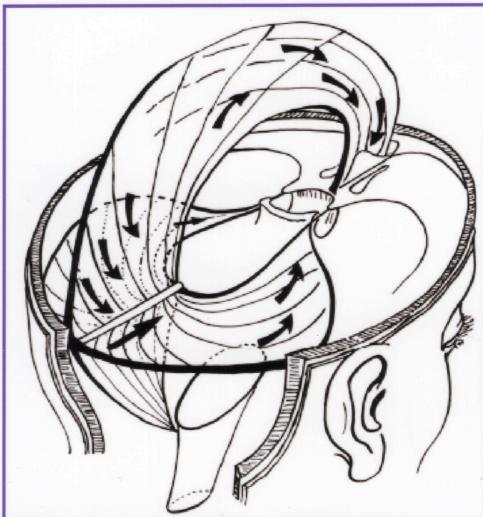
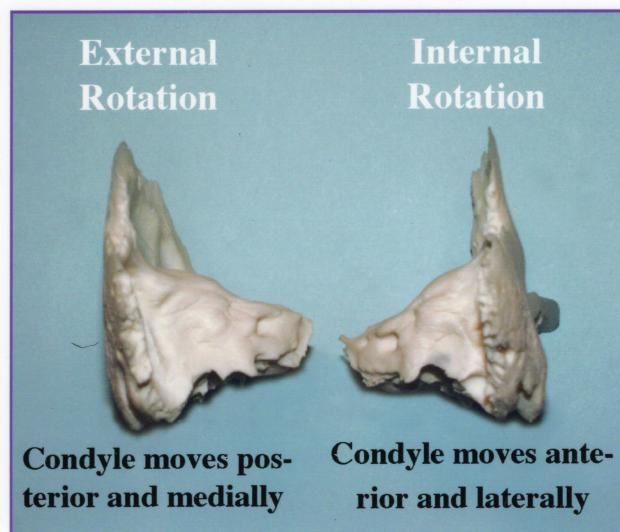


Basic Functional Cranial Anatomy

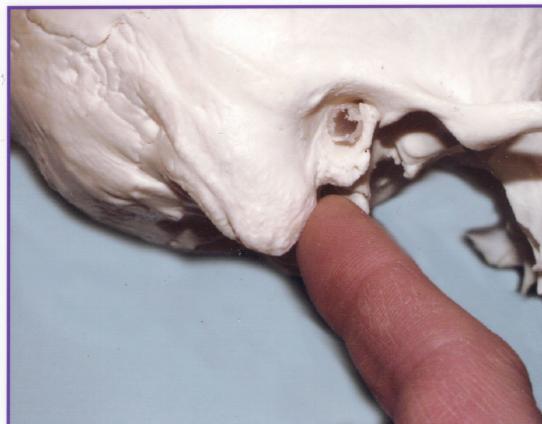
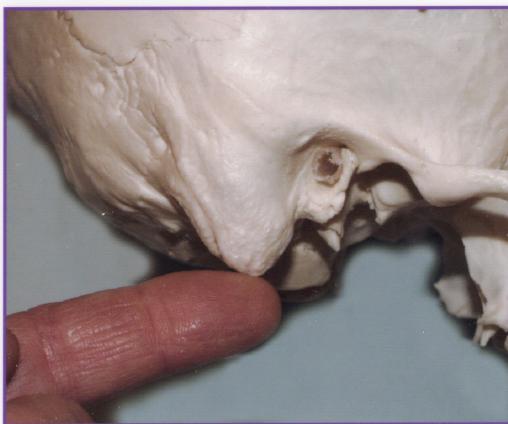
Temporal Bones

Because of the dural tube attachments from the cranium to the sacrum, these bones have reciprocal action with the innominate or pelvic bones. Because of the intracranial dural membranes, they reciprocate with one another during primary respiration. Diaphragmatic (normal breathing) motion overlays primary respiration (cranial motion that occurs even if one holds their breath). During inspiration there is a reciprocal motion in which one side goes into external movement while the other goes into internal rotation. Since the glenoid fossa houses the mandibular condyle, temporal bone distortions directly impact on TMJ function. Fabricating orthopedic appliances, adjusting the occlusal table by means of crowns, bridges, overlays or simple occlusal restorations is inaccurate if the temporal bones are out of alignment.



