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Introduction to Osteopathic Manipulative Medicine.

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Introduction to Osteopathic Manipulative Medicine

Background/Goals:

My interest in completing this project and learning about osteopathy stems from my experiences observing osteopathic physicians during a Family Medicine rotation in my third year of medical school. Until that point, I was not aware of the existence of osteopathy – a system of medical practice that emphasizes treating an illness in the context of the whole body, and using manipulation techniques to facilitate healing. Having been practicing Reiki, a type of bodywork modality with a similar holistic perspective on health and the human body, I was naturally drawn to learning more about osteopathy.

My goals for this project included the following:

- a) To develop an understanding of the history, philosophy and principles of osteopathic medicine
- b) To develop an understanding of how to perform an Osteopathic physical examination and make a diagnosis of somatic dysfunction (in addition, to have an overview of the different types of somatic dysfunctions)
- c) To recognize the indications for several commonly used osteopathic manipulative treatment (OMT) techniques – including soft tissue, myofascial release, muscle energy, counterstrain, cranial, articular, high-velocity-low-amplitude, and lymphatic techniques
- d) To develop an understanding of how OMT can be incorporated into the management of conditions commonly treated by primary care physicians
- e) To develop an understanding of how osteopathic manipulative treatments can be used in the management of neurological disorders
- f) To gain the basic understanding of how to perform OMT techniques described above through direct practice in the clinical setting

Clinical experiences:

During the two months of my ISP, I spent six weeks in a Family Medicine clinic with Dr. Kurisu, Dr. Fleming, and Dr. Cyr and one week in a Neurology clinic with Dr. Alexander (the remaining week was spent at the Convocation). My patient encounters are summarized in the tables below.

A) Family Medicine clinic

<i>Chief Concern</i>	<i>Treatment</i>
Upper extremity edema (history of breast cancer status post lumpectomy and axillary lymph node dissection)	Axillary lymph node drainage, myofascial release to the pectoralis major, shoulder joint and scapula
Low back pain	Sacroiliac joint decompression, lumbosacral decompression, balanced ligamentous tension to the lumbosacral region, muscle energy to the anterior innominate dysfunction, high-velocity-low-amplitude techniques to the lumbar spine
Bilateral lower extremity edema (history of congestive heart failure)	Myofascial release to the lower extremities (from the level of the ankles to the level of the knees)
Iliotibial band syndrome	IT band myofascial release
Acute otitis media	Mandibular drainage (Galbreath technique), auricular drainage technique

Tension headache	Suboccipital release, inhibition to the cervical paraspinal muscles and trapezius, muscle energy and high-velocity-low-amplitude techniques to the cervical spine
Gastroesophageal reflux disease	Myofascial release of the gastroesophageal junction, muscle energy to the diaphragm (doming of the diaphragm), T5-T9 muscle energy/soft tissue/myofascial release (to normalize sympathetic innervation of the GI tract), decompression of the vagus nerve at the jugular foramen (to normalize regulation of gastric acid secretion)
Acute sinusitis	Frontal sinus drainage, maxillary sinus drainage, submandibular release, anterior/posterior cervical chain drainage, thoracic inlet myofascial release, thoracic pump
Low back pain/pelvic pain associated with pregnancy	Pelvic diaphragm release, pubic symphysis articular technique, sacroiliac joint decompression, lumbosacral decompression, sacral rocking
Carpal tunnel syndrome	Myofascial release to the transverse carpal ligament
Post-concussive syndrome	Cranial techniques
Cholelithiasis/cholestasis	Myofascial release/balanced ligamentous tension techniques to the gallbladder and liver
History of falls/balance difficulties	Muscle energy and high-velocity-low-amplitude techniques to C2, balanced ligamentous tension to the lumbar spine, cranial techniques
Back, neck, and hip pain (history of MVA)	Muscle energy and high-velocity-low-amplitude techniques to the cervical spine and hip, balanced ligamentous tension and inhibition to the thoracic spine
Cervical radiculopathy (due to bone spur)	Suboccipital release, occipitoatlantal decompression, muscle energy and balanced ligamentous tension to the cervical spine, high-velocity-low-amplitude technique to the 1 st rib
Temporomandibular joint dysfunction	Counterstrain, balanced ligamentous tension and ligamentous articular strain techniques to the temporomandibular joint
Vertigo	Cranial techniques
Paraplegia (history of spinal cord injury after an MVA), acute constipation	Myofascial release to the thoracic cage and diaphragm, colonic stimulation technique, mesenteric release (ascending and descending colon)
Sciatica (secondary to piriformis spasm)	Counterstrain to the piriformis
Low back pain (secondary to psoas spasm)	Still technique to the psoas, counterstrain to the psoas and L1
Shingles (V1 distribution)	Cranial techniques, trigeminal stimulation
Hand weakness and limited range of motion of the wrist (history of distal radius fracture status post plate fixation, complicated by osteoarthritis)	Myofascial release and balanced ligamentous tension to the hand, wrist, and distal forearm
Low back pain (secondary to lumbar spinal stenosis)	Balanced ligamentous tension and muscle energy to the lumbar spine
Viral upper respiratory infection	Venous sinus drainage, frontal lift, maxillary sinus drainage, anterior/posterior cervical chain drainage
Upper back pain (following acute muscle strain while lifting weights)	High-velocity-low-amplitude technique to the thoracic spine, muscle energy to latissimus dorsi and ribs, myofascial release to scapula, soft tissue technique to cervical paraspinal muscles and trapezius

