“PCSOM MODEL” ADDRESSES ALL FIVE COMPONENTS SIMULTANEOUSLY!
GET MORE DONE QUICKLY

1. FINDING SUTURAL AGR AND TREATING IN SEQUENCE
   • KEY AREA: MOST DYSFUNCTIONAL AREA
   • TENSEGRITY EFFECT RESPECTED
   • “FLUID LEVEL” ATTAINED

2. FINDING D.B.P. FOR THE SUTURAL AGR
   • FINDS DBP FOR EACH BONE
   • FINDS DBP FOR THE SUTURE
   • BALANCES THE R.T.M. (DURAL REFLECTIONS)?

3. ADDING APPROPRIATE “THERAPEUTIC “PRESSURE
   • BALANCES THE CSF PRESSURE?
   • ACTIVATES THE TENSEGRITY PHENOMENA?
PRINCIPLES & METHODS OF TREATMENT: GRAHAM

1. **EXAGGERATION OR INDIRECT**
2. **DIRECT**: REMEMBER SUTHERLAND’S STATEMENT, i.e., DIRECT CONTRA-INDICATED IF CAN BE EFFECTIVELY TREATED INDIRECTLY
3. **DISENGAGEMENT**

**NOTE**: “PCSOM MODEL” ADDRESSES BOTH 1 & 3 SIMULTANEOUSLY BUT MAY SIMULTANEOUSLY ADDRESS ALL THREE
“THE BONES DO NOT HAVE ARTICULAR MOBILITY BUT THEY DO HAVE MOVEMENT. THE NORMAL CRANIUM IN INFANTS AND CHILDREN PROVIDES FOR GROWTH BUT YOU DO NOT FIND SIGNIFICANT ARTICULATAR GEARS UNTIL THE AGE OF TEN ...IN ADULTS THE DIFFERENT GEAR TYPES APPEAR.

THERE IS BEVELING, BOTH INTERNAL AND EXTERNAL WITH OPPOSITE ARTICULAR CONTACT, SIGNIFYING GLIDING MOBILITY. THERE ARE ALSO CORRIGATIONS RUNNING TRANSVERSELY, DIAGONALLY, AND SO FORTH. SUTURAL ARRANGEMENTS DISPLAY WORM GEARS, CONE GEARS, COMPENSATING GEARS, CRYPTIC GEARS, FRICTION GEARS, AND SCREW GEARS.”
“YOU FIND ARTICULAR ARRANGEMENTS SUCH AS BALL AND SOCKET, BALL BEARING, BALL CRANK, BOX COUPLING, PIT AND PULLEY, COUNTER SHAFTS, AND EVEN A CRADLE. EQUALIZING BARS, ESCAPEMENTS, FLEXIBLE SHAFTS, FORCE PUMPS, GOVERNORS, JIGGERS, AND THE FULCRUM ARE ALL FOUND.”

“THE PERFECT ANATOMICAL PICTURE IS A NECESSARY BACKGROUND FOR UNDERSTANDING YOUR PATIENT...THE GOAL WITH YOUR PATIENT IS TO FIND THE WAY TO HEALTHY FUNCTION WITHIN THE MECHANISM THAT THEY BRING YOU. YOU NEED THE PERFECT MENTAL PICTURE TO GUIDE YOU, BUT IT IS NOT BENEFICIAL TO UNDERTAKE TO IMPOSE THE IDEAL UPON THE HEAD AS YOU FIND IT.”

NOTE: SAME TRUE WITH THE REST OF THE BODY
“PCSOM MODEL” SPECIFICALLY ADDRESSES ALL OF THE CONCERNS OF SUTHERLAND

CONSIDER THE MIND SUTHERLAND MUST HAVE HAD TO FIGURE THIS ALL OUT AND TO SEE THE MECHANICAL CORRELATIONS

A **SYSTEM THEORIST** IS A SCHOLAR WHO IS ABLE TO CONCEPTUALIZE, DELINEATE, AND INTERPRET THE INTEGRATIVE MATRIX OF AN ACTUAL SYSTEM
J**OE ENGELBERG, PhD U. of KENTUCKY**

DESCRIPTION OF THE OSTEOPATHIC PHYSICIAN?
MATRIX


JOE ENGELBERG, PhD UNIVERSITY OF KENTUCKY

• **DURA**: EXTERNAL LAYER = PERIOSTEUM

• **DURA**: INNER LAYER
  
  **FALX**: CEREBLLI & CEREBELLI
  
  **TENTORIUM**
  
  ( DURA VERY FIRMLY ATTACHED @ SUTURE AND AT FORAMEN )

• **CRANIAL BONES:**
OCCIPITAL MANAGEMENT
OCCIPITAL PARTS:

( SEPARATE @ BIRTH )

- BASILAR AREA
- CONDYLAR PARTS (2)
- SQUAMATA

EXTERNAL VIEW
OCCIPITAL ARTICULATIONS:

- PARIETALS
- TEMPORALS
- SPHENOID
- ATLAS
OCCIPITAL MOTION:

- MOTION: FLEXION AND EXTENSION
- TRANSVERSE AXIS - ABOVE FORAMEN MAGNUM
S/B EXTENSION
PAIRED BONES
INTERNAL ROTATION

S/B FLEXION
PAIRED BONES
EXTERNAL ROTATION
ALLOW POSTERIOR PART OF THE MASTOIDS
REST ON YOUR THUMBS:

• WITH ALL CRANIAL TECHNIQUES, HAVE YOUR ELBOWS ON THE TREATMENT TABLE . . . INC. PALPATORY SKILLS
  • FIND THE LOOSE PACKED POSITION
• MONITOR OCCIPITAL FLEXION-EXTENSION WITH FINGER PADS
OCCIPITAL DIAGNOSIS:

- HAVE THE POSTERIOR PART OF **MASTOID PROCESSES REST** ON YOUR THUMBS
  ( OPERATORS HANDS ARE CROSSED WITH THUMBS PARALLELL AND POINTING CAUDAD )
- OPERATORS FINGERTIPS PALPATE THE SUB-OCCIPITAL AREA WITH ONE FINGER TIP OVER POST. ARCH OF THE ATLAS
- GLIDING THUMBS MEDIALL AND LATERALLY, “LOOSE PACKS” O / M SUTURE
- FINGERS MONITOR: ( OCCIPUT )
  - FLEXION
  - EXTENSION RATE, QUALITY & AMPLITUDE
CLINICAL QUESTIONS:

( PROCEEDURE FOR EACH SUTURE )

- BOTH SIDES MOVING EQUALLY ?
- IS ONE SIDE RESTRICTED ? WHICH SIDE ?
- RATE
- QUALITY OF MOTION GOOD ?
- AMPLITUDE GOOD ?

F <-> E
OCCIPITAL Rx

- **DETERMINE THE RESTRICTED O/M SUTURE.**

  **EX: RIGHT SIDE**

- ALLOW THE RIGHT MASTOID PROCESS TO CONTINUE TO REST ON OPERATORS THUMB

- ROTATE LEFT HAND TO ENABLE LEFT FINGER TIPS TO PALPATE ALONG MOST LATERAL AREA OF RIGHT SIDE OF OCCIPUT

- DETERMINE MOST RESTRICTED BONE
  
  (OCCIPUT OR MASTOID)

- **FIND THE DBP:**
  - FOR MOST RESTRICTED BONE (KEY) FIRST
  - THEN FIND DBP FOR OTHER BONE OF THE PAIR
  - ADD CORRECT THERAPEUTIC PRESSURE.
  - ALLOW TO SPECIFICALLY "UNWIND"...UNIQUELY RESPECTS THE SPECIFIC ANATOMICAL CHARACTERISTIC OF THAT SUTURE AND PAIR OF CRANIAL BONES

**NOTE:** CAN USE RESPIRATORY ASSIST (WITH ALL TECHNIQUES)

- **SB₁:** USE HELD INSPIRATION
- **SBₑ:** USE HELD EXPIRATION
OCCIPITAL-MASTOID SUTURE
FINDING THE D.B.P. FOR TWO INVOLVED CRANIAL BONES:

• ASK SELF WHICH OF THE TWO BONES IS MOST RESTRICTED
• FIND THE D.B.P. FOR THAT BONE
• EX: GWS / TEMPORAL
  • IF GWS KEY BONE
  • WILL IT GLIDE CEPHALD OR CAUDAD BETTER? MAINTAIN THIS / ADD
  • WILL IT GLIDE ANTERIOR OR POSTERIOR BETTER? (STACK) MAINTAIN / ADD
  • WILL IT GLIDE C/W OR CC/W BETTER? STACK ON OTHER TWO LEAST TENSE FINDINGS . . . ALL THREE STACKED
• FIND D.B.P. FOR THE OTHER BONE
OCCIPITAL Rx

BENEFITS OF FINDING THE DBP FOR BOTH BONES

- **LOOSE PACKS**
  - The two related bones of the suture
  - The restricted suture

- **BALANCES**
  - The RTMs

- This may represent the **FIRST “STILL POINT”**

- **“THERAPEUTIC PRESSURE”** kicks in the **TENSEGRITY** phenomena and integrates the cranium, membranes & CSF mechanics

- **ALLOW TO “UNWIND”**

- **SKULL CAN START TO FUNCTION AS AN INTEGRATED UNIT !!!! INTEGRATIVE MATRIX**
OCCIPITAL BENEFITS

AREAS OR STRUCTURES INFLUENCED BY OCCIPITAL AND S/B MOVEMENT OR DYSFUNCTION:

- RESPIRATORY CENTER
- CARDIO-VASCULAR CENTER
- HYPOTHALAMUS: MODULATES EXTERNAL, INTERNAL & LIMBIC INPUT
  - TRH: THYROTOPIN-RELEASING HORMONE
  - CRH: CORTICOTROPIN-RELEASING HORMONE
  - GnRH: GONADOTROPIN-RELEASING HORMONE
  - GHRH: GROWTH HORMONE-RELEASING HORMONE
  - SOMATOSTATIN
  - PIF: PROLACTIN-INHIBITING FACTOR
- PITUITARY (ENDOCRINE)
  - ACTH: ADRENOCORTICOTROPIC HORMONE
  - TSH: THYROID STIMULATING HORMONE
  - FSH: FOLLICLE STIMULATING HORMONE
  - LH: LUTEINIZING HORMONE
  - ANTI-DIURETIC HORMONE
  - OXYTOCIN
  - GROWTH HORMONE
  - PROLACTIN
- NUCLEI OF ALL CRANIAL NERVES

AFFECT: OF OCCIPITAL “RELEASE”
- FREQUENTLY, MARKEDLY RELAXES THE PATIENT
- EQUIVALENT TO A “CV-IV” TECHNIQUE RESPONSE
4th VENTRICLE

- RESPIRATORY CENTER
- CARDIO-VASCULAR CENTER
- NUCLEI OF CRANIAL NERVES
- CRI CENTER ? (RECTUS CAPITUS POST. MINOR)
HOW KNOW YOUR EXPERIENCING A
• A “STILL POINT” ? OR IS
• TREATMENT FINISHED ?

• IF “UNWINDING” STOPS AND RELATED TISSUES RELEASE:
  YOUR FINISHED !

• IF “UNWINDING” STOPS BUT RELATED TISSUE TENSION PERSISTS
  THIS IS A “STILL POINT”
  MAINTAIN AND
  WILL START “UNWINDING” AGAIN
  CONTINUE UNTIL
  STOPS AND RELATED TISSUES RELEASE
  YOUR FINISHED !
SPHENOID MANAGEMENT
SPHENOID

- **NOTE BILATERAL VARIATIONS**
- "KNOW ANATOMY OF EACH BONE"
- HOW DO THAT WITH ALL THIS VARIATION?
  - FIND DBP FOR BOTH BONES
  - "LOOSE PACK" INVOLVED SUTURE
  - ADD "THERAPEUTIC PRESSURE"
  - ENABLE TO UNIQUELY "UNWIND"
CLINICAL QUESTION

Do you treat according to:

- **COGNITIVE** knowledge of anatomy
- **PALPATORY** anatomical findings

The acquired knowledge of the unique anatomy of that patient’s @ DBP enable to get “deeper & quicker”
CRANIAL CONCEPT: BONE CLASSIFICATION

- **MIDLINE**
  - OCCIPUT
  - SPHENOID
  - VOMER
  - ETHMOID

- **PAIRED BONES**
  - TEMPORALS
    - “WOBBLING WHEEL”
    - “TROUBLE MAKER”
    - “CLOWN”
  - PARIETALS
  - FRONTAL: ONE BONE BUT ‘FUNCTIONS’ AS TWO
  - MAXILLA
  - ZYGOMA
  - PALATINES

“SPEED REDUCERS”
SPHENOID PARTS:

- BODY
- LESSER WINGS (2)
- GREATER WINGS (2)
- PTERYGOID PLATES (2)
SPHENOID

PAIRED ARTICULATIONS:

- PARIETALS
- TEMPORALS
- PALATINES (AND PTYGOID PLATES INTERACTION)
- ZYGOMAS
- MAXILLAE
SPHENOID MIDLINE ARTICULATIONS:

- FRONTAL (BOTH LWS & GWS)
- ETHMOID
- VOMER
- OCCIPUT
SPHENOID MOTION

**FLEXION** OF S/B AREA

- **GREATER WINGS** - FORWARD, LATERAL AND INFERIOR . . . WHY EXPECT THIS MOVEMENT?

- **PTERYGOID PLATES** - POSTERIOR AND LATERAL . . . WHY EXPECT? PALATINE-MAX. INFLUENCE

- **TRANSVERSE AXIS** - THROUGH THE BODY OF THE SPHENOID

  - **SKULL**: MINUTELY WIDENS & SHORTENS

  **FLEXION / FULL SKULL (FAT)**

THIS PATTERN HELPS TO UNDERSTAND WHAT EACH BONE IN SKULL IS DOING
S/B FLEXION
SPHENOID MOTION

EXTENSION OF S/B AREA

- GREATER WINGS - BACKWARDS, MEDIAL AND SUPERIOR . . . WHY EXPECT THIS MOVEMENT?

- PTERYGOID PLATES - ANTERIOR AND MEDIAL

  WHY EXPECT?  PALATINE-MAX. INFLUENCE

- TRANSVERSE AXIS - THROUGH THE BODY OF THE SPHENOID

- SKULL - MINUTELY NARROWS & LENGTHENS

  - EXTENSION ELONGATES SKULL

THIS PATTERN HELPS TO UNDERSTAND WHAT EACH BONE IN SKULL IS DOING
SPHENOID FUNCTIONS
( STILES’ MEMORY TOOL )

- **BODY:**
  - ( YOUR TRUNK )
    - FORWARD BENDING = FLEXION
    - BACKWARD BENDING = EXTENSION

- **GREATER WINGS:**
  - ( YOUR ARMS ABD. & E/R WITH WRISTS EXTENDED )

- **PTERYGOID PLATES:**
  - ( YOUR ARMS HANGING DOWN )

- **VOMER:**
  - ( ARMS OUT IN FRONT OF YOU )
SPHENOID DIAGNOSIS

- **OCCIPUT**: Rest on one hand of the operator [don’t let fingers cross O/M sutures]
- The operator’s other hand is placed over the forehead so that the thumb is over one GWS and 4th or 5th finger is over the other GWS (some call occipital-frontal hold)

[ Occipital - GWS/ Sphenoid hold ]

- Both hands should be placed so the fingers point toward patient’s feet
- This hold enables you to evaluate S/B motion
  - Sphenoid
  - Occiput
  - S/B strains
S/B “PALPATION”: DEEP INSIDE SKULL

( ANALOGY: “PALPATING” ROAD THROUGH THE STEERING COLUMN & TIRES )
S/B INTERPRETATION:

NORMAL MOVEMENT:
- BOTH HANDS SHOULD GLIDE CAUDAD WITH S/B FLEXION
- BOTH HANDS SHOULD GLIDE CEPHAD WITH S/B EXTENSION

QUESTIONS:
- ARE BOTH BONES MOVING?
- ARE BOTH IN PATTERN (SB_F & SB_E ?)
- IS THERE A S/B STRAIN?
- IF RESTRICTED, WHICH BONE HAS LEAST MOVEMENT, ie, MOST RESTRICTED?
- ARE RATE, QUALITY & AMPLITUDE GOOD?
S/B MOVEMENT PATTERNS

NORMAL:
- FLEXION (EXTERNAL ROTATION OF PAIRED BONES)
- EXTENSION (INTERNAL ROTATION OF PAIRED BONES)

DYSFUNCTIONAL S/B PATTERNS:
- $S/B_F$ & E/R OR $S/B_E$ & I/R
- VERTICAL SHEARS: CEPHLAD OR CAUDAD
- LATERAL SHEARS: LEFT OR RIGHT
- TORSIONS: RIGHT OR LEFT
- SB / R PATTERNS: RIGHT OR LEFT

BENEFITS: WITH THE “PCSOM MODEL”
YOU DON’T HAVE TO MOTION TEST
FOR ALL THE DIFFERENT S/B PATTERNS !!
SPHENOID  Rx:  IF A.G.R.

- DETERMINE IF S/B MOTION IS RESTRICTED
- DETERMINE WHICH OF THE TWO BONES IS THE MOST RESTRICTED; TAKE IT TO ITS DBP
- TAKE THE OTHER BONE TO ITS DBP
- ADD THE APPROPRIATE THERAPEUTIC PRESSURE INTO THE S/B SUTURE.

**EFFECT:**
- LOOSE PACKS THE TWO BONES
- LOOSE PACKS THE INVOLVED SUTURE
- BALANCES RTMs
- “THERAPEUTIC PRESSURE” ACTIVATES THE TENSEGRITY MODEL & FLUID DYNAMICS

- AS RELEASES, YOU’LL HAVE THE SPECIFIC S/B DIAGNOSIS! MAY BE MULTIPLE Dx!
- THE QUICK, “DOWN & DIRTY” METHOD
SPHENOBASILAR MOVEMENT OPTIONS:

- Flexion & Extension
- Side-bending Rotation
- Torsions
- Compression

ALSO

- Vertical Shears
- Lateral Shears

COMBINATIONS:

“What learn in school is the melody of a tune but what you see in practice is the “jazz variation”.

HOW PICTURE SHEARS?