Dural Membrane System

The vertical Falx cerebri and horizontal Tentorium cerebelli act as tent poles to stabilize anterior/posterior and side-to-side cranial bone position. This membrane system above the Tentorium is innervated by sensory branches of all three divisions of the trigeminal nerve. Below the Tentorium the membrane is innervated by C2 & C3. Structural distortion results in eliciting pain in the form of headaches as well as paresthesia, motor and sensory dysfunction anywhere within the body depending on the area of the brain affected and/or spinal nerve entrapment.

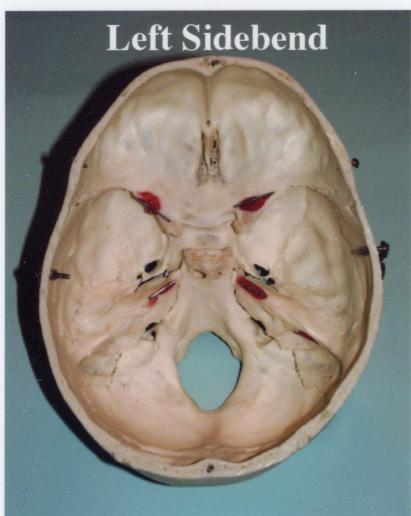


Mastoid position either inferior/superior or anterior/posterior can easily be determined by palpating the tips or anterior borders. Gently pulling back on the anterior border will determine if it is locked.

Basic Functional Cranial Anatomy

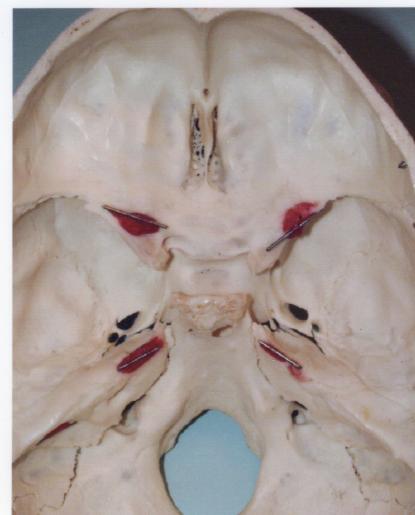
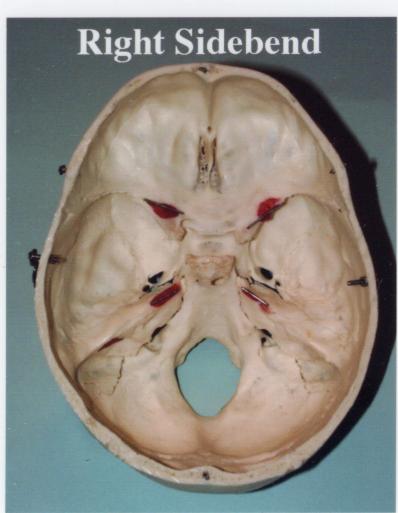
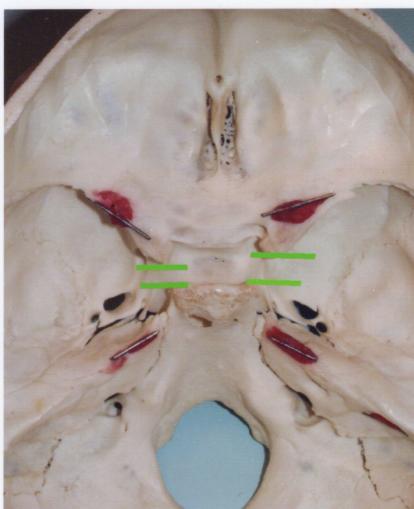


