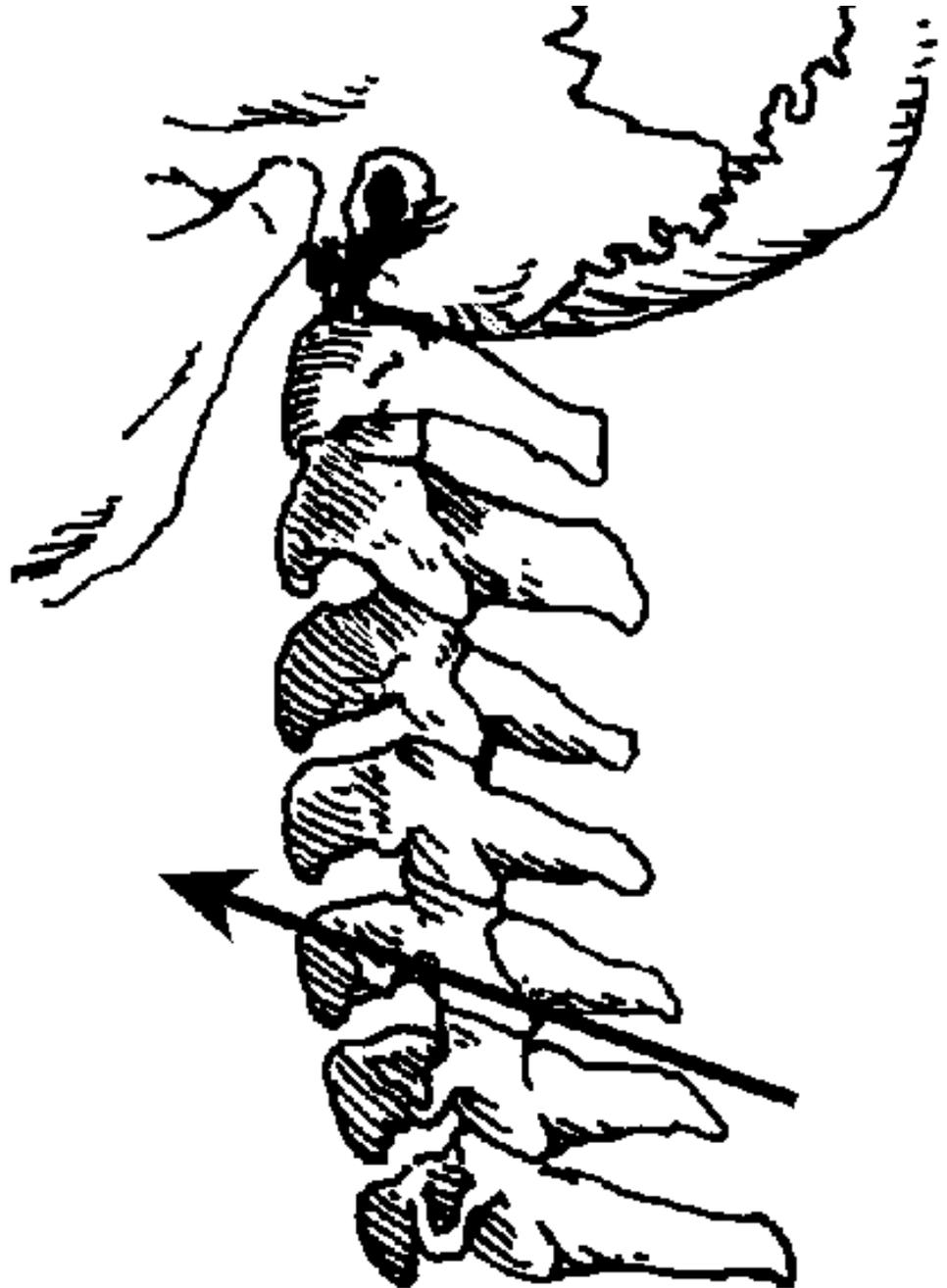


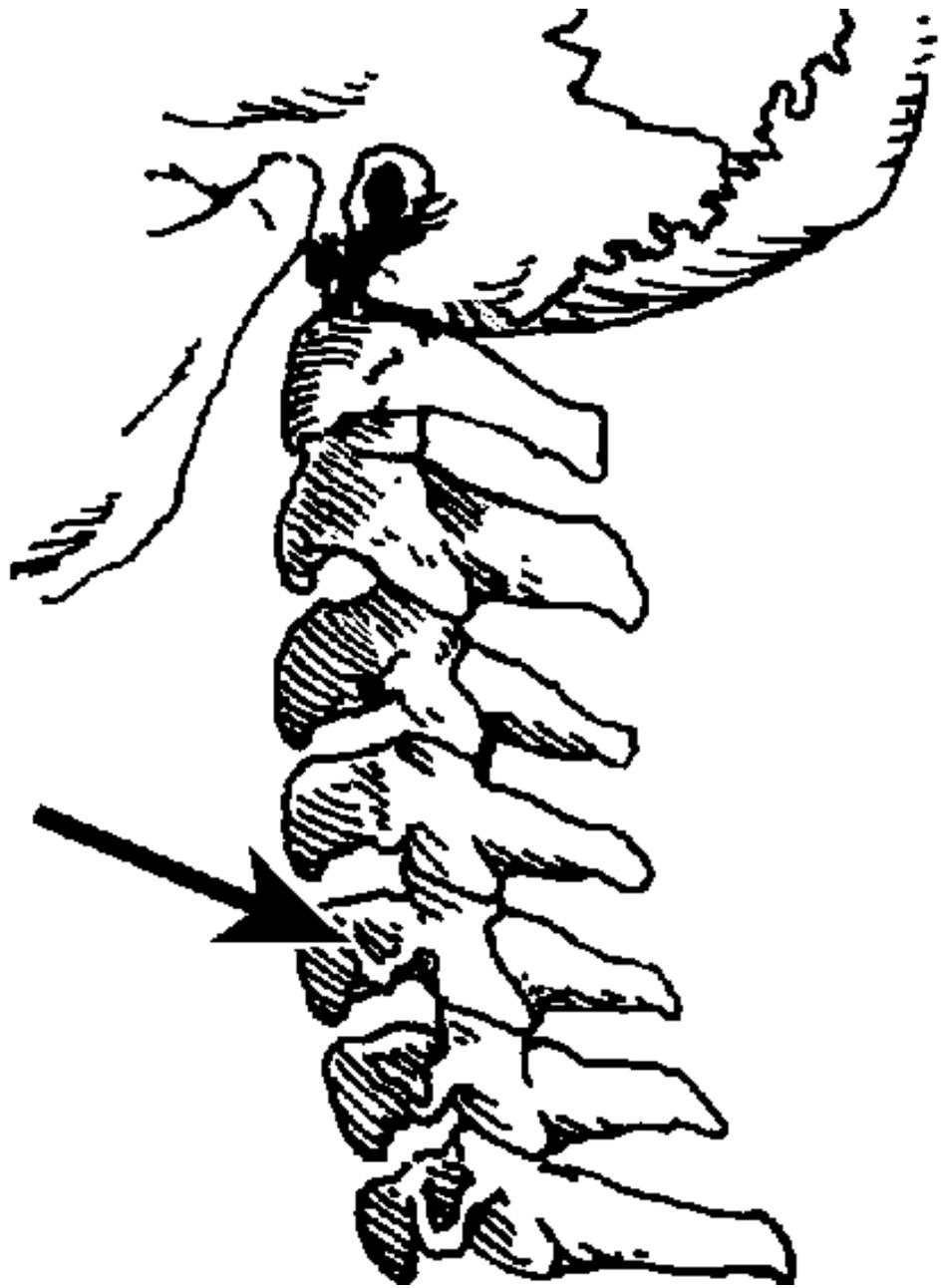
Anterior cervical subluxation(hidden cervical disc)

- Kabat,“ cervical spinal cord compression by cervical disc herniated nucleus pulposus
- Lower cervical subluxation-anteriorly, superiorly
- C5,C6,C7
- Spinous process tender, head forward posture
- C5-C8 muscle test weak in the clear or with flexion

- 자세의 평가가 중요
- 증상이 없는 경우도 많다.
- Cervical disc 에 이것을 치료해야 빨리 해결 되는 경우 많다.
- 주로 C5
- sitting, standing, prone 모두 static challenge (direct challenge와는 약간 다름) 지속적으로 pressure를 45도 위쪽으로 facet joint 방향으로 힘을 주면서, 지표근육검사를 한다.
- 한 쪽씩 검사

- 머리를 숙이면 C5, 6, 7 myotome의 근육이 약해진다.
- Thoracic subluxation이 동반되는 경우 많다.
- Cervical subluxation이 동반될 수도





Prone adj , unilateral





Sitting, unilateral



Supine, unilateral



Bilateral lesion adj by Dr. Goodheart



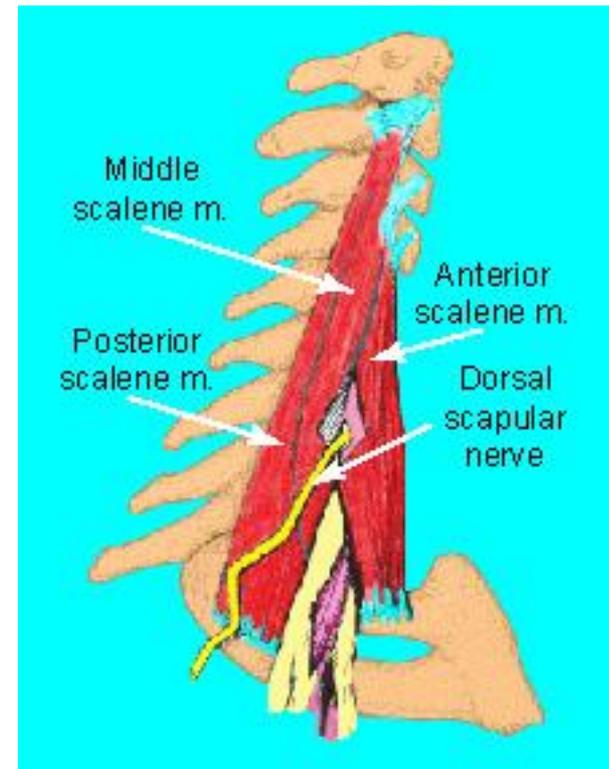
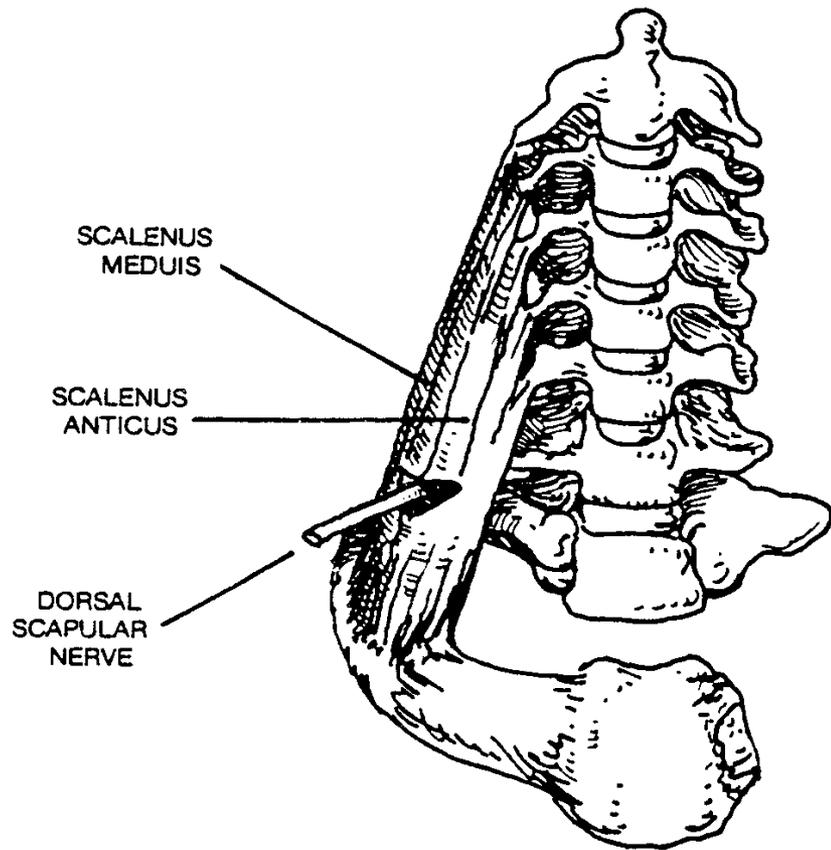
- Bilateral anterior subluxation
 - 관련된 경추 바로 아래 SP를 index로 잡고 stabilize시키면서 다른 손으로 환자의 머리와 턱을 잡고 위로 순간적으로 당긴다.
- Unilateral-sitting, supine

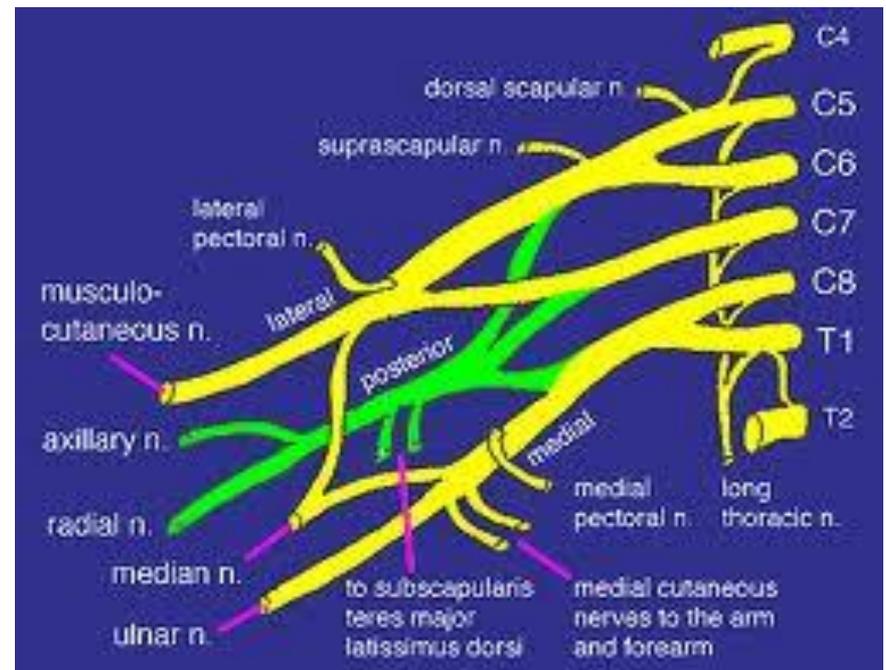
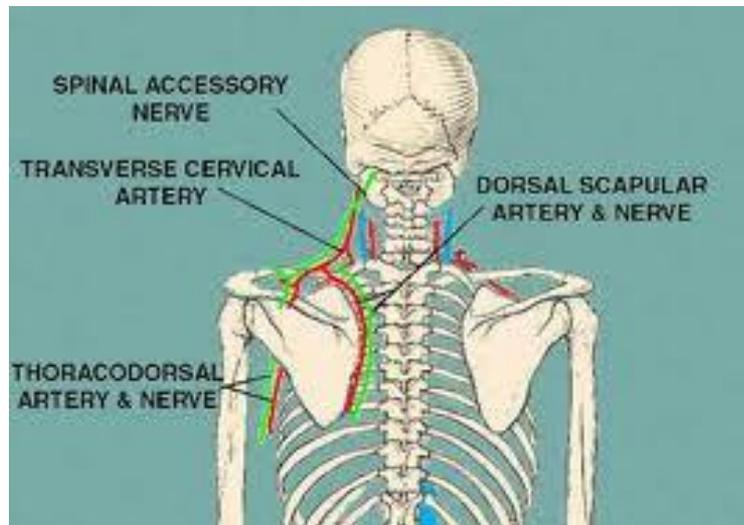
관련된 근육..

- Neck flexors,extensors
- Scalene-short, test positive with fascial flush, strain/counterstrain
- Cervical extensor-like upper trap weak
- Head forward posture-check pelvic anteriority(weak G-max, abdominal)
 - Foot dysfunction-positive support reaction
- Subtle dorsal scapular nerve entrapment by scalene.

Dorsal scapular nerve

- MOTOR(no sensory)
 - C5(predominate)
 - C4,C6
 - Rhomboid
 - levator scapular(C3,C4에서도 온다)
- Piece scalenus medius(entrapment발생)





증상

- Medial border of scapula에서 통증
- Arm, forearm의 바깥쪽으로 방사통
- Generalized dull, ache
- Trauma to scalene 근육(hyperextension-hyperflexion of whiplash injury)
- 화가나 전기공 등 고개를 뒤로 젖히고 위를 쳐다보며 일하는 작업에서 빈번.

검사

- 만성 entrapment인 경우 마름모근(능형근)이나 어깨들어올림(견갑거)근에 근위축증이 온다
- rhomboid-scapular winging이 serratus anterior보다 미세하다.
- 환자의 자세:head forward posture와 목의 lateral flexion, rotation을 통해 scalene 근육육을 이완시켜 dorsal scapular nerve의 압박을 풀어주려 한다.

검사

- 두 근육에 압통점 있다
- Scalenus medius아래를 누르면 두 근육에 통증이 증가하기도 한다.(팔까지)
- Rhomboid, levator scapulae이 처음부터 약하면 목의 자세를 위치변경 시켜주면서 강해지는지 확인한다.(보통 환측으로 고개를 돌리고 기울일 때 가장 강해진다.)
- 만일 두 근육 다 강하면 목을 뒤로 젖히거나 돌리게 해서 다시 약해지는지 확인한다.
- 만일 다른 근육들이 약해지면 cervical spine, reactive muscle, 등등이 원인.

Unilateral entrapment of dorsal scapular nerve

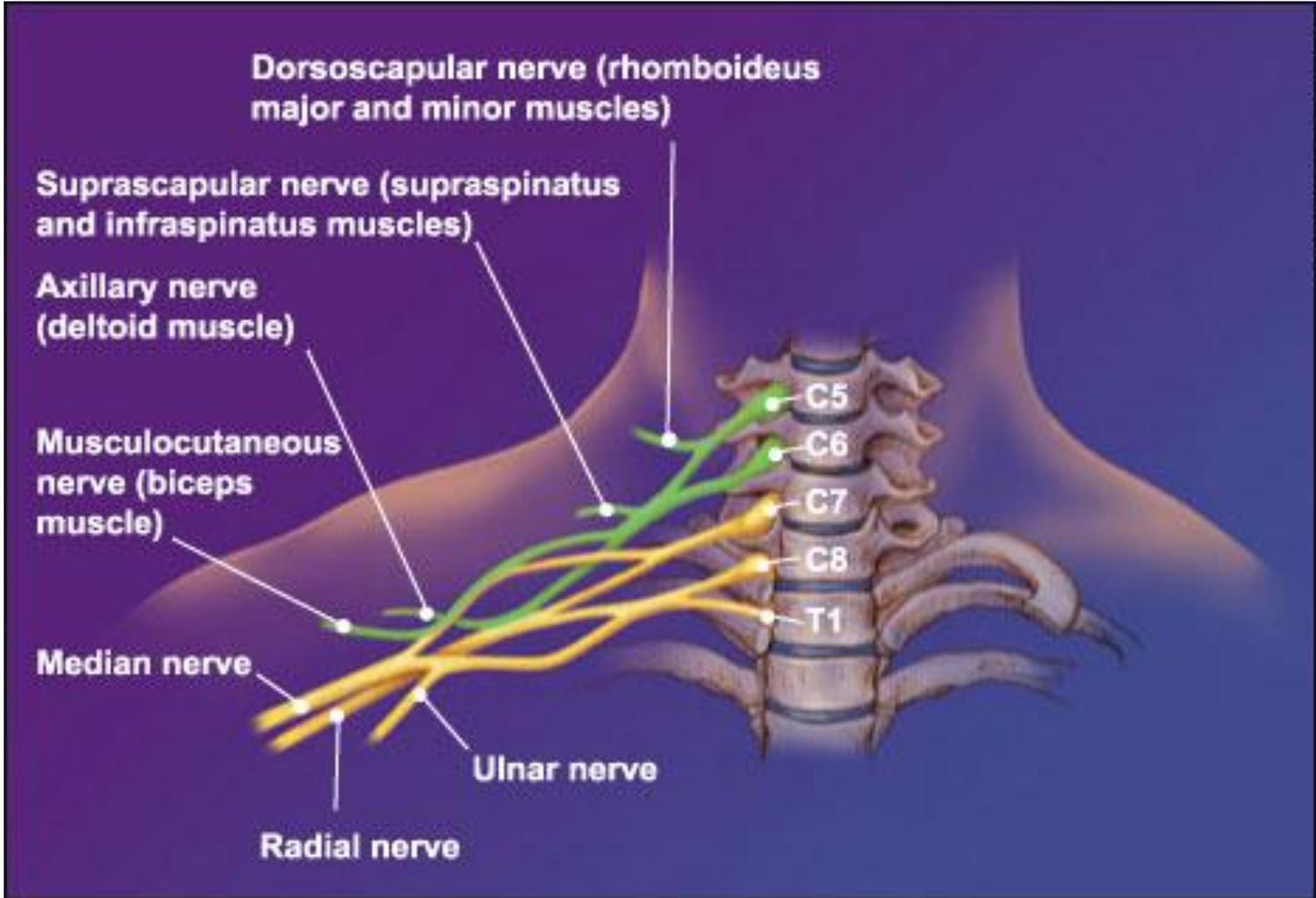
- rhomboid과 levator scapulae 양쪽 근육의 불균형 초래
- Spinal column이 이 근육의 origin이기 때문에 cervical or thoracic subluxation 초래하기도 한다.
- 따라서 이 부위에 subluxation만 치료하면 재발한다.

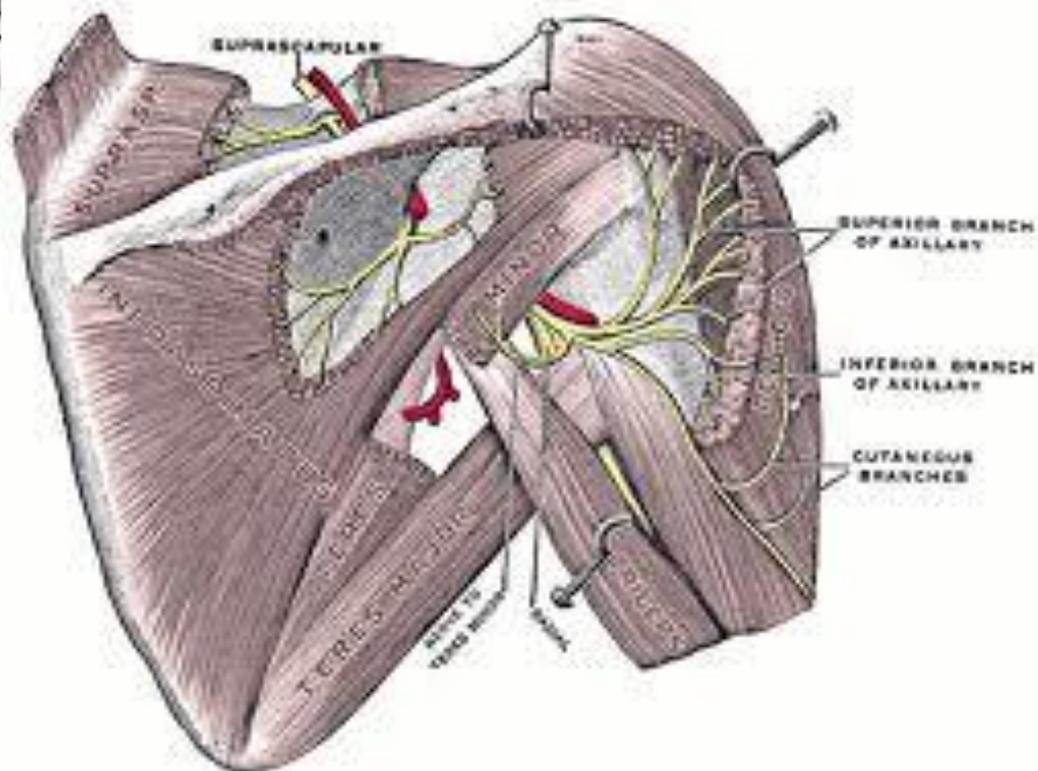
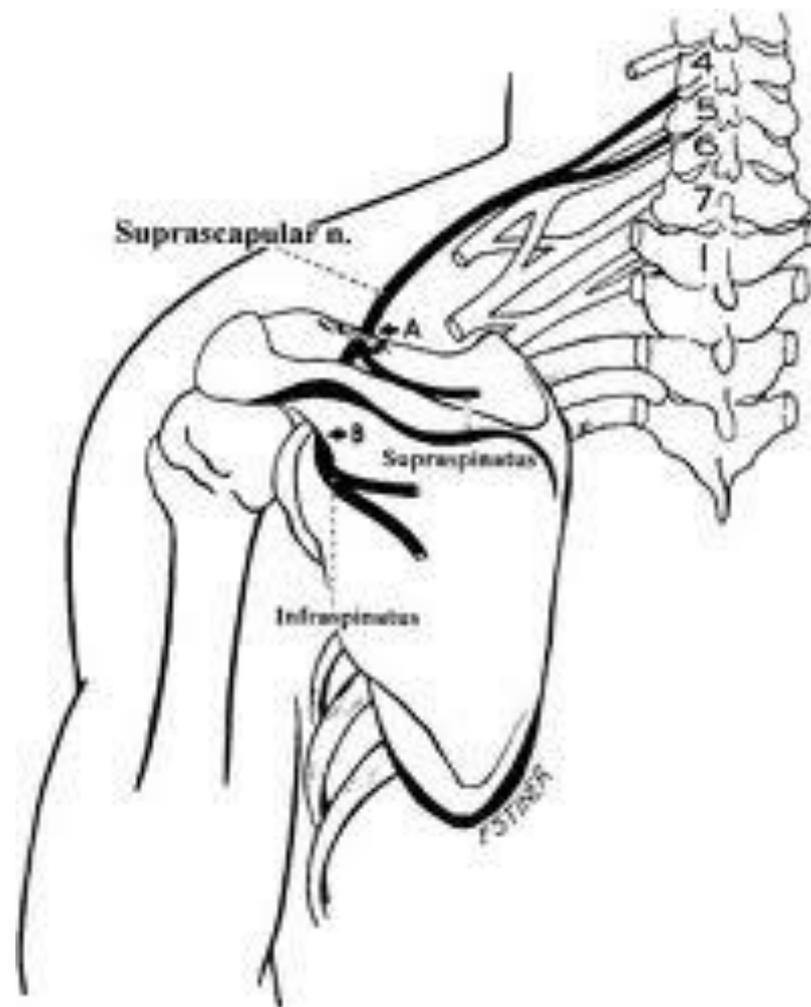
AK 치료

- Scalenus medius를 fascial flush와 strain/counterstrain으로 검사하고 치료한다.
- Hidden cervical disc가 함께 잘 발견됨
- Head forward posture
- Weak cervical extensor with anterior cervical subluxation
- Suprascapular nerve entrapment-rhomboid가 약함으로 인해 excessive scapular protraction되므로 같이 나타나기도 한다.

Suprascapular nerve

- Upper trunk of brachial plexus from C5,C6 root.
- Pass down, parallel to the omohyoid, traverse beneath the upper trapezius to superior edge of the scapula, and then through the suprascapular notch.
- The suprascapular notch is roofed by the transverse scapular ligament-foramen





Suprascapular vessels, nerve

- Cross above the foramen
- 가끔 vein이나 suprascapular 동맥의 가지가 foramen을 관통하기도 한다
- 신경은 supraspinatus을 지배하고 glenohumeral과 acromioclavicular joint로 articular branch가 간다.
- Supply sensory and sympathetic fibers to 2/3 of the shoulder capsule

Suprascapular nerve

- Wind around the base of spine of scapula-supply infraspinatus
- Compression from:
 - fibro-osseous tunnel
 - Stretching of the nerve
- 가장 흔한 압박이유는 poor scapulohumeral rhythm
- Overhead work이나 팔을 지나치게 abduction과 external rotation한 경우 가능성높다.

증상

- Deep, diffuse pain, poorly localized- posterior and lateral shoulder
- Pain referred to neck, arm, upper anterior chest, to ac joint

검사

- Cross-body arm adduction test-두 근육이 약해지면-entrapment
- Rhomboid 근육이 약하면 excessive scapular motion-origin/insertion치료와 5 factor치료..
 - Dorsal scapular nerve entrapment일수도.
 - Anterior cervical subluxation과 늘 관련.
 - Hypertonic scalne
 - Weak cervical extensor
 - Head forward posture

AK 치료

- 가장 흔한 suprascapular nerve entrapment는 excessive scapular protraction and/or rotation(stretch nerve)
- Scapular protraction하고 supra,infraspinatus 근육 검사하면 약해진다.
- Anterior cervical subluxation치료
- Dorsal scapular nerve치료
- Rhomboid 치료

Thoracic outlet syndrome

흉곽출구 증후군

- Scalene synd
- Costoclavicular synd
- Pectoralis minor syn
- Cervical rib syn

Anterior Scalene Symptoms

- Numbness in the hand and fingers radiating up into the forearm
- Pain from the shoulder to the hand and cold hands with symptoms similar to Raynaud's phenomenon.
- Entrapment of the brachial plexus causes sensory symptoms on the ulnar side of the hand.
- Small muscles of the hand may appear to have atrophied.
- Signs of venous entrapment

진단

- Ant scalene contraction하면서 팔의 근육을 검사

Treatment

- Test for fascial involvement of the scalenes
- Test for weakness of the neck extensors
- Test for conditions creating hypertonicity in the scalenes
 - Cervical dysfunction
 - Dropped arch, excessive pronation
 - TMJ
 - Posture

Treatment Procedures

- Cervical manipulation
- Travell treatment to scalenes with stretching
- Strain counterstrain to Levator scapula
- Exercises for neck extensors
- PNF to neck muscles

Home Care

- Cervical Pillow - instructions
- Massage - instructions
- Neck Extensor exercises – instructions
- Posture exercise
- Nutrition: omega-3, Myosedate

Costoclavicular Symptoms

- Entrapments of the brachial plexus, the subclavian artery and/or the subclavian vein as they traverse beneath the clavicle and over the first rib.
- Symptoms are transient and brought on by motions of the clavicle or the first rib.

Costoclavicular Symptoms

- Numbness in the hand and fingers radiating up into the forearm
- Pain from the shoulder to the hand and cold hands with symptoms similar to Raynaud's phenomenon.

Differential Diagnosis

- Hidden cervical disc
- Anterior Scalene
- Pectoralis minor Syndrome

Treatment

- Test for weakness of the [subclavius](#)
- Test for muscle imbalances of the clavicle
- Test for subluxations of the first rib and clavicle

Treatment Procedures

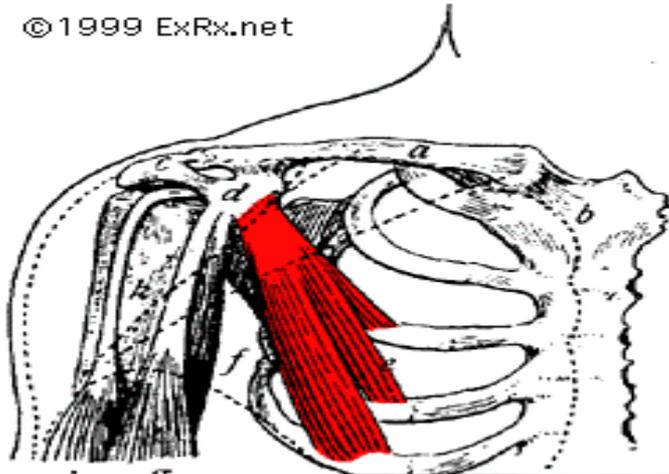
- Cervical, clavicle, 1st rib manipulation
- Origin/Insertion to the subclavius
- Balancing of muscles attaching to clavicle
- Exercise for subclavius
- PNF to neck - shoulder

Pectoralis Minor Symptoms

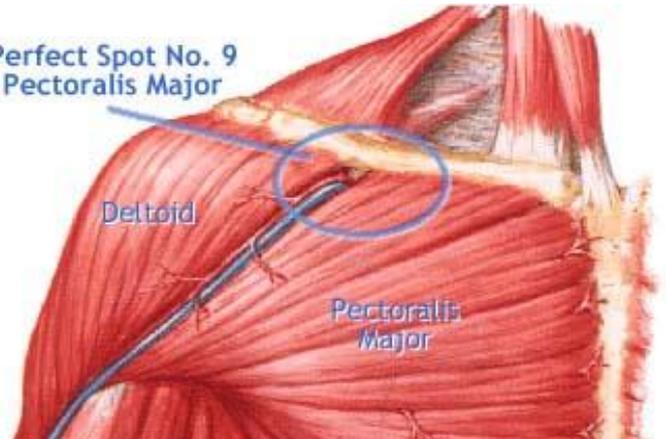
- Entrapment of brachial plexus, axillary artery and subclavian vein between pectoralis minor, humeral head and coracoid process of the scapula.
- Symptoms are usually transient. More vascular and lymphatic
- Numbness in the hand and fingers radiating up into the forearm
- Pain from the shoulder to the hand and cold hands with symptoms similar to Raynaud's phenomenon.

pect

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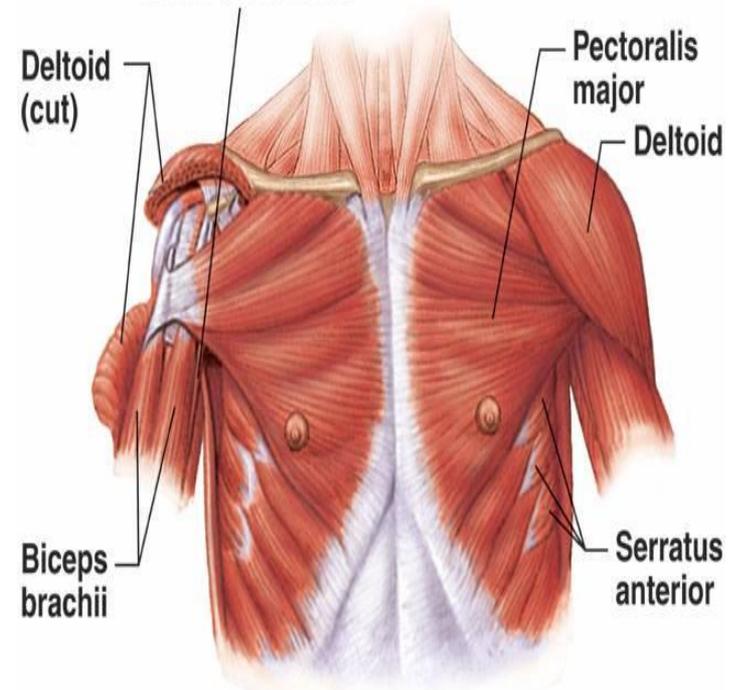
Perfect Spot No. 9
Pectoralis Major



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Coracobrachialis



Pectoralis Minor Diagnosis

Have the patient fully contract the pectoral muscles as a weight lifter would do. Holding this retest:

Triceps

Wrist extensors

Opponens

Differential Diagnosis

- Hidden cervical disc
- Anterior Scalene Syndrome
- Costoclavicular Syndrome

Treatment

- Test for hypertonic pectoralis minor
- Test for weak shoulder extensors
 - Latissimus
 - Rhomboids
- Test for cervical subluxations

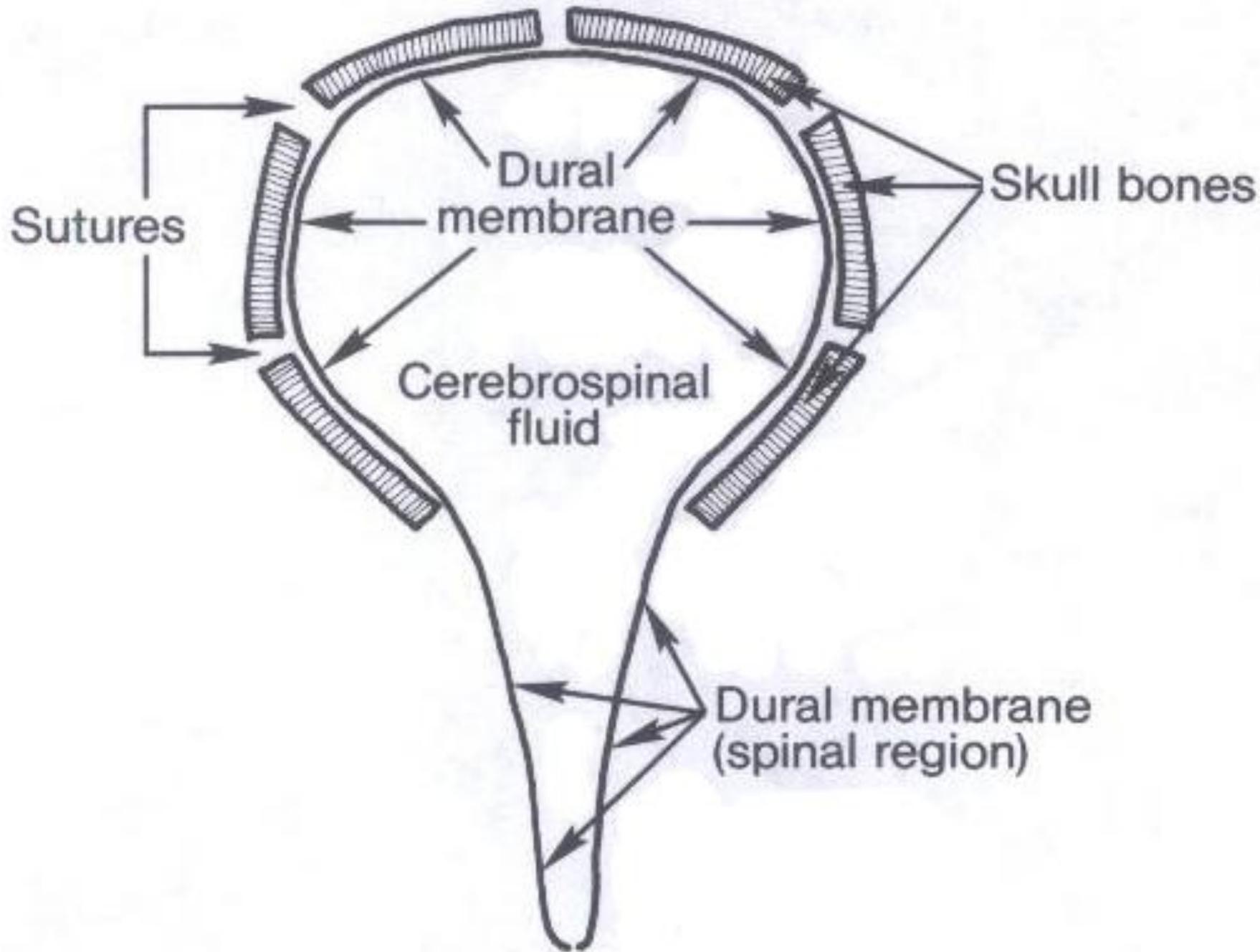
Treatment Procedures

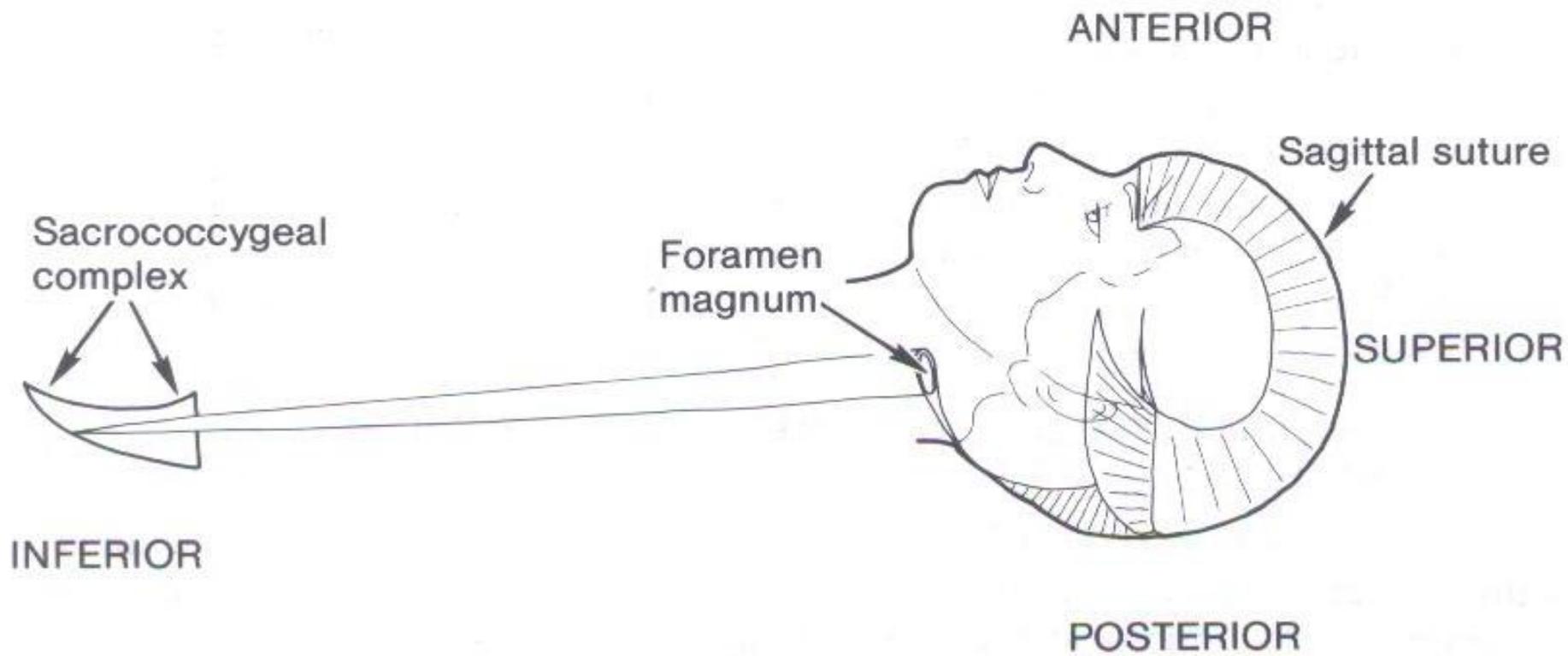
- Cervical, thoracic & rib subluxations
- Travell technique for pectoralis minor
- Balancing of the shoulder extensors
- Exercise for shoulder extensors
- PNF to shoulder