- Lateral
- Vertical

A/P Compression

S/B_E

S/B_F

SB/R_L

L. Torsion

S/B

Osteopathic Games

L. TORSION
OCCIPITAL / GWS HOLD

(WHAT MAY FEEL)

• **SB<sub>F</sub>:** BOTH GLIDE CAUDAD
• **SB<sub>E</sub>:** BOTH GLIDE CEPHLD
• **TORSION:** HANDS ROTATE IN OPPOSITE DIRECTIONS
• **SB / R:** HANDS SIDEBEND / APPROXIMATE & BOTH HANDS GLIDES CAUDAD ON CONVEX SIDE

• **LATERAL SHEAR:** ANTERIOR HAND GLIDES LATERALLY

• **VERTICAL SHEAR:** ANTERIOR HAND GLIDES CEPHLD OR CAUDAD

• **COMPRESSION:** NO MOVEMENT: HEAD FELLS LIKE A “BOWLING BALL”

Q: HOW MOTION TEST? Rx?
SPHENO-BASILAR: STRAIN PATTERN EVALUATIONS

SOMATIC DYSFUNCTION COMPONENTS:

• **ASYMMETRY**: VISUAL & PALPATION
  - FRONTAL VIEW
  - COMPARE BOTH SIDES
  - SUPERIOR VIEW

• **ALTERED RANGE OF MOTION**: PALPATION

• **SOFT TISSUE CHANGES**: PALPATION
S/B STRAIN PATTERNS: TWO BASIC PATTERNS

TWO BASIC COMPONENTS OF PATTERNS:

- **FLEXION / EXTENSION MECHANICS RESTRICTED** (TRANSVERSE AXES)
  - **FLEXED**: FULL / SHORT HEAD
  - **EXTENDED**: NARROW / ELONGATED HEAD

- **ROTATIONAL MECHANICS RESTRICTED** (A/P AXIS)
  - **SPHENOID & OCCIPUT**: SAME DIRECTION (SB/R)
  - **SPHENOID & OCCIPUT**: OPPOSITE DIRECTION (TORSION)

- **SPHENOID**: HIGH SIDE WILL HIGH / WIDE WIDE EYE
- **OCCIPUT**: LOW SIDE ENABLES THAT TEMPORAL TO E/R . . . “FALL OVER” . . . PRODUCES CONVEXITY
SPHENO-BASILAR: STRAIN PATTERNS

BASIC PRINCIPLES: ASYMMETRY EVALUATION

• **HIGH G.W.S. PRODUCES:** AROUND A/P AXIS
  - CEPHLAD EYE CEPHLAD COMPARED TO OPPOSITE EYE
  - WIDE & SHALLOW ORBIT [ S/B_F PATTERN ]

• **LOW OCCIPUT:** AROUND A/P AXIS
  - TEMPORAL / PARIETAL BONES GOES INTO EXTERNAL ROTATION [ POST VAULT “FULL” ]
  - “S/B_F E/R ON ‘LOW SIDE’”
SPHENO-BASILAR: STRAIN PATTERNS

BASIC PRINCIPLES: ASYMMETRY EVALUATION

• TWO SPHENOID PATTERNS: 2 MECHANISMS
  • $S_{BF}/E_{R}$: BOTH ORBITS WIDE & SHALLOW (TRANSV. AXIS)
  • ROTATION: “E/R” ORBIT ON HIGH SIDE (A/P AXIS)

• TWO OCCIPITAL PATTERNS: 2 MECHANISMS
  • $S_{BF}/E_{R}$: BOTH SIDE GLIDE CAUDAD... (TRANSV. AXIS)
    E/R [BILATERAL] ... WIDE SKULL
  • ROTATION: “E/R” ON LOW SIDE ... (A/P AXIS)
    BECOMES THE CONVEX SIDE ... UNILATERALLY WIDE
S/B MOVEMENT: BASIC PRINCIPLES

BONES: “CONTROL” IMPACT

- **OCCIPUT**: IMPACTS ON TEMPORAL & PARIETALS
- **SPHENOID**: IMPACTS ON FRONTAL & FACIAL BONES

BONES: ROTATIONAL IMPACT

- **OCCIPUT**: LOW SIDE PRODUCES E/R OF TEMPORALS AND PARIETALS [ POSTERIOR VAULT = “FULL’ ]
- **SPHENOID**: HIGH SIDE PRODUCES E/R PATTERN OF FRONTAL AND FACIAL BONES [ WIDE / SHALLOW EYE ]

CRANIAL COMPLEXITY: MEMBRANEOUS BONES

- **DISCRETELY:**
  - EXPLAINED BY WHAT EACH BONE DOES IN ISOLATION : HRUBY
  - GWS COMPONENT / ORBIT IMPACT & FACIAL IMPACT

- **COMPLEX**: MELODY OR ‘JAZZ’ VARIATION ?
  - EXPLAINED BY THE OVERALL PATTER OF SKULL: SUTHERLAND
  - TEMPORAL / PARIETAL COMPONENT [ VAULT IMPACT ]
VAULT HOLD:
FINGER PLACEMENT

VAULT HOLD ACCESSES: SIMULTANEOUSLY
• OCCIPITAL FUNCTION
• SPHENOID FUNCTION
• TEMPORAL FUNCTION ( BOTH SIDES )

INDEX FINGER:
G.W.S.

FINGER # 2:
IN FRONT OF EAR

FINGER # 3:
BEHIND EAR

LITTLE FINGER:
ON OCCIPUT
SPHENO-BASILAR DYSFUNCTIONS: VAULT HOLD FINDINGS

DYSFUNCTIONS: POSSIBLE S/B PATTERNS

• SHEARS:
  - VERTICAL [SUPERIOR, INFERIOR]
  - LATERAL [RIGHT, LEFT]

• TORSIONS: RIGHT AND LEFT

• SIDE BENDING & ROTATION: RIGHT AND LEFT

NOTE: ONLY HOLD THAT SIMULTANEOUSLY EVALUATES ALL 4 BONES!
CARTILAGENOUS BONE(S)

- BODY OF SPHENOID
- BASI-OCCIPUT
- PETROUS PORTION OF TEMPORALS

“GEAR ACTION”
RECPROCAL TENSION MEMBRANCE

- FALX
  - CEREBRAL
  - CEREBELLUM
- TENTORIUM
- DURAL TUBE
SPHENOBASILAR ( S/B) STRAIN PATTERNS

POSSIBLE DYSFUNCTIONS:

- FLEXED
- EXTENDED
- TORSIONS: RIGHT AND LEFT
- SIDEBENDING / ROTATED: RIGHT AND LEFT
- LATERAL SHEARS: RIGHT AND LEFT
- VERTICAL SHEARS: CEPHLAD AND CAUDAD
- COMPRESSIONS
SUPERIOR VIEW

S/B MOVEMENT PATTERN

COMPONENTS:
- A/P REFERENCE LINE
- CONVEX SIDE
- IMPACT ON EAR
### S/B STRAINS: BASIC PRINCIPLES ( "BOTTOM-LINE" SUMMARY )

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<th>Diagnosis</th>
<th>Ant. View</th>
<th>Superior View</th>
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<td><strong>S/B_F &amp; E/R</strong></td>
<td>FAT OR FULL</td>
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<td><strong>S/B_E &amp; I / R</strong></td>
<td>NARROW</td>
<td>ELONGATED</td>
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<td><strong>TORSIONS</strong></td>
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<td><strong>COMPRESSION</strong> ( A/P OR P/A )</td>
<td><strong>HEAD FEELS “HARD AS ROCK”</strong></td>
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IF YOU UNDERSTAND THE

BASIC CONCEPTS
IN
PREVIOUS SLIDE

YOU ARE IN GREAT SHAPE TO THEN

UNDERSTAND THE MECHANICS

PRODUCING THE S/B DYSFUNCTIONS
S/B STRAINS: BASIC PRINCIPLES (FRONTAL VIEW)

- **FACE SYMMETRICAL:**
  - **S/B<sub>F</sub> & E/R:** FULL OR “FAT” FACE & SHORTENED
  - **S/B<sub>E</sub> & I / R:** NARROW FACE & ELONGATED
  - **VERTICAL SHEARS:** PEAR SHAPED
    - **CEPHLAD:** FACE WIDER THAN BACK OF HEAD
    - **CAUDAD:** FACE NARROWER THAN BACK OF HEAD
  - **LATERAL SHEARS:** PARALLELOGRAM
    - **LEFT:** FACE SHIFTED TO LEFT COMPARED TO BACK OF HEAD
    - **RIGHT:** FACE SHIFTED TO RIGHT COMPARED TO BACK OF HEAD

- **FACE ASYMMETRICAL:** ONE SIDE CONVEX AND WIDER THAN OTHER SIDE
  - **TORSION . . . CONVEX EYE CEPHLAD & WIDE**
  - **SIDEBENDING / ROTATIONS . . . CONVEX EYE CAUDAD & NARROW**
SCHEMATIC : HOW TO INTERPRET IT

ANTERIOR PART (LIKE HOW LOOKINGS AT AS TREAT SUPINE PATIENT)

FACE SYMMETRICAL

**ER: BILATERAL**
- MEANS SPHENOID HAS BILATERALLY ROTATED ANTERIORLY AROUND A TRANSVERSE AXIS
- BOTH EYES THEREFORE WILL BE LEVEL & WIDE / SHALLOW
- FACE “FULL / FAT”

**ER: BILATERAL**
- MEANS BOTH OCCIPUTS ARE LOW AROUND A TRANSVERSE AXIS (SQUAMA)
- THEREFORE BOTH TEMPORALS WILL E/R PRODUCING A BILATERAL CONVEXITY / FULL HEAD

YOUR DIAGNOSIS?

S/B<sub>F</sub> & E/R
SCHEMATIC : HOW TO INTERPRET IT

ANTERIOR PART ( LIKE HOW LOOKINGS AT AS TREAT SUPINE PATIENT )
FACE SYMMETRICAL

**IR** : BILATERAL
- MEANS SPHENOID HAS BILATERALLY ROTATED POSTERIORLY AROUND A TRANSVERSE AXIS
- BOTH EYES THEREFORE WILL BE LEVEL & DEEP / NARROW
- FACE NARROW

**IR** : BILATERAL
- MEANS BOTH OCCIPUTS ARE “HIGH” ROTATING AROUND TRANSVERSE AXIS ( SQUAMA )
- THEREFORE BOTH TEMPORALS WILL I/R PRODUCING A BILATERALLY LONG / NARROW HEAD

YOUR DIAGNOSIS ?
S/B_{E} & I / R
SCHEMATIC: HOW TO INTERPRET IT

ANTERIOR PART (LIKE HOW LOOKINGS AT AS TREAT SUPINE PATIENT)
FACE ASYMMETRICAL

ER: UNILATERAL
- MEANS SPHENOID HAS ROTATED AROUND AN A/P AXIS
- RIGHT SIDE IS CEPHLAD
- EYE THEREFORE WILL BE HIGH / CEPHLAD & WIDE

ER:
- MEANS OCCIPUT ROTATED ON AN A/P AXIS & LOW ON RIGHT SIDE
- THEREFORE TEMPORAL WILL E/R PRODUCING A CONVEXITY ON RIGHT SIDE
- NOTE SPHENOID AND OCCIPUT ROTATED IN OPPOSITE DIRECTIONS
- WHAT TELL YOU?

YOUR DIAGNOSIS?
RIGHT TORSION
SCHEMATIC: HOW TO INTERPRET IT

ANTERIOR PART (LIKE HOW LOOKINGS AT AS TREAT SUPINE PATIENT)
FACE ASYMMETRICAL

IR: UNILATERAL
• MEANS SPHENOID HAS ROTATED AROUND AN A/P AXIS
• RIGHT SIDE IS CAUDAD
• RIGHT EYE THEREFORE WILL BE LOW / CAUDAD & SHALLOW

ER:
• MEANS OCCIPUT IS LOW ON RIGHT SIDE SINCE ROTATED AROUND AN A/P AXIS
• THEREFORE RIGHT TEMPORAL WILL E/R PRODUCING A CONVEXITY ON RIGHT SIDE
• NOTE BOTH SPHENOID & OCCIPUT ROTATED RIGHT / LOW
• WHAT TELLS YOU?

YOUR DIAGNOSIS?
SIDEBENT / ROTATED RIGHT (SB/R_R)
Schematic: How to Interpret It

Anterior Part (like how looking at as treat supine patient)

Face Symmetrical

ER: Bilateral
• Means sphenoid has rotated anteriorly around a transverse axis
• Both eyes therefore will be level & wide / shallow
• Face full / fat

IR: Bilateral
• Means both occiputs are high (squama) around a transverse axis
• Therefore both temporals will I/R producing a bilaterally narrow vault
• Pear-shaped head with wide end anterior

Your Diagnosis?
• Vertical Shear
• Cephlad
SCHEMATIC : HOW TO INTERPRET IT

ANTEORIR PART ( LIKE HOW LOOKINGS AT AS TREAT SUPINE PATIENT )
FACE SYMMETRICAL

IR: BILATERAL
• MEANS SPHENOID HAS ROTATED POSTERIORLY AROUND A TRANSVERSE AXIS
• BOTH EYES THEREFORE WILL BE LEVEL & DEEP / NARROW
• FACE NARROW

ER: BILATERAL
• MEANS BOTH OCCIPUTS ARE "LOW" AROUND A TRANSVERSE AXIS ( SQUAMA )
• THEREFORE BOTH TEMPORALS WILL E/R PRODUCING A BILATERALLY WIDE VAULT
• PEAR-SHAPED WITH WIDE END POSTERIOR

YOUR DIAGNOSIS?
• VERTICAL SHEAR
• CAUDAD
SCHEMATIC : HOW TO INTERPRET IT

ANTERIOR PART ( LIKE HOW LOOKINGS AT AS TREAT SUPINE PATIENT )
FACE SYMMETRICAL

SPHENOID:
• SPHENOID SHIFTS TO THE LEFT
• SPHENOID ALSO ROTATES AROUND A VERTICAL AXIS
• LEFT SIDE GLIDES ANTERIORLY
• CAN BE SUPERIMPOSED ON TOP OF ANOTHER S/B PATTERN

OCCIPUT:
• RELATIVELY SHIFTED TO THE RIGHT
• LEFT SIDE ALSO ROTATES ANTERIORLY
• HEAD TAKES ON PARALLELOGRAM SHAPE
• FACE CAN BE EITHER SYMMETRICAL OR ASYMMETRICAL BUT AS LOOK AT PERSON, RIGHT SIDE OF HEAD IS VISIBLE

YOUR DIAGNOSIS ?
• LATERAL SHEAR
• LEFT
SCHEMATIC: HOW TO INTERPRET IT

ANTERIOR PART (LIKE HOW LOOKINGS AT AS TREAT SUPINE PATIENT)

FACE SYMMETRICAL

SPHENOID:
- Sphenoid shifts to the right
- Sphenoid rotates around a vertical axis
- Right side also rotates anteriorly
- Can be superimposed on top of another S/B pattern

OCCIPUT:
- Relatively shifted to the left
- Right side also rotates anteriorly
- Head takes on parallelogram shape
- Face can be either symmetrical or asymmetrical but as look at person, LEFT side of head is visible

YOUR DIAGNOSIS?
- Lateral shear
- Right
SPECIFICS OF S/B MECHANICAL DYSFUNCTIONS
S/B TORSIONS
NAMED BY THE HIGH G.W.S.
DETAILS EXPANDED
S/B TORSION: RIGHT
[ HIGH SIDE G.W.S. ]
SPHENO-BASILAR PATTERNS: DESCRIPTIONS

(REFERENCE POINT IS THE SPHENOID)

S/B TORSION
SUPERIOR VIEW

A/P VIEW:
MOVEMENT AROUND AXIS

MOVEMENT PATTERN
OF SKULL
SUPERIOR CRANIAL VIEW: ORIENTATION

ANTERIOR PART

POSTERIOR PART

I / R: INTERNAL ROTATION 'PATTERN'
E / R: EXTERNAL ROTATION 'PATTERN'

- SPHENOID: HIGH SIDE PRODUCES WIDE EYE
- OCCIPUT: LOW SIDE PRODUCES VAULT CONVEXITY

WHAT ARE MECHANICS? → DIAGNOSIS?
SPHENO-BASILAR PATTERNS
(REFERENCE POINT IS THE SPHENOID)

S/B TORSION
(AXIS)

S/B TORSION- RIGHT
(GWS HIGH ON RIGHT)
SPHENOID & OCCIPUT
ROTATE IN OPPOSITE DIRECTIONS
SPHENO-BASILAR TORSION: RIGHT

- RIGHT G.W.S. HIGH . . . R. TORSION
- LEFT OCCIPUT HIGH
- BOTH SIDE ( A/P ) EQUAL LENGTH
RIGHT GWS CEPHLAD

LEFT OCCIPUT CEPHLAD

RIGHT S/B TORSION IMPACT ON THE TENT?
S/B TORSION: RIGHT

- CONVEX SIDE ON THE RIGHT
- EYE HIGH ON FULL SIDE

CONVEX EYE: HIGH
WIDE & SHALLOW

LEFT EYE: LOW
NARROW & DEEP
SPHENO-BASILAR TORSION: RIGHT

- RIGHT G.W.S. IS HIGH
- LEFT OCCIPUT IS HIGH  [ RIGHT LOW = E/R . .  CONVEX ]
- NAMED FOR THE HIGH SIDE OF G.W.S.

NOTE: HANDS FEEL LIKE THE ROTATE IN OPPOSITE DIRECTIONS ( VAULT HOLD )
• **WHAT AXIS INVOLVED?**
  - An A/P Axis

• **WHAT ARE THE TWO INVOLVED BONES?**
  - Sphenoid
  - Occiput

• **IN WHICH DIRECTION DO THE TWO BONES ROTATE?**
  - Opposite Directions

• **WHY IS THE RIGHT POSTERIOR SKULL CONVEX?**
  - Low side of Occiput
  - Temporal E/Rs

**RIGHT (S/B) TORSION**
HOW COULD I WRITE TEST QUESTIONS USING THIS TEACHING FORMAT?

• **A/P DISTANCE EQUAL BILATERALLY** ... SUGGESTS?
  - FLEXED OR EXTENDED
  - VERTICAL SHEARS
  - LATERAL SHEARS
  - TORSIONS

• **A/P DISTANCE UNEQUAL BILATERALLY** ... SUGGESTS?
  - SIDEBENDING / ROTATION DYSFUNCTION

• **HEAD ASYMMETRICAL / CONVEX RIGHT.** .. SUGGESTS?
  - RIGHT EYE HIGHER THAN LEFT ... WHAT MEAN?
  - RIGHT EYE LOWER THAN RIGHT ... WHAT MEAN?

• **EYES ARE UNLEVEL:** THAT SUGGESTS?

• **VIEWED FROM ABOVE, THE HEAD APPEARS:** SUGGESTS?
  - SHORT & WIDE OR LONG & NARROW
  - UNILAT. E/R ANT. & POST HEAD, E/R OPPOSITE (ANT / POST)
  - PEAR SHAPED: WIDE END ANTERIOR OR WIDE END POSTERIOR
  - PARALLELOGRAM
TEST TAKING STRATEGIES:

DRAW DIAGRAMS
(SEE NEXT SLIDE)

• THEN UNDERSTAND ANSWER

• FIND CORRECT ANSWER
S/B TORSION: LEFT
[ HIGH SIDE G.W.S. ]
SPHENO-BASILAR PATTERNS
(REFERENCE POINT IS THE SPHENOID)

S/B TORSION
(AXIS)

S/B TORSION- LEFT
(GWS HIGH ON LEFT)
SPHENOID & OCCIPUT ROTATE IN OPPOSITE DIRECTIONS
SPHENO-BASILAR TORSION: LEFT

- LEFT G.W.S. HIGH ... LEFT TORSION
- RIGHT OCCIPUT HIGH
- LEFT OCCIPUT LOW ... E/Rs
- BOTH SIDE ( A/P ) EQUAL LENGTH
SPHENO-BASILAR TORSION: LEFT

- LEFT G.W.S. IS HIGH
- RIGHT OCCIPUT IS HIGH  [LEFT LOW = E/R SIDE]
- NAMED FOR THE HIGH SIDE OF G.W.S.

NOTE: HANDS FEEL LIKE THE ROTATE IN OPPOSITE DIRECTIONS (VAULT & GWS/O HOLD)
LEFT GWS CEPHDAD

LEFT S/B TORSION

- TENT: FLAT ON LEFT
- SHIFT FALX TO LEFT ( ST. SINUS )

RIGHT OCCIPUT CEPHDAD
S/B TORSION: LEFT:
- CONVEX SIDE ON THE LEFT
- EYE HIGH ON FULL SIDE

RIGHT EYE: LOW NARROW & DEEP

‘CONVEX EYE’: HIGH WIDE & SHALLOW
PALPTION: WHAT WILL YOU FEEL?

