alexander has never let anything or anyone hold her back. So when heart failure became a serious threat at age 78, the former professional roller-skater—now a Bible teacher—was neither ready nor willing to slow down. What's keeping Constance on the move and not merely skating by at nearly 80?

By Nancy Sokoler Steiner

Constance Alexander likes to take charge. The vibrant 78-year-old Bible teacher knows she can be controlling, even in dealing with the Almighty.

“God talks to me when I’m asleep because then I don’t interfere,” she says, with a twinkle in her eye.

It is hard to believe that just months earlier, she didn’t expect to live to her next birthday. Even her formidable force of will could not change the fact that her heart was failing and her body would not tolerate the valve replacement surgery that she desperately needed.

Spend a few minutes with Constance and you can picture the plucky teenager she must have been growing up in Asbury Park, New Jersey. There, she found refuge from a hostile family environment at the local roller rink. She worked weekends as a hatcheck girl, earning unlimited free skating time. Often,



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— CONSTANCE ALEXANDER

she would sleep at the rink rather than return home to a stepmother who was happy to pretend Constance did not exist.

Constance was 16 when the Skating Vanities, a traveling roller-skating extravaganza, came to town to perform. They were also holding auditions.

For young Constance, this was the ticket out of Asbury Park. Already a talented skater, she aced her audition and soon found herself a member of the chorus and an understudy for the female leads.

“Everyone at home told me I was ‘white trash’ for going into showbiz,” says Constance. “But I didn’t care. The Vanities became my family.”

Staged by top theater professionals, the lavish production traveled throughout the United States and Canada, as well as to Europe and South America during the ‘40s and ‘50s. Louis Armstrong performed with the group during its stop in Springfield, Missouri. In New York, the show ran for eight weeks at Madison Square Garden, The Roxy, and Radio City Music Hall.

While home for the summer in 1958, Constance met Ken Alexander, a military instructor permanently stationed at a nearby base. They hit it off immediately, but he had plans to move to California, and the Skating Vanities were heading to Australia.

“I realized I could go down to Australia and be with the crocodiles and the kangaroos,” says Constance, “or I could follow Ken to California.” She chose California, hung up her skates, and got a job in an orthodontist’s office.

“It wasn’t long before we decided to get married,” recalls Ken. Constance corrects him. “I decided,” she says. “She decided,” Ken agrees. After a pause, Constance adds, “I made him have all his front teeth capped first.”

The couple settled in Redlands, east of Los Angeles, and had two children. Constance ran four beauty salons in the area. Ken worked for Douglas Aircraft then TRW systems for 30 years.

In 2010, 78-year-old Constance Alexander had long ago given up traveling around the world on roller skates, but she was as active as ever, passionately teaching three weekly Bible classes at Sun Lakes Country Club, the community where she and Ken reside, as well as a weekly class at Beaumont Presbyterian Church, where she serves as an elder.

When she was diagnosed with aortic stenosis, a serious heart condition, Constance faced the news with her usual feistiness.

Aortic stenosis occurs when the heart’s aortic valve narrows. This narrowing prevents the valve from opening fully, which obstructs blood flow from the heart into the aorta and onward to the rest of the body.

When the aortic valve is obstructed, the heart needs to work harder to pump blood through the body. Eventually, this extra work weakens the heart muscle and limits the amount of blood it can pump, leading to symptoms such as fatigue, chest pain, and dizziness.

Constance says she felt like she was drowning. She would wake up in the

middle of the night gasping for air, pain radiating across her stomach. Patients with aortic stenosis may develop fluid in their lungs, and, when Constance was taken to the hospital, physicians removed nine pounds of water from just one lung.

“I felt like I was dying,” she says. “My body knew it couldn’t go on like that.”

A normal aortic valve opening is about an inch and a quarter wide. Hers measured less than a quarter of an inch.

Left untreated, aortic valve stenosis can lead to serious heart problems. In most cases, valve replacement surgery is recommended. But about a third of those who need the surgery can’t tolerate it, either because they are too old, too medically frail, or because they suffer from another condition that would make the operation too risky. Among patients who don’t receive treatment, 50 percent will die within the first two years after symptoms appear.

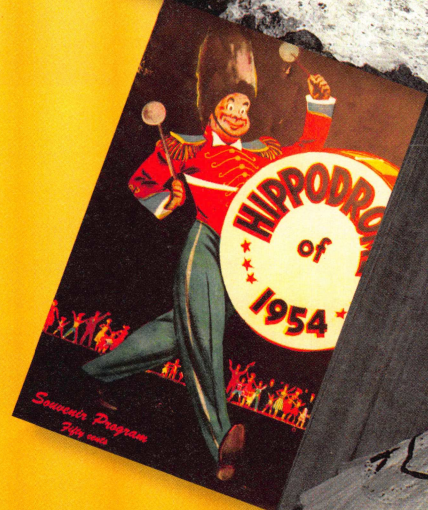
For Constance, surgery was not an option: Back in 1969, she had received cobalt radiation treatment for breast cancer. The radiation caused so much bone damage that four of her ribs had to be removed. Stomach muscle now covered the space where her ribs used to be, and opening her chest to access the heart valve was out of the question.

