Uncorrected Pelvic Obliquity is Associated with Lower Health Related Quality of Life in Ambulatory but not in Non-Ambulatory Patients after Surgical Treatment in Patients with Early Onset Scoliosis

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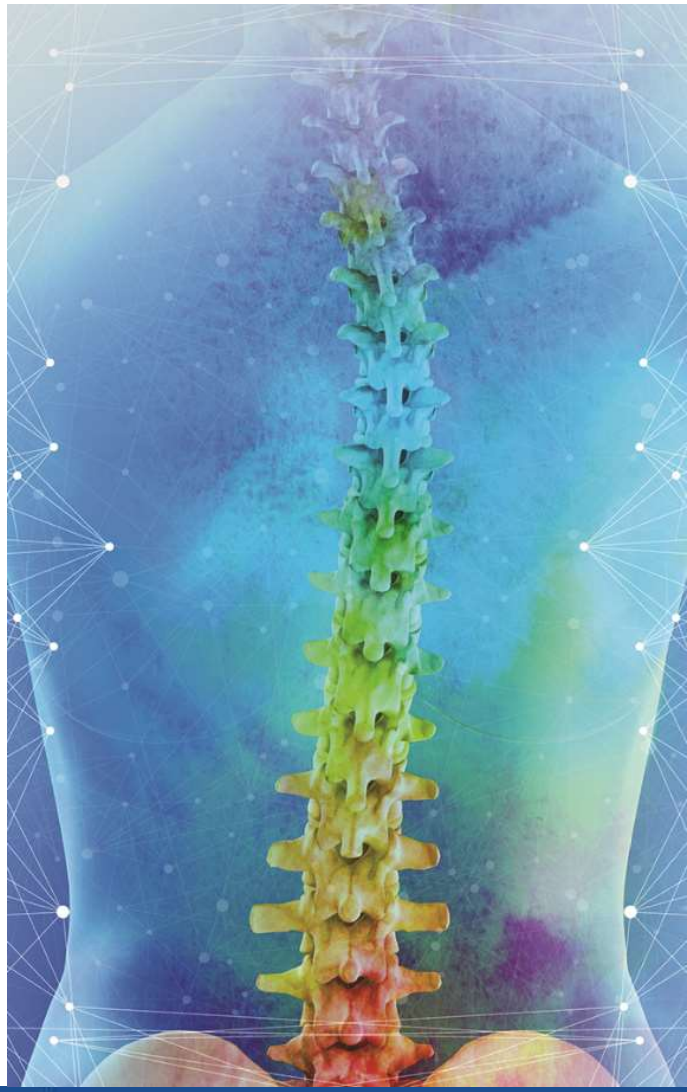
Disclosures

- I have something to disclose:
  - Research support from Children's Spine Foundation, Setting Scoliosis Straight Foundation, Scoliosis Research Society, and Pediatric Orthopedic Society of North America
  - Consultant for Children's Spine Study Group
  - Committee Member for American Academy of Cerebral Palsy and Developmental Medicine



Introduction

- Uncorrected pelvic obliquity remains common in patients with Early Onset Scoliosis (EOS) after surgical treatment
- Balancing of the pelvis is believed to be important for comfortable ambulation and seated positioning
- The association between pelvic obliquity and Health-Related Quality of Life (HRQoL) is not well understood

Purpose

- To investigate the association between pelvic obliquity and HRQoL in patients with EOS at the completion of surgical treatment

- *Hypothesis: There is an association between increasing pelvic obliquity and worsening HRQoL in patients with EOS after definitive fusion*

Methods

Retrospective Cohort Study

- 214 patients
- A multicenter registry from 27 hospitals
- Pediatric Spine Study Group Registry

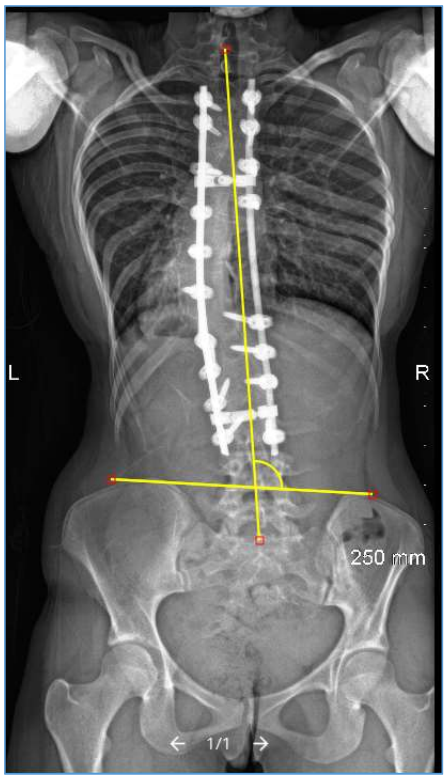
Inclusion Criteria

- Diagnosis of EOS
- Skeletally mature (females ≥ 13 and males ≥ 15 years of age)
- Definitive fusion between 2012-2019

