

## Differential Diagnosis for Apparent Short Leg\*

- I. Anatomic Short Leg, or Femoral Head Unleveling ( $\Delta$ FHU)
  - A. Unilateral
    1. Dropped longitudinal foot arch
    2. Severe Knee or
    3. Hip arthritis
      - a. Congenital hip dysplasia
      - b. Slipped capital epiphysis
    4. Short leg bone, tibia or femur
    5. Short Seated hemipelvis ( $\Delta$ SeHP)
  - II. Sacral Shear, or Sacral Base Unleveling ( $\Delta$ SBU)\*\*
  - III. Functional asymmetries
    - A. Unilateral tight hip flexors
      6. Unilateral tight psoas
      7. Unilateral tight rectus femoris or functional equivalent
    - B. Descending influences
      8. Unilateral tight quadratus lumborum or functional equivalent that pulls the pelvis up on the ipsilateral side when pt. is supine.
      9. cranial influence? Ross Pope, D.O., is working on this.
    - C. Anterior rotated innominate \*\*\*

\* Apparent short leg is a clinical finding on physical exam. The supine patient flexes hips and knees, lifts butt off the table and drops it down. Physician places thumbs just below medial malleoli to assess apparent short leg.

\*\*While theoretically a Lt. sacral torsion should lower the sacral base on the Rt. Side, no one yet has shown before and after x-rays that show a leveling of the sacral base as the result of treatment.

\*\*\* Juhl, et. al., confirmed that an anteriorly rotated innominate is usually a compensation for an anatomic short leg ( $\Delta$ FHU or  $\Delta$ SBU)

If we evaluate and effectively remove the functional asymmetries, and we still find an apparent short leg, the differential diagnosis is simplified to

- I. Anatomical short leg ( $\Delta$ FHU).
- II. Short Seated Hemipelvis ( $\Delta$  SeHP).
- III. Ideopathic Sacral Base Unleveling ( $\Delta$  SBU).

This can be confirmed with a standing lumbo-sacral x-ray in the manner of Denslow/Juhl. If the measurements  $\Delta$ FHU,  $\Delta$ SBU, and  $\Delta$ SeHP are  $<4$  mm, the patient doesn't have a compensatory scoliosis to the short leg side and only requires episodic osteopathic treatment, the patient probably should not be burdened with a butt or heel lift.

If the  $\Delta$ SBU is  $\geq 10$  mm or there is a compensatory scoliosis convex to the short leg side, a heel lift should be considered.

If the  $\Delta$ SeHP is  $\geq 4$  mm and the patient has a compensatory scoliosis or recurrent back pain and tires easily in the seated position, the concept of a butt lift should be introduced.

A general rule (c.f. Zink) is that if a patient's patterns are out of the common compensatory patterns, they are likely to be more clinically significant.

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