LEFT TORSION

- OCCIPITAL / GWS HOLD (AROUND AN A/P AXIS)
  - ANTENIOR HAND: WILL ROTATE COUNTER CLOCKWISE
    (REFERENCE POINT: AS LOOK AT FACE)
  - POSTERIOR HAND: ROTATING CLOCKWISE
    (REFERENCE POINT: AS LOOK AT FACE)

- VAULT HOLD (AROUND A TRANSVERSE AXIS)
  - LEFT HAND: WILL ROTATE CLOCK-WISE
  - RIGHT HAND: WILL ROTATE CLOCK-WISE

HOW COULD YOU USE THIS INFORMATION TO DO B.M.T.?
QUESTION:
WHAT IS HAPPENING AT THE OTHER END OF THE

• DURAL TUBE ?
  • SACRUM

• DURING GAIT ?
S/B TORSION: LEFT

- HIGH L. SIDE G.W.S.
- LOW L. OCCIPUT

GAIT: R ON R TORSION

LEFT HEEL STRIKE / WT. BEARING
SOMATIC DYSFUNCTION
( SACRUM MODEL )

LOST ROM
• ACTIVE
• PASSIVE

PASSIVE

( PAUL KIMBERLY, DO )

A  E  P

N

P  E  A

R/ R S.T.

X

X

L/ L S.T.

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SOMATIC DYSFUNCTION

( GAIT RESTRICTION MODEL )

LOST ROM

• ACTIVE
• PASSIVE

( PAUL KIMBERLY, DO )

A E P

P E A

G/R
R/ R S.T.

L/ L S.T.

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GAIT RESTRICTION MODEL: A PARADIGM SHIFT?

• PROBLEM NOT REFLECTED BY POSITIONAL DIAGNOSIS . . . IF GOAL IS PROVIDE AN ACCUATE DESCRIPTION OF DYSFUNCTION. EXAMPLE:

• G/R RIGHT ON RIGHT TORSION IS A LEFT SI/J DYSFUNCTION . . . CAN’T GO FROM NEUTRAL INTO RIGHT ON RIGHT / ANTERIOR COMPARTMENT

• LEFT ON LEFT TORSION ( IF USED AS A POSITIONAL DIAGNOSIS ) WOULD BE A RIGHT SI/J DYSFUNCTION. IT CAN GO INTO LEFT ON LEFT / ANTERIOR COMPARTMENT BUT CAN’T COME OUT OF IT BACK INTO THE NEUTRAL COMPARTMENT

• IF THE RIGHT ON RIGHT G/R WAS CALLED A LEFT ON RIGHT TORSION, THERE WOULD BE ASYMMETRY AT SACRAL BASES AND ILA PLUS THERE WOULD BE A POSITIVE SITTING FORWARD BENDING TEST ON THE LEFT . . . BUT THESE FINDINGS ARE NOT PRESENT!

• THEREFORE THE ‘SPINAL MODEL’ OF POSITIONAL AND RESTRICTION DESCRIPTION INTER-CHANGE DOESN’T WORK WITH THIS PROBLEM, ie, FRSL WOULD BE A ERSR RESTRICTION
G/R DISCUSSION: CONTINUED

• THIS MAY BE ANOTHER EXAMPLE OF KIMBERLY’S, “MINIMAL LESION THAT PRODUCES A MAXIMAL PHYSIOLOGICAL EFFECT” . . . THIS HAS BEEN OUR EXPERIENCE

• WALKING HAS BEEN DESCRIBED AS “A TEST OF ALL STABLE QUALITIES” (STABILIZING ACTIVITIES)

• KUHN: NEW PARADIGMS NEED A NEW LANGUAGE TO ACCURATELY DESCRIBE THEM, ALSO IT HELPS TO BETTER UNDERSTAND THE OLD PARADIGM. PEOPLE THAT UNDERSTOOD THE OLD PARADIGM MAY NOT UNDERSTAND THE NEW PARADIGM

• POSSIBLE PARADIGMS (DALTON DISCUSSION)
  • REGULAR INDIRECT FUNCTIONAL AND DIRECT OMT GOAL IS TO RESTORE POSITIONING AND ULTIMATELY FUNCTION AND STIMULATED MECHANORECEPTORS INHIBIT THE PAIN RECEPTORS . . . MORE OF A PAIN MODEL ROLE
  • DIRECT FUNCTIONAL STIMULATES THE UNSTIMULATED MECHANORECEPTORS, FIRES THE ‘HARDWIRED’ MUSCLE GROUPS RELATED TO IT, FOR THE ‘FIRST TIME’, AND FIRING PATTERNS CHANGE, i.e., RESTORES FUNCTION AND THE POSTIONING ISSUES RESOLVED . . . MORE OF A ‘FIRING PATTERN’ ROLE AND LESS PAIN MODEL ROLE
GAIT / DYNAMIC SCREENING: STILES & SALE

- CAME OUT OF MY QUESTION TO MICHA SALE:
  WHAT IS CRANIAL S/B AREA DOING DURING GAIT?

SIGNIFICANCE: OFTEN THE PELVIC LANDMARKS AND STANDING & SITTING FORWARD BENDING TESTS ARE NORMAL AFTER YOUR TREATMENT BUT

GAIT IS DYFUNCTIONAL WHEN PALPATED

- PALPATE THE SACRAL BASES AND HAVE PATIENT WALK
- SACRUM SHOULD GO INTO L/L AND R/R TORSIONAL MOVEMENTS (ON RIGHT AND LEFT HEEL STRIKE)
- THEN PALPATE THE PSIS AREA AND HAVE THE PATIENT WALK
- DO INNOMINATES GLIDE INTO ANTERIOR AND POSTERIOR ROTATIONAL MOVEMENTS?
- THE PALPATE THE OCCIPUT AND HAVE THE PATIENT WALK
- NORMAL FINDINGS
  - RIGHT OCCIPUT SHOULD GLIDE CAUDAD AT RIGHT HEEL STRIKE (LEFT S/B TORSION)
  - LEFT OCCIPUT SHOULD GLIDE CAUDAD AT LEFT HEEL STRIKE (RIGHT S/B TORSION)
S/B TORSION: RIGHT

- HIGH R. SIDE G.W.S.
- LOW R. OCCIPUT

GAIT: L ON L TORSION
( ON RIGHT HEEL STRIKE / WT. BEARING )

NOTE: TORSIONS ARE PART OF THE GAIT CYCLE!
S/B SIDEBENDING ROTATION
NAMED BY THE CONVEX SIDE

NOTE:
• ALL OTHER CRANIAL STRAINS ARE NAMED BY WHAT THE SPHENOID DOES!
• THIS ONE REALLY IS NAMED BY WHAT THE OCCIPUT DOES AND THE CONVEXITY PRODUCED BY THE UNILATERAL E/R OF THAT TEMPORAL
WE HAVE WHAT MIGHT BE CALLED **FOUR TYPES OF S/B LESIONS.**

ONE IS **SIDE-BENDING ROTATION** AS IS EXEMPLIFIED IN THE ILLUSTRATION. YOU WILL NOTICE BY THE ILLUSTRATION THAT THE **SIDE-BENDING** **ROTATION** IS TO THE **LEFT.**

THE **GWS** IS DOWNWARD ON THE **LEFT** AND **OCCIPUT** IS TIPPED DOWNWARD ON THE **LEFT.**

THE **PETROUS PORTION** IS **ROTATED OUTWARD** ON THE **LEFT.**

THE **A-P DIAMETER** IS **SHORTER** ON THE **RIGHT** AND **GREATER** ON THE **LEFT**

WHENEVER THE **BASILAR PROCESS** OF THE **OCCIPITAL BONE** IS TIPPED DOWNWARD ON ITS **SIDE,**

THE **PETROUS PORTION** IS **ALWAYS EXTERNALLY ROTATED.**

IN THE **SIDE-BENDING** **ROTATION,**

ON THE **SIDE** WHERE THE **GWS** IS **UPWARD,**

THE **ORBIT CAVITY** WILL BE **WIDER**

OPPOSITE ON THE DOWNWARD **SIDE,** **ORBIT** WILL BE **SMALLER**

**NOTE:**

**COULD BE NAMED** **S/B\_R** AND **R\_L** ( **CONVEX SIDE** )
SB/R PATTERN:
• S/B . . . LEFT
• ROTATED RIGHT
• R. SIDE CONVEX [ ON LOW OCCIPUT SIDE ]

Dx: SB/R RIGHT
SPHENO-BASILAR PATTERNS
(REFERENCE POINT IS THE SPHENOID)

SIDEBENDING / ROTATION PATTERN: MOTION

- SIDEBENDING AROUND 2 VERTICAL AXES
- ROTATION AROUND AN A/P AXIS (SAME DIRECTION)

NAMED BY SIDE OF CONVEXITY OF HEAD (SB left R right)
DIAGNOSIS: SPHENO-BASILAR SIDEBENT (LEFT)

CONCAVE SIDE:
- IN “I / R”
- FINGERS ARE CLOSER TOGETHER
- PALM: MEDIAL

CONVEX SIDE:
- IN “E / R”
- FINGERS ARE FARTHER APART
- PALM: LATERAL

SB/R NAMED: BY CONVEX SIDE [RIGHT]
SIDE BENT ROTATED RIGHT:
• CONVEX SIDE ON THE RIGHT
• RIGHT SIDE IN E/R [VAULT]
• LEFT SIDE IN I/R [VAULT]

‘CONVEX EYE’: LOW
NARROW & DEEP

LEFT EYE: HIGH
WIDE & SHALLOW
SPHENO-BASILAR SIDEBENDING / ROTATION: RIGHT

YOU WILL PALPATE:

• FINGERS ON LEFT SIDE ARE CLOSER THAN RIGHT PLUS YOUR HAND IS INTERNALLY ROTATED

• FINGERS ON RIGHT SIDE ARE FURTHER APART THAN LEFT PLUS YOUR HAND IS EXTERNALLY ROTATED (PALM MORE LATERAL)
PALPTION: WHAT WILL YOU FEEL?

SB/R RIGHT

- **OCCIPITAL / GWS HOLD** (AROUND AN A/P AXIS)
  - ANTERIOR HAND: WILL ROTATE COUNTER CLOCKWISE
    (REFERENCE POINT: AS LOOK AT FACE)
  - POSTERIOR HAND: ROTATING COUNTER CLOCKWISE
    (REFERENCE POINT: AS LOOK AT FACE)
  - BOTH HANDS SIDEBEND LEFT

- **VAULT HOLD** (AROUND A TRANSVERSE AXIS)
  - LEFT HAND: INDEX & LAST FINGER APPROX. / PALM MEDIAL
  - RIGHT HAND: INDEX & LAST FINGER SEPERATED / PALM LAT.

HOW COULD YOU USE THIS INFORMATION TO DO B.M.T.?
SB/R PATTERN:
- S/B RIGHT
- ROTATED LEFT
  (LEFT SIDE ROTATED DOWN)
- CONVEX SIDE [LEFT]

E/R ON THE LOW
SIDE OF OCCIPUT
(CONVEXITY)
DIAGNOSIS: SPHENO-BASILAR
SIDEBENT ( RIGHT )
ROTATED ( LEFT )
SB/R NAMED BY CONVEX SIDE [ LEFT ]

CONVEX SIDE:
- IN "E / R"
- FINGERS ARE FARTHER APART
- PALM: LATERAL

CONCAVE SIDE:
- IN "I / R"
- FINGERS ARE CLOSER TOGETHER
- PALM: MEDIAL
SPHENO-BASILAR PATTERNS
(REFERENCE POINT IS THE SPHENOID)

SIDEBENDING / ROTATION PATTERN: MOTION

• NAMED BY SIDE OF CONVEXITY OF HEAD (SB right R LEFT)
• SUTHERLAND: "NOTICE A/P DIAMETER IS SHORTER ON RIGHT AND SOMEWHAT CONCAVE". [CONVEX LEFT]
SIDE BENT ROTATED LEFT:
- CONVEX SIDE ON THE LEFT

LEFT SIDE IN E/R [ VAULT ]
RIGHT SIDE IN I/R [ VAULT ]

RIGHT EYE: HIGH
WIDE & SHALLOW

‘CONVEX’ EYE: LOW
NARROW & DEEP
**SB LEFT / R RIGHT:**

- **HEAD CONVEX:** RIGHT
- **RIGHT EYE:** LOW NARROW & DEEP
- **HEAD LONGER (A/P) ON RIGHT**

**RIGHT TORSION:**

- **HEAD CONVEX:** RIGHT
- **RIGHT EYE:** HIGH WIDE & SHALLOW
- **HEAD SAME LENGTH (A/P) ON BOTH SIDES**

**IF EYE ON CONVEX SIDE IS LOW & NARROW = SB/R STRAIN**
**IF EYE ON CONVEX SIDE IS HIGH & WIDE = TORSION STRAIN**
S/B SHEARS: OTHER OPTIONS

POSTERIOR PART OF THE BODY OF THE SPHENOID IS YOUR REFERENCE POINT

• VERTICAL SHEARS:
  • CEPHLAD
  • CAUDAD

• LATERAL SHEAR:
  • RIGHT
  • LEFT
S/B SHEARS:

- **VERTICAL**: CEPHDAD / CAUDAD
- **LATERAL**: RIGHT OR LEFT

**NOTE:** NAMED BY WHAT THE **SPHENOID BODY** DOES!

(ESPECIALLY POSTERIOR PART OF BODY)
VERTICAL STRAIN PATTERNS

( REMEMBER TRANSVERSE AXIS PRESENT: BOTH BONES )

S/B SURFACES ARE REFERENCE / NAMING POINT

- INF. SHEAR: ‘SPHENOID EXTENDED’ / ‘OCCIPUT FLEXED’
- SUP. SHEAR: ‘SPHENOID FLEXED’ / ‘OCCIPUT EXTENDED’
SPHENO-BASILAR PATTERNS

• REFERENCE POINT IS THE SPHENOID
• ESPECIALLY POST. SPHENOID BODY SURFACE

S/B VERTICAL SHEAR (CEPHLAD)
SPHENOID “FLEXED” PATTERN

S/B VERTICAL SHEAR (CAUDAD)
SPHENOID “EXTENDED” PATTERN
PALPTION: WHAT WILL YOU FEEL?

VERTICAL STRAIN / SHEAR: CEPHALAD

- OCCIPITAL / GWS HOLD (AROUND AN A/P AXIS)
  - ANTERIOR HAND: WILL S/B_F / GWS SPREAD
  - POSTERIOR HAND: WILL S/B_E / POSTERIOR PART NARROW

- VAULT HOLD (AROUND A TRANSVERSE AXIS)
  - BOTH HANDS WILL ROTATE:
    - RIGHT: WILL ROTATE CLOCK-WISE
    - LEFT: WILL ROTATE COUNTER CLOCKWISE
    - INDEX FINGERS SEPARATE / LITTLE FINGER APPROX.

HOW COULD YOU USE THIS INFORMATION TO DO B.M.T.?
PALPTION: WHAT WILL YOU FEEL?

VERTICAL STRAIN / SHEAR: CAUDAD

- OCCIPITAL / GWS HOLD (AROUND AN A/P AXIS)
  - ANTERIOR HAND: WILL $S/B_e$ / GWS APPROXIMATE
  - POSTERIOR HAND: WILL $S/B_f$ / POSTERIOR PART WIDENS

- VAULT HOLD (AROUND A TRANSVERSE AXIS)
  - BOTH HANDS WILL ROTATE:
    - RIGHT: WILL ROTATE COUNTER CLOCK-WISE
    - LEFT: WILL ROTATE CLOCKWISE
    - INDEX FINGERS APPROX. / LITTLE FINGER SEPERATE

HOW COULD YOU USE THIS INFORMATION TO DO B.M.T.?
LATERAL SHEAR PATTERNS

- **RIGHT**
- **LEFT**

**NOTE:** NAMED BY WHAT THE SPHENOID BODY DOES (POST. BODY)
SPHENO-BASILAR STRAIN PATTERNS:
LATERAL SHEARS: **ESP. POST. SPHENOID BODY**

S/B **LEFT** LATERAL SHEAR

S/B **RIGHT** LATERAL SHEAR

NAMED BY DIRECTION
POSTERIOR **SPHENOID** GLIDES
DIAGNOSIS: SPHENO-BASILAR:
LATERAL SHEAR TO THE LEFT

PALPATORY FINDINGS: NAMED BY SPHENOID SHIFT
• GWS / OCCIPITAL HOLD ?
• VAULT HOLD ?

HEAD FEELS LIKE A PARALLELOGRAM
DIAGNOSIS: SPHENO-BASILAR: LATERAL SHEAR TO THE RIGHT

PALPATORY FINDINGS: NAMED BY SPHENOID SHIFT
- GWS / OCCIPUT HOLD ?
- VAULT HOLD ?

HEAD FEELS LIKE A PARALLELOGRAM
PALPTION: WHAT WILL YOU FEEL?

LATERAL STRAIN / SHEAR: LEFT

- **OCCIPITAL / GWS HOLD** (AROUND AN A/P AXIS)
  - ANTERIOR HAND: WILL GLIDE TO THE LEFT
  - POSTERIOR HAND: WILL GLIDE TO THE RIGHT

- **VAULT HOLD** (AROUND A TRANSVERSE AXIS)
  - INDEX FINGERS WILL GLIDE LEFT
  - LITTLE FINGERS WILL GLIDE RIGHT
  - INDEX AND LITTLE FINGER ON LEFT WILL GLIDE ANTERIOR

HOW COULD YOU USE THIS INFORMATION TO DO B.M.T.?
PALPTION: WHAT WILL YOU FEEL?

LATERAL STRAIN / SHEAR: RIGHT

• OCCIPITAL / GWS HOLD (AROUND AN A/P AXIS)
  • ANTERIOR HAND: WILL GLIDE TO THE RIGHT
  • POSTERIOR HAND: WILL GLIDE TO THE LEFT

• VAULT HOLD (AROUND A TRANSVERSE AXIS)
  • INDEX FINGERS WILL GLIDE RIGHT
  • LITTLE FINGERS WILL GLIDE LEFT
  • INDEX AND LITTLE FINGER ON RIGHT WILL GLIDE ANTERIOR

HOW COULD YOU USE THIS INFORMATION TO DO B.M.T.?
SPHENO-BASILAR COMPRESSION
( A-P OR P-A )

WHAT COULD BE FINGER TREATMENT OPTIONS?
SPHENO-BASILAR PATTERNS
(REFERENCE POINT IS THE SPHENOID)

SPHENO-BASILAR COMPRESSION
(HEAD FEELS LIKE A BOWLING BALL)

- A/P TRAUMA
- P/A TRAUMA

HAMULUS OF PALATINE AND PTERYGOID PLATES
SPHENOID: Rx

S/B “COMPRESSION”: FREQUENT AFTER BLOWS TO EITHER THE FRONT OR BACK OF THE HEAD!!!!

PATIENT IS SUPINE.