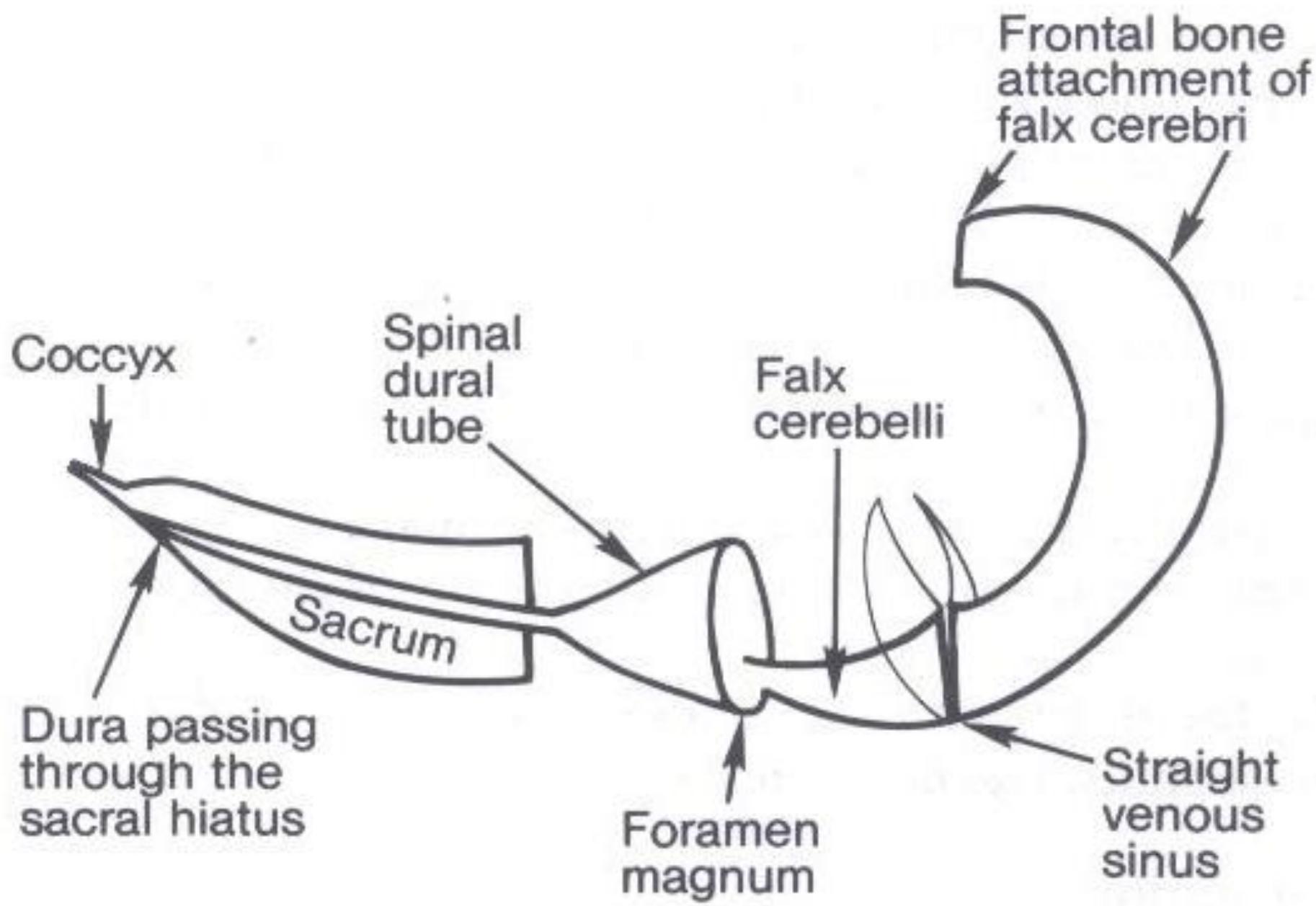
Home Care

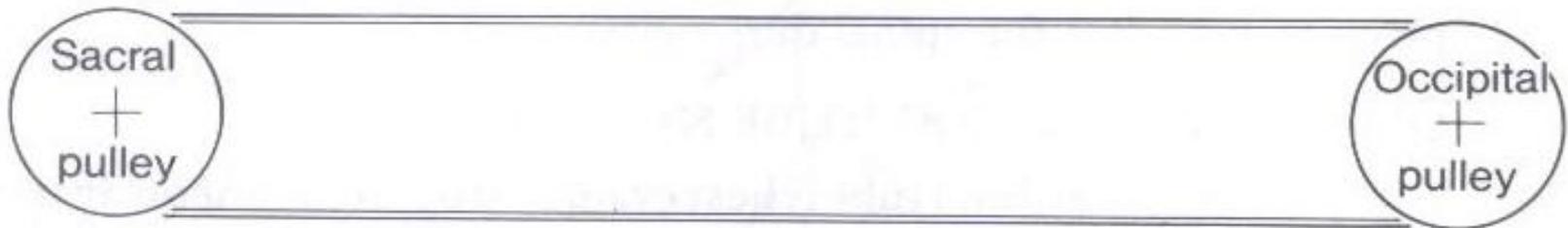
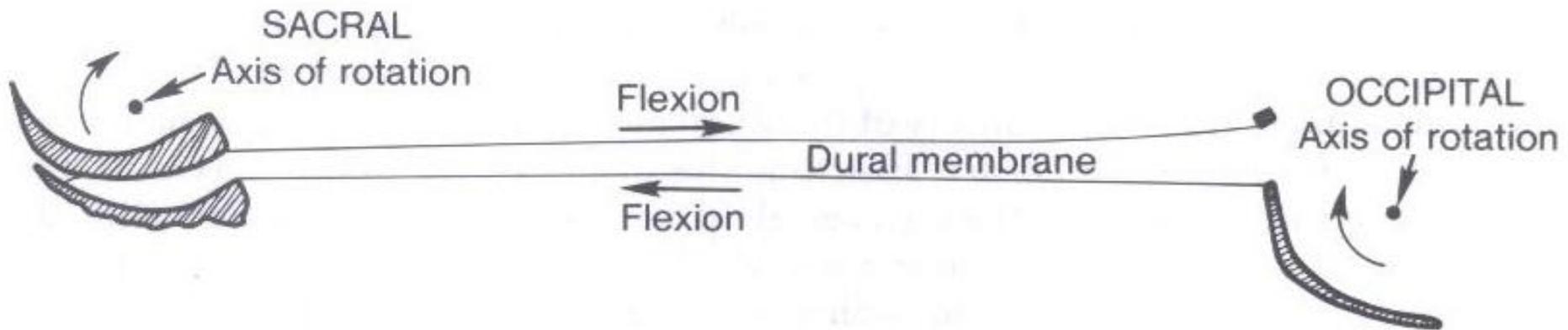
- Pectoralis minor massage
- Shoulder stabilizer exercises - instructions
- Nutrition- omega-3, myosedate

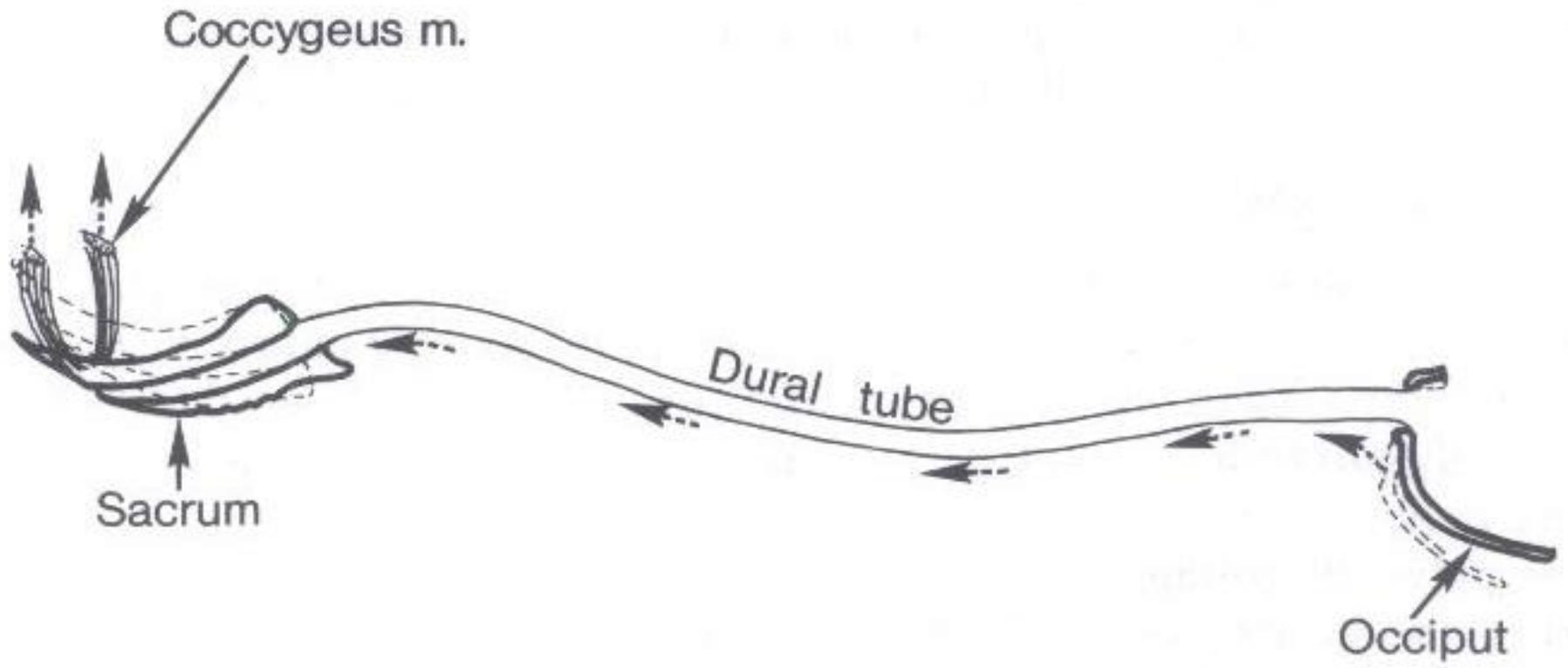
Cranial fault



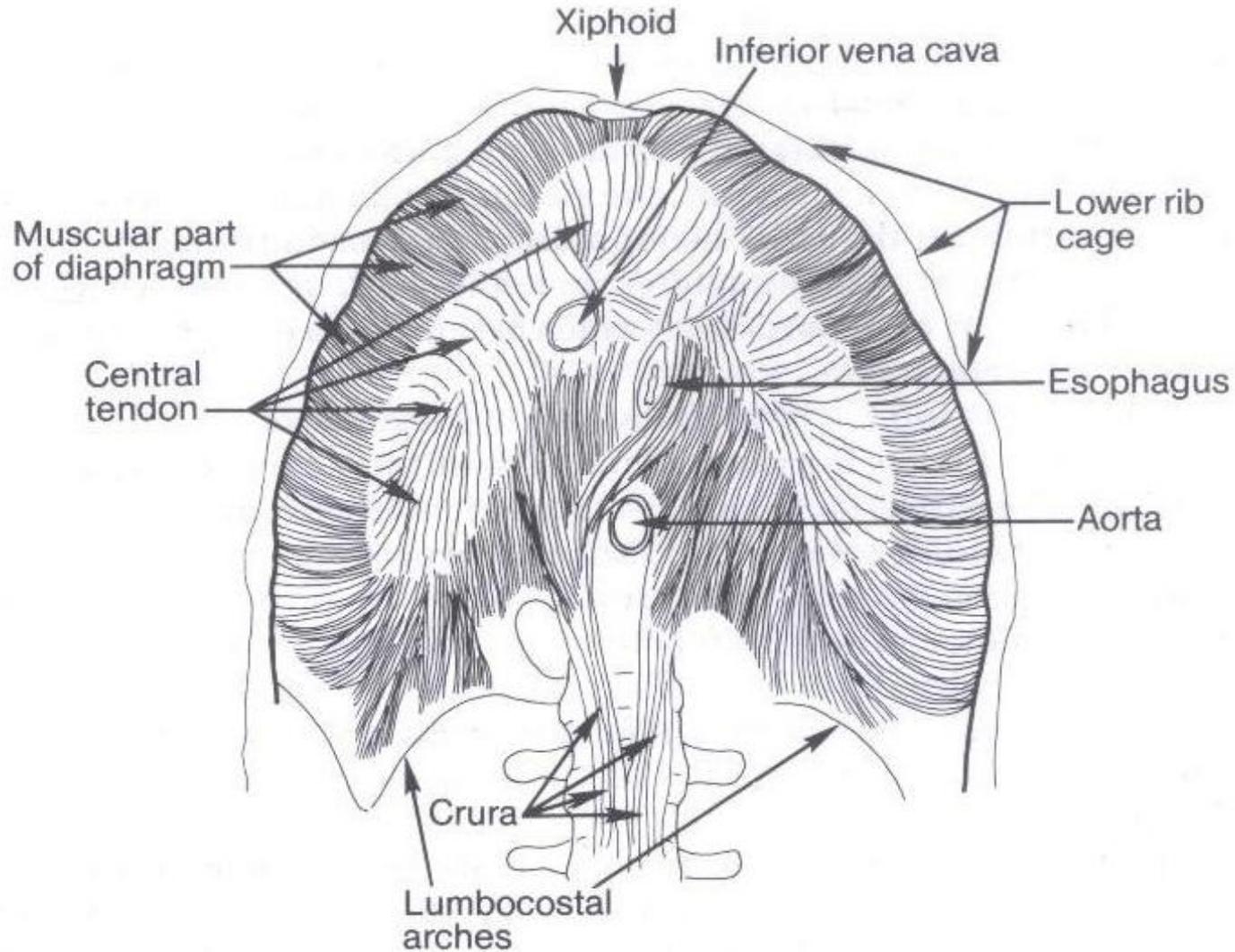




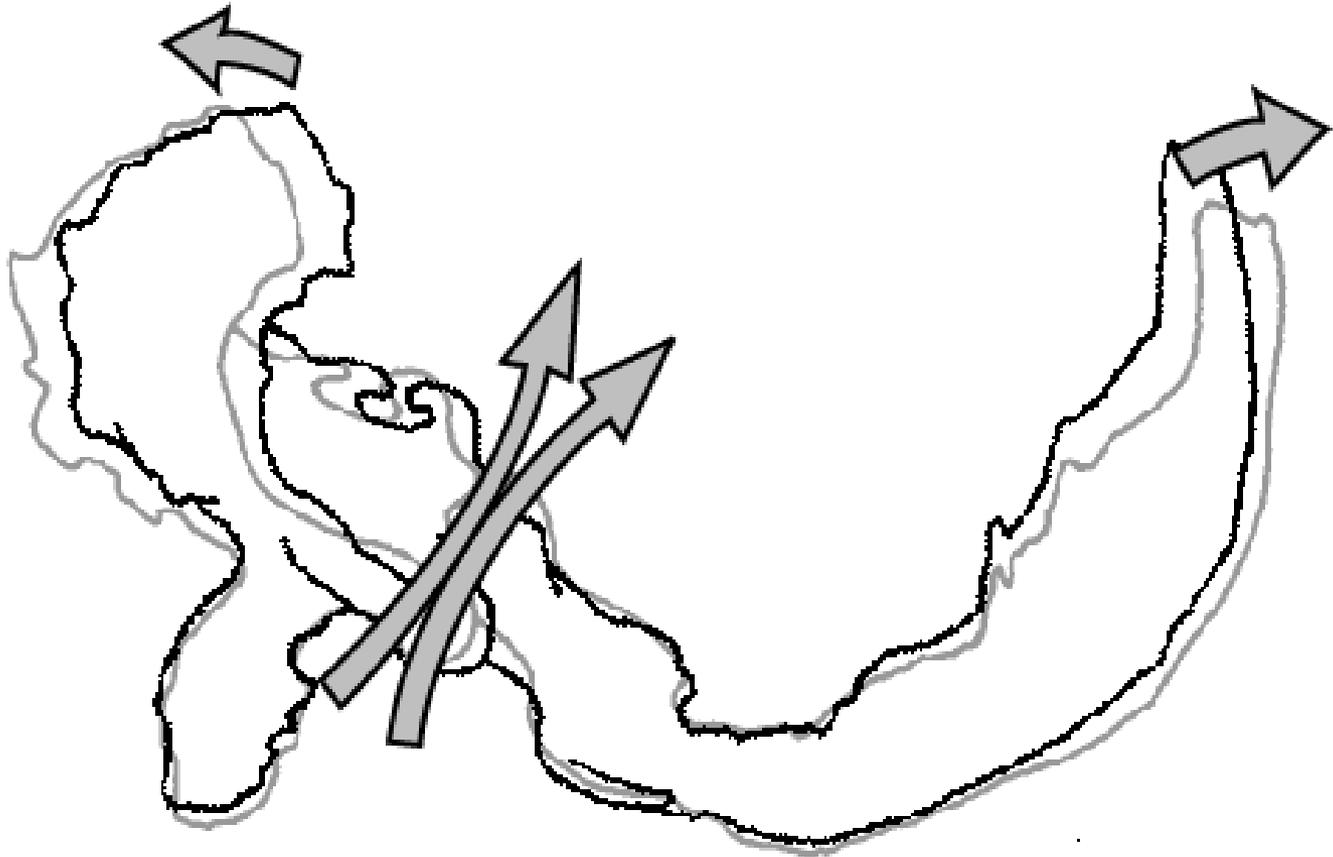


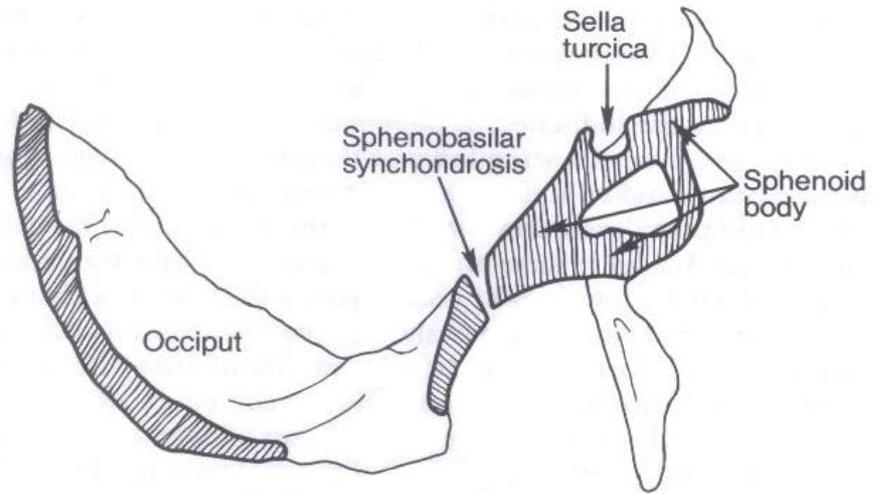


3 diaphragm 관련

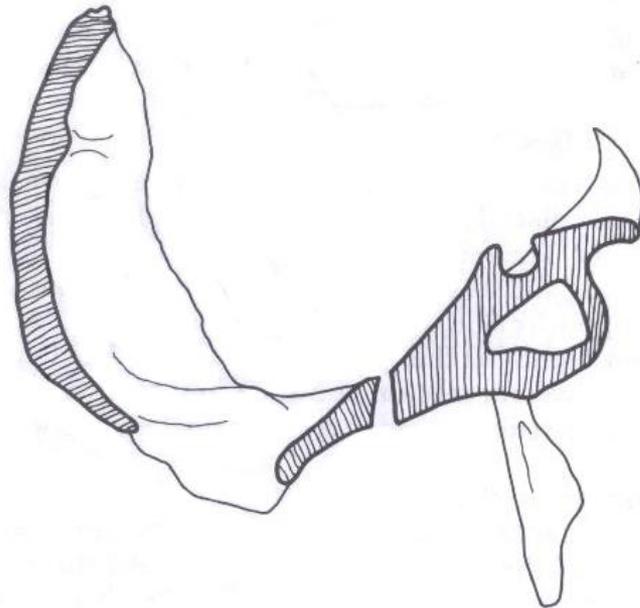


Flexion/extension



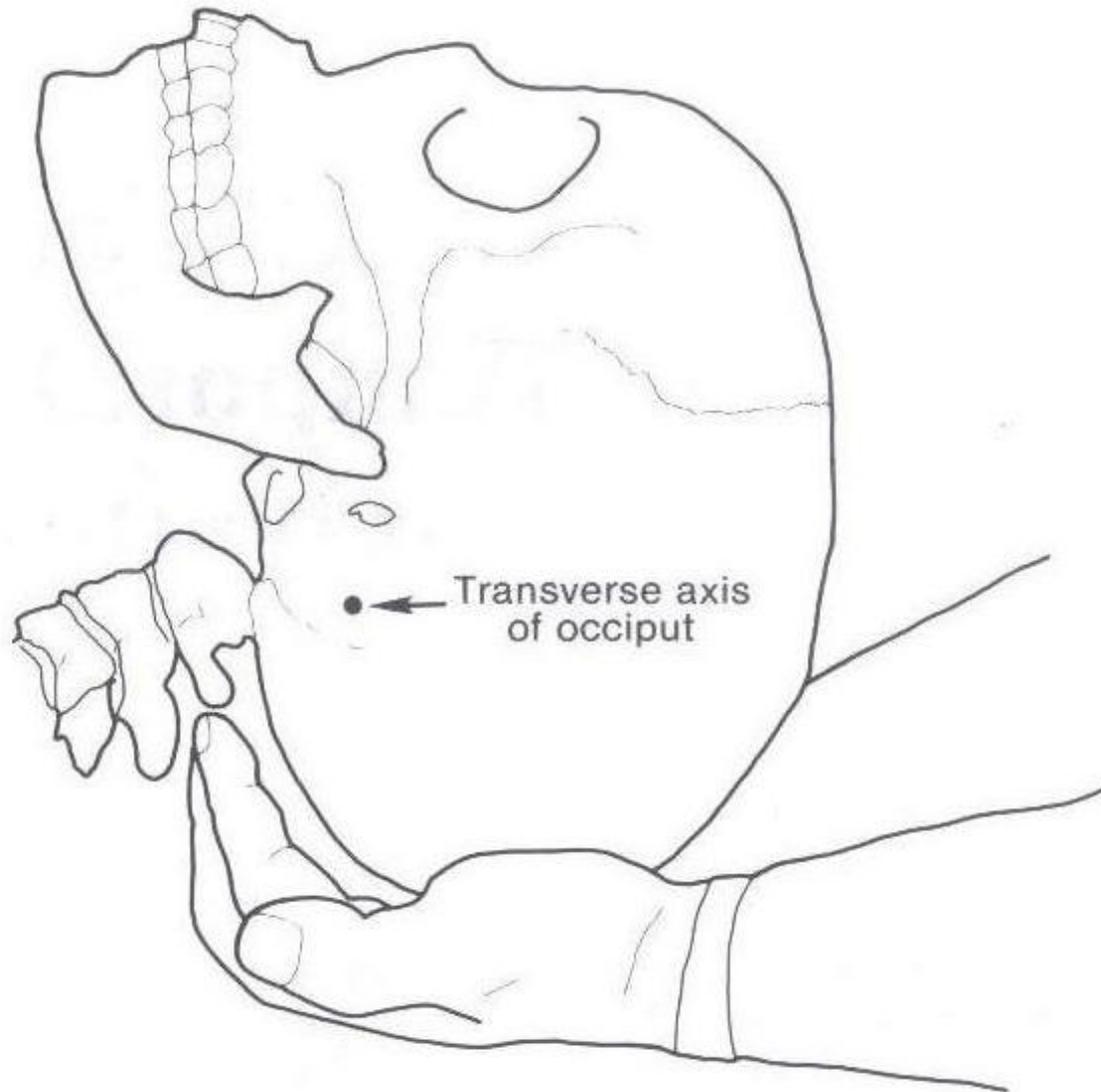


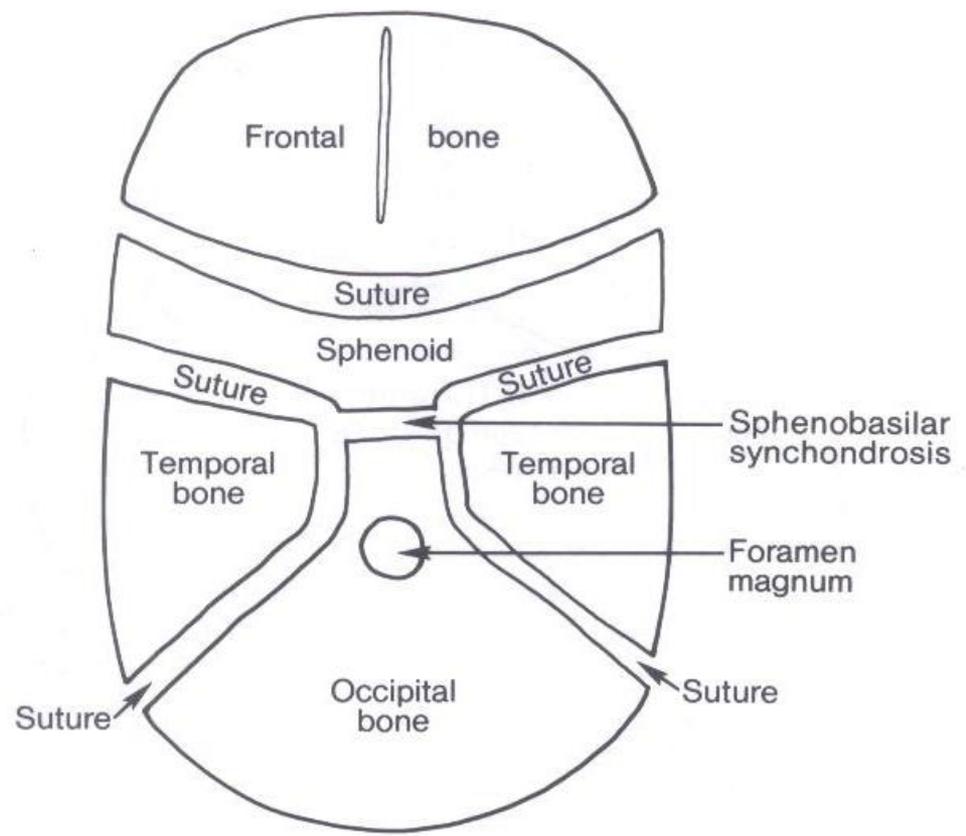
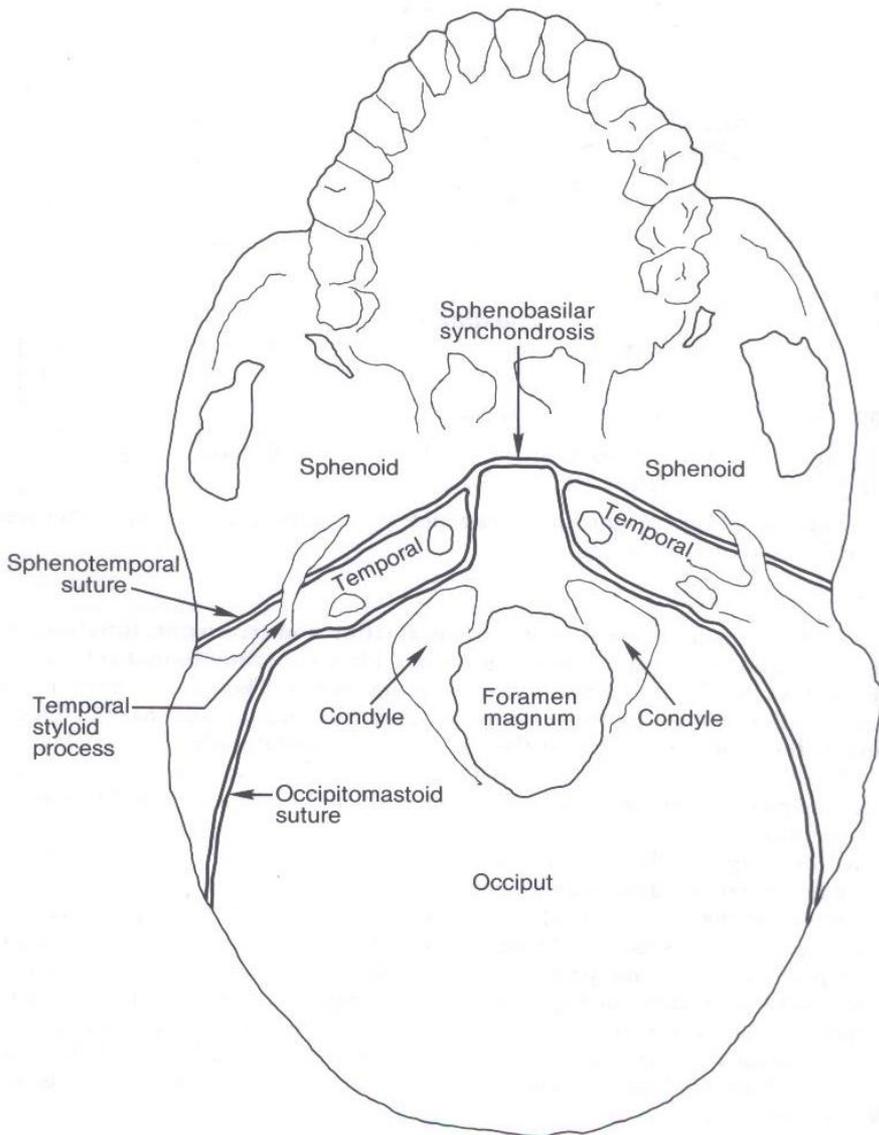
FLEXION

