

How to Handle Pelvic Obliquity with Deformity Surgery

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Disclosures

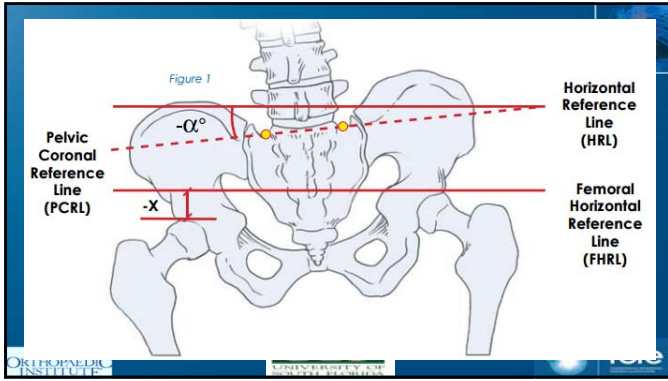
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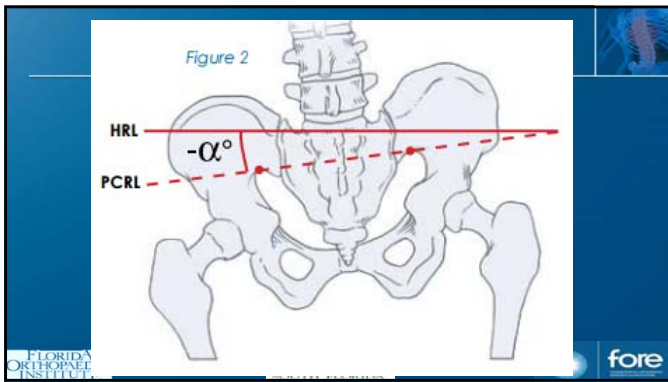
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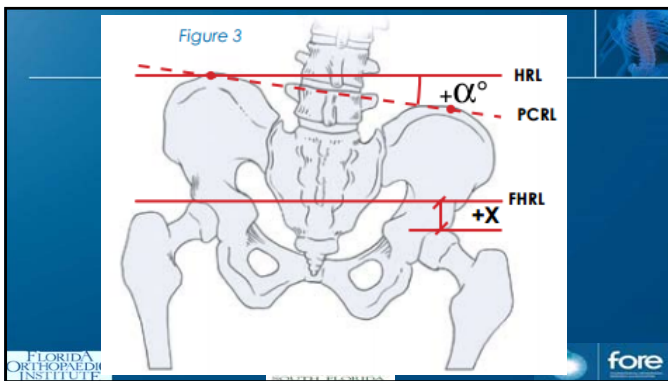
Pelvic Obliquity

- Describes pelvic alignment in the coronal plane.
- Can be measured a number of ways either by angles or cm of obliquity

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Etiology

- ❖ Compensatory
 - ❖ Spinal deformity
- ❖ Limb length discrepancies
 - ❖ Hip osteoarthritis
 - ❖ Muscle contraction
 - ❖ Prior fracture of the femur/tibia
 - ❖ Knee arthroplasty
 - ❖ Hip arthroplasty
 - ❖ Amputation
- ❖ Neuromuscular causes
 - ❖ Cerebral palsy
 - ❖ NMS
 - ❖ Polio
 - ❖ Parkinson's
 - ❖ Para/Quadriplegia

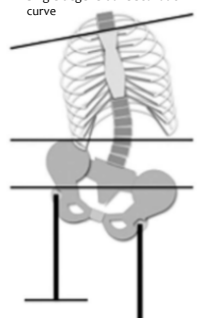
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Diagnosis

❖ First step is proper standing AP/PA radiograph

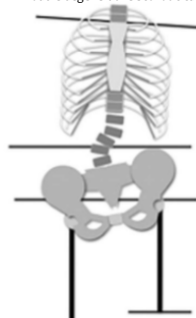
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Single degenerative scoliotic curve



