TEMPOROMANDIBULAR JOINT DYSFUNCTION

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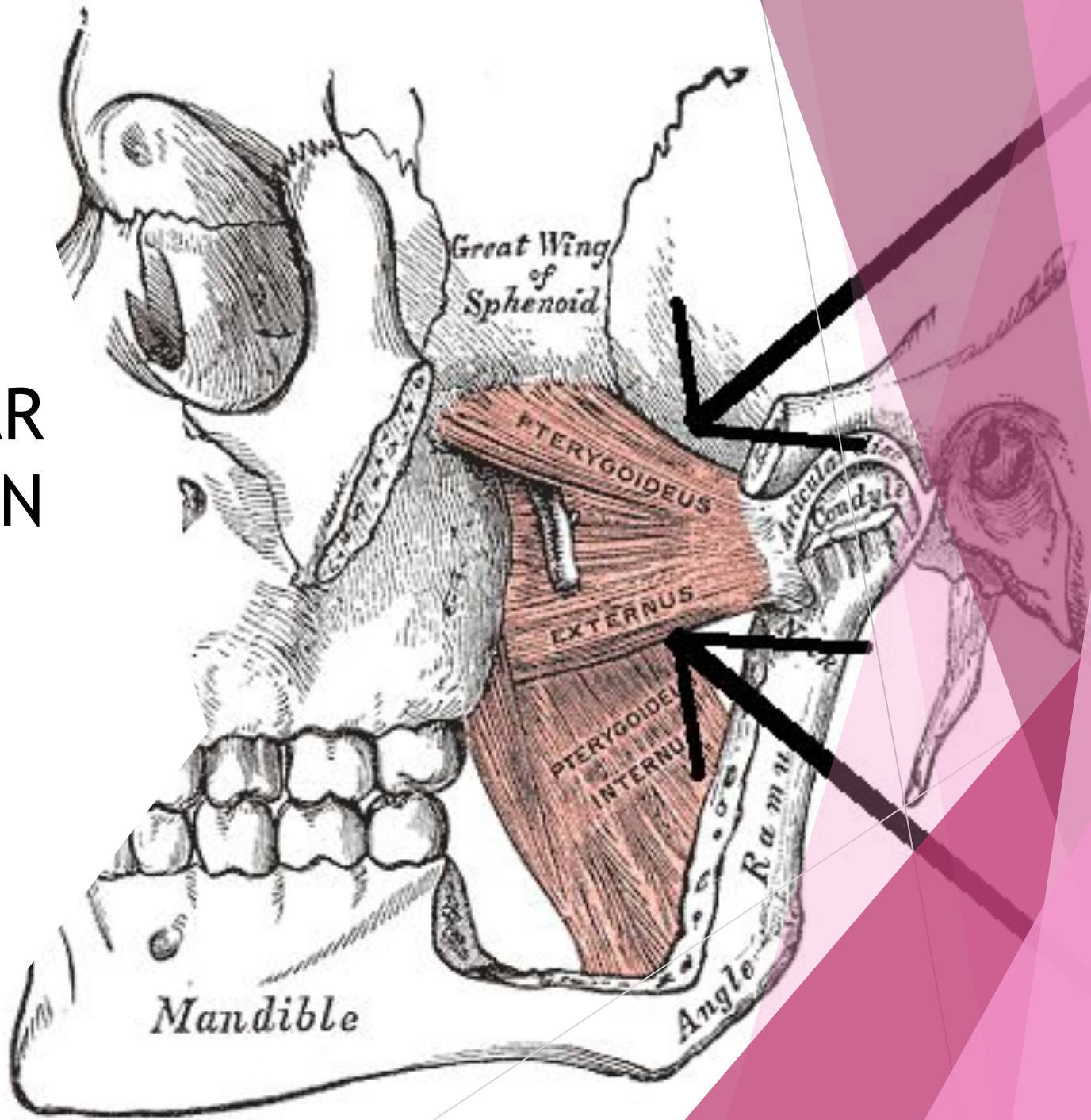
Pg.597



