



*Viva*  
**LAS VAGUS**  
CONTINUING EDUCATION COURSE



## Itinerary for Today

Logistics describing the benefits involved with manually treating the Vagus Nerve

Discussion involving diseases patients present with in clinic and how most have Vagus Nerve implications

Discussion involving Vagus trends happening and emerging right now

Vagus Nerve, Roles and Functions

Vagal Health Self-Assessment form

Vaguset

Overview Chart of the Central Nervous System / Autonomic Nervous System / Enteric Nervous System

Social Engagement System / Relational Field / Heart Math

Case History Questions, assessments, CI's and precautions involved with treating the CNX

Partner Practice

OsteoArticulation Considerations with Partner Practice

Myofascial Release Considerations with partner Practice

End of day Wrap up...

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## Why incorporate Vagus care into your practice.....

Quality of care for your patients, specifically for the autonomics

Achievement of patient goals, beyond the musculoskeletal and fascial structures

Reduction of patients' signs and symptoms, with longer lasting results

Patient awareness and education regarding Vagus self and home care

Respect from fellow health care providers in your community, your practice will be **UNIQUE** and word will spread from patients to primary health care providers

Longevity of your practice, all techniques are gentle for both the therapist and patient

New attitude, fresh outlook, for the therapist in practice

New results for the long-lasting patients with chronic situations

Deeper understanding of the Safety aspect and the Vagus Nerve responses in the body and systems

Honouring the bodies Inherent Treatment Plan

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# Diseases , Conditions and Clinical Considerations



Metabolic Syndrome
Impaired Glucose Intolerance
Area Postrema Syndrome
Dorsal Vagal Collapse / Shutdown
Major Depression Disorder (MDD)
Digestive Disorders
PTSD
Thyroid Issues
Dysphagia
Obesity
Inflammation (arthritis)
Diabetes
Hypertension
ADHD
Dysphasia
Dis-Autonomia
Swallowing Issues and Barrets Esophagus
TMJ issues
Cardiac Sphincter hypo/hypertonicity
C1C2C3 scoliosis or fusion
Pyloric Stenosis
Changing voice
Chronic Peptic Ulcers
POTS Postural Orthostatic Tachycardia Syndrome
Cervicovagopathy
Cervical Ligament Instability: C3 anterolisthesis
Rome HELD Syndrome
Extended Inflammation
Orgasm issues
Cushings Syndrome
Arthritis

GERD
FHP
Gastroparesis
Pancreatitis
Depression and or Anxiety
Achalasia
IBS / Bloating
Whiplash
Vertigo
Brain Stem Issues: Parkinsons or Dementia
Tinnitus
Thyroid issues
Fatigued Adrenals
Hyper/Hypo glycemia
Elevated HR and or blood pressure
Gall Stones
Dowagers Hump
Vision Changes
Vernet Syndrome: paralysis of CN IX, X and XI
Bouts of Tachycardia
Low HRV (average HR is 60 – 100 BPM )
Ear sensitivity differences
Vagal Syncope
Brain Fog
Extended use of antibiotics
Lateral Medullary Syndrome
Apnea
Painful Pelvic Floor
Bladder Incontinence
Chronic Stress
Neurodegenerative Diseases

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# Vagus Nerve Trends

Within the last 20 years the Vagus Nerve has really gained attention from health care professionals and the public population in general:

Research

Text Books

Treatment, medical procedures and self care devices

Daith Piercings

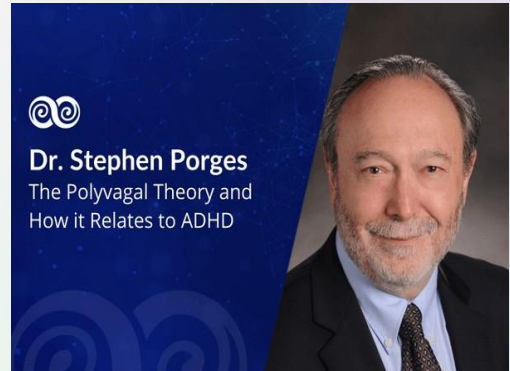
The Perrin Technique

Social Media: blogs / podcasts / yoga / online courses / Ted Talks...

