

Mayo Clinic 150th Collection of Stories

Violinist Still Making Music After DBS Surgery

Intro: You may remember the story, a few years ago, about the professional musician who played the violin during his brain surgery? That journey began at Mayo Clinic when a surgical team implanted electrodes in his brain to stop a tremor that could have ended his career. Today, more than five years after his deep brain stimulation surgery, Roger Frisch continues to be one of the world’s foremost violinists on the world stage.

Video

Audio

TRT 4:07	
Voice of Vivien Williams	To Roger Frisch, the violin is not just an instrument; it’s part of him – an extension of his passion for music, beauty and excellence.
	Music up
Voice of Vivien Williams	Roger’s mastery of the violin has put him on the world’s stage. Few have reached this level of expertise. But not long ago, Roger noticed something wasn’t quite right when he pulled the bow across the strings
Roger Frisch Violinist	“When I would draw my bow, I suddenly had a shake in my bow. Now, for most professions this wouldn’t be a concern, For a violinist where your career depends on the stability of your appendage, this was of great concern. It would have ben career ending.”
Voice of Vivien Williams	Roger has what’s called essential tremor. A nervous system disorder that causes shaking. Concerned, he went to Mayo Clinic where he met neurosurgeon Dr. Kendall Lee.
Kendall Lee, M.D., Ph.D. Mayo Clinic neurosurgeon	“The amount of tremor he had was pretty mild. But not in the case of a concert violinist.”
Voice of Vivien Williams	Dr. Lee and Roger agreed that Deep Brain Stimulation, or DBS, was their best chance at stopping the tremor. It involved placing electrodes into Rogers’s brain.

Voice of Vivien Williams	But there was a challenge to overcome that created a first-ever situation in an operating room. You see, because Roger's tremor was so small, it would be difficult for Dr. Lee and his team to tell if the electrodes they were implanting were in the best possible place to stop the tremor.
Kevin Bennet Mayo Clinic engineer	"We needed a violin in the OR."
Voice of Vivien Williams	Kevin Bennet heads Mayo Clinic's Division of Engineering. His team worked with Dr. Lee's team to create a violin Roger could play while awake during surgery.
Kevin Bennet Mayo Clinic engineer	"We built and designed a 3-axis accelerometer that we could attach to the bow, so that as Mr. Frisch was playing, we could actually see and plot on a computer screen, the movement that shouldn't be there."
	During the procedure Dr. Lee inserted electrodes into Roger's brain and moved them to the site where the tremor originated. Once there, electrodes fire electrical signals to hopefully stop the tremor. By measuring Roger's movements, the accelerometer told Dr. Lee if the electrodes were in the right spot. There was no guarantee it would work.
Voice of Vivien Williams	Thankfully, it did work.
Kendall Lee, M.D., Ph.D. Mayo Clinic neurosurgeon	"I thought this was a wonderful challenge. To see if this technology could help in this unique situation."
Roger Frisch Violinist	"I started playing right away the day I came home from Mayo. I was back playing with my colleagues at the Minnesota Orchestra three weeks later."
Voice of Vivien Williams	You can see the difference. With the click of a controller, Roger can turn the electrodes on and off.
Roger Frisch	"Without the stimulator on, the tremor is quite pronounced. That's as smooth of a bow as I can play right now."
Voice of Vivien Williams	But when it's on, Roger's mastery of the violin is absolutely clear.
Roger Frisch Violinist	"I remain very, very thankful every day that I have had the opportunity to have

	this surgery. To basically have another chance. I just do not take it for granted.”
Voice of Vivien Williams	Back on the world stage. To make music, beauty and achieve excellence.