

## VISCERAL MANIPULATION

# Visceral Manipulation and NDT

## Complementary Treatment Interventions

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**It was in the year 2000 when I received three new pediatric referrals for physical therapy services for gait training.** There were staggering similarities between these children: all were girls under two years of age, all had a history of prematurity, all had extensive complications and hospitalizations, and all had tracheotomies and gastrostomy tubes.

Looking at each little girl, I immediately thought, “independent ambulation—no problem.” As a Neuro-Developmental Treatment certified physical therapist, my ability to apply the principles of NDT was without question. However, I felt there was something more that each could benefit from. At that time, however, I did not have the training, understanding, or skills in order to help them.

Observing these girls, it was apparent that all three moved in straight planes with very little rotation. My attention kept being drawn to their trach and g-tube sites. It was like seeing restrictions in their transitional movements coming from within their core or gut. I decided I had to explore complementary treatment options. That’s when I discovered visceral manipulation (VM).

Visceral manipulation is a gentle, non-aggressive form of manual therapy that specifically targets the internal organs, how they articulate, their support structures, and their physiological functions as well as dysfunctions. The term was coined by Dr. Jean-Pierre Barral, DO, an osteopathic physician and physical therapist. While working as a physical therapist, an osteopath introduced him to the visceral system, lines of tension within the body, and the concept that tissues have memory.

Barral began his career after earning his diploma in 1974 from the European School of Osteopathy in Maidstone, England. He continued his interest in the visceral system, examining how greater mechanical tensions caused by the thickening of tissues pull on visceral structures via their surrounding tissues.

As physical therapists we have been trained to deal with multiple systems at once and we have an extensive background in the structures of the spine and extremities, emphasizing the importance of articulation for movement. Our training includes some overview of the viscera and its contents, but not nearly as detailed as in this form of osteopathy.

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VM is an approach that combines both mechanistic and energetic theories. By definition, mechanistic theory explains phenomena in purely physical or deterministic terms and relates to the physical entities: the organs. Energetic theory involves the exchange of energy in the form of production, gain, and loss. The energetic theory is

apparent in good health, where there is a balanced exchange of energy. In the presence of poor health, however, there will be a disruption in energetic exchange.

### Basic Concepts of VM

There are a few basic concepts about visceral manipulation. All organs have motility and mobility. Motility is the inherent and energetic characteristic of each organ, independent of external influences. The mobility of an organ is the way it moves—a mechanical concept. For the most part, when assessing the viscera, each organ moves in phases towards and away from the axis of the body. Expir is the movement of an organ closer to the median axis and inspir is the movement of an organ away from it.

When performing visceral manipulation, it is often optimal to begin with the “listening technique.” This is where, in a matter of seconds, an assessment is made as to where the body is asking for attention. Once that is established, three treatment techniques are used: direct, indirect, and induction.

The direct technique consists of applying slight traction directly to an organ. The indirect technique involves using the body as a long lever to influence the mobility of an organ (thus the treatment is not direct). An example of an indirect technique would be using trunk rotation in supine to address a kidney. The first two techniques are used to address an organ's mobility. The third technique, induction—which is also known as facilitation—addresses motility. Here one must know the precise pendulum-like motion of each organ and be able to assess the phases, i.e., inspir and expir. When the larger excursion of the two is determined, then facilitation of the lesser excursion is performed by working in its larger excursion first. It is the path of least resistance that one listens to and follows.

### VM and NDT

So what makes Neuro-Developmental Treatment and visceral manipulation complementary therapies? NDT is based on the sensori-motor development of postural control with emphasis on biomechanical alignment for efficiency of movement. Furthermore, with the organization of movement comes the recognition that the development of movement is multi-planar: sagittal, frontal, and transverse. This concept is one of the many commonalities between NDT and VM.

Dealing with the visceral system includes, but is not exclusive to, nutrition, digestion, absorption, and elimination. All too frequently our patients may have feeding issues and more often than not, problems with constipation. More specifically, with developmental delay, there is a decrease in mobility, which translates to decreased visceral motility.



