Osteopathic Clinical Applications in Disease

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Learning Objectives

- Demonstrate an understanding of osteopathic medicine, including its philosophy and application.
- Be able to identify examples of the four tenets of osteopathic medicine.
- Recognize the 5 Models of Osteopathic Care.

Andrew Taylor Still, DO

"Osteopathic physicians must be able to give a reason for the treatment they give, not so much to the patient, but to themselves."

Terminology- Words that Matter

OPP- Osteopathic Principles and Practices

- The contextual framework used to deliver patient care **(4 tenets)**

OMM- Osteopathic Manipulative Medicine

- System of diagnosis and manipulative treatment of somatic dysfunction

OMT- Osteopathic Manipulative Treatment **(5 models)**

- The application of multiple osteopathic techniques as treatment

SD- Somatic Dysfunction

- Impaired or altered function of related components of the **somatic** (bodywork) system including: the skeletal, arthrodial, and myofascial structures, and their related vascular, lymphatic, and neural elements.
- Diagnosed by palpation, treated with OMT.

Diagnosis of Somatic Dysfunction

Diagnosis by palpation, based on the presence of T.A.R.T.. in the somatic system.

- **Tissue texture abnormalities**
- **Restriction of motion**
- **Asymmetry**
- **Tenderness**

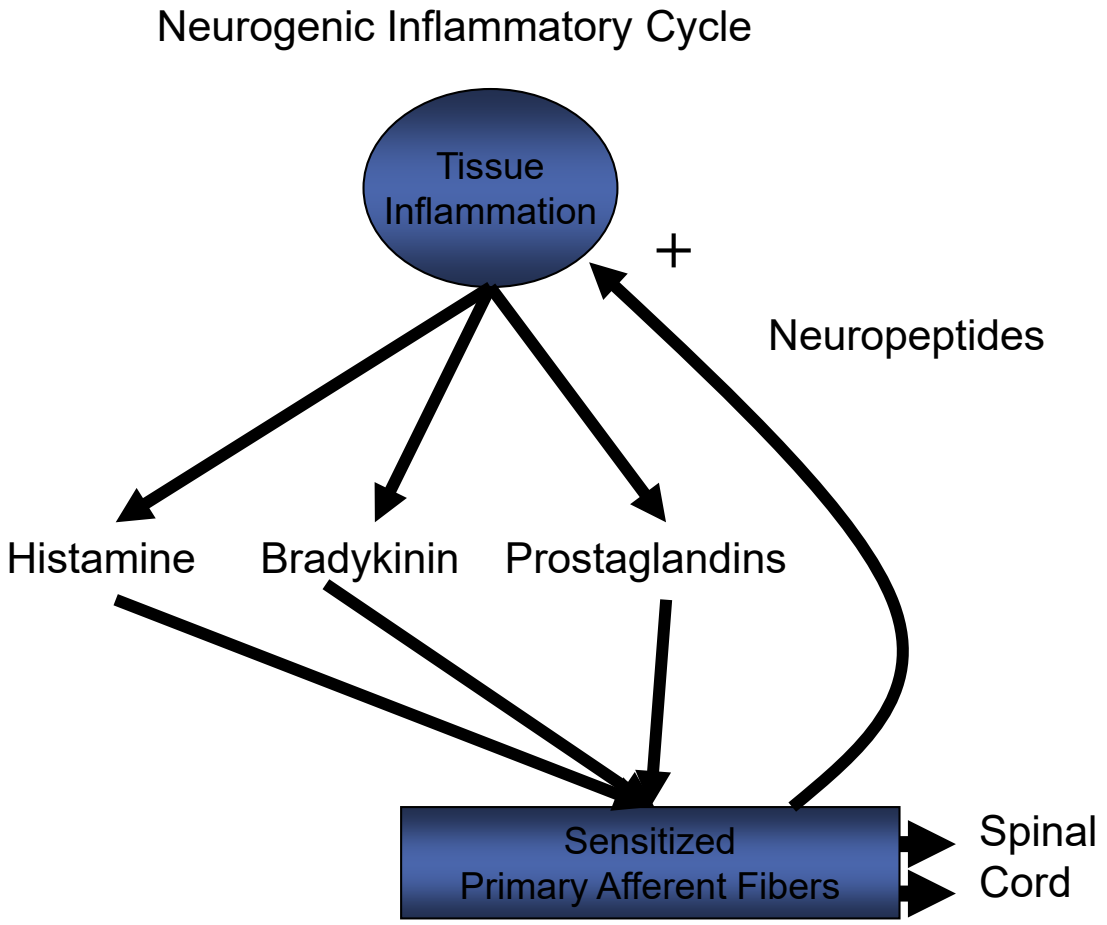
Disruption of normal human system mechanisms