One thing was certain: Constance wasn’t going to let heart failure—or fear—slow her down.

When at the age of 37 she was diagnosed with breast cancer, her doctor told her she had less than a year to live. “That’s when I gave my life to the Lord,” she recalls. “I said, ‘Just take this fear away from me.’”

Despite the intense fatigue and weakness brought on by heart disease, Constance continued to teach her four weekly classes. She was boldly facing the fact that she would live the remainder of her golden years with an inoperable heart.





Former professional skating beauty Constance Alexander traveled around the world in the '40s and '50s with the Skating Vanities. "I was a natural on skates," says Constance. Now in her senior years, she is still on the go, thanks to a revolutionary heart valve replacement procedure.

“It’s clear now that this procedure has a place in the medical arsenal we use to treat aortic stenosis.”

—RAJ MAKKAR, MD

Constance was out of options—until her doctor told her about a revolutionary valve replacement procedure that would not require opening up her chest. She immediately headed to Cedars-Sinai.

The idea behind the procedure is nothing short of extraordinary, yet it is deceptively simple: Like our freeways, highways, and roads, the body’s vascular system also has a sophisticated network of pathways: arteries, arterioles, and capillaries. The approach takes advantage of the body’s “highways”—the arteries—to reach areas without the need for surgery (*see sidebar*).

Instead of opening up the chest to replace the defective aortic valve, an artificial valve is placed inside a thin tube, or catheter, which is then inserted through a small incision in the groin or side of the chest. The catheter is threaded along the arteries all the way to the heart, where the artificial valve is precisely positioned inside the patient’s defective aortic valve. A balloon inside the catheter—the same kind used for angioplasties—is then inflated. This causes the artificial valve to spring open, like an umbrella, to its full diameter.

The experimental procedure is called transcatheter aortic valve implantation—TAVI for short. Cedars-Sinai is one of only 22 centers in the United States—and the only one in the Los Angeles area—participating in the TAVI study. The trial is called PARTNER because a cardiologist and a heart surgeon must perform each TAVI as a team, from the consultation process to the implantation itself. The partners

at Cedars-Sinai are the double lead investigators on the study: cardiologist Rajendra (Raj) Makkar, MD, director of the Interventional Cardiology and Cardiac Catheterization Laboratory at the Cedars-Sinai Heart Institute, and cardiac surgeon Gregory Fontana, MD, vice chair of Strategic Planning in the Department of Surgery.

After TAVI, the replacement valve expands—and the resulting increase in blood flow is immediate.

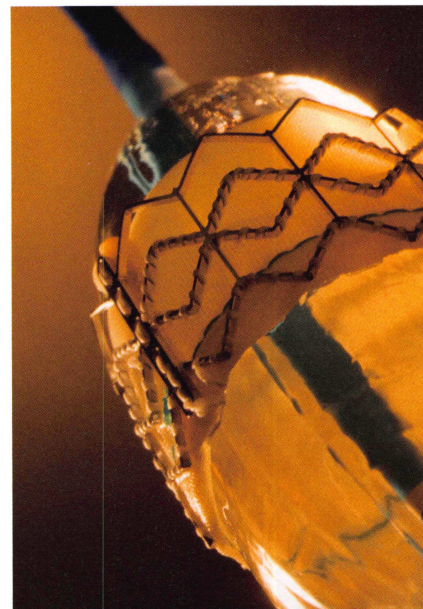
“I see patients who are out of breath just walking the 30 feet from the waiting room to my office,” Dr. Fontana says. “After the procedure, patients notice a difference even when they’re just sitting in bed doing nothing. From one heartbeat to the next, their entire physiology is improved.”

With her new valve in place, Constance Alexander’s aortic opening grew more than 500 percent—from a width the size of a pencil to the size of a quarter.

She was discharged from the hospital three days later, and went right back to teaching Bible classes and tending her garden with renewed energy.

“I feel like I have a brand-new heart,” says Constance. “While I was in the hospital, they showed me an image of my heart with the valve in place. It looked just like a crown—a silver crown with blue. It was just magnificent. God sent me to the right place.”

In a rare moment of stillness, Dr. Makkar is seated in his office. He begins describing the astonishing experimental procedure that allowed him



The Edwards SAPIEN transcatheter heart valve is the device that’s helping Constance Alexander’s heart function. The valve was placed inside a thin tube, or catheter, which was inserted through a small incision in the groin and threaded along the arteries all the way to Constance’s heart. The image above shows the valve coiled around the inflated balloon that causes it to spring open to its full diameter once in place.

and Dr. Fontana to save Constance’s heart through a tiny opening in her artery, without surgery. He stops to take a call from the lab and quickly rattles off the equipment needed for his next procedure.