6-day-old infant with sternocleidomastoid spasm and cranial strain pattern (due to positioning in the uterus and/or birth trauma), gastroesophageal reflux	Cranial techniques, decompression of the vagus nerve at the jugular foramen (to normalize function of the lower esophageal sphincter), inhibition and myofascial release to the sternocleidomastoid
Low back pain (secondary to L2-S1 degenerative disc disease)	Balanced ligamentous tension and gentle high-velocity-low-amplitude technique to the lumbar spine and sacrum (<i>Note: Patient came to clinic in a wheelchair, was unable to stand up straight due to pain. She reported significant decrease in pain immediately after treatment and was able to walk out on the exam room.</i>)
Tinnitus (secondary to restricted motion of the temporal bones)	Cranial techniques
Low back pain (secondary to multiple herniated discs in the lumbar spine)	Balanced ligamentous tension and counterstrain to the lumbar spine and sacroiliac joints
Dyspnea secondary to pulmonary fibrosis	Rib raising, muscle energy to ribs and diaphragm
Shoulder pain (history of labral tear), neck tension and headaches	Balanced ligamentous tension and Spencer technique to the shoulder joint, suboccipital release, soft tissue to cervical paraspinal muscles and trapezius
Plantar fasciitis	Counterstrain and myofascial release to the plantar fascia
Nasal and maxillary fractures, rib pain (following bicycle accident), knee osteoarthritis	Cranial techniques, muscle energy to ribs, balanced ligamentous tension/myofascial release to the knee
Sliding hiatal hernia	Myofascial release to the stomach and diaphragm
Ankle and hip pain (history of ankle sprain)	Balanced ligamentous tension to the ankle
History of myocardial infarction	Myofascial release to the pericardium
Vision loss (homonymous hemianopsia with macular sparing) following ischemic stroke in the occipital cortex	Cranial techniques (one of the goals is to normalize blood supply to the brain, especially occipital lobe) (<i>Note: Patient reported improved vision after several treatments.</i>)
3-year-old boy with a history of craniosynostosis (sagittal synostosis, diagnosed at approximately 10 months of age; patient began developing strabismus as a result of changes in cranial anatomy)	Cranial techniques (with the goal of normalizing motion at the sagittal suture and in general, restoring normal cranial structure) (<i>Note: Patient has been treated regularly since diagnosis of synostosis was made, thus avoiding craniectomy.</i>)
Sensory and motor deficits – secondary to Brown-Séquard syndrome, caused by air embolism at the level of C1 during radiofrequency neurotomy that patient underwent several years ago. Patient was initially paralyzed in all four extremities, with significant sensory loss (loss of light touch, vibration, and proprioception on the ipsilateral side, and loss of pain and temperature on the contralateral side).	Cranial techniques, myofascial release and balanced ligamentous tension to the upper extremities, muscle energy to the ribs (<i>Note: Patient has been receiving regular treatment beginning shortly after diagnosis. She had eventually transitioned from a wheelchair to ambulating with a cane. She has also experienced progressive return of sensory function in all four extremities. For example, when I initially met her, she reported a return of the sense of light touch in her fifth and fourth fingers on one hand. Two months later, she reported intact sensation to the level of the axilla, with associated improvements in strength, temperature sensation, stereognosis, etc. in other extremities as well.</i>)