TMJ

- **TMJ is a disorder of the muscles of mastication, the temporomandibular joints and associated structures.**
- Terminology used by Dentists and DR's to describe the jaw positions used in evaluating proper mandibular motion is not clear.
- A combination of jaw, head and ear pain has been described clinically.
- DR. J. Costen (1934) described HA's and ear P in 11 people who were missing molars, theory was the height of posterior teeth helped maintain proper space at the TMJ, P than resulted. Psychosocial factors such as stress, lead to TMJ dysfunction.

TMJ ANATOMY & FUNCTION

- 2 temporomandibular joints are the most superior synovial joints in the body.
- TMJ joints have 2 components: **Rotation & Glide**
- Inferior portion which is the condyle: **allows for rotation.**
- Superior portion which is the temporal bone: **allows for gliding**
- Between the 2 bones: **meniscus or articular disc**

FACTORS CONTRIBUTING TO TMJ DYSFUNCTION

- 3 components must be present: **Predisposition, tissue alteration, and stress**
- **Predisposition:** Can be intrinsic (genetic development of mm's, ligaments and bones) or extrinsic (trauma to the neck, face or jaw)
- **Tissue alteration:** malocclusion, tooth loss, cranial bone misalignment, hypermobility, postural dysfunction, spasms, ischemia, and TP's.
- **Stress:** increase mm tone due to jaw clenching, bruxism, or chewing gum, popping or clicking.

FACTORS CONTRIBUTING TO TMJ DYSFUNCTION

- **Opening Lock or subluxation** occurs when the condyle is anterior to the articular eminence; the condyle is unable to return posteriorly and the jaw cannot close.
- **Closing Lock** occurs when the disc is displaced anteriorly and the condyle cannot reduce over the posterior portion of the disk into the disc depression; the jaw cannot open more than 10 mm and often there is premature dental contact on the same side as the disc displacement.
- Other factors are: incorrect swallowing patterns, mouth breathing and incorrect respiration

CAUSES OF TMJ

- Imbalances in the mm's of mastication-H+, spasms, TP's
- MM overuse-chewing gum BL or one sided
- Malocclusion-losing a tooth misaligns the whole jaw structure
- Cranial bone misalignment-Temporal bone most common
- Postural dysfunction
- Increased stress
- Trauma
- Sinus blockage or infection
- Joint pathology- hypermobility, capsulitis or synovitis

MUSCLES OF MASTICATION

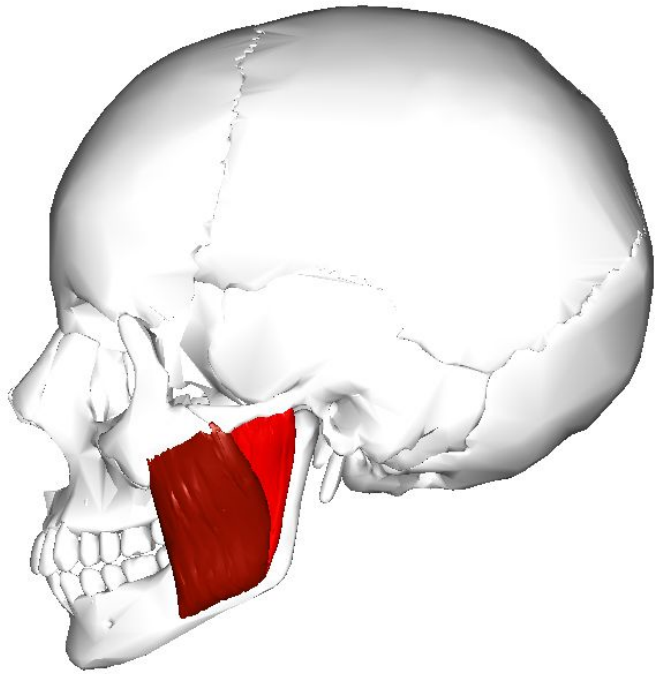
TEMPORALIS

- O: Temporal fossa
- I: Coronoid process of the mandible
- A: Elevates the mandible (closes the jaw)
- To palpate, ask the client to gently clench their jaw