Self Care books

Common conversation

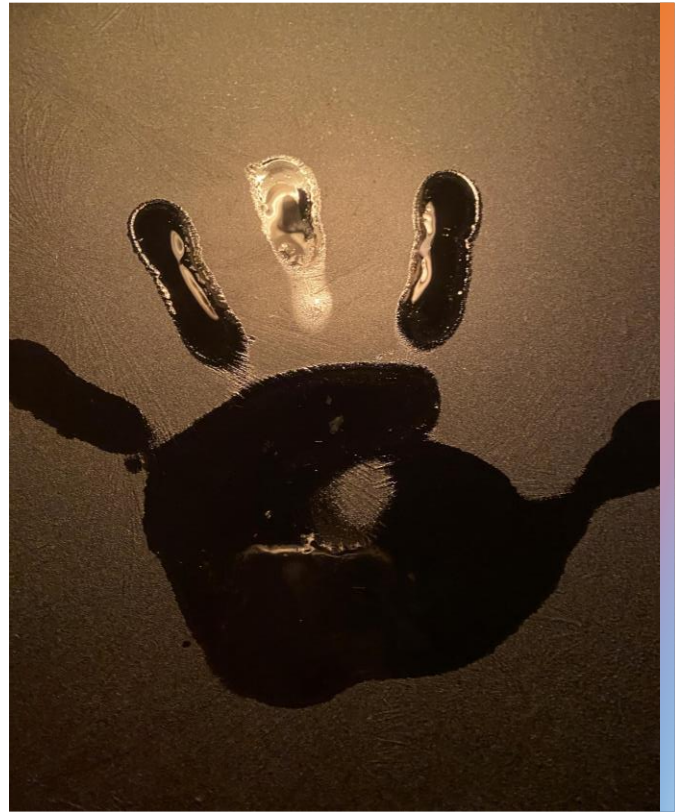
Vagus Nerve Stimulators

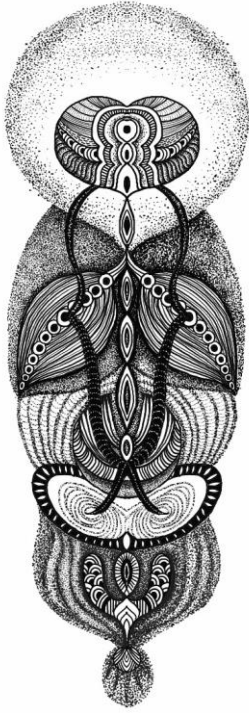


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# Human Touch

- Ability to Assess
- Observe and monitor Patient during treatment
- Opportunity to Re -Assess
- Chart findings and results
- Follow Up: appointment, phone or email
- Support patient
- Offer home care to continue progress
- Adapt future treatments as indicated
- Connection





# Vagus Nerve Anatomy

“Pneumogastric Nerve”

Largest and most complex nerve in the body

Considered the Parasympathetic Nervous System

80 – 90 % Efferent Fibres

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Communicates and Interacts with the following systems:

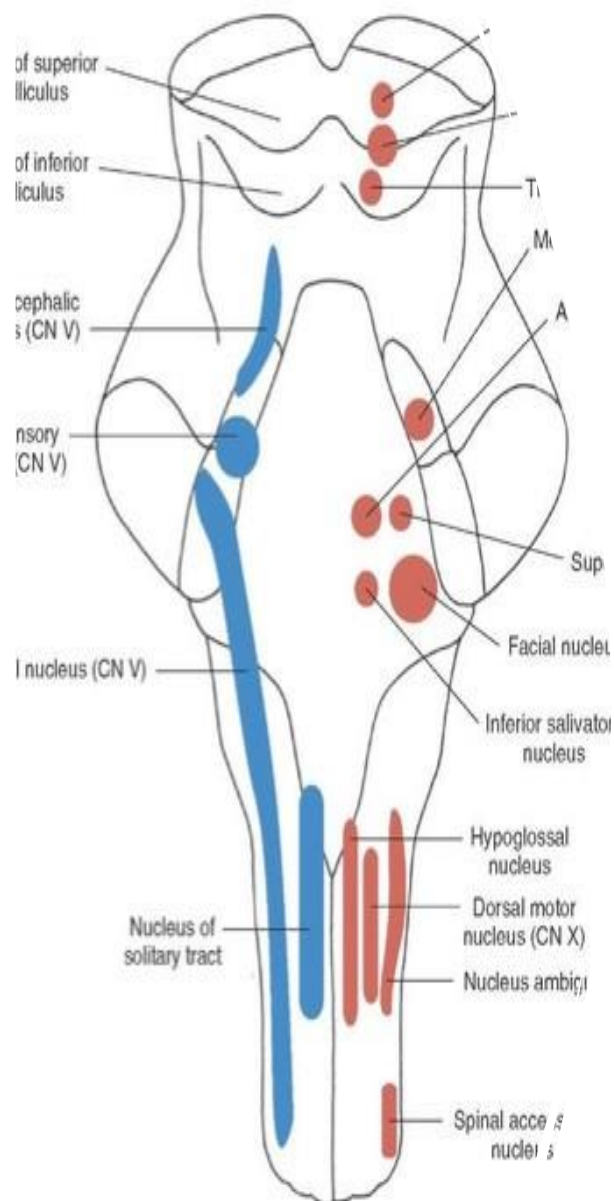
- Enteric Nervous System
- Social Engagement System
- Respiratory
- Cardiovascular
- Digestive
- Reproductive
- Endocrine
- Urinary
- Central Nervous System
- Sympathetic Nervous System
- Musculoskeletal

Vagus Nerve axons originate from four nuclei located at the inferior aspect of the rhomboid fossa within the medulla oblongata

CNIX and CNXI also exit the medulla oblongata

K5

# CNX Nuclei



## Nucleus Ambiguus / Ventral Vagus (anterior): motor nucleus

These fibers primarily innervate structures superior to the diaphragm  
 This nucleus is also shared with the CN IX and CN XI  
 Contains parasympathetic neurons for the heart  
 Efferent motor fibers provide innervation for the somatic muscles of the pharynx, larynx, and soft palate

## Dorsal nucleus : parasympathetic motor nucleus

Parasympathetic efferent fibers to the organs of the thorax and abdomen, innervation is primarily inferior to the diaphragm

## Spinal Trigeminal nucleus: general sensory nucleus

- Inferior ganglia of CNX: Nodose  
 Afferent general visceral fibers to carotid and aortic bodies as well as Efferent fibers travel to nucleus tractus solitarius  
 - Superior ganglia of CNX: Jugular  
 Provide sensory innervation, general somatic afferent, through both the auricular or meningeal branches

## Nucleus Tractus Solitarius: visceral sensory nucleus "Sensory Relay Area"

This nucleus is also shared with the CN VII and CN IX  
 Receives afferent fibers from the visceral organs:  
 taste sensation  
 sensory information from the middle ear  
 Mnemonic: Non Stop Training (Ninth, Seventh, Tenth)

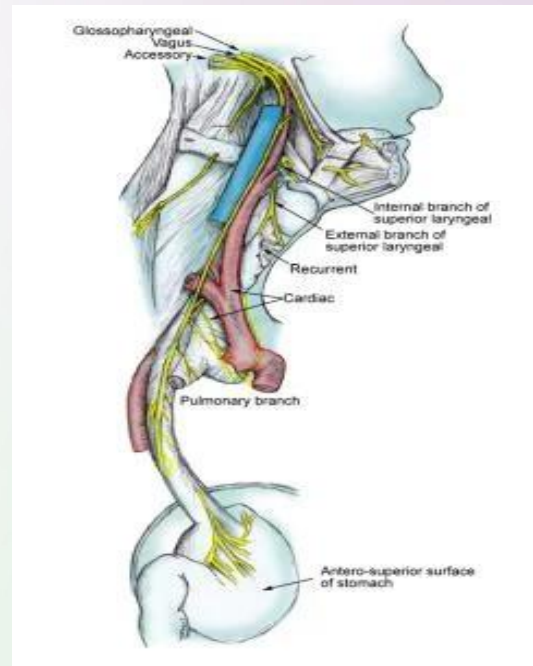




## Cervical Vagus descending down the neck encased in the carotid sheath, with the internal carotid artery and the internal jugular vein