B) Neurology clinic

<i>Chief Concern</i>	<i>Treatment</i>
Vertigo, neck muscle pain	Cranial techniques and inhibition/myofascial release to the cervical paraspinal and scalene muscles (to release fascial strain extending from the temporal bone to scalenes and thorax on the same side)
Traumatic brain injury (following pedestrian vs. car collision)	Cranial techniques, balanced ligamentous tension to the cervical and thoracic spine
Hereditary neuropathy with liability to pressure palsies (HNPP)	Balanced ligamentous tension to the scalenes/1 st rib/clavicle/pectoralis minor (to normalize function of the brachial plexus), balanced ligamentous tension to the upper extremity (to normalize function of the ulnar nerve)
History of subarachnoid hemorrhage secondary to an arteriovenous malformation rupture	Cranial techniques
Postural orthostatic tachycardia syndrome (POTS)	Cranial techniques (including venous sinus drainage)
Migraine headaches (that became more severe during pregnancy)	Cranial techniques (<i>Note: Patient reported reduction in frequency and severity of migraines after 3 weeks of treatment.</i>)
Constant unilateral tinnitus associated with severe sensorineural hearing loss	Cranial techniques (<i>Note: Patient reported dramatic reduction in severity of tinnitus and significant improvement in quality of life.</i>)
Multiple sclerosis	Cranial techniques, myofascial release to thoracic and lumbar spine, articular techniques to shoulders and hips, balanced ligamentous tension/muscle energy to the spine, ribs, and pelvis

Workshops and Conferences:

During my two ISP months, I attended a workshop describing the use of OMT in prenatal care and obstetrics, a national conference for osteopathic medical students and physicians featuring workshops, lectures, and a poster presentation, as well as a workshop that served as an introduction to cranial osteopathy. I am including brief summaries below, describing my experiences at each of these events.

“Management of Expecting Mothers in Late Stages of Pregnancy”

Philippe Druelle, DO, and Hollis King, DO
(January 22-23, San Diego, CA)

Background:

Implementing osteopathic manipulative treatments (OMT) as part of routine prenatal care, especially during the second and third trimesters of pregnancy, gives the physician the opportunity to improve the chances of a successful delivery. Treatment of the woman includes optimizing the movement of the uterus within the pelvic and abdominal cavities, the mobility of the baby within the uterine cavity, and the orientation of the baby in relation to the birth canal. The goal of these treatments is to prevent intra-uterine compression of the fetus as well as traumatic/prolonged deliveries, thus minimizing the baby's risk of neurologic developmental delays.

Lectures:

- 1) *Evaluation of the Mother in Later Stages of Pregnancy*¹ (Dr. Druelle) – emphasis on:
 - a) Proper alignment of the musculoskeletal system, especially the spine (e.g., physician may have the opportunity to alleviate low back pain caused by anterior rotation of the pelvis and increased lordosis and strain of the lumbar spine)
 - b) Integrity of the spinal chord and proper function of the sympathetic and parasympathetic nervous systems – ensures adequate vascularization of the uterus, and therefore optimal growth and development of the placenta and the fetus
 - c) Emotional/psychological health of the mother – treating the whole person
- 2) *OMT in Pregnancy, Labor & Delivery: The Research*² (Dr. King)
 - a) Evidence-based medicine – research that support the use of OMT in prenatal care:
 - 2010 and 2015 studies suggest that OMT may help reduce low back pain in third trimester of pregnancy.^{3,4}
 - OMT treatment protocol:
 1. Sitting: forward-leaning articulatory thoracic spine technique
 2. Supine: cervical soft tissue/myofascial release, occipitoatlantal decompression, thoracic inlet myofascial release
 3. Lateral recumbent: scapulothoracic myofascial release, lumbosacral soft tissue
 4. Supine: abdominal diaphragm myofascial release, pelvic diaphragm myofascial release, sacroiliac articulation, anterior and posterior rotations of the ilia, pubic decompression

