How to Handle Pelvic Obliquity with Deformity Surgery
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Disclosures
None

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

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

Diagnosis

First step is proper standing AP/PA radiograph
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).
The high iliac crest side was significantly more likely to occur on the concave sciotic curve side in patients with single curves (79%) versus double curves (48%, P = 0.001).

Patients were compensated.

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.

Single degenerative sciotic curves are more rare and in fact may develop as compensatory mechanisms for PO.
Double curves may develop due to primary lumbar degenerative pathology independent of PO. PO has a significant role in trunk shift in these patients.

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

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
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
Thank you