

Laterally transposed pelvis: A new and proper name for an old problem

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There is need for specific terminology for osteopathic findings, including the findings in postural examination. A static test for laterally transposed pelvis is sometimes critical to the establishment of a diagnosis of postural imbalance, particularly in the minor forms of this important clinical entity. There is need for a word or phrase that identifies this clinical finding and nothing else.

The phrase laterally transposed pelvis is nominated to indicate a specific finding in the static evaluation of pelvic position in the frontal (coronal) plane in relation to the vertical extension of the midheel line (sagittal plane). The definition of laterally transposed pelvis is: With the patient standing, knees fully extended bilaterally and the feet together on a flat horizontal surface, the median (midsagittal) plane of the pelvis is observed to lie laterally to the vertically extended midheel line (median/midsagittal plane).

(Key words: Laterally transposed pelvis, osteopathic medical terminology, posture)

During the past 15 years, the osteopathic profession has made great advances in the development of standardized terminology. The members of the American Association of Colleges of Osteopathic Medicine's Educational

Council on Osteopathic Principles (ECOP), a dedicated group of teachers of osteopathic principles, have spearheaded the effort. They meet several times a year to discuss questions of common concern relating to terminology, concepts and philosophy, teaching methods, and course content. A concern for standardization is an ongoing part of the proceedings. Among its other interests, ECOP specifically looks at terminology related to postural evaluation.

Static and motion evaluations are separate phases of the postural examination, each requiring specific nomenclature. It is clear then that the use of terminology applied, only by universal agreement, to the static phase of examination would provide a reinforcing signal that a static postural finding is being reported. This etymologic device helps to clarify the application of descriptors found in medical records. It reduces to a minimum the ambiguity too often found in clinical descriptions.

The search for laterally transposed pelvis is the third step in the three-step postural screening examination. It is undertaken after the examiner has decided whether there are clinically significant anteroposterior and lateral spinal curves, and whether there is unleveling of the iliac crests. The presence of either or both of these findings strongly suggests that a laterally transposed pelvis will be present.

Finding a laterally transposed pelvis provides additional information supporting the diagnosis of postural imbalance, especially when there is minimal "suggestive" lateral spinal curving and iliac crest unleveling. In this case having a third "suggestive finding" in hand

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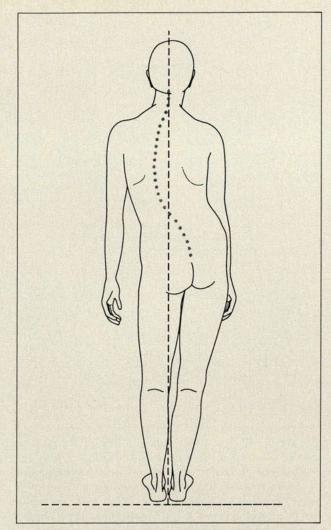


Figure 1. Laterally transposed pelvis, in this case to the right, of the vertical extension of the midheel line with counterbalancing of the upper body to the left of the midheel line.

could nudge the clinician to pursue the possibility that pelvic imbalance (obliquity) exists, and to order x-ray films of the patient in the standing position for documentation.

In clinical situations where the identification of spinal curving and iliac crest unleveling remains uncertain, the finding of asymmetric position of the pelvis in the frontal plane, relative to the vertically extended midheel line, can help to determine the presence or absence of sacral base unleveling and postural imbalance. In this instance, the finding of a laterally transposed pelvis plays a critical role in diagnosis when added to the minimal abnormalities identified in either or both of the other

steps in the examination. A positive finding may help the examiner to decide that minor postural imbalance exists and requires further documentation and management. Make no mistake, it is often critical to identify the presence of a minor sacral base unleveling. Irvin¹ underlines the importance of a minor unlevelness of the pelvis as he asks why widely known medical writers think that large differences in leg length have a deleterious effect on scoliosis and small differences do not. He¹ cites Greenman's view that low back pain followed unlevelness of the sacral base of 4 mm or more, even though he did not use a heel lift for the treatment of the associated lumbar scoliosis.