β # 1 : FIND THE D.B.P. FOR EACH BONE AND ADD “THERAPEUTIC COMPRESSION”

β # 2 : UTILIZE THE S/B DIAGNOSTIC ( OCCIPITAL / GWS ) HOLD BUT INTRODUCE GENTLE ANTERIOR TRACTION ON THE SPHENOIDS UTILIZING THE GWS

β # 3 : OPERATOR PLACES A INDEX FINGER OF EACH HAND OVER THE GWS AND INTRODUCES GENTLE ANTERIOR TRACTION

β # 4 : MODIFY THE VAULT HOLD: BILATERALLY SEPARATE FINGER # 1 FROM STABILIZING FINGER # 2

ALL 3 TECHNIQUES WILL “DECOMPRESS” THE S/B AREA

NOTE: COMPRESSED HEADS FEEL LIKE A BOWLING BALL [ HARD AS A ROCK ]
QUESTION:
• WHAT IMPACT COULD STRAIN PATTERNS HAVE ON THE SKULL WHEN
  • THE OCCIPUT IS IN 4 PARTS?
  • THE SPHENOID IS IN 3 PARTS?
  • THE TEMPORAL IS IN 3 PARTS?
  • ESPECIALLY ON CARTIGAGENOUS PARTS MAKING UP THE BASE?
  • A POSSIBLE CLINICAL “ILLUSTRATION”
DOWN’S SYNDROME: BOSTON 1973

• PATIENT’S MOTHER WAS A PATIENT ( AN R.N. )
• CALLED FROM THE MGH COUPLE YEARS AFTER I LAST SAW HER AS A PATIENT
• “YESTERDAY I HAD A DOWN’S SYNDROME BABY, TALK TO ME”
• CHROMOSOMAL ABNORMALITY, CAN’T CHANGE BUT THE CHILD HAS A POTENTIAL, EXPLAINED CRANIAL
• CAN’T PROMISE ANYTHING BUT WOULD BE GLAD TO TREAT AS A “GIFT” FOR THE FIVE WEEKS BEFORE MOVED BACK TO MAINE TO START HOSPITAL PROGRAM
• TREATED THE CHILD WEEKLY X 5 WEEKS
• 15 YEARS LATER I GOT A CALL FROM THE MOTHER
• “I HAVE BEEN MEANING TO CALL YOU FOR YEARS, TO THANK YOU. BIGGEST PROBLEM HAS BEEN, NEW PHYSICIANS DON’T BELIEVE HE IS A DOWN’S SYNDROME UNTIL SEE CHROMOSOMAL STUDIES”
• SHOULD HAVE GOTTEN PHONE # TO CALL BACK AND GOTTEN MORE INFO ABOUT HIS FUNCTIONAL POTENTIAL, ETC.
• BONES MAKING UP BASE: MULTIPLE PARTS (SKULL SHAPE)
S/B AREA IS SIMILAR TO THE SACRAL REGION

IN THAT THE **S/B “COMPENSATES”** FOR DYSFUNCTION ELSEWHERE IN THE CRANIUM JUST LIKE THE **SACRUM** DOES FOR DYSFUNCTION ELSEWHERE IN THE BODY.

THIS EXPLAINS WHY **SEQUENCING** IS ALSO IMPORTANT IN THE SKULL. INTERESTINGLY, BOTH THESE FUNCTIONAL AREAS ARE AT THE TWO ENDS OF THE DURAL TUBE (**“CORE-LINK”**)

**BONES AT BOTH ENDS OF DURAL TUBE HAVE AN “L” SHAPED ARTICULAR SURFACE**
TEMPORAL MANAGEMENT
QUICK REVIEW:

- **S/B MOVEMENTS: WHAT ARE THEY?**
  - SB/F & E/R: FULL / FAT & SHORT HEAD
  - SB/E & I/R: ELONGATED / NARROW HEAD

- **TENT & FALX CHANGES: WHAT ARE THEY?**
  - SB/F & E/R: TENT FLATTENS / FALX GLIDES CAUDAD
  - SB/E & I/R: TENT DOMES / FALX GLIDES CEPHALAD

- **SACRAL MOVEMENT: WHAT ARE THEY?**
  - SB/F & E/R: SACRAL BASE GLIDES POSTERIORLY
    - COUNTER-NUTATION / C-S FLEXION
    - EXTENSION IN NON-CRANIAL COURSES
  - SB/E & I/R: SACRAL BASE GLIDES ANTERIORLY
    - NUTATION / C-S EXTENSION
    - FLEXION IN NON-CRANIAL COURSES

- **CRANIAL RATE: 10-14**

- **S/B DYSFUNCTIONAL PATTERNS:**
  - S/B FLEXION & EXTENSION
  - TORSIONS: NAMED BY HIGH SIDE GWS [ EYE HIGH ON CONVEX SIDE ]
  - SB/R: NAMED BY CONVEX SIDE [ EYE LOW ON CONVEX SIDE ]
  - LATERAL STRAINS: NAMED BY SPHENOID SHIFT / PARALLELOGRAM.
  - SUP./ INF. SHEARS: PEAR SHAPED HEAD [ WIDE/Front & WIDE/BACK ]
  - S/B COMPRESSION: “BOWLING BALL HEAD”
SPHENO-BASILAR PATTERNS: DEScriptions

(REFERENCE POINT IS THE SPHENOID)

S/B TORSION
SUPERIOR VIEW

A/P VIEW: MOVEMENT AROUND AXIS

MOVEMENT PATTERN OF SKULL
(SUPERIOR VIEW)
TEMPORAL DIAGNOSIS

THE “VAULT HOLD”

- Operator’s hands are placed on the sides of the patient’s head
- Fs # 1 - Over the GWSs
- Fs # 2 - Over anterior temporal area (infront of the ear)
- Fs # 3 - Over the posterior temporal area (behind the ear)
- Fs # 4 - Over the occipital bone

Benefit: Evaluates simultaneously sphenoid, occipital & temporal movement patterns!

[The cartilagenous base]
VAULT HOLD: FINGER PLACEMENT
PROGRESSIVE INFORMATION GAINED:

- Is the **OCCIPUT** moving? Occipital Hold
- Is the **SPHENOID** moving? In pattern with the Occipit? GWS / Occipital Hold
- Are the **TEMPORALS** moving? In pattern with the S/B movement? Vault Hold

**NOTE:**
- Really evaluates the **CRANIAL BASE**
  (Cartilagenous Bone / “Gear Action”)
- **CRANIAL NERVE** IMPACT (11 OF 12)
PALPATORY: VAULT HOLD

S/B_F & EXTERNAL ROTATION

B Fs # 1 & 4 GLIDE CAUDAD ( GWS & OCCIPUT )

B Fs # 2 & 3 GLIDE MEDIALLY AS THE TEMPORALS GO INTO EXTERNAL ROTATION

( PALPATING LOWER HALF OF TEMPORAL BONES AND GLIDES MEDially )

S/B_E & INTERNAL ROTATION - OPPOSITE MOVEMENT PATTERN
VAULT INTERPRETATION

- RESTRICTION BETWEEN **Fs 1 & 2** = GWS / TEMPORAL SUTURE BUT
  R/O SQUAMO-SPHENOID SUTURE [ S/S SUTURE ]

- RESTRICTION BETWEEN **Fs 3 & 4** = OCCIPITAL / MASTOID SUTURE

- RESTRICTED AT LEVEL OF YOUR KNUCKLES = TEMPORAL / PARIETAL SUTURE

- RESTRICTED BETWEEN **Fs 2 & 3** = PETROUS PORTION OF TEMPORAL
  - MOSTLY F # 2 = PETROUS – SPHENOID
  - MOSTLY F # 3 = PETROUS – OCCIPITAL
  [ JUGULAR FORAMEN ]

- EQUAL F # 2 & 3 = SQUAMO / PETROUS FUSION SITE
VAULT HOLD: INTERPRETATION
MASTOID MOVEMENT

- **S/B_F**
  - **TIP:** POSTERIOR / MEDIAL
  - **MASTOID PORTION:** ANTERIOR / LATERAL

- **S/B_E**
  - **TIP:** ANTERIOR / LATERAL
  - **MASTOID PROCESS:** POSTERIOR / MEDIAL
TEMPORAL BONE DYSFUNCTIONS:
• TEMPORAL / GWS
• SQUAMOUS / SPHENOID ( S/S )
• PETROUS ( 3 COMPONENTS )
  • SQUAMOUS / PETROUS FUSION POINT
  • PETROUS / SPHENOID ( FORAMEN LACERUM )
  • PETROUS / OCCIPITAL
• SQUAMOUS / MASTOID FUSION SIDE
• MASTOID / OCCIPITAL
• TEMPORAL / PARIETAL

NOTE: # OF SUTURES AND FUSION POINTS
• CLOWN
• TROUBLE MAKER
• WOBLING WHEEL
TEMPORAL DYSFUNCTION ROLE IN:

- **MIDDLE EAR INFECTIONS:** E/R "OPENS" TUBE
- **VERTIGO**
- **INSTABILITY & EQUILIBRIUM PROBLEMS**
- **TINNITIS**
TEMPORAL Rx: UNILATERAL

- Determine the **RESTRICTED SUTURE**
- Determine if **ONE AREA** of the suture is more restricted than other areas (**BEVEL CHANGE**)
- Determine if **BOTH TEMPORALS** are dysfunctional (**MEMBRANEous**)
- Palpate on either side of the dysfunctional suture, **find the DBP** (starting with most restricted bone of the pair.)
- Add the **CORRECT THERAPEUTIC PRESSURE** and allow to “UNWIND”
PCSOM MODEL: ‘TWO BASIC TECHNIQUES’

1. PALPATE ON EITHER SIDE OF DYSFUNCTIONAL SUTURE
   EX: TEMPORAL PARIETAL SUTURE

2. UTILIZE THE TWO BONES THAT MAKE UP THE DYSFUNCTIONAL SUTURE
   EX: SPHENO-BASILAR SUTURE

NOTE: WILL ALSO DISCUSS
- MEMBRANEOUS TECHNIQUE PRINCIPLES
- OTHER TECHNIQUES
  - CV-IV
  - “V SPREAD”
  - DURAL
  - VENOUS DRAINAGE
MANAGEMENT “HOLDS”

TECHNIQUE # 1
“PINCH” THE MASTOID PROCESS IMPACTS PETROUS COMPONENT

TECHNIQUE # 2

PETROUS-OCCIPITAL SUTURE OR PETROUS-SPHENOID SUTURE
SPHENO-SQUAMOUS PIVOT: “RIDGE”

MANDIBULAR FOSSA

DIAGNOSIS:
- GWS / TEMPORAL TX (‘AGR’)
- THEN GWS / ZYGOMATIC ARCH TESTED . . . MORE RESTRICTED
TEMPORAL Rx

BILATERAL TEMPORAL DYSFUNCTIONS:

- Determine the MOST RESTRICTED SIDE and find the DBP
- Find the DBP for the other TEMPORAL BONE
- Add the correct amount of THERAPEUTIC PRESSURE

NOTE: USUALLY REPRESENTS A MEMBRANOUS PROBLEM WHEN BILATERAL
TEMPORAL: ALTERNATIVE Rx (LAUGHLIN)

MOTION TEST / TREATING:

- **ANTERIOR / POSTERIOR** "ROCKING" = INFLARE / OUTFLARE
- **SUPERIOR / INFERIOR** "ROCKING" = INTERNAL AND EXTERNAL ROTATION
- **ANTERIOR / POSTERIOR** ROTATIONAL "GLIDING" = ANTERIOR & POSTERIOR ROTATION

TECHNIQUE # 4
ALTERNATE TECHNIQUE:
FINGER PLACEMENT

- BE VERY GENTLE
- DO SLOWLY
- DO WITH APPROPRIATE S/B\textsubscript{F-E} PHASE

INFLARE / OUTFLARE
INTERNAL & EXTERNAL ROTATION
ANTERIOR & POSTERIOR ROTATION
TEMPORAL: PETROUS COMPONENT

DETERMINE WHICH COMPONENT IS RESTRICTED:

- **PETROUS / OCCIPITAL** (JUGULAR FORAMEN)
  - CN IX, X & XI
  - INTERNAL JUGULAR VEIN (95% OF BRAIN’S VENOUS DRAINAGE)

- **PETROUS / Sphenoid** (CAROTID / ARTERIAL SUPPLY)

TREATMENT:

- FIND DBP FOR MOST RESTRICTED BONE OF THE PAIR
- FIND THE DBP FOR THE OTHER HALF OF THE SUTURE
- ADD APPROPRIATE THERAPEUTIC PRESSURE
- ALLOW TO “UNWIND”
PCSOM CRANIAL MODEL

- ONLY “TWO” TECHNIQUES
- DOZENS OF APPLICATIONS

TECHNIQUES # 1

- ON EITHER SIDE OF THE DYSFUNCTIONAL SUTURE
- EXAMPLES
  - GWS / TEMPORAL
  - FRONTAL / PARIETAL

TECHNIQUE # 2

- ON THE TWO BONES WHICH MAKE UP THE SUTURE
- EXAMPLES
  - SPHENO-BASILAR ( S/B )
  - PETROUS - SPHENOID
COMMON SUTURAL DYSFUNCTIONS

NOTE:
ANY OF THESE DYSFUNCTIONAL SUTURES COULD PRODUCE A
S/B STRAIN PATTERN

COMMON SUTURAL DYSFUNCTIONS
SPHENOID TEMPORAL
TEMPORAL MECHANICAL ROLE?

VENOUS ROLE
VENOUS DRAINAGE

CAVERNOUS SINUS

PETROUS SINUS
- SUPERIOR
- INFERIOR

TRANSVERSE SINUS

SIGMOID SINUS
VENOUS CIRCULATION:

- Superior Sagittal Sinus
- Inferior Sagittal Sinus
- Straight Sinus
- Lateral: Transverse Sinus
- Sigmoid Sinus
- Petrous Sinus
- Cavernous Sinus
- Cranial Sacral Motion

= The "PUMP" for

- Cerebral Sinal Fluid (CSF)
- Venous Systems
- **CN III** Oculomotor
- **CN IV** Trochlear
- **CN V₁** Trigeminal Ophthalmic
- **CN V₂** Trigeminal Maxillary
- **CN VI** Abducens

**Also consider**
- **CN II** Pituitary
- **CN ARTERIAL**
TEMPORAL ROLE

TMJ

DISK
S/B DYSFUNCTIONAL PATTERNS + TEMPORALS: 3 SIMULTANEOUSLY FUNCTIONING AXES

• WHAT WILL YOU SEE?
• WHAT WILL YOU FEEL?
• WHICH WAY ARE S/B SURFACES GLIDING?
• WHAT DIRECTION ARE THE BONES ROTATING?
• WHAT IS MOVEMENT PATTERN?
• WHAT WILL BE SKULL SCHEMATIC?

NEW MATERIAL
SPHENO-BASILAR DYSFUNCTIONS: VAULT HOLD FINDINGS

DYSFUNCTIONS:
• $S/B_F$-E/R & $S/B_E$-I / R
• SHEARS:
  VERTICAL [ SUPERIOR, INFERIOR]
  LATERAL [ RIGHT, LEFT ]
• TORSIONS: RIGHT AND LEFT
• SIDEBENDING & ROTATION: RIGHT AND LEFT
SPHENO-BASILAR: STRAIN PATTERNS

BASIC PRINCIPLES: ASYMMETRY EVALUATION

• TWO SPHENOID PATTERNS:
  • $S_{bf}$ / ER: BOTH ORBITS WIDE & SHALLOW: TRANSV. AXIS
  • ROTATION: “E/R” ORBIT ON HIGH SIDE: A/P AXIS

• TWO OCCIPITAL PATTERNS:
  • $S_{bf}$ / ER: BOTH SIDE GLIDE CAUDAD...E/R: TRANSV. AXIS
  • ROTATION: “E/R” ON LOW SIDE ... BECOMES THE CONVEX SIDE: A/P AXIS
SPHENO-BASILAR: STRAIN PATTERNS

BASIC PRINCIPLES: ASYMMETRY EVALUATION

- **HIGH G.W.S. PRODUCES:** AROUND A/P AXIS
  - CEPHLAD EYE COMPARED TO OPPOSITE EYE
  - WIDE & SHALLOW ORBIT [ S/B_F PATTERN ]
- **LOW OCCIPUT:** AROUND A/P AXIS
  - TEMPORAL BONE GOES INTO EXTERNAL ROTATION [ POST VAULT “FULL” ]
  S/B_F PATTERN
CONCAVE SIDE:
- IN I / R
- FINGERS ARE CLOSER TOGETHER
- PALM: MEDIAL

CONVEX SIDE:
- IN E / R
- FINGERS ARE FARTHER APART
- PALM: LATERAL

DIAGNOSIS: SPHENO-BASILAR:
SIDEBENT (LEFT)

ROTATED RIGHT [CONVEX SIDE]
NAMED: SB / RR
SPHENO-BASILAR PATTERNS
( REFERENCE POINT IS THE SPHENOID )

SIDEBENDING / ROTATION PATTERN: MOTION

- SIDEBENDING AROUND 2 VERTICAL AXES
- ROTATION AROUND AN A/P AXIS (SAME DIRECTION)
  NAMED BY SIDE OF CONVEXITY OF HEAD (SB left R right)
DIAGNOSIS: SPHENO-BASILAR:
SIDEBENT (LEFT)

ROTATED RIGHT [CONVEX SIDE]
NAMED: SB/R RIGHT
TERMINOLOGY
ISSUES

• 3 SIMULTANEOUSLY FUNCTIONING AXES
• BOTH BONES SIMULTANEOUSLY ROTATE ON TWO PARALLEL VERTICAL AXES
• BOTH BONES SIMULTANEOUSLY ROTATE ON AN A/P AXIS

SIDEBENDING / ROTATION DYSFUNCTIONS
S/R ISSUES: NAMED BY CONVEX SIDE

- **AXES:** 2 VERTICAL & 1 A/P
- **ROTATION:** REFERENCE POINT
  - **VERTICAL AXIS:** ANTERIOR SURFACE
  - **A/P AXIS:** SUPERIOR SURFACE

**SUPERIOR VIEW:**
- **2 VERTICAL AXES**
  - **S/B SURFACES:** GLIDE IN SAME DIRECTION (LATERAL)
  - **S & O ROTATE IN OPPOSITE DIRECTIONS (VERTICAL AXES)**
    - **SPHENOID:** $R_L$
    - **OCCIPUT:** $R_R$

**POSTERIOR VIEW:**
- **A/P AXIS**
- **RIGHT SIDE GLIDES CAUDAD**
  - **OCCIPUT:** SB SURFACE GLIDES $R$ & $R_R$
  - **SPHENOID:** SB SURFACE GLIDES $R$ & $R_R$

**RIGHT SIDE:**
- **BOTH BONES**
- **GLIDE CAUDAD**

**SAVARESE: OMT 3d EDITION (GREEN)**
- **RIGHT SIDE BENDING OF THE SBS ABOUT TWO VERTICAL AXES WILL CAUSE THE SBS TO DEVIATE TO THE RIGHT**
- **BOTH SPHENOID & OCCIPUT ROTATE IN SAME DIRECTION ON AN A/P AXIS AND INTO E/R ON LOW SIDE**
- **$S/B_R$ (DEVIATES SBS TO RIGHT) WHILE SPHENOID / OCCIPUT WILL BE LOW ON RIGHT**
S/R ISSUES: NAMED BY CONVEX SIDE

- **AXES:** 2 VERTICAL & 1 A/P
- **ROTATION:** REFERENCE POINT
  - **VERTICAL AXIS:** ANTERIOR SURFACE
  - **A/P AXIS:** SUPERIOR SURFACE

**SUPERIOR VIEW:**
- 2 VERTICAL AXES
  - **S/B SURFACES:** GLIDE IN SAME DIRECTION (LATERAL)
  - S & O ROTATE IN OPPOSITE DIRECTIONS
    - **SPHENOID:** R_L
    - **OCCIPUT:** R_R

**POSTERIOR VIEW:**
- **A/P AXIS**
- **RIGHT SIDE GLIDES CAUDAD**
- **OCCIPUT:** SB SURFACE GLIDES_R & R_R
- **SPHENOID:** SB SURFACE GLIDES_R & R_R

**MAGOUN:**
OSTEOPATHY IN CRANIAL FIELD (DIAGRAM)

**RIGHT SIDE:**
- BOTH BONES
- GLIDE DOWN

SB/R_R
S/R Issues: Named by Convex Side

- **Axes:** 2 Vertical & 1 A/P
- **Rotation:** Reference Point
  - Vertical Axis: Anterior Surface
  - A/P Axis: Superior Surface

**Superior View:**
- 2 Vertical Axes
  - S/B Surfaces: Glide in Same Direction (Lateral)
  - S & O Rotate in Opposite Directions
    - Sphenoid: $R_L$
    - Occiput: $R_R$

**Posterior View:**
- A/P Axis
- Right Side Glides Caudad
  - Occiput: SB Surface Glides $R_R$ & $R_R$
  - Sphenoid: SB Surface Glides $R_R$ & $R_R$

**Sutherland: Cranial Bowl**
- Sphenoid Bent to Left
- Right Wing Tipped Down
- Occiput Bent to Right
- Right Occiput Tipped Down
- Right Petrous Portion E/Rs