2015 American Academy of Osteopathy Convocation
“Life in Motion: The Science, Philosophy, and Art of Osteopathic Medicine”
(March 11-15, Louisville, KY)

Workshops and lectures attended:

1. “An Introduction to Osteopathy in the Cranial Field,” with Daniel Shadoan, DO and Thomas Moorcroft, DO

Osteopathy in the cranial field (OCF) is defined as the “system of diagnosis and treatment by an osteopathic practitioner using the primary respiratory mechanism (PRM) and balanced membranous tension” first described by William Garner Sutherland, DO, a student of A. T. Still⁵. In the early 1900s, Dr. Sutherland began to study the biomechanics of the cranium, after examining the sutures between the cranial bones – anatomic suggestions of the cranium’s inherent involuntary motion. He later proposed a model to describe this motion that he termed the *primary respiratory mechanism*, which consists of the following five components: inherent motility of the brain and spinal cord, fluctuation of cerebrospinal fluid, mobility of intracranial and intraspinal membranes (the dura mater connects the cranial bones to the sacrum and coccyx), articular mobility of cranial bones, and involuntary mobility of the sacrum between the ilia.

At the beginning of the workshop, Dr. Moorcroft mentioned that similar to all other osteopathic techniques, cranial osteopathy supports the innate healing ability present within each of us. By bringing awareness to the present moment and practicing being still and attentive, the physician is able to palpate the patient’s PRM and determine whether there are restrictions of motion affecting any of the five components mentioned above. Dr. Moorcroft emphasized the importance of making the diagnosis and that no treatment should be applied without carefully examining the PRM.

Following the lecture that described the history and philosophy of cranial osteopathy, we paired up for the lab portion of the workshop. Dr. Shadoan guided us through an exercise to start developing our palpation skills. First, with out hands around the ribcage, we practiced feeling thoracic respirations,

shifting our focus from the movements of the diaphragm to the motion of the ribs, and perhaps the abdominal muscles, fascia, and the GI tract. Then, with our hands on our partner's thigh, we practiced trying to differentiate the palpatory signatures of the subcutaneous tissues, muscle, fascia, and bone. For our last exercise, we placed our hands under our partner's occiput with the intention to palpate the motion of the cranial bones: the coupled flexion of the cranial base (the sphenobasilar symphysis – the junction of the occipital and sphenoid bones) and external rotation of the paired bones, followed by extension and internal rotation. The first motion feels like the skull widens laterally and shortens in the anterior/posterior and superior/inferior diameters, while the second motion feels like the skull narrows laterally and lengthens in the anterior/posterior and superior/inferior diameters.

2. "The Still Technique," with Dennis Dowling, DO

Dr. Dowling opened the workshop by emphasizing that osteopathic manipulative treatments should be *individualized* to fit the diagnosis and the need of each patient. This makes a lot of sense from an integrative medicine perspective, since two people may experience a similar illness in slightly different ways and may respond differently to the same treatment. Therefore, it is important for the physician to be aware of the health of the entire person, including their emotional reaction to illness and expectations regarding treatment.

The diagnostic components for the Still technique are the same as for other osteopathic techniques: the physician notes any tissue texture abnormalities, asymmetry of position, restriction of motion, and/or tenderness. The starting point of this technique is to place the dysfunctional segment (e.g., a vertebra, an extremity, etc.) in the position of ease. A slight compressive force can then be applied to enhance tissue relaxation. Alternatively, a distractive force can be applied – this may be tolerated better in some cases (for instance, if there is foraminal narrowing, compression through the vertebrae may lead to nerve root irritation). Then, the segment is taken through the path of least resistance toward its restrictive barrier. Dr. Dowling explained that going through the path of least resistance is important, as the elements within the joint (e.g., ligaments, tendons) should not be stressed in order to avoid pain. It was also mentioned that the dysfunctional segment does not necessarily need to be taken *through* its restrictive barrier, since the dysfunction may be eliminated during the movement within the range between ease and restriction.

