MOTION TESTING FOR CLASSICAL SPHENOBASILAR JOINT DYSFUNCTIONS

In testing the types of motion described below, the therapist initiates the gentle movements of the cranial vault bones in the desired direction, then monitors the resulting motion until it reaches a restricted end point. You evaluate range of motion, symmetry of movement and ease or restriction of motion.

The force applied to the patient’s head is exceedingly light, 5-10 grams in most instances. (For those of you who are not metrically oriented, that is about one-sixth to one-third of an ounce.) Greater force interferes with inherent cranial motion. Remember, you are trying to evaluate what this craniosacral system does under normal circumstances, not how it responds to outside interference. Most biological systems respond to outside threats such as heavy touch, traction or pain, by contracting. You should work with your patients at a level of touch which is beneath this stimulus threshold so as to avoid causing the contraction-self-protective response from the organism you are attempting to observe.

The motions which you will test using the vault hold, and which Sutherland attributed to the sphenobasilar joint or synchondrosis are:

1. Flexion-extension.
2. Sidebending with convexity to the left or to the right.
3. Torsion with the great wing of the sphenoid high on the left or the right.
4. Vertical strain with the posterior sphenoid body either superior or inferior to the anterior occipital base.
5. Lateral strain with the posterior sphenoid body either left or right of the anterior basiocciput.
6. Compression or impaction of the sphenobasilar joint/synchondrosis.

Among the first five of these six sphenobasilar joint motions, the reciprocal motions are compared to determine the presence of "lesion" or motion dysfunction, i.e., the range of flexion motion is compared with the range of extension motion. Traditional cranial concept as originated by Dr. Sutherland states that when the sphenobasilar joint moves more readily into flexion and is more resistant to extension, it is called a "flexion lesion." When the sphenobasilar joint moves further into left lateral strain than into right lateral strain, it is called a "left lateral strain lesion." The lesion is named for the direction toward which the cranial base moves with the greatest facility.

When the sphenobasilar joint is compressed or impacted, examination will reveal that the joint is resistant to anterior-posterior expansion or disimpaction. There is thus no real reciprocal motion for
use as a comparison. The diagnosis must be made on the basis of the therapist's experience with compressed and noncompressed patients. As your experience grows, you will gain confidence and sharpen your diagnostic acumen.

When testing for flexion or extension, the therapist should always first lay hands on, tune in and join the inherent motion of the patient. Testing for flexion or extension phase, respectively. Do not attempt to initiate a flexion movement while the patient is moving into flexion.

There is a neutral or relaxed period of time between each reciprocal motion of a brief time of relaxed neutrality following the return from the extension phase of motion, and vice versa. It is the excursion from neutrality to the end of the range of boost as the patient's craniosacral system moves from neutral into one or the other of the active ranges of motion. You then evaluate the response to the push or boost. In the perfectly functioning craniosacral system, flexion and extension are the only normal sphenobasilar joint motions which are occurring where that subject is in a relaxed, supine position.

However, the sphenobasilar joint-cranial base will allow for a little gently-induced, extrinsically-originated torsion, sidebending, vertical strain, lateral strain and compression-decompression. It is how much of each of these motions the craniosacral base will permit which is of interest to the therapist and which is, therefore, the subject of the testing procedures described below.

Cranial base motion patterns are positionally inducible. While you are monitoring the cranial motion, ask another person to raise or rotate one of your subject's extremities (either upper or lower),. Observe what changes occur in cranial motion. A little experimentation in this manner will bring to afford the therapist an appreciation of the delicate integrity of the human body and of the significance of connective tissue tonus and tension.

**SPHENOBASILAR/CRANIAL BASE FLEXION-EXTENSION**

Using one of the vault holds described above, exert a gentle force over the occipital/squama and great wings of the sphenoid concurrently. This force is directed toward the patient's feet. When you use the first vault hold, the third and fourth fingers are not in use; the thumbs are in contact with each other and furnish proprioceptive and kinesthetic cues so that your force will be applied as equally and symmetrically as possible. After the cranium has responded to the initiating force (on the order of 5 grams), you become passive and follow the cranial motion to its restricted end point. Flexion at the sphenobasilar union is the postulated motion which is being tested. That is, the angle formed by the basiocciput and the sphenoid body becomes more acute. After reaching the end point of the flexion motion, passively follow the sphenoid wings and occipital squama back to a position of neutral balanced ease.