MUSCLES OF MASTICATION

MASSETER

- Superficial and deep layers
- O: Zygomatic arch
- I: to the angle of the mandible
- A: Elevates the mandible
- To palpate externally, ask the client to clench their jaw.
- To palpate intra orally, therapist places gloved finger into the client's mouth between the cheek and molars, ask the client to gently clench.

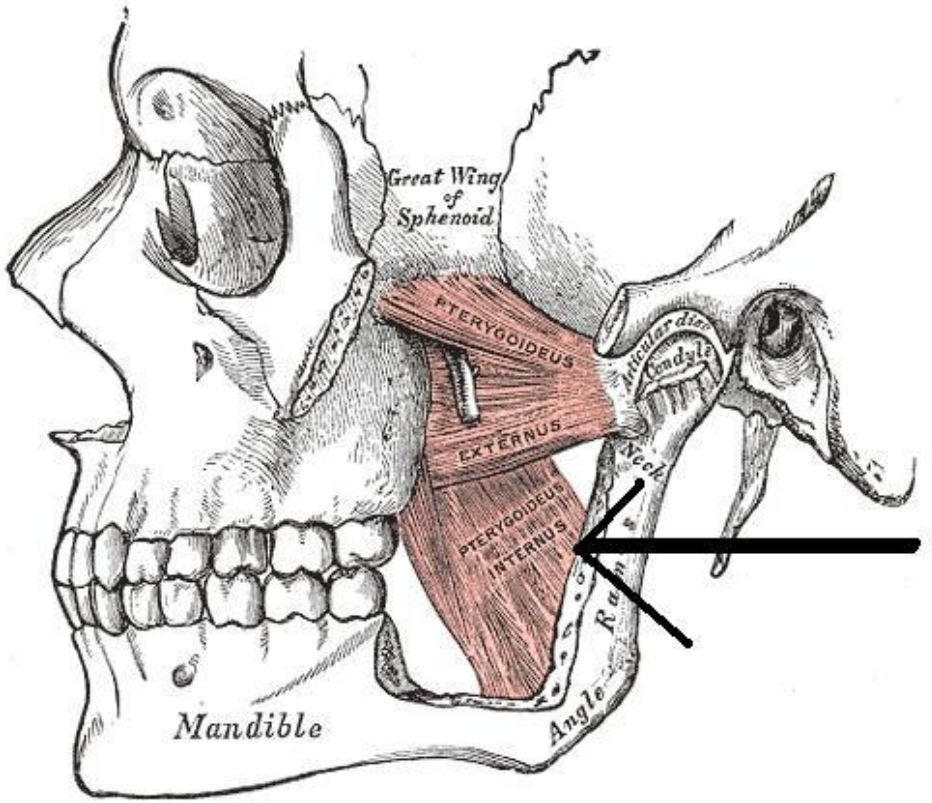


MUSCLES OF MASTICATION

MEDIAL PTERYGOID

- O: Runs from the lateral pterygoid plate of the sphenoid bone
- I: To the inner aspect of the angle of the mandible
- A: BL, elevates the mandible, Unilaterally one muscle moves the mandible to the opposite side
- To palpate mm externally, first side bend the clients head to the side being palpated, palpate along the inner surface of the mandible at the angle while the client is asked to clench the jaw
- Intra-orally, using gloves finger is first placed on the last lower molar, than slid around to the medial surface and inferiorly past the gum towards the floor. Keeping the pad of the finger against the inner surface of the mandible, the finger is then slid posteriorly to medial pterygoid.
- To contract the muscle isometrically, the therapist hooks two fingers of the non-palpating hand over the lower front teeth, the client is than asked to close the jaw.