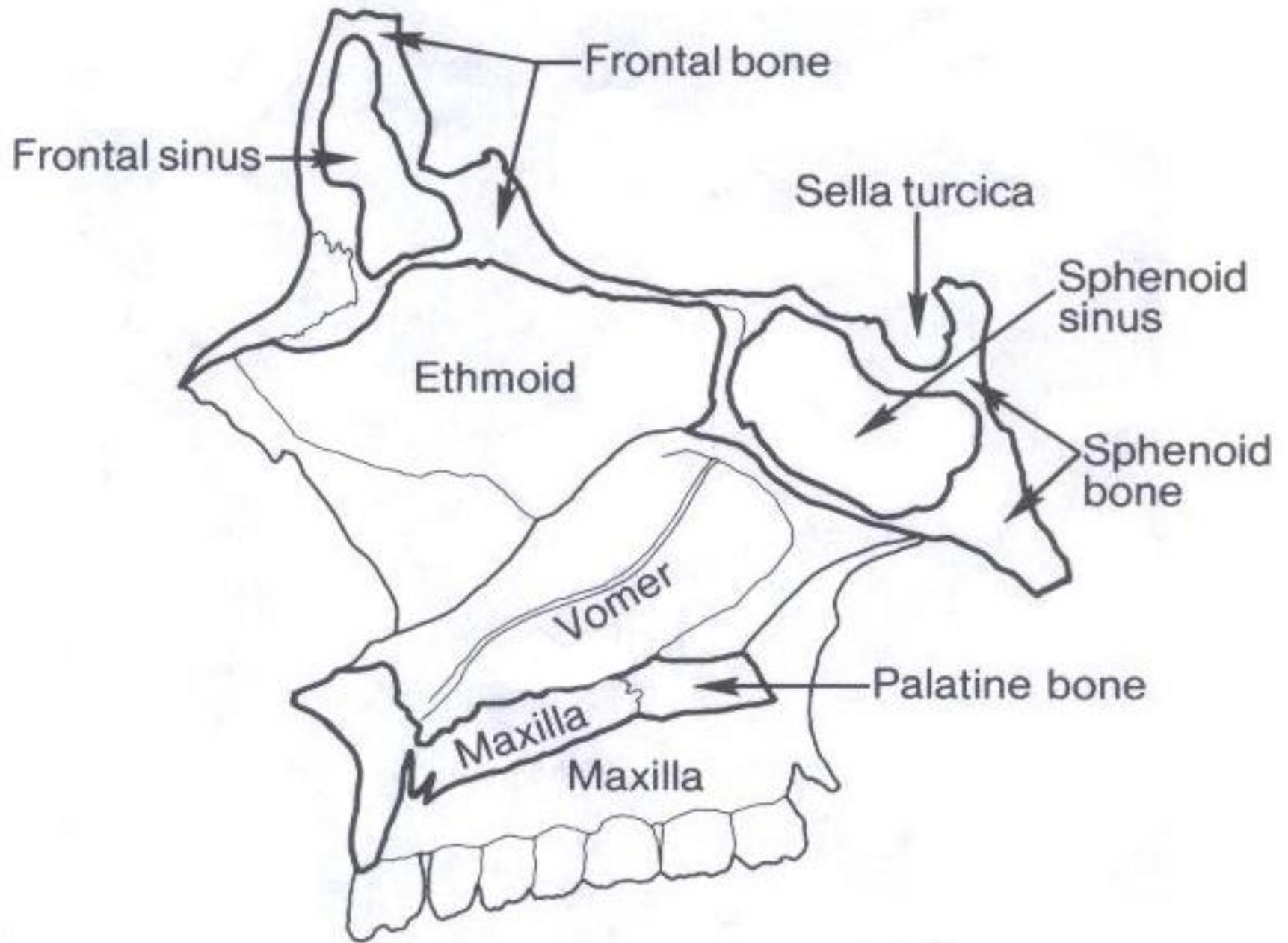


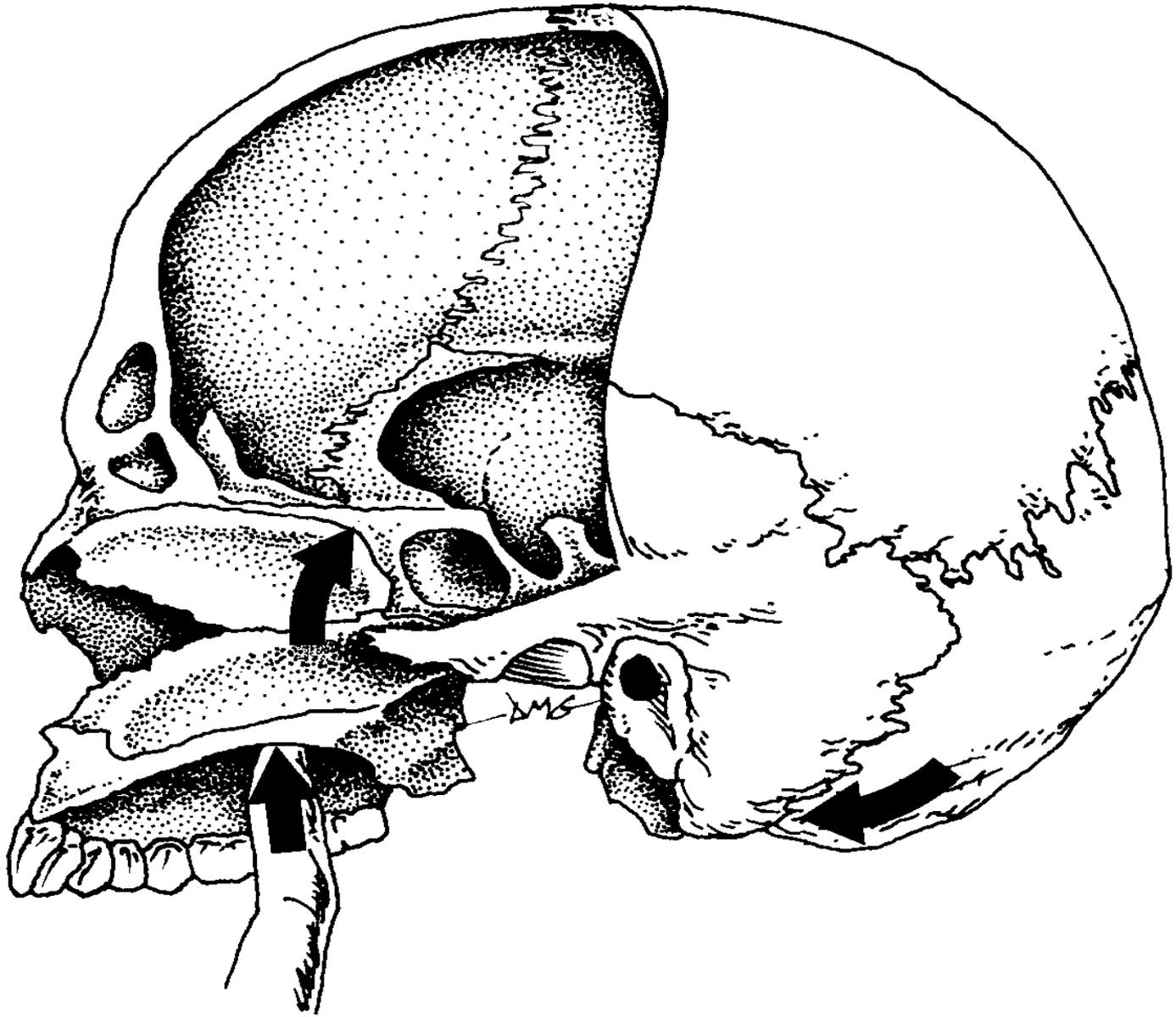
EXTENSION

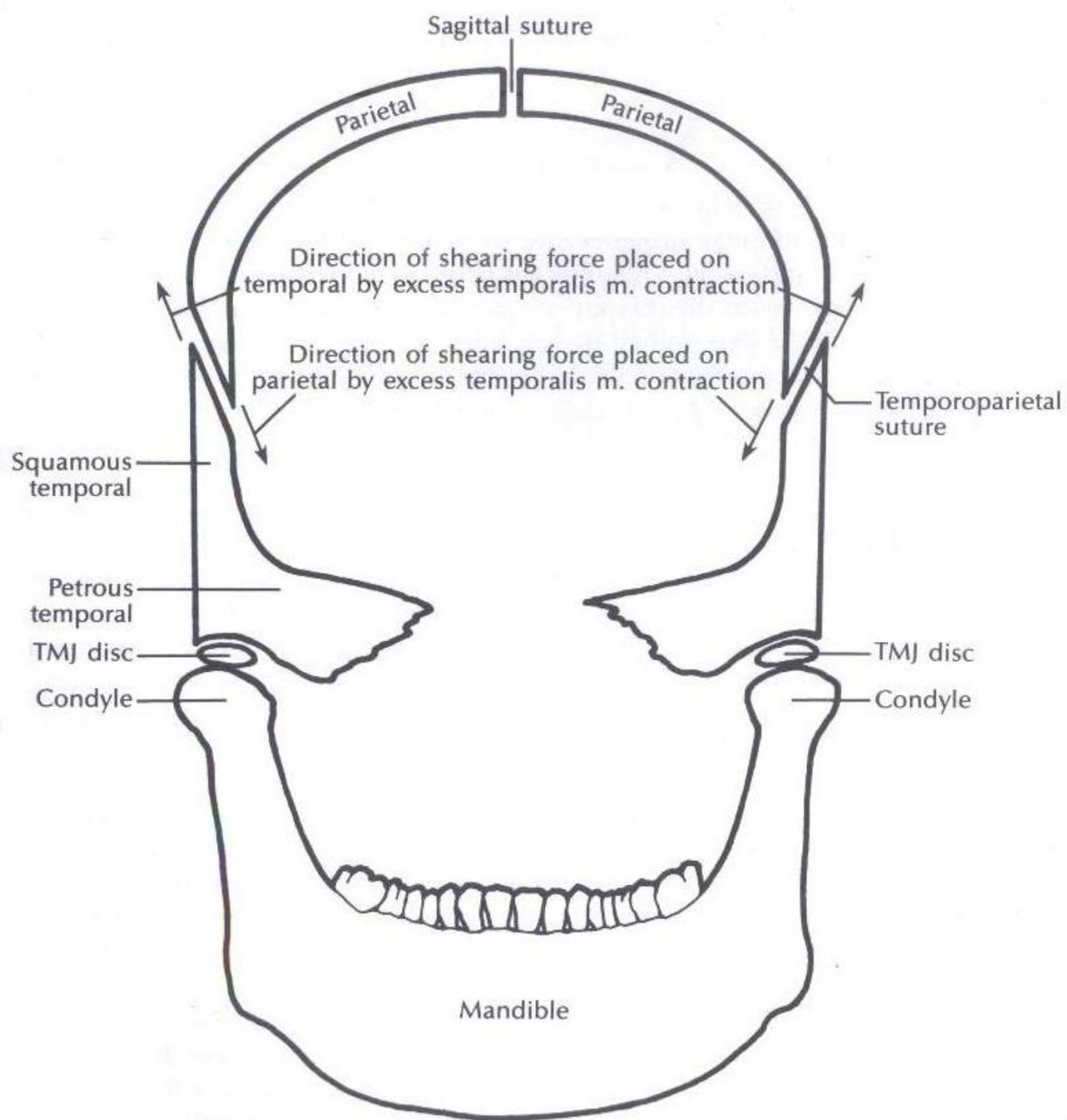
Jugular decompression

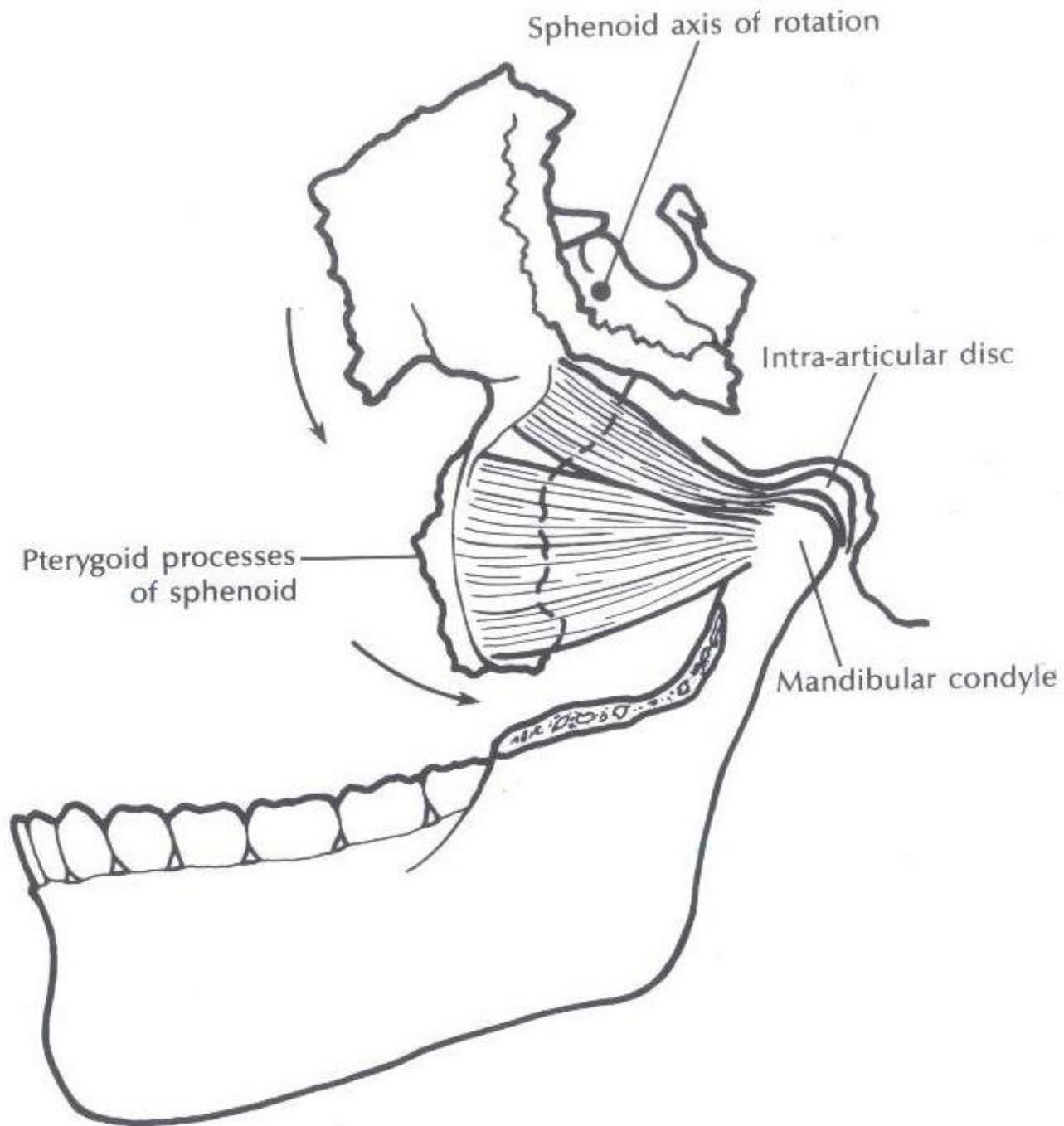




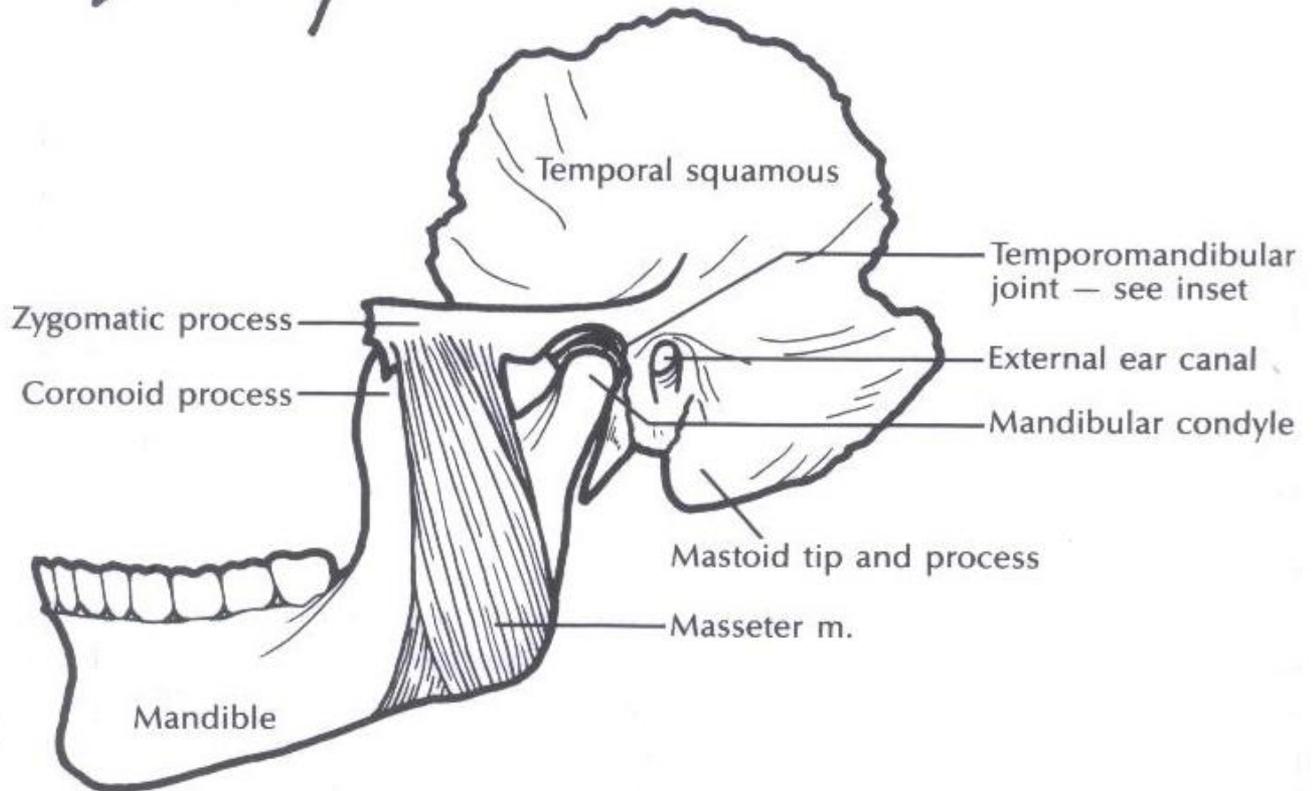
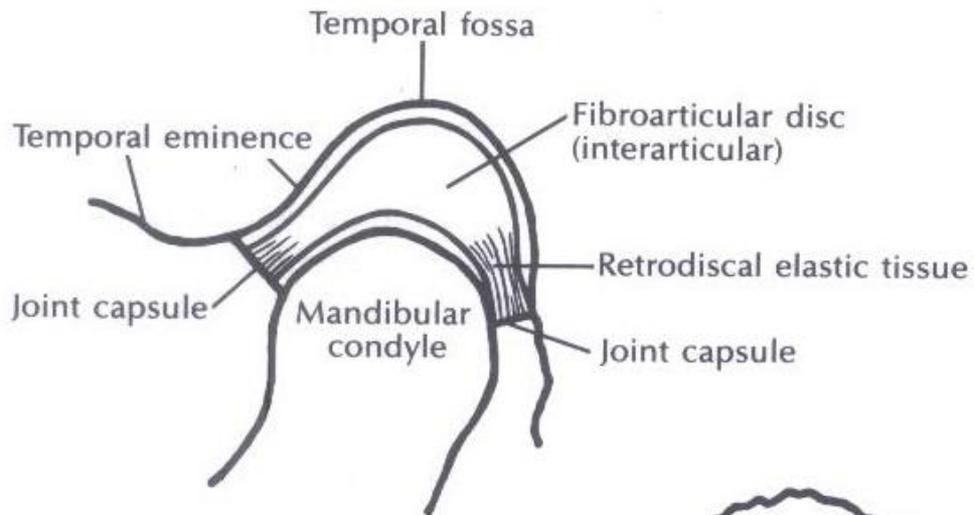


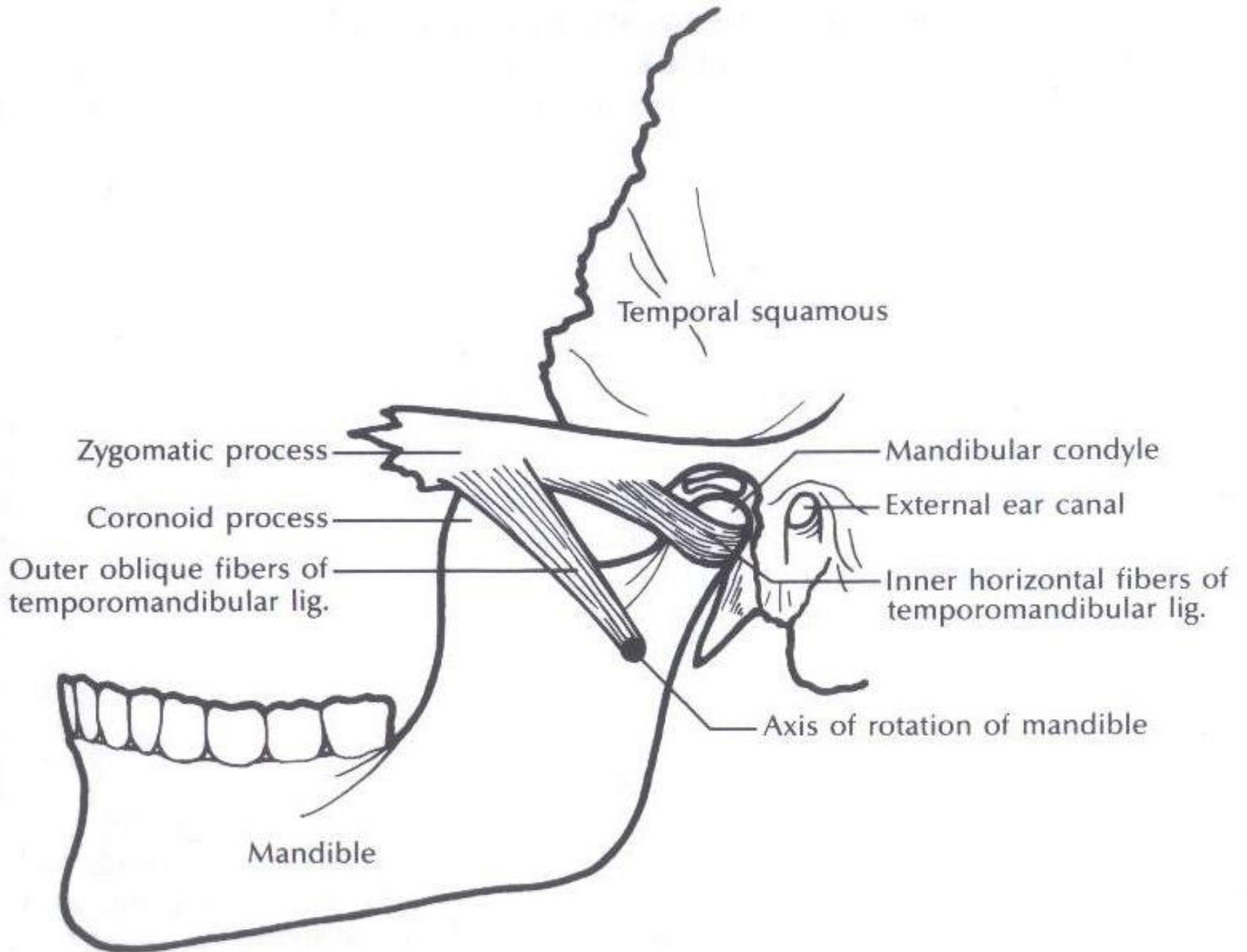


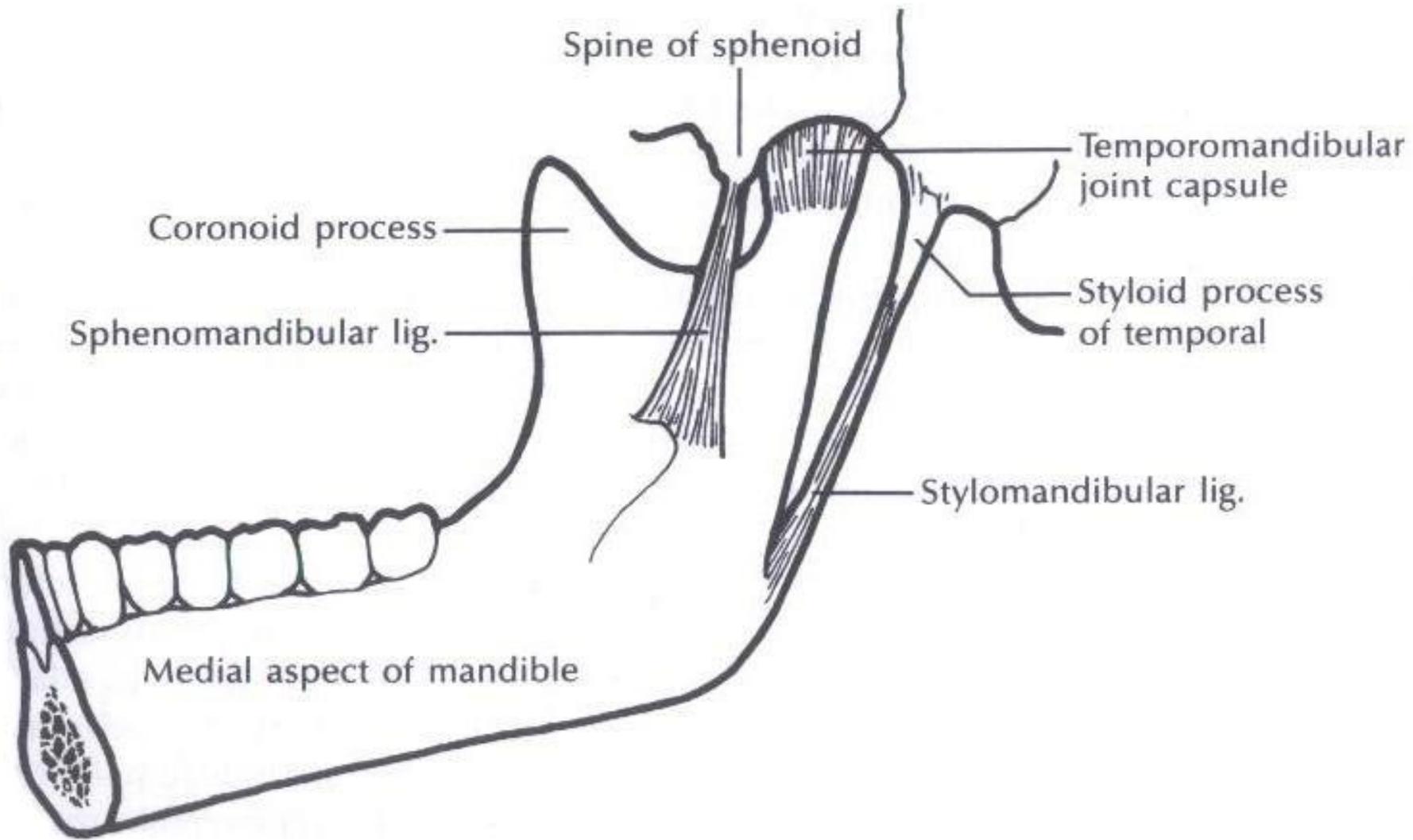




INSET







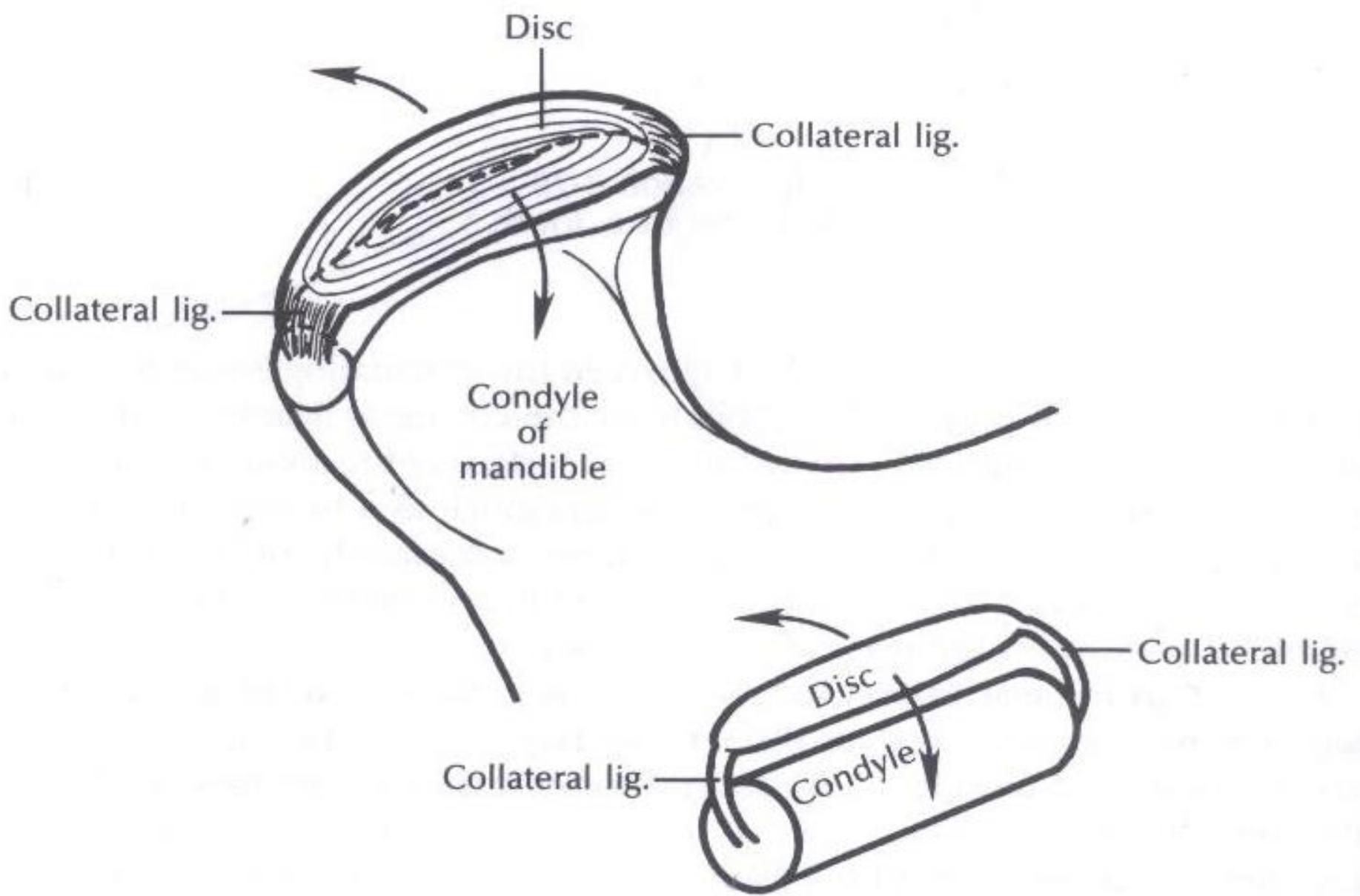
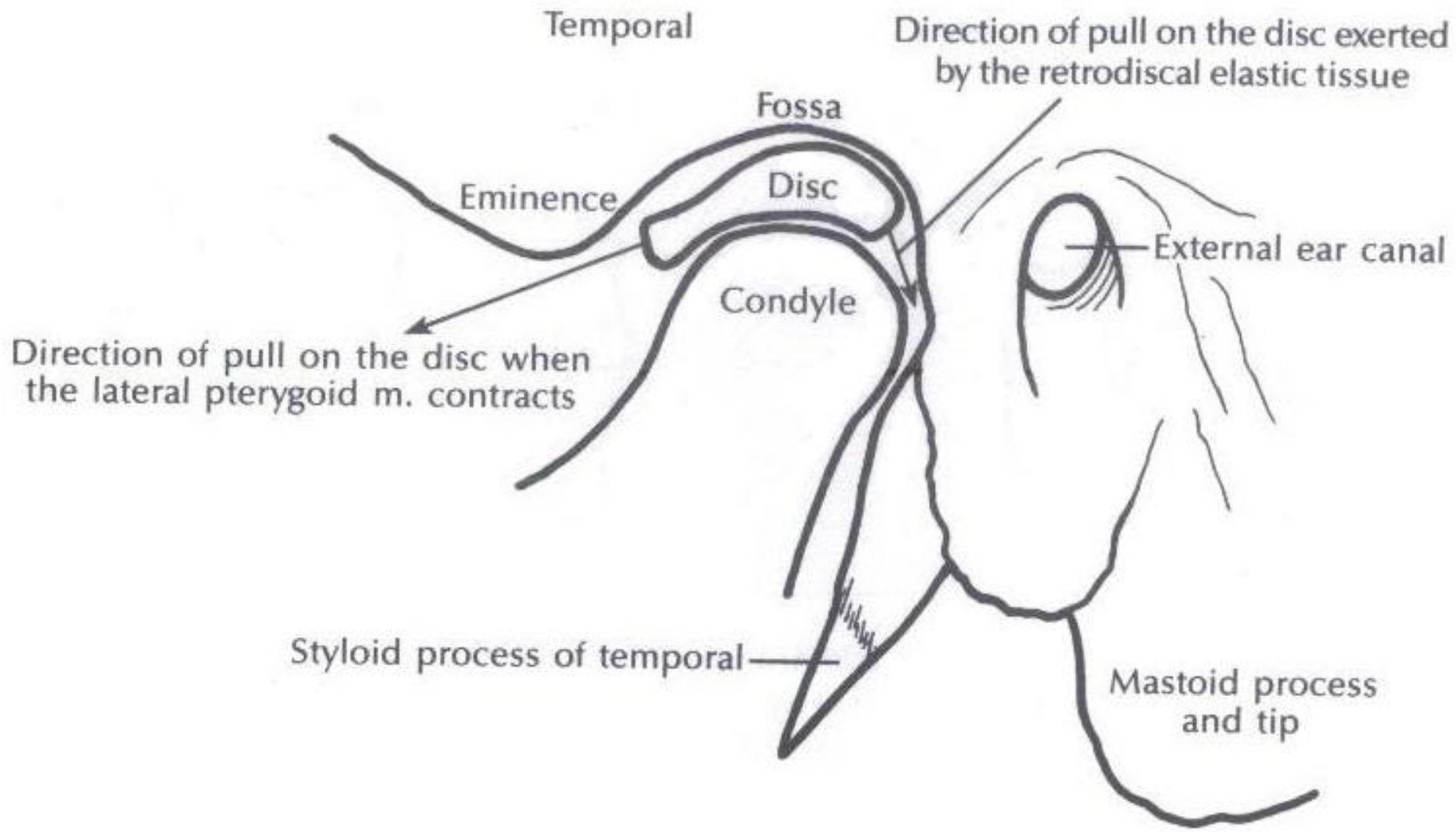


DIAGRAM SHOWING FUNCTION



TL mastoid



TL

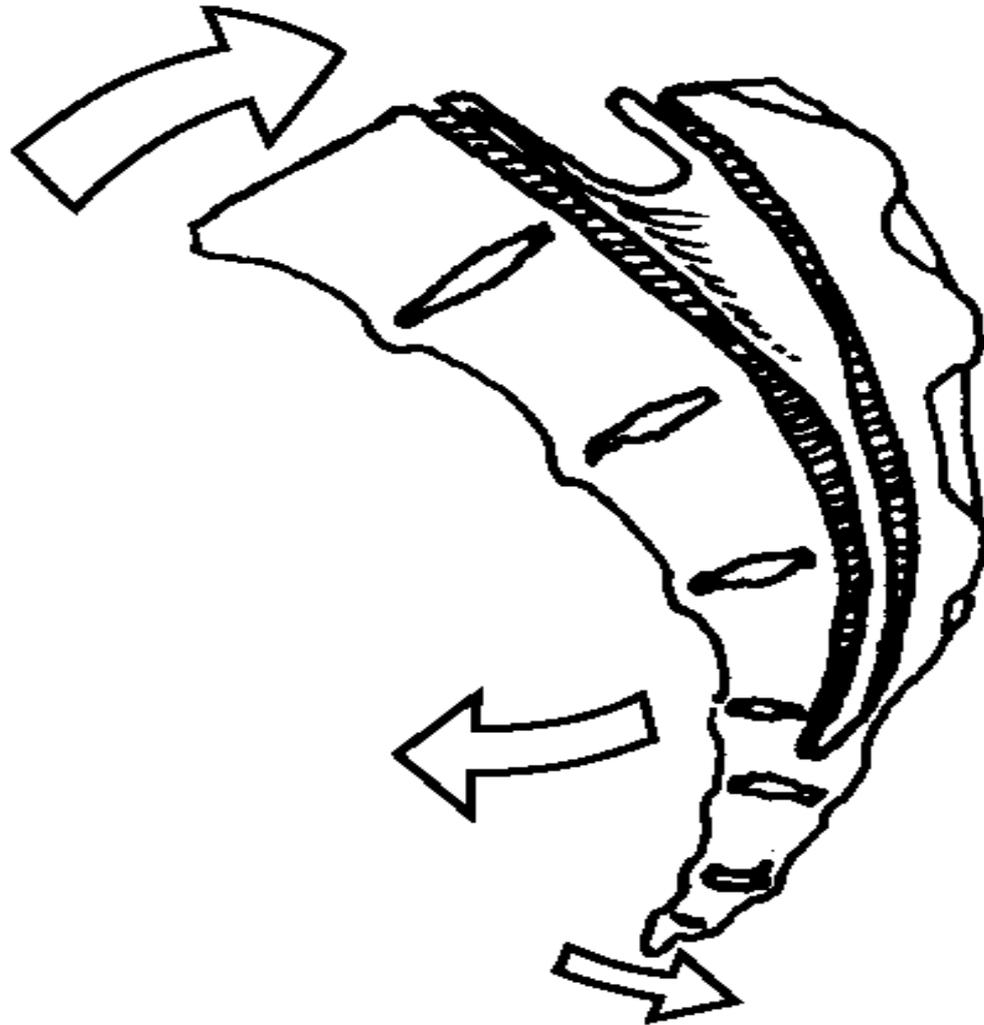
Sphenobasilar fault



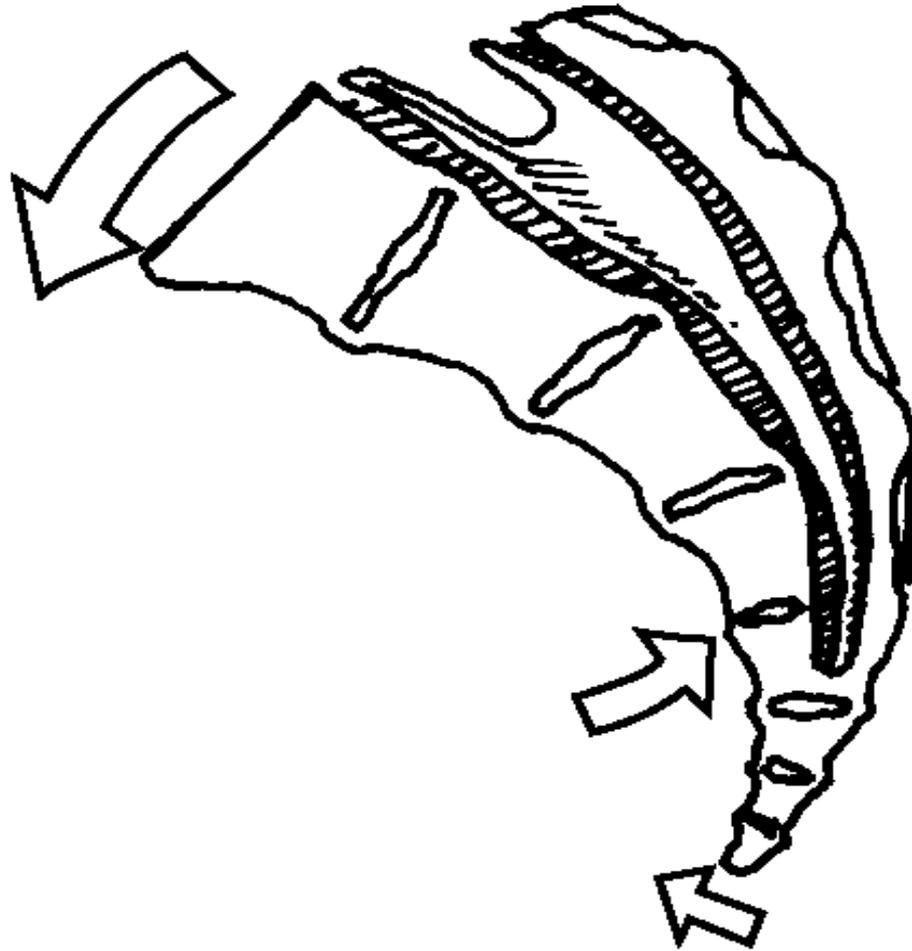
Cruciate fault

- Temporomandibular joint involvement
- Failure to swallow with the mouth partially open.
- The patient may complain of decreased mouth opening or of constant neck tightness