The example given in this workshop was a hypertonic psoas muscle. First, with the patient prone, each hip was taken into extension to determine which side was affected to a greater extent. To perform the Still technique, the patient would be placed in the lateral decubitus position on the unaffected side, and the superior hip would be taken into flexion (position of ease), with the knee bent. With the physician's hand on the patient's knee, a slight compressive force may then be applied (note: force is directed toward the origin of the psoas, not the hip joint). The lower extremity is then taken into extension. With the patient prone, hip extension is once again assessed to determine the efficacy of this technique.

3. "Secrets of the Psoas," with David Harden, DO

In this workshop, we reviewed the anatomy of the psoas muscle and the presentation of psoas muscle dysfunction, also known as psoas syndrome. This syndrome may present with a variety of symptoms and signs, including pain in the lumbosacral region, delay or difficulty in hip extension and internal rotation of the lower extremity (caused by acute psoas spasm), and contralateral piriformis hypertonicity and/or pain. It is important to rule out other musculoskeletal and visceral causes of low back pain, such as disc herniation, hip arthritis, nephrolithiasis, acute appendicitis, or diverticulitis.

Dr. Harden focused on the counterstrain technique during the hands-on portion of the workshop. Counterstrain involves identifying tender points, which can feel edematous and tense, and which are usually found within the belly of a muscle, its tendons, or ligaments. After a tender point is found, the

corresponding myofascial unit is placed into a position of greatest comfort and held there for approximately 90 seconds, or until the physician feels tissue release. It is generally believed that flexion dysfunctions produce tender points on the anterior aspect of the body, while extension dysfunctions produce posterior tender points. According to Dr. Harden, there are several hypotheses as to how this technique works, but most involve abnormal painful reflexes caused by alpha Ia afferent and gamma efferent neurons, as well as nociceptive activity caused by tissue damage and subsequent metabolic activity and inflammation.

The four tender points discussed in this workshop included two anterior lumbar tender points (AL1 and AL2), the psoas major tender point, and the iliacus tender point. Their locations and the position of ease that would be held during a counterstrain technique are outlined in the table below.

<i>Tender Point</i>	<i>Location</i>	<i>Treatment Position</i>
AL1	Medial to anterior superior iliac spine (ASIS)	With patient supine, physician stands on the <i>same</i> side as the tender point and flexes patient's hips and knees to engage the lumbar vertebrae up to the level of L2. Patient's knees are pulled toward the physician, leaving L1 rotated <i>away</i> from the tender point. Patient's ankles are pulled <i>toward</i> the physician, which side bends the L spine toward the tender point. This position is held until the tenderness is reduced at least by 70%.
AL2	Medial to anterior inferior iliac spine (AIIS)	Physician stands on the <i>opposite</i> side of the tender point. The patient's hips and knees are flexed to the level of L3 and rotated toward the physician, leaving L2 rotated <i>toward</i> the tender point. The patient's ankles and feet are brought toward the physician, which side bends the L spine <i>away</i> from the tender point.
Psoas major	At 2/3 of the distance from ASIS to the umbilicus	Physician stands on the <i>same</i> side as the tender point, flexes patient's hips and knees and side bends the spine <i>toward</i> the tender point.
Iliacus	At 1/3 of the distance from ASIS to the umbilicus	Physician stands on the <i>same</i> side as the tender point, flexes patient's hips and knees, crosses the ankles and abducts the knees while externally rotating the hips.

4. "Trigeminal Trifecta," with Deborah Heath, DO

Dr. Heath opened this workshop by explaining that the trigeminal nervous system is frequently implicated in the etiology of migraine, cervicogenic and concussion-related headaches. The trigeminal nerve has numerous functions; it plays a role in influencing cerebral blood flow, cervical muscles, and chronic pain sensitization. Dr. Heath explained that by applying continuous stimulation to the trigeminal system, the physician aims to reduce its activity and therefore reduce symptoms.