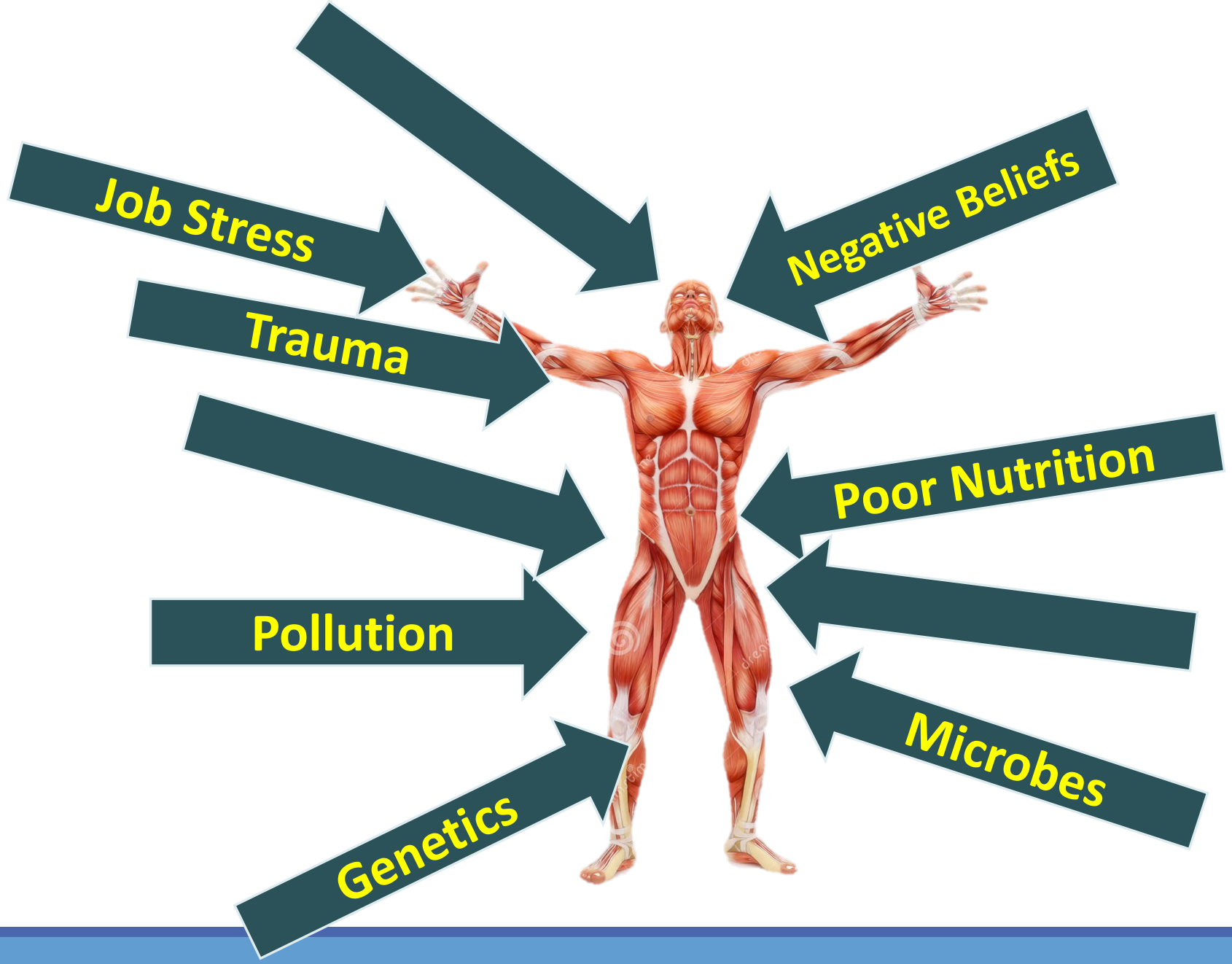
Inflammatory process/ cascade

- Inflammation is the beginning of the healing process

Neural responses/reflexes

- Nociception
- Autonomic NS




Job Stress
Trauma
Pollution
Genetics
Negative Beliefs
Poor Nutrition
Microbes

Classical Osteopathic Philosophy

HEALTH

Health is a natural state of harmony.

The human body is a perfect machine created for health and activity.

A healthy state exists as long as there is normal flow of body fluids and nerve activity.

DISEASE

Disease is an effect of underlying, often multifactorial causes.

Illness is often caused by mechanical impediments to normal flow of body fluids and nerve activity.

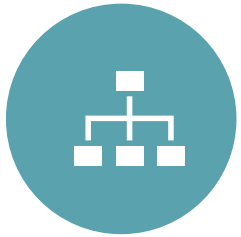
Environmental, social, mental, and behavioral factors contribute to the etiology of disease and illness.

Classical Osteopathic Philosophy

PATIENT CARE

THE HUMAN BODY PROVIDES ALL THE CHEMICALS NECESSARY FOR THE NEEDS OF ITS TISSUES AND ORGANS.

REMOVAL OF MECHANICAL IMPEDIMENTS ALLOWS OPTIMAL BODY FLUID FLOW, NERVE FUNCTION, AND RESTORATION OF HEALTH.



ENVIRONMENTAL, CULTURAL, SOCIAL, MENTAL, AND BEHAVIORAL FACTORS NEED TO BE ADDRESSED AS PART OF ANY MANAGEMENT PLAN.

ANY MANAGEMENT PLAN SHOULD REALISTICALLY MEET THE NEEDS OF THE INDIVIDUAL PATIENT.

What does OMT “treat”?

Somatic dysfunction to assist in:

- Restoring
  - Blood flow
  - Lymphatic flow
  - Nervous system function
- Decreasing pain
- Increasing the ability to function

Osteopathic Clinical Approach based on the Four Tenets of Osteopathic Medicine

The human being is a dynamic unit of function

- Complete History - chief complaint, past medical, surgical, family, social histories
- Review of Systems

The body possesses self-regulatory mechanisms that are self healing in nature

- Where did the body get “restricted/impeded” in the process of maintaining health?
- What caused the patient’s condition?

Structure and function are interrelated at all levels

- Physical examination
- Is there a structural abnormality causing the condition, or is there a structural dysfunction occurring as a result of a disease? Viscerosomatic, somatovisceral reflexes

Rational treatment is based on these principles

- Can OMT improve a patient’s condition?

Four Tenets of Osteopathic Medicine

A person is the product of dynamic interaction between body, mind, and spirit.

Patient-centered care
Wholistic
Cultural competence
Spirituality
Empathy
Body-Mind

The body has self-healing, homeostatic mechanisms.