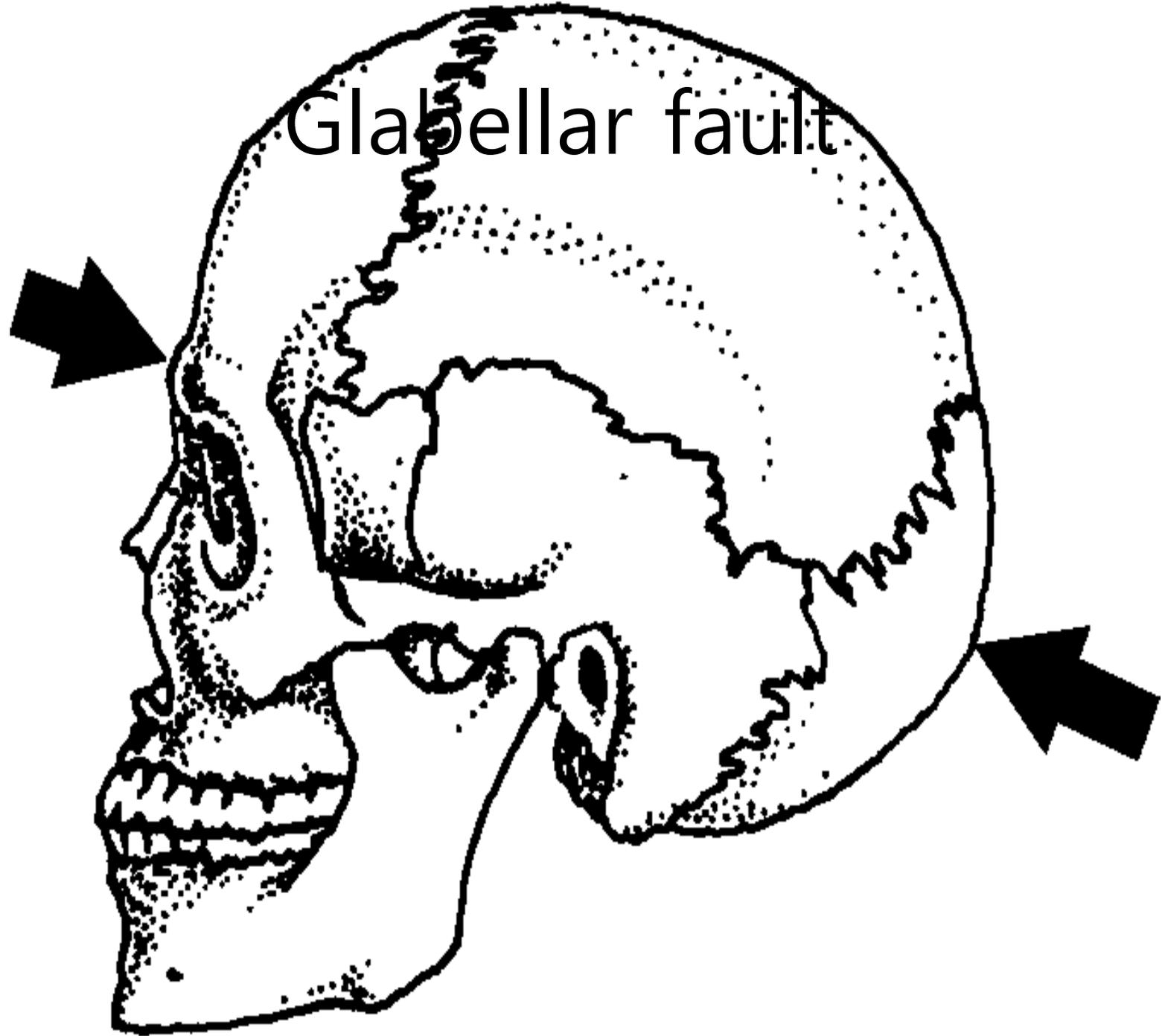
Sacral movement in inspiration



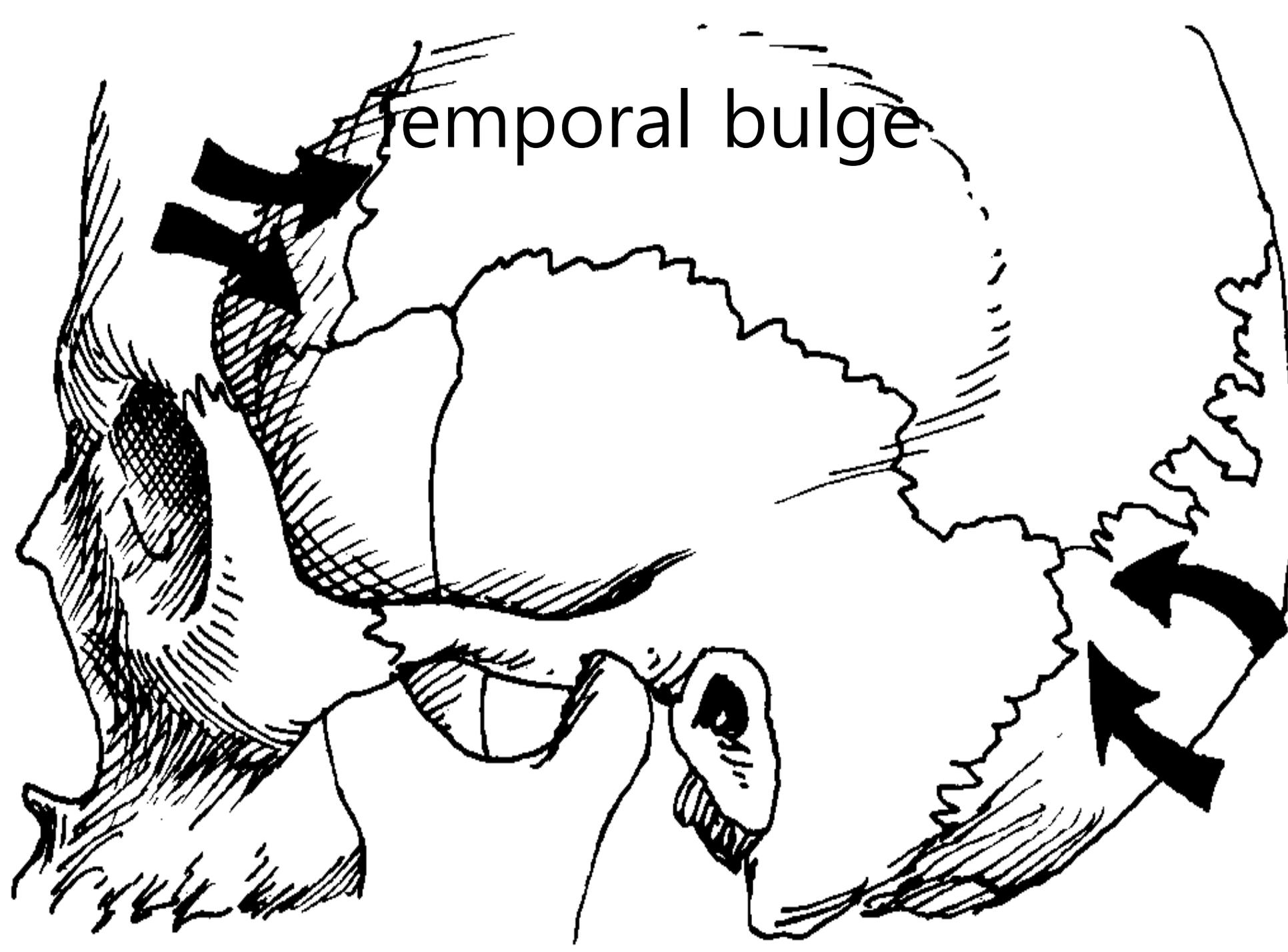
Sacral movement in expiration



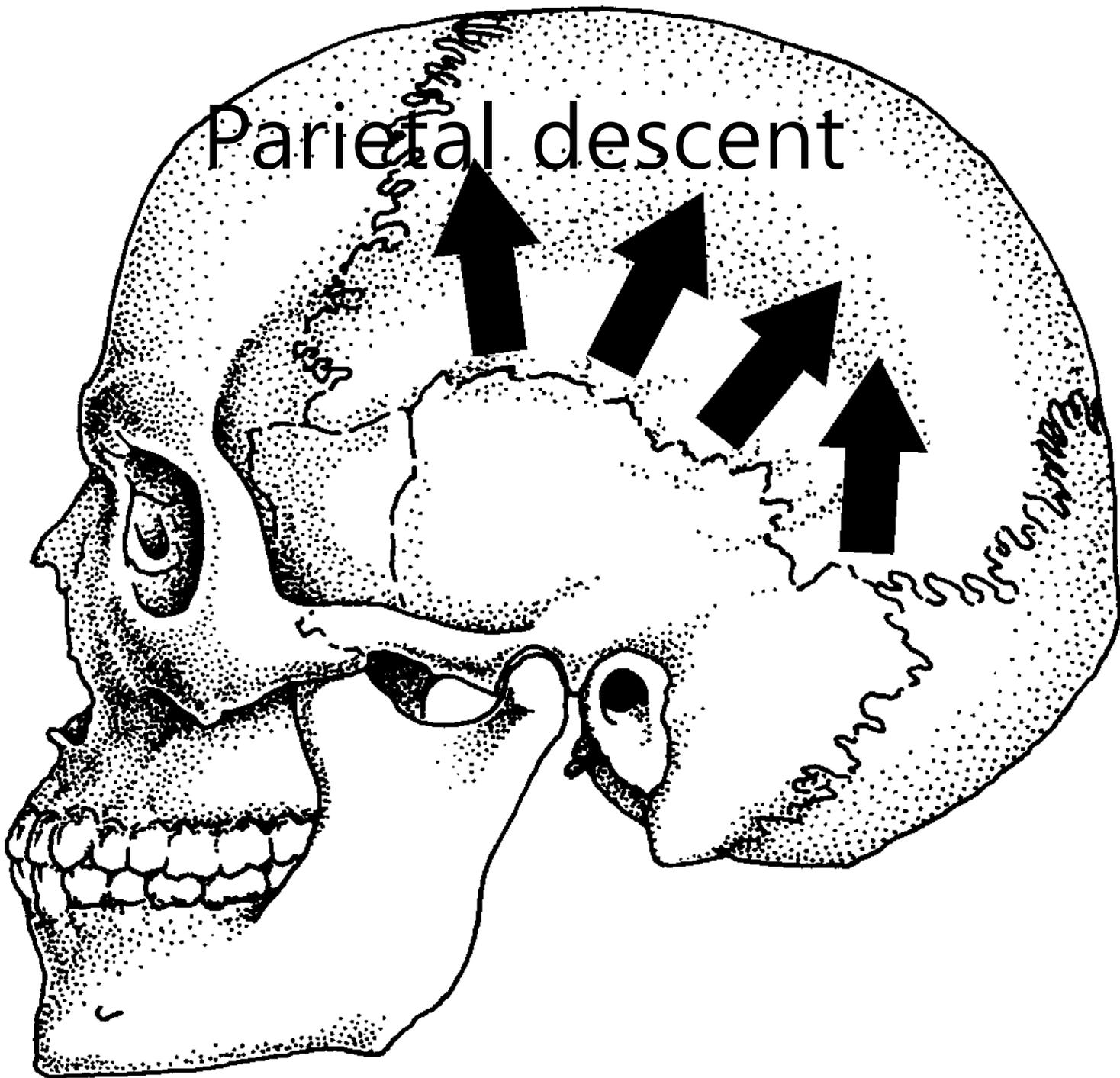
Glabella



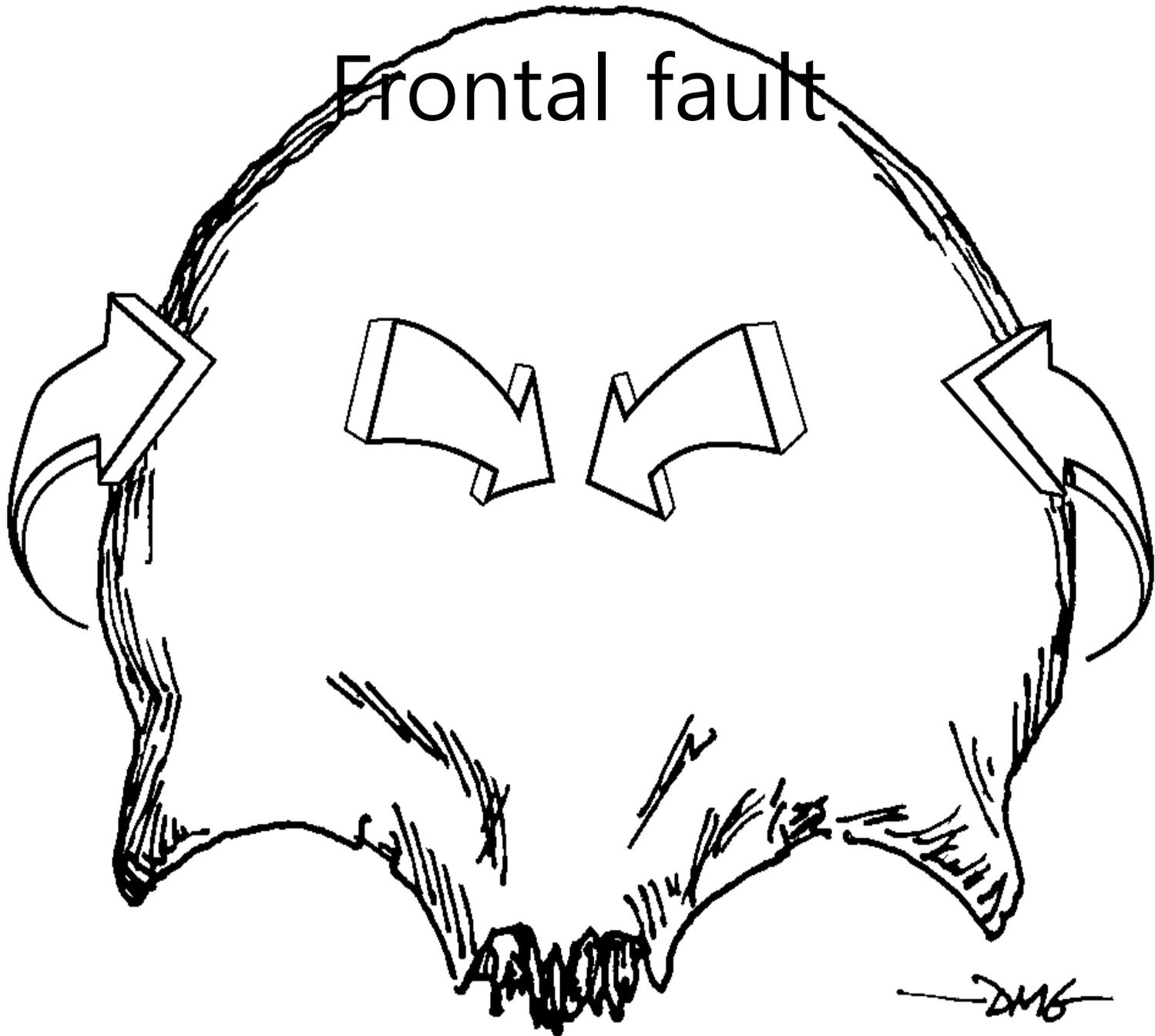
temporal bulge

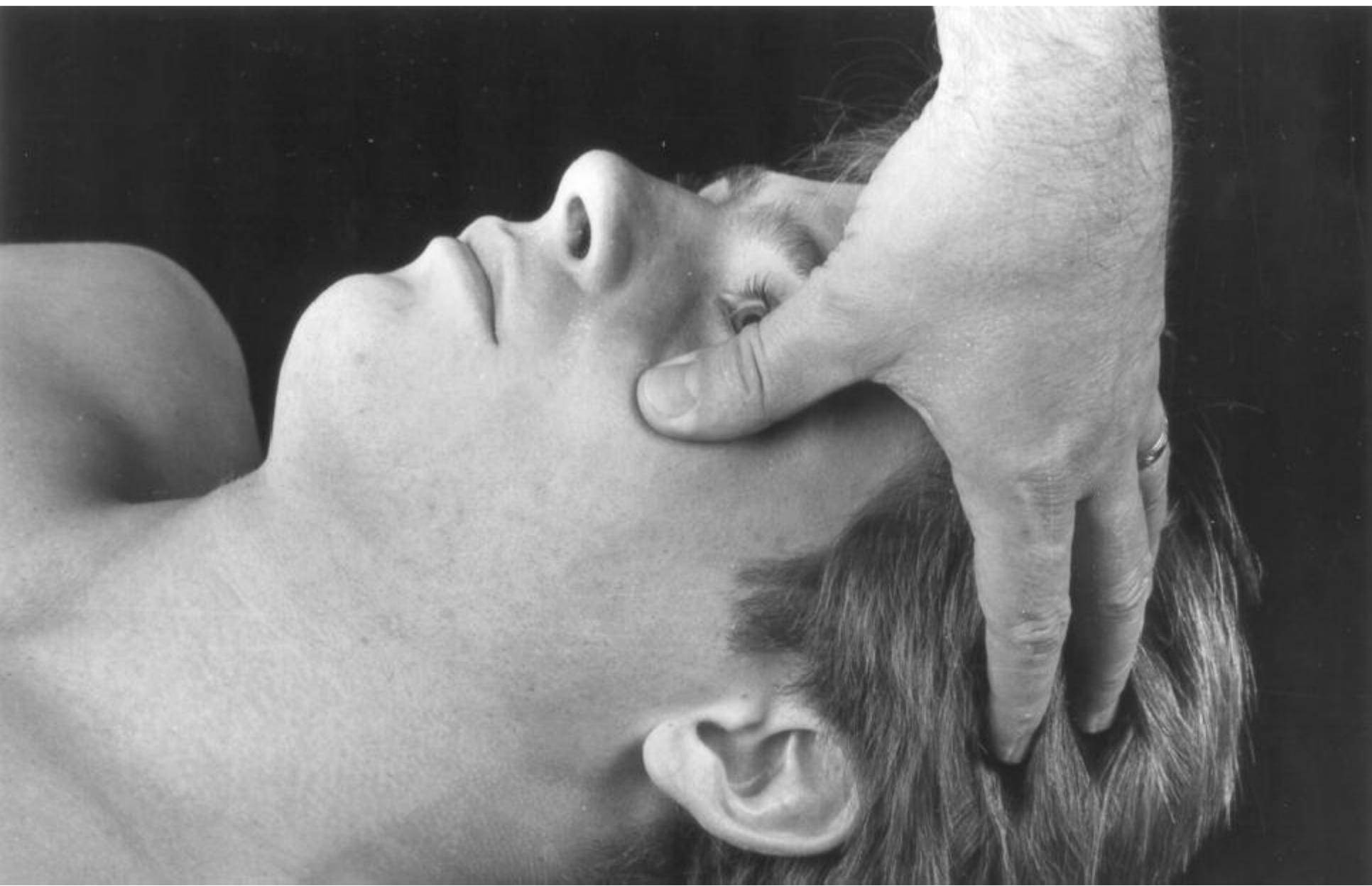


Parietal descent



Frontal fault

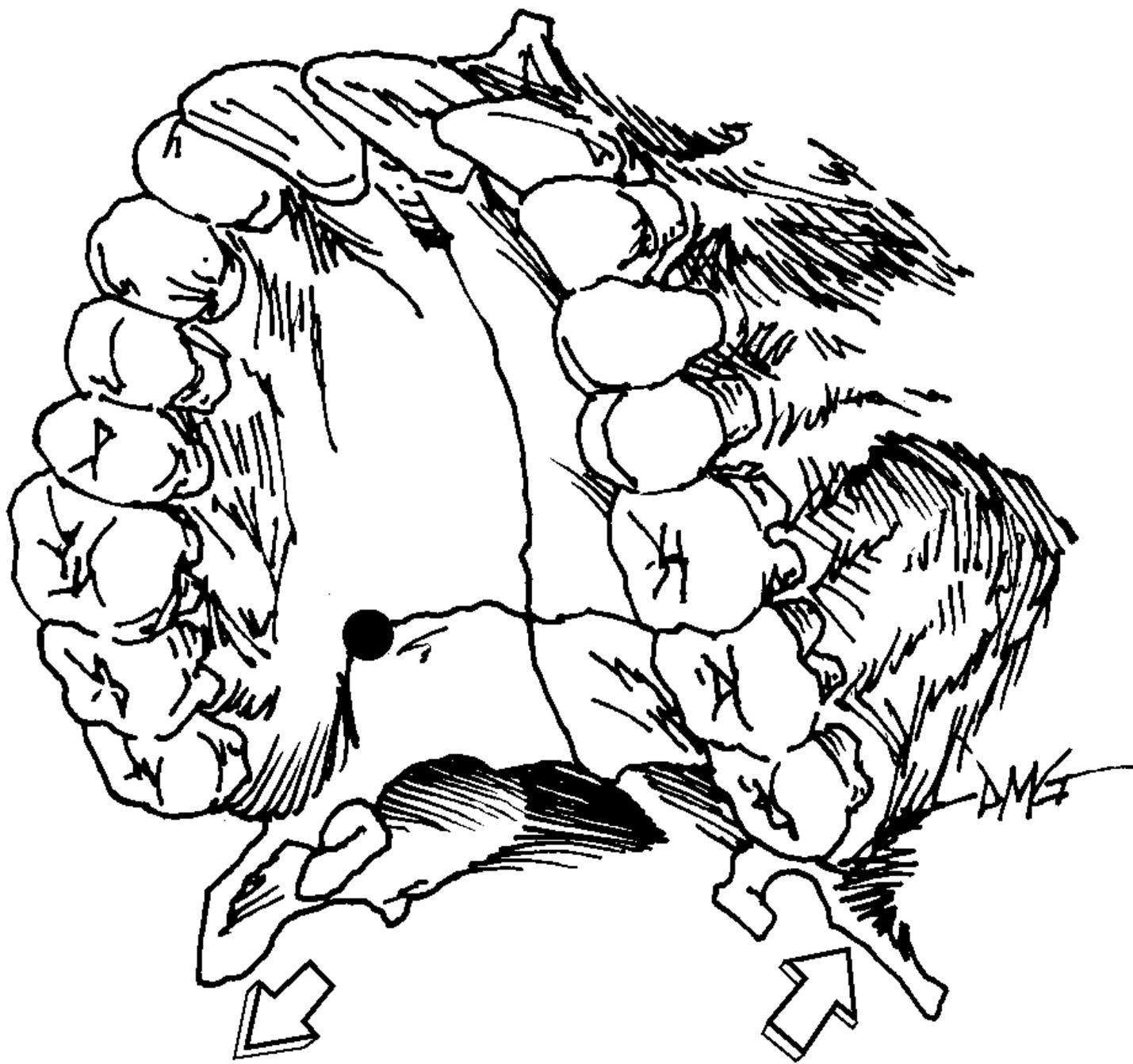




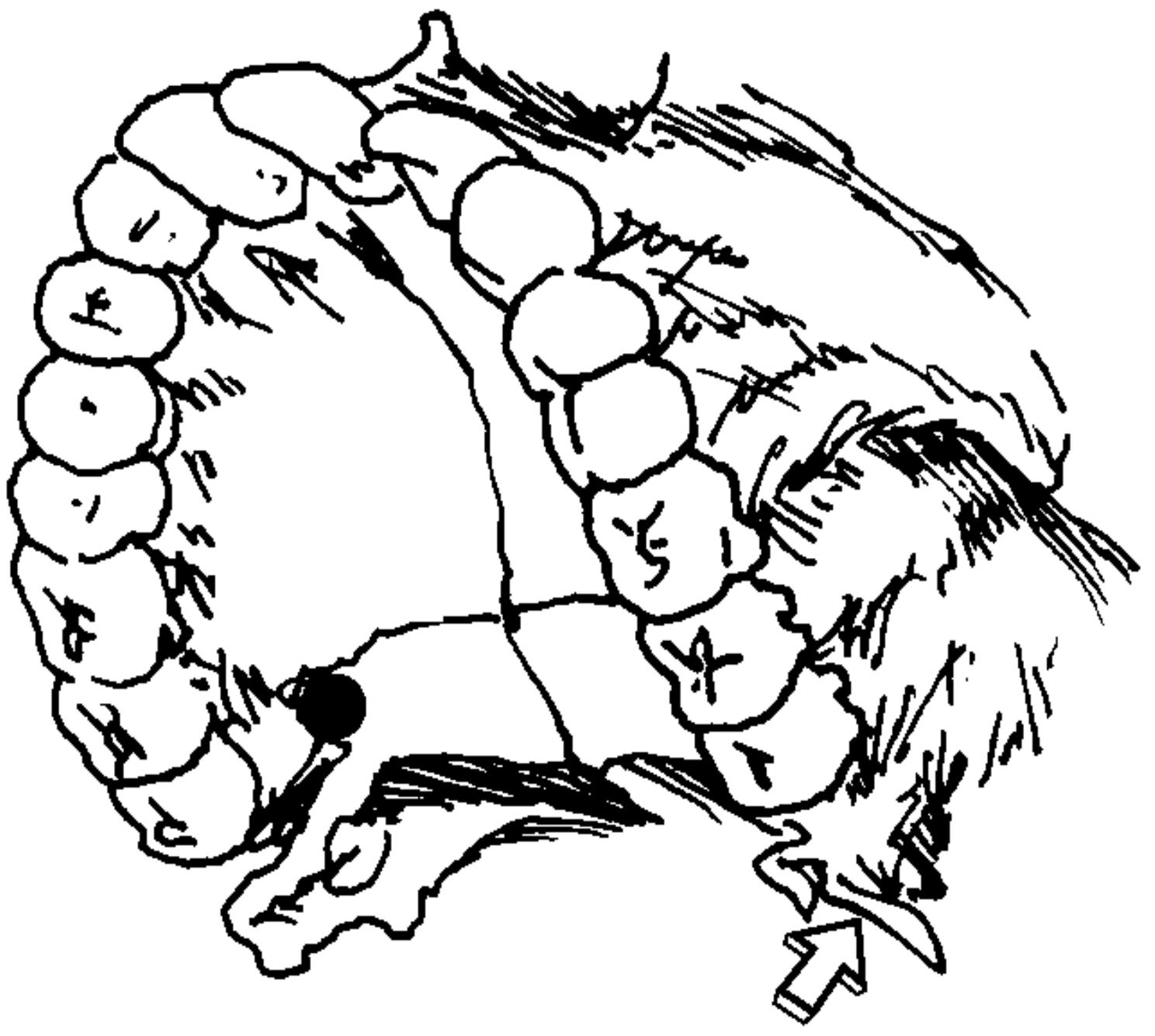
3 steps to correction

- Laterally and slightly inferiorly 20-40초간
-통증이 좋아지지 않으면 방향을 전방 혹은 후방으로 바꿀 것
- Gum in post molar: 10-20초
- Push on the opposite side of pterygoid process: 10-20초

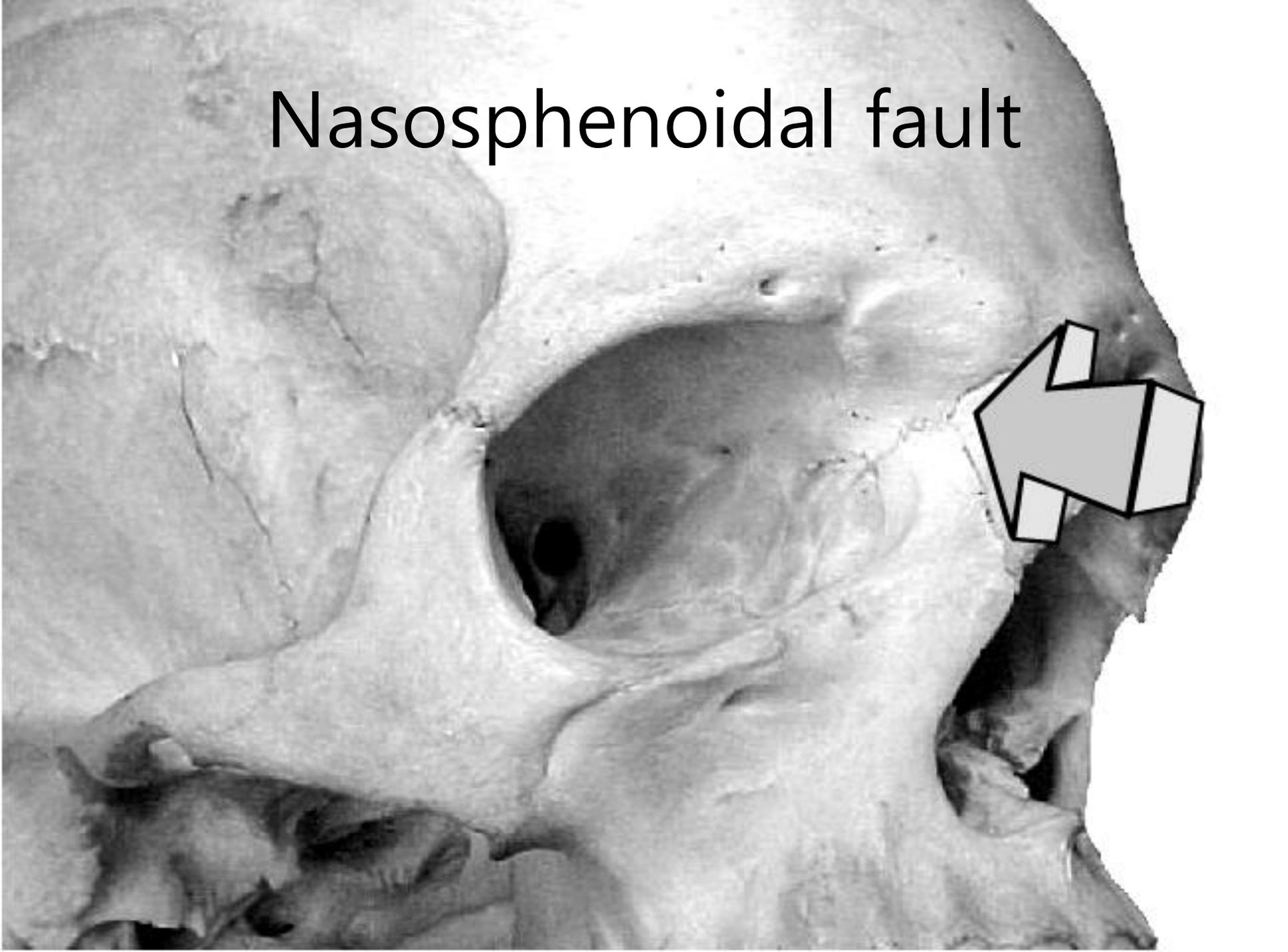




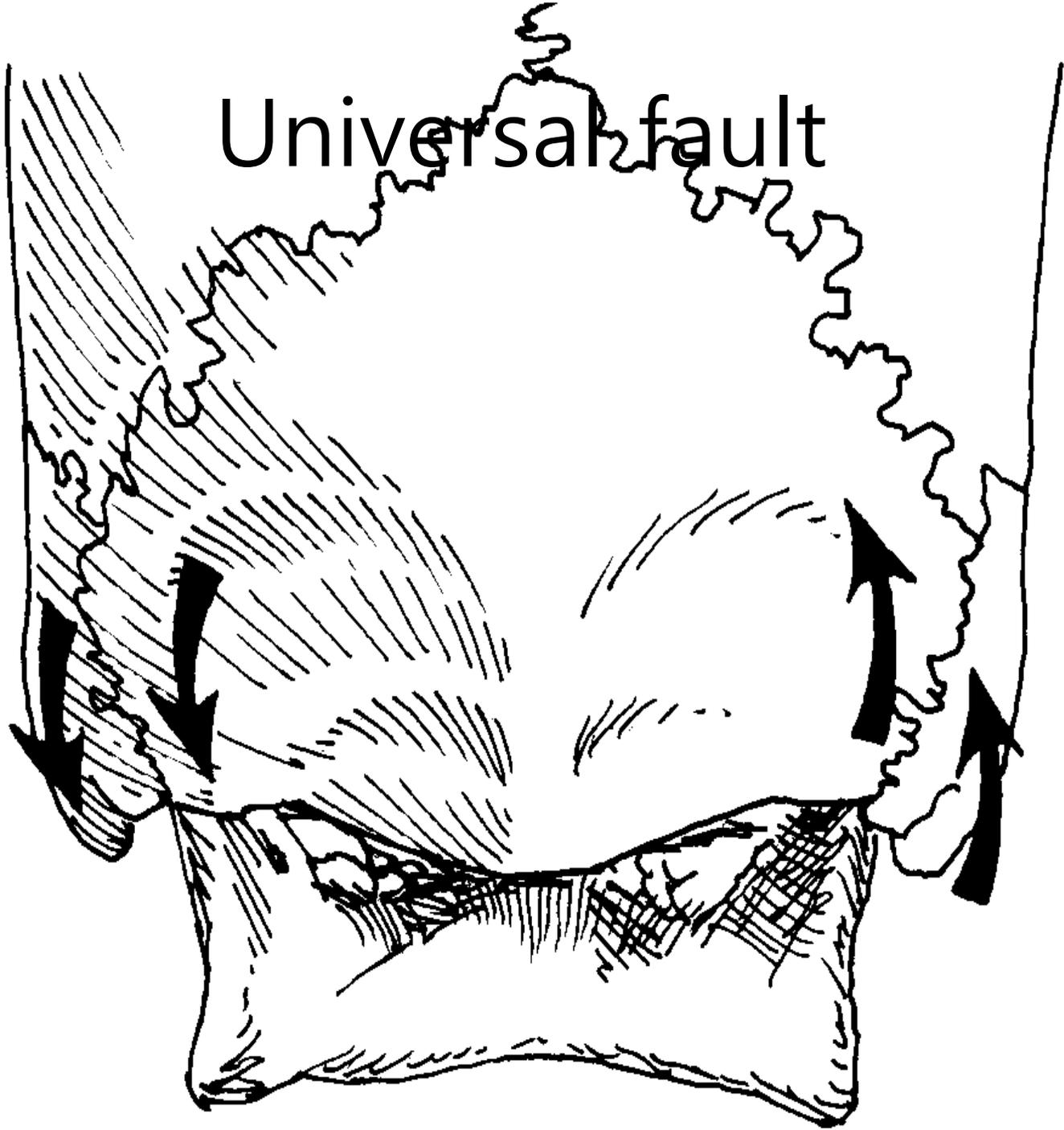




Nasosphenoidal fault



Universalfault

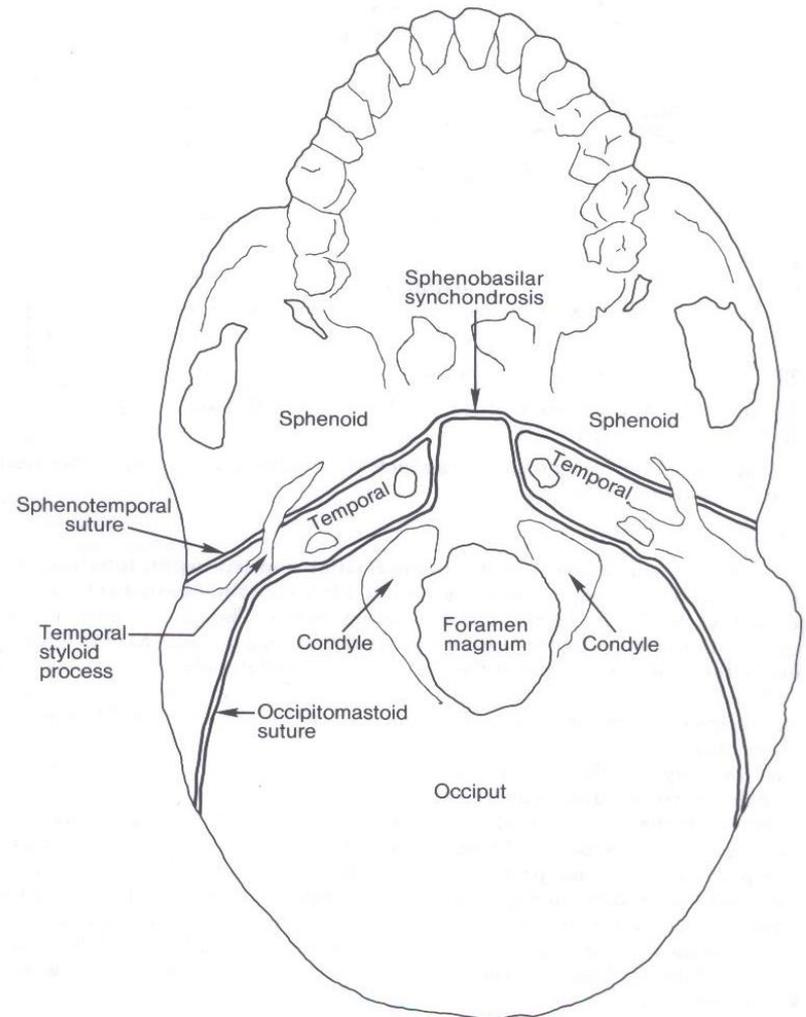


Check for pineal gland

- Great wing of sphenoid 누르기
- Neurolink 방식: 혀를 soft palate에

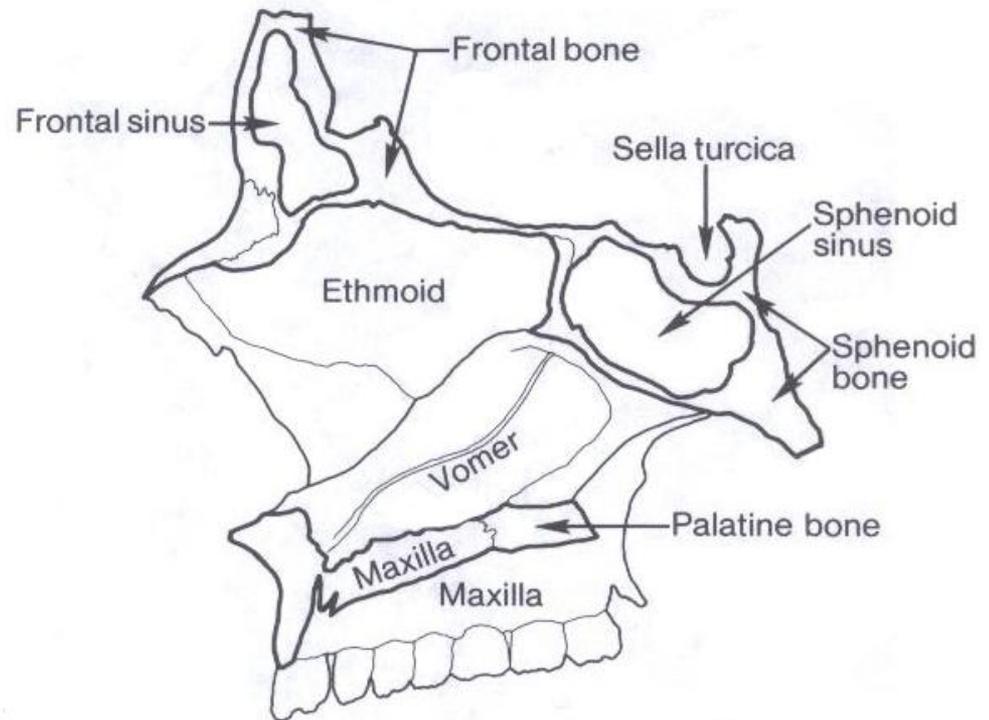
Maxilla-palatine complex

- Flexion/ extension movement
- Torsion: torsion to the R/L
- Shear
- Compression: hard palate-sphenoid decompression

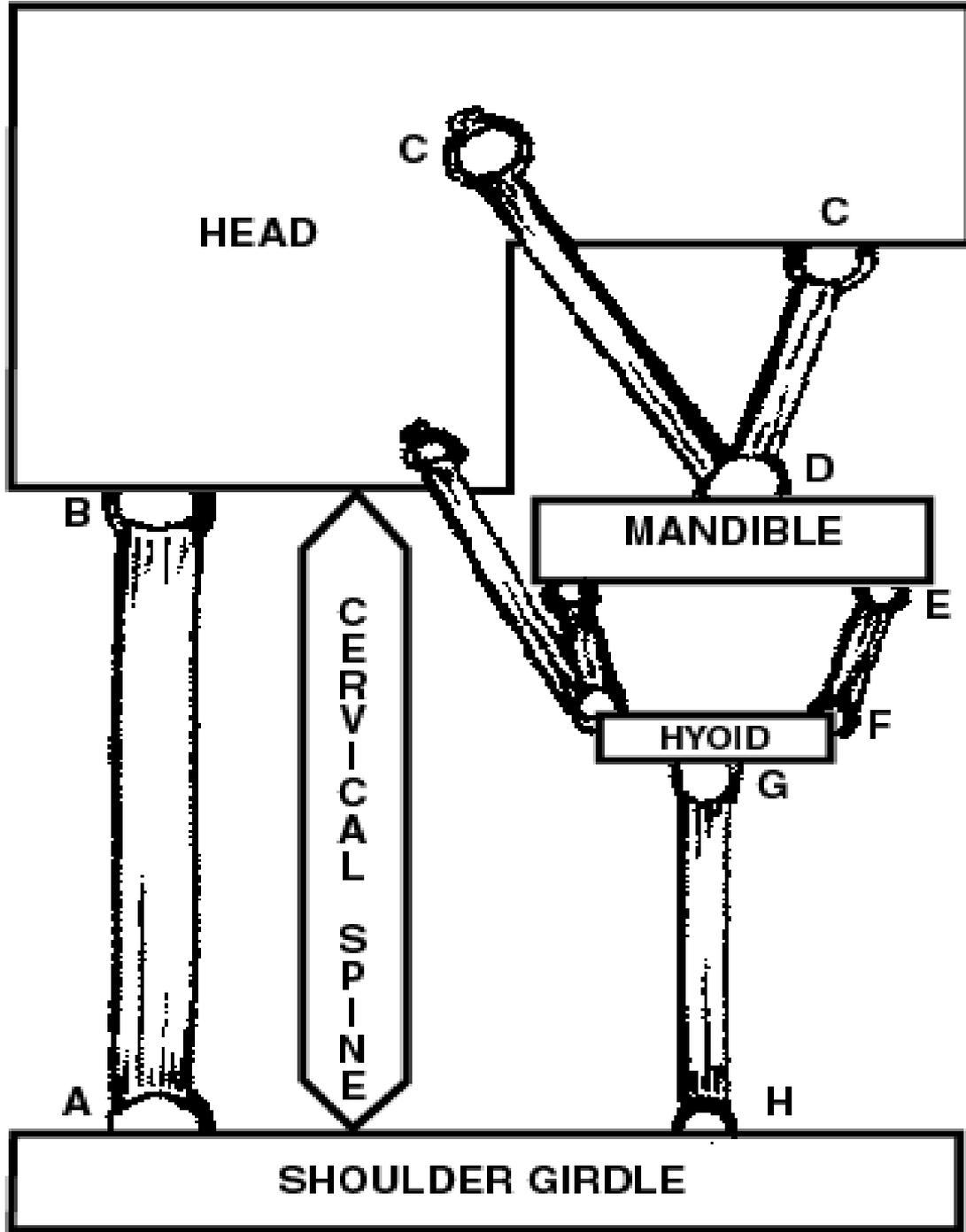


Vomer

- Flexion/ extension movement
- Torsion: torsion to the R/L
- Shear
- Compression: decompression ant inf with stabilizing sphenoid