Trigeminal Stimulation Technique:

- a. With the patient supine, the physician sits at the head of the table.
- b. Physician palpates along the superior orbital ridge and identifies the supraorbital foramen. With the pads of the index fingers, the physician applies gentle pressure in a circular motion for 30 seconds to 2 minutes.
- c. The same technique is repeated at the infraorbital foramen and the mandibular foramen.

According to Dr. Heath, if a patient presents with symptoms characteristic of occipital neuralgia (e.g., reported as severe shooting pain that originates in the back of the neck and spreads toward the vertex), the greater and lesser occipital nerves can be stimulated in a similar manner. To inhibit the

greater occipital nerve, the physician would apply pressure to a point approximately 1 cm lateral of the inion. To stimulate the lesser occipital nerve, the physician would find a point halfway between the inion and the mastoid process.

5. “ACGME Unified Accreditation System: What Will Happen to OMT?” with Boyd Buser, DO

The American Osteopathic Association (AOA) and the Accreditation Council for Graduate Medical Education (ACGME) have agreed to a single accreditation system for graduate medical education programs in the United States: the AOA-accredited training programs will transition to ACGME accreditation between July 1, 2015 and June 30, 2020⁶. When fully implemented, the new system will allow graduates of osteopathic and allopathic medical schools to complete their residency and/or fellowship education in ACGME-accredited programs. The goals of this single accreditation system include creating a more consistent and cost-efficient way to evaluate the competency of graduating physicians, to increase opportunities for trainees, and to increase accountability and transparency (to insurance companies, general public).

To recognize the unique principles and practices of the osteopathic medical profession and its contribution to healthcare in the US, some residency programs will remain osteopathic-focused. In addition, certain ACGME programs will incorporate OMT training for DO and even MD residents. This is already underway at the Madison Family Medicine Residency Program in Wisconsin: several of the DO residents I met at Convocation are working with a faculty member at this program (Sarah James, DO) to create an OMT curriculum for MD residents (there is already a curriculum for DOs in place at this program).

An important discussion point that was brought up during this session is that emphasis should be placed on increasing undergraduate students' awareness about osteopathic medicine, since not all pre-med students know about osteopathy when they apply to medical school. Medical students, residents, and/or faculty who are members of the AOA could participate in annual or quarterly lectures on college campuses and recruit undergraduate students who would be interested in pursuing a career in osteopathic medicine. Eventually, I think even allopathic medical schools could have electives that would include formal lectures/labs and clinical experiences that can expose students to the principles and applications of OMT.

6. Research Poster Presentation of the Louisa Burns Osteopathic Research Committee and the National Undergraduate Fellows Association

Two posters that stood out to me described the use of OMT in the case of a high-risk OB patient with gestational hypertension and upper extremity edema⁷, and a small group of patients with Parkinson's Disease and impaired balance⁸.

In the first case, a 33-year-old G2P1 woman presented at 30-weeks gestation with complaint of significant bilateral arm swelling. She was categorized as high-risk at 20-weeks due to gestational hypertension, for which she was started on labetalol. On physical examination, multiple somatic dysfunctions were found, including restricted motion of occipitoatlantal junction, thoracic vertebrae 1-8, ribs 1-8, as well as abdominal and pelvic diaphragms. Treatment plan was designed to address these restrictions and improve lymphatic drainage (including addressing SNS tone in upper thoracics, which may be impacting lymphatic circulation). There was a decrease in upper extremity edema noted at the second visit (measurements of arm circumference were obtained at each visit). Patient also reported a decrease in frequency and severity of dizziness and dyspnea. After several treatments over the next four weeks, patient became normotensive and labetalol was discontinued. This case shows that OMT can help manage gestational hypertension and edema by removing obstructions to lymphatic flow and normalizing the function of the autonomic nervous system, thus assisting the body's inherent self-regulatory mechanisms.