The sphenoid and occiput make up the posterior 1/3 of the human skull's base. The symphysis fuses by age 25. Although calcified, it retains its flexibility due to its saturation with blood and natural physical characteristics of bone. During inhalation the symphysis provides flexion and during exhalation it moves into extension. The flexion-extension motion of the sphenoid and occiput provide the leverage to keep the cranial tent (reciprocal tension membranes: Falx cerebri, Tentorium cerebelli and Falx cerebelli) in balance and the cerebrospinal fluid circulating. The reciprocal action of the sphenobasilar symphysis is carried out at the sacro-coccyx junction. Movement of these joints serves as a rocker mechanism aiding the flow of cerebrospinal fluid.

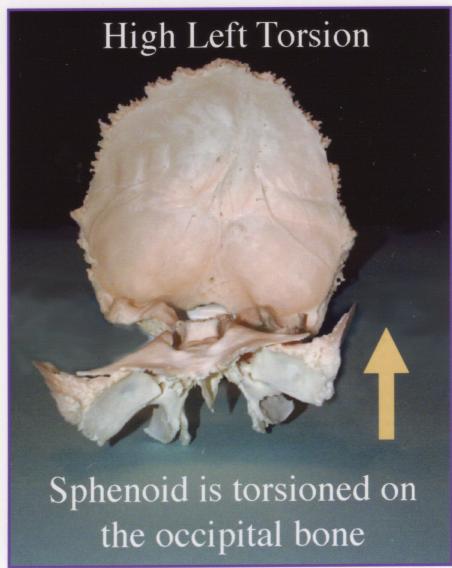
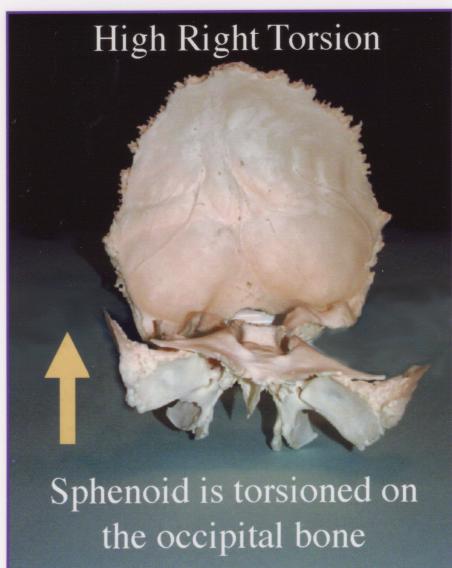
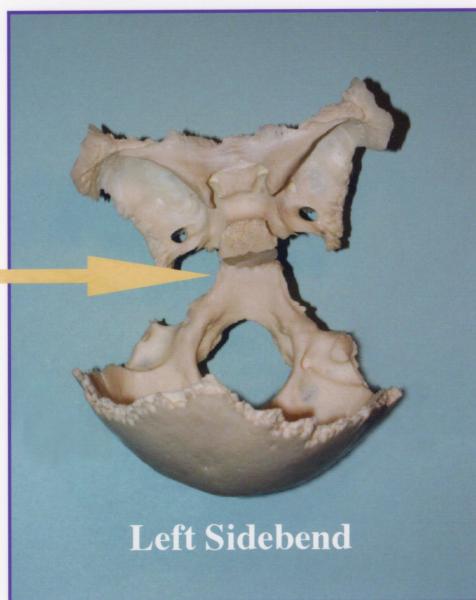
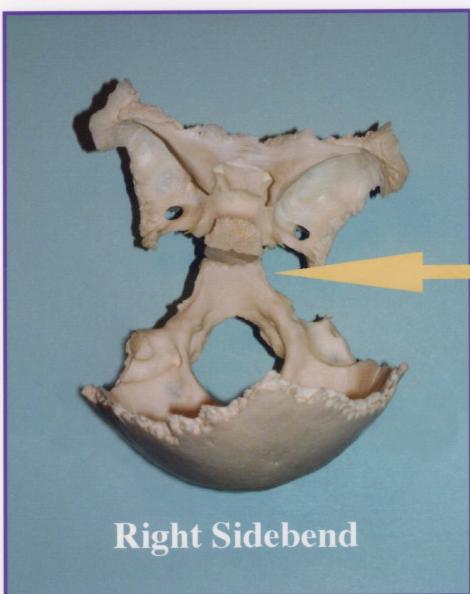
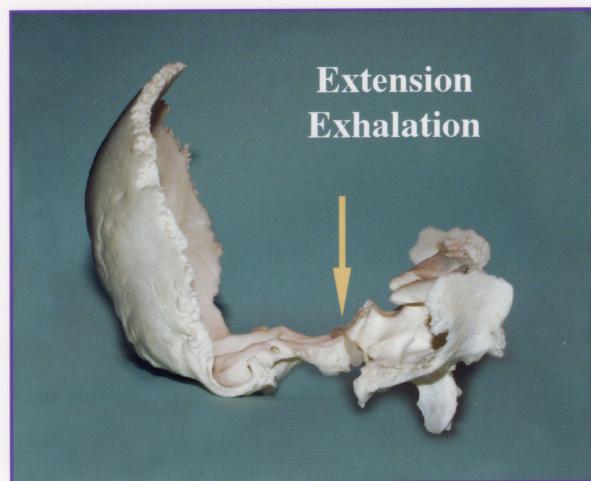
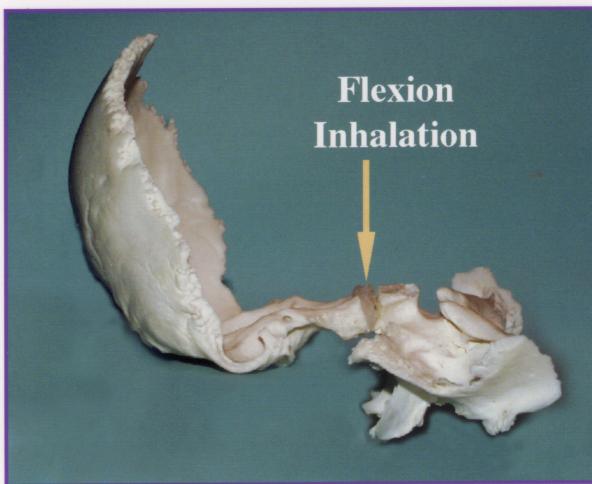