Temporomandibular joint 악관절



4 steps of stomatognathic system

- **1. cranial and pelvic adj**
- **2. level the head and upper cervical muscles**
- **3. balance TMJ muscle**
- **4. hyoid muscle balance**
- **5. foot correction**

Examination prior to the stomatognathic area rationale

- **Muscles of mastication receive cranial nerve supply-cranial fault를 먼저 치료하는 이유**
- **Treatment changes occlusion and jaw motion**
- **Cranial bone position**
- **Structure balance**
 - Head leveling**
 - Cranial-pelvic organization**

Examination prior to the stomatognathic area rationale

- **Closed cervical kinematic chain**
- **Gait mechanism**
 - Foot and ankle function**
 - Walking gait**
 - Gait testing**

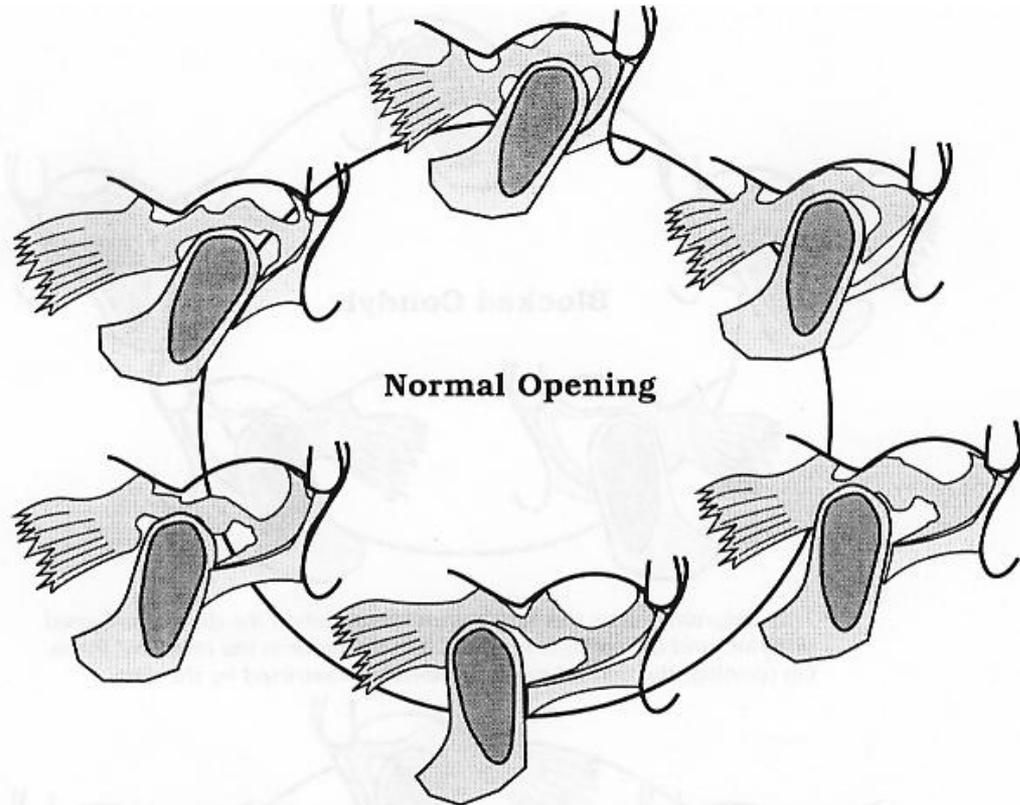
Closed kinematic muscle chain-stomatognathic system

- **Body language of imbalance**
- Tenderness
- AP postural balance
- Head level
- Open head instead of mouth
- Head movement

Head and cervical spine unleveling- shoulder leveling

- **Cervical muscle imbalance**
 - Subluxation(upper cervical-atlas/occiput)
- Cranial faults
- Foot dysfunction
- Local muscle involvement
- Reflexes

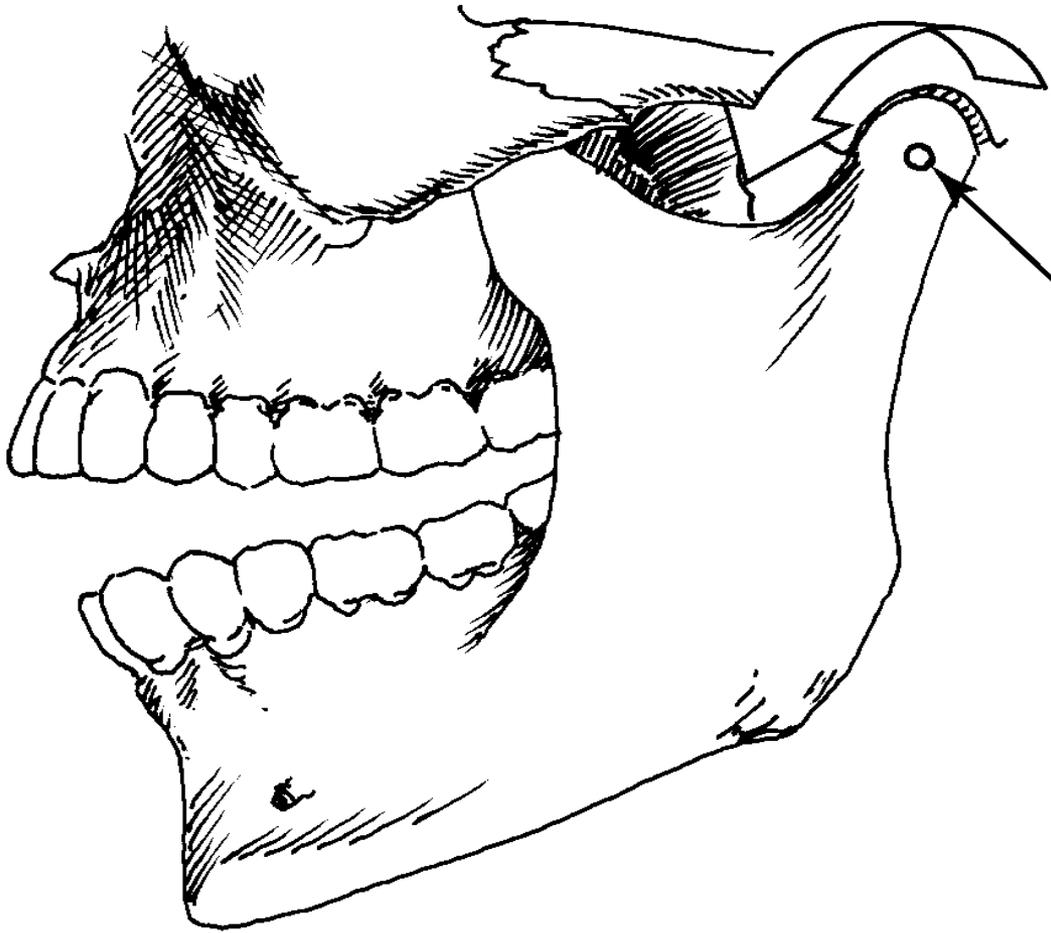
Temporomandibular joint



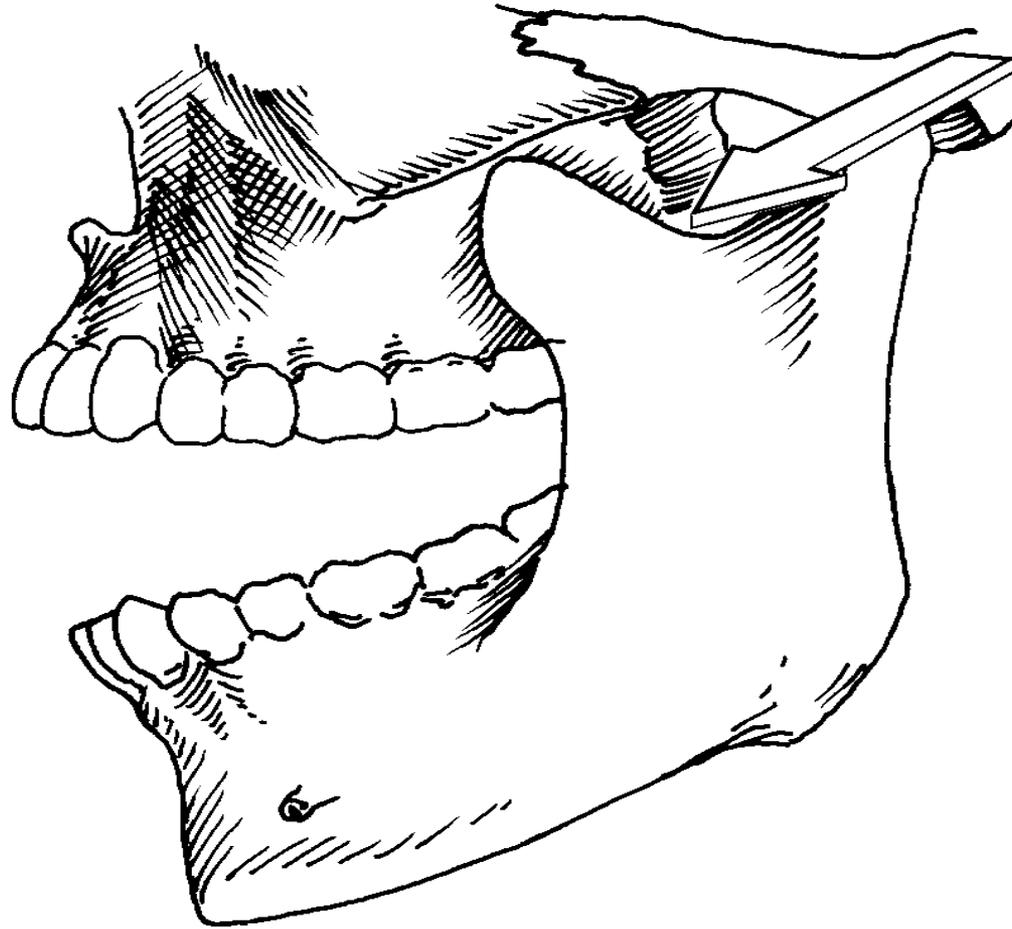
- **Penfield and Rasmussen:**

”35-40퍼센트의 인체내 신경이 얼굴과 머리와 관련이 되어있다”

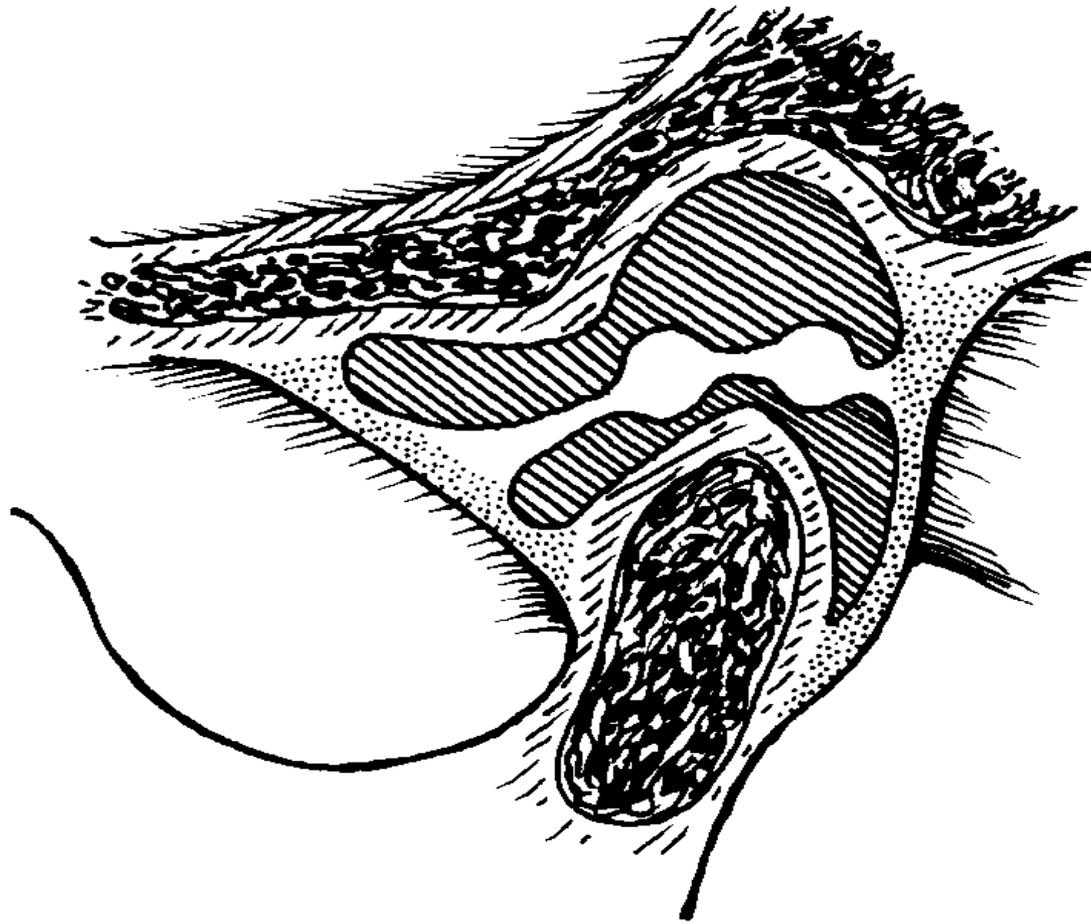
TMJ rotation



TMJ translation

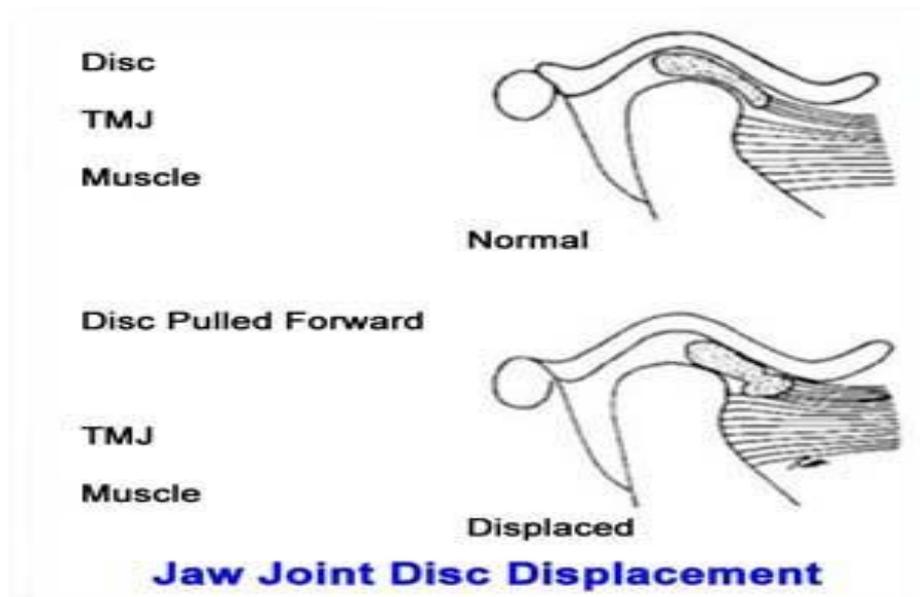


TMJ-sagittal section

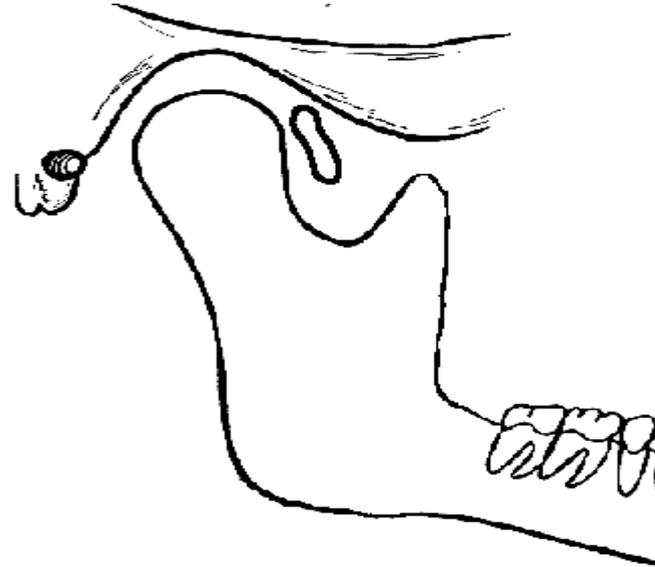
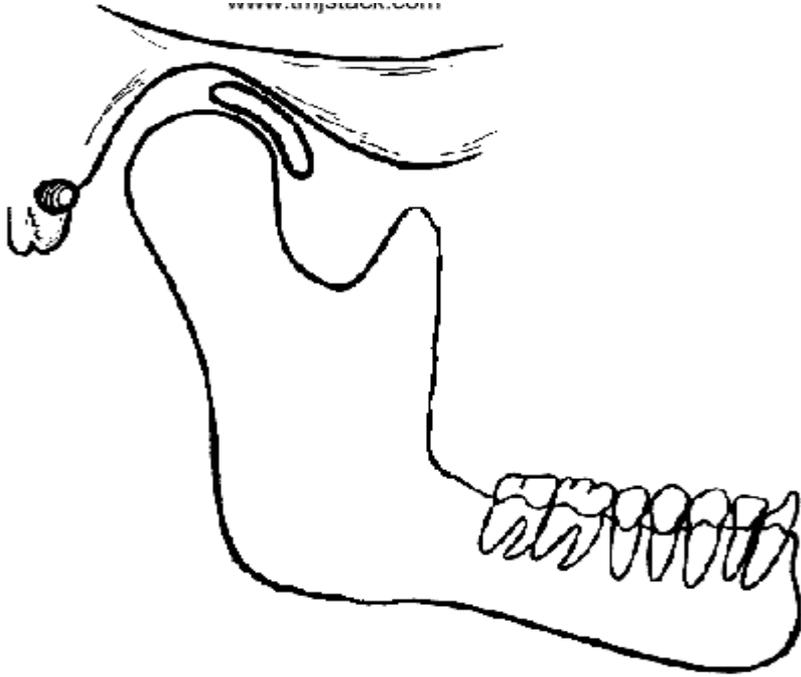


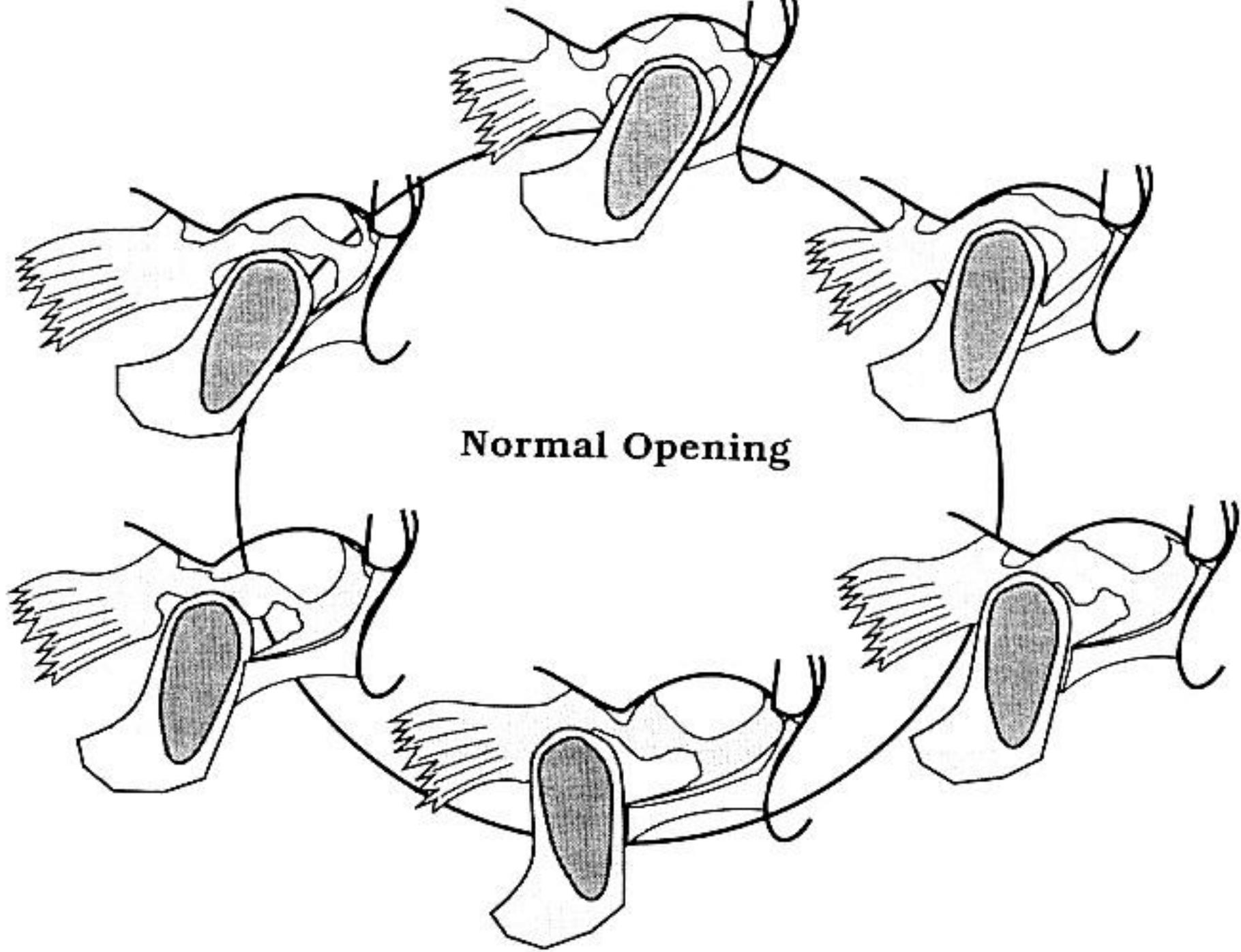
Opening click

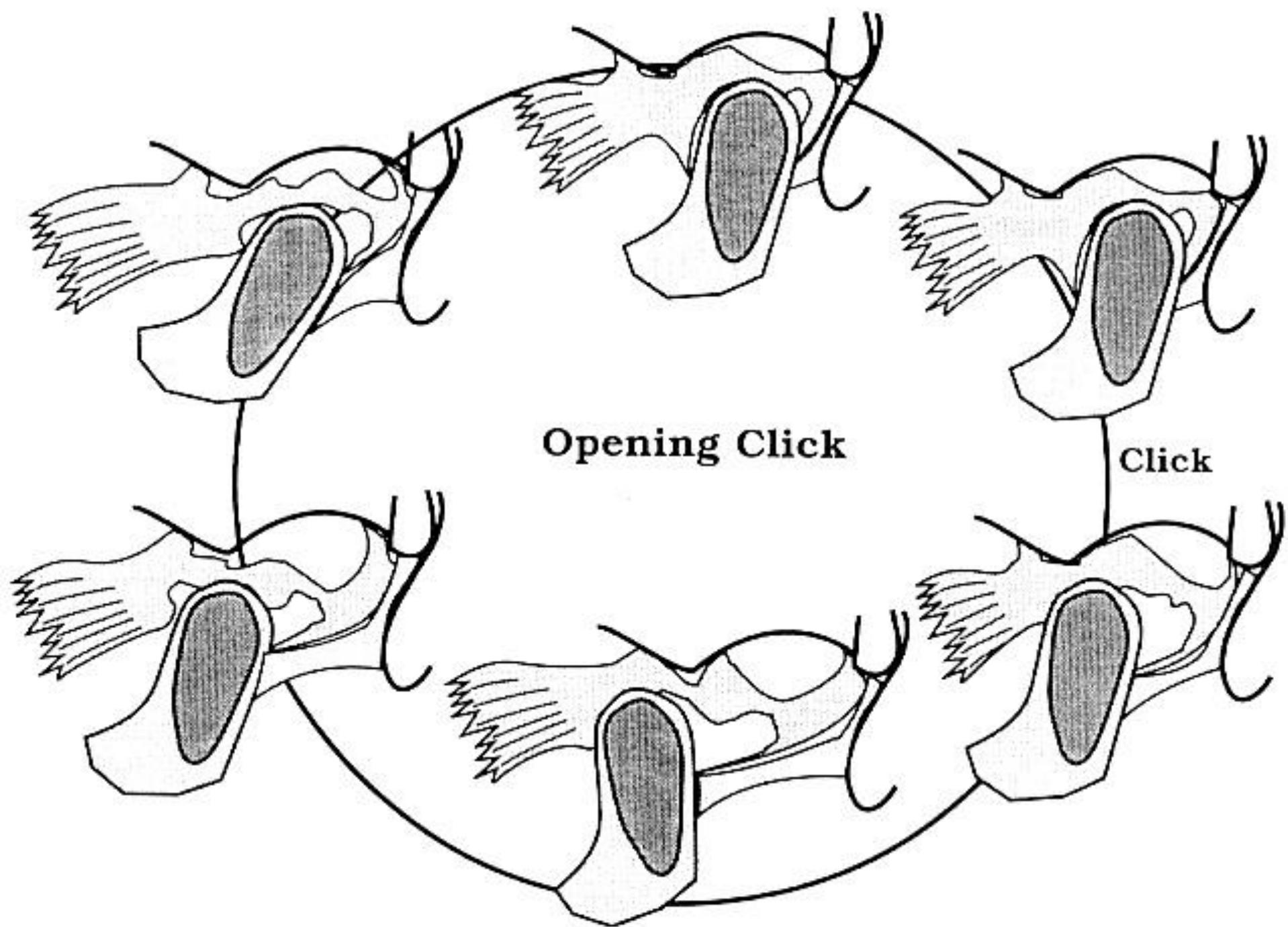
1. too far ant movement of disc in opening muscle
due to hypertonic lateral pterygoid muscle
2. too far post movement of condyle
due to hypertonic posterior temporalis muscle



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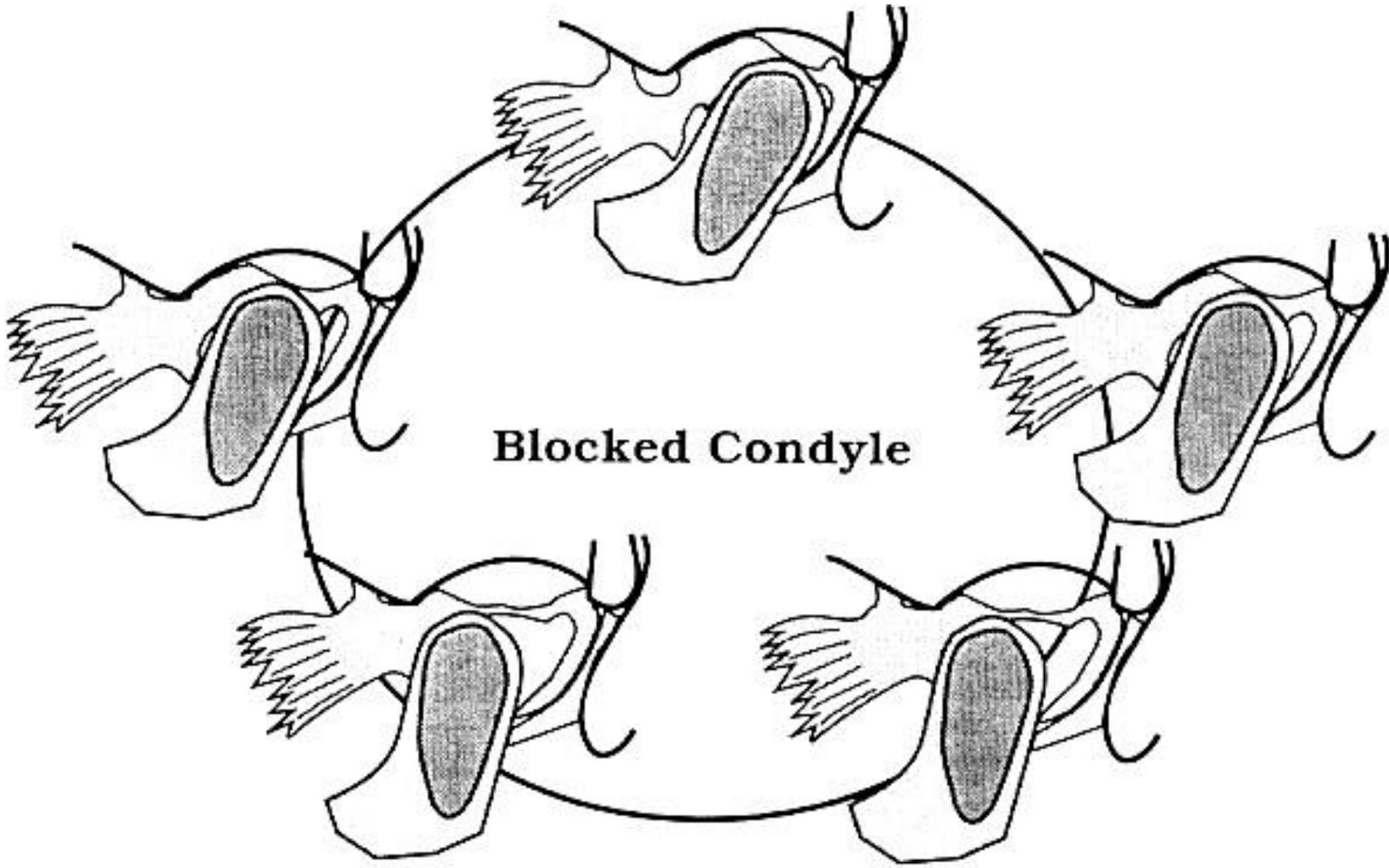


Opening Click

- **Imbalance between the temporalis and the inferior division of the external pterygoid and the digastric muscle**
 - **The digastric works at the end stages of opening to pull the mandible inferior and posterior**
 - **The temporalis muscle progressively relaxes while the inferior division of the external pterygoid pulls the condyle inferior and anterior**

Closed lock

- greater degree of forward movement of disc due to 1, 2 hypertonic muscle



Blocked Condyle

Closing Click

- **Possible hypotonicity of the external pterygoid - superior division**
 - It would fail to hold the disc anterior allowing a snapping back of the disc
- **Hypertonicity of the temporalis and or the masseters**
 - Decreasing the spacing between the mandible and the temporal fossa

Recapturing the disc

- **Stand behind the patient and stabilize their head so as to prevent any posterior motion.**
- **Grasp under the inferior angle of the mandible bilaterally and stabilize your hands against the skull.**
- **Exert pressure to separate the mandible in a lateral direction.**
- **Ask the patient to protrude the mandible and open as wide as possible. The patient then closes and is asked to open again.**
- **At complete opening for the second time, the hand contact is removed and the patient returns the mandible to the resting position.**

Consideration prior to equilibration

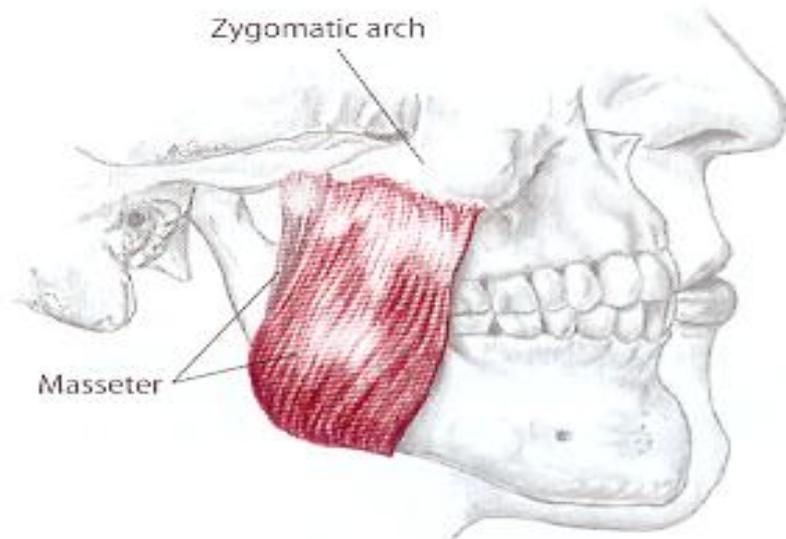
- Cranial–sacral corrected
- Muscles of mastication balanced
- Total stomatognathic system balanced
- Factors immediately prior to equilibration
- Foot balance

TMJ 근육

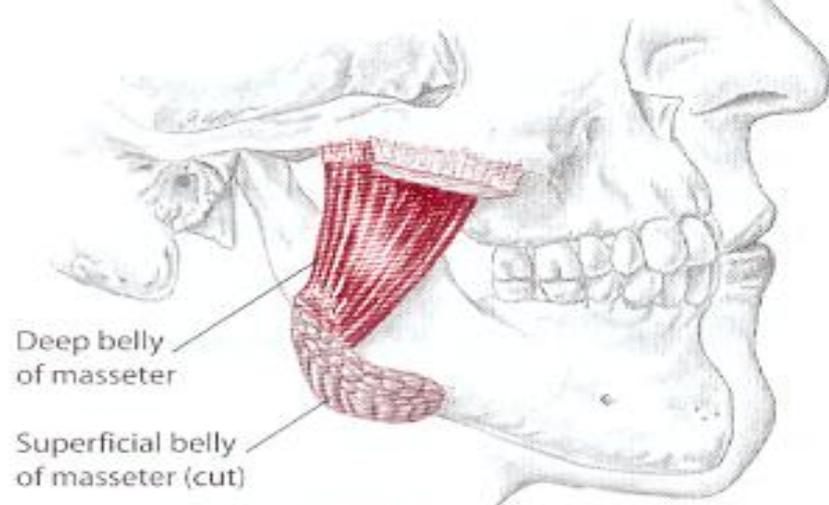
- **Closing: temporalis, masseter, internal pterygoid, superior division external pterygoid**
- **Opening: inferior division external pterygoid, anterior digastric**
- **Lateralization: opposite internal pterygoid and inferior division external pterygoid, same side temporalis**
- **Protrusion: inferior division external pterygoid**
- **Retraction: deep fibers of masseter, posterior temporalis**

Masseter

- **기시: Zygomatic arch**
- **종지: Angle & ramus of mandible – outer surface; coronoid process**
- **기능: Closes the jaw; clenches the teeth; mastication**
- **Spinal Levels: Innervation: V-3 (mandibular)**



(5.43) Lateral view



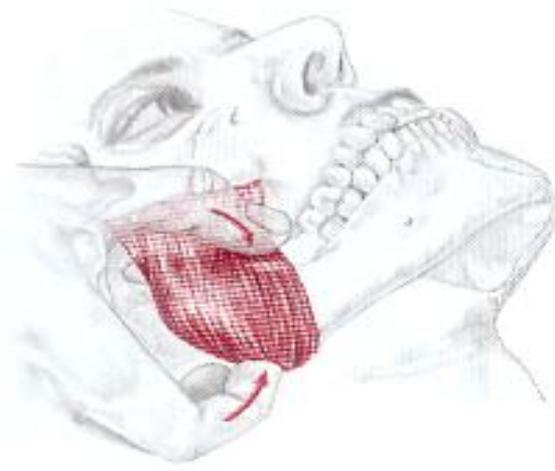
(5.44)



Location Superficial, side of face
BLMs Angle of mandible, zygomatic arch
Action "Clench your jaw"



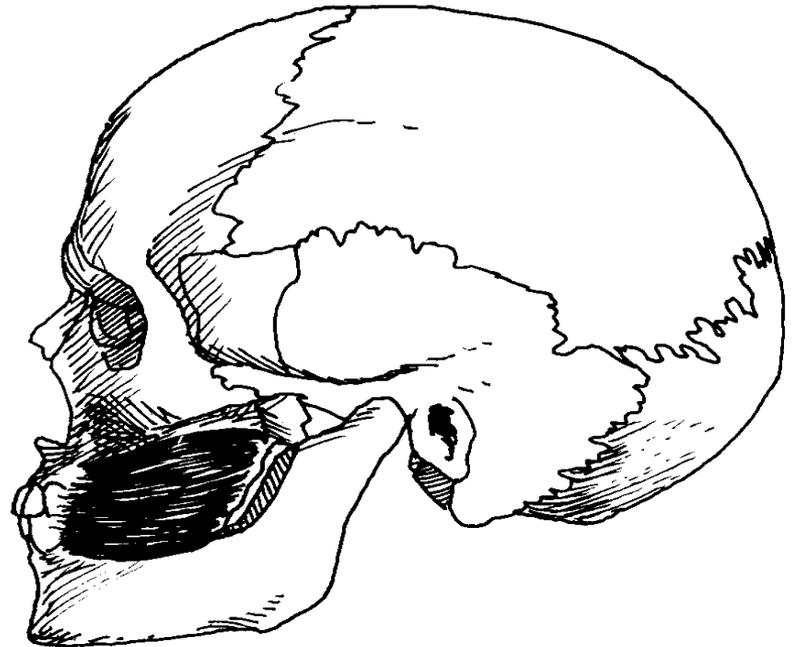
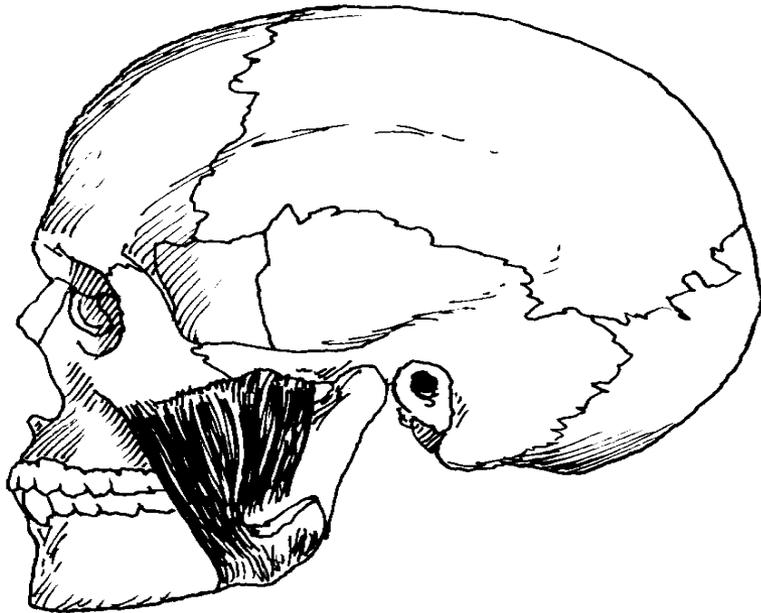
(5.45) Partner supine, clenching her jaw