Terminology used in postural examination

Postural descriptors related to the previous discussion are found in the osteopathic literature. They include lateral shift of the pelvis, lateral displacement of the pelvis, lateral shift of the sacrum, hip shift, and pelvic sideshift. Each of these terms has multiple definitions and applications. None of them is used universally to refer solely to the static finding of pelvis acral position in the coronal plane in relation to the vertically extended midheel line.

- Lateral shift of the pelvis was described by Strachan²:
 - "When a normal standing subject lateroflexes to the right he avoids the tendency to fall to the right by shifting the weight of the pelvis and lower trunk to the left, while bearing more weight on the right foot." This description refers to a dynamic motion/balance response pattern.
- Lateral displacement of the pelvis is a concomitant (balancing) motion in the walking cycle in which "the center of gravity is displaced laterally over the weight-bearing extremity twice during the cycle of motion."

 This description again includes dynamic motion/balance content and meaning.
- Lateral shift of the sacrum was used by Hoover and Nelson⁴:
 - "... while lifts on the long leg tend to increase the compensatory lateral shift of sacrum and pelvis...." This usage may limit itself to describing a static finding while at the same

time it seems to deal with a response to a demand for/of compensation. The application of this phrase is ambiguous.

- Hip shift has been used by Johnston,⁵ who said, "In the case of positive 'hip shift' there will be resistance to motion laterally in one direction while there will be a free and unrestricted movement in the opposite direction." This clearly is a response to force applied by the examiner in "dynamic" testings.
- Pelvic sideshift is defined as follows:
 "Deviation of the pelvis to the right or left of the central axis, usually observed in the standing position."
 This description ap-

pears to deal with a static examination finding. It uses the word *shift*, which carries with

it a connotation of motion.

A brief review of these descriptors and definitions reveals confusing and nonspecific use of words, none having one meaning alone. The literature reveals no conventions about the meaning of these words except those assigned by the authors. However, we need descriptors having clear meanings which, by agreement, mean one thing only.

For an example of the multiple confusing and individualized applications of a term, here is how several authors use the phrase *pelvic shift*:

- (1) A shift of the symphysis.⁸
- (2) Lateral movement of the whole pelvis in relation to a perpendicular line from between the two heels.⁹
- (3) The symphysis and the pubes being off center. 10

Clearly, the different authors say, and mean, different things while using the same words. One must agree that the meanings approximate each other. They lack, however, the clearness, conciseness, and specificity that we need in osteopathic medical language. Their general use is fuzzy, the result of multiple applications.

Some words and phrases are beyond the scope of this paper. They are clearly reserved for description of findings resulting from other than static examination. For example, *hip shift* is meant, by Johnston,⁵ to represent a response to a translational force applied to the hip by the examiner, which is a motion test. We are,

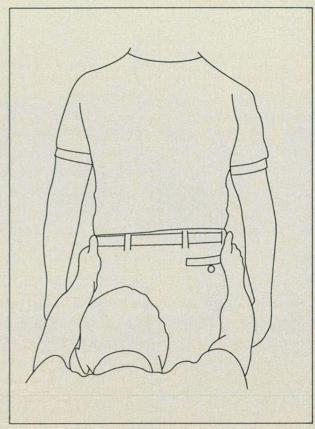


Figure 2. The examiner crouches behind the patient, eyes at the level of the iliac crests, both arms fully extended with the palms against the most lateral portion of the trochanteric area. The examining physician compares the distances from his or her palms to the vertically extended midheel line. When the distances are unequal, laterally transposed pelvis exists.

however, in need of a word or words to describe a pelvic positional finding on static postural evaluation.