MEDIAL PTERYGOID

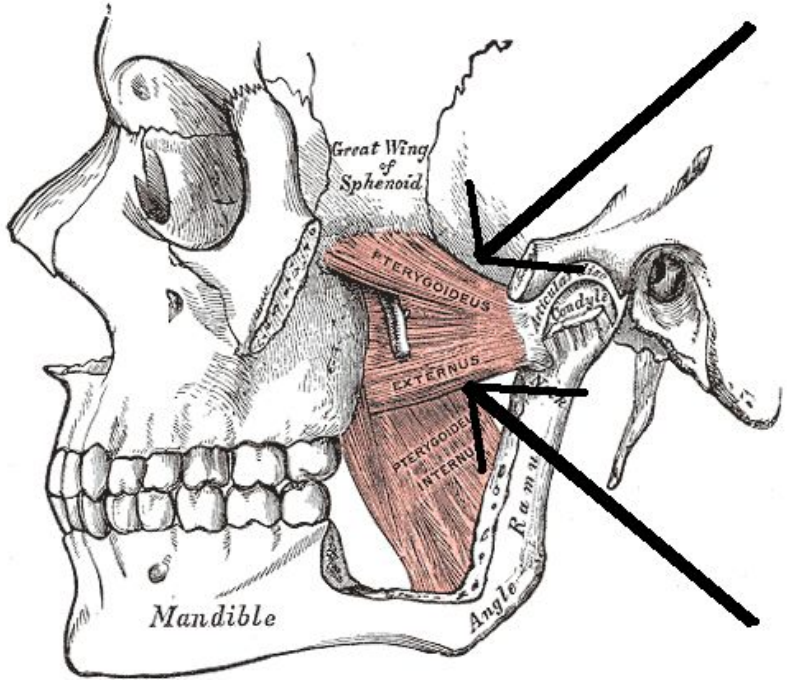


LATERAL PTERYGOID

LATERAL PTERYGOID

- O: Superior and inferior portions. Superior runs from the sphenoid bone posteriorly. Inferior runs from the lateral pterygoid plate
- I: Superior inserts the temporomandibular joint capsule and articular disc. Inferior inserts on the neck of the mandible.
- A: Superior pulls the disc anteriorly when the mandible opens. Inferior depresses and protrudes the mandible BL, pulls the jaw to the opposite side when acting unilaterally.
- To palpate externally, first open the jaw 2 cm. It is found 2cms anterior to the external auditory meatus, inferior to the zygomatic arch and through the mandibular notch. The mm is palpated through the masseter mm. To isolate lateral pterygoid, ask the client to resist depression of the mandible.
- To palpate intra-orally, using gloves placing between the cheek and the teeth, with your fingernail against the last upper molars. Ask the client to open the jaw and move it to the side being palpated to allow the next movement

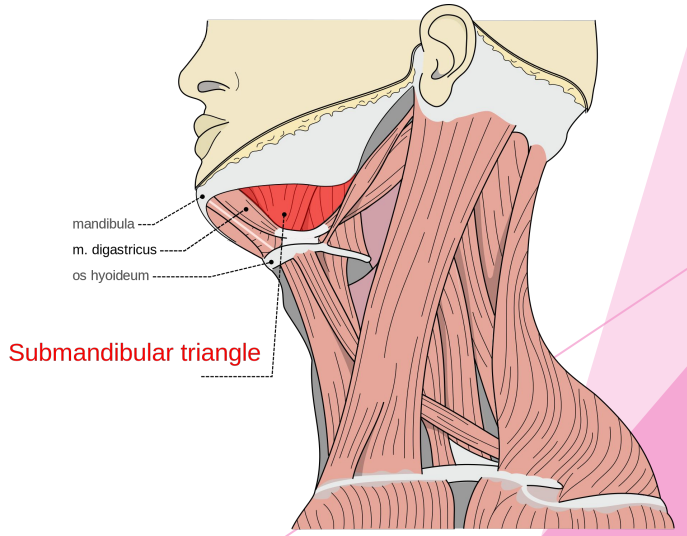
LATERAL PTERYGOID



- The finger is slid superiorly and posteriorly between the maxilla and the coronoid process of the mandible, into the hollow at the roof of the cheek. Ask the client to resist depression.

