THE RULE OF THE ARTERY IS ABSOLUTE:
MAINTAINING AND SUSTAINING STRUCTURAL INTEGRITY AND OPTIMAL FUNCTION

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Introduction

Dr. Andrew Taylor Still (1829 -1917) was a physician, surgeon, legislator, author, son of a preacher and the founder of Osteopathic medicine, a diverse and unique approach to traditional medicine that uses manual therapeutic techniques to release blockages in the body to support homeostasis. Dr. Still founded the world's first osteopathic medical school, The American School of Osteopathy, now named A.T. Still University, in Kirksville, Missouri. His teachings historically outline how to treat the human body effectively as a functional unit by removing the obstacles which block the fluidics and suppress the hemodynamics.

In a clinical setting the removal of blockages in the body by applying Osteopathic Manipulative Treatment (OMT) and/or Pulsed Electromagnetic Field Therapy (PEMFT) often succeeds in achieving and accelerating healing potential. If blood flow is enhanced systemically or locally tissues have the capability to restore and repair themselves because blood and lymphatic fluid carry the essential building blocks that support cellular metabolism. There exists scientific support from clinical studies demonstrating that certain OMT and PEMFT modalities have shown improvement in patients with certain ailments and disorders.

Osteopathic Medicine

The tenets of Osteopathic Medicine promulgated by the American Osteopathic Association are as follows: 1) the body is a unit; the person is a unit of body, mind, and spirit; 2) the body is capable of self-regulation, self-healing, and health maintenance; 3) structure and function are reciprocally interrelated; and, 4) rational treatment is based upon an understanding of the basic principles of body unity, self-regulation, and the interrelationship of structure and function.

The key principle of Osteopathy maintains that the rule of the artery is absolute. Still (1908) stated “the artery is the river of life, health and ease and, if muddy or impure, disease follows.” The primary goal of Osteopathy is to remove the obstacle creating the blockage so that the artery can transport health to the source.

When pathology is diagnosed or a system presents lack of functionality, it is prudent to consider the interrelationships between the organs and the alignment of the associated vertebra. We know that the sympathetic drive of the organ stems from the ganglion in the spine. Therefore, if a vertebra is out of alignment or is lacking proper nourishment (blood flow and waste disposal), this may cause hypofunction of the organ in which the system is related.

Interrelationships in the body (Fig. 1) include the gut-brain connection (e.g., an embedded rib may cause vagal disruption and therefore trigger a lack of peristalsis due to potential sympathetic overdrive). In immunosuppressed patients assessment of D5-D9 or D12-L2 should be considered because 70% of immunity is generated by the gastrointestinal system. Surgical adhesions can also disrupt functionality by
inhibiting blood and lymphatic flow (i.e., scar tissue is fibrous and can pull connective tissue holding the organ out of alignment). Another example would be a history of whiplash that compromises the ability for the brain and nervous system to receive proper blood flow through the vertebral artery, which makes two ninety degree turns before entering the cranium and can be strained by such incident(s).

Movement of lymph and blood

Osteopathic Manual Therapy provides relief of many symptoms related to pathological influence and has been scientifically proven to be effective even in cases of *Streptococcus pneumoniae* in nasally infected lab rats. Some OMT modalities include: cranial osteopathy, myofascial release, ligamentous strain, strain-counterstrain, functional release, energetic impulsing, muscle energy techniques, visceral manipulation and lymphatic drainage (Schooley, 1958; Chikly, 2005). The key goal of these therapies is to remove blockages in the body to liberate and enhance the movement of lymph and blood in support of auto-regulation. PEMFT provides an optimal integrative therapy because of its enhancement of blood flow.

Hodge (2012) demonstrated in a clinical study a reduction of *Streptococcus pneumoniae* after lymphatic manual therapy (LMT) performed on nasally infected rats to increase flow of lymphatic fluid that carries white blood cells to tag and combat infection. The study group received one lymphatic pump per second for 4 minutes over 8 days. Lungs were collected and examined showing a significant reduction in bacteria while the control group subjects were unable to clear their lungs.