Self-healing
Homeostasis
Allostatic load
Promote health
Wellness

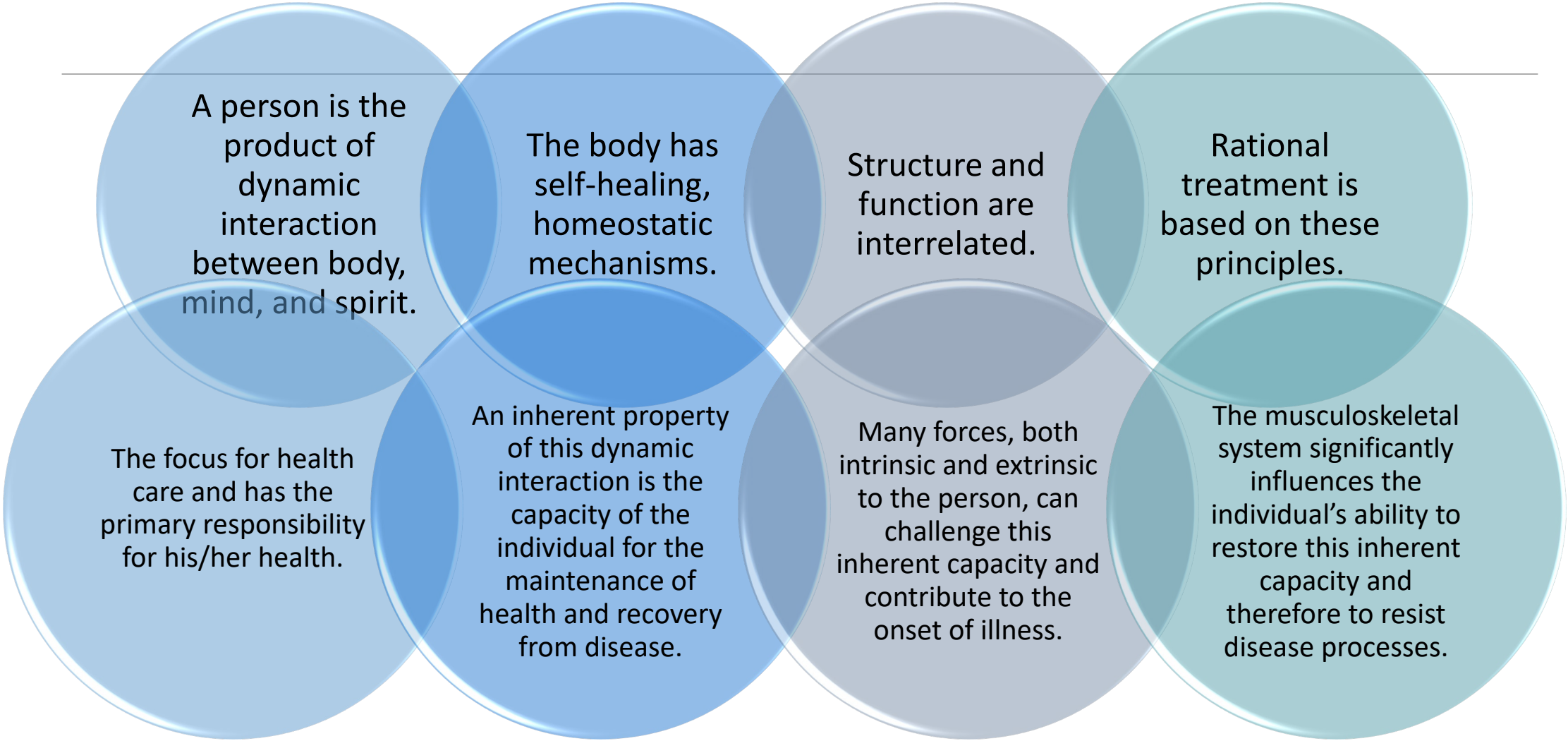
Structure and function are interrelated.

Structure-function
Somatic Dysfunction
Viscerosomatic reflex
Somatovisceral reflex
T.A.R.T.

Rational treatment is based on these principles.

OMT/OMM
Therapeutics
Partnering with patients
5 Models of Osteopathic Medicine
Prevention

Four Tenets of Osteopathic Medicine



Origin of the 5 Models of Osteopathic Care

Physiology text described 10 basic coordinated body functions:

- Control of posture and body movement
- Respiration
- Circulation
- Regulation of water and electrolyte balance
- Digestion and absorption of nutrients and elimination of wastes
- Metabolism and energy balance
- Protective mechanisms
- The sensory system
- Reproduction
- Consciousness and Behavior

ECOP consolidation

- Posture and motion, including fundamental structural and biomechanical reliability
- Gross and cellular respiratory and circulatory factors
- Metabolic processes of all types, including endocrine-mediated, immune-regulatory, and nutritionally related biochemical processes
- Neurologic integration, including central, peripheral, autonomic, neuroendocrine, and neurocirculatory and their reflex relationships
- Psychosocial, cultural, behavioral, and spiritual elements

Osteopathic Five Models in the Context of the Three Domains of a Philosophy of Medicine			
Models	Health	Disease	Patient Care*
Biomechanical	Efficient and effective posture and motion throughout the musculoskeletal system	Somatic dysfunction; inefficient posture; joint motion restrictions or hyper mobility; instability	Alleviate somatic dysfunction utilizing the osteopathic palpatory diagnosis and OMT to restore normal motion and function throughout the body
Respiratory-Circulatory	Efficient and effective arterial supply, venous and lymphatic drainage to and from all cells; effective respiration	Vascular compromise, edema, tissue congestion' poor gas exchange	Remove mechanical impediments to respiration and circulation and relieve congestion and edema by improving venous and lymphatic drainage
Neurological	Efficient and effective sensory processing, neural integration and control, autonomic balance, central and peripheral nervous functions	Abnormal sensation, imbalance of autonomic functions, central and peripheral sensitization/malfunction; pain syndromes	Restore normal sensation, neurological processes and control; alleviate pain
Metabolic-Energy	Efficient and effective cellular metabolic processes, energy expenditure and exchange, endocrine and immune regulation and control	Energy loss, fatigue, ineffective metabolic processes, toxic waste buildup, inflammation, infection, poor wound healing, poor nutrition; adverse response to medication; loss of endocrine control of vital functions	Restore efficient metabolic processes and bioenergetics, alleviate inflammation, infection, restore healing and repair functions and endocrine control
Behavioral	Efficient and effective mental, emotional and spiritual functions, healthy lifestyle choices and activities, good social support system	Ineffective function due to drug abuse, environmental chemical exposure or trauma, poor lifestyle choices (i.e., inactivity, dietary indiscretions); inability to adapt to stress or environmental challenges	Assess and treat the whole person – physical, psychological, social, cultural, behavioral and spiritual aspects; collaborative partnership; individualized patient care and self-responsibility for healthy lifestyle choices

*Utilizing combinations of Osteopathic manipulative medicine, medications, surgery, and education as appropriate.