Pelvic Obliquity and HRQoL Measures

Pelvic Obliquity:

- The angle created by a line between T1 and S1 and a line connecting the apices of the iliac crests



Outcome:

- EOSQ-24 domain scores after definitive fusion
  - HRQoL
  - Parental Burden
  - Financial Burden
  - Satisfaction

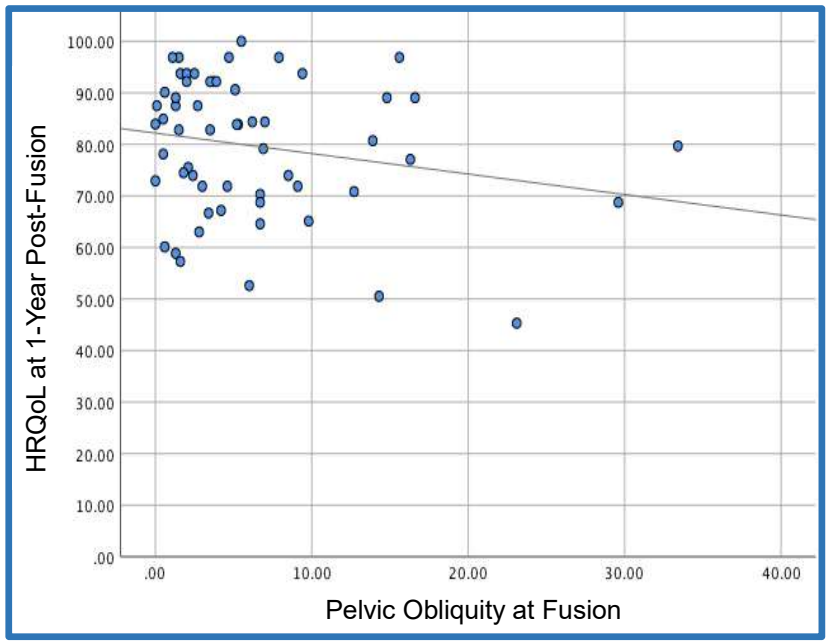
Study Participants – 214 patients

Age at Fusion	12.4 ± 2.4 (1.1-17.9)
Age at X-Ray	15.6 ±1.8 (13.0-23.1)
Age at EOSQ-24	15.7±1.8 (13.0-23.1)
Gender	
Male	55 (25.7%)
Female	159 (74.3%)
Weight (kg)	50.4 ± 13.9 (20.2-118.1)
Height (cm)	153.4 ± 11.4 (118.0-177.0)
Major Coronal Curve	42.6 ±18.8 (6.0-106.0)

Etiology	
Congenital	61 (28.5%)
Neuromuscular	40 (18.7%)
Syndromic	50 (23.4%)
Idiopathic	62 (29.0%)
Intervention History	
Growth Friendly Graduate	125 (58.4%)
Primary Fusion	89 (41.6%)
Fusion to the Pelvis	
Yes	33 (15.4%)
No	181 (84.6%)

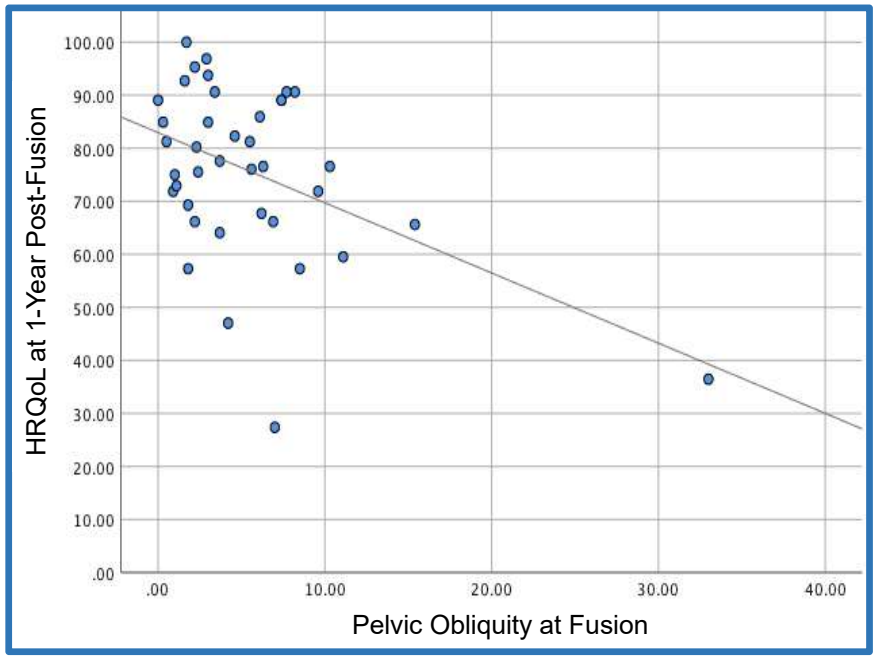
Pelvic obliquity and HRQoL are negatively correlated in ambulatory Neuromuscular and Syndromic EOS