Figure 1. Interrelationships (retrieved from chiropracticnyc.com). 24 vertebrae in the spinal column protect the spinal cord made up of billions of nerves. Between each vertebra nerves emerge that lead to internal organs, muscles, ligaments, tendons and other parts of the body (Winsor, H. 1921).
Importance of PEMF Therapy

PEMFT enhances blood flow (passively in that patients are only required to lay on a mat) and produces cumulative results as an optimal supportive tool. This is especially noted when used over 6+ weeks and incorporates a sleep or nap mode where a lower frequency is applied over longer periods (called PEMFT naps) to more compromised patients.

The electro-magnetic field: The beginning and continuum

The electromagnetic field begins as an invisible electromagnetic signal (in a torus-shaped field) that comes from the embryonic protoplasm. The signal radiates and returns in waves as the embryo begins to recognize the difference between self and intrusion. This wave develops before the heart develops (lymphatic system develops at week 5, heart at week 7). As we live and breathe the hemodynamic flow consists of a spiraling motion through the vessels in a lemniscate pattern. Therefore, hemodynamics creates a field by stimulating an enzymatic cascade in the vessels.

The organs reference the axis of motion which are established in embryological development in utero. As the thoracic diaphragm descends in inspiration the motility of viscera continues to regenerate the field as do the ventricles in the brain that house the production of the cerebrospinal fluid (CSF) from the choroid plexus. The CSF spirals around the thalamus through the third ventricle before it descends into the fourth ventricle entering the aqueduct of Sylvius, again regenerating the field.

Vascularized bones and nerves

Treatment of dysfunction in the spine requires assessment of proper alignment of vertebrae and correction of any misalignments. It is essential to consider blood flow to the nerves that exit the vertebral foramen (Fig. 2) as well as the blood supply to the vertebra itself to release some of the more chronic strains that may be present. Inhibition of blood flow and venous drainage can often have a larger impact than facilitated blood flow (increased flow into an area).

A 72-year old female suffering an acute herniation (T4/T5) reported relief once PEMF therapy was applied. Once the spasms had settled OMT was successfully applied in order to align the spine (through soft tissue techniques) to re-establish translation of the lines of gravity.

A 62-year old female was not a candidate for surgery given clear presentation of resonance imaging (i.e., no impingements, bulging discs or calcifications present). OMT could not reach the strain. A single PEMF therapy application allowed the patient to feel her toes for the first time in 20 years. OMT was then applied to facilitate improvement of strains in the connective tissue that was too rigid to move without discomfort in prior sessions.

Lyme disease linked to pathologies

Lyme disease is a systemic disease (Baranova et al., 2012; Halperin et al., 2012; 2013) that has challenged specialists by often presenting symptomatically like autoimmune disorders. Presentations include those of rheumatoid arthritis, cardiac disorders, Lupus, Alzheimer’s Disease, Parkinson’s, Lou
Gehrig’s, Multiple Sclerosis, chronic fatigue, fibromyalgia, psychiatric disorders, neuropathies and neuralgias, and gastrointestinal disease and inflammation. Patients suffering from autoimmune disease comprise over 23.5 million cases in the U.S. Medical studies have linked several of these pathologies to Lyme disease.

The Center for Disease Control and Prevention (2013) reports Lyme disease as the number one vector-borne illness in the U.S., Canada, Europe and Japan. 30,000 cases reported in 2012 jumped to 300,000 in 2013.

The bacterium *Borrelia burgdorferi* (Bb) thrives without oxygen. The coil-shaped, anaerobic Bb burrows where oxygen and blood flow is inhibited (opportunist pathogen). There have been few randomized clinical trials of treatment, so optimal choice of antibiotic or optimal duration of treatment are not known. In general, early Lyme disease in adults is treated with doxycycline (100 mg orally twice daily) or amoxicillin (500 mg orally three times daily for 20 to 30 days). There was a shortage of doxycycline in 2013 (CDC). PEMFT enhances oxygen transport to capillaries and thus may be considered an optimal tool (Dr. Dietrich Klinghardt, pers. comm.) in supportive therapies.