On a typical day, Drs. Makkar and Fontana will perform two to three TAVI procedures together. Dr. Fontana’s clinical and research expertise is in surgery through very small incisions to replace or reconstruct heart valves in adults and children.

“What is fantastic about this study,” says Dr. Fontana, “is that we have a surgeon and a cardiologist working in collaboration. Dr. Makkar and I each evaluate the patient, perform the procedure, and oversee the post-operative care together. This hybrid

The End of the Scalpel?

Instead of cutting through bone or muscle, the physician makes a small nick in the skin to feed a thin, hollow tube, called a catheter, into a nearby blood vessel. The catheter is threaded along the arteries to reach the heart.

This is interventional cardiology, and it is steadily replacing traditional surgery in many treatments. There is no need for a large incision or general anesthesia—just a long, thin tube and the “arterial highway” as a guide.

In 2010, Cedars-Sinai led U.S. medical centers in percutaneous aortic valve replacements and mitral valve repairs. The Heart Institute’s program is the only one nationwide with initiatives in all three major heart valves that typically require surgical repair or replacement: the aortic, the mitral, and the pulmonic valves.

Cedars-Sinai is also the lead enroller worldwide for the Endovascular Valve Edge-to-Edge Repair Study (EVEREST) II

clinical trial, which is comparing nonsurgical repair for leaky mitral valves with conventional surgery. Instead of open-heart surgery, patients with this condition undergo a less rigorous catheter-based procedure in which an Evalve MitraClip™ is inserted to hold the flaps of the mitral valve together and prevent blood from flowing back into the heart instead of into the body.

The Cedars-Sinai Heart Institute was selected as one of only two U.S. training sites for the transformational procedure. “We have already begun training physicians from around the world,” says Saibal Kar, MD, director of Interventional Cardiac Research and the Cedars-Sinai lead investigator in EVEREST.

“I’m convinced we can do things less invasively in a way that’s best for the patient,” says Raj Makkar, MD, director of the Interventional Cardiology and Cardiac Catheterization Laboratory at the Heart Institute. “Over the last 20 years we’ve made tremendous advances in treating coronary artery blockages using interventional methods. Valves are the next frontier.”

environment allows us to run an experimental, first-generation study in a way that optimizes safety and effectiveness for patients.”

Fontana adds that this innovative collaboration is also a learning opportunity for both. “It’s very stimulating to work together. It’s a new landscape for both of us, one that’s full of creative opportunities. We’ve been siloed in our own respective fields until now. While working on this study, I spend more time with Dr. Makkar than with my colleagues in Surgery!”

As he walks briskly through the breezeway connecting his office to the hospital, Dr. Makkar recounts how he heard French physician Dr. Alain Cribier describe TAVI back in 2002. Dr. Cribier was the first to perform the procedure on a human subject.

“From that moment, I could tell it was going to be a remarkable technique, and I wanted to play a part in making it available to as many patients as possible,” says Dr. Makkar.

He is clearly excited as he talks about

the two patients on whom he and Dr. Fontana performed the procedure the previous day, one age 78 and the other age 90. Both patients are sitting up and talking. Had they undergone traditional valve replacement surgery, they would just be getting their breathing tubes removed. Given their ages and health complications, both patients also could have expected to be hospitalized for at least a week. Instead, they were discharged in a mere 48 hours.

Cedars-Sinai has more patients enrolled in the TAVI study than any other participating institution. At press time, more than 300 patients have had a new aortic valve installed by Drs. Makkar and Fontana since 2007.

One-year results from the PARTNER Trial were published in the *New England Journal of Medicine* last October. They showed that, for patients like Constance who could not undergo surgical valve replacement, TAVI was significantly more effective than other therapies in increasing survival rates. (That group, in fact, showed an astonishing 50 percent decrease in mortality.) Patients who

underwent TAVI were less likely to require hospital readmission or to experience the weakness, chest pains, and dizziness associated with aortic stenosis. However, there are still serious risks associated with TAVI.

“This is truly revolutionary,” says Dr. Fontana. “For the first time, we can replace a heart valve without stopping the heart. Even minimally invasive heart surgery requires the use of a heart-lung machine. This is even less invasive than minimally invasive surgery.”

“It’s clear now that this procedure has a place in the medical arsenal we use to treat aortic stenosis,” adds Dr. Makkar. “This is a pivotal clinical trial that will hopefully lead to FDA approval of this technology. Once that happens, we’ll be able to use it to treat many more candidates.”

In the case of Constance Alexander, this remarkable clinical trial has allowed a vibrant force to remain engaged and dynamic well into her old age.

“I’ll never retire,” she says. “I’ll teach to my last breath.” ●