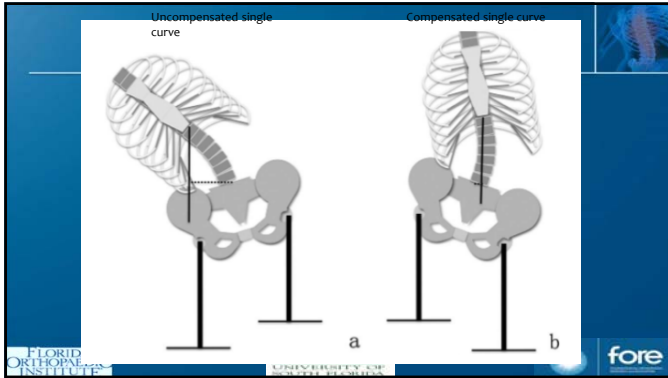
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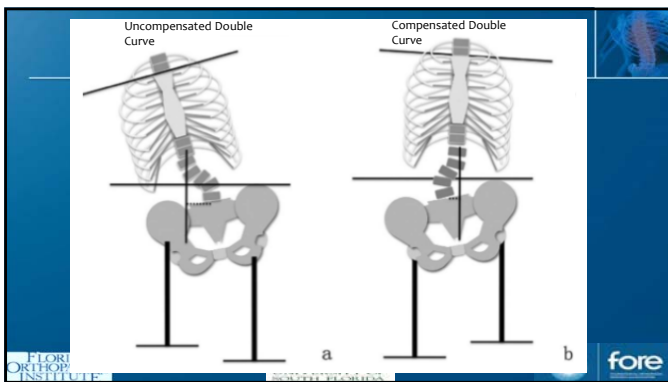
Double degenerative scoliotic curve



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Is Pelvic Obliquity Related to Degenerative Scoliosis?

Kristen E Radtke, MD, Fabio Costantini, MD, Nicholas Malley, MD, Eric Chen, MD, Goro Kohno, S Saito, MD, PhD, Alexander E Vaccaro, MD, PhD, Alistair Ong, MD

Department of Orthopaedic Surgery, Rothman Institute, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, USA

- There were 656 patients in the study population.
- The prevalence of PO in patients with a single degenerative scoliotic curve was 91% (116/127).
- The prevalence of PO in patients with double scoliotic curves was 85% (338/397).

Logos for Florida Orthopaedic Institute, USF, and fore are present at the bottom.

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 Department of Orthopaedic Surgery, Rothman Institute, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, USA

- The high iliac crest side was significantly more likely to occur on the concave scoliotic curve side in patients with single curves (79%) versus double curves (48%, $P = 0.001$).
- Patients were compensated

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- Patients with double curves (72%) were significantly ($P = 0.0001$) more likely than patients with single curves (49%) to have the low iliac crest on the same side as the coronal bisector.
- Patients were decompensated

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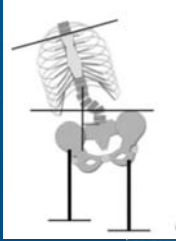
- Single degenerative scoliotic curves are more rare and in fact may develop as compensatory mechanisms for PO.

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- Double curves may develop due to primary lumbar degenerative pathology independent of PO.
- PO has a significant role in trunk shift in these patients



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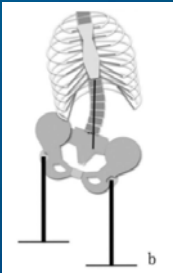
Management

- Adults**
 - Must obtain coronal plane standing x-rays that have the femoral heads within the shot
 - Divide curves into single and double then compensated versus decompensated
- Sparse studies on the management of PO and DS
 - Following slides is my opinion on management based on the previous study and has not been evaluated in a trial

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Single Curve - Compensated

- 79% of single curve cases
 - PO is likely the cause of the degenerative scoliosis
 - Trial shoe lift to even out iliac crests and consider sending to hip specialist for evaluation if indicated







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Single curve - Decompensated

- ✦ 21% of single curve cases
- ✦ PO contributes to DS in worsening coronal imbalance

1. Eval for LLD causes
 - ✦ If YES – address with referral to specialist then eval coronal deformity
 - ✦ If NO – likely needs fusion to pelvis to level obliquity
2. Surgery to correct coronal imbalance +/- fusion to pelvis

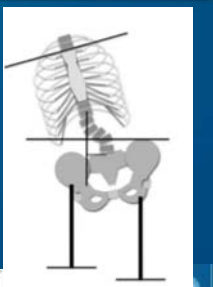









Double Curve - Decompensated

- ✦ 52% of double curves
- ✦ PO contributes to DS in worsening coronal imbalance

1. Eval for LLD causes
 - ✦ If YES – address with referral to specialist then eval coronal deformity
 - ✦ If NO – likely needs fusion to pelvis to level obliquity
2. Surgery to correct coronal imbalance +/- fusion to pelvis



Double Curve - Compensated

- ✦ 48% of double curves
- ✦ PO is compensatory due to DS
 - ✦ Fix DS and coronal imbalance without fusion to the pelvis necessary
 - ✦ LLD is likely not present and PO should improve with correction of coronal deformity

