



Non-segmental low implant density pedicle screw construct in Lenke Type 1 & 2 Adolescent Idiopathic Scoliosis

Does it have an impact on degree of curve
correction and thoracic kyphosis?



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Introduction

There is an increasing trend in the use of bilateral segmental pedicle screw construct in scoliosis correction surgery which increases the implant load , decreases thoracic kyphosis and increases the cost of surgery.



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- **Objective.** To evaluate the coronal and sagittal correction of Type 1& 2 adolescent idiopathic scoliosis using all-pedicle screw non segmental instrumentation with low implant density
 - **Study Design.** Retrospective cohort study
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Materials & Methods

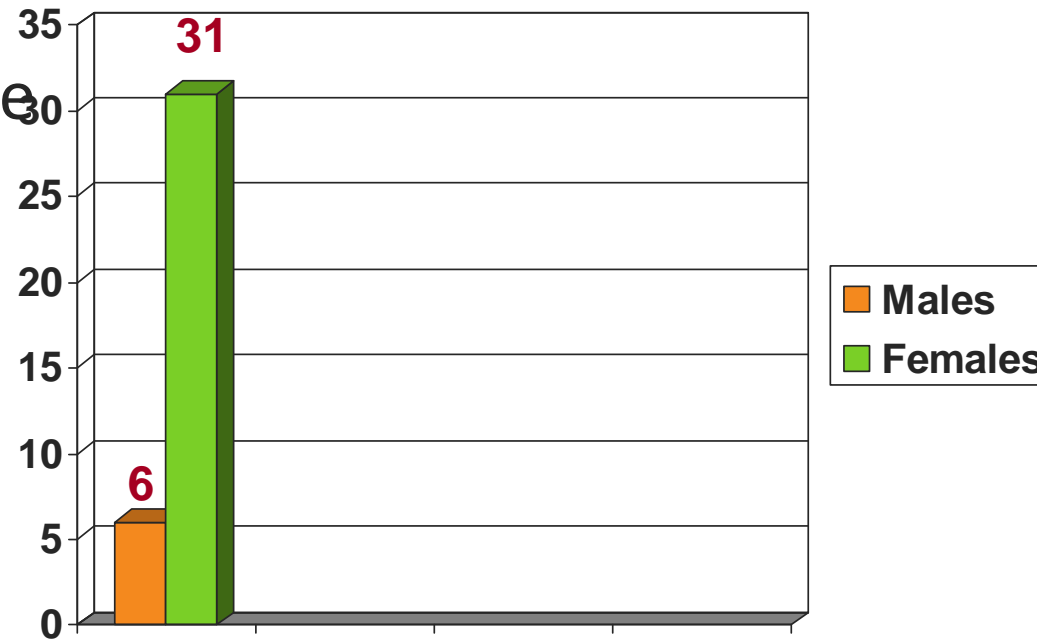
37 consecutive patients with Lenke 1 and 2 AIS curve pattern underwent single stage posterior correction and instrumented spinal fusion with non segmental pedicle screw fixation between 2004 and 2011.

Pre- and postoperative radiographs were analyzed.



Results

- Mean patient age at the time of operation was 15 years
- Minimum follow-up was 2 years.