General Indications for OMT

Diagnosis of Somatic Dysfunction

To:

-Increase joint range of motion

-Improve arterial, venous and lymphatic circulations

-Balance muscle length and tension

-Improve immune function

-Normalize neuro-reflexive activity

-Supporting homeostatic function

General Contraindications for OMT

No diagnosis of somatic dysfunction

Patient refusal of technique

Physician inability to perform technique

Emergency health crisis:

- vital signs, profuse bleeding, open fracture, etc.

Patient is too ill for OMT

Somatic Dysfunction

"Implicit in the term 'somatic dysfunction' is the notion that manipulation is appropriate, effective, and sufficient treatment for it." -Fred Mitchell, Sr., DO

Not all somatic lesions are somatic dysfunction

- *NOT SOMATIC DYSFUNCTION*:
  - fractures
  - degenerative processes
  - inflammatory processes

Direct vs Indirect OMT

Osteopathic technique modalities can be either

- **Direct**- the somatic dysfunction is moved towards a restrictive barrier
- **Indirect**- the somatic dysfunction is moved away from a restrictive barrier towards the direction of ease
- **Either** – can be performed either direct or indirect
- **Combined**- have elements of both in one technique

Rationale for OMT

- Areas of somatic dysfunction indicate that the body (and therefore the whole person) has moved from a state of health, balance or homeostasis to a state of allostasis or stress.
- The body is exhibiting signs and symptoms of inflammation, autonomic nervous system imbalance and other physiologic imbalances.
- By diagnosing somatic dysfunction (using the TART criteria), then performing OMT to correct the somatic dysfunction, we attempt to return the body to normal and optimize physiology.

OMM in Systemic Diseases

Community-Acquired Pneumonia

Community-Acquired Pneumonia

Accounts for over 4.5 million outpatient and emergency room visits annually

Approximately 650 adults are hospitalized with CAP every year per 100,000 population in the United States, corresponding to 1.5 million unique CAP hospitalizations each year

Causative organisms: Strep pneumonia, H. influenza, M. catarrhalis

One of the top 10 causes of death

Risk Factors:

- Age > 65
- Chronic comorbidities
- Viral respiratory infection
- Impaired Airway protection
- Smoking and Alcohol overuse

https://www.uptodate.com/contents/overview-of-community-acquired-pneumonia-in-adults (June 2019)

The Multicenter Osteopathic Pneumonia Study in the Elderly (MOPSE) trial

Multi-center study conducted at 7 community hospitals

Subjects were > 50 years old, diagnosis of pneumonia, primarily community-acquired, 387 people participated

Protocol: thoracolumbar and cervical soft tissue, rib raising, doming of the diaphragm (MFR), suboccipital inhibition, thoracic inlet (MFR), thoracic and pedal lymphatic pumps

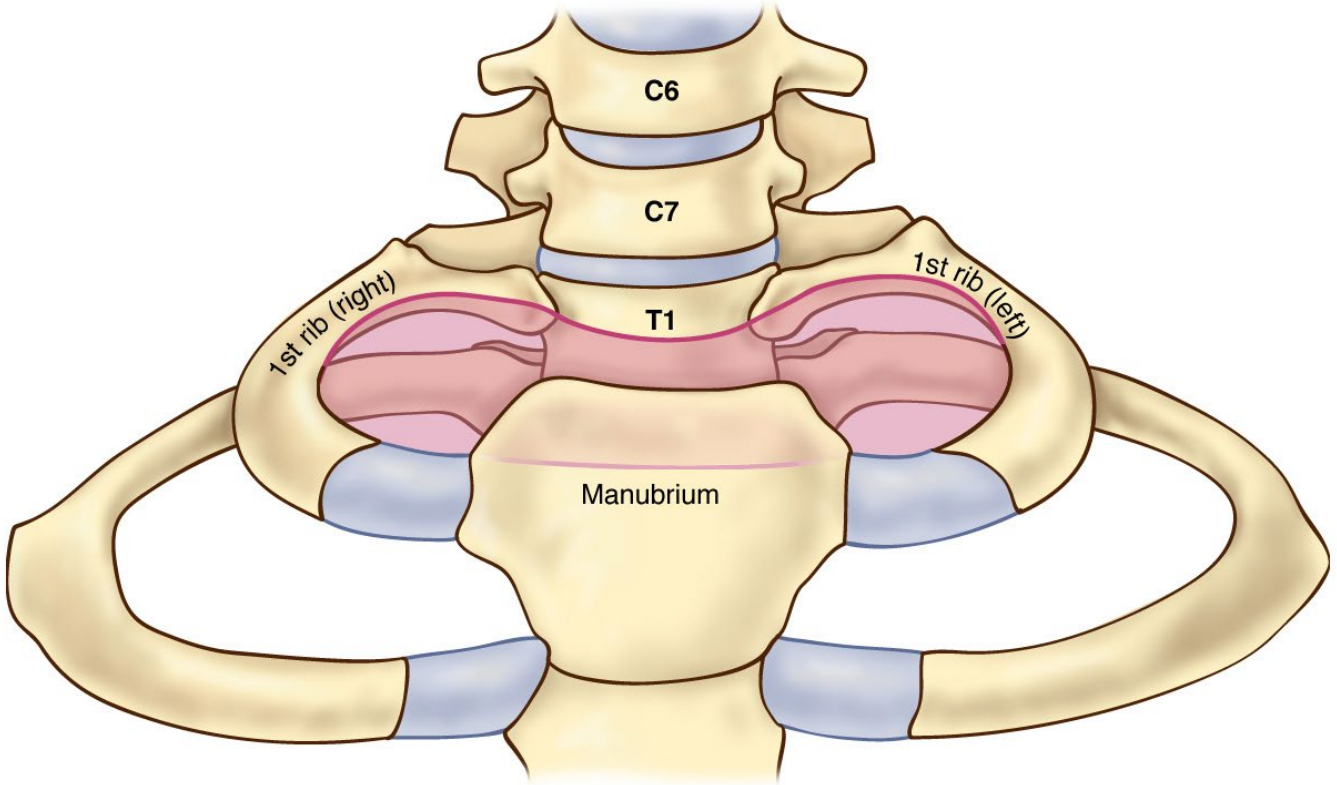
Length of stay was lower in the OMT group