The word *shift* appears frequently in descriptors of lateral displacement of the pelvis. It has, as I have indicated, a connotation of motion. Wide use of the word suggests the special need for a descriptor of lateral pelvic positioning. I must admit that I have had a strong preference for the word *shift*, but this preference has greatly weakened as I have come to recognize that *shift* carries with it a strong notion of change or motion, which better fits it for description of a motion test response. The attendant idea of motion clearly rules out its use in the definition of a static postural examination finding. If any phrase using the word *shift* is powerfully misleading, even in-

accurate, then how shall we define this physical examination finding which is so helpful in diagnosing postural imbalance?

I offer the phrase laterally transposed pelvis to indicate the lateral location of the midline of the pelvis in the coronal plane in relation to the vertically extended midheel line (sagittal plane), with the patient standing motionless with the feet together on a flat surface. The phrase is a composite of the several ideas already noted. It clearly establishes a basic reference to the static postural evaluation. It suggests that the pelvic position has changed from some earlier position. It is universal and specific. Its usage obviously depends on broad acceptance and specific application throughout the profession.

Laterally transposed pelvis

The proposed definition of *laterally transposed* pelvis is as follows: With the patient standing, knees fully extended bilaterally and the feet together on a flat, horizontal surface, the median (midsagittal) plane of the pelvis is observed to lie laterally to the vertically extended midheel line (median/midsagittal plane). An example of this condition is shown in *Figure 1*.

This definition provides the inclusions and exclusions necessary for the application of the designation. It clearly refers only to the standing (weight-bearing, knees extended-feet together) position. The textbook definition of median plane includes the idea of the sagittal plane that specifically bisects the pelvis. This plane bisects both the sacrum and the pubic symphysis. Whenever this plane does not coincide with the vertically extended midheel (median sagittal plane) line, a laterally transposed pelvis exists. Early on, the examiner may require a plumb bob and string to assist in the establishment of a visually "vertically extended midheel line." Later, any vertical line or structure in the examining room may provide sufficient reference. This definition excludes the special situation, often seen in standing x-ray films, in which the midline of the sacrum is on one side of the midheel line and the pubic symphysis is on the other side (pelvic rotation around a vertical axis).

The presence of a laterally transposed pel-

vis is identified by a combination of positioning of the examiner's eyes and hands and careful observation. The examiner crouches or kneels, at arm's length, behind the patient who stands straight with knees fully extended, feet together, the arms at the sides, and head facing forward. The examining physician's arms should be extended and palms placed against the most laterally projecting areas of the patient's trochanteric (lateral hip) areas without attempting to move or displace them in any way. The examiner, eyes positioned at the approximate horizontal level of his or her hands, then visually extends a reference line or plane vertically from between the two heels of the patient up through the pelvisacral area. As noted, the examining physician may require some vertical reference in the examining room to establish the vertical midheel line. The examiner then compares the distance from the palm of each hand to the imagined vertical midheel line. A laterally transposed pelvis exists when the distances from each hand to the vertical midheel line appear to be unequal (Figure 2).

Other visual cues aid the examiner in the identification and quantification of laterally transposed pelvis if the situation is not obvious. The lateral outline of one flank, just above the iliac crest, may appear flat and vertical whereas the other flank is noticeably concave. One often sees a deep, unilateral, anteroposterior skin fold at the posterolateral flank of the side toward which lateral transposition of the pelvis has occurred. Finally, on the side of the pelvis toward which there is lateral transposition, the hand and wrist of the patient may be in close proximity to or in contact with the lateral surface of the hip, whereas the other hand and wrist hang well clear of the lateral hip structures.

Comment

This paper has discussed a specific aspect of the static postural examination, more specifically the definition and language rules applicable to the description of the altered "static" position of the pelvis in relation to the vertical extension of the midheel line. Various conflicting and ambiguous terminologies have been used to describe and record this particular finding on postural static examination. The specific terminology suggested, if applied universally, would eliminate a semantic problem currently found in clinical literature and discussions.

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