



Wide -Awake Hand Surgery

Dr. Don Lalonde, Professor, Division of Plastic Surgery

From his base at the Saint John Regional Hospital in New Brunswick, Dr. Don Lalonde is pioneering a wide-awake hand surgery method becoming known around the world as 'the Canadian technique.' It involves injecting adrenaline into the hand and fingers to drive blood away

from the skin so the surgeon can operate in a bloodless environment without the tourniquet which was previously used to block the flow of blood to the hand.

"The tourniquet was so uncomfortable that patients needed sedation or general anesthesia," notes Dr. Lalonde. "With the adrenaline injections, we can simply use a local anesthetic. The patient stays wide awake and doesn't feel a thing."

The revolutionary technique is saving billions of dollars worldwide, while providing patients with superior results.

"Because patients are awake, I can ask them to move their hand during the surgery – for example, to test the tension of a tendon transfer," Dr. Lalonde explains. "I can then make adjustments before I close the incision. There's no way you can do this kind of functional testing when a patient is under general anesthesia."

Dr. Lalonde performs about 200 carpal tunnel release procedures a year, along with tendon transfers and repairs, hand fractures, thumb arthritis, and other hand surgeries. He uses the

Canadian technique for 95% of hand surgeries. "We can perform twice as many carpal tunnel release procedures in the same amount of time at half the cost in minor procedure rooms – not including savings from not needing an anesthetist or nursing care in the recovery room," says Dr. Lalonde. "And it's a lot easier on patients."

As Dr. Lalonde explains, people with health problems must undergo a series of tests to undergo general anesthesia. These are inconvenient for the patient and costly for the system. And, after general anesthesia, many patients experience side effects like nausea, vomiting and a sore throat.

Before he could get wide-awake hand surgery off the ground, Dr. Lalonde had to debunk the longstanding myth that injecting adrenaline in fingers could cause them to fall off. Dr. Lalonde and 17 other Dalhousie-trained hand surgeons put the myth to the test. "We injected our own fingers with adrenaline in both hands at an alumni meeting in Halifax in 2001," he recalls. "We proved that phentolamine reliably reverses adrenaline vasoconstriction in the human finger and established the safety of the technique."

This test set the stage for more than 20 Dalhousie-led clinical studies and papers that have further proven the safety and effectiveness of wide-awake hand surgery. Dr. Lalonde has been teaching the technique around the world ever since. Many international hand surgeons have visited Saint John to learn the techniques taught to Dalhousie residents there.

Dr. Don Lalonde is the first Canadian ever to be elected chairman of the American Board of Plastic Surgery. He is also president-elect of the American Association for Hand Surgery. Dr. Lalonde has taught wide-awake hand surgery to hand surgeons in Argentina, Australia, Brazil, China, Ecuador, England, Germany, Greece, India, Italy, Panama, Qatar, South Africa, South Korea, and the United States. He's also a leading teacher in the art of almost-painless local anesthesia.

Plastic Surgery: Safer, better, less costly procedures



The arthritis in

Dr. Caroline Runyon's hands was so painful she was barely able to hold a scalpel to perform surgery on her canine patients. "I changed the

way I hold instruments so I could continue operating, but the pain was so excruciating I couldn't sleep at night," recalls Dr. Runyon, a veterinarian orthopedic surgeon and professor at the Atlantic Veterinary College in Charlottetown, Prince Edward Island.

Thanks to wide-awake hand surgery from Dalhousie plastic surgeon Dr. Don Lalonde, Dr. Runyon is back in the OR, repairing dogs' hips, shoulders and knees.

"It was a fascinating procedure," she says of the four-hour operation, in which Dr. Lalonde removed a small bone at the base of her thumb to relieve the bone-on-bone contact between the carpal and metacarpal bones. "I watched every step, in awe of his precision."

Because Dr. Runyon was awake, Dr. Lalonde was able to test the effectiveness of the surgery partway through. "He asked me to move my thumb from

time to time, to ensure there was no bone-on-bone contact," she recalls. "When he was satisfied, he stitched me back up."

Now Dr. Runyon has full, pain-free use of her hands – essential to the physically demanding handwork of re-positioning broken bones, removing pins, suturing incisions, and so on. Only now she has a new procedure in her repertoire. Like Dr. Lalonde uses adrenaline injections to move blood away from the hands to perform wide-awake surgeries on humans, Dr. Runyon is using adrenaline injections to perform bloodless surgeries on dogs.

"We have to tranquilize the dogs, but we don't need a tourniquet or a general anesthesia," Dr. Runyon explains. "This prevents the terrible post-operative swelling that dogs get when we use a tourniquet. Because they don't have a lot of padding on their limbs, they swell much more than people."

It was through dogs that Dr. Runyon and Dr. Lalonde met. "He and his wife Jan rescue Labrador retrievers and frequently bring them to me for surgery," Dr. Runyon says. "It seems appropriate that his intervention is enabling me to continue working on dogs."



Dr. Caroline Runyan, Veterinarian surgeon - back to work!