The second poster described a pilot study (n=10) that assessed the efficacy of OMT on improving postural stability in patients with Parkinson’s Disease. Patients were evaluated using the Mini-BESTest (Mini-Balance Evaluation Systems Test) tool, which assesses four balance control systems: sensory organization (e.g., standing on firm vs. soft surface with eyes open vs. closed), anticipatory postural adjustments (e.g., rise to toes), postural responses (e.g., regaining balance after being pushed forward), and dynamic balance during gait (e.g., turning). Patients were then randomized to receive either a single 45-minute OMT protocol* or a time-matched counseling session**. Balance tests were repeated following the OMT or counseling session. Results of the Mini-BESTest in the OMT group showed a statistically significant increase in scores indicating improved balance (p-value = 0.007) vs. counseling group (p-value = 0.546). This data suggests that OMT may help reduce the risk of falls in PD patients by improving axial postural tone as well as axial and peripheral joint mobility.

*OMT protocol:

- 1) Suboccipital release
- 2) Compression of the fourth ventricle
- 3) Cervical spine articulatory technique (supine)
- 4) Muscle energy of the cervical spine
- 5) Spencer’s technique of the shoulder
- 6) Muscle energy of the radial head
- 7) Circumduction of the wrist
- 8) Sacroiliac joint decompression
- 9) Muscle energy of the lower extremity adductors
- 10) Muscle energy of the psoas
- 11) Muscle energy of the hamstrings
- 12) Ankle articulatory technique
- 13) Muscle energy of the plantarflexors and dorsiflexors of the ankle
- 14) Thoracic and lumbar spine articulatory technique (seated)
- 15) Active myofascial stretch of the thoracic spine (seated)

**Counseling session: Discussion of PD symptoms, medication side effects, quality of life issues, etc.

“Introduction to Osteopathy in the Cranial Field”

Beth Thompson, DO
(March 24, San Diego, CA)

During this workshop, Dr. Thompson reviewed the five elements of the cranial concept: fluctuation of the CSF, inherent motility of the CNS, mobility of cranial bones, mobility of the sacrum between the ilia, and the mobility of the reciprocal tension membrane (composed by the falx cerebri, the falx cerebelli, and the tentorium cerebelli – reflections of the dura that help to guide, protect, and limit the motion of the cranial bones). We then briefly discussed the anatomy of the cranial nerves and of the foramina through which the cranial nerves exit the skull. Dr. Thompson described several examples of instances where compression of the cranial nerves as they pass through the skull base could lead to symptoms (e.g., compression of CN XII in infants affecting tongue protrusion and leading to inability to latch on during breastfeeding).

Next, we discussed the common dysfunctional patterns of cranial motions. For instance, *torsion*, *side bending coupled with rotation*, and *fixed flexion/extension* are the three common strain patterns that are considered physiologic. Conversely, *compression*, *vertical strains*, and *lateral strains* are considered non-physiologic dysfunctions that may occur as a result of head trauma, birth trauma, dental procedures, or postural abnormalities.

<i>Strain pattern</i>	<i>Description</i>
Torsion	Sphenoid and occiput rotate in opposite directions around and anteroposterior axis at the SBS
Side bending/rotation	Side bending at the SBS coupled with rotation of the sphenoid and occiput to the side of convexity

Flexion/Extension	Flexion or extension at the SBS accompanied by external or internal rotation, respectively, of the parietal and temporal bones
Compression	Compression of the SBS
Vertical strain	Flexion of the sphenoid with extension of the occiput (superior vertical strain) or extension of the sphenoid with flexion of the occiput (inferior vertical strain)
Lateral strain	Rotation of the sphenoid and occiput in the same direction around two vertical axes

SBS – sphenobasilar synchondrosis (cartilaginous junction between the sphenoid and occipital bones)

After reviewing the anatomy, we were guided through a palpation exercise – we practiced feeling the cranial rhythm at the head and at the sacrum, and identifying any strain patterns that may be present. Dr. Thompson ended the workshop by presenting several techniques designed to improve motion of the cranial bones and the CSF, briefly described below.