Ventilator-dependent respiratory failure and in-hospital mortality was lower in OMT group for the sickest patients with community-acquired pneumonia

In-hospital mortality for those > 75 years of age decreased in the OMT group, so did the sham treatment of light touch compared to usual care

The Multicenter Osteopathic Pneumonia Study in the Elderly (MOPSE) trial: http://jaoa.org/article.aspx?articleid=2546793

Thoracic Inlet: First Ribs, T1, Manubrium



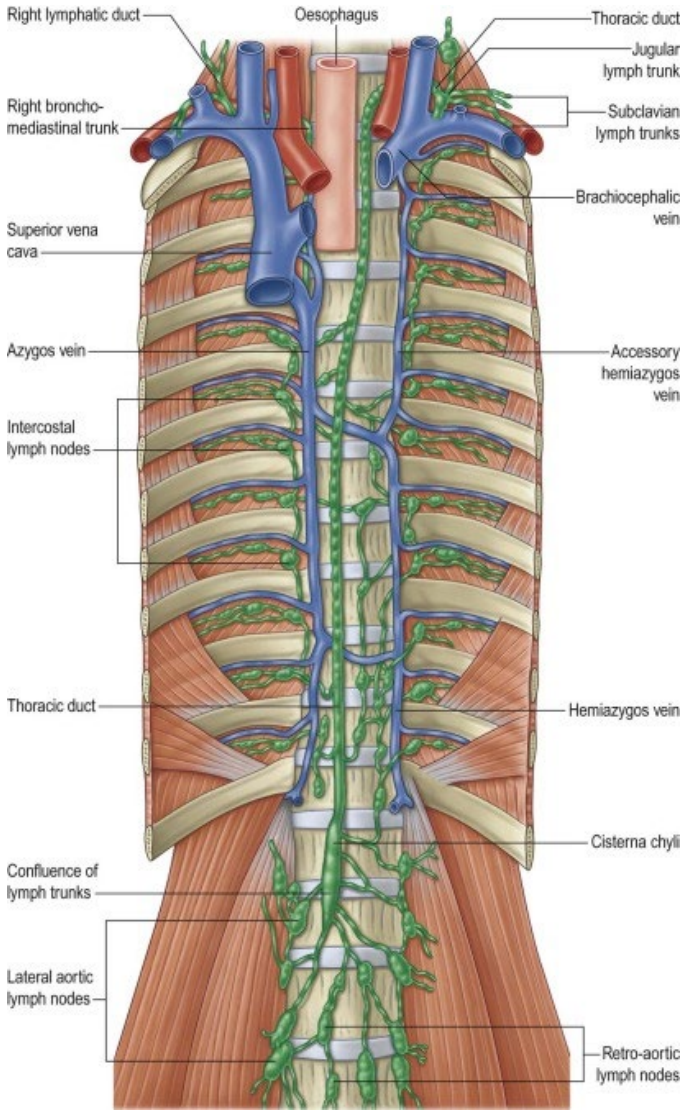
http://www.asnr2.org/neurographics/7/2/52/Final%20Thoracic%20Inlet_files/slide0620_image021.jpg

Thoracic Duct

The right duct conveys lymph from

head, neck, heart, right upper extremity, right lung, top of liver.

The left duct conveys lymph from the rest of the body.