**Right Side:**
- Both Bones
- Glide Down

**Notes:**
- Right Petrous Portion in Internal Rotation
- Left Petrous Portion in External Rotation
S/R ISSUES: NAMED BY CONVEX SIDE

- **Axes:** 2 Vertical & 1 A/P
- **Rotation:** Reference Point
  - Vertical Axis: Anterior Surface
  - A/P Axis: Superior Surface

**Superior View:**
- 2 Vertical Axes
  - S/B Surfaces: Glide in Same Direction (Lateral)
  - S & O Rotate in Opposite Directions
    - Sphenoid: $R_L$
    - Occiput: $R_R$

**Posterior View:**
- A/P Axis
- Right Side Glides Caudad
  - Occiput: SB Surface Glides $R$ & $R_R$
  - Sphenoid: SB Surface Glides $R$ & $R_R$

**Right Side:**
- Both Bones
- Glide Down

**Maugoun: Osteopathy in Cranial Field (2d)**
- Sphenoid: Rotate on A/P Axis / Down Right
- Carries Basi-Sphenoid Toward Low Side
- Occiput: E/R on Low Side . . . Convexity
- Carries Basi-Occiput Toward Low Side
**S/R ISSUES: NAMED BY CONVEX SIDE**

- **Axes:** 2 Vertical & 1 A/P
- **Rotation:** Reference Point
  - Vertical Axis: Anterior Surface
  - A/P Axis: Superior Surface

**Superior View:**
- 2 Vertical Axes
  - S/B Surfaces: Glide in Same Direction (Lateral)
  - S & O Rotate in Opposite Directions
    - Sphenoid: $R_L$
    - Occiput: $R_R$

**Posterior View:**
- A/P Axis
- Right Side Glides Caudad
  - Occiput: SB Surface Glides $R_R$ & $R_R$
  - Sphenoid: SB Surface Glides $R_R$ & $R_R$

**Magoun: Appendix / Definition**
- A Lesioned Position of S/B Symphysis in Which Sphenoid and Occiput Rotate in the Same Direction on an A/P Axis (Caudad)
- While at Same Time Sidebends on Parallel Vertical Axes to Approximate on High Side and Separate on Low Side.
  - "Concavity" on High Side [$I/R$]
  - "Convexity" on the Low Side [$E/R$]
**S/R ISSUES: NAMED BY CONVEX SIDE**

- **AXES:** 2 VERTICAL & 1 A/P
- **ROTATION:** REFERENCE POINT
  - VERTICAL AXIS: ANTERIOR SURFACE
  - A/P AXIS: SUPERIOR SURFACE

**SUPERIOR VIEW:**
- 2 VERTICAL AXES
  - S/B SURFACES: GLIDE IN SAME DIRECTION (LATERAL)
  - S & O ROTATE IN OPPOSITE DIRECTIONS
    - SPHENOID: $R_L$
    - OCCIPUT: $R_R$

**POSTERIOR VIEW:**
- A/P AXIS
- RIGHT SIDE GLIDES CAUDAD
  - OCCIPUT: SB SURFACE GLIDES $R$ & $R_R$
  - SPHENOID: SB SURFACE GLIDES $R$ & $R_R$

**FOUNDATION OF OSTEOPATHIC MEDICINE: “AUTHORITY”**
- SIDEBENDING AND ROTATION WITH CONVEXITY TO THE RIGHT
- BOTH GWS AND OCCIPUT ARE LOWER ON SIDE OF CONVEXITY
- TWO BONES SIDEBEND [ROTATE] AWAY FROM EACH OTHER ON VERTICAL AXES
S/R ISSUES: NAMED BY CONVEX SIDE

- AXES: 2 VERTICAL & 1 A/P
- ROTATION: REFERENCE POINT
  - VERTICAL AXIS: ANTERIOR SURFACE
  - A/P AXIS: SUPERIOR SURFACE

SUPERIOR VIEW:
- 2 VERTICAL AXES
  - S/B SURFACES: GLIDE IN SAME DIRECTION (LATERAL)
  - S & O ROTATE IN OPPOSITE DIRECTIONS
    - SPHENOID: R_L
    - OCCIPUT: R_R

POSTERIOR VIEW:
- A/P AXIS
- RIGHT SIDE GLIDES CAUDAD
  - OCCIPUT: SB SURFACE GLIDES R & R_R
  - SPHENOID: SB SURFACE GLIDES R & R_R

FOUNDATION OF OSTEOPATHIC MEDICINE: “AUTHORITY”
- GLOSSARY (PG. 1251)
- S/B DYSFUNCTION
  - SPHENOID AND OCCIPUT ROTATE IN OPPOSITE DIRECTIONS AROUND PARELLEL VERTICAL AXES
  - SPHENOID AND OCCIPUT ROTATE IN THE SAME DIRECTION AROUND AN A/P AXIS
  - SBS SIDEBENDING / ROTATIONS ARE NAMED FOR THE CONVEXITY
S/R ISSUES: NAMED BY CONVEX SIDE

- **AXES:** 2 VERTICAL & 1 A/P
- **ROTATION:** REFERENCE POINT
  - VERTICAL AXIS: ANTERIOR SURFACE
  - A/P AXIS: SUPERIOR SURFACE

SUPERIOR VIEW:
- 2 VERTICAL AXES
  - S/B SURFACES: GLIDE IN SAME DIRECTION (LATERAL)
  - S & O ROTATE IN OPPOSITE DIRECTIONS
    - SPHENOID: $R_L$
    - OCCIPUT: $R_R$

POSTERIOR VIEW:
- A/P AXIS
- RIGHT SIDE GLIDES CAUDAD
  - OCCIPUT: SB SURFACE GLIDES $R_L$ & $R_R$
  - SPHENOID: SB SURFACE GLIDES $R_L$ & $R_R$

RIGHT SIDE:
- BOTH BONES
- GLIDE DOWN

UPLEDGER: CRANIAL SACRAL THERAPY

SIDE BENDING WITH CONVEXITY RIGHT

Vertical axes of rotation about which sphenoid and occiput are rotated in a sidebending lesion.
S/R ISSUES: NAMED BY CONVEX SIDE

**AXES:** 2 VERTICAL & 1 A/P

**ROTATION:** REFERENCE POINT
- VERTICAL AXIS: ANTERIOR SURFACE
- A/P AXIS: SUPERIOR SURFACE

**SUPERIOR VIEW:**
- 2 VERTICAL AXES
- S/B SURFACES: GLIDE IN SAME DIRECTION (LATERAL)
- S & O ROTATE IN OPPOSITE DIRECTIONS
  - SPHENOID: R_L
  - OCCIPUT: R_R

**POSTERIOR VIEW:**
- A/P AXIS
- RIGHT SIDE GLIDES CAUDAD
  - OCCIPUT: SB SURFACE GLIDES R & R_R
  - SPHENOID: SB SURFACE GLIDES R & R_R

**CHILA: CRANIAL SACRAL COURSE MANUAL OU-COM**
- SIDEBENDS AT SBS WITH CONVEXITY TO THE OPPOSITE SIDE
- SPHENOID & OCCIPUT ROTATE IN SAME DIRECTION ON A/P AXIS
- SIDEBENDING OCCURS IN OPPOSITE DIRECTIONS, SPHENOID COUNTER CLOCK-WISE BUT THE OCCIPUT CLOCK-WISE, AROUND TWO PARALLEL VERTICAL AXES. THEREFORE, SBS BECOMES CONVEX ON RIGHT SIDE AND INFERIOR ON RIGHT (CONVEXITY)
**S/R ISSUES:** NAMED BY CONVEX SIDE

- **AXES:** 2 VERTICAL & 1 A/P
- **ROTATION:** REFERENCE POINT
  - VERTICAL AXIS: ANTERIOR SURFACE
  - A/P AXIS: SUPERIOR SURFACE

**SUPERIOR VIEW:**
- 2 VERTICAL AXES
  - S/B SURFACES: GLIDE IN SAME DIRECTION (LATERAL)
  - S & O ROTATE IN OPPOSITE DIRECTIONS
    - SPHENOID: R<sub>L</sub>
    - OCCIPUT: R<sub>R</sub>

**POSTERIOR VIEW:**
- A/P AXIS
- RIGHT SIDE GLIDES CAUDAD
  - OCCIPUT: SB SURFACE GLIDES<sub>R</sub> & R<sub>R</sub>
  - SPHENOID: SB SURFACE GLIDES<sub>R</sub> & R<sub>R</sub>

**DiGIOVANNA:** AN OSTEOPATHIC APPROACH TO Dx & Rx
- SIDE BENDING & ROTATION ARE SEPARATE MOTIONS @ SBS
- SIDEBENDING OCCURS BY ROTATION AROUND TWO VERTICAL AXES
- SPHENOID & OCCIPUT ROTATE IN OPPOSITE DIRECTIONS TO CAUSE SIDEBENDING
- BOTH BONES ROTATE IN SAME DIRECTION ON A/P AXIS, DOWN ON THE RIGHT . . . CONVEXITY

**RIGHT SIDE:**
- BOTH BONES
- GLIDE DOWN

SB/L

SB/R<sub>R</sub>
SIDE BENT ROTATED RIGHT:
CONVEX SIDE ON THE RIGHT
RIGHT SIDE IN E/R
LEFT SIDE IN I/R

‘CONVEX EYE’: LOW NARROW & DEEP

LEFT EYE: WIDE & SHALLOW 173
SPHENO-BASILAR SIDEBENDING / ROTATION: RIGHT

YOU WILL PALPATE:

• FINGERS ON **LEFT SIDE** ARE CLOSER THAN RIGHT PLUS LEFT PALM IS CLOSER TO MIDLINE THAN THE RIGHT HAND [ I / R ]

• FINGERS ON **RIGHT SIDE** ARE FURTHER APART THAN LEFT PLUS RIGHT PALM IS FURTHER FROM MIDLINE THAN THE LEFT [ E /R ]
SIDEBENDING ROTATION
S/B PATTERNS:

• HOW ARE THEY NAMED?
  ANS: BY THE CONVEX SIDE

• HOW MANY AXES ARE INVOLVED IN THIS DYSFUNCTION?
  ANS: THREE
  • TWO VERTICAL
  • ONE A-P

• WHAT DOES DIAGNOSIS SB/R R MEAN?
  ANS: SIDEBENT ROTATED RIGHT

• WHAT TERMINOLOGY MIGHT HAVE HELPED?
  • SIDEBENT LEFT
  • ROTATED RIGHT . . . THE CONVEX SIDE

• IN WHAT DIRECTION DO THE S/B SURFACES GLIDE?
• IN WHICH DIRECTION DO THE BONES ROTATE? VERT. & A/P AXES
DIAGNOSIS: SPHENO-BASILAR:
SIDEBENT (RIGHT)
ROTATED LEFT [CONVEX SIDE]
DIAGNOSIS: SPHENO-BASILAR

SIDEBENT ( RIGHT )

ROTATED LEFT [ CONVEX SIDE ]

NAMED: SB / R_L
SPHENO-BASILAR PATTERNS
(REFERENCE POINT IS THE SPHENOID)

SIDEBENDING / ROTATION PATTERN: MOTION

• NAMED BY SIDE OF CONVEXITY OF HEAD (SB right R LEFT)
• SUTHERLAND: "NOTICE A/P DIAMETER IS SHORTER ON RIGHT AND SOMEWHAT CONCAVE". [CONVEX LEFT]
SIDE BENT ROTATED LEFT:
• CONVEX SIDE ON THE LEFT
• LEFT SIDE IN E/R
• RIGHT SIDE IN I/R

RIGHT EYE:
WIDE & SHALLOW

‘CONVEX EYE’: LOW
NARROW & DEEP
SPHENO-BASILAR SIDEBENDING / ROTATION LEFT

YOU WILL PALPATE:

• FINGERS ON **LEFT SIDE** ARE FURTHER APART THAN RIGHT PLUS PALM OF LEFT HAND IS FURTHER FROM THE MIDLINE THAN RIGHT [ E / R ]

• FINGERS ON **RIGHT SIDE** ARE CLOSER TOGETHER THAN LEFT PLUS THE PALM OF YOUR RIGHT HAND IS CLOSER TO THE MIDLINE THAN LEFT [ I / R ]
TORSIONS:

• HOW ARE THEY NAMED?
  ANS: BY THE HIGH GWS...CEPHLAD

• HOW MANY AXES ARE INVOLVED IN DYSFUNCTION?
  ANS: ONE (A/P)

• HOW DO TWO BONES ROTATE?
  (SPHENOID & OCCIPUT)
  ANS: IN OPPOSITE DIRECTION AROUND THE A/P AXIS

• WHAT DOES RIGHT (S/B) TORSION DIAGNOSIS MEAN?
  ANS: SPHENOID HAS ROTATED SO RIGHT SIDE IS HIGHER / CEPHLAD THAN LEFT
SPHENO-BASILAR TORSION: **LEFT**

- **LEFT G.W.S. HIGH**
- **RIGHT OCCIPUT HIGH THEREFORE**
- **L. OCCIPUT LOW & E/R [ CONVEX SIDE ]**
- **BOTH SIDE EQUAL A/P LENGTH**
SPHENO-BASILAR PATTERNS
(REFERENCE POINT IS THE SPHENOID)

S/B TORSION
(AXIS)

S/B TORSION - LEFT
(GWS HIGH ON LEFT)
SPHENOID & OCCIPUT ROTATE IN OPPOSITE DIRECTIONS
S/B TORSION: **LEFT**
- **CONVEX SIDE ON THE LEFT**
- **EYE HIGH ON FULL SIDE**

**RIGHT EYE:** LOW NARROW & DEEP

**'CONVEX EYE': HIGH WIDE & SHALLOW**
SPHENO-BASILAR TORSION: LEFT

- **LEFT G.W.S. IS HIGH**
- **RIGHT OCCIPUT IS HIGH**
- NAMED FOR THE HIGH SIDE OF G.W.S.

**NOTE:** HANDS FEEL LIKE THE ROTATE IN OPPOSITE DIRECTIONS [ R /CLOCKWISE & L / CLOCKWISE ]
SPHENO-BASILAR TORSION: **RIGHT**

- **RIGHT G.W.S.** HIGH
- **LEFT OCCIPUT** HIGH THEREFORE
- **R. OCCIPUT** LOW & E/R [ CONVEX SIDE ]
- **BOTH SIDE EQUAL LENGTH**
SPHENO-BASILAR PATTERNS
(REFERENCE POINT IS THE SPHENOID)

S/B TORSION (AXIS)

S/B TORSION - RIGHT
(GWS HIGH ON RIGHT)
SPHENOID & OCCIPUT ROTATE IN OPPOSITE DIRECTIONS
S/B TORSION: RIGHT

- CONVEX SIDE ON THE RIGHT
- EYE HIGH ON FULL SIDE

‘CONVEX EYE’: HIGH WIDE & SHALLOW

LEFT EYE: LOW NARROW & DEEP
**Sphenop-basilar Torsion: Right**

- **Right G.W.S. is high**
- **Left Occiput is high**
- Named for the high side of G.W.S.

*Note: Hands feel like they rotate in opposite directions*
LATERAL SHEARS
OF S/B AREA

• WHAT HAPPENED MECHANICALLY?
  ANS: SPHENOID SHIFTED TO ONE SIDE

• HOW ARE THEY NAMED?
  ANS: BY THE DIRECTION THE SPHENOID SHIFTED (RIGHT / LEFT)

• WHAT IS THE OVER-ALL SHAPE OF THE HEAD (SUPERIOR VIEW)?
  ANS: PARALLELOGRAM

• IN WHICH DIRECTION DO S/B SURFACES GLIDE?
• IN WHICH DIRECTION DO TWO BONES ROTATE?
DIAGNOSIS: SPHENO-BASILAR
LATERAL SHEAR TO THE LEFT

VAULT HOLD PALPATORY FINDINGS: NAMED BY SPHENOID (POSTERIOR SURFACE) SHIFT

HEAD FEELS LIKE A PARALLELOGRAM

• WHAT PALPATE WITH GWS / OCCIPITAL HOLD?
• WHAT PALPATE WITH VAULT HOLD?
DIAGNOSIS: SPHENO-BASILAR

LATERAL SHEAR TO THE LEFT

S/B SURFACES GLIDE: IN OPPOSITE DIRECTION
BONES ROATATE: IN THE SAME DIRECTION

HEAD FEELS LIKE A PARALLELOGRAM
DIAGNOSIS: SPHENO-BASILAR LATERAL SHEAR TO THE LEFT

S/B AREA GLIDE: IN OPPOSITE DIRECTION
BONES ROTATE: IN THE SAME DIRECTION

HEAD FEELS LIKE A PARALLELOGRAM

HOW COULD YOU MOTION TEST?
• OCCIPITAL-GWS HOLD?
• VAULT HOLD?
**DIAGNOSIS:** SPHENO-BASILAR LATERAL SHEAR TO THE **RIGHT**

**VAULT HOLD PALPATORY FINDINGS:** NAMED BY SPHENOID SHIFT

**HEAD FEELS LIKE A PARALLELOGRAM**
**DIAGNOSIS:** SPHENO-BASILAR

**LATERAL SHEAR TO THE RIGHT**

* S/B SURFACES GLIDE: IN OPPOSITE DIRECTIONS
* BONES ROTATE: IN SAME DIRECTION

HEAD FEELS LIKE A PARALLELOGRAM
VERTICAL S/B STRAINS:

• WHAT IS MECHANICAL ACTION?
  ANS: SPHENOID GLIDES
    • CEPHLAD
    • CAUDAD

• HOW ARE THEY NAMED?
  ANS: BY THE DIRECTION THE SPHENOID GLIDES

• IN WHAT DIRECTION DO THE S/B SURFACES GLIDE?
  ANS: IN OPPOSITE DIRECTIONS

• IN WHICH DIRECTION DO THE BONES ROTATE?
  ANS: IN SAME DIRECTION...TRANSVERSE AXIS

• WHAT IS THE OVERALL SHAPE OF THE HEAD?
  ANS: PEAR SHAPED
VERTICAL STRAIN PATTERNS
VERTICAL S/B STRAIN PATTERNS:

• NAMED BY DIRECTION OF SPHENOID

SUPERIOR VERTICAL SHEAR:

• SPHENOID IN “FLEXION” PATTERN
• FACE FULL [ IN E/R PATTERN ]
• OCCIPUT IN “EXTENSION” PATTERN [ I/R ]
• HEAD PEAR SHAPED
  • WIDE END ANTERIOR
  • NARROW END POSTERIOR

INFERIOR VERTICAL STRAIN:

• SPHENOID IN “EXTENSION” PATTERN
• FACE NARROW [ IN I/R PATTERN ]
• OCCIPUT IN “FLEXION” PATTERN [ E/R ]
• TEMPORAL / PARIETAL IN E/R
• HEAD PEAR SHAPED
  • NARROW END ANTERIOR
  • WIDE END POSTERIOR
VERTICAL S/B STRAIN PATTERNS:

- NAMED BY DIRECTION OF SPHENOID

SUPERIOR VERTICAL SHEAR:

- SPHENOID IN “FLEXION” PATTERN
- SPHENOID SURFACE GLIDES CEPHALAD
- OCCIPUT IN “EXTENSION” PATTERN [ I/R ]
- OCCIPUT SURFACE GLIDES CAUDAL
  - S/B SURFACES: GLIDE OPPOSITE DIRECTION
  - ROTATING: OPPOSITE DIRECTION (TRANSV. AXIS)

INFERIOR VERTICAL STRAIN:

- SPHENOID IN “EXTENSION” PATTERN
- SPHENOID SURFACE GLIDES CAUDAL
- OCCIPUT IN “FLEXION” PATTERN [ E/R ]
- OCCIPUT SURFACE GLIDES CEPHALAD
  - S/B SURFACES GLIDE: OPPOSITE DIRECTION
  - ROTATION: OPPOSITE DIRECTION (TRANSV. AXIS)
REMEMBER: REFERENCE POINT IS POSTERIOR SPHENOID BODY
QUESTION: TO ASK YOURSELF

• WHAT WILL YOU PALPATE WITH THE OCCIPITAL – GWS HOLD?