To rest the reciprocal motion (extension) of the sphenobasilar joint/cranial base, you apply a similar, bilaterally equal force in a superior cephalad direction toward yourself. Once the motion is initiated, your force is terminated and the motion is passively followed to its restricted end point. This motion implies a lessening of the acuteness of the angle at the sphenobasilar union.

Once again, the therapist passively follows the cranial bone motion to a point of neutral balanced ease. The testing may be repeated several times until you are satisfied that your impression is reliable with respect to the relative ease or restriction of the reciprocal motions. The direction
toward which the motion is restricted is noted; e.g., restriction against the induction of flexion is
called an "extension lesion" and vice versa. Always begin your testing force at the onset of the
physiological flexion or extension motion, and compare the result with normal motion. Sutherland
postulated, and both the Sutherland Cranial Teaching Foundation and the Cranial Academy have
traditionally taught, that the palpable, rhythmic activity perceived on the skull of the subject is the
result of changes in the angle formed between the sphenoid body and the occipital base. At the
junction of these two bones, the angle formed at the inferior surface of this synchondrosis is less
than 180 degrees, while the superior surface of the angle is greater than 180 degrees. During the
flexion phase of craniosacral system motion, the number of degrees of the angle formed by the
inferior surface decreases. Therefore, the size of the angle formed at the superior surface must
increase. The reverse is true during the extension phase of the motion; however, the angle formed
by these two bones is never regarded as being a straight line. Also, during the flexion phase, the
sphenobasilar joint is said to move slightly cephalad, and during the extension phase, slightly caudad.
X-ray studies by Greenman lend some support to this idea.

SPHENOBASILAR/CRANIAL BASE SIDEBENDING

Sidebending distortions of cranial base motion, we believe, are maintained by an imbalance of
tension placed upon the bones of the sphenobasilar joint by one or a combination of factors. The
result is that the anterior-posterior distance between the sphenoid great wing and its paired occipital
squamous bone on the same side is shorter than on the opposite side. This means that the median
sagittal plane through the head is angulated slightly at the sphenobasilar joint. The flexion and
extension phases of craniosacral system motion continue, but from a sidebent orientation. When this
lesion pattern is discovered, it is called sidebending with convexity either left or right.

The test for sidebending lesion patterns is performed by the application of one of the vault holds
described above, but with palm contact on one side to perceive convexity bulging. At the beginning
of a flexion phase of the craniosacral motion, the therapist should attempt to gently approximate the
occipital squamous and the ipsilateral great wing of the sphenoid. As this gentle approximation is
performed, a bulging of the convexity on the opposite side is perceived with the palm of your other
hand. The extent of this bulging should be mentally noted. The cranial motion is passively monitored
back to neutral, then through the extension phase, and back to neutral again. As the next flexion
phase begins, repeat the test on the opposite side. The amount of approximation and convexity
bulging at each side of the head is compared. The lesion is named for the side at which the greater
bulging convexity is perceived.

We repeat: the force applied by the therapist during this test is small (5-10 grams) and initiatory
only. Once the sidebending has begun in response to the induced force, you become a passive
monitor observing how far it will go. This is not a test to see how far you can push it. The sidebending
force is induced during the natural origin of the flexion phase of craniosacral motion only. Essentially,
you are inducing an exaggerated flexion of the sphenobasilar joint, unilaterally. Normally, during the
flexion phase of motion the occipital squama and the great wings of the sphenoid move closer as the
angle at the inferior sphenobasilar surface decreases slightly.
SPHENOBASILAR/CRANIAL BASE TORSION

This lesion is named either right or left for the side on which the great wing of the sphenoid bone moves cephalad with the most ease and excursion. A "right torsion lesion" simply means that the orientation of the sphenoid is such that the right great wing elevates more easily. All crania should exhibit some torsion in response to extrinsically applied initiatory forces. You are interested in the symmetry of the torsion motion in response to your test. Lack of symmetry means that a lesion pattern is present in the cranial base.