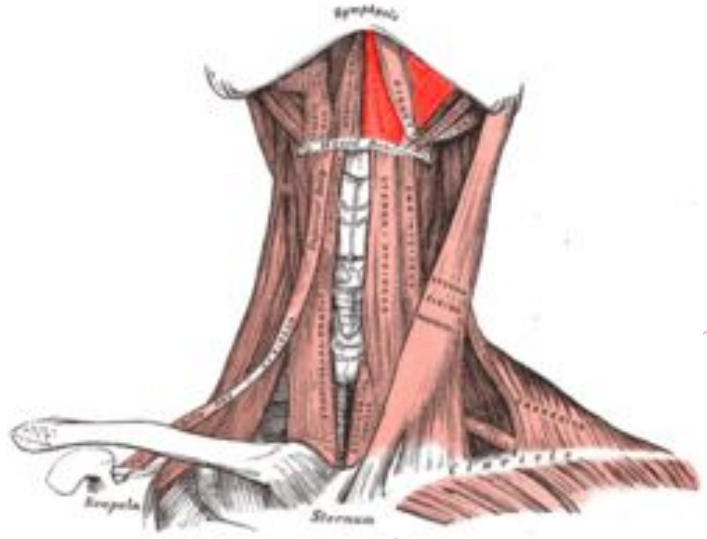
DIGASTRIC

- Digastric has 2 bellies
- O: Posterior belly attaches to mastoid notch and common tendon attaching to the hyoid bone, than continues as the anterior belly.
- I: Attaches to the inside of the mandible at the symphysis.
- A:BL Depresses and retracts the mandible; unilaterally, moves the mandible to the same side.
- To palpate, ask the client to open their jaw against resistance, posterior belly is located between the angle of the mandible and mastoid process, anterior is close to the midline of the hyoid and mandible.



MYLOHYOID

- O: Attaches inside of the entire mandible
- I: Runs to the hyoid bone, covers the entire floor of the mouth
- A: Depresses the mandible when the hyoid is fixed and tightens the floor of the mouth.
- To palpate, ask the client to depress the mandible against resistance. Externally palpate on the inner aspect of the mandible, from the ramus to the angle.
- Intra-orally, using gloves, place finger between the lower teeth and tongue. Using your finger pad slid down the inner surface of the mandible to the floor of the mouth. Palpation is as far as the last molar when mylohyoid ends.