Sidebending Lesions

Notice the skull curves to the left side: more of a convexity on the left. Also the anterior and posterior clinoid processes are closer together on the left than the right (noted in green). This strain pattern reflects into the dural membrane system, down to the sacrum,



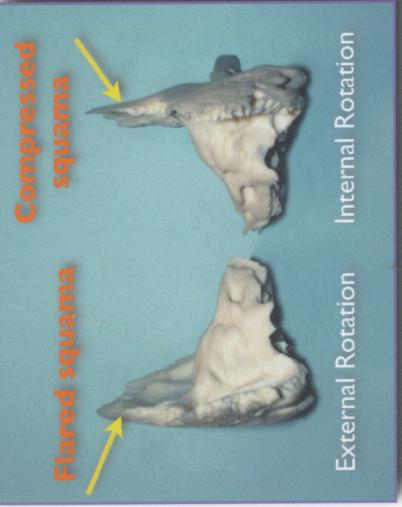
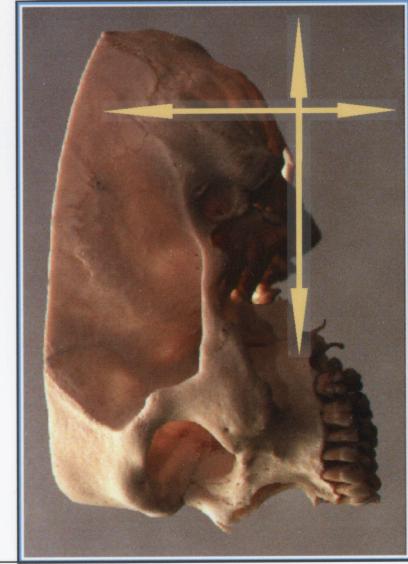
Basic Functional Cranial Anatomy