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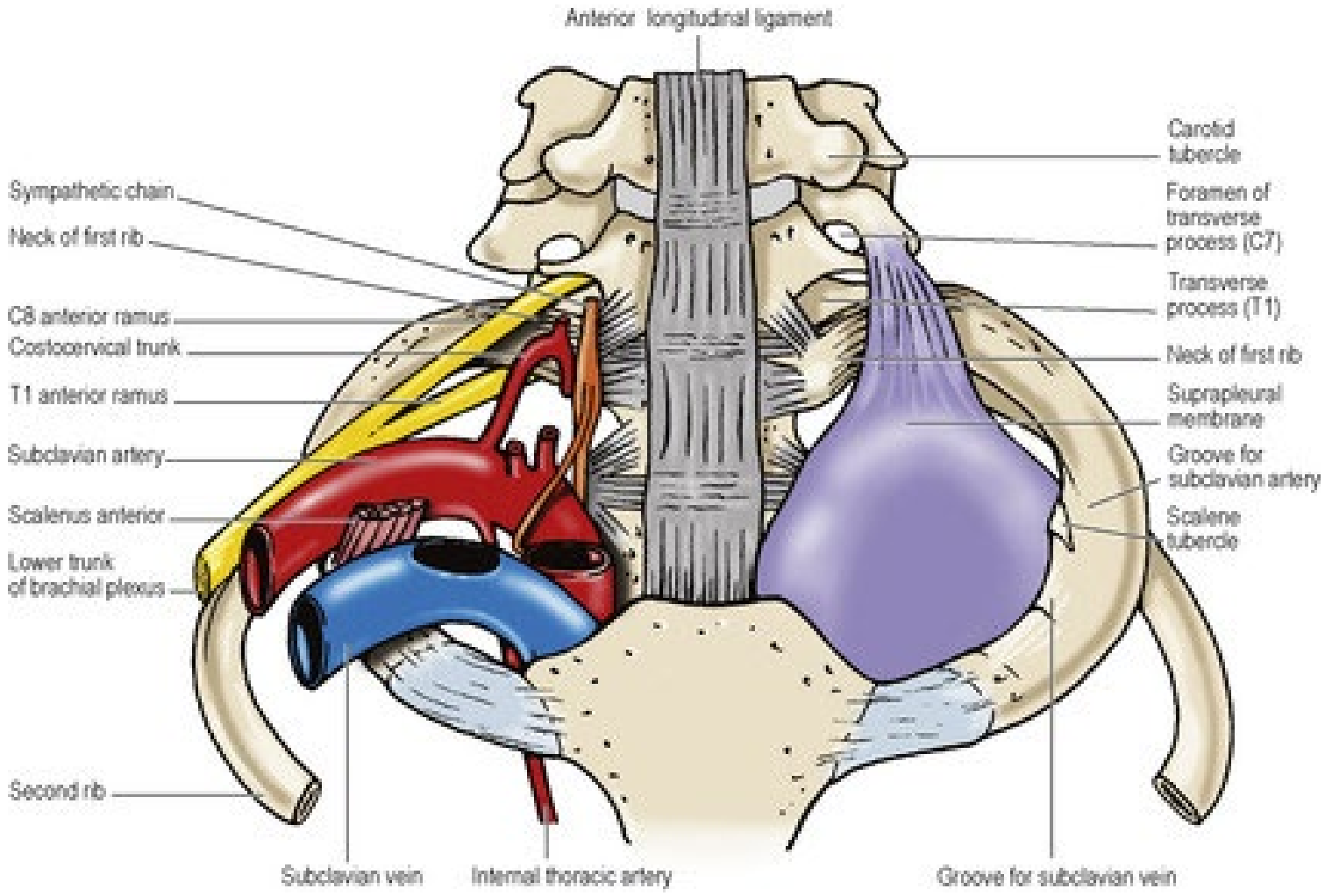
Thoracic Inlet: First Rib, T1, Manubrium

Contains:

nerve roots, subclavian artery and vein, thoracic ducts, lower trunk of the brachial plexus, dome of the pleura and apices of the lungs, longus colli and scalene muscles, sympathetic chain, vagus nerve (CN X), trachea, esophagus



https://basicmedicalkey.com/wp-content/uploads/2016/06/f04-05-9780702033957.jpg

Thoracic Inlet Release

AKA Necklace or Steering Wheel Technique

Indications: Any condition involving lymphatic, circulatory congestion or nerve compression

Diagnosis: fascial restriction in the supraclavicular fossa

Patient may be seated or supine.

Place palms over shoulders with fingers on clavicles and manubrium, thumbs over T1 posteriorly.

Contact the tissues deeply enough to connect with fascia, not overlying skin.

Check superior/inferior, right/left translation, right/left rotation for bind/ease.

Indirect application: move into the 3 planes of ease

Direct application: move into the 3 planes of restriction

Hold position without changing light force until change is perceived (at least 60 seconds).

Deep breathing may facilitate change.

FIGURE 8.4. Step 2.

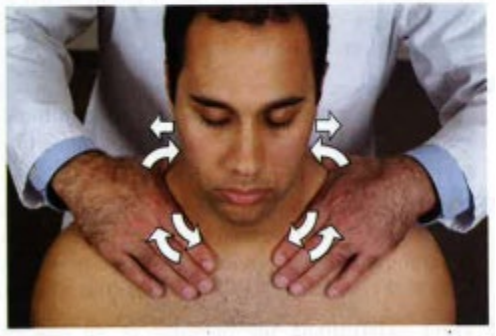


FIGURE 8.5. Step 3.

Atlas of Osteopathic Techniques, A. Nicholas, E. Nicholas, Lippincott Williams & Wilkens, 2008

Thoracic Lymphatic Pump

The patient lies supine in bed or on a treatment table with their head turned to one side to avoid coughing on the physician.

Physician stands at the head of the patient and places their hands over the patient's upper ribcage avoiding breast tissue as much as possible for modesty.

The physician's thenar eminences should be below the patient's clavicles.

The patient is instructed to take in a deep breath and fully exhale.

On exhalation, the physician applies a quick compressive force on the ribs toward the diaphragm.

The compressive force is applied quickly in an on-off manner at the rate of 2 compressions per second for several minutes.

Atlas of Osteopathic Techniques, A. Nicholas, E. Nicholas, Lippincott Williams & Wilkens, 2008

From: **Lymphatic Techniques**

Atlas of Osteopathic Techniques, 3e, 2016

Legend:

Modified hand position.

Pedal Lymphatic Pump

Patient is lying supine on a bed or treatment table.

Physician grasps the dorsa of the feet and applies a pressure toward plantar flexion or dorsiflexion.

The choice of plantar flexion or dorsiflexion is whichever is most comfortable for the patient.

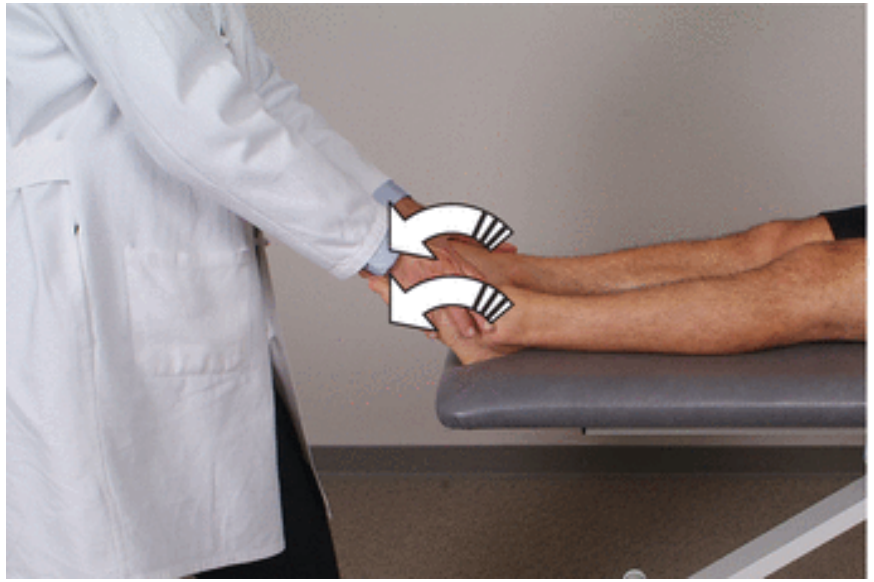
A quick movement into the preferred direction is applied and then released.