To better understand torsion motion, simply imagine an axis running through the patient’s head between the posterior occipital protuberance (where the straight venous sinus ends) and glabella anteriorly. Then imagine that the sphenoid is tilted slightly to one side upon this axis, and the occiput is tilted slightly in the opposite direction upon the same axis.

The normal rhythmic flexion and extension motions are proceeding as usual, but the cranial base is operating from a torsioned orientation.

To test for torsion, the vault hold is applied. A gentle torsional motion is induced at the great wings of the sphenoid, while the occiput is stabilized relative to any torsional movement. The motion test can be initiated at the beginning of either a flexion or extension phase of craniosacral motion. If your testing force is focused more upon the wing of the sphenoid which is rising cephalad, initiation of the test should be made during the beginning of the extension phase. If you are concentrating more upon the great wing of the sphenoid moving inferiorly, then start the test at the beginning of the flexion phase. You are simply testing to determine the direction of ease toward which cranial base torsion can be induced.

CLINICAL SIGNIFICANCE AND TREATMENT OF FLEXION, SIDEBENDING AND TORSIONAL DISTORTIONS OF CRANIOSACRAL SYSTEM MOTION

The clinical significance and correction of flexion, extension, sidebending and torsional lesions of the cranial base are all discussed together for several reasons:

1. In our experience these lesions are usually secondary to some somatic dysfunction or imbalance which is extrinsic to the craniosacral system. Frequently, flexion, extension, sidebending and torsion dysfunctions of the cranial base are correctable by cranial treatment, but will often return unless the extracraniocerebral system problem is itself identified and treated. These cranial base dysfunctions are often self-correcting when the primary dysfunction is remedied. We use the "spontaneous" correction of abnormal flexion-extension, sidebending and torsion patterns as indicators of the therapeutic effect on the primary, extracraniocerebral system problems. Strain and compression of the cranial base often have their origin within the craniosacral system.

2. Craniosacral motion pattern abnormalities are often transient. This is not true of the more severe cranial base strain and compression problems, which are discussed further on. The transient nature of many of these problems may be due to the fact that they are often secondary to temporary changes in the neuromusculoskeletal system. These changes are usually the result of traumas and everyday stresses.
3. Although the dysfunctions of flexion-extension, sidebending and torsion of the cranial base may be symptomatic, they are seldom seriously incapacitating and/or debilitating as may be the case with cranial base strains and compression problems.

4. The correction (at least, the temporary correction) of these lesions can usually be effected by the application of indirect technique without much difficulty. The correction of cranial base strain and compression problems is frequently more difficult and may sometimes require the use of direct techniques with more individual modification in order to achieve success.

Flexion-lesion heads, in general, belong to externally rotated bodies. That is, the extremities will usually be more externally rotated. The walk will often have a slight "waddling" quality, and the head will tend to be transversely wider and proportionately shorter in its anterior-posterior dimension.

The complaints of such flexed-externally rotated patients will often be related to pelvic and lumbosacral instability; annoying but seldom severe headaches; transient and numerous musculoskeletal system problems. They will frequently have endocrine dysfunction, recurrent sinusitis and nasal allergies. This type of cranial lesion is often temporarily correctable by the use of indirect technique. That is, after it has been determined that flexion is the dysfunction, follow the motion into its extreme range of flexion, and hold against that barrier very gently. When the craniosacral system attempts to return to the neutral position, the therapist becomes immovable. Do not push against the indirect barrier; just prevent the cranium from returning to neutral. If it begins to exhibit torsion or sidebend, or proceeds into any other motion pattern, you allow that to happen. These are lesions which you have not diagnosed and which will probably correct as you prevent the return of the craniosacral system to its neutral position. You are a passive barricade.

Ultimately the cranium will get further into the flexion range of motion. When this occurs, you have achieved at least a partial release of the flexion lesion pattern. As this movement into further flexion occurs, you follow, staying against the barrier but not pushing it. This may occur once or several times. Finally, one of these movements of the flexion range of motion will be accompanied by a sense that the patient's head has "softened."