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<tr>
<th>Table 1. Lyme disease timeline</th>
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<tr>
<td>1800s: Diphtheria and Tuberculosis</td>
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<td>1883: Lyme first discovered in Germany by Alfred Buchwald</td>
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<tr>
<td>1981: Burgdorfer W et al. (1982) discover <em>Borrelia burgdorferi</em> (Bb)</td>
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<tr>
<td>1999: Costerton JW et al. (1999) discover microbial biofilm (bacterial society)</td>
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<td>2014: Deer tick <em>Ixodes scapularis</em> and sheep tick <em>Ixodes ricinus</em> complex</td>
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<td>Note: 5,300 years before present the Tyrolean iceman mummy Ötzi may hold the earliest evidence of Lyme disease (Keller et al., 2012)</td>
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**OMT/PEMFT application to Lyme and Autoimmune disease**

Digestion, detoxification and drainage are clinically examined in patients suffering from symptoms related to Lyme and autoimmune disease. OMT and/or PEMFT is applied to areas that channel the blood and support the detoxification potentials. The key areas assessed where therapies applied are: superior mesenteric artery, portal vein, and inferior vena cava. Through application of cranial osteopathic techniques more fluidic balance is achieved by aligning and opening the ventricles and venous sinuses. Drainage is improved by opening or stimulating the key areas linked to the lymphatic system: left clavicle, cisterna chyli, and inguinal lymph nodes. Endotoxins can often congest areas where the immune system is reliant. The mobility and potential of the thymus, spleen, and long and flat bones (bones rich in marrow) are also considered. The endocrine system needs balance to ensure optimal blood flow and venous drainage to and from the hypothalamus, pituitary and adrenal glands (HPA axis stabilization). The endocrine system also supports the potential of the parasympathetic nervous system and is linked to its limbic and involuntary functions. PEMFT application twice daily or 2-3 times per week at a minimum can help maintain results and help the patient passively clear deep congestion inhibiting the life force or circulatory system.

**New Discoveries: The Brain**

Ninety percent of Lyme patients in clinic present a history of head trauma. Injury to orbital/frontal areas triggers insomnia and restlessness. Studies from the University of Virginia have linked the immune system to social behavior and have connected the brain to the immune system as new vessels have been discovered (Filiano et al., 2016). The Glymphatic System was named by the University of Rochester presenting evidence that the glia creates a network of fluidic flow like the lymphatic system (Jessen et al. 2015).
Antibiotic resistance or Endotoxin/Toxic Load?

Capillaries comprise 74% of the circulatory system (vasodilation- and vasoconstriction-driven by a spontaneous vasomotion) and are non-responsive to commands from the endocrine system, CNS, or medications due to lack of striated muscle and receptor sites to receive the messages. The lymphatic system scans for pathogens in the capillary bed where the arterioles and venules interface (Fig. 3). Endotoxic or environmental toxic loads may congest these deep capillary beds that subsequently inhibit the function of the lymphatic and immune system. The influence and congestive qualities of the capillary bed biofilm may perhaps interfere with the body’s ability to utilize and metabolize antibiotic interventions. OMT or PEMFT as tools that enhance blood flow in the circulatory system as a whole might prove these interventions as more effective.

Influence of surgical adhesions/scars: PEMF Therapy Reboots the Hydraulics

Organs rely on lubrication from the interstitial fluid to glide properly with each compression and release of the thoracic diaphragm. Surgical adhesions and scars can influence the alignment of the organs in the abdomen and can potentiate a dryness surrounding the organs. The key immune dispatch centers that may be influenced by scar tissue lie in the intestines: Brunner’s Glands (duodenum), Peyer’s Patches (Ileum), and Appendix (Cecum). Just below the lumen in the intestinal wall at these sites a T-lymphocyte aggregation is present ready to dispatch if the flora of the biome shifts away from the norm or if a mass of antigens is detected. Intestinal epithelium monitors the mucosa for pathogens (Fig. 4).
Clinical applications and case studies

1. **Parietal Subdural Hematoma**: A 65-year old retired schoolteacher was left paralyzed on the left side from a subdural hematoma. Scar tissue presented challenges for cranial OMT therapy in addition to difficulties in repositioning the patient. One PEMFT session was applied to the right parietal lobe, which resulted in movement of patient's left side phalanges.