This motion is continued at the rate of two flexions per second for 1-2 minutes.

Atlas of Osteopathic Techniques, A. Nicholas, E. Nicholas, Lippincott Williams & Wilkens, 2008

From: **Lymphatic Techniques**

Atlas of Osteopathic Techniques, 3e, 2016



Legend:

Step 4, plantar flexion.
Step 5, dorsiflexion

Otitis Media

Recurrent Otitis Media

Per Medscape, May 2018:

84-93% of children will experience at least one episode of otitis media by age 10

5% of children 2-4 years old will have hearing loss due to a middle ear effusion that lasts 3 months or longer

In children younger than 1 year, 62% had at least 1 episode of acute otitis media,

- and 17% had 3 or more episodes

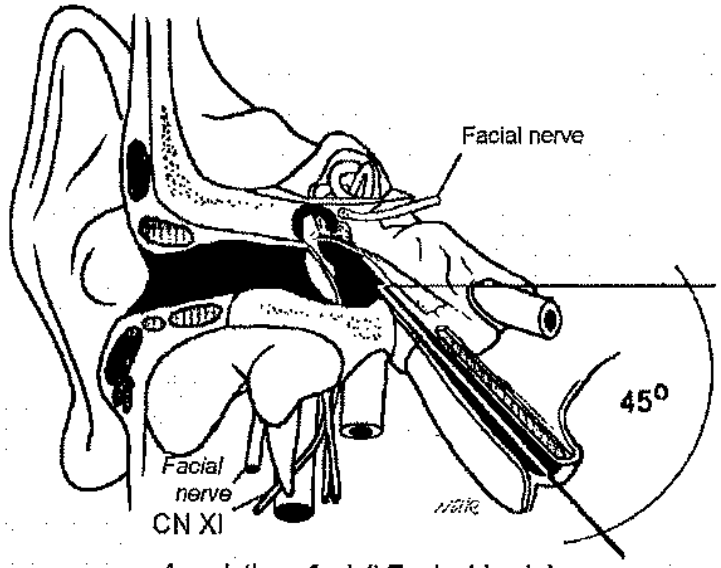
In children younger than 3 years, 83% had at least 1 episode of acute otitis media,

- and 46% had 3 or more episodes.

Higher in Native Americans particularly Navajo and Eskimo peoples

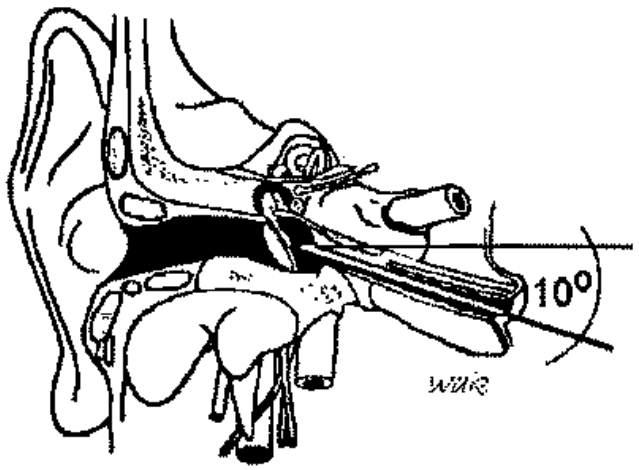
Why do kids get Otitis Media?

ADULT'S EUSTACHIAN TUBE



Angulation of adult Eustachian tube

CHILD'S EUSTACHIAN TUBE



Angulation of pediatric Eustachian tube

Foundations for Osteopathic Medicine, 4th edition, M Seffinger, ed.

Effect of Osteopathic Manipulative Treatment on Middle Ear Effusion Following Acute Otitis Media in Young Children: A Pilot Study

52 subjects (6 mos-2 yoa) with middle ear effusions were enrolled in the study. 9 dropped out.

Tympanograms were obtained on all subjects; abnormal tympanograms were analyzed in 76.

- 38 belonged to subjects in the Standard of Care Only (SCO) group
- 38 belonged to subjects in the Standard of Care plus OMT (SCO+OMT) group

OMT protocol treated the sacrum, diaphragm, ribs, thoracic inlet, cervical spine, suboccipital decompression, venous sinus drainage and treatment of the sphenobasilar symphysis.

Tympanograms were statistically improved in the middle ear effusion at the 3rd visit

The Journal of the American Osteopathic Association, June 2014, Vol. 114, 436-447. doi:10.7556/jaoa.2014.094

Karen M. Steele, DO; Jane E. Carreiro, DO; Judith Haug Viola, DO; Josephine A. Conte, DO; Lance C. Ridpath, MS

Galbreath Technique

Purpose – to increase blood flow through the pterygoid plexus of veins and lymphatics, drainage of the Eustachian tube, stretching of the peri-pharyngeal muscles and fascia.

Patient supine (or seated in treating physician's or parent's lap).