1. Frontal lift – The goal is to treat dysfunction of the frontal bone (i.e., frontoparietal compression, frontonasal compression).
 - The physician places thenar eminences of both hands just anterior to the lateral aspects of the coronal suture and the hypothenar eminences on the temples, interlacing the fingers above. With the thenar and hypothenar eminences providing a gentle compressive force medially, the physician applies a gentle anterior force to disengage the frontal and the parietal bones.
2. Parietal lift – The goal is to treat dysfunction of the parietal bone (i.e., parietotemporal compression, parietofrontal compression).
 - The physician places the fingertips of both hands on the parietal bones, just superior to the parietotemporal sutures, and crosses the thumbs above the sagittal suture (with the thumbs not touching the patient). The physician applies gentle pressure through the fingertips in the medial and superior directions, until external rotation of the parietal bones is detected.
3. Interparietal suture opening – The goal is to restore freedom of movement to the sagittal suture and to increase drainage of venous blood from the superior sagittal sinus.
 - With thumbs crossed over the sagittal suture and the remainder of the fingers resting on the parietal bones, the physician applies a gentle force pushing the parietal bones apart at the sagittal suture, while encouraging external rotation of the parietal bones with the other fingers. The physician moves the thumbs anteriorly along the sagittal suture from lambda to bregma.

Summary:

During the two month of my ISP, I saw a wide variety of medical conditions that can benefit from osteopathic manipulative treatments. In some cases, OMT was used to successfully alleviate symptoms (in the examples of headaches, muscle strains, or URIs), but occasionally it changed disease progression and significantly improved the outcome (as in the case of a boy with craniosynostosis who was able to avoid neurosurgery). By attending clinic, workshops, the national conference, and through independent study, I was able to fulfill the goals that were established at the beginning of this project.

One of the biggest challenges was learning how to develop palpation skills necessary to diagnose and treat – a skill that osteopathic medical students develop over two years before they begin clinical rotations and a skill that is not emphasized in allopathic medical education.

This project was an incredibly valuable educational experience for me – now that I have a basic understanding of the applications and benefits of OMT, I can refer certain patients that I encounter in my own practice to DOs. I also hope to continue learning about osteopathy by directly working with preceptors (for example, there is a DO attending at my residency program that has weekly OMT clinic hours) and by attending workshops/conferences (in May 2015, I am going to audit a 40-hour workshop on cranial osteopathy organized by the San Diego Osteopathic Center for Children).

References:

- ¹ Druelle, Philippe. "Management of Expecting Mothers in Late Stages of Pregnancy." San Diego. 22-23 Jan. 2015. *Lecture*.
- ² King, Hollis. "OMT in Pregnancy, Labor & Delivery: The Research." San Diego. 22-23 Jan. 2015. *Lecture*.
- ³ Licciardone JC, Buchanan S, Hensel KL, et al. Osteopathic manipulative treatment of low back pain and related symptoms during pregnancy: a randomized controlled trial. *Am J Obstet Gynecol* 2010; 202:43.e1-8
- ⁴ Hensel KL, Buchanan S, Brown SK, et al. Pregnancy Research on Osteopathic Manipulation Optimizing Treatment Effects; the PROMOTE study. *Am J Obstet Gynecol* 2015; 212:108.e1-9
- ⁵ Nicholas, Alexander S., and Evan A. Nicholas. *Atlas of Osteopathic Techniques*. 2nd ed. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins, 2012.
- ⁶ "The Single GME Accreditation System." American Osteopathic Association. <http://www.osteopathic.org/inside-aoa/single-gme-accreditation-system/Pages/default.aspx>. Web. 30 Mar. 2015.
- ⁷ Hussain M, Yao S, Abu-Sbaih R. "The Use of Osteopathic Manipulative Treatment (OMT) in a High-Risk Obstetric Patient with Upper Extremity Edema and Gestational Hypertension." Department of Osteopathic Manipulative Medicine, New York Institute of Technology College of Osteopathic Medicine, Old Westbury, NY. *Poster*.
- ⁸ Watari J, Apoznanski T, DiFrancisco-Donoghue J, Mancini JD, Cheriyan G, Curtis S, Yao SC. "Effects of a Single Treatment of PARK-OMM Protocol on Balance in Parkinson's Disease: A Pilot Study." Department of Osteopathic Manipulative Medicine, New York Institute of Technology College of Osteopathic Medicine, Old Westbury, NY. *Poster*.