Neuromuscular etiology (p=0.085)

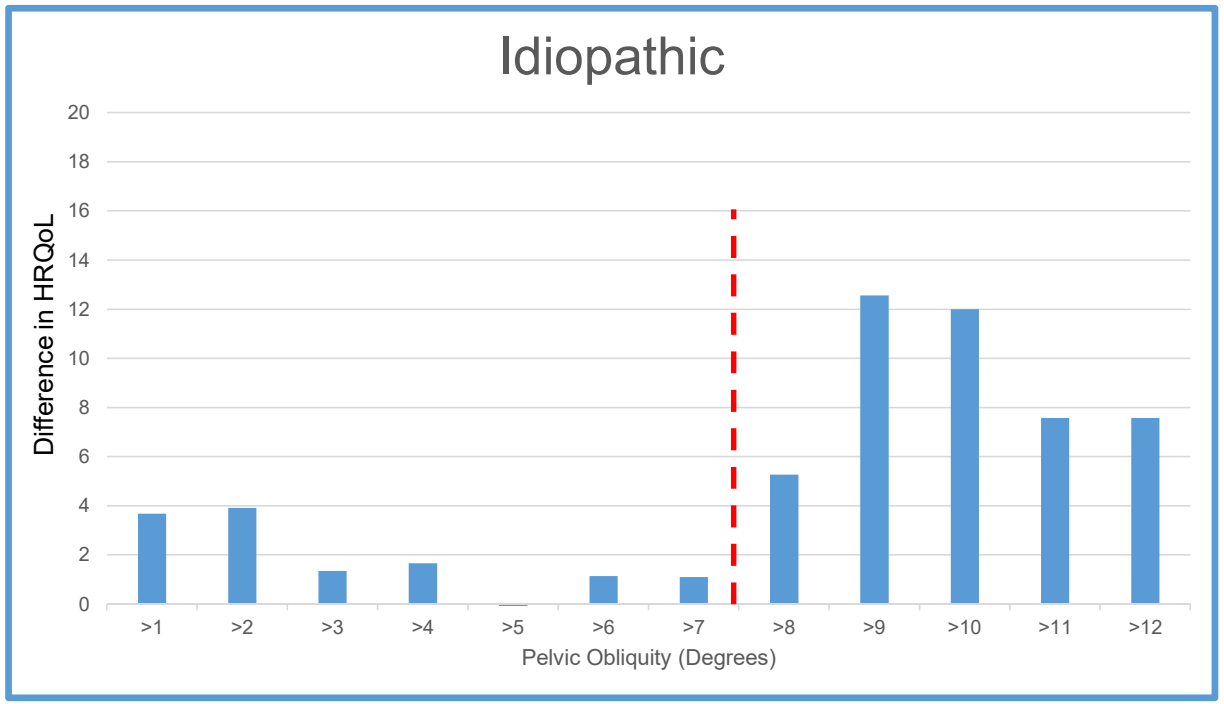


There was no evidence of the association in non-ambulatory patients

Syndromic etiology (p=0.003)



Decrease in HRQoL started to be apparent when patients had more than 8 degree of pelvic obliquity for idiopathic EOS



Discussion

- Pelvic obliquity is negatively associated with HRQoL at the end of treatment for ambulatory neuromuscular and syndromic EOS
- For idiopathic EOS, pelvic obliquity should be within 8 degree to maintain their HRQoL
- Leveling the pelvis should be a one of the goals of definitive spinal fusion surgery especially for ambulators

Discussion

- The below factors did not alter the association
  - Fusion to the pelvis vs not
  - Fusion after growth friendly procedures vs primary fusion

- Ongoing investigation on the impact of change from preop pelvic obliquity

Thank You!

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