**a) Pre-Treatment Sitting:** ZW with a kyphotic floor sitting posture; noted to have spinal and rib inflexibility.

With respect to the development of movement control, it could be an oversight not to include the intricacies of the entire child, including the viscera. In applying visceral manipulation techniques, the practitioner has the opportunity to study the anatomy of the viscera in depth and learns manual therapy skills for treatment application. With the theory that “the body hugs the lesion,” a treatment intervention can be implemented while simultaneously working on improving the quality of movement. While applying NDT principles to gain sensori-motor trunk control, VM uses treatment techniques that specifically work on the viscera while at the same time leading right into the range, alignment, and facilitation of posture and movement with little to no change in hand placement of the therapist or position of the child. Thus the complementing therapies: VM & NDT.

I am grateful that the three little girls started me on the journey using VM as a complementary therapeutic approach to NDT. Ultimately, they each walked independently without assistive devices and went on to enhance their gross motor skills. I went on to pursue the connection between VM and NDT.

### CASE REPORT

ZW was a two-year-old male with a primary diagnosis of cystic fibrosis (CF), a disorder caused by a defective gene that results in the production of copious amounts of mucus in the lungs. This mucus builds up in the lungs as well as in the pancreas, which produces digestive enzymes and houses the islets of Langerhans, which regulate blood sugar. CF is known to affect the respiratory and digestive systems; however, there are usually musculoskeletal and developmental components as well. Thus it is a multi-system disorder.

ZW was born full term into a family with five healthy siblings and no familial history of cystic fibrosis. He was born with a malrotation of the intestines, which was surgically repaired soon after birth. Reportedly he was eating and gaining weight until nine months of age, then his intake and growth was found to be on a decline. At one year of age, he was diagnosed with cystic fibrosis and at 15 months he underwent surgery for a gastrostomy tube with a fundoplication. His medications included Pulmicort, Pulmozyme, Xopenex, and Creon-Enzymes.

At 16 months ZW was evaluated by the Regional Center and he began physical therapy services close to six months later, at 22 months of age. When he was 28 months old, he was still not ambulating. His parents sought an outside consultation to determine his functional abilities.

Upon initial observation, ZW was found to be tall but thin for his chronological age. Although he was non-verbal, he was alert, aware, and very happy to be exploring a new environment. He was videotaped and still photos were taken while he was clothed and then in his diaper.

ZW had hypotonia and was without increased deep tendon reflexes or ankle clonus. In terms of mobility, he was able to assume sit from supine on the floor. In floor sit (photograph (a)), he sat in a postural kyphosis with decreased mobility of his ribcage. He was not able to tolerate prone and had difficulty with active spinal extension. He was seen to transition in a straight (sagittal) plane to quadruped where his primary mode of mobility was bunny hopping, with some rare periods of reciprocal creeping.

He was able to pull to stand on a bench with the use of his right lower extremity repeatedly, but was not seen to switch and use his left leg. In stand, he displayed considerable underlying flexion and his shoulders were rolled forward. In standing (photograph (b)), he would at times balance next to the bench without the use of his hands. When his mother tried to walk him by holding his arms, he lacked organized weight shifting and intentional foot placement.

In addition, ZW was found to have a number of sensory issues. These included but were not exclusive to oral motor sensitivity; tactile defensiveness, especially on the plantar aspect of



#### **b) Pre-Treatment Standing:**

ZW demonstrated postural insecurity; shoulders downwardly rotated; rounded, and forwardly flexed trunk.

his feet; and significant vestibular hyposensitivity, which was consistent with his postural and gravitational insecurities.

Given ZW's developmental delay, his history, and his multi-system needs, it would have been a gross oversight not to assess his visceral status. According to his mother, he was not an oral feeder, as he had the G-tube and, as previously stated, had a significant oral motor tactile defensiveness. In terms of passing stools, he did so regularly, but they were not well formed and tended to be of a liquid consistency. Although the assessments are usually far more in depth, for the purpose of this article, it will remain succinct.