• WHAT WOULD YOU FEEL WITH THE VAULT HOLD?

CORRELATE WITH THE DIAGRAMS!
PALPATORY FINDINGS (VAULT HOLD) EXAMPLES

- **S/B_F:**
  - FIRST & LAST FINGERS GLIDE CAUDAD
  - MIDDLE TWO FINGER TIPS GLIDE MEDIALLY / PALMS LATERALLY

- **S/B_E:**
  - FIRST & LAST FINGERS GLIDE CEPHLAD
  - MIDDLE TWO FINGER TIPS GLIDE LATERALLY
  - PALMS GLIDES MEDIALLY

- **RIGHT TORSION:**
  - RIGHT HAND ROTATES COUNTER-CLOCKWISE
  - LEFT HAND ROTATES COUNTER-CLOCKWISE

- **SB / R_R:**
  - LEFT FINGER CLOSER TOGETHER / PALM MORE MEDIAL
  - RIGHT FINGERES SEPERATED / PALM MORE LATERAL

- **VERTICAL SHEAR: “PEAR-SHAPED” PATTERN**
  - **CEPHLAD:** “FLEXED PATTERN” FRONT OF HEAD
    - FIRST FINGERS MORE CAUDAD & SEPERATED
    - LITTLE FINGERS MORE CEPHLAD & APPROXIMATED
  
  - **CAUDAD:** “EXTENDED PATTERN” FRONT OF HEAD
    - FIRST FINGERS MORE CEPHLAD & APPROXIMATED
    - LITTLE FINGERS MORE CAUDAD & SEPERATED

- **LATERAL SHEAR: “PARALLELOGRAM PATTERN”**
  - FIRST FINGERS MOVE LATERALLY
  - LITTLE FINGERS MOVE IN OPPOSITE DIRECTION
HOW COULD YOU USE THESE PRINCIPLES TO TREAT THE DYSFUNCTIONAL S/B STRAINS?

• WITH THE **FRONTAL (GWS)** / **OCCIPITAL HOLD**?
  • **TAKE EACH BONE TO ITS BDP (BMT)**
  • **FIND THE DBP FOR THE MOST RESTRICTED BONE, OF THE SUTURAL PAIR FIRST, THEN THE OTHER BONE**
  • **ADD “THERAPEUTIC PRESSURE” & ALLOW “UNWINDING”**

• **WITH THE “VAULT HOLD” (EXAGGERATE: BMT)**
  • **SB<sub>F</sub>: GLIDE FINGERS 1 & 4 CAUDAD, MIDDLE TWO MEDIALLY**
  • **SB<sub>E</sub>: GLIDE FINGERS 1 & 4 CEPHALAD, MIDDLE TWO LATERALLY**
  • **R. TORSION: ROTATE BOTH HANDS COUNTER-CLOCKWISE**
  • **R. SB/R<sub>R</sub>:**
    • GLIDE LEFT FINGER 1 & 4 TOGETHER, RIGHT APART
    • GLIDE LEFT PLAM MEDIALLY, RIGHT LATERALLY
  • **VERTICAL SHEAR (CEPHLAD): “PEAR SHAPED PATTERN”**
    • GLIDE FIRST FINGERS CAUDAD & LATERALLY ("FLEXED")
    • GLIDE LITTLE FINGERS CEPHALAD & MEDIALLY ("EXTENDED")
  • **LEFT LATERAL SHEAR: PARALLELOGRAM PATTERN**
    • GLIDE FIRST FINGERS TO LEFT
    • GLIDE LITTLE FINGERS TO RIGHT OR
    • GLIDE LEFT FIRST & LITTLE FINGERS ANTERIORLY

**KEY: UNDERSTAND MECHANICS & TECHNIQUE “FLOWS”**
<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>S/B Surfaces</th>
<th>Bone Rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torsion</td>
<td>Rotate opposite [ A/P axis ]</td>
<td>Opposite direction [ A/P axis ]</td>
</tr>
</tbody>
</table>
| SB / R        | Glide in same direction | Opposite direction [ Vert. axis ]
| GLIDE IN SAME DIRECTION | SAME DIRECTION [ A/P AXIS ] |
| Lat. Shear    | Glide in opposite direction (both) | Lat: Rotate same [ Vert. axis ]
| VERT. Shear   | GLIDE IN SAME DIRECTION | Vert: Rotate same [ Transv. axis ] |
| SB/F & SB/E   | Glide in same direction | Opposite direction [ Transv. axis ] |
BONE & SBS MOVEMENT PATTERNS:

**S/B_F & E/R:**
- **SBS:** SAME
- **BONES:** OPPOSITE

**S/B_E & I /R:**
- **SBS:** SAME
- **BONES:** OPPOSITE

**VERT. SHEAR UP:**
- **SBS:** OPPOSITE
- **BONES:** SAME

**VERT. SHEAR DOWN**
- **SBS:** OPPOSITE
- **BONES:** SAME
BONE & SBS MOVEMENT PATTERNS:

**SBS SB/R<sub>R</sub>:**
(LEFT = MIRROR IMAGE)

**L. LAT. SHEAR:**
(RIGHT = MIRROR IMAGE)

**RIGHT TORSION:**
(LEFT = MIRROR IMAGE)

**SBS: SAME**  
**BONES: OPPOSITE**
( PARALLEL VERTICAL AXES )

**SBS: SAME**  
**BONES: SAME**
( A/P AXIS )

**SBS: OPPOSITE**  
**BONES: SAME**
( L. : BOTH ANTERIOR )

**SBS: ROTATE OPPOSITE**  
**BONES: ROTATE OPPOSITE**

ROTATES UP (A/P AXIS)

ROTATES DOWN (A/P AXIS)
AQUEDUCT PASSES OVER THE S/B AREA:
DISRUPTS FLOW OF C.S.F.
FROM 3d TO THE 4TH VENTRICLE

AQUEDUCT: IMPACTED BY
- SIDEBENDING-ROTATION: KINKS IT
- TORSIONS: TWISTS IT
- FLEXION / EXTENSION: KINKS IT
- EXTREME EXTENSION: STRETCHES IT
PETROUS FUNCTIONS:

- PETROUS / OCCIPITAL
  - HINGE
  - GLIDE

- PETROUS / SPHENOID

- PLUS, S/S SUTURE
  - ROCKING E / R
  - ROCKING I / R
TRAUMATIC INJURIES:

POTENTIAL IMPACT

TEMPORAL TRAUMA:

- TEMPORO-PARIETAL SUTURE
- TEMPORO-GREATER WING OF THE SPHENOID
- SPHENO-SQAUMOUS SUTURE / “S/S” PIVOT RIDGE
- PETRO-SPHENOID SUTURE
- PETRO-OCCIPITAL SUTURE [JUGULAR FORAMEN]

LATERAL BLOW:

- FORCED INTO SB/E & I/R IF BLOW IS HIGH
- FORCE INTO SB/F & E/R IF BLOW IS LOW
FAMOUS FACES

HYPOTHESIS: CONVEXITY PREDICTS POLITICAL VIEWS?
MATCH
TWO SIDES
OF
FACE

RIGHT SIDE MATCHED

LEFT SIDE MATCHED
ADDITIONAL FACIAL ASYMMETRY EXAMPLES
PARIETAL MANAGEMENT
PARIETALS

AXIS:

- FROM CHANGE IN BEVEL (ANTERIOR AND POSTERIOR)
- MULTIPLE AXES POSSIBLE?

NOTICE THE JAGGED CONFIGURATION:

DBP ROLE?
( @ DIFFERENT SITES )
PARIETAL: ARTICULATIONS

- PARIETAL-PARIETAL (SAGITTAL SUTURE)
- FRONTAL (CORONAL)
- OCCIPITAL (LAMDOID)
- TEMPORAL (HORSE-SHOE SHAPE)
- AXIS: ANTERIOR / POSTERIOR

EXTERNAL ROTATION:
- INFERIOR BORDER of PARIETAL GLIDES LATERAL
- SAGITTAL SUTURE glides caudad
PARIETAL: FINGER & THUMB PLACEMENT
WITH S/B FLEXION,

• **FINGER TIPS** WILL GLIDE LATERALLY (EXTERNAL ROTATION)
• **SAGITTAL SUTURE, THUMBS, GLIDE CAUDAD**
PARIETAL DIAGNOSIS

- Hands are placed over the head so that the thenar areas meet over the sagittal suture.
- Three or four fingers are placed over the most inferior border of the parietals.
- With S/Bf & ER: Inferior parietal area glides laterally and sagittal suture glides caudad.
PARIETAL:

- FINGER & THUMB PLACEMENT
- DIAGNOSTIC SIGNIFICANCE
PARIETAL INTERPRETATION

- RESTRICTION FELT ALONG LATERAL BORDER OF F # 1 = PARIETAL / FRONTAL SUTURE
  ( IF @ FINGERTIP = PTERION )
- RESTRICTION FELT ALONG LATERAL BORDER OF F # 4 = PARIETAL / OCCIPITAL SUTURE
- RESTRICTION @ THUMBS MIDLINE = SAGITTAL SUTURE
- RESTRICTION AT TIPS OF FINGERS = TEMPORAL / PARIETAL

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PARIETALRx

- Identify the **RESTRICTED SUTURE**
- Identify area **WITHIN THE SUTURE** which is most restricted (bevel point)
- Take each bone involved in the suture to its **DBP**
- Add the appropriate **THERAPEUTIC PRESSURE.** Allow to uniquely “UNWIND”.
- Recheck and re-screen
MANAGEMENT: PARIETAL

[ FIND AGR WITHIN LARGE SUTURES / BEVEL POINT ]
TRAUMATIC INJURIES: POTENTIAL IMPACT

PARIETAL TRAUMA:

- PARIETO-FRONTAL (CORONAL)
- SAGITTAL-CORONAL SUTURAL JUNCTION
- PARIETO-GREATER WING SUTURE
- SAGITTAL TRAUMA: FORCE INTO E/R & SB/F
- LATERAL TRAUMA: FORCE INTO I/R & SB/E
TRAUMATIC INJURIES: POTENTIAL IMPACT

OCCIPITAL TRAUMA:
- POSTERIOR SAGITTAL SUTURE
- S/B COMPRESSION
- OCCIPITO-PARIETAL SUTURE
- OCCIPITO-MASTOID SUTURE
NEWBORN HEADS

CAN

HAVE

A LOT OF

PARIETAL OVER-RIDING

• OVER FRONTAL
• OVER TEMPORAL
• OVER OCCIPITAL
• PARIETAL OVER PARIETAL
FRONTAL MANAGEMENT
FRONTAL ARTICULATIONS

- PARIETAL (S) = CORONAL SUTURE
- SPHENOID
  - GREATER WINGS; “L”
  - LESSER WINGS
- ZYGOMAS
- MAXILLAE
- NASAL
- ETHMOID

NOTE: FRONTAL “FUNCTIONS” AS TWO BONES (METOPIC SUTURE)
**AXIS:** FROM CHANGE IN BEVEL (CORONAL) SUTURE THROUGH ORBIT

“L” SHAPED SURFACE
METOPIC SUTURE
FRONTAL DIAGNOSIS

- REST HANDS ON FRONTAL AREA SO THAT PALMS ARE OVER LATERAL PART OF FRONTAL BONE
- FINGERS ARE INTER-LACED OVER THE MIDLINE OF FRONTAL BONE
- S/B_F & ER: LATERAL FRONTAL BONE GLIDE LATERALLY (CARRIED BY G/W SPHENOIDS) AXIS: TWO ANTERIOR / POSTERIOR BUT “TOWED IN” ANTERIORLY
- S/B_E & IR: LATERAL FRONTAL BONES GLIDE MEDIANALLY (CARRIED BY G/W SPHENOIDS)
EXTERNAL ROTATION
INTERNAL ROTATION
FRONTAL-GWS SUTURE
“L”
FRONTAL-LWS SUTURE
HEADACHE
FRONTAL-LESSER WING
ETHMOID
MAXILLARY-FRONTAL
INTER-MAXILLARY
VOMER
FACIAL DIFFERENTIAL DIAGNOSIS
FRONTAL DIAGNOSIS

- Glide thumbs posteriorly along the frontal / parietal area
  (Coronal Suture)

- Little fingers placed along supra-orbital area = frontal / lw sphenoid
  (Horizontal band palpated @ supra-orbital ridge)

- Supra-orbital / midline = vomer or ethmoid

- Supra-orbital / just lateral to midline = maxilla

- Also monitor: with two fingers
  - Frontal / zygoma
  - Frontal / gw sphenoid

(Do as part of ‘Bermuda Triangle’: Slide # 231)
FRONTAL: GWS SIGNIFICANCE

- This is a large "L Shaped" suture where the frontal bone sits down on the greater wing of the sphenoid (GWS).
- Sutherland correlated this with the "L Shaped" sacro-ilial joint.
- There frequently is a clinical correlation between both these cranial and pelvic regions since the dural tubes connects them.
FRONTAL- GWS ARTICULATION
“L” SHAPED
DIAGNOSIS OF: “BERMUDA TRIANGLE”

**MODIFY THE VAULT HOLD TO EVALUATE:**

**BY MOVING THE SECOND FINGER FORWARD AND OVER THE GWS. NOW THE INDEX FINGER IS FREE TO PALPATE:**

- **GWS / ZYGOMATIC** SUTURE
- **GWS / FRONTAL** SUTURE
- **FRONTAL / ZYGOMATIC** SUTURE
GREATER WING OF SPHENOID – FRONTAL SUTURE
FRONTAL Rx

- Determine the restricted suture (s)
- Take both bones involved in the suture to their DBP
- Add the appropriate amount of therapeutic pressure
- Allow to uniquely "unwind"

Note: If suture is long, palpate for the A.G.R. within the suture... treat there
FRONTAL BONE
FRONTAL BONE
FRONTAL MANAGEMENT

PALPATION: F/LWS

FRONTAL-LWS

FRONTAL-GWS

FRONTAL-PARIETAL

FRONTAL-ZYGOMATIC
TRAUMATIC INJURIES: POTENTIAL IMPACT

FRONTAL BLOW:

- FRONTO-PARIETAL (CORONAL) SUTURE
- FRONTO-GREATER WING OF THE SPHENOID
- FRONTO-LESSER WING OF THE SPHENOID
MAXILLARY MANAGEMENT
MAXILLA

- AXES
- SINUSES
MAXILLA: ARTICULATIONS

- ZYGOMA (S)
- FRONTAL
- NASAL
- MAXILLA-MAXILLA (INTER MAXILLARY SUTURE)
- VOMER (MIDLINE)
- PALATINES
- MAX / GWS
HARD PALATE
MAXILLARY SUTURES:
- MAXILLARY / ZYGOMATIC
- MAXILLARY / FRONTAL
- INTER-MAXILLARY
- MAXILLARY / PALATINE
- MAXILLARY / ETHMOID
- MAXILLARY / GWS
ORTHODONTIC CARE:
MAXILLA DIAGNOSIS

**AXIS:** Runs diagonally from lateral (inferior) to medial (superior) “A” configuration

Place thumbs **under the**

**ORBITS:** Lateral part glides anteriorly and laterally (minutely widens) with SB/F & ER and the opposite during SB/E & IR (elongates)

Place thumbs along **supra-dental arch:** Differential diagnosis potential

- **Midline** = inter-maxillary R/O vomer
- **Very lateral** = palatine
- **In between** = tooth contact problem

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MAXILLA: EXTERNAL ROTATION
(LOW & WIDE PALATE)
MAXILLA: INTERNAL ROTATION
( HIGH & NARROW PALATE )
MAXILLA INTERNAL & EXTERNAL ROTATION (MAX / ZYGOMA)

DIFF. DIAGNOSIS: MAXILLA
MIDLINE ( FRONTAL ): INTERPRETATION

- MIDLINE FRONTAL & MIDLINE MAXILLA = VOMER
- MIDLINE FRONTAL BUT NOT MAXILLA = ETHMOID (2 ARTICULAR SURFACES)
  - FRONTAL
  - SPHENOID
- MIDLINE MAXILLA BUT NOT FRONTAL = INTER-MAXILLARY SUTURE
MAXILLA Rx

- **DETERMINE THE RESTRICTED SUTURE**

- **FIND THE DBP FOR THE TWO BONES INVOLVED IN THE SUTURE**

- **ADD APPROPRIATE THERAPEUTIC PRESSURE**

- **WHEN TOOTH INVOLVED, ESTABLISH FULCRUM ON LATERAL MAXILLA NEXT TO INVOLVED TOOTH. FIND THE DBP**

- **ALSO:**
  - MAXILLARY-ETHMOID
  - MAXILLARY-GWS

FRONTO – MAX.

MAX - ZYGOMA

INTER - MAXILLARY
• PLACE TIP OF GLOVED FINGER ON MAXILLA; JUST MEDIAL TO THE INVOLVED TOOTH

• FIND THE D.B.P.
  • ANT. / POST.
  • MED. / LAT.
  • CLOCKWISE / COUNTERCLOCKWISE

• ALLOW TO UNIQUELY “UNWIND”

• YOU MAY ALSO STABILIZE THE HEAD BY PALPATING GWSs AS YOU DO THIS TECHNIQUE
DENTAL CONTACT PROBLEM:

• PALPATE ON HARD PALATE JUST MEDIAL TO TOOTH
• WITH OTHER HAND PALPATE THE GWS BILATERALLY
MAXILLARY TECHNIQUES

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INTER-MAXILLARY MANAGEMENT
MAXILLARY – SPHENOID ‘SUTURE’

TECHNIQUE:
• PALPATE MAXILLA (EXT. OR INT.)
• GWS (B/L)
MAXILLARY-SPHENOID SUTURE
PALATINE
MANAGEMENT
PALATINE ARTICULATIONS

- MAXILLA
- SPHENOID
  - PTERYGOID PLATES
    (PALATINE HAMULUS)
  - WITH BODY
    (SPHENOID PROCESS)
- S/B FLEXION / EXTENSION ROLE
- ORBIT (ROLE?)

NOTE: A “SPEED REDUCER”
HAMULUS OF PALATINE

PTERYGOID PLATES OF THE SPHENOID

A GLIDING ACTION MUST TAKE PLACE FOR S/B FLEXION & EXTENSION TO OCCUR!