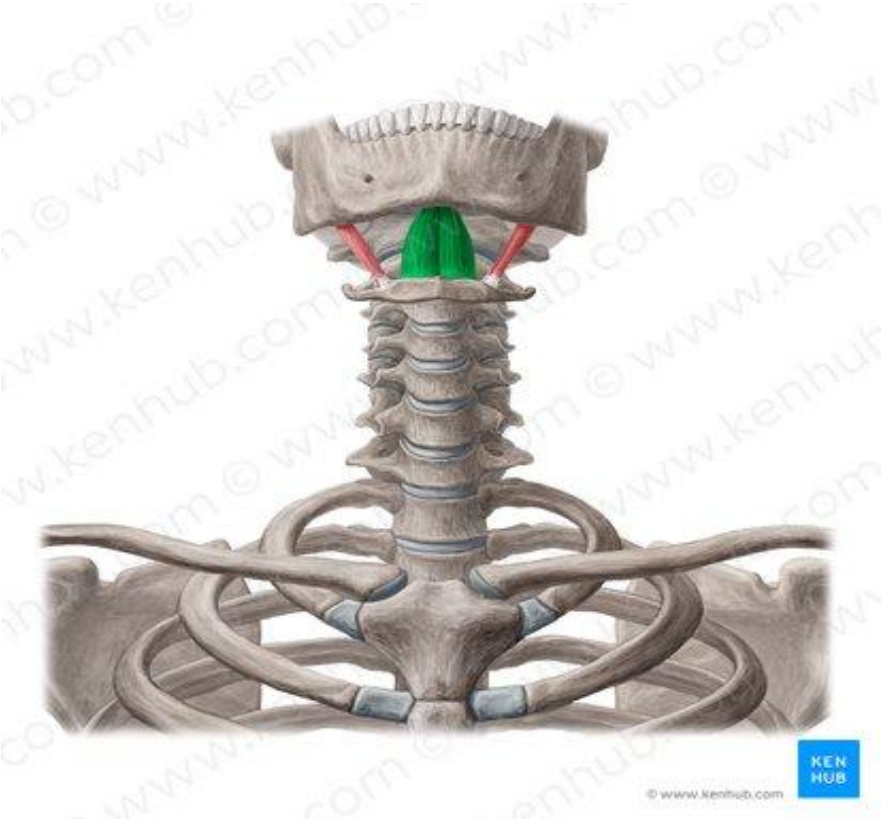
GENIOHYOID

O: INF mental spine of mandible

I: Hyoid bone

A: Depresses the mandible

Lies on top of the Mylohoid and supports the root of the tongue. ANT portion of geniohyoid is palpated in conjunction with mylohyoid.



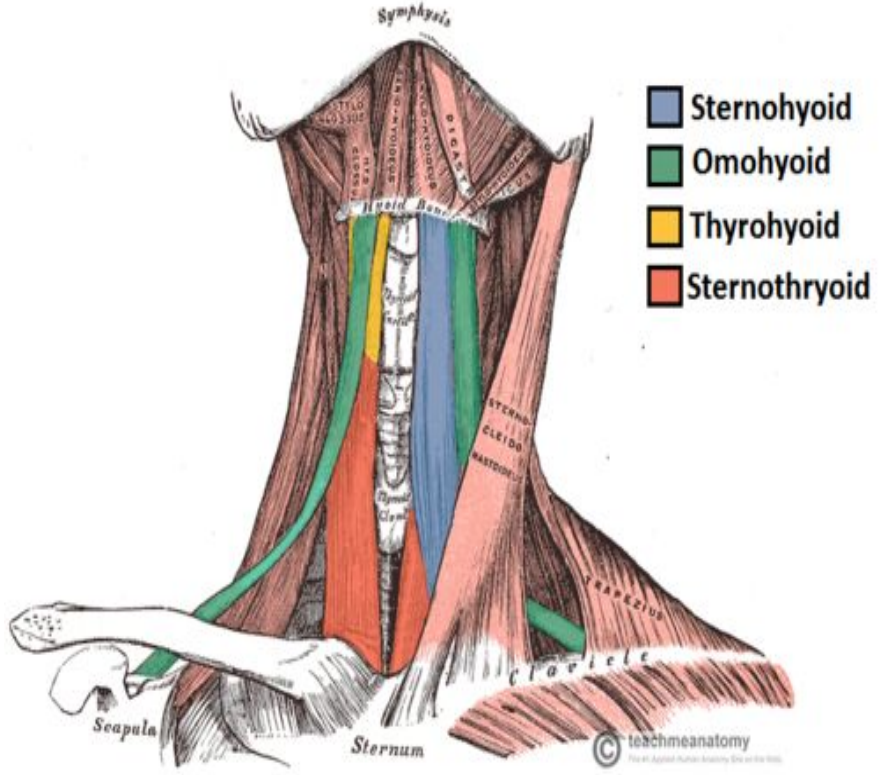
INFRAHYOIDS

O: INF from the hyoid ANT to trachea

I: Sternum

A: Depresses mandible

Gentle resisted depression of mandible makes mm palpable



MEDICAL TREATMENT OF TMJ

- Medication-NSAIDS to reduce P and inflammation, mm relaxants for spasms
- Dental splints
- Physiotherapy
- Behavioural therapy
- Surgery has been used but not successful