### Treatment Using VM

With ZW, the visceral listening brought attention to three areas. One was his ventral surface, right front and below the diaphragm. This was the area of the liver, and given his history and medications, it made sense, as the function of the liver is to metabolize. This was also the region in which to assess the integrity and elasticity of two ligaments: the coronary and the falciform. The coronary ligament is located along the posterior wall of the liver and is directly connected to the diaphragm. Utilizing a direct technique to the coronary ligament, organ mobility was addressed. An increase range of motion was appreciated as seen by an improved ability for facilitated trunk rotation in sit.

Second, the falciform ligament is a structure that is formed by the peritoneum folding on itself and attaching to the abdominal wall. It lies close to the midline and divides the right and left lobes of the liver, playing a role in determining the motility of the liver. As previously noted, ZW had a posture of excessive underlying flexion, with rounding of his rib cage and difficulty with active spinal extension. With a direct technique, elongation of the ligament was achieved to increase ZW's trunk extension range of motion to where he could tolerate the prone position. This made increasing spinal and rib mobility possible as well as building anti-gravity trunk extension strength, thereby enhancing an erect floor sitting (photograph (c)) and standing posture (photograph (d)).

The third area that was identified with the visceral listening was on the ventral surface, left and below the diaphragm, where the G-tube was located.

Here, a phrase amongst visceral practitioners becomes applicable: "The body hugs the lesion." It was apparent that ZW "guarded" this area where the G-tube was located. In stand, his posture was flexed (sagittal plane) and he had difficulty with equilateral weight shift (frontal plane). In addition, he consistently pulled up to stand on furniture with his right leg.

Utilizing an indirect technique, his legs were used as the long lever arm with counter rotation of his trunk to increase the mobility in this region. This in turn promoted



**c) Post-Treatment Sitting:** ZW with increased flexibility and range of motion of the ribcage promoting a more erect floor sitting posture.



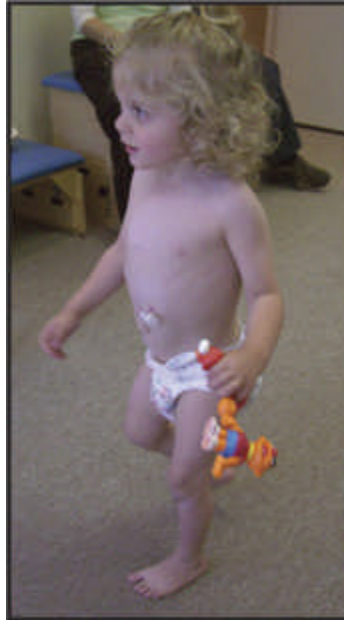
**d) Post-Treatment Standing:** ZW noted to have more elongation and symmetry through his trunk, promoting well balanced independent standing.

ZW's active rotation of his trunk during independent ambulation as was appreciated by spontaneous reciprocal movement and an arm swing (photograph (e)).

The visceral techniques were performed in conjunction with ZW's physical therapy sessions utilizing NDT. From working with ZW, it was noted that he began with almost a disconnect between his trunk and his lower extremities as seen by his tendency to bunny hop for deep proprioceptive input into his legs. The releases that occurred from his core promoted two things: 1) increased range of motion, which permitted slow graded transitional multi-planar movements, and 2) the ability to organize in the upright position and register his spatial orientation, promoting balance and stability. This in turn enhanced his ability to independently ambulate after three months of once-a-week treatment.

In conclusion, it was felt the combination of Visceral Manipulation along with Neuro-Developmental Treatment was immensely successful in attaining functional as well as qualitative changes to enhance ZW's level of abilities in a relatively short period of time. Since NDT is an approach utilized with neural dysfunction involving the motor system and VM is an approach for visceral dysfunction, it makes sense to combine these approaches, as they complement each other to enhance well being.

To find out more information regarding visceral manipulation, go to [www.barralinstitute.com](http://www.barralinstitute.com).



**e) Post-Treatment Walking:**  
ZW with active rotation of his trunk during independent ambulation, which was appreciated by spontaneous reciprocal movement as well as an arm swing.

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