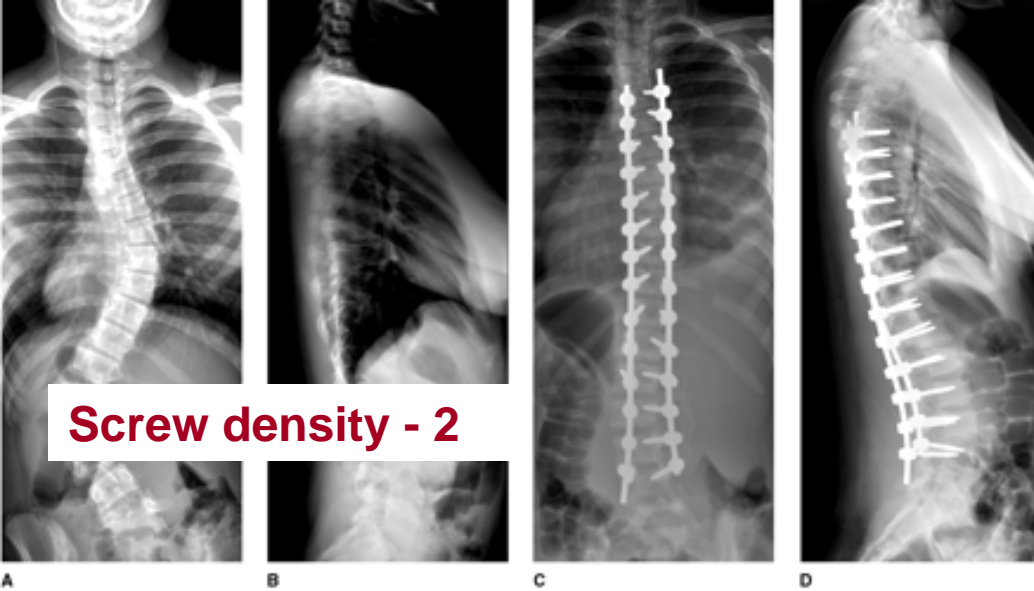


Coronal Correction

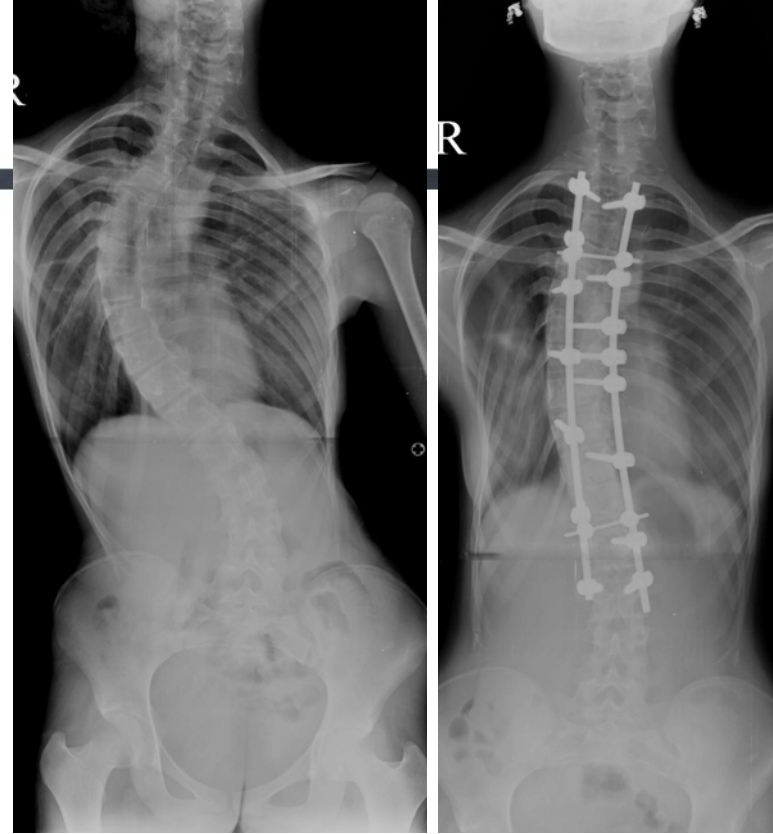
Pre-operative Cobbs angle	Post operative Cobbs angle	Correction%
58.8 ⁰	14.8 ⁰	74.4% (p<0.001)

Kyphosis Correction

Pre-operative Kyphosis	Post operative Kyphosis	Improvement of Kyphosis %
15.7 ⁰	23.1 ⁰	47.1% (p<0.001)



[J Am Acad Orthop Surg.](#) 2009 17(9):550-61.
Use of all-pedicle-screw constructs in the treatment of adolescent idiopathic scoliosis.
[Cuartas E](#), [Rasouli A](#), [O'Brien M](#), [Shufflebarger](#)



Our study- Screw density 1.07



Analysis

- No of segments fused - 432
- No of Pedicle screws used - 493
- No of screws in b/l fixation - 864
- Screws saved - 371

Average price/screw 600-1000 USD
Cost saved 222600-371000 USD

The mean screw density $-493/432=1.13$

Conclusion

- **Even with non segmental pedicle screw construct with low implant density of 1.13 we could achieve 74% of curve correction with improvement of thoracic kyphosis.**

**Minimizing the implant load
saves time and money
without compromising curve correction**



Disclosure declaration

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None of the authors has any potential
conflict of interest

