Sensory Improvement with Structural Integration (Rolfing)

Thomas W. Findley, MD, PhD[1,2,4]; Miriam Maney, MA[1,]; Hans Chaudhry, PhD[1,3],
[1]East Orange VA Medical Center, East Orange NJ; [2]Department of Physical Medicine, University of Medicine and Dentistry of New Jersey - New Jersey Medical School, Newark, NJ; [3]Department of Biomedical Engineering, New Jersey Institute of Technology, Newark NJ
[4] Co-Director, Center for Healthcare Knowledge Management, East Orange VA Medical Center Mailstop 129, 385 Tremont Ave, East Orange NJ 07061.
findletw@umdnj.edu phone 973 676 1000 x 2713 fax 973 395 7114

BACKGROUND Peripheral neuropathy is a major health concern, affecting 10-25% of diabetics. Nerves in persons with diabetic neuropathy have a cross section twice that of normal nerves, felt due to increased osmotic pressure in the nerve (Lee 2005). Decompressive surgery to the foot has been suggested for treatment of peripheral neuropathy (Chaudhry 2006 Aszmann 2000 Siemionow 2006). This raises the question of whether non-surgical myofascial intervention can improve nerve function, in both diabetic and non-diabetic persons.

CASE ONE 44 year old woman experienced 4 days of left sided weakness and slurred speech after difficult labor and delivery 5 years ago. No medical diagnosis had been made and she sought Rolfing for diffuse pain and fatigue. She was found to have hemoglobin San Jose (Sicilian variant of sickle cell) and probably had a mild stroke. Exam showed 4+/5 left deltoid strength, decreased sensation both feet middle toes, and graphesthesia left hand. EMG and Nerve conduction studies were normal. Balance was markedly impaired 37/100 on Sensory Organization Test of Neurocom Equitest (normal is 80 SD 5). After 10 sessions of structural integration she was able to identify coins with the left hand, and balance had improved to 65/100. Fatigue and pain had decreased and no longer interfered with daily activities.

CASE TWO 52 year old man had early childhood scoliosis with partial resection and radiation for grade I astrocytoma at T12 at age 6 and left Achilles tendon lengthening with subtalar arthrodesis age 10. 8 years ago he fell off a horse, injuring left hip with resulting intermittent numbness right leg. EMG reported as bilateral mild L4 radiculopathy mostly sensory. 1 year ago he again fell off a horse and suffered increased numbness right leg. He sought Rolfing for leg pain and decreased mobility. EMG studies showed reduced recruitment of motor units right quadriceps and the entire left leg without denervation. Motor conduction studies of the right peroneal and tibial nerve showed decreased conduction velocity, reduced amplitude and absence of F waves. After 10 sessions of structural integration, he noted some sensory return to the legs. After 10 additional sessions were given to the legs, specifically to the course of the peroneal and tibial nerves, he reported being able to distinguish the accelerator from the brake pedal while driving, and to feel a difference between carpet and tile floor with bare right foot. Repeated nerve conduction studies showed distal motor latency improved from 6.0 to 5.6 msec in the right peroneal and from 5.5 to 4.0 in the right tibial; however evoked amplitude decreased by 50% to 0.4 mV peroneal and 0.8 mV tibial. F waves were now present in both nerves and conduction velocity improved from 30 to 38 m/sec in the right tibial, but decreased from 35 to 29m/sec in the right peroneal.

DISCUSSION Subjective improvement in sensation is accompanied by demonstrable neurophysiological changes. Mathematical modeling of applied pressure suggests changes to both nerve tissue and fascia may be occurring.

Aszmann OC. Kress KM. Dellon AL. Results of decompression of peripheral nerves in diabetics: a prospective, blinded study. *Plastic & Reconstructive Surgery. 106(4):816-22, 2000.*

Chaudhry V. Stevens JC. Kincaid J. So YT. Practice Advisory: utility of surgical decompression for treatment of diabetic neuropathy: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology. 66(12):1805-8, 2006.*

Lee D. Dauphinee DM. Morphological and functional changes in the diabetic peripheral nerve: using diagnostic ultrasound and neurosensory testing to select candidates for nerve decompression. *Journal of the American Podiatric Medical Association. 95(5):433-7, 2005 .*

Siemionow M. Alghoul M. Molski M. Agaoglu G. Clinical outcome of peripheral nerve decompression in diabetic and nondiabetic peripheral neuropathy. *Annals of Plastic Surgery. 57(4):385-90, 2006.*