SYMPTOM PICTURE

- TMJ may be unilateral or BL
- Most common in ages 15-45 and more common in women 5:1
- Predisposition, tissue alteration, and stress
- Postural dysfunction
- Other pathologies such as Fibromyalgia, OA, RA

SYMPTOM PICTURE

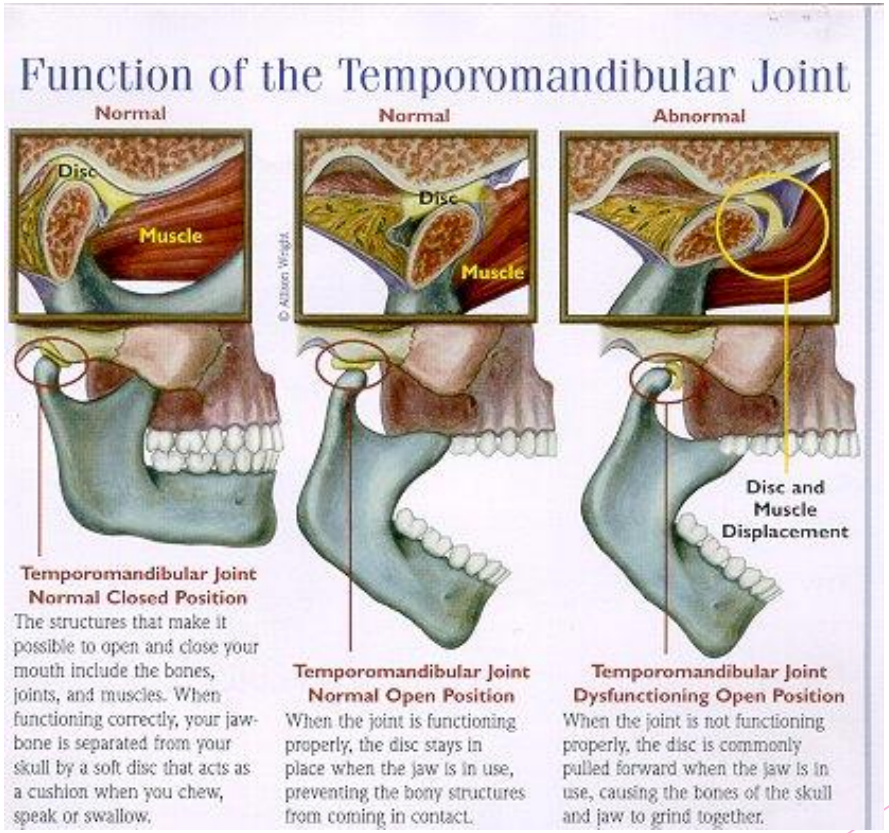
EARLY STAGE

- Muscular incoordination and subluxation
- TMJ joints sounds, clicking and popping sounds with jaw movement
- Jaw P with movement or jaw clenching, P more worse in the morning, tenderness with muscles of mastication and joint capsule
- HA usually frontal or temporal
- Spasms, TP's and H+ may occur in the mm's of mastication
- Shoulder and neck tightness
- Decreased ROM of the jaw, especially when opening
- Ear stuffiness, hearing loss
- Trauma: which than will produce edema, inflammation, adhesions

SYMPTOM PICTURE

LATER STAGE

- If not corrected, mm's of mastication may develop contractures, limiting ROM
- Degeneration of the disc, condylar hear and articular eminence may occur.
- Please read Pg's 607-608 on Postural Assessment and Palpation