CRANIAL DIAGNOSTIC INDICATORS

STEPS IN ANALYZING THE CRANIAL INDICATORS

STEP 1 - MASTOIDS



When comparing the relative anterior/posterior position of the mastoids, is one more anterior than the other? Is one higher than the other? Is there a forward/backward motion? Or are the mastoids locked with no motion?

STEP 2 - SPHENOID



With gentle pressure, the clinician must determine if the greater wing of the sphenoid on the right is higher than on the left or if the left is higher than the right? Next one must assess if the greater wing of the sphenoid is more anterior on one side than the other.

Cranial Diagnostic Indicators developed by Dr. Gerald H. Smith

CRANIAL DIAGNOSTIC INDICATORS

STEPS IN ANALYZING THE CRANIAL INDICATORS

STEP 3 - AMPLITUDE

INHALATION - EXPANSION

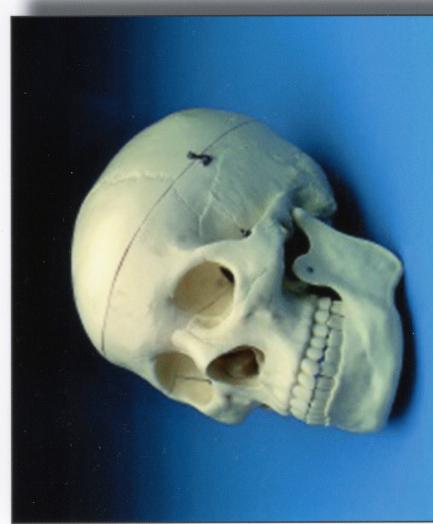


Primary cranial motion involves innate expansion and contraction of the brain and associated structures, dural membranes, CSF and sutures at a patterned rate of 9 to 14 cycles per minute. Palpation of the cranial vault enables the clinician to perceive this motion.



Vault hold to assess amplitude motion

The palms of the hands are placed gently over the parietal bones with barely any hair or scalp contact. Evaluation focuses on symmetry. Is the amplitude bilaterally strong or weak or no motion at all? Is one side more dominant than the other? Is the motion of expansion in a transverse or horizontal plane or distorted in a diagonal direction? Is there a sense of fibrillation like holding a bag of live worms? Normal amplitude motion should be perceived as a flowing, slow expansion and then contraction similar to an umbrella being slowly opened then slowly closed.