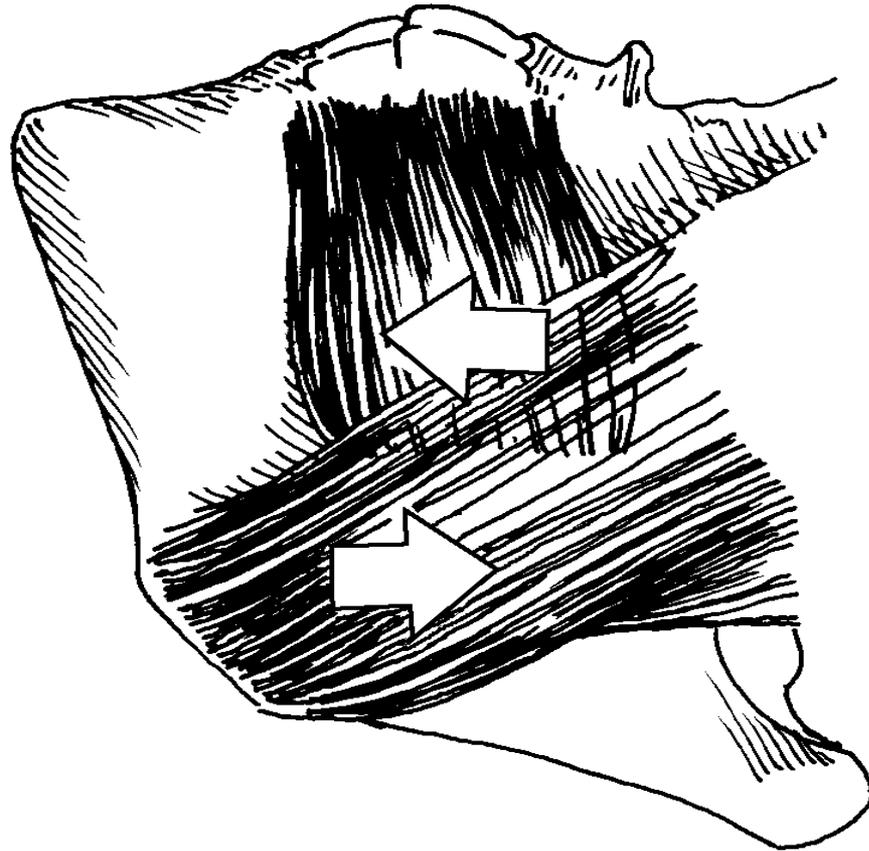
(5.46) Partner relaxes her jaw while you grasp the masseter

masseter

- **action: aids to closing the mandible. The deep masseter fibers aid in retraction of the mandible**
- **check for cruciate suture fault**



Masseter and buccinator



Maseter and buccinator 치료



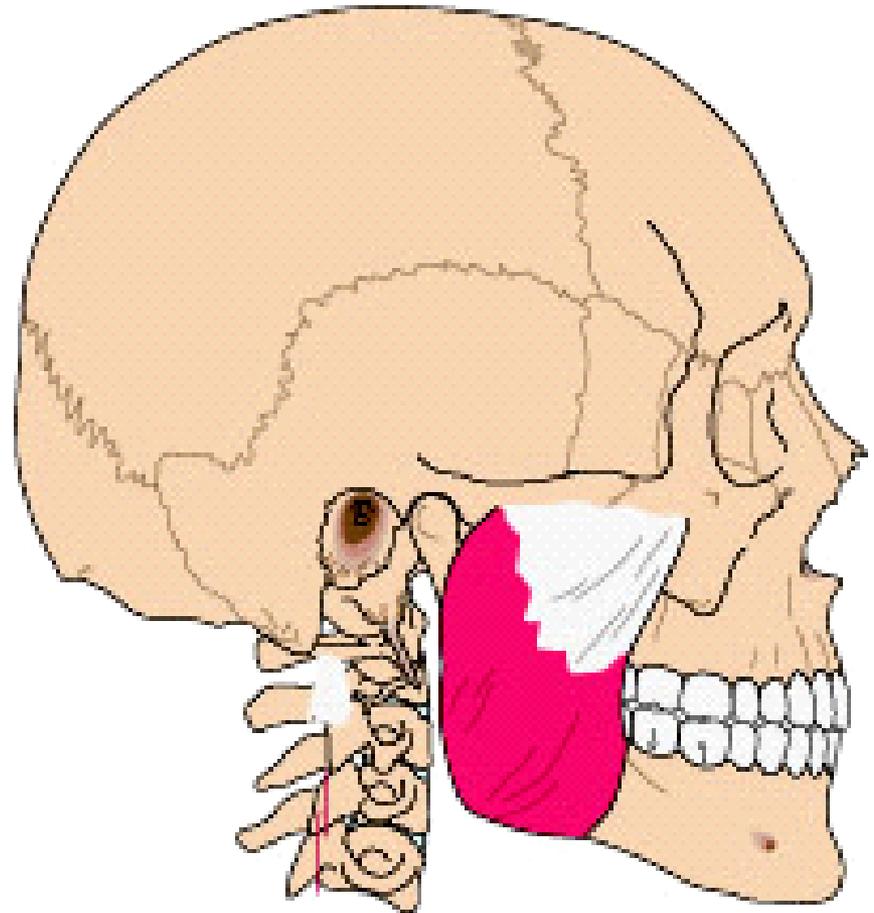
Masseter

- 기관: N/A
- 경락: 위장
- 영양: Raw veal bone
- Chapman's Reflex: (Bilateral) Ant: IC spaces 2, 3, & 4 peristernal; Post: T-2,3,4

- 임상적 적응증:
- TMJ 문제
- 턱 근육이 쉽게 피로해지면서 씹는 문제가 생긴다

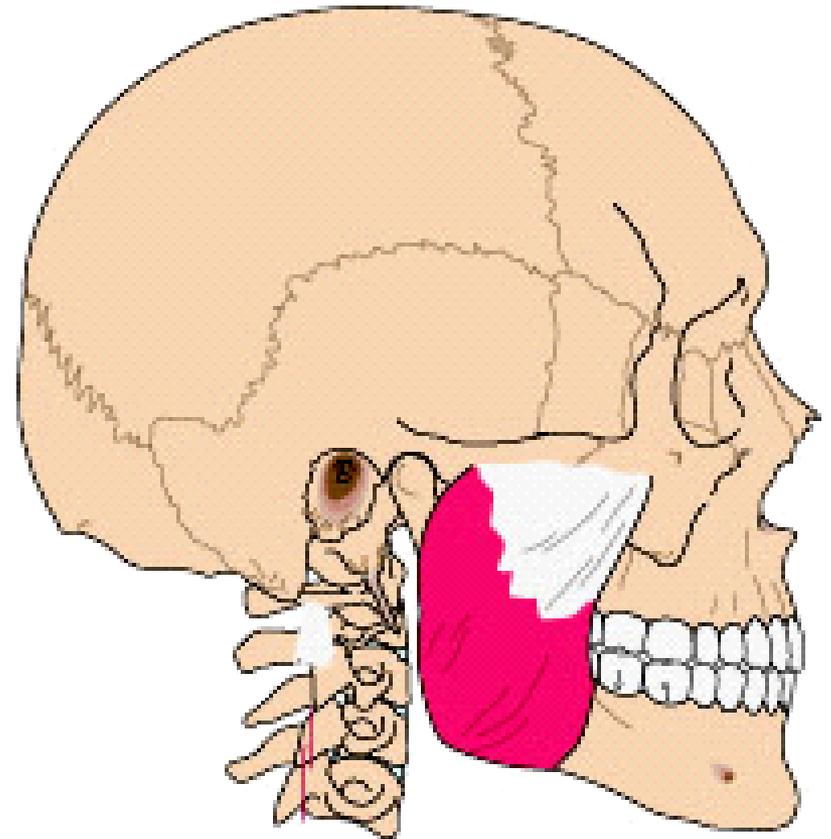
Masseter - Origin

- **Superficial:**
 - Zygomatic arch
- **Deep:**
 - Zygomatic arch



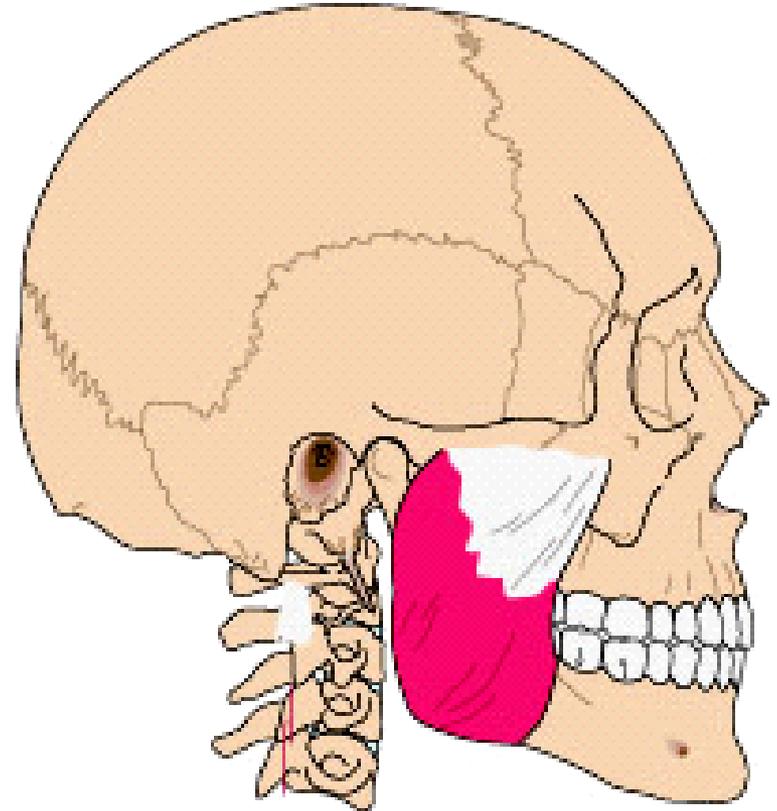
Masseter - Insertion

- **Superficial:**
 - External surface of the angle of the mandible and the inferior half of the ramus.
- **Deep:**
 - External surface of the superior half of the ramus of the mandible



Masseter - Action

- Aids to closing the mandible.
- Deep masseter fibers aid in retraction of the mandible.



Masseter - Synergists

- **Closing:**
 - **Temporalis, Superior division of the External Pterygoid, Internal Pterygoid**
- **Lateral deviation:**
 - **Contralateral Superior External Pterygoid and Internal Pterygoid, ipsilateral temporalis**
- **Retraction:**
 - **Posterior Temporalis**

Masseter - Nerve Supply

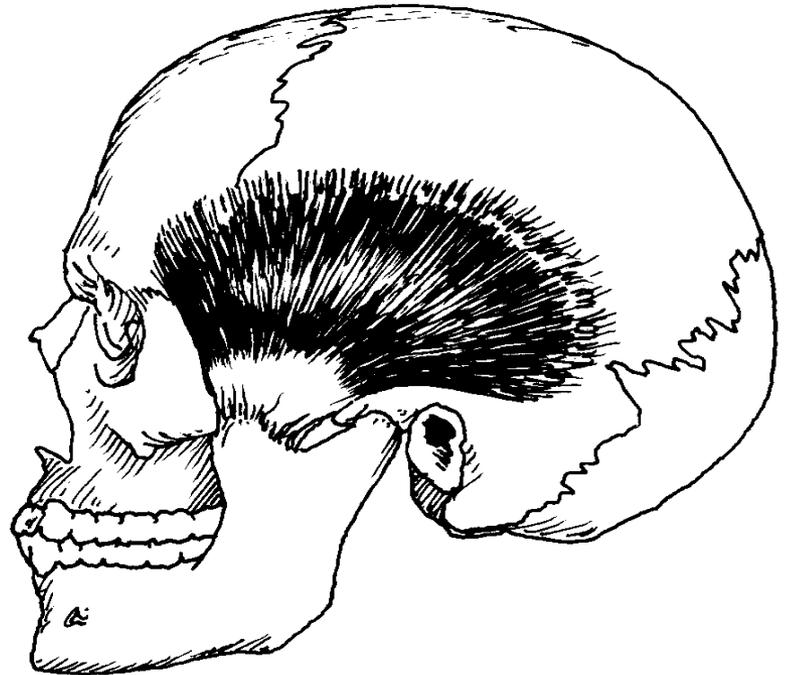
- **Masseteric nerve which is derived from the anterior branch of the mandibular division of the Trigeminal nerve. (Cranial V)**

Temporalis

- **origin: temporal fossa**
- **insertion: mandible at coronoid process and ramus**

Temporalis

- **action: closing the mouth**
 - **clenching of the incisors from anterior fibers**
 - **retract the mandible from posterior fibers**
 - **lateral deviation from middle and posterior fibers**

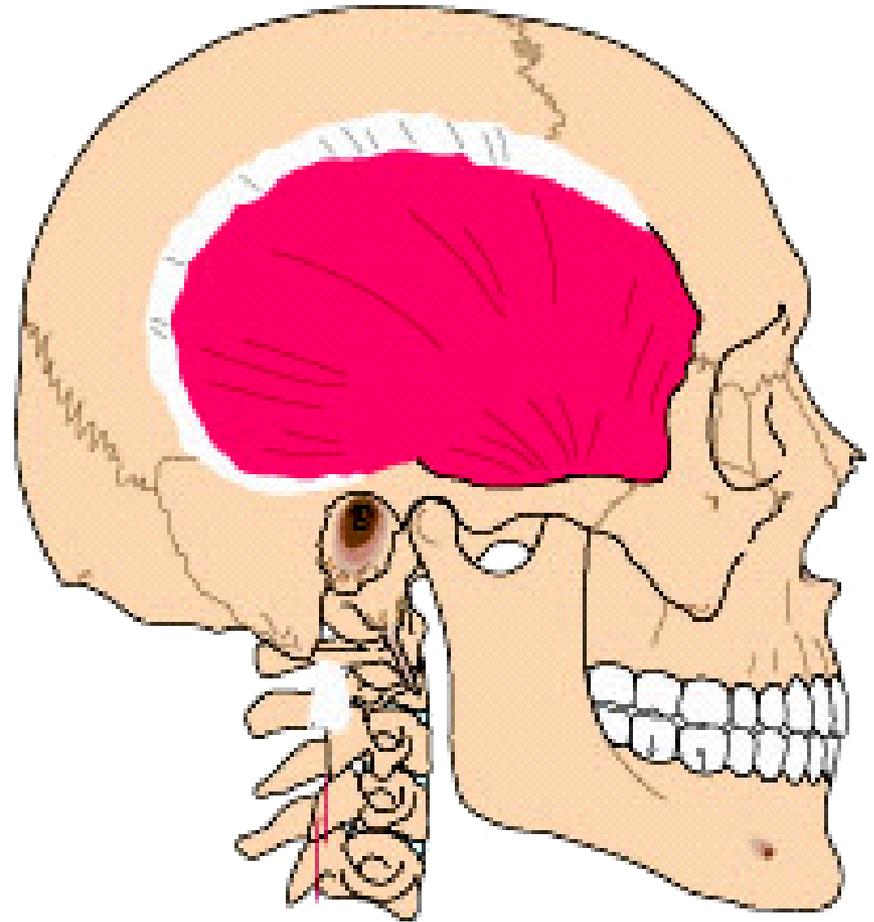


Temporalis

- 기관: N/A
- 경락: 위장
- 영양: Raw veal bone
- Chapman's Reflex: (Bilateral) Ant: IC spaces 2, 3, & 4 peristernal; Post: T-2,3,4
- 임상적 적응증:
- TMJ 문제
- 턱 근육이 쉽게 피로해지면서 씹는 문제가 생긴다
- temporoparietal jam cranial fault와 관련된 fascial flush

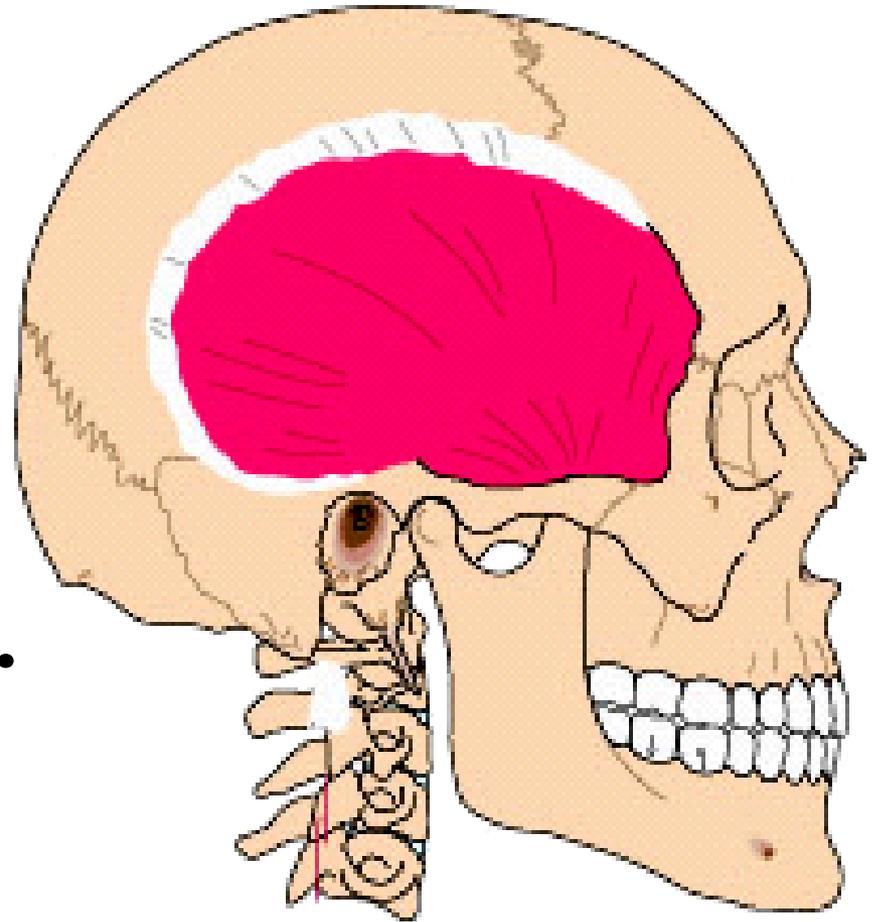
Temporalis - Origin

- **Attaches to the rim of the temporal fossa which is composed of parts of the frontal, sphenoid and parietal bones.**



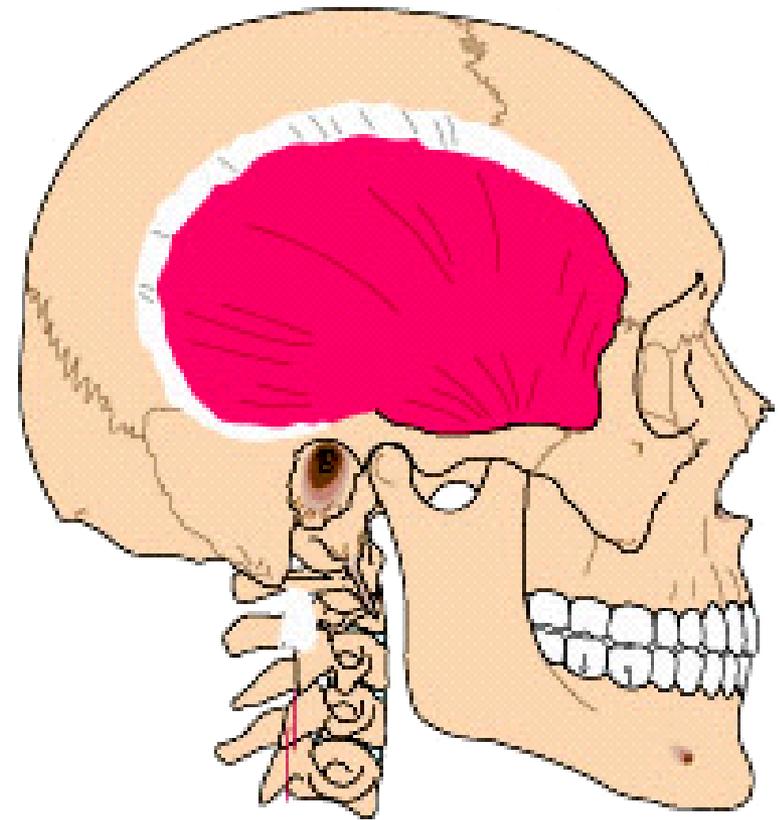
Temporalis- Insertion

Attaches to the mandible at the coronoid process as well as the anterior superior edge of the ramus.



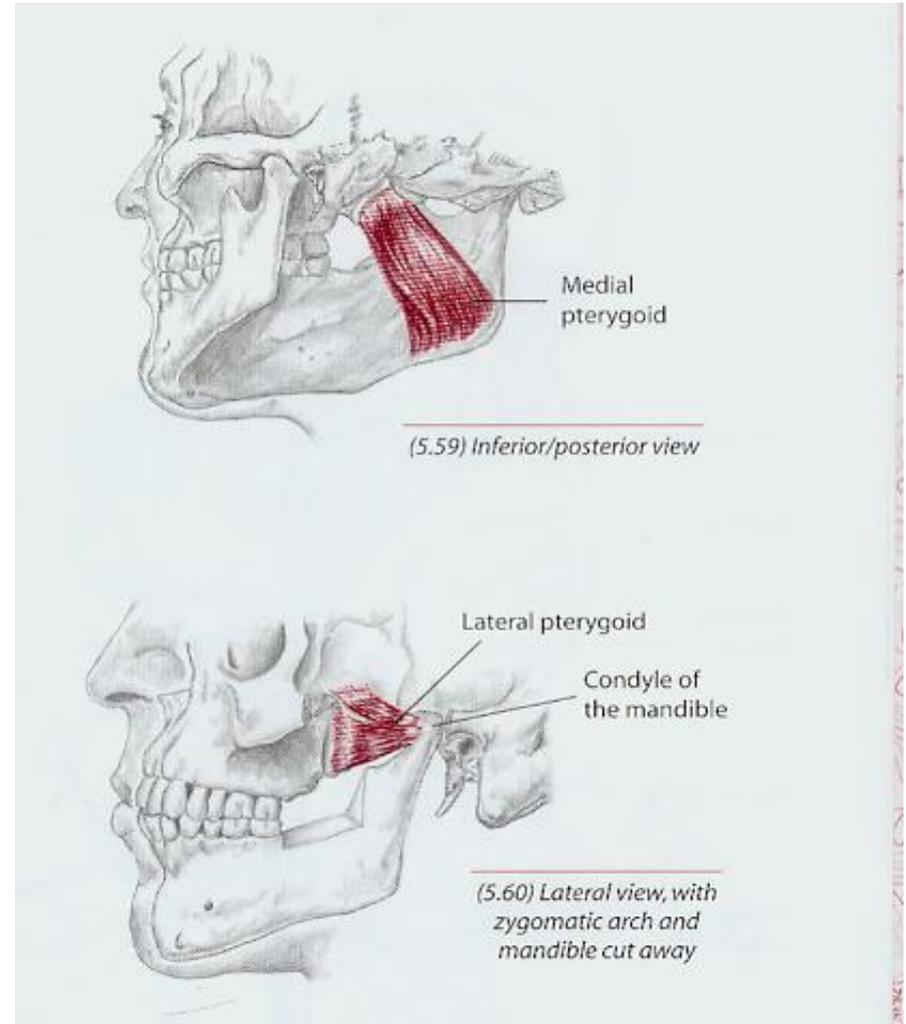
Temporalis - Action

- Aids in closing the mouth (elevation of the mandible).
- Clenching of the incisors is accomplished by the anterior fibers.
- The posterior fibers function to retract the mandible.
- Lateral deviation to the side of contraction is performed by the middle and posterior sections of the muscle.



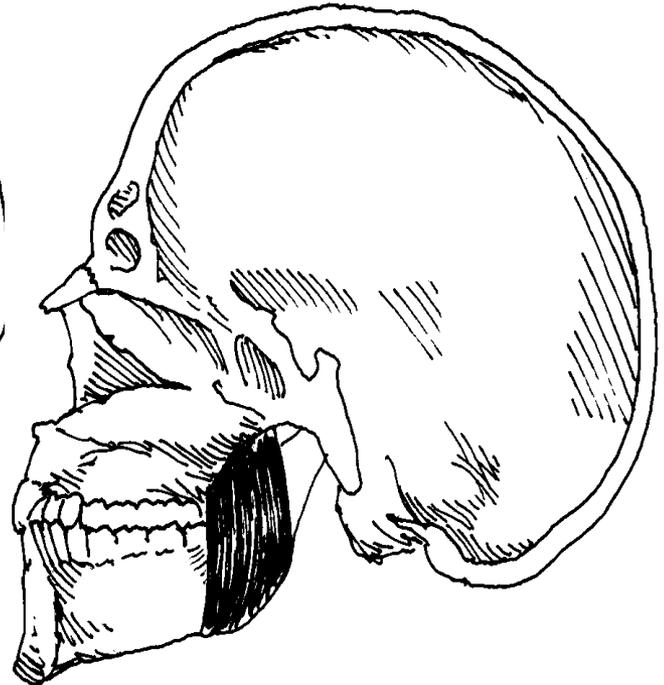
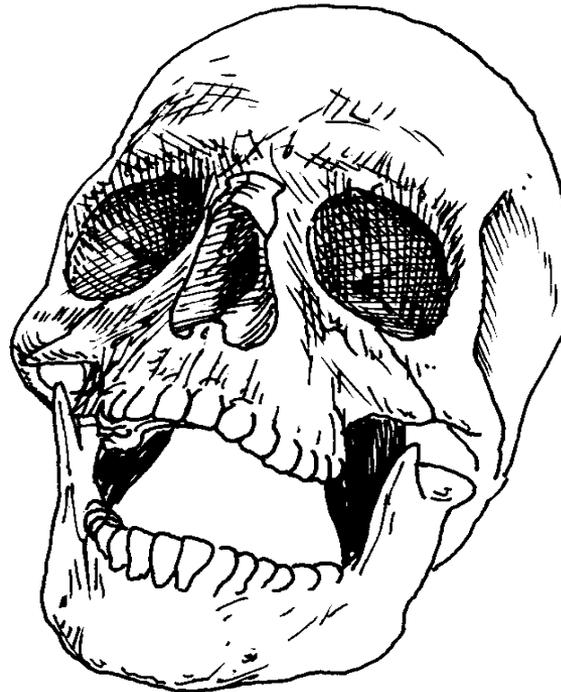
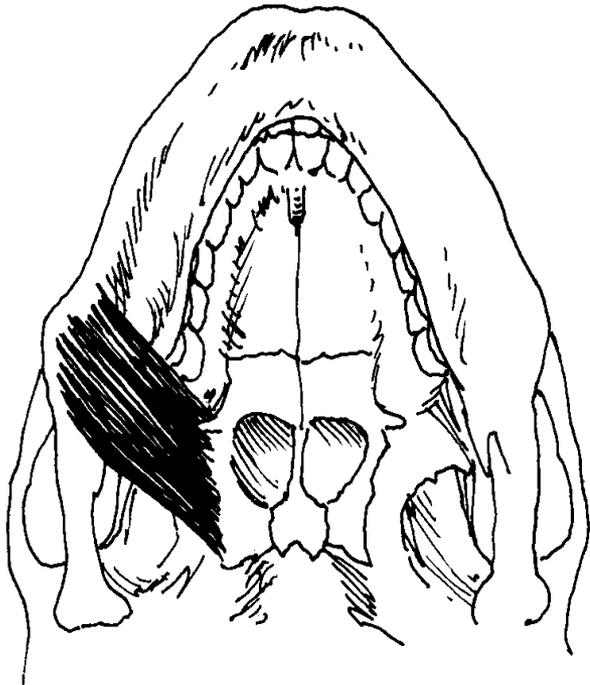
Internal pterygoid

- **origin: medial aspect of the lateral pterygoid of the sphenoid**
- **insertion: lower border of the ramus (angle of the mandible)**



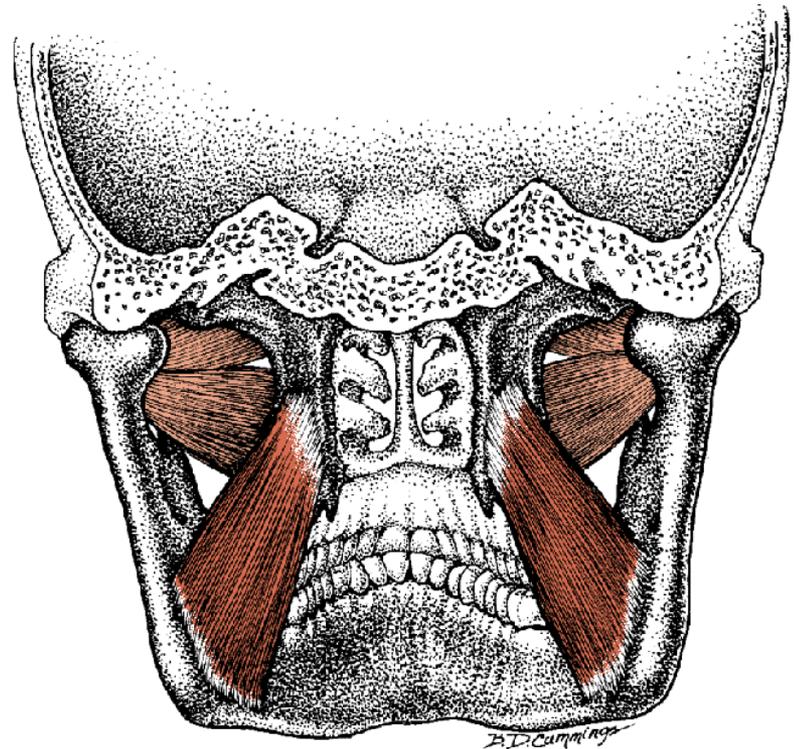
Internal pterygoid

- masseter와 internal pterygoid는 mandibular sling을 형성 - hold the mandible and stabilize the condyle



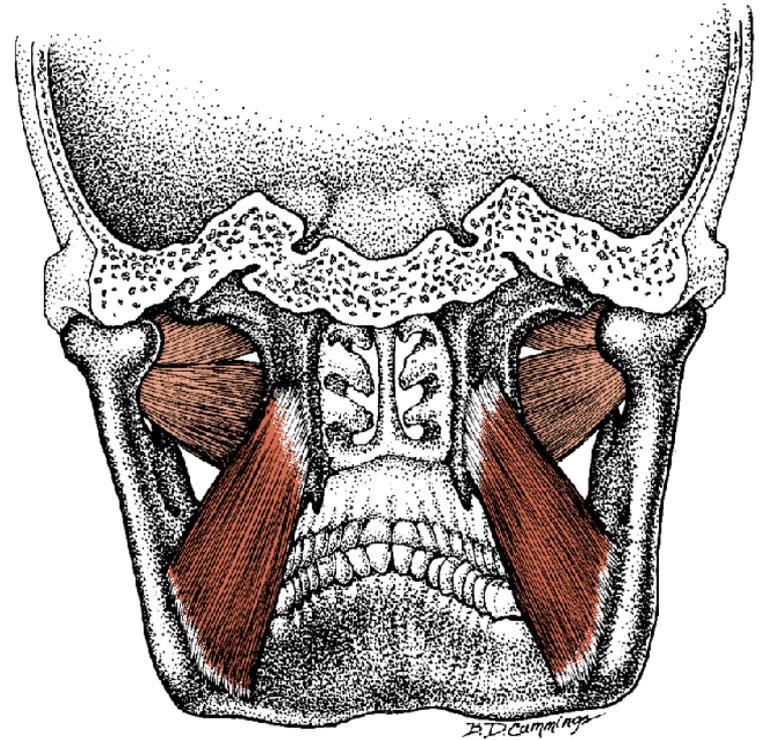
Internal Pterygoid

- **Origin**
 - Attaches to the inner aspect of the lateral pterygoid plate of the sphenoid.



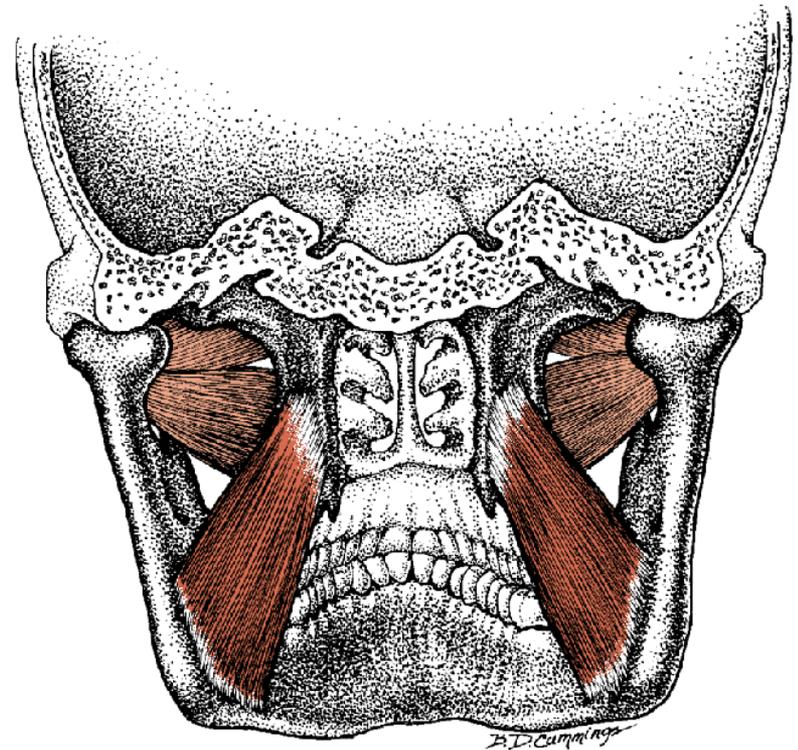
Internal Pterygoid

- **Insertion**
- **Attaches to the lower border of the ramus near the angle of the mandible.**



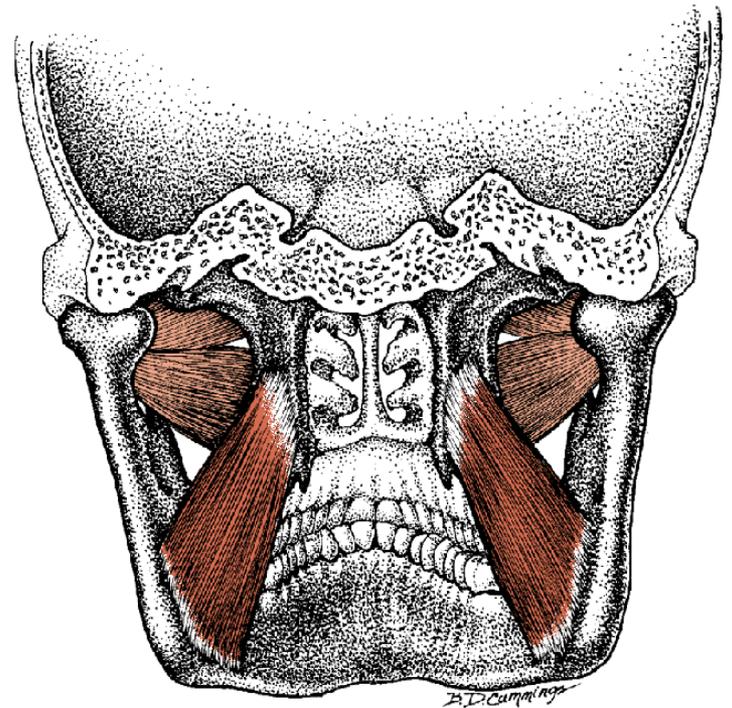
Internal Pterygoid

- The masseter and the internal pterygoid form the mandibular sling. The combination of these muscles acts to hold the mandible and stabilize the condyle squarely in the fossa.