CNX gives rise to 4 branches:

1. Pharyngeal branches  
Visceral afferent and motor efferent fibers  
Contributions to forming the Pharyngeal Nerve Plexus  
Does not innervate the *tensor veli palatini muscle*
2. Superior laryngeal nerve  
Divides into internal & external branches  
Internal contains sensory and parasympathetic fibers  
External has motor fibers innervating the cricothyroid muscle
3. Recurrent (inferior) laryngeal nerve  
Left loops around the aortic arch  
Right loops under part of the right subclavian artery  
Both nerves give filaments to the deep cardiac plexus  
2 Branches: tracheal and esophageal
4. Superior cardiac branches  
Sensory and parasympathetic fibers  
Descend with the common carotid artery  
Form the Cardiac Plexus with the branches of the sympathetic trunk (nerves travel to the heart)  
Superior cardiac branches divide: superior and inferior divisions



# LAS VAGUS



## Thoracic Vagus: In the thorax nerve and its branches contain only sensory and parasympathetic fibers

Bilaterally the CNX travels posterior to the pulmonary radix

Left: passes anterior to the left subclavian artery to descend posteriorly to the primary left bronchus laterally to the aortic arch

Right: same on right side

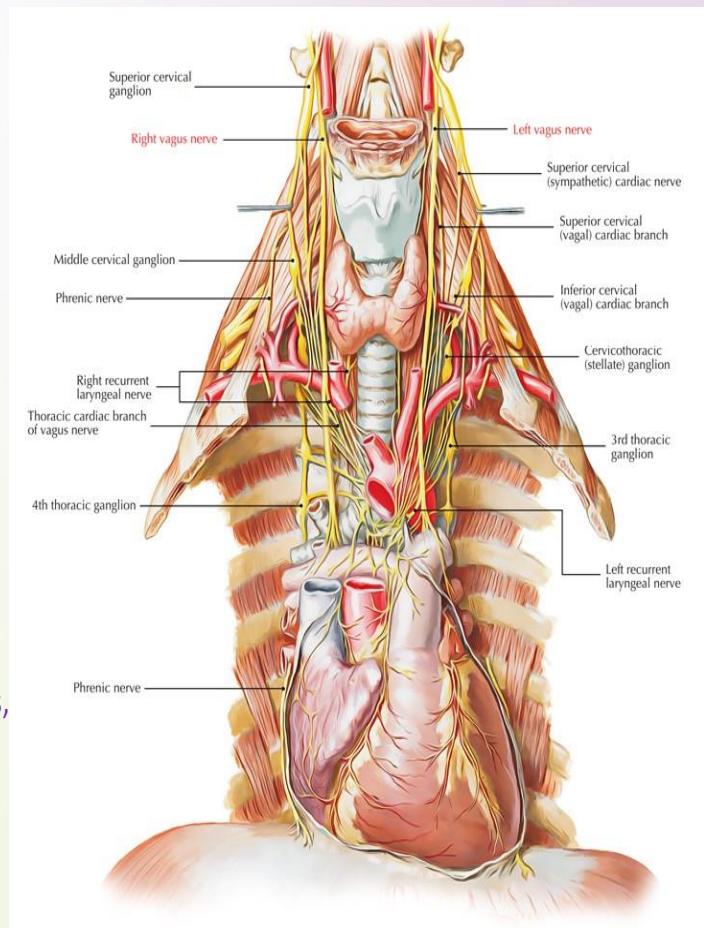
At the middle 1/3 of the esophagus, left and right fibers blend to create the Esophageal Plexus

Inferior fibers of the Esophageal Plexus form the anterior and posterior vagal trunks:

Anterior: anterior esophagus, primarily of left CNX

Posterior: posterior esophagus, mostly right CNX

Both the trunks together, along with the esophagus, descend through the esophageal hiatus of the diaphragm into the abdominal cavity