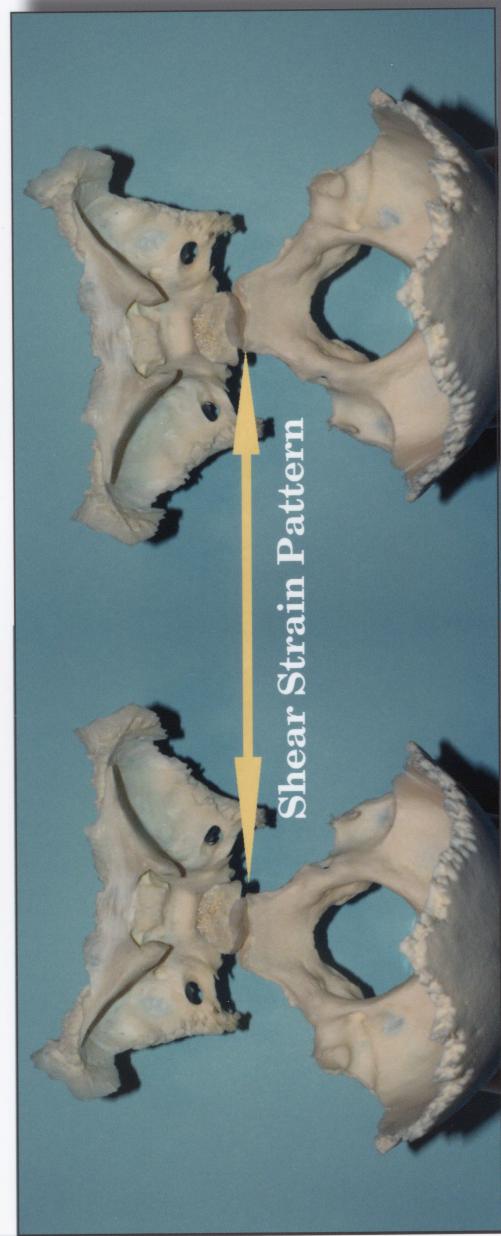


EXHALATION - CONTRACTION

CRANIAL DIAGNOSTIC INDICATORS

STEPS IN ANALYZING THE CRANIAL INDICATORS

STEP 4 - SPHENOBASILAR SYMPHYSIS



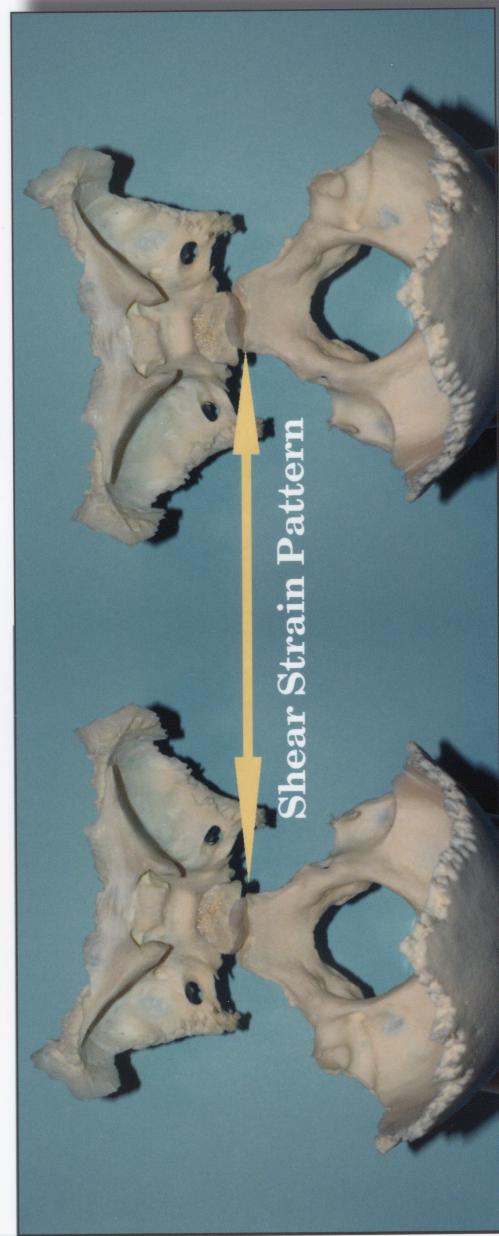
Assessing the SBS requires the practitioner to place the palm of one hand under the occiput and the other straddling the frontal bone with the middle finger and thumb making contact over the greater wings of the sphenoid bone. When assessing SBS lesions, one cannot actually feel the greater wing of the sphenoid, one just perceives the strain pattern. This cranial hold position is needed to evaluate side bend, lateral distortions, torsions of the sphenoid on the occiput, torsions of the occiput on the sphenoid, vertical and inferior strain patterns.



CRANIAL DIAGNOSTIC INDICATORS

STEPS IN ANALYZING THE CRANIAL INDICATORS

STEP 4 - SPHENOBASILAR SYMPHYSIS



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