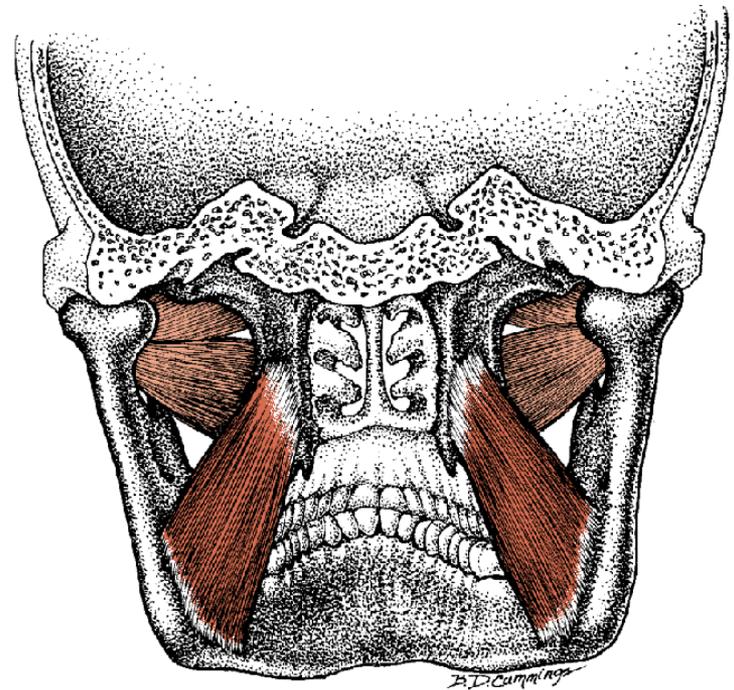
Internal Pterygoid

- Action
 - Aids in closing the mouth.
 - Unilateral contraction causes lateral deviation of the mandible to the side opposite that of the contracted muscle.
 - Most responsible for lateral deviation of the mandible



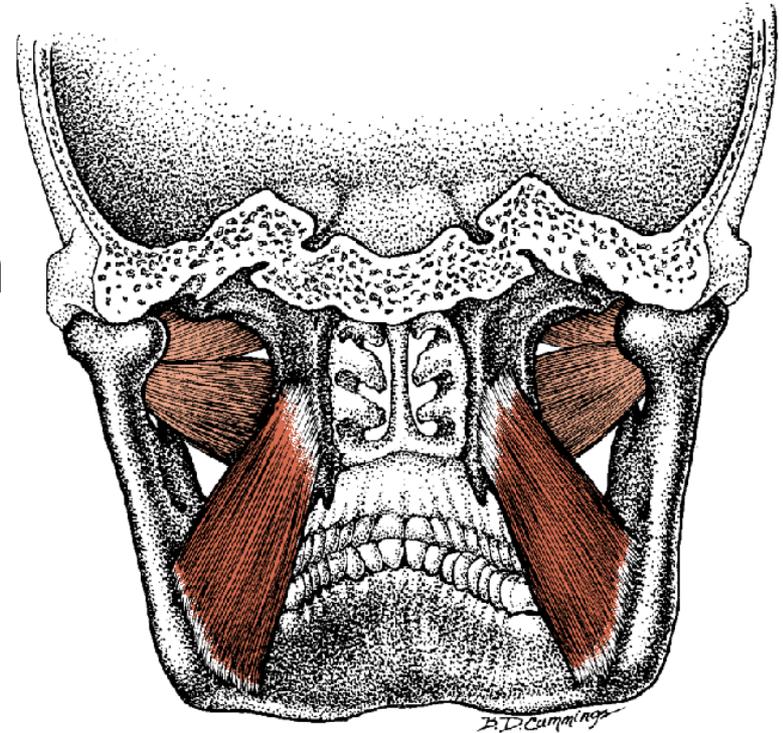
Internal Pterygoid - Synergists

- **Closing: Masseter, Temporalis, Superior division of the External Pterygoid**
- **Lateral deviation: Ipsilateral Superior External Pterygoid, contra lateral masseter and temporalis**



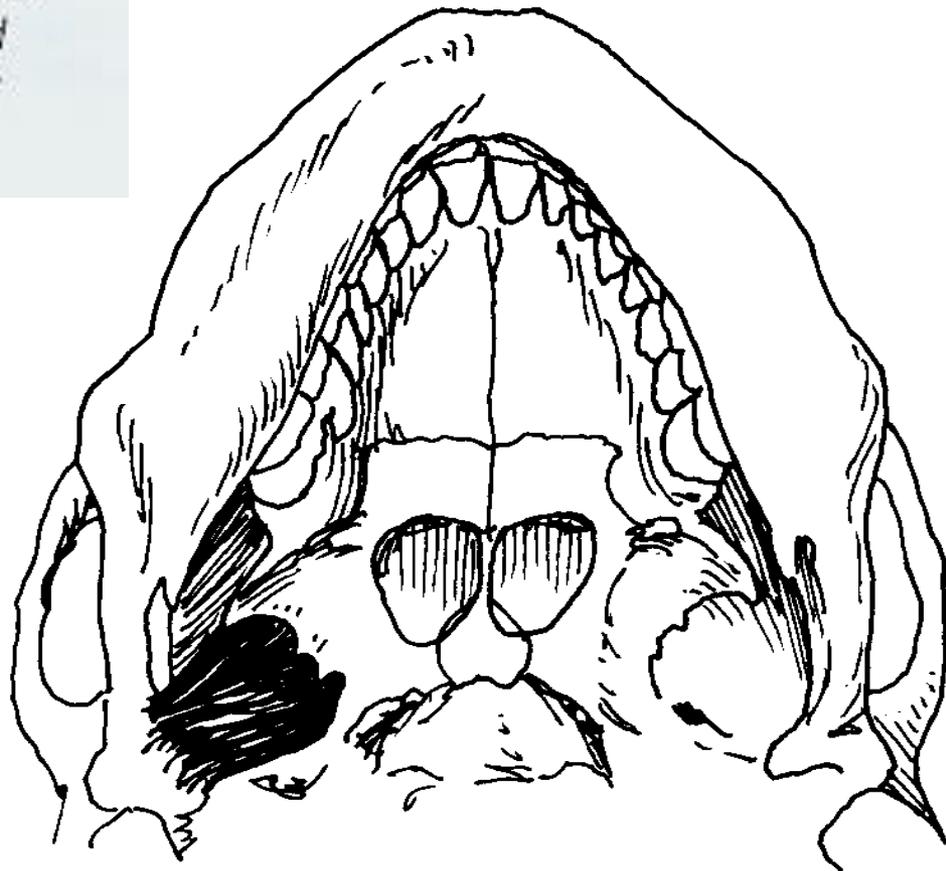
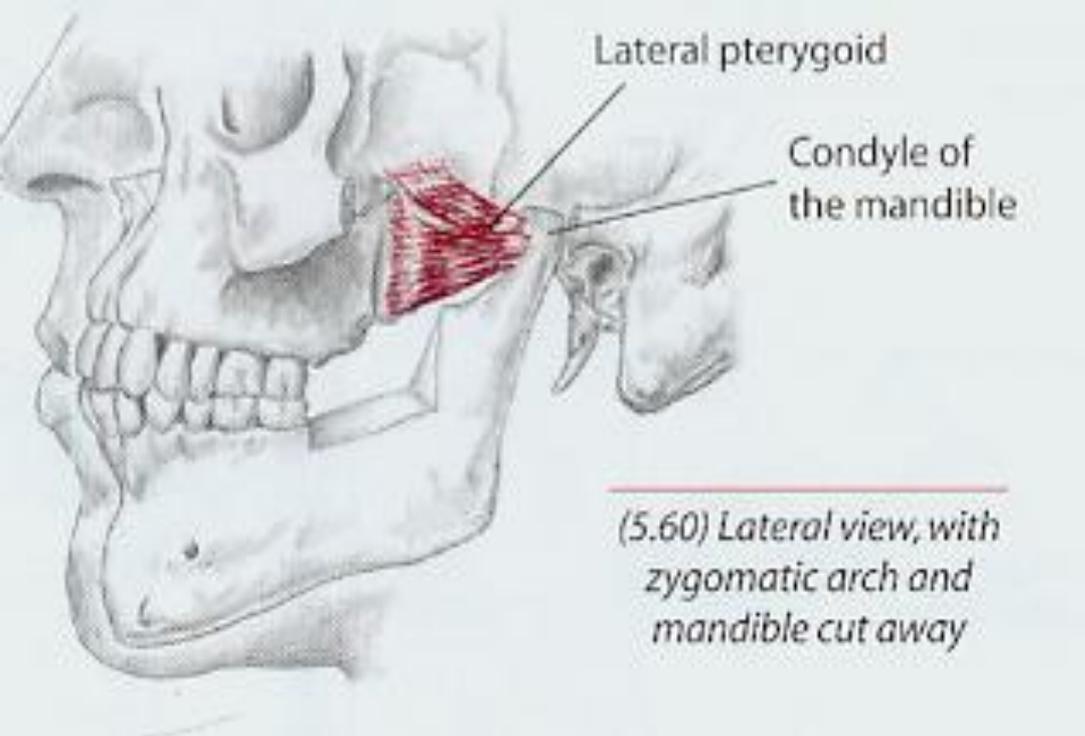
Internal Pterygoid

- **Synergists**
- **Protrusion: Superior division of the External Pterygoid, Superficial Masseter, Anterior fibers of the Temporalis**



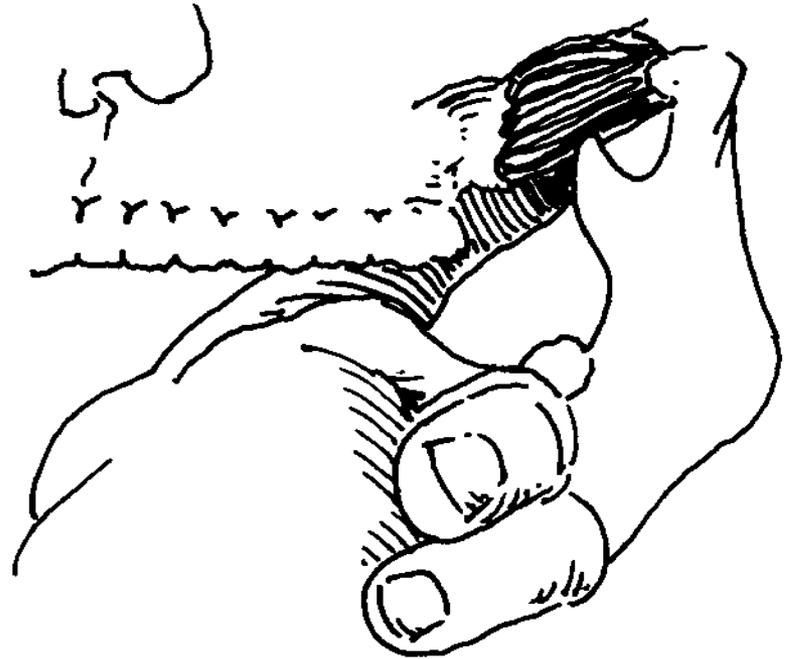
External pterygoid

- **origin: superior-infratemporal crest and inferior lateral surface of the wing of the sphenoid**
 - inferior-lateral surface of the pterygoid plate of the sphenoid
- **insertion: superior- TMJ joint capsule, articular disc, superior 1/3 neck of the condyle**
 - inferior-neck of the condyle and ramus of the mandible just inferior to TMJ joint



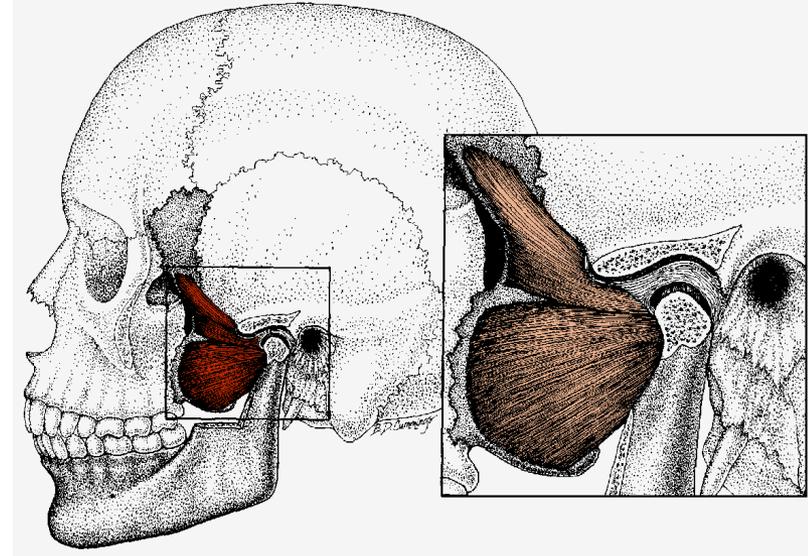
External pterygoid

- **action:**
 - **superior-exerts anterior traction on the disc during closing**
 - **inferior-opening mouth.**
- Protrusion of the mandible when contracted bilaterally.**



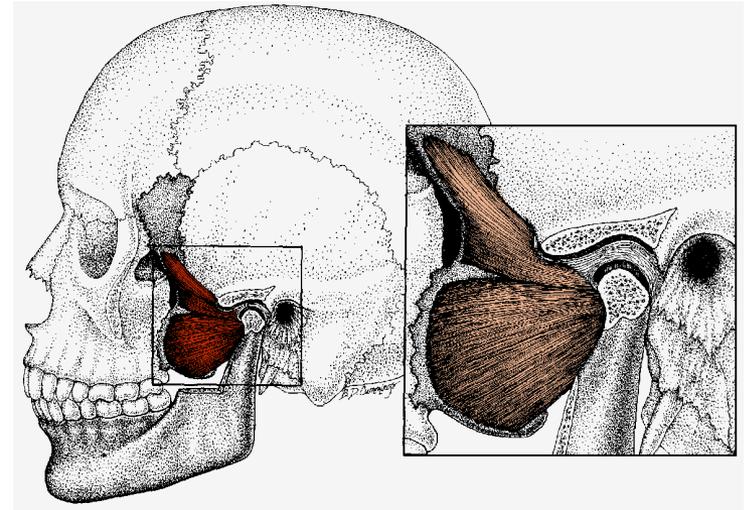
External Pterygoid - Origin

- **Superior:**
 - Attaches to the infratemporal crest and to the inferior lateral surface of the wing of the sphenoid
- **Inferior:**
 - Lateral surface of the pterygoid plate of the sphenoid



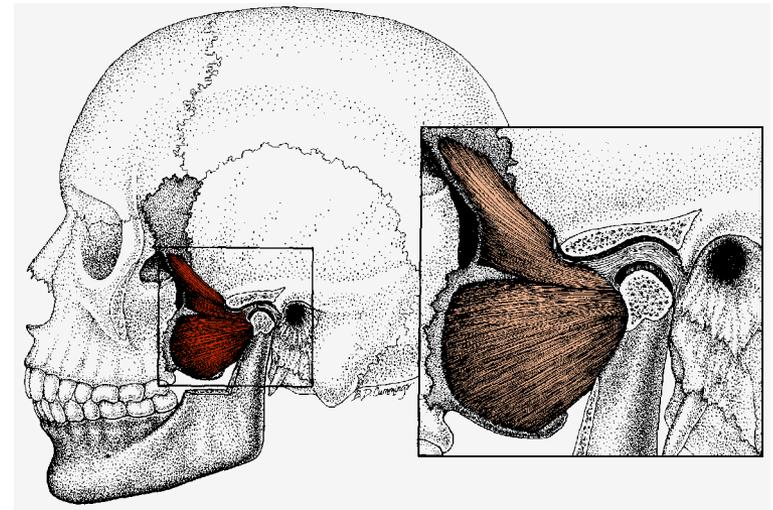
External Pterygoid - Insertion

- **Superior:**
 - Ligament of the TMJ joint capsule, the articular disc, superior one third of the neck of the condyle.
- **Inferior:**
 - Attaches to the neck of the condyle and the ramus of the mandible just inferior to the TMJ joint.



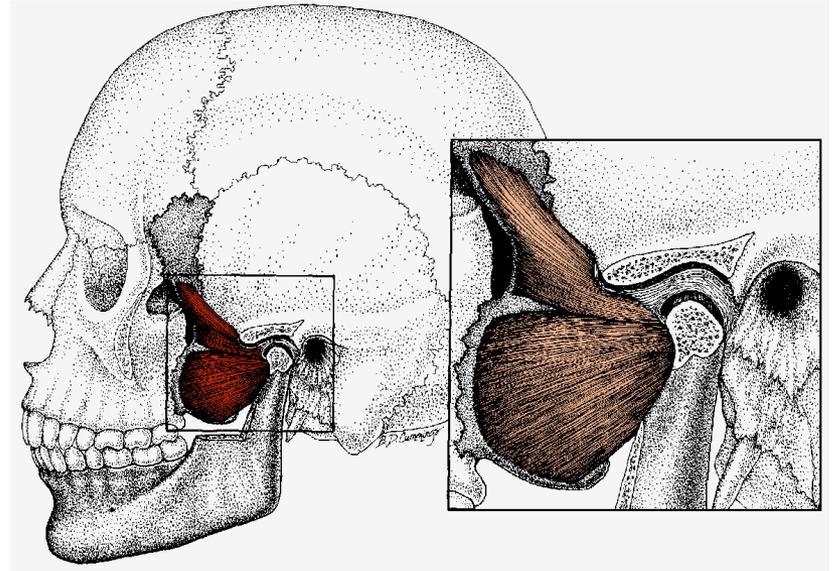
External Pterygoid - Action

- Superior:
 - Anterior traction on the disc during closing.
- Inferior:
 - Opening the mouth, protrusion of the mandible when contracted bilaterally, unilateral contraction aids in lateral deviation of the mandible to the side **opposite** contraction. Pulls the head of the condyle inferior and anterior during opening.



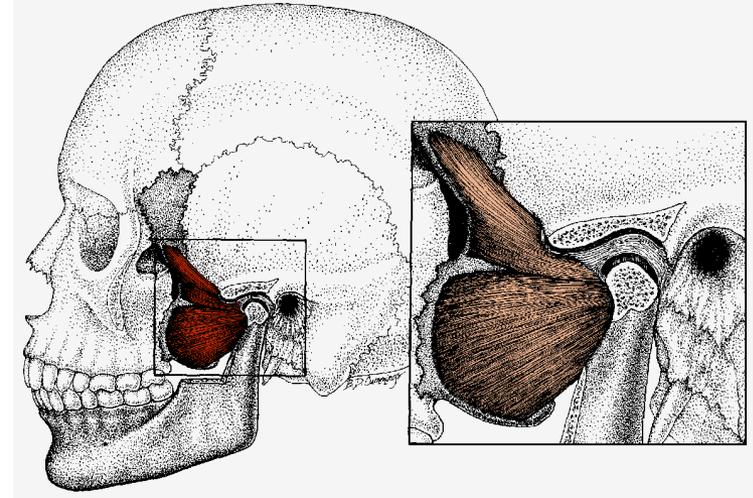
External Pterygoid - Synergists

- **Superior division:**
 - **Masseter,**
Temporalis,
Medial Pterygoid
- **Inferior division:**
 - **Digastric,**
suprahyoid
muscles

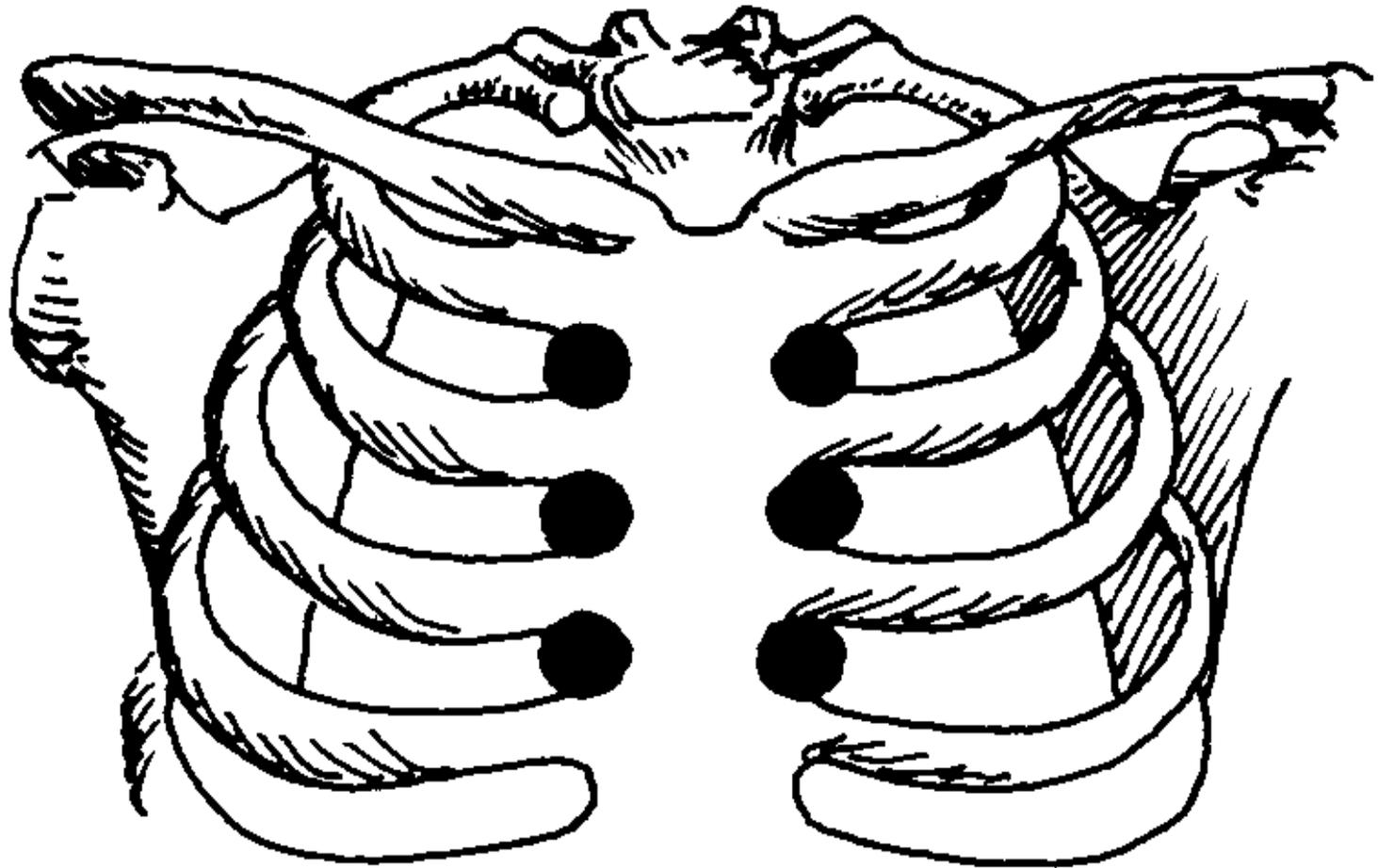


External Pterygoid-Synergists

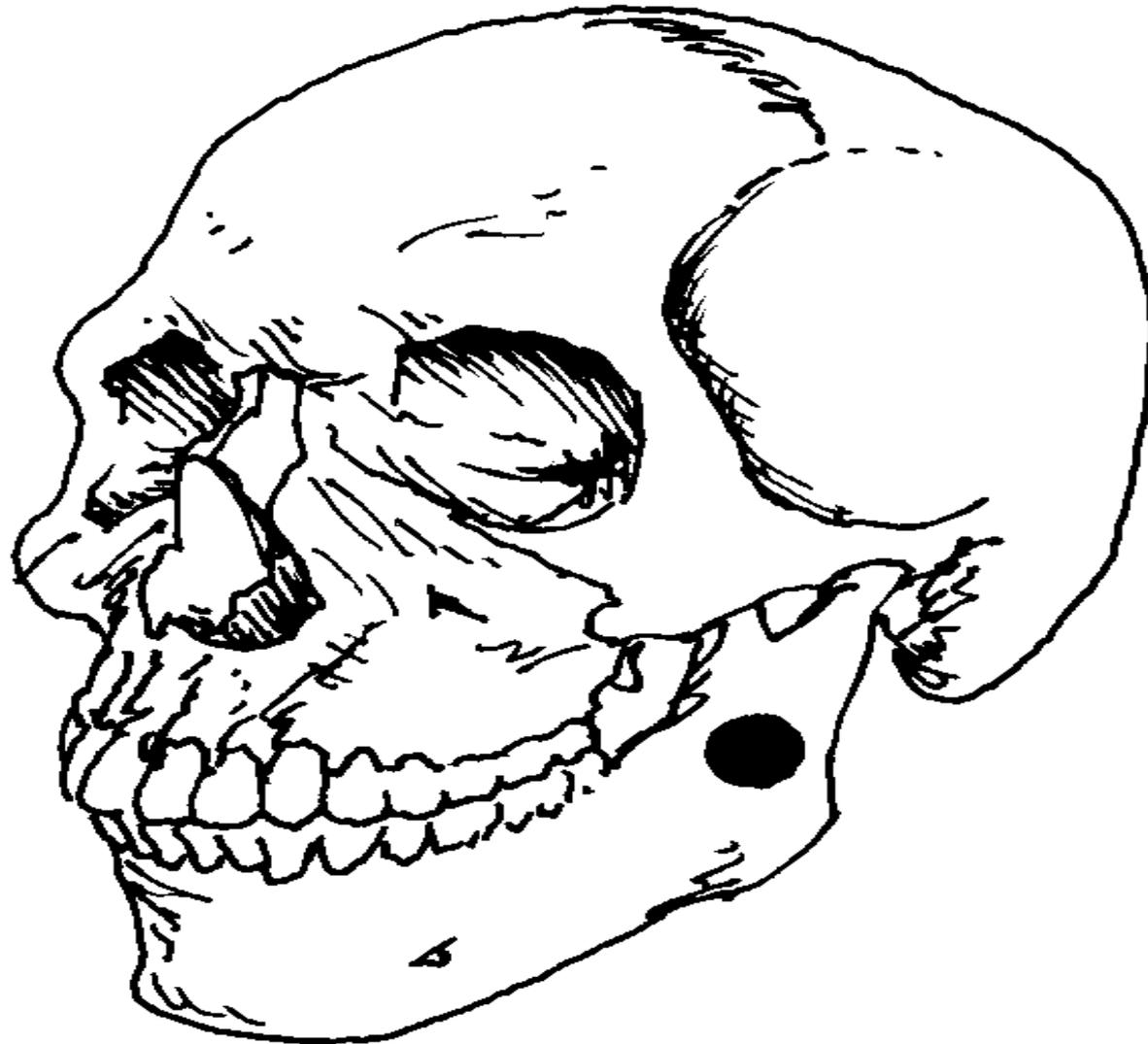
- **Lateral deviation: Ipsilateral Internal Pterygoid, contralateral masseter and temporalis**
- **Protrusion: Internal Pterygoid, Superficial Masseter, Anterior fibers of the Temporalis**



TMJ NL



TMJ NV



TMJ TL



AK exam and treatment

- **1) without TL**
 - **mouth closed without TL—tooth problem or malocclusion**
 - **mouth opened without TL---만일 지표근육이 약해지면 입을 벌린 상태에서 TL masseter, temporalis, inferior pterygoid (3 closing muscles)한다**
 - **이때 약했던 지표근육이 강해지면 indication 이 되며 해당 closing muscle을 fascial flush technique (vitamine B12)으로 치료한다.**

AK exam and treatment (cont..)

- 2) With TL
 - Without movement-Disc pathology, small intestine
 - Bite with TL—지표근육이 약하면 bite한상태에서 TL masseter, inferior pterygoid, Temporalis
치료)Turn down spindle cells
 - Open with TL-----지표근육이 약하면 해당되는 external pterygoid의 muscle spindle을 치료
 - Lateral deviation with TL –move jaw to right, left—ipsilateral temporalis(posterior), Contralateral internal pterygoid

With TL (cont..)

- **Protrusion with TL—external pterygoid**
- **Retrusion with TL---deep fiber of masseter, temporalis(posterior)**
 - **If positive—retrusion한 상태에서 TL masseter, posterior temporalis**

Painful pterygoid(external) side

- **Posterior atlas—primary atlas technique**
- **Contralateral category 2**
- **Ipsi navicular drop**

AK test, alternative

1) open mouth TMJ fault

TL bilateral mouth open wide—external pterygoid—adductor

2) bite down TMJ fault

TL bilateral with bite down-buccinator(masseter)-obturator externus

3) chewing TMJ fault

TL bilateral with chewing motion-temporalis-QL

4) lateralization of jaw fault

TL bilateral with lateralization-internal and external pterygoid-adductor and psoas(lateralization은 주로 internal이 작용한다)

1),4)는 동시에 검사하고 치료한다

5) protrude jaw forward

TL bilateral with protrude-internal pterygoid-psoas

6) jaw pull in

TL bilateral with pull in-posterior 1/3 temporalis-QL

IRT를 이용한 TMJ 교정

- temporomandibular joint (TMJ)는 많은 문제가 발생하는 곳이다. IRT를 이용해서 TMJ나 TMJ근육 혹은 관련된 치아를 치료할 수 있다
- 만일 TMJ에 TL을 해서 약한 근육이 강해진다면 고개를 뒤로 신전한 채 TMJ를 TL해본다. 만일 양성반응이면 다음의 option을 고려한다

IRT를 이용한 TMJ 교정

- 양성반응인 TMJ에 TL을 하고 IRT (atlanto-occipital flexion)를 시행한다.
 1. 고개를 뒤로 신전한 채 TMJ관련 근육의 기시 종지부를 TL한다.
 - a. External (Lateral) Pterygoid
 - b. Internal (Medial) Pterygoid
 - c. origin-insertion IRT 교정

IRT를 이용한 TMJ 교정

2. 반복되는 TMJ IRT 패턴 – Maintain IRT to TMJ 에 IRT를 유지한 상태에서 동측 치아에 TL한다. 만일 하나 혹은 그 이상에서 양성반응이 나오면 Tooth Techniques을 검사한다:
 - a. Neurological Tooth
 - b. IRT
 - c. Set Point Technique
 - d. Nociceptor–Stimulation Blocking Technique

Temporoparietal Jamming Cranial Fault (TPJ)

- TPJ는 squamosal suture에서 발생한다. parietal descent cranial fault와 비슷하지만 다음과 같이 다르다. parietal descent에서는 parietal이 아래로 움직이면서 temporal bone 의 squamosal area로 떨어진다.
- TPJ에서는 parietal bone이 squamosal suture 바깥쪽으로 끼게 된다.

Temporoparietal Jamming Cranial Fault (TPJ)

- TPJ fault는 입을 가장 크게 벌린 상태에서 TMJ를 접촉검사를 해야 양성반응이 나오는 것과 관련이 있다.
- 이것은 또한 temporalis와 masseter에 대한 fascial flush를 필요로 한다. Temporalis와 fascial shortening은 suture jamming의 원인의 일부인 것 같다.
- TPJ fault의 진단은 하악골의 ramus 아래부위를 위쪽 방향으로 직접 밀어올려 temporal bone을 parietal bone 방향으로 direct challenge하면 지표근육이 약해진다.

Temporoparietal Jamming Cranial Fault (TPJ)

- 교정은 두 가지:
 - 1) fascial release techque to the temporalis (and masseter),
 - 2) squamosal suture. 위를 안쪽 방향으로 밀면서 parietal bone을 decompression 시킨다.

Temporoparietal jam

- Diagnosis
- Superior pressure on angle of mandible

- Treatment
- 1) fascial release temporalis & masseter
- 2) parietal decompression

- CRANIAL fault related to fascial shortening

Holographic Mandible

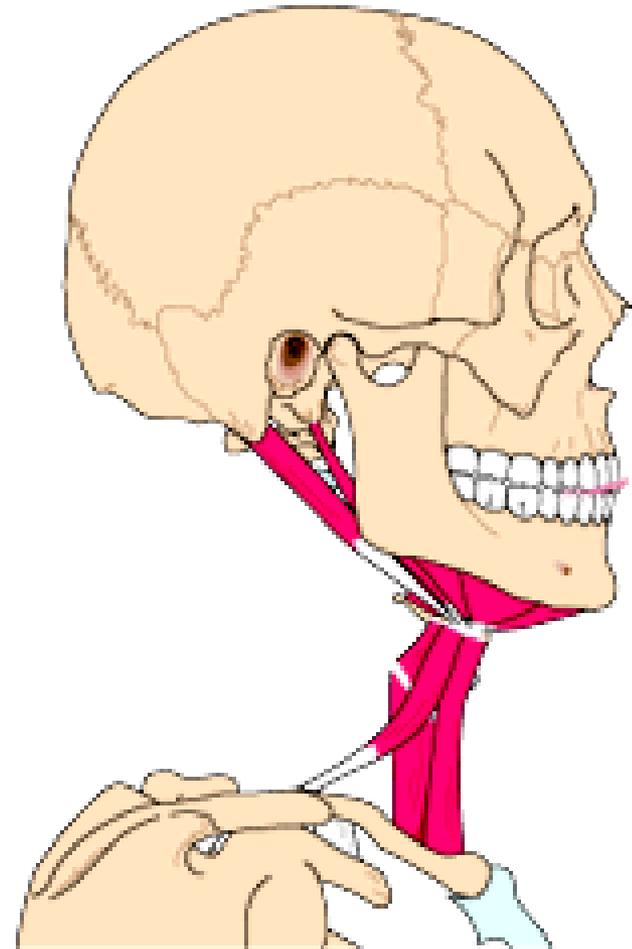
- **Cause**
 - **Chronic muscle imbalance causing alterations in the bone structure**
- **Procedure**

- **The mandible should be therapy localized using both hands for a holographic subluxation.**
 - **Contact is made on the ramus and on the body of the mandible on one side and then on the other side. A strong muscle is tested for weakening, if weakness is found, challenge the mandible as to increase or decrease the angle formed by the ramus and the body.**
 - **Correct in the direction that challenges with the phase of respiration that negated the positive therapy localization.**

- **After testing for imbalances between the ramus and the body, test for imbalances in the superior - inferior alignment of the ramus.**
 - **This type of imbalance will be found if there are chronic imbalances in the internal pterygoid and the masseter muscles.**
- **In all cases, if there is a holographic subluxation present, there will be tenderness at the inferior angle of the mandible at the junction of the ramus and the body.**

Hyoid

- Importance
- Action
- Nerve supply
- Referred Pain
- Reflexes



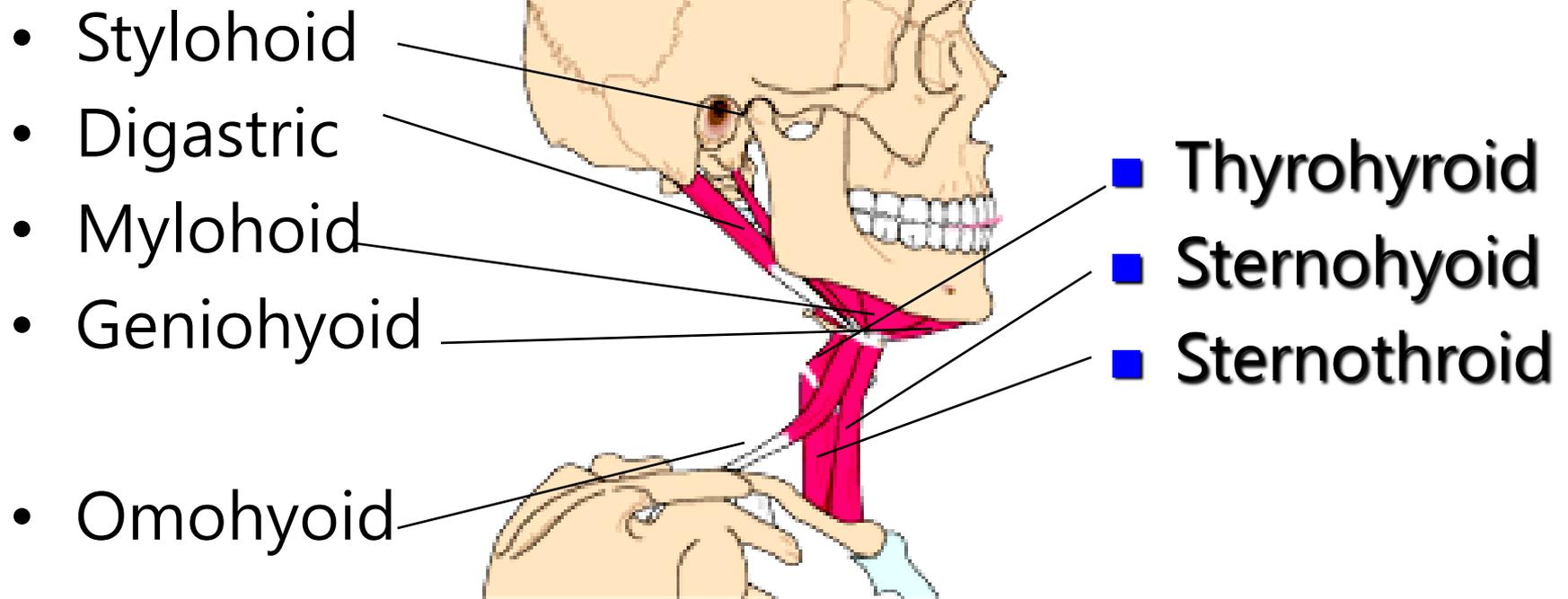
Hyoid

- U shaped bone located between the mandible and the sternum
- Suspended by muscles from the skull, tongue, first rib, sternum and scapula

Importance

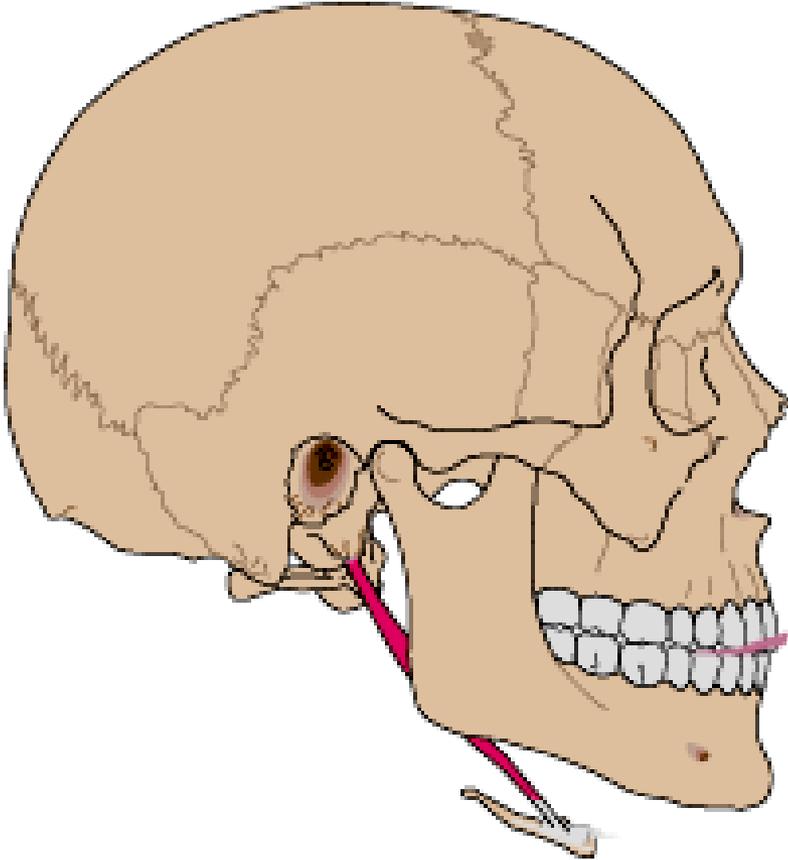
- **The hyoid appears to function as a gyroscope**
- **Postural imbalances are replicated in muscle imbalances of the hyoid muscles**

Muscles



Stylohyoid

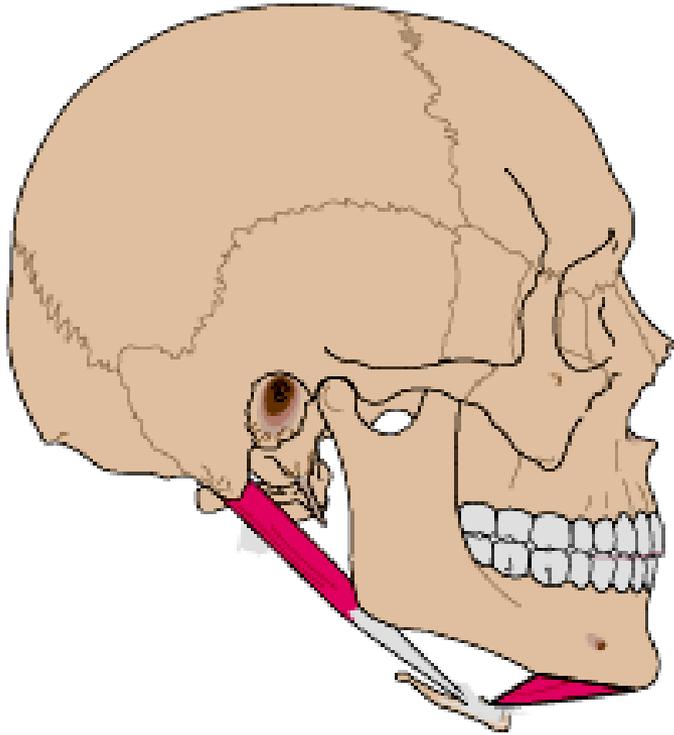
- **Origin**
 - Lateral posterior surface of the stylohyoid process
- **Insertion**
 - Body of the hyoid
- **Nerve supply**
 - Facial
- **Action**
 - Pulls hyoid superior and posterior



Stylohyoid

- **Origin: styloid process of the temporal bone**
- **Insertion: hyoid**
- **Action: elevate and draw hyoid posterior**

