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Pelvic Screw Fixation Maintains Lumbar Lordosis in Growing Rod Constructs Better Than S Hooks

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Background

- Multiple options exist for pelvic fixation in distraction based growing rod systems:
 - Pelvic hooks (S hooks)
 - Screw based fixation (Iliac, sacral-alar-iliac)
- Little comparative data on how types of pelvic fixation maintain or improve lumbar lordosis



Purpose

Examine the impact of type of pelvic fixation in growing rod constructs on the maintenance lumbar lordosis

S Hooks



Screws (Iliac/Sacral-Alar-Iliac)

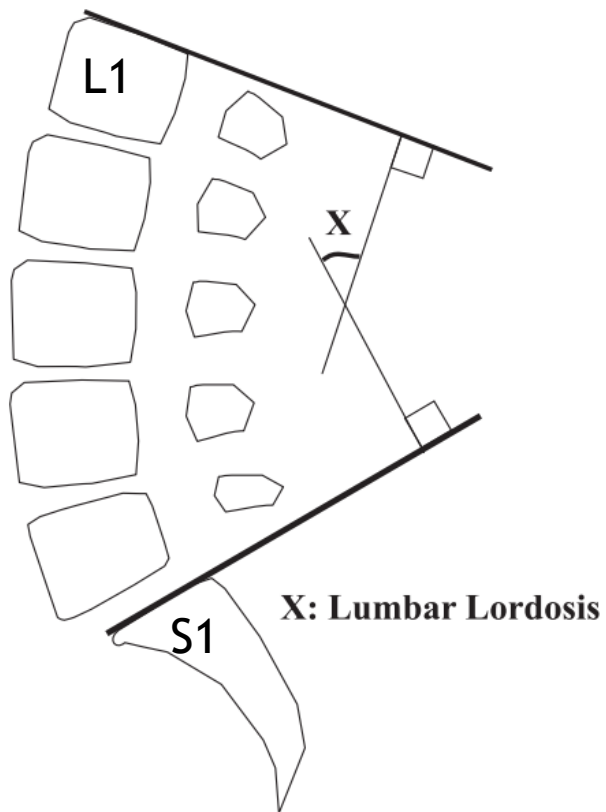


Methods

- **Type of Study**
 - Multicenter Retrospective Comparative Study
- **Study Subjects**
 - Early onset scoliosis patients with distraction based implants with pelvic fixation from 2000 – 2013
 - Two Multicenter EOS databases
 - Exclusion Criteria:
 - Index instrumentation \geq 10 years old
 - $<$ 2 years of follow-up
 - Incomplete radiographic data

Methods

- **129 patients**
- **Analysis**
 - Two groups for comparison
 - Screws (11 Sacral-alar-iliac screws, 27 iliac screws)
 - S hooks (91)
 - Lumbar lordosis measurements
 - Preoperative, postoperative, final follow-up (prior to fusion/change in fixation type)
 - Increase in lumbar lordosis (+), loss of lumbar lordosis (-)



Results: Change in Lumbar Lordosis

Interval	Screw (N = 38)	S Hook (N=91)	P-value
Preoperative to Postoperative	$6^{\circ} \pm 27^{\circ}$	$-6^{\circ} \pm 22^{\circ}$	0.02*
Preoperative to Final Follow-up	$1^{\circ} \pm 30^{\circ}$	$-11^{\circ} \pm 24^{\circ}$	0.04*

- Lumbar lordosis increased in the screw group and decreased in the S hook group after index surgery and at final follow-up

Results

- At final follow-up, patients with $\geq 10^\circ$ lumbar kyphosis:
 - 4 S Hook group
 - 0 Screw group

Conclusion

Distraction based growing spine constructs anchored with screws were superior to S hooks in the maintenance of lumbar lordosis

