



# CHANGING LIVES, ONE NERVE AT A TIME: APPLYING RESEARCH TO IMPROVE TREATMENT FOR SPASTICITY

by Annie Moore

**Dr. Paul Winston and his team** want to do better. As Medical Director of Rehabilitation and Transitions for Island Health, Winston is responsible for ensuring the best available care for people who are living with disabling diseases or recovering from injury. Now, thanks to new research evidence, Winston's team has changed their practice to offer more treatment options for patients living with spasticity.

Spasticity is a neurological condition that causes certain muscles to contract

constantly. It usually results from brain injuries like stroke, or conditions like multiple sclerosis or cerebral palsy. Spasticity can be very painful and often robs people of the use of their limbs, severely affecting movement and quality of life. It's estimated that more than 300,000 Canadians live with spasticity, including 20 to 30 per cent of stroke survivors and 80 per cent of people with multiple sclerosis. Usually, spasticity is treated with physiotherapy, bracing, and botulinum toxin injections (Botox). While these

treatments work well to relax muscles and improve range of motion, they're not always effective for everyone. That's why Winston wants to do better—so he can offer an alternative for patients whose condition hasn't responded fully to the available treatments.

As a physiatrist, Winston specializes in treating a range of conditions that affect the brain, spinal cord, nerves, bones, joints, ligaments, muscles and tendons. Spasticity also happens to be his primary area of research, and that means access to the latest evidence and techniques. Over the last year, Winston's team at Victoria General Hospital (VGH) gathered all the evidence they could find on treating spasticity. They then combined it to come up with the best new nerve techniques, which include cutting tendons to open up contracted muscles, blocking or cutting nerves, or even freezing them, a technique known as cryoneurotomy.

While it might sound like science fiction, cryoneurotomy offers very real results for patients. It can sometimes restore function and motion in a matter of minutes. During the procedure, a probe is used to freeze the nerve to -60 degrees Celsius, which degenerates the nerve and lets the muscles relax. The effect lasts until the nerve grows back, usually six months or longer. It can then be frozen again.

In order to offer these exciting new treatments on Vancouver Island, the team has recently expanded to include a peripheral nerve surgeon (Dr. Emily Krauss) and an interventional anesthesiologist (Dr. Daniel Vincent). As far as they know, they're the only team like this. As a result, they're able to treat a whole group of patients who had no hope for future improvement—patients like Lori Simon, Alison Nelson and Joe Andrade.

Nine years ago, at age 39, Lori Simon experienced a devastating stroke that left her with partial paralysis and spasticity on her left side, especially in her left arm. She received Botox every three months to help relax the muscles, but it was no longer improving the condition.

Living with spasticity affected Simon's ability to sleep and to dress, and made her feel increasingly self-conscious and uncomfortable. When Winston suggested she might be a candidate for cryoneurotomy and introduced her to Vincent, she was thrilled. After two treatments, the effects have been transformative: "The muscle contractions in my arm have decreased, my range of motion has improved, and I can now sleep through the night, which hasn't happened in years," says Simon. She's grateful for the team's collaborative approach, and for their commitment to finding and offering new treatments. "It is truly life-changing," she says. "It's even given me back some of my self-confidence."

Like Simon, Alison Nelson of Union Bay had a stroke 10 years ago and has lived with debilitating pain from spasticity on her left side ever since, especially in her arm and shoulder. Despite Botox treatment every three months, she's unable to use her left arm. In January, a cryoneurotomy immediately reduced the pain and spasticity in Nelson's left elbow, shoulder, and pectoral muscles. Now, she no longer needs regular Botox in that area, her range of motion is increasing, and her fingers are more relaxed. "My physiotherapist noticed a big difference right away," she says, "and I'm still seeing improvement." More motion and less pain mean fewer acrobatics are required for everyday

activities, which improves quality of life for Nelson and her husband Bruce.

In January 2016, Joe Andrade had a stroke that left him with no function in his right arm. When Winston recommended that he try the new nerve treatment, he leapt at the chance. Since having the procedure, his arm has regained significant movement and function, and he's now able to perform daily tasks like putting on his coat and shoes, mowing the lawn, and picking up his grandchildren. For Andrade, this treatment has given back something many of us take for granted: his independence. "My family and I will always be grateful to Dr. Winston and his team for everything they've done," he says.

When nerves can't be frozen, Krauss instead selects and removes the tiny branches that connect them to the muscles. She's developing her own technique to restore function and reduce limitations for patients after years of living with a disability. Thirty-year-old Lauren Tipping of Nanaimo is one of those patients. Tipping lives with spasticity caused by cerebral palsy, which severely restricts her ability to use her left arm. Thanks to Krauss, Tipping is able to cradle her three-month-old cousin Bryan in her arms for the first time. Last July, Krauss performed a selective neurotomy on two nerves in Tipping's arm to relax her elbow and wrist, which was permanently flexed.

Now, Tipping can bend and straighten her arm and wrist at will, and can even open the fingers of her left hand. In addition to cuddling baby Bryan, Tipping's newfound freedom lets her multitask while on her iPad, dress and shower more easily, and explore her love of baking by using bowls with handles. Most of all, it's given her more confidence and self-esteem and makes life easier for Tipping and her mom Evelyn, who describes Krauss and the new treatment in one word: "Awesome!"

Patients across Island Health can be referred to Winston's VGH clinic through a family doctor or physician at a walk-in clinic. "I can say with confidence that people on Vancouver Island are receiving treatments that aren't as readily available anywhere else on the continent," Winston declares. In the future, the team hopes to offer these treatments more frequently and for more patients. They're also planning to purchase a portable handheld machine that will allow them to provide nerve freezing on the go—for example, for patients in long-term care. Winston is going national with his innovative treatments, too. In April, he's co-hosting a conference in Vancouver that will bring together experts from across the country so he can encourage them to offer these treatments as well.