## Abdominal Vagal Pathway: both vagal trunks contain sensory and parasympathetic fibers

### Anterior Vagal Trunk

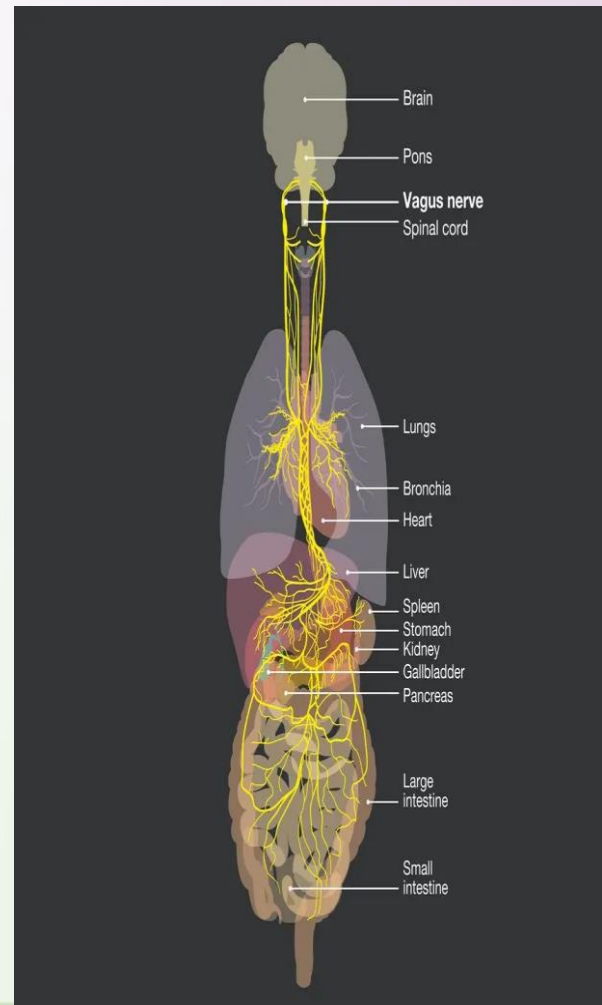
Travels along the lesser curvature of the stomach, here it divides into branches:

- Anterior Gastric Branches - these branches form the Anterior Gastric Plexus and supply the stomach
- Hepatic Branch - travels along with the lesser omentum to the liver

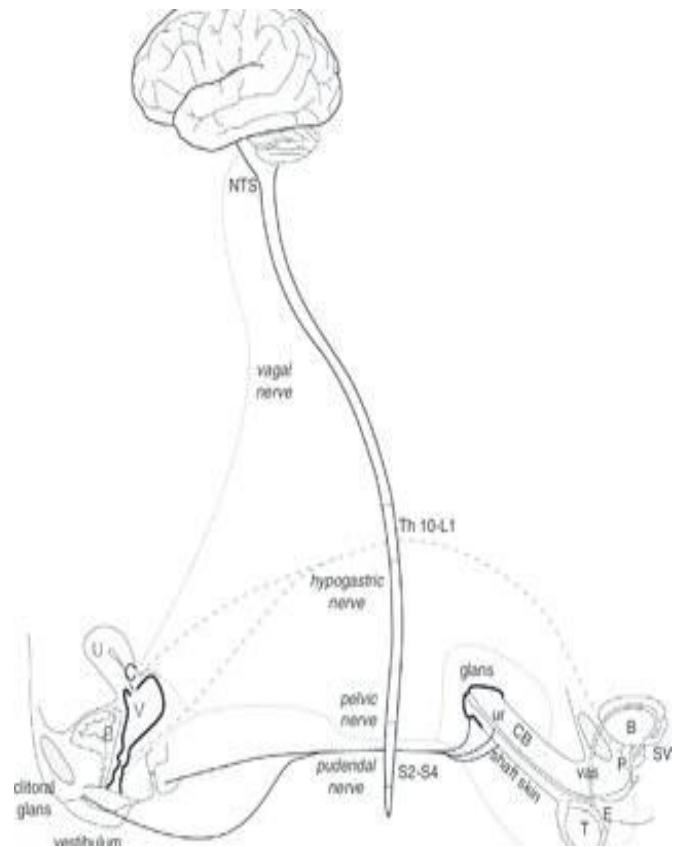
### Posterior Vagal Trunk

Travels posteriorly along the lesser curvature of the stomach where it divides into branches:

- Posterior Gastric Branches - involved with the Posterior Gastric Plexus, innervates the stomach, kidneys, liver and biliary tract
- Celiac Branch - this branch joins the Celiac Nerve Plexus, innervates most of the abdominal organ:
  - Small intestine
  - Large intestine up to the Splenic flexure
  - Liver
  - Pancreas
  - Spleen
  - Adrenal glands
  - Kidneys
  - 2/3 of the ureters
  - Testes / Ovaries
  - Epididymis
  - Uterus



# Pelvic Pathways of the Vagus Nerve





# Vagus Nerve Functions

- Most important function of the vagus nerve is afferent, bringing information of the inner organs, such as gut, liver, heart, and lungs to the brain
- In the male reproductive tract, erections and excitatory signals to the vas deferens, seminal vesicles, and prostate
- In the eye, contraction of the sphincter muscle of the iris leading to constriction of the pupil (miosis) and contraction of the ciliary muscle improving near vision
- In the heart, decreased heart rate and velocity of conduction through the AV node
- In the vasculature, parasympathetic stimulation of M3 receptors leads to vasodilation.
- In the lungs, bronchoconstriction and increased bronchial secretions
- In salivary glands, higher volume secretion of potassium ions, water, and amylase.
- In the stomach and intestines, increased motility and relaxation of sphincters and increased gastric secretions to aid in digestion, Brain Gut Axis
- In the gallbladder, stimulates contraction to release bile
- In the pancreas, release of digestive enzymes and insulin
- In the kidneys and bladder, peristalsis of ureters, contraction of the detrusor muscle, and relaxation of the internal urethral sphincter aiding in the flow and excretion of urine.
- One of the branches of the ANS along with the ENS and SNS
- Speech
- Skin sensations
- Muscle sensations
- Immunomodulatory properties, important roles in the relationship between the gut, brain and inflammation.
- Uterus Orgasm
- Activation leads to the release of acetylcholine (ACh) at the synaptic junction with secreting cells, intrinsic nervous fibers, and smooth muscles of the GI tract. ACh then binds to nicotinic and muscarinic receptors and stimulates muscle contractions in the parasympathetic nervous system

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## Vagus Nerve Reflexes

Emetic

Barometric

Carotid Sinus

Coughing Photic Sneezing

Swallowing

Pharyngeal or Gag

Trigeminal Vagal

Heuring – Breuer Inflation

VasoVagal

Sacral

Orgasm

Startle

Orienting



# Vagus Cranial Nerve Collaborations

## Social Engagement System

The social nervous system involves CN's **V, VII, IX, X and XI**. These CN's control sucking, swallowing, voice, breathing, middle ear muscles, heart rate, ingesting, facial expression and head movements

- **Trigeminal nerve (V)**

Derivatives of the 1st pharyngeal arch

*Sensory: 3 branches innervate the skin, mucous membranes and sinuses of the face*

Ophthalmic Mandibular Maxillary

Motor: Only the mandibular branch of CN V has motor fibres which supply the muscles of mastication:

medial and medial pterygoids, masseter, temporalis, anterior belly of digastric, mylohyoid, tensor veli palatini, tensor tympani

- **Facial nerve (VII)**

*Motor innervation of facial muscles / expression*

(stapedius / stylohyoid / posterior belly of the digastric muscles)

Parasympathetic innervation to oral cavity glands and the lacrimal gland

Sensory innervation of the anterior 2/3 of the tongue

- **Glossopharyngeal (IX)**

Derivatives from the third pharyngeal arch

Sensory: Oropharynx, carotid body and sinus, posterior 1/3 of the tongue, middle ear cavity and the eustachian tube

Special sensory: Provides taste sensation to the posterior 1/3 of the tongue

Parasympathetic: Supplies the parotid gland

Motor: Innervates the stylopharyngeus muscle of the pharynx

- **Vagus nerve (X)**

- **Spinal Accessory (XI)**

Upon exiting the skull cranial section blends with the CN X at the inferior ganglion, this is why the cranial part of the CN XI is considered part of the CN X