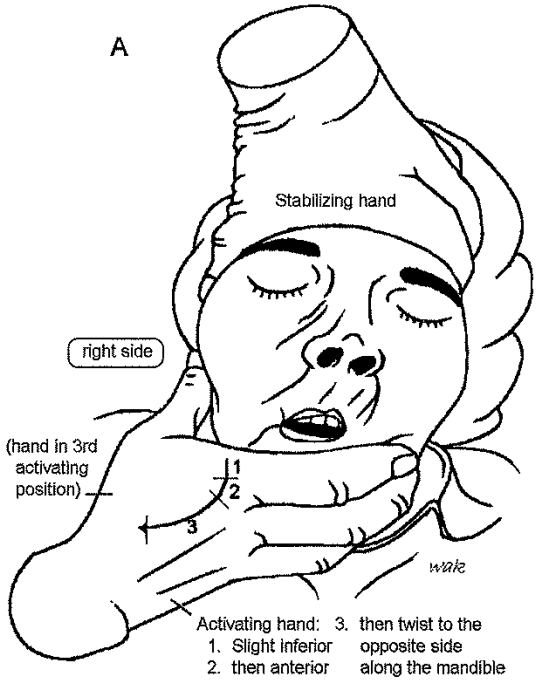
Affected side down (or away from physician's treating hand).

Grasp mandible of affected side.

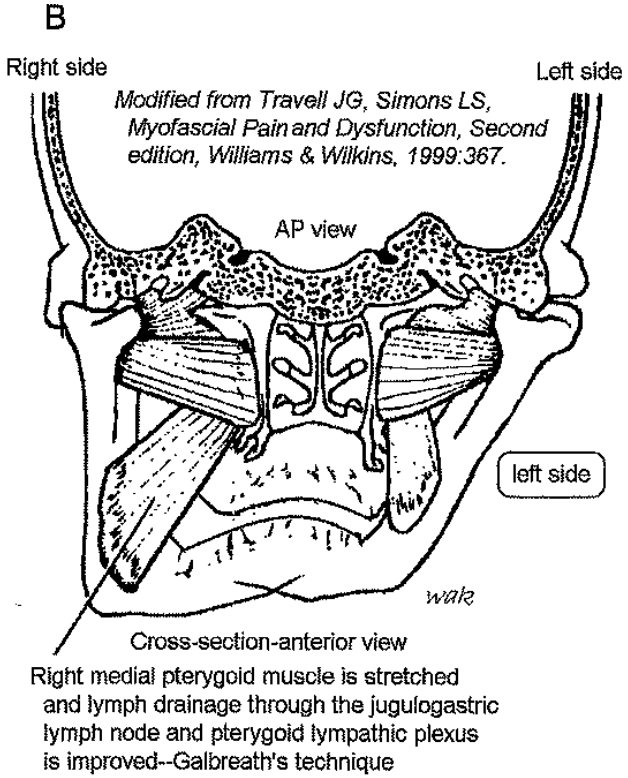
Draw mandible downward and transversely with mild force for 3-5 seconds, repeating for 30-60 seconds.

Galbreath Technique

HAND POSITION



ANATOMY



Foundations for Osteopathic Medicine, 4th edition, M Seffinger, ed.

Post-operative Ileus

Post-operative Ileus

Why is bowel function important?

- Maintain homeostasis
- Elimination of wastes

Absorption of nutrients

Immune function

Post-Operative Ileus

- Failure to pass flatus or stool for 3-6 days after surgery
- Transient impairment of function and motility

Etiology of Post-Op Ileus (POI)

Mechanical irritation

Edema of tissues – mesentery and intestine

Inflammatory molecules which cause the

Activation of inhibitory neural reflexes

Medications, particularly opiates

Hocking, MP, Medline, April, 2002, Contemporary Perioperative Patient care: New Considerations in the Management of Postoperative Ileus and Perioperative Pain

Standard Medical Treatment

Nasogastric suctioning

Rectal stimulation

Ambulation

Medications:

- laxatives
- erythromycin
- metoclopromide
- cisapride
- alvimopan
- methylnaltrexone

No efficacy on POI

Gum chewing – stimulates the gastrocolic reflex?

NSAIDs

Thoracic epidural analgesia with lidocaine or bupivacaine

Hazards of Medical Treatment

Electrolyte imbalance

Dehydration

Gastric perforation

Nasal irritation or erosion of mucosa

Infection

Rectal perforation

Impaired nutrition

Delayed healing

Increased pain from withholding of opiate pain reliever

Increased bleeding due to anti-platelet activity from NSAID

Gastric mucosal erosions from NSAID

Other adverse effects of NSAIDs

Meningitis/spinal headache from epidural analgesia

Cost

Estimated cost of postoperative ileus is ~ $1 billion per annum in the US.

Research on Post-Op Ileus

Crow, Gorodinsky- (Crow, Int'l J of Osteopathic Med, 3/09), retrospective study

Length of stay in patients given OMT = 11.8 days

Length of stay in patients not given OMT = 14.6 days

Baltazar, et. al., (Baltazar, JAOA, 3/13), retrospective, 17/55 subjects received OMT

Subjects matched for severity of illness according to anesthesiologist's assessment

Length of stay in patients given OMT = 6.1 days

Length of stay in patients not given OMT = 11.5 days

Low Back Pain

Statistics

Low Back Pain (LBP) afflicts a quarter of adult Americans annually

Affects an estimated 632 million people worldwide

Is a leading cause of disability

Most LBP has unidentifiable causes

OSTEOPATHIC Trial

Subjects had LBP > 3 months (chronic)

445 subjects randomized to receiving OMT (230) vs sham OMT (225)

Subjects received 6 sessions of OMT over 8 weeks

Assessed at week 12:

- ~25% of those receiving OMT had improvement in back pain intensity and back-specific functioning
- Those with co-morbid depression did not have a favorable recovery response to OMT

Licciardone JC, Gatchell RJ, Aryal S, Recovery From Chronic Low Back Pain After Osteopathic Manipulative Treatment: A Randomized Controlled Trial, JAOA, 3/2016, Downloaded from https://jaoa.org by Burrell College of Osteopathic Medicine user on 06/03/2020

OMT Study with Chronic LBP

A study of 455 subjects

- 79 treated by manipulating DOs
- 48 treated by non-manipulating DOs
- 318 treated by MDs

NSAID use was 51.9%, 62.5%, 68.2%

Opiate use was 25.3%, 35.4%, 39.9%

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