Digastric



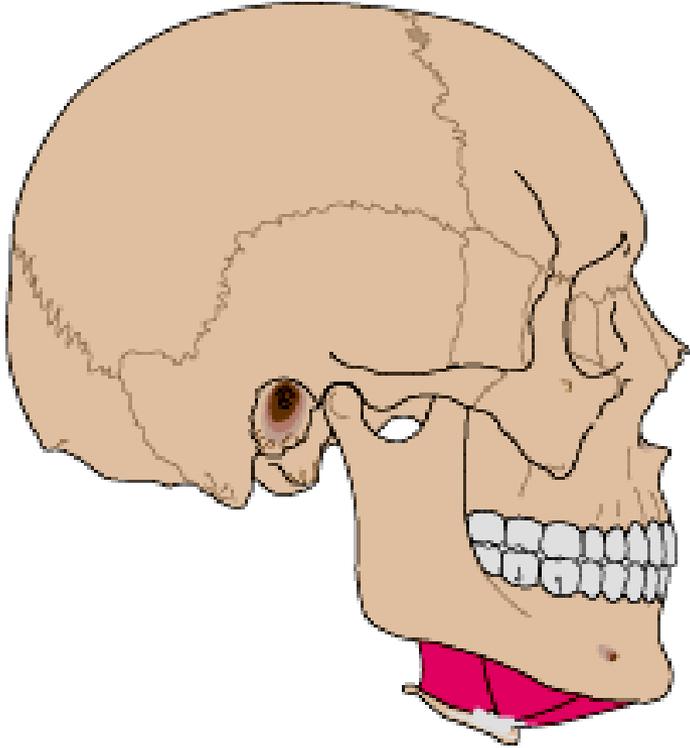
- **Origin**
 - Anterior from the mandible near symphysis menti.
 - Posterior from the mastoid
- **Insertion**
 - Anterior and posterior to the lateral hyoid body
- **Nerve supply**
 - Anterior - Trigeminal nerve
 - Posterior - Facial Nerve
- **Action**
 - Anterior assists in mouth opening - hyoid elevation

Digastric

- **origin: posterior surface of the symphysis menti**
- **insertion: hyoid**
- **action: elevate and draw the hyoid anterior**

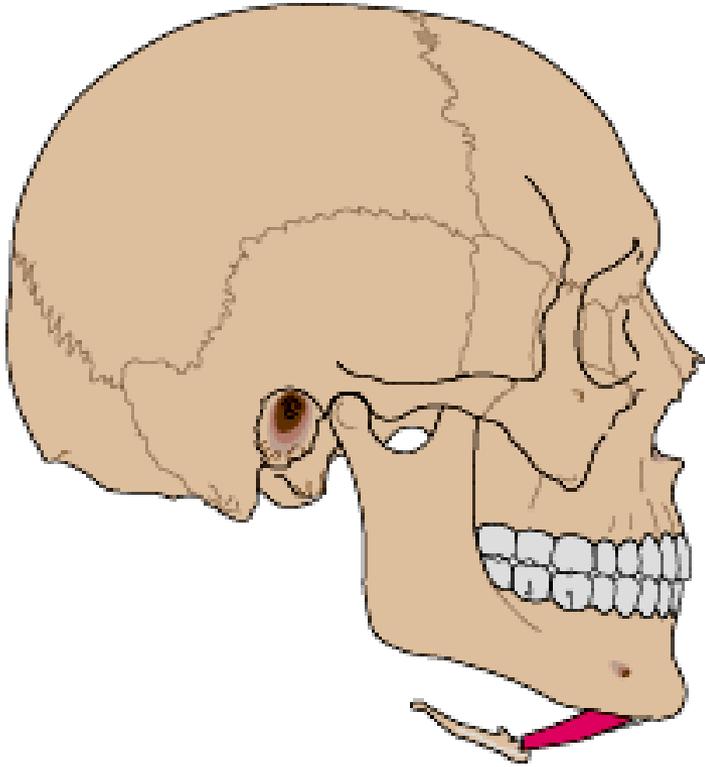


Myloheid



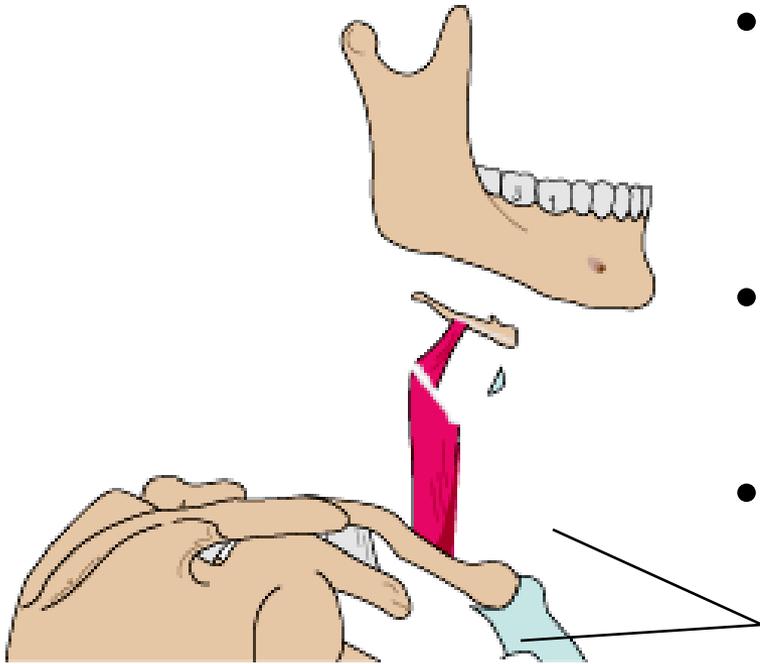
- **Origin**
 - **Symphysis menti to the last tooth on the mandible**
- **Insertion**
 - **Anterior hyoid body**
- **Nerve supply**
 - **Trigeminal nerve**
- **Action**
 - **Elevates the hyoid, tongue and floor of the mouth**

Geniohoid



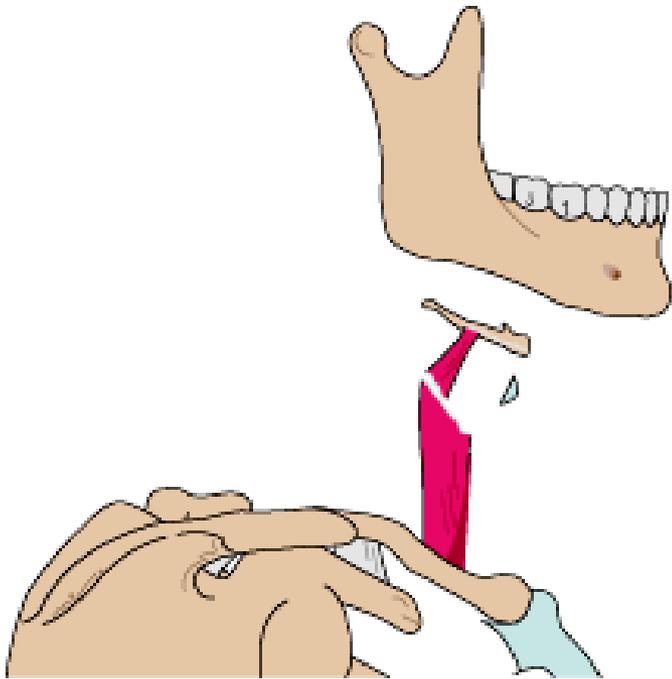
- **Origin**
 - **Symphysis menti**
- **Insertion**
 - **Hyoid body**
- **Nerve supply**
 - **Hypoglossal nerve**
- **Action**
 - **Elevates and moves hyoid anterior**

Sternothyroid



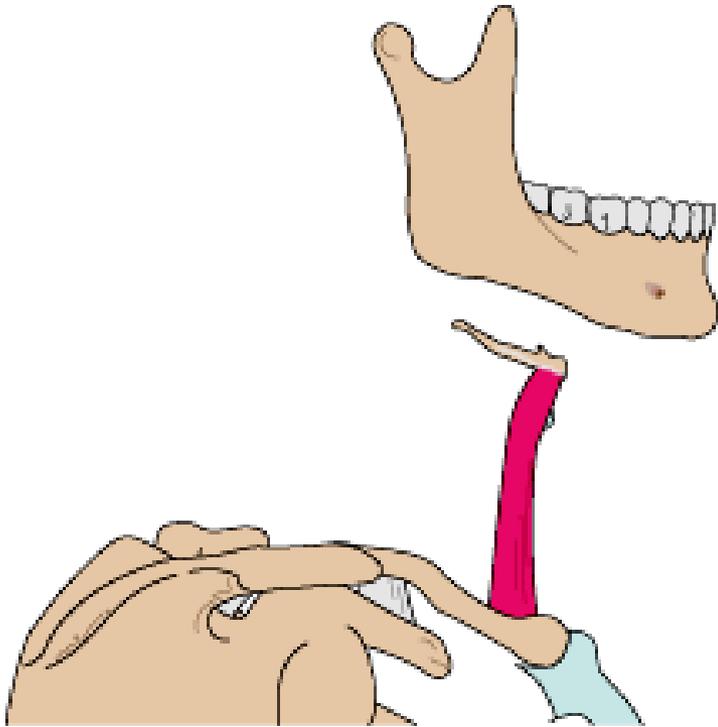
- **Origin**
 - First rib and the manubrium
- **Insertion**
 - Thyroid cartilage
- **Nerve supply**
 - C - 1 - 3
- **Action**
 - Pulls the larynx inferior
 - Involved in swallowing and speaking

Thyrohyoid



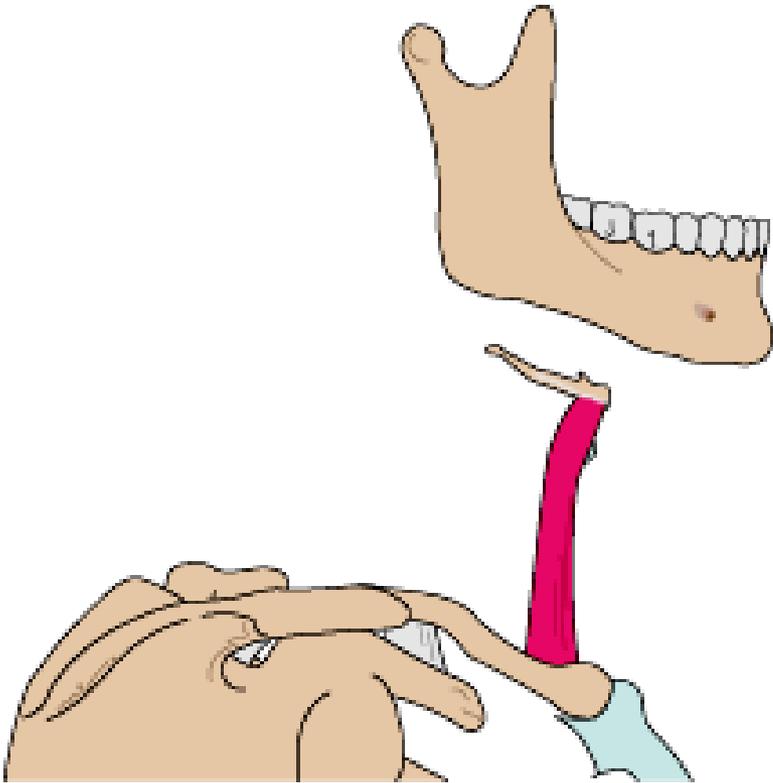
- **Origin**
 - Thyroid cartilage
- **Insertion**
 - Lower border of the body of the hyoid
- **Nerve supply**
 - C - 1
- **Action**
 - Pulls the hyoid inferior
 - Pulls the thyroid cartilage superior

Sternohyoid



- **Origin**
 - Medial clavicle, manubrium
- **Insertion**
 - Lower border of the body of the hyoid
- **Nerve supply**
 - C - 1 - 3
- **Action**
 - Pulls the hyoid inferior

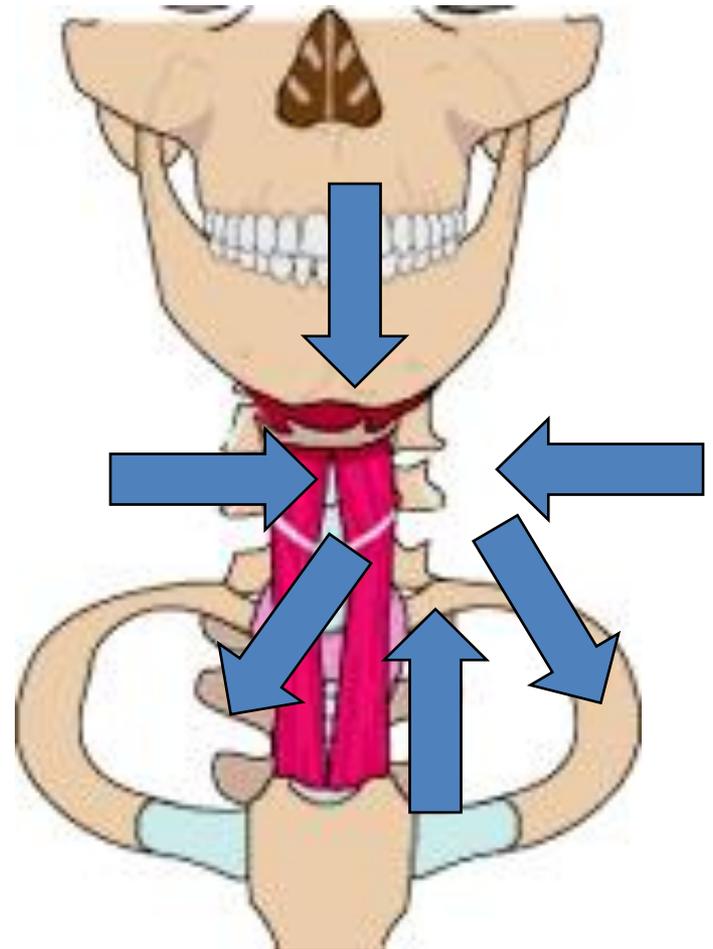
Omohyoid



- **Origin**
 - Superior scapula near scapular notch
- **Insertion**
 - Lower border of the body of the hyoid
- **Nerve supply**
 - C - 1 - 3
- **Action**
 - Pulls the hyoid inferior

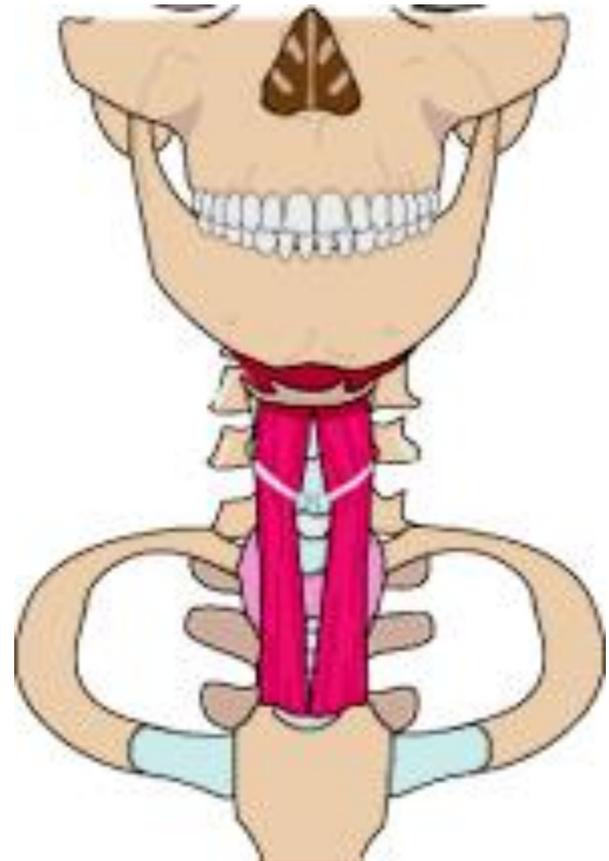
Testing

- Motion palpate the hyoid for restriction in motion
- Using a strong indicator muscle, press and hold hyoid in direction to stretch the tight muscle
- Weakness indicates a muscle imbalance



Treatment

- **Tenderness**
 - **Strain**
counterstrain
- **Directional challenge**
 - **Use TL and challenge to test for need of turning up or down the spindle cells on the opposing muscle**



Hyoid

- **Hyoid**를 한쪽으로 밀었을 때 **challenge**되는 근육은 **hyoid**가 밀리는 방향의 반대에 있는 근육이 된다.
- **치료: turn down muscle spindle cell**

PRYT

PITCH, ROLL, YAW, TILT

What is PRY?

- **Microfixations in the upper cervical, pelvis and thoracolumbar spine**
- **These cause coordination problems between the head and the pelvis**
- **Goodheart's analogy was to two planes trying to refuel.**
They must be synchronized

PRYT

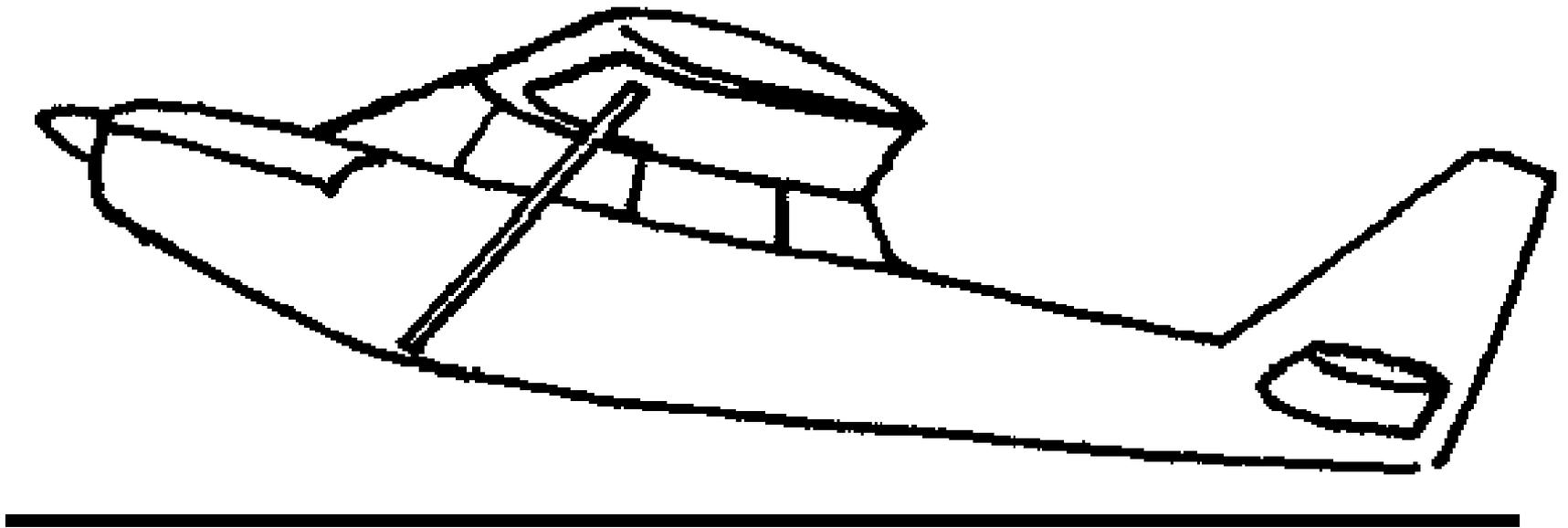
Modular interaction

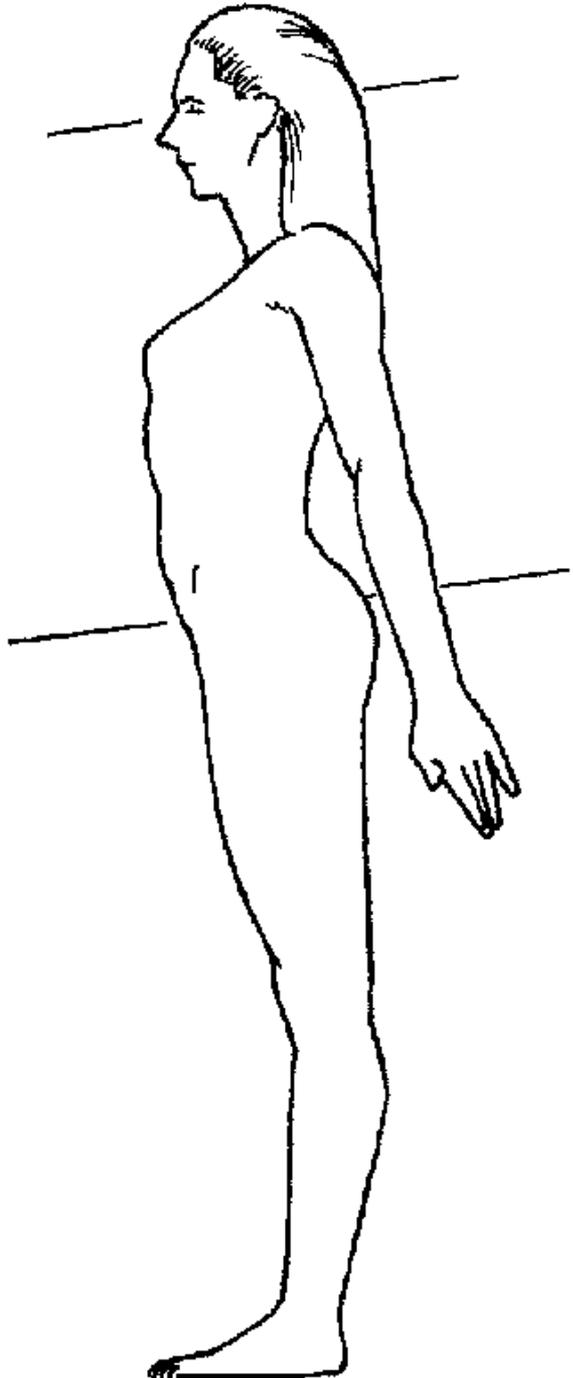
- **Examine for
modular disorganization**
- **Locate cause of disorganization**
- **Correct the cause**
- **Re-evaluate**

Basic Concept

- **Place two body parts in various positions and test a strong indicator muscle to see if proper communication or integration is functioning between the parts**
 - **Head - Pelvis**
 - **Pelvis - Thorax**

PITCH





- **The patient is supine with the knees flexed.**
 - **The neck is flexed with the chin approximated to the chest and a strong indicator muscle is tested.**
- **If weak, check for diminished femur abduction.**
- **Correction**
 - **stabilize the skull and prevent motion as the patient attempts to forcibly flex the neck. Repeat 5 times.**



Pitch Test

Pitch Extension Test



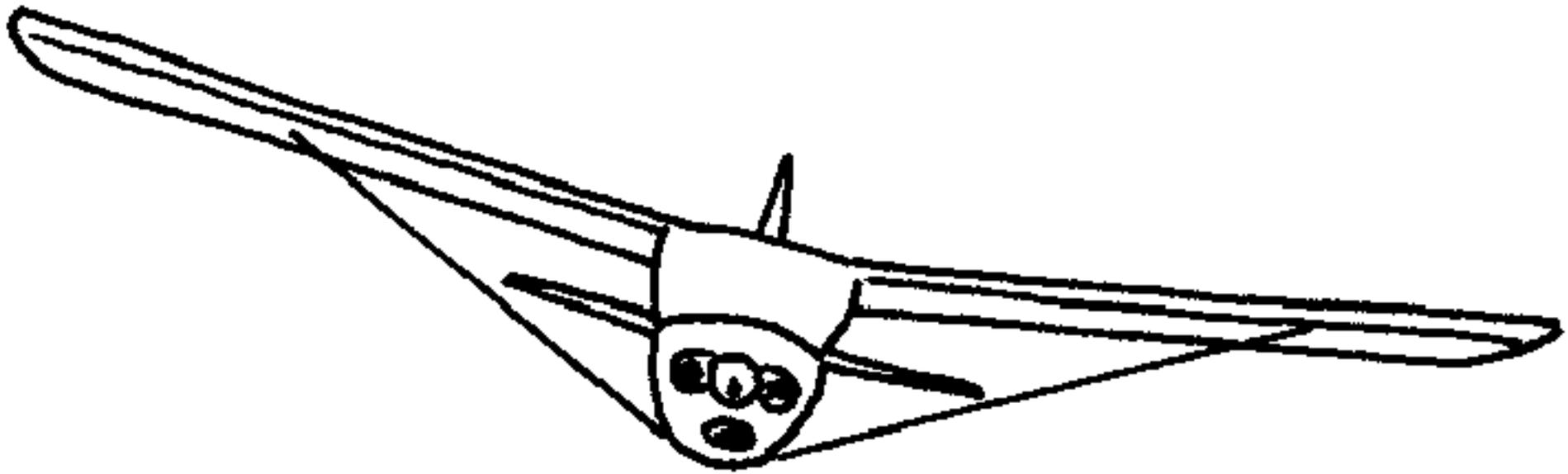
- **The patient may also be tested for an extension problem by elevating the chin and dropping the head off the edge of the table.**
- **Correction is attained by opposing the patient's attempt to extend the head.**

Pitch Turn Test



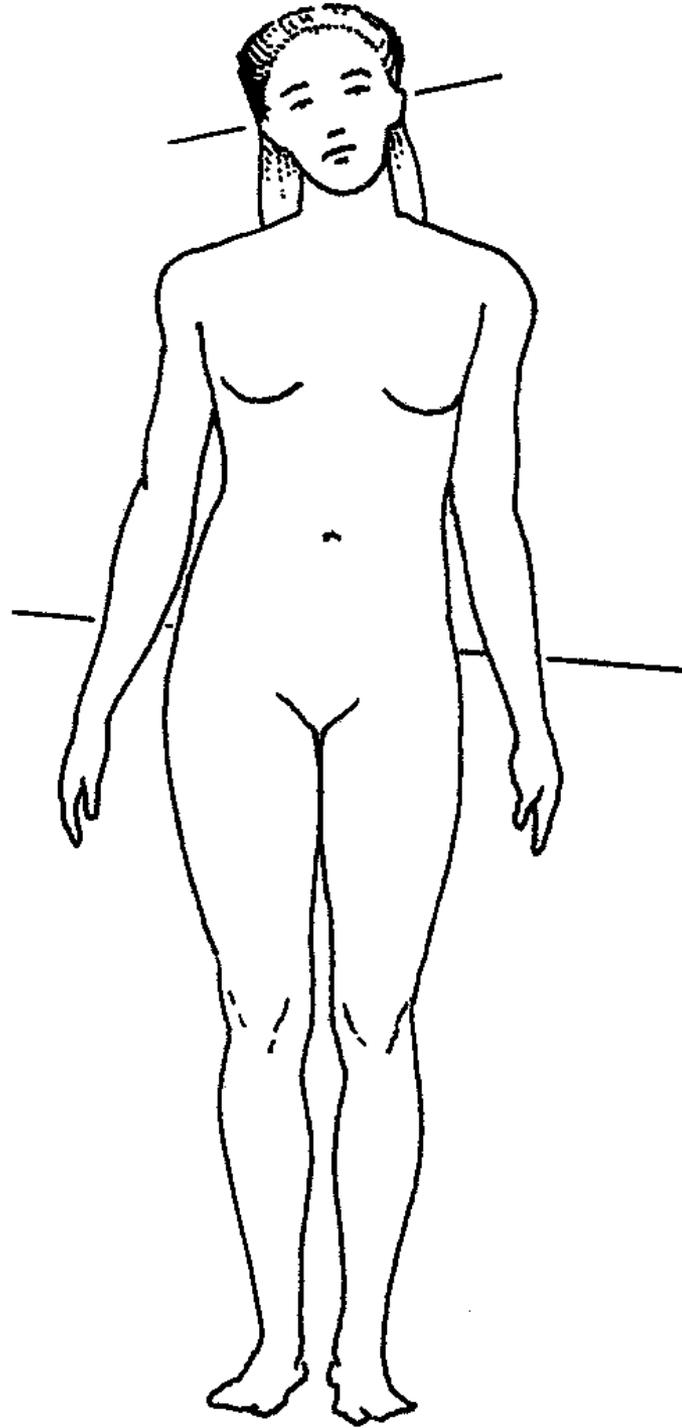
- **This is tested by rotating the skull after flexing the neck.**
 - **This should be tested both right and left and the correction is the same as above, but the patient attempts to rotate the skull.**

ROLL



ROLL

- **Dr. Goodheart originally first name:
ocular basic technique-sacrum eye
relation-visual righting reflex**
- **Challenge and correction:
sacrospinous ligament attachment to
the sacrum-sup or sup lateral in
breathing in**



Roll Test

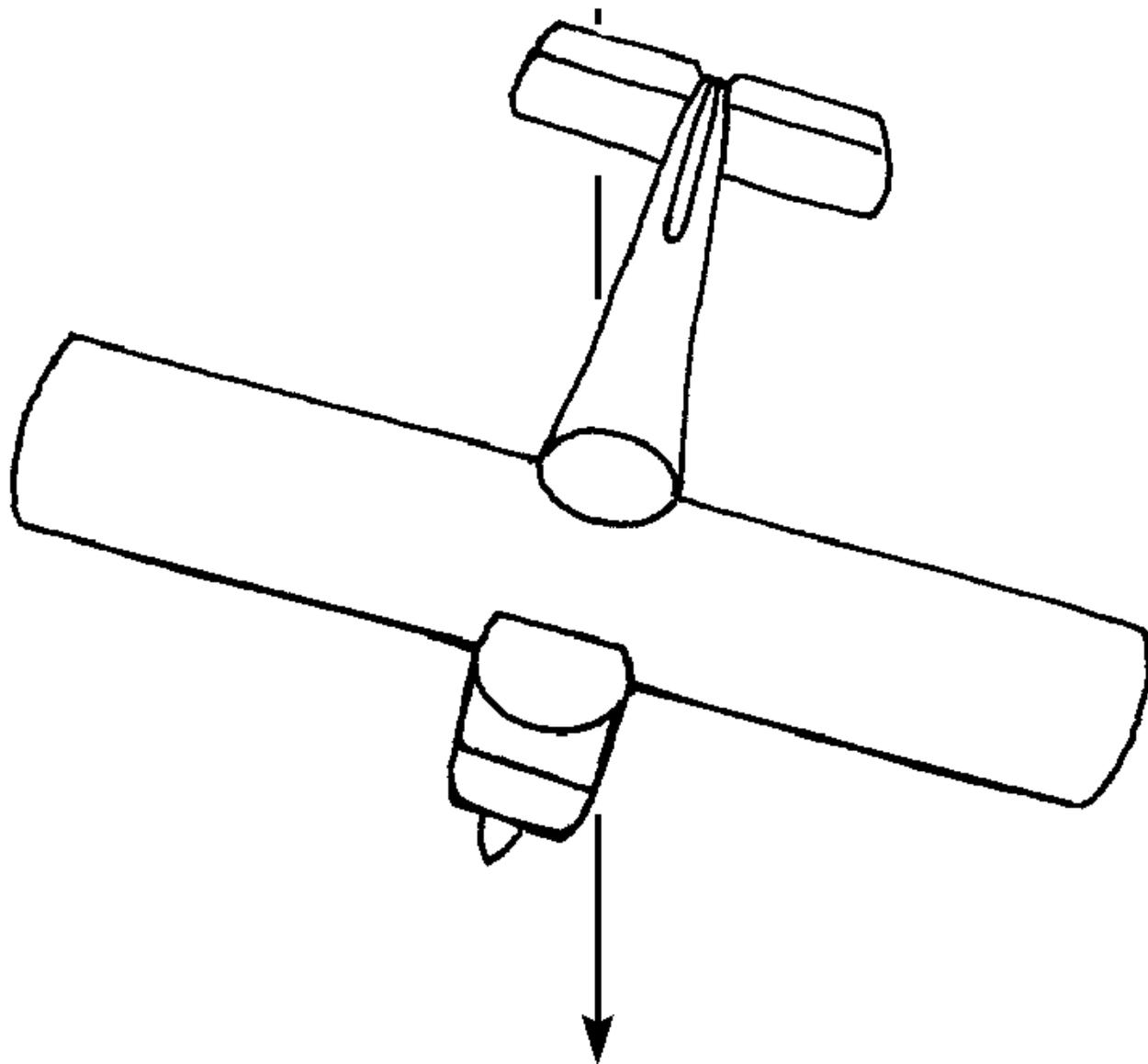
- **The patient is supine with the knees bent.**
- **A strong muscle weakens when both knees are rotated either left or right**
 - **This will be abolished by having the patient roll the eyes either left or right.**

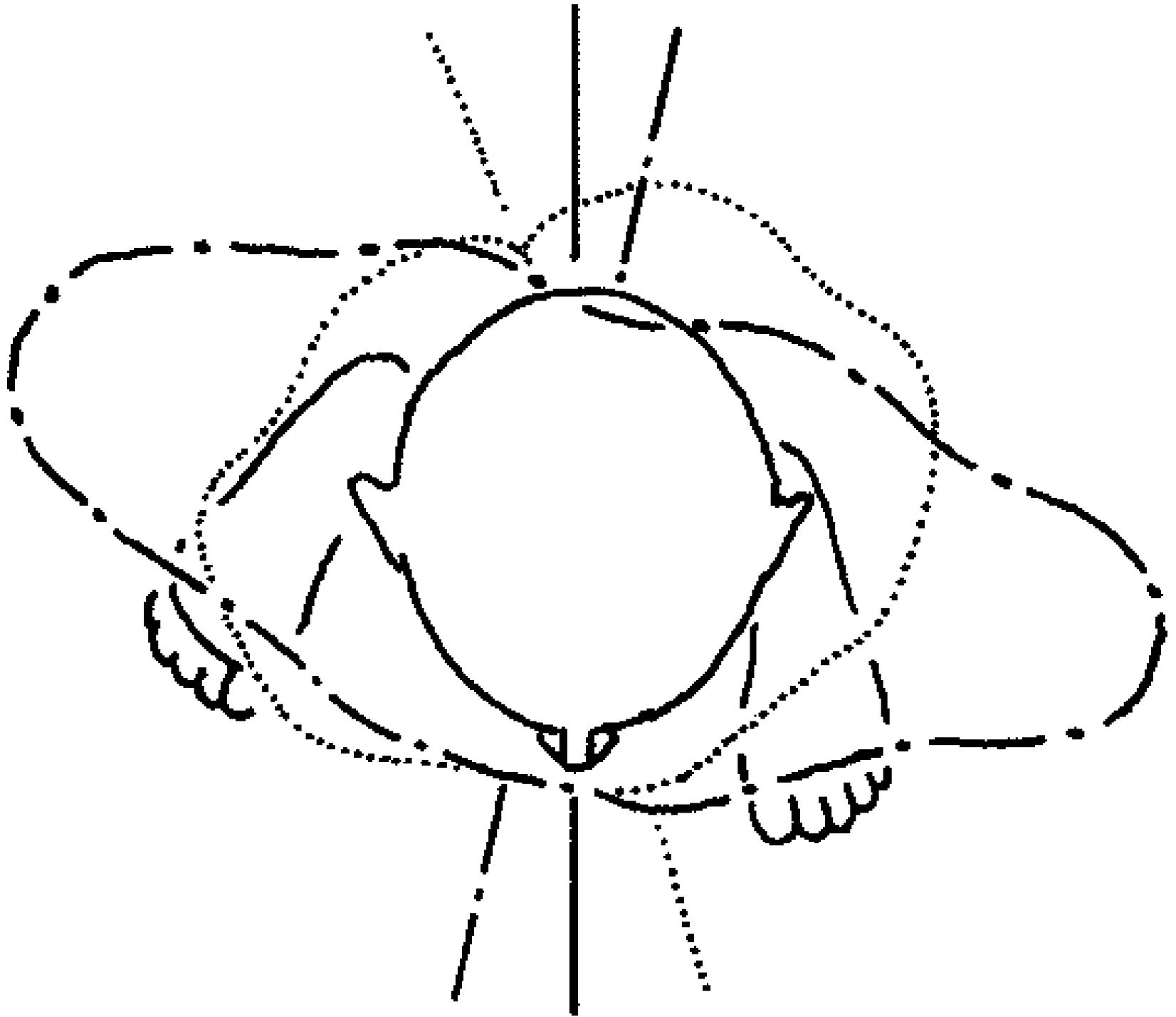


Roll Correction

- **Correction involves placing the patient in a prone position and challenging the sacrum, lateral to the apex, in a superior direction with the eyes lateralized.**
- **Find the phase of respiration that abolishes the weakness.**
 - **If inspiration is found, correct cephalad and slightly anterior**
 - **If expiration is found, correct cephalad and slightly posterior in direction.**

YAW





Yaw 1 Test

- The patient is supine with the knees flexed.
- A strong muscle is tested for weakening when the knees and head are rotated in opposite directions.
 - This is a subluxation fixation of the occiput on the atlas.



Yaw 1

- Challenge by stabilizing the atlas and pressing anterior on the occiput to find the side of involvement.
- Adjust at the sorest spot on the side of challenge in an anterior direction without rotating the skull.
 - Many times this will increase lumbar flexion.

YAW #1

- **Leg roll + contralateral head rotation**
- **Hidden occiput fixation**
- **Occiput correction on the side of occiput up-under the occipital ridge**



Yaw #2

- **Sacral component of yaw**
- **Block under the shoulder and the other side of pelvis**
- **Sacral fixation correction**

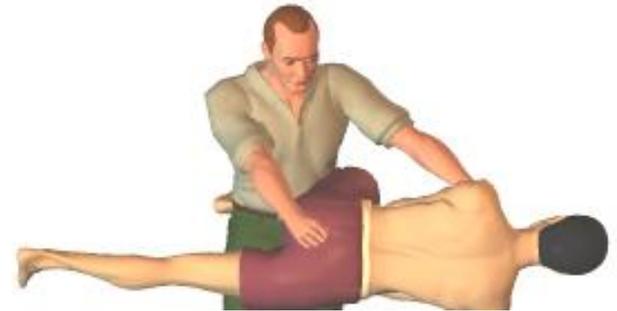
Yaw 2 Test

- Patient is prone with blocks under the opposite anterior superior iliac spine and the shoulder. Test for weakening of a strong muscle and reverse the blocks and retest.
- If positive, have the patient therapy localize each side of the sacrum.



Yaw 2 Correction

- **Adjust with the side that therapy localized up in a side lying position.**
- **Stand between the patient's legs with the superior leg parallel to the floor supported by the doctor's thigh.**
- **As pressure is applied against the leg, and anterior thrust is delivered against the sacrum on the side that therapy localized.**



Yaw 3

- **With the patient prone, move the lower block in the above pattern to rest below the lower rib cage. This will torque the ribs opposite the shoulders.**
- **Weakening of a previously strong muscle indicates the presence of an underlying fault in the lower thoracic-upper lumbar areas.**



Tilt Test

- The patient is supine with one knee flexed.
- The head is laterally flexed with the ear approximated to the ear. The bilateral PMC is tested for weakening.
- If no weakness is found, test with the head tilted to the opposite side. Repeat with the opposite knee flexed.



Tilt Correction

- **If weakness is found, treat by having the patient hold the ear towards the shoulder and forcibly attempt to medially bend the neck and head away from the shoulder. Repeat on the opposite side.**



Jugular decompression

- **9, 10, 11, 12 cranial nerve**
- **SCM, upper trap, tongue**
- **Suboccipital pincer palpation**
- **PRYT**
- **Atlantooccipital countertorque**
- **Balance**
- **Resp, digestion**