Motor innervation to the upper trapezius and sternocleidomastoid muscles

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# Patient Support and Safety

Outdoor clinic atmosphere, plants, parking, signs... My job is to ensure your nervous system feels safe and supported to release and shift

Visual models/images

Greeting and water... readers

Permission to touch

Comfort on the table

Lighting and scent

Mask

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Touch control

Any questions

Feel the differences throughout shifts

Communicate why and checking in

Be with them when getting up, stay for getting off table

Write down homecare and demo

Any questions

Walk to the door

Remind about the call tomorrow

Room atmosphere

Space orientation

Discussing what to expect

Asking about warmth

Tone of voice

Explain no pain

Discuss how you work

Part of case history, how is stress (today and in general), sleep, support, energy

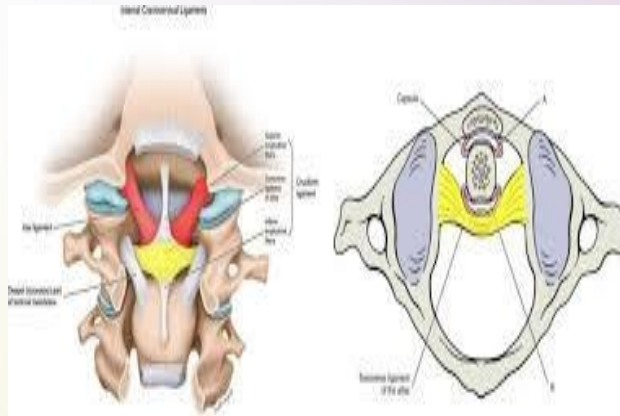


# Fascial Release Demo and Practice

Alar and Transverse Ligament Testing  
SP of C2 and Occipital base assessment

**Treatment:**

- Support under mid occiput if necessary
- Lower leg tractions
- SI gapping
- Mini respiratory diaphragm release
- Thoracic Inlet / diaphragm ( All diaphragms, including hyoid )
- Deep investing fascia
- Platysma / superficial anterior fascia
- Occipital Atlanto Junction / diaphragm / sub occipitals
- Csp and occipital traction
- Temporal release with occiput ipsilateral support
- Mastoid processes bilateral release
- Root of tongue release
- Mandibular unwinding
- Csp and occiput traction
- Reassess Sp of C2 to occiput
- Biodynamically....



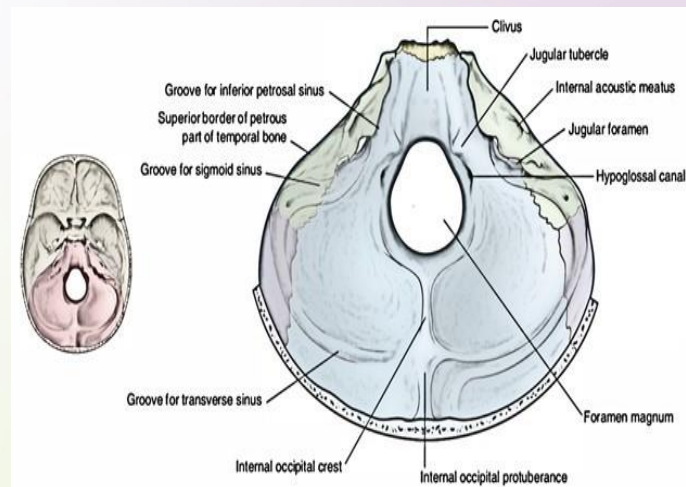
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# OsteoArticulationRelease Demo and Practice

**Treatment:**

- Assess Csp and TMJ ROM
- Seated: Assess and treat with muscle energy techniques SI joints and Lsp rotation
- Supine: Assess and treat any ilia dysfunction
- Assess upper Tsp and Csp joint movement
- Mobilize upper Tsp with contralateral clavicle compression and Csp rotation
- Assess and treat an elevated 1<sup>st</sup> rib with static compression, occipital distraction, eyes down and hands reaching to feet
- Assess and balance C1C2
- Temporal bone distraction, add eye and mandibular AROM
- Re-Assess Csp and TMJ ROM
- Biodynamically



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