2. **Charcot’s Foot**: Patient was diagnosed with softening of the cuboid bone with neuropathy and diabetic complications (Charcot’s foot). This condition can often result in amputation. OMT and PEMFT were applied to the navicular bone and tibiotalar joint. The diagnosis was revised after 2 weeks since changes were sighted after new imaging was done.

3. **Multiple Sclerosis**: A 32-year old female diagnosed with multiple sclerosis was not responding to care and presented with increased weakness. Therapies applied included chemical/nutritional analysis (Lyme disease was suspected), and OMT through cranial osteopathy to encourage enhancement of venous flow in straight sinus. Techniques were applied to support nourishment of bone marrow and to open immune dispatch areas in abdomen. Results included a slowed degenerative pattern and an eventual pregnancy.

4. **Diabetes**: A 68-year old female with uncontrolled diabetes underwent PEMFT and OMT resulting in discontinuation of her insulin with simultaneously more energy, ability to exercise, and loss of weight.

5. **Multiple Chemical Sensitivities/Environmental Illness**: A 59-year old female presented with a history of extensive bone infection in the mouth. Her history included twenty traumatic dental surgeries and over 200 stitches in the forehead from a multi-vehicle accident. Diagnosis was slow healing, inability to get teeth, spinal cord injury and maxillary osteoma. Oxygen was prescribed for extreme multiple chemical sensitivities/environmental illness (MCS/EI) and electromagnetic field exposure (with documentation of electric smog). OMT was applied (standard care of facial bones) and PEMFT (2-3 times daily to cranium). Results included instant cessation of reactions with PEMFT application and no further need for oxygen was indicated. The MCS/EI was 80% resolved. Dental pain improved and patient proceeded with fitting for dentures within a week.

6. **Migraine**: A 60-year old female presented with a history of chronic migraines since her 30s. OMT sessions (1 x week) and PEMFT (daily for 4 weeks) were applied. Results included a migraine-free record for 102 consecutive days.

7. **Lyme Disease**: A 47-year old mother and her family received treatment with antibiotic/herbal applications for 18 months. The mother reported chronic lumbar back pain that was not relieved by OMT. Other symptoms included brain fog, joint pain, fatigue, which was particularly difficult for her as an athlete. She was unable to cope and plateaued in care. Applied therapies included OMT (primarily at mesenteric root) and PEMFT (twice daily) were applied. A cyst in lumbar spine (L2/L3) eventually resolved through surgery and congestion did not return. PEMFT helped patient avoid Herxheimer reaction (detoxification) that often followed from her OMT sessions. She successfully stopped her IV therapy and antibiotics and returned to athleticism, energetic nature, and stability. The son who presented with a long history of on and off viral activity (including mononucleosis), learning disabilities, and malaise, returned to functioning well in life. Now he is thriving in school and rides his bike and the daughter is a star basketball player.

**Summary**

The body has a phenomenal potential to heal itself once the correct channels are opened to provide nourishment and auto regulation capabilities to the tissues. If a patient’s left clavicle is compacted at the
level of the sternoclavicular joint, the lymphatic system is not capable of draining at the level of the subclavian vein. If surgical adhesions and scar tissue are creating a dryness around the Glisson’s capsule of the liver that depends on movement induced by the thoracic diaphragm to rotate around its three axes of motion, the parenchymal tissue cannot properly expand and retract to maintain optimal function of the liver itself.

Clinicians need tools to help support the whole organismal system. The focus needs to be on enhancing and inducing better fluidic flow. Promotion of optimal health occurs through enhancement of carrying building blocks the body requires to support cellular metabolism, ATP production, and cellular differentiation. OMT is an extremely effective tool and provides care to the most chronic patients. However, it remains challenging to find extensive OMT sessions nationally. PEMFT, however, is an optimal tool to help patients maintain what they have achieved in their care as well as continually opening channels of nourishment, drainage, and detoxification.

The body is a mechanism designed to self-repair. Many case studies and medical trials document the healing potential of the body if the natural pathways are supported. If adequately nourished, the entire body functions to maintain, repair and heal itself to the best advantage if its structures (Magoun, 1966). Change happens when we tune into what truly supports our existence.

**Literature Cited**