TESTING

- AF ROM of the mandible is reduced due to P
- Temporomandibular joint AF ROM test is done. If the therapist see's a C-wobble, indicating a capsular source on the side of the jaw deviates towards, or an S-wobble, indicating a muscular source such as TP's.
- Reduced mandibular depression= BL TP's in masseter
- AF ROM of the C/sp may be reduced
- PR ROM: Painful end feel may be present, clicking and springy block end feel are present; PR ROM of the C/sp may be reduced
- AR Isometric testing, reveals weakness or P

SPECIAL TESTS

Three Knuckle Test

- Positive with TP's in the muscles that elevate the jaw

CONTRAINDICATIONS

- When treating anterior C/sp, do not compress the carotid artery
- Do not treat the SCM at the same time, client may feel choked
- Avoid deep work over the styloid process of the temporal bone, potentially fragile
- Frictions are CI'd with anti inflammatories and blood thinners
- Do not use latex gloves for intra-oral work if the client has a latex allergy
- Avoid using heavy or deep pressure when working intra-orally, mm's may be delicate or tender
- TMJ may be a result of abuse or history of abuse, work within the clients tolerance while working intra-orally

TREATMENT

- Mm stripping in short strokes for adhesions
- PF AROM is used to normalize proprioception: in between working orally get the client to open and close within P tolerance
- Joint play for hypomobile joints: Traction of the mandible
- Once intraoral work is done, remove your gloves and continue with suboccipital work GTO
- Passive stretching, long axis traction of C/sp, Inferior traction of the mandible
- PR ROM of C/sp
- Treatment is finished with effleurage to shoulders, neck and scalp.

TREATMENT

TREATMENT GOALS

- Reduced P, decrease SNS firing
- Maintain local circulation
- Reduce inflammation and edema if present
- Reduce fascial restrictions, stretch shortened mm's
- Reduce H+, and TP's
- Mobilize hypomobile jts

- **Positioning**: Prone, side lying and supine are all indicated
- **Hydro**: Heat to shoulder girdle, neck and jaw.
- If inflammation is present, apply cold
- Tx compensatory structures first, DDB
- If edema is present, start direct treatment with lymphatic drainage, beginning with nodal pumping at the terminus.

TREATMENT

- Effleurage and general Swedish techniques proximal to the affected joint
- If no edema is present, fascial glide to assess, than fascial techniques are used at neck and jaw. Skin rolling, cross hands and fingertip kneading.
- Passive stretching: Tight pectoral muscles
- Effleurage and petrissage at C/sp, being specific to anterior Scalenes, pec major, minor and subclavius.
- SCM treated unilaterally: Pincer grasp or O & I technique
- Joint play techniques for C/sp, shoulder girdle and thorax
- Muscles of mastication are now treated outside the mouth, temporalis, masseter, medial pterygoid/lateral pterygoid are treated using fingertip kneading, mm stripping, and ischemic compressions. Gentle fascial spreading can also be used within clients P tolerance on temporalis and masseter.

TREATMENT

- Temporalis and masseter: direction of strokes is from superior to inferior. O & I technique is used on temporalis attachments, zygomatic and mandibular attachments of masseter.
- TP's in temporalis are tx'd
- Intra-orally masseter, medial and lateral pterygoid and mylohyoid are tx'd.
- Specific consent are required, a signal should be arranged so tx can be stopped if necessary.
- Vinyl or latex gloves must be worn by the therapist, wash prior to putting the gloves on. MAKE SURE YOUR CLIENT IS NOT ALLERGIC TO LATEX.
- Pressure here is gentle, O & I techniques are used, gentle mm stripping, cross fibre work, ischemic compressions.

SELF-CARE

- **Self-massage**: To affected muscles, mm stripping and gentle ischemic compressions
- **Hydro**: Heat, Ice if inflammation is present
- Suboccipitals are stretched using chin tuck 30-3-3
- Relaxation exercises DDB
- Isometric active resisted exercise for all muscles involved
- Refer out to Physiotherapy, or a Dentist
- **Tx plan:** 2x/week for 2 weeks, than RE-AX, than 1x/week for several months based on prognosis.