CAN BE ALTERED DURING DENTAL EXTRACTION
PALATINE Rx

- Slide a gloved finger along dental ridge (intra-orally) until contact is made with the ptergoid plate (finger pad will be on Palatine)
- With the other hand palpate the GWS bilaterally. (Other bone of the pair)
- Find the DBP for each bone
- Add the therapeutic pressure
- Allow to unwind
- When releases, SB flexion / extension occurs

Note: This is a very fragile bone so be very gentle with your technique
ZYGOMA MANAGEMENT
ZYGOMA ARTICULATIONS

- **SPHENOID** (GREATER WING): COMMON SUTURAL DYSFUNCTION
- **MAXILLA** (CHEEK BONE)
- **FRONTAL**
- **TEMPORAL** (ZYGOMATIC ARCH)

**NOTE:** A "SPEED REDUCER"
ZYGOMA
A “SPEED REDUCER”
ZYGOMA MANAGEMENT

# 1 MAXILLARY - ZYGOMATIC

# 2 FRONTAL - ZYGOMATIC
#3 GWS - ZYGOMA

#4 ZYGOMATIC - TEMPORAL
“SPEED REDUCERS”

**BONES:**
- PALATINES
- ZYGOMA

**ROLE (HYPOTHESIS TALLEY & STILES):**

**ABSORB** THE GREATER MOTION POTENTIAL OF THE VAULT BONES. WHEN “SPEED REDUCERS” ARE **RESTRICTED**, MORE THAN NORMAL MOTION IS INTRODUCED INTO THE FACIAL BONES. THIS CAN PRODUCE **COMPLICATED AND CONFUSING FACIAL PAIN PATTERNS**
VOMER MANAGEMENT
VOMER
VOMER: RELATIONSHIPS
“L” SHAPED SURFACE

ETHMOID

VOMER
VOMER ARTICULATIONS

- **SPHENOID** (BODY / GROOVE)
- **MAXILLA** (INTER-MAXILLARY SUTURE)
- **S/B_{F/ER}** = SPHENOID BODY ROTATES ANTERIORLY WHICH GLIDES THE VOMER CAUDAD WHICH ENCOURAGES EXTERNAL ROTATION OF MAXILLA

( VOMER ALSO ROTATES POSTERIORLY )

SEE SLIDE #220

NOTE: VOMER ROLE WITH FRONTAL, SPHENOID, ETHMOID AND MAXILLARY SINUS FUNCTION AND SINUS INFECTIONS.
SPHENOBASILAR FLEXION

- ANTERIOR PART GLIDES CAUDAD
- POSTERIOR PART ROTATES CAUDAD . . . WIDENS DENTAL ARCH
VOMER Rx

- Place a gloved finger over the inter-maxillary suture (Vomer “contact”)
- With the other hand palpate the GWS bilaterally (other bone / sphenoid)
- Find the DBP for each bone
- Add the “therapeutic pressure”
- Allow to uniquely “unwind”

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**VOMER / ETHMOID JUNCTION**

**TREATMENT:**
- HOLD THE **ETHMOID** “THROUGH” THE NASAL BONES
- HAVE GLOVED FINGER ON THE **INTER-MAXILLARY SUTURE**
- TAKE BOTH TO THEIR **D.B.P.**
- ADD “**THERAPEUTIC COMPRESSION**”
- ALLOW TO UNIQUELY **“UNWIND”**
ETHMOID MANAGEMENT
ETHMOID ARTICULATIONS

- **BODY** OF SPHENOID
- **FRONTAL** (CRISTA GALLI ROLE WITH DURA)
- **VOMER** “SADDLED” BY ETHMOID

**TREATMENT STRATEGIES:**
- ETHMOID - FRONTAL
- ETHMOID - SPHENOID
- ETHMOID - VOMER
- ETHMOID - MAXILLARY
CRISTA GALLI OF ETHMOID
( FALX ATTACHES TO IT )

“L” SHAPED ARTICULATION
SPHENOID ARTICULAR SURFACE

FRONTAL ARTICULAR SURFACE

SPHENOID ARTICULAR SURFACE
ETHMOID Rx

ETHMOID-FRONTAL SUTURE:
• “PINCH” NASAL BONES LIGHTLY WITH ONE HAND
• PALPATE SUPRAORBITAL RIDGE WITH THE OTHER HAND
• FIND THE DBP FOR EACH BONE
• ADD “THERAPEUTIC PRESSURE”

ETHMOID-SPHENOID SUTURE:
• “PINCH” NASAL BONES LIGHTLY WITH ONE HAND
• PALPATE THE GWS BILATERALLY WITH THE OTHER HAND
• FIND THE DBP FOR EACH BONE
• ADD THE “THERAPEUTIC PRESSURE”

ETHMOID – VOMER JUNCTION:
• “PINCH” NASAL BONES LIGHTLY WITH ONE HAND
• GLOVED FINGER ON INTER-MAXILLARY SUTURE
• FIND THE D.B.P. FOR EACH BONE
• ADD “THERAPEUTIC PRESSURE”
ETHMOID Rx

ETHMOID-MAXILLARY SUTURE:

• “PINCH” NASAL BONES LIGHTLY WITH ONE HAND (IMPACT ETHMOID)
• WITH THE OTHER HAND ALLOW YOUR THUMB “GENTLY MOLD INTO” THE MAXILLA
• FIND THE D.B.P. FOR EACH OF THE BONES
• ADD “THERAPEUTIC PRESSURE”
• ALLOW TO “UNWIND”
• RECHECK
PARADOXICAL MOVEMENTS? EX: SB/F & E/R

• **MAXILLA**: DENTAL ARCH WIDENS BUT

• **MANDIBULAR CONDYLES**: GLIDING MEDIALLY

• **MANDIBULAR PLASTICITY** ENABLES CONSTANT OCCLUSION
MANDIBLE:

- Palpate both sides of ramus
- Which side has the most muscle tightness
- Find the DBP for that side first
- Find the DBP for the other side
- Add appropriate medial compression
- Allow to “unwind”
MANDIBLE:

- Palpate mandible bilaterally with 2d & 3d fingers along the ramus of the mandible.
- Determine the most restricted side of the mandible.
- Find the DBP for each side.
- Add therapeutic pressure, let uniquely "unwind".

Alternative:

"Down & Dirty" Cranial Technique:

Simultaneously balance:

- The GWS and
- Mandible areas
- Add the appropriate pressure
MANDIBULAR PALPATION
SACRAL MANAGEMENT
DIAGRAM:
- S/B AREA DIRECTION GLIDING
- SPHENOID ROTATION
- OCCIPUT GLIDING
- SACRUM BASE / GLIDING
- CORD ( ARROW MEANING )

WHAT IS DIAGNOSIS?
- S/B FLEXION & E/R
- SACRAL
  - COUNTER-NUTATION
  - C/S FLEXION
SACRAL MECHANICS: SUPINE

- S/B FLEXION
- SACRAL: COUNTER-NUTATION / ‘C/S FLEXION’
SACRUM (SUPINE)

- **HAND # 1:** PALPATE SACRUM BY ALLOWING IT TO "REST" ON YOUR HAND
- **HAND # 2:** PALPATE ANTERIOR LOWER ABDOMINAL AREAS AND DETERMINE WHICH AREA IS MOST RESTRICTED
- FIND THE DBP FOR THE MOST RESTRICTED AREA FIRST, THEN FOR THE OTHER AREA
- ADD THE APPROPRIATE THERAPEUTIC PRESSURE. ALLOW TO UNIQUELY "UNWIND"
GAIT: STILES / SALE VERSION

- AT L. HEEL STRIKE MTA CONVERTS INTO ROA AXIS
- AS WEIGHT PLACED ON L. HEEL, SACRUM FLIPS INTO RIGHT ON RIGHT SACRAL TORSION
- LEFT P/I OCCURS

TESTING SACRAL MECHANICS

- AT R. HEEL STRIKE MTA CONVERTS INTO LOA AXIS
- AS WEIGHT PLACED ON R. HEEL, SACRUM FLIPS INTO LEFT ON LEFT SACRAL TORSION
- RIGHT P/I OCCURS

TERMINOLOGY: GAIT RESTRICTION GOING INTO . . . .
- LEFT ON LEFT SACRAL TORSION
- RIGHT ON RIGHT SACRAL TORSION
- POSTERIOR OR ANTERIOR ROTATION
- OCCIPUT SHOULD ‘FOLLOW’ THE SACRAL BASE

USE A DIRECT FUNCTIONAL TECHNIQUE
S/B TORSION: LEFT

- HIGH L. SIDE G.W.S.
- LOW L. OCCIPUT

GAIT: R ON R TORSION

R/R TORSION @ L. HEEL STIKE & WT. BEARING

GWS / L (L. TORSION)

OCCIPUT / L

TO KEEP EYES LEVEL
S/B TORSION: RIGHT

- HIGH R. SIDE G.W.S.
- LOW R. OCCIPUT

GAIT: L on L TORSION

GWS / R (R. TORSION)

OCCIPUT / R

TO KEEP EYES LEVEL

RIGHT HEEL STRIKE & WT. BEARING
OSTEOPATHIC CARE ISSUES:

- **Dx:** UNILATERAL PNEUMONIA (PMH)
- **INITIAL CONSULTATION:** Prev. Day
  - Facilitated A.N.S.
  - Right lower ribs restricted (expired)
  - Diaphragm restricted
- **HISTORY:**
  - Lower right lobe pneumonia
  - Fell on right side 2 Wks. P.T.O.
  - Fell and hit head, 20 yrs. ago, on waterslide...knocked out
- **FINDINGS:** Rhonchi & insp. wheeze auscultated right rib cage & diaphragm restricted

**KEY: TO MANAGEMENT:** Dr. Parsley monitored ribs

- **FIND A.G.R / KEY**
  - Left S/S suture...diaphragm and rib cage started to function (50% improvement)
  - Right petrous-sphenoid...diaphragm and rib cage mechanics improved even more (65%)
    [PR. respiratory mechanism]
  - C₅ FRSₗ: FRT/L “balanced ans & reversed facilitation”; ERSᵣ intensified findings!
  - T₂ ERSᵣ: As started treating, Dr. Parsley monitored & reported lung rotation and expansion...direct visceral impact!
- **OUTCOME:** Immediately lung totally clear & remained so the next morning
- **“LESSONS”: Hypothalamus role? PRM “crucial role?” Vasomotor / arterial change?
CASE SCENARIO: YOUNG MALE, R. HEMI-PARESIS FOLLOWING AN ASSULT 6 WEEKS EARLIER

• **DAY # 1:**
  - LEFT S/S SUTURE
  - RIGHT PETROUS-SPHENOID
  - $C_2$ FR$S_L$
  - RIGHT LEG: ANT. FIBULA HEAD & ANT. TALUS (FOOT-DROP)
  - RELEASED SACRUM

• **DAY # 2:** 16 HOURS LATER . . . PATTERN DIFFERENT
  - RIGHT S/S SUTURE & RIGHT PETROUS-OCCIPITAL
  - LEFT GWS/FRONITAL ("L" SHAPED ARTICULATION / SACRUM)
  - RIGHT FOOT AND ANKLE . . . ESP. TALUS
  - IMPROVEMENT NOTICED IN 16 HOURS!
    - WALKED WITH MINIMAL SUPPORT . . . FIRST TIME
    - LESS FOOT-DROP AND HIP FLEXED GAIT
    - SHOULDERS LEVEL . . . FIRST TIME

• **DAY # 3:** 40 HOURS FROM FIRST TREATMENT
  - RIGHT HAND GRIP MARKEDLY IMPROVED . . . A FIRST
  - COULD GET OFF TOILET WITHOUT SUPPORT OR HELP
  - LESS STEPPAGE GAIT
  - RIGHT ARM NO LONGER FLEXED & HELD AGAINST THE BODY BUT HELD AT HIS SIDE

MESSAGE: ALWAYS CONSIDER THE HOST POTENTIAL!
OTHER Rx STRATEGIES:

- **CV-IV TECHNIQUE**: TAKE INTO S/B EXTENSION

- **“V SPREAD”**: ADDRESSES SUTURAL AND MEMBRANEOUS COMPONENTS UTILIZING FLUID MECHANICS

- **“C/S BASE RELEASE”**: RELEASES JUGULAR FORAMEN AREA. SUPPORT THE POSTERIOR ARCH OF THE ATLAS UNTIL RELEASES
CRANIAL TECHNIQUES

GREENMAN

WHY USED THIS REFERENCE?
• WELL RECOGNIZED TEXTBOOK
• INFLUENCED BY KIMBERLY
• CONTENT FROM MSU-COM CRANIAL COURSE (1990’s TO PRESENT)
GOALS OF CRANIO-SACRAL TECHNIQUE:

- Improve S/B mechanics
- Remove articular restrictions
- Reduce membranous tension restrictions
- Improve circulation
  - C.S.F.
  - Venous
- Reduce potential neural entrapment
- Increase the vitality of the C.R.I.

GREENMAN: PG 183

The other main activating force is operator guiding where the operator applies external force to the skull by directing action to a suture, membranous tension or S/B junction.
GREENMAN: ACTIVATING FORCES

• INHERENT PRIMARY RESPIRATORY MECHANISM
  • POTENT INTRINSIC ACTIVATING FORCE

# 1: V-SPREAD: ASSUMES SHOULD BE SEPARATED

• OPERATOR PLACES A FINGER ON EITHER SIDE OF THE INVOLVED SUTURE
• A FINGER OR TWO ARE PLACED OVER THE PART OF THE SKULL WHICH IS THE FURTHEST DISTANCE, ON THE CONTRA-LATERAL SIDE, FROM THE DYSFUNCTIONAL SUTURE ("LONGEST DIAGONAL" CONCEPT)
• APPLY MINIMAL COMPRESSION ON THIS CONTACT POINT TOWARD THE DYSFUNCTIONAL SUTURE.
• A SENSATION OF SURF-LIKE POUNDING WILL BE FELT AGAINST THE DYSFUNCTIONAL AREA UNTIL RELEASE OCCURS.

# 2: RESPIRATORY ASSISTANCE

• VOLUNTARY INSPIRATION ASSISTS S/B_F
• VOLUNTARY EXPIRATION ASSISTS S/B_E
• MAINTAINED RESPIRATORY EFFORT CAN BE HELPFUL
GREENMAN: ACTIVATING FORCES (CONT.)

- INHERENT PRIMARY RESPIRATORY MECHANISM
- POTENT INTRINSIC ACTIVATING FORCE

# 3: DURAL TUBE ENHANCEMENT

- DORSI-FLEXION OF CONTRA-LATERAL ANKLE WILL ENCOURAGE S/B<sub>F</sub>
- PLANTAR-FLEXION OF CONTRA-LATERAL ANKLE WILL ENCOURAGE S/B<sub>E</sub>
- ENABLES UTILIZATION OF “LONGEST DIAGONAL” PRINCIPLE

# 4: CV-IV TECHNIQUE

- HEAD RESTS ON THENAR EMINENCES OF OPERATOR’S HAND (LATERAL PART OF OCCIPITAL BONE)
- THE OPERATOR RESISTS S/B<sub>F</sub> PHASE BUT ENCOURAGES S/B<sub>E</sub> PHASE
- CONTINUE UNTIL A “STILL POINT” IS REACHED
- REMOVE RESISTANCE ONCE S/B MOTION RETURNS
- SAME CAN BE ACCOMPLISHED USING SACRUM
CRANIAL-SACRAL TECHNIQUES:

- **VENOUS SINUS**: Skull can feel very hard, rigid & has a loss of rigidity (like compressed)
  - Patient is supine
  - Fingers are placed along the occipital protuberance
  - Weight of the head rests on the operator's fingers
  - Wait until a softening sensation of the bone occurs
  - Fingers can then be moved toward the foramen magnum: in the midline and wait for bone softening
  - Can be repeated along the superior nuchal line, moving medially to laterally (releases the transverse sinus)
  - Use thumbs to work up along the sagittal suture and hold until softening occurs (releases the sagittal sinuses)
CRANIAL-SACRAL TECHNIQUES:

- **CONDYLAR DECOMPRESION:**
  - PATIENT IS SUPINE
  - CRADLE THE SKULL IN THE PALMS OF HANDS
  - MIDDLE FINGER PADS ARE PLACED ALONG THE INFERIOR ASPECT OF THE OCCIPUT BEGINNING AT THE INION AND SLIDING AS FAR FORWARD AS POSSIBLE
  - OPERALTOR INTRODUCES A GENTLE LATERAL GLIDING FORCE OF MIDDLE FINGERS
  - HOLD UNTIL SENSATION OF SOFTENING

- **CV-IV COMPRESSION:** CAN ENHANCE CRI AMPLITUDE

- **S/B SYMPHASIS: STRAINS:**
  - DIRECT, EXAGGERATION OR INDIRECT
  - INDIRECT BALANCED MEMBRANOUS TENSION APPROACH MOST COMMONLY UTILIZED
  - ADD ACTIVATING FORCES
    - RESPIRATORY ASSISTANCE
    - “LONGEST DIAGONAL” PRINCIPLE
    - APPROPRIATE ANKLE ACTIVATION FORCES
CRANIAL-SACRAL TECHNIQUES: CONTINUED

• TEMPORAL ROCKING:
  • SKULL IS SUPPORTED IN PALMS WITH THUMBS ON THE MASTOID PROCESSES
  • DURING S/B_F, ENCOURAGE TEMPORAL E/R
  • DURING S/B_E, ENCOURAGE TEMPORAL I/R
  • TWO OPTIONS OF ROCKING
    • SYNCHRONOUS ROCKING: FALX IMPACT PROPOSED
      • BOTH IN SAME PATTERN (E/R OR I/R)
      • ENCOURAGES FORWARD & BACKWARD CSF FLOW
    • ASYNCHRONOUS ROCKING: TENT IMPACT PROPOSED
      • ONE SIDE INTO E/R
      • OTHER SIDE INTO I/R
      • ENCOURAGES SIDE TO SIDE CSF FLOW
      • DO VERY SLOWLY AND GENTLY ! !
  • END WITH SYNCHRONOUS ROCKING TO ENCOURAGE S/B_F AND S/B_E AND TO AND FRO CSF FLOW
  • TEMPORAL ROCKING APPEARS TO HAVE A BENEFICIAL EFFECT ON MEMBRANOUS BALANCE
CRANIAL-SACRAL TECHNIQUES: CONTINUED

• **LIFT TECHNIQUES:**
  
  • **FRONTAL LIFT:**
    
    • Patient is supine
    • Operator grasps the inferior & lateral corners of frontal bone bilaterally
    • The hands apply a medial compression force to disengage the frontal which is then lifted anteriorly until release occurs
  
  • **PARIETAL LIFT:**
    
    • Patient is supine
    • Operator contacts the anterior inferior corner with index finger and posterior & inferior corner with the little finger
    • Operator interlaces thumbs cross over vertex
    • The four fingers compress medially while cephalad traction is applied
    • Gently remove force once the release is obtained
CONTRA-INDICATIONS: THERE ARE FEW

- ACUTE INTRACRANIAL BLEEDING
- INCREASE IN INTRACRANIAL PRESSURE
- RECENT FRACTURE
- SUBARACHNOID HEMORRHAGE
- SEIZURE STATES: ONLY IF UNCONTROLABLE

REMEMBER:
"THERAPEUTIC PRESSURE", INTO THE DYSFUNCTIONAL SUTURE, IS CORRECT WHEN YOU ARE NOT AWARE OF THE PALPATING PARTS OF THE HAND

- NOT PUSHING THE BONE
- BONE NOT PUSHING YOU
- "HAVE BLENDED IN"
OCCIPITO-MASTOID SUTURE

- PATIENT SUPINE
- OPERATOR CONTROLS
  - OCCIPUT WITH PALM OF ONE HAND
  - TEMPORAL WITH 4 FINGERS (MODIFIED “VAULT HOLD”)  
- OPERATOR INTRODUCES I/R & E/R WHILE MONITORING RESPONSE IN OCCIPUT ... DYSFUNCTIONAL IF OCCIPUT DOESN’T CORRESPOND TO TEMPORAL MOVEMENTS
- ESTABLISH THE “LONGEST DIAGONAL” USING CONTRA-LATERAL ANKLE
- HOLD THE OCCIPUT IN FLEXION OR EXTENSION WHILE THE OTHER HAND ROTATES THE TEMPORAL AGAINST E/R OR I/R BARRIER (MATCH UP)
- PATIENT USES APPROPRIATE RESPIRATORY EFFORT
- USE REPEATED RESPIRATORY EFFORTS UNTIL RELEASE ATTAINED
- NOTE: MOST COMMON ARTICULAR RESTRICTION OF POSTERIOR QUADRANT
SPHENO-SQUAMOUS ( S/S ) SUTURE:

- PATIENT IS SUPINE
- OPERATOR CONTROLS THE TEMPORAL BY CONTACTING THE MASTOID REGION WITH ONE THUMB
- USING A GLOVED HAND, INSERT THE LITTLE FINGER AGAINST THE LATERAL PTERYGOID PROCESS WHILE MIDDLE FINGER, ON OUTSIDE OF MOUTH AND PLACED OVER THE GWS
- ESTABLISH THE “LONGEST DIAGONAL” BY EITHER DORSI-FLEXING THE CONTRALATERAL ANKLE WHILE THE OPERATOR E/R’s TEMPORAL AND GLIDE SPHENOID INTO S/B_F BY USING THE GWS’S
- USE RAPID DEEP BREATHING AS TEMPORAL IS E/R’d AND SPHENOID IS FLEXED
- NOTE: THIS IS ONE OF THE MOST COMMON RESTRICTIONS OF THE ANTERIOR QUADRANT
PALATINE:

- Patient is supine
- Operators grasps the GWS bilaterally
- Gloved little finger, inside the mouth, is glided forward until pad is over the palatine
- Operator introduces S/B\textsubscript{F} & S/B\textsubscript{E} and monitors the response of the palatine ... should glide laterally with S/B\textsubscript{F} and medially with S/B\textsubscript{E} as well as toward the vertex
- “Long diagonal” is established with the contralateral ankle ... use dorsiflexion
- The sphenoid is markedly flexed to disengage the pterygoid processes from palatine
- If E/R is restricted, the little finger is pressed laterally as patient takes deep breaths
- If I/R is restricted, little finger is pressed toward vertex during deep exhalations
- The sphenoid is returned to neutral, recapituring the palatine by the pterygoid processes
- Note: palatine common ant. quadrant restriction
ZYGOMA:

- Patient is supine
- Gloved little finger is inserted into the mouth inorder to contact the inferior border of zygoma
- The thumb is placed on the outside of zygoma allowing the operator to grasp the zygoma
- The operator’s other hand stabilizes the head and monitors the attachment of the zygoma to the frontal (F/Z) and GWS (GWS/Z)
- Operator E/R & I/R the zygoma as the other hand monitors the zygomatic-frontal and zygomatic-sphenoid articulations
- The “longest diagonal” is established using the contra-lateral ankle
  - Inhalation as zygoma is E/R (plus dorsiflexion)
  - Exhalation as zygoma is I/R (plus plantar-flex)
- The zygoma can be mobilized from the maxilla by distracting the zygoma using the same hold while stabilizing the maxilla
FACIAL BALANCE:

- PATIENT IS SUPINE
- OPERATOR PLACES HAND OVER THE FRONTAL AND FACIAL BONES
- OPERATOR FOLLOWS E/R AND I/R
- IF DYSFUNCTIONAL, OPERATOR EXAGGERATES THE DESIRED MOTION AS PATIENT DEEPLY INHALES OR EXHALES
- SOMETIMES A SHEARING MOTION IS ADDED TO E/R AND I/R TO ENHANCE MOTION
- IF STILL ASYMMETRICAL, EACH FACIAL BONE NEEDS TO BE ASSESSED AND APPROPRIATELY TREATED
INFANT SKULL

- ANTERIOR FONTANELLE: BREGMA
- POSTERIOR FONTANELLE: LAMBDA
- ANTERIOR LATERAL: PTERION
- POSTERIOR LATERAL: ASTERION
- REMEMBER PARIETAL OVER-RIDING
NORMAL DELIVERY POSITION
( WHAT WANT TO FEEL )
NORMAL OPTIONS:
• 2/3 : ROA
• 1/3 : LOA

OB PALPATION
( LOA POSITION )
LEFT OCCIPUT ANTERIOR
• REF. POINT:
  • PART OF SKULL ANTERIOR
  • SIDE OF MOTHER’S BODY
  • LARGE FONTANIEL ‘FACING’ FLOOR
SOME ISSUES WHICH AROSE IN OTHER CLASSES
TEMPORAL MECHANICS

DURING S/B_F
TEMPORAL: EXTERNAL ROTATION
• SUPERIOR PORTION TEMPORAL: GLIDES LAT. & ANTERIOR
• MASTOID PORTION: GLIDES ANTERIOR & LATERAL
• TIP OF MASTOID: GLIDES MEDIAL & POSTERIOR
Figure 14. Flexion

Figure 15. Extension

Figure 16. Superior vertical strain

Figure 17. Inferior vertical strain

Figure 18. Left sphenobasilar torsion

Figure 19. Right sphenobasilar torsion
LEFT SB/R
- LOW LEFT EYE
- CONVEX LEFT

LEFT LAT. STRAIN
- LEFT SIDE OF HEAD ANTERIOR

Figure 20. Left sidebending rotation

Figure 21. Right sidebending rotation

Figure 22. Left lateral strain

Figure 23. Right lateral strain
CRANIAL SCREENING

FINDING “KEY” AREA

• WITHIN THE S/B PATTERN
• WHERE THE “FLUID WANTS TO WORK”
HOW DO EXPERT LOGGERS DEAL WITH LOG JAMS?

- CLIMB THE TALLEST TREE IN AREA
- IDENTIFY THE “KEY” LOG
- DYNAMITE THAT LOG
- JAM RELEASES ITSELF . . . MECHANISM / RIVER RELEASES JAM

AMATEURS:
START REMOVING LOGS FROM THE PERIPHERY
AND
EVENTUALLY GET TO THE “KEY” LOG
CRANIAL SCREENING EXAMINATION

- **FIRST THREE “HOLDS” EVALUATE THE CARTILAGENOUS BASE**
  (ALSO, S/B STRAINS, RATE, RHYTHM & AMPLITUDE)
  1. **OCCIPITAL HOLD**: OCCIPUT\textsubscript{F&E} ?
  2. **OCCIPITAL / SPHENOID (GW) HOLD**
     - S/B\textsubscript{F&E} AREA FUNCTION
     - ANY SUGGESTION OF S/B STRAINS ?
  3. **“VAULT” HOLD**
     - TEMPORALS CORRELATE WITH S/B\textsubscript{F&E} ?
     - ANY S/B STRAIN PATTERNS ?
     - IF DYSFUNCTIONAL, INVOLVED SUTURE ?

- **REMAINDER OF SCREEN EVALUATES THE REMAINING CRANIAL BONES AND SUTURES**
  - BONE DYSFUNCTIONAL ?
  - WHAT IS THE DYSFUNCTIONAL SUTURE ?

**GOAL:** FIND THE CRANIAL A.G.R.
CRANIAL SCREENING EXAM:

# 1 OCCIPITAL SCREEN: MOVING ?
CV- IV EFFECT SLIDE # 15

# 2 S/B AREA SCREEN: BOTH BONES
MOVING? IN PATTERN ?
RHYTHM ? SLIDE # 39

# 3 "VAULT HOLD": S/B MOTION RE-CONFIRMED,
BOTH TEMPORALS MOVING ? “IN SINC” WITH
S/BF & S/BE ? SLIDE # 52

GOAL: TO EVALUATE THE CARTILAGENOUS BASE
FUNCTION & IDENTIFIED ANY RESTRICTED
SUTURE

KEY CONCEPT: NOW KNOW WHETHER BASE IS
LOCKED UP OR NOT. THEN CONTINUE THE
SCREEN TO SEE IF THERE IS ANOTHER AREA THAT IS
MORE RESTRICTED (AGR) THAN THE BASE!
**4TH VENTRICLE IMPACT:**

**AREAS OR STRUCTURES INFLUENCED BY OCCIPITAL AND S/B MOVEMENT OR DYSFUNCTION:**

- **RESPIRATORY CENTER**
- **CARDIO-VASCULAR CENTER**
- **HYPOTHALAMUS:** MODULATES EXTERNAL, INTERNAL & LIMBIC INPUT
  - TRH: THYROTROPIN-RELEASING HORMONE
  - CRH: CORTICOTROPHIN-RELEASING HORMONE
  - GnRH: GONADOTROPHIN-RELEASING HORMONE
  - GHRH: GROWTH HORMONE-RELEASING HORMONE
  - SOMATOSTATIN
  - PIF: PROLACTIN-INHIBITING FACTOR

- **PITUITARY (ENDOCRINE)**
  - ACTH: ADRENOCORTICOTROPIC HORMONE
  - TSH: THYROID STIMULATING HORMONE
  - FSH: FOLLICLE STIMULATING HORMONE
  - LH: LUTEINIZING HORMONE
  - ANTI-DIURETIC HORMONE
  - OXYTOCIN
  - GROWTH HORMONE
  - PROLACTIN

- **NUCLEI** OF ALL CRANIAL NERVES

**AFFECT:** OF OCCIPITAL “RELEASE”

- FREQUENTLY, MARKEDLY RELAXES THE PATIENT
- EQUIVALENT TO A “CV-IV” TECHNIQUE RESPONSE
CRANIAL SCREENING EXAM: CONTINUED

#4 G/W - ZYGOMA
#5 G/W - FRONTAL ("L" SHAPED AREA)
#6 ZYGOMA - FRONTAL

“BERMUDA TRIANGLE”
CRANIAL SCREENING EXAM: CONTINUED

# 7 FRONTAL: GO INTO INTERNAL AND EXTERNAL ROTATION? IF NOT, FIND THE RETRICTED SUTURE SLIDE # 154
FRONTAL-LESSER WING

ETHMOID

MAXILLARY-FRONTAL

INTER-MAXILLARY

VOMER

FACIAL DIFFERENTIAL DIAGNOSIS

SEE SLIDE # 213
MAXILLA INTERNAL & EXTERNAL ROTATION (MAX / ZYGOMA)

DIFF. DIAGNOSIS: MAXILLA

SEE SLIDE # 247
CRANIAL SCREENING EXAM: CONTINUED

PARIETAL: BOTH MOVING? IF NOT, WHICH SUTURE?

#1 AT TIP: G/W - PARIETAL

#2 ALONG FIRST FINGER: PARIETAL - FRONTAL

# 1,2,3 & 4: PARIETAL - TEMPORAL

# 4 PARIETAL - OCCIPITAL

# 5 SAG. SUTURE

MANDIBLE
SLIDE # 272

SLIDE # 199
MANAGEMENT STRATEGY:

• DO A COMPLETE CRANIAL SCREEN
• TREAT THE A.G.R. # 1
• RE-SCREEN AND TREAT A.G.R. # 2
• RE-SCREEN AND TREAT A.G.R. # 3

NOTE:
DON’T GET CRANIUM AHEAD OF THE REST OF THE BODY

HOW KNOW TO TREAT CRANIAL COMPONENT?

• A.G.R. IS A “DURAL RESTRICTION” IN UPPER CERVICAL AREA DURING GENERAL SCREEN
• A.G.R. IS SACRUM, ESPECIALLY INVOLVING THE S.T.A. DURING THE PELVIS SCREEN
APPENDIX
CRANIAL LANDMARKS

FONTAL VIEW

- FRONTAL BONE
- NASION
- GLABELLA
- NASAL BONES
- ZYGOMAS
- MAXILLAE
- MANDIBLE
- METOPIC SUTURE
CRANIAL LANDMARKS

LATERAL

- FRONTAL (CORONAL SUTURE, BREGMA)
- PARIETAL (SAGITTAL SUTURE, BREGMA)
- TEMPORAL
- PTERION ("H")
- ZYGOMA &
- ZYGOMATIC ARCH
- MASTOID PROCESS
- MANDIBLE & TMJ
- OCCIPUT
CRANIAL LANDMARKS
POSTERIOR

- SAGITTAL SUTURE
- PARIETALS
- OCCIPITAL
- LAMBDOIDAL SUTURE & LAMBDA
- GR. OCCIPITAL PROTUBERANCE (INION)
- MASTOID PROCESS
- ASTERION (OCCIPUT, PARIETAL & MASTOID)
CRANIAL LANDMARKS
SUPERIOR VIEW

- FRONTAL
- PARIETALS / CORONAL SUTURE
- BREGMA
- SAGITTAL SUTURE
- LAMBDOIDAL SUTURE / LAMBDA
- OCCIPITAL

SIG: OF PALPATING DURING LABOR ( LOA & ROA POSITION )
CN I: OLFACTORY

SENSE: SMELL

SYMPTOMS: ALTERED OR IMAGINED SMELL

S/D: FRONTO-ETHMOID SUTURE

A purely sensory nerve, it carries nerve impulses associated with the sense of smell. Branches of the olfactory nerve pass through the foramina of the cribriform plate into the nasal epithelium.
CN II: OPTIC

SENSORY: SIGHT

SYMPTOMS: VISUAL DISTURBANCES

S/D: SPHENOID OR SPHENO-OCCIPITAL SUTURE
CN III: OCULOMOTOR

**MOTOR:**
- UPPER EYE LID
- ALL EXTRA-OCULAR MUSCLES EXC. SUP. OBLIQUE & LATERAL RECTUS
- SUPPLIES PNS FIBERS TO PUPIL & CILIARY MUSCLES

**SYMPTOMS:**
- IPSILATERAL EYE TURNS UP AND OUTWARD
- DOUBLE VISION
- PTOSIS OF LID
- POOR ACCOMIDTION

**S/D:**
- TENSION OF PETRO-SPHENOID LIGAMENT (ANT. TENTORIUM)
- TEMPORAL OR SPHENOID
- CONGESTION OF VENOUS SINUSES OF CRANIUM
CN IV: TROCHLEAR

**MOTOR:** SUPERIOR RECTUS

**SYMPTOMS:**
- DIPLOPLIA ESP. WHEN LOOKING DOWN

**S/D:**
- LONG NERVE CAN BE EASILY TORN WITH HEAD INJURY
- CONGESTION OF VENOUS SINUSES

**TROCHLEAR NERVE**

It is a mixed nerve carrying motor fibers to the superior rectus muscles and proprioceptive (sensory) fibers from these muscles to the brain.
CN V: TRIGEMINAL

- **OPHTHALMIC**: V₁
- **MAXILLARY**: V₂
- **MANDIBULAR**: V₃
CN V₁: OPHTHALMIC

SENSORY:
- SCALP
- FOREHEAD
- ORBIT
- CONJUNCTIVA
- ETHMOID SINUSES
- NASAL CAVITY

SYMPTOMS: PAIN IN ANY THESE AREAS

S/D:
- PETRO-SPHENOID LIGAMENT TENSION (ANT. TENTORIUM)
- TEMPORAL OR SPHENOID
- CONGESTION OF VENOUS SINUSES OF CRANIUM

The ophthalmic branch (arrow) of the trigeminal nerve innervates the tear gland (motor) and is responsible for picking up sensory messages from the upper eyelid, the mucosa of the nasal cavity and the cornea.
CN V₂: MAXILLARY

**SENSORY:**
- DURA
- MAXILLARY SINUSES
- NOSE & NASAL SEPTUM
- UPPER & LOWER LIDS
- PREMOLAR & MOLAR TEETH

**SYMPTOMS:**
- MAXILLARY PAIN
- TEARING
- PARESTHESIAS UPPER LIP, NOSE & EYELIDS
- HEADACHES
- TIC DOULOUREUX

**S/D:**
- SPHENOID
- TMJ
- POOR FITTING DENTURES
CN V₃: MANDIBULAR

SENSORY:
• TEETH
• MANDIBULAR GINGIVA
• PART OF EAR
• LOWER FACE
• FLOOR OF ORAL CAVITY
• PART OF THE TONGUE

MOTOR: MUSCLES OF MASTICATION

SYMPTOMS: PAIN IN ANY OF THESE SITES

S/D:
• SPHENOID
• TMJ
• POOR FITTING DENTURES
CN VII: FACIAL

SENSORY:
• TASTE BUDS ANT 1/3 OF TONGUE

MOTOR:
• MUSCLES OF FACIAL EXPRESSION
• SCALP
• EAR
• BUCCINATOR
• PLATYSMA
• STAPES
• STYLOHYOID
• POST. BELLY OF DIGASTRIC

SYMPTOMS:
• BELL’S PALSY
• LOSS OF TASTE
• DYSPHAGIA
• SALVATION

S/D:
• SPHENOID
• OCCIPITAL (CONDYLAR)
• OCCIPITO-MASTOID COMPRESSION
• UPPER CERVICAL

FACIAL NERVE

A mixed nerve, it carries motor fibers to the muscles of facial expression. Parasympathetic motor fibers stimulate the lacrimal glands. The Facial nerve stimulates salivation from the submandibular and sublingual glands. It carries sensory fibers of taste from the anterior 2/3 of the surface of the tongue and proprioceptive fibers from the facial muscles.
CN VIII: AUDITORY

**ROLE:**
- AUDITORY
- COCHLEAR: EQUILIBRIUM

**SYMPTOMS:**
- HEARING LOSS
- LOSS OF EQUILIBRIUM

**S/D:**
- SPHENOID
- OCCIPUT
- TEMPORAL
CN IX: GLOSSOPHARYNGEAL

SENSORY:
• PHARYNX
• TONSILS
• POST. PHARYNX

PNS: TO PAROTID

SYMPTOMS:
• POOR FEEDING
• SWALLOWING
• EXCESSIVE GAG REFLEX IN NEWBORNS
• PROBLEM SWALLOWING
• SPEECH DIFFICULTIES
• NEURALGIA

S/D:
• OCCIPITAL (CONDYLAR COMPRESSION)
CN X: VAGUS

MOTOR:
• HEART
• LUNGS
• THYROID
• GI TRACT TO DESC. COLON
• LIVER, GALL BLADER, PANCREAS & SPLEEN
• KIDNEYS & UPPER URETER
• GONADS

SENSORY:
• POST. CRANIAL FOSSA
• PHARYNX
• SOFT PALATE & SINUSES
• LARYNX

PNS: TO PAROTID

SYMPTOMS:
• COUGH REFLEX
• POST. OCCIPITAL HEADACHES
• BRADYCARDIA
• FEEDING & SWALLOWING PROBLEMS IN INFANTS
• INC. GAG REFLEX
• NAUSEA AND VOMITING
• RESPIRATORY IRRITABILITY
• GI IRRITABILITY

S/D:
• OCCIPITAL (CONDYLAR COMPRESSION)
• OCCIPITO-PETROUS SUTURE (JUGULAR FORAMEN)
CN XI: SPINAL ACCESSORY

MOTOR:
- STERNOCLEITOMASTOID
- TRAPEZIUS
- PHARYNX
- PALATE

SYMPTOMS:
- DIFFICULTY ROTATING HEAD
- TORTICOLLIS

S/D:
- OCCIPITO-PETROUS SUTURE ( JUGULAR FORAMEN )
CN XII: HYPOGLOSSAL

**MOTOR:**
- TONGUE

**SYMPTOMS:**
- SUCKING DISORDERS IN NEWBORN
- DYSPHAGIA
- DYSARTHRIA
- SWALLOWING PROBLEMS

**S/D:**
- CONDYLAR COMPRESSION
MYTHS

THIS EXPLODES SOME MYTHS ABOUT THE CRANIUM
Sympathetic nervous system

- Sympathetic outflow to smooth muscle of hair follicles, sweat glands, and peripheral blood vessels.

Parasympathetic nervous system

- Sympathetic outflow to organs of the head and trunk.

- Eye
- Ciliary ganglion
- Pterygopalatine ganglion
- Submandibular ganglion
- Lacrimal gland
- Salivary glands
- Salivary gland
- Otic ganglion

- Heart
- Bronchi and lungs
- Vagus nerve
- Liver
- Bronchi and lungs
- Pancreas
- Stomach
- Spleen
- Intestines
- Bladder and external genitalia
- Distal colon
- Pelvic nerve
- Spinal cord

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Autonomic Nervous System Divisions

**Sympathetic**
- Dilate bronchioles
- Speed up heartbeat
- Secrete adrenaline
- Decrease secretion
- Decrease motility
- Retain colon contents
- Delay emptying
- Constrict bronchioles
- Slow down heartbeat
- Increase motility
- Empty colon
- Bladder

**Parasympathetic**
- Dilate
- Stop secretion
- Secrete saliva
- Constrict
- Increase secretion
- Large intestine
- Increase motility
- Small intestine
- Empty colon
- Empty bladder

Spinal cord
Sympathetic ganglion chain