



## Less density pedicle screw construct for Adolescent Idiopathic Scoliosis

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### Background

Pedicle screws are used as bone anchors for reduction of spinal deformity and securing stability of the spine. Optimal implant density for Adolescent Idiopathic Scoliosis (AIS) surgery to ensure that is question for debate. Two screws per vertebra constructs is widely considered most secure option. Nevertheless, less density screw constructs is gaining popularity. At our institution, we have gradually adopted the strategy aspiring for average screw density 1.3 screws per vertebra. This study is aiming to evaluate radiological results as well as time and blood loss of deformity surgery for AIS patients in terms of correction of the coronal and sagittal deformity depending on density of pedicle screw construct.

### Methods

We analyzed preoperative and 1-year postoperative x-rays of patients with AIS operated at our institution. The length of surgery and blood loss was recorded. Cobb angle of major curve, thoracic kyphosis, and coronal balance was measured. Posterior approach was used in all cases. Intraoperative CT navigation was used in all cases.

### Results

Data from 79 AIS patients were available. The mean deformity correction was 65 % (min 26.6, max 94.6). There was minimal decrease in thoracic kyphosis (mean 0.16°, min 22° decrease, max 45° increase). Mean screw density was 1.66 (min 1.18, max

2.0). Correlation analysis showed weak negative correlation between screw density and correction percentage ( $R=-0.19$ ), weak positive correlation between screw density and blood loss ( $R=0.32$ ) as well as surgery time ( $R=0.4$ ). Screw density did not correlate with coronal balance at 1y follow up.

### **Conclusion**

Reduced screw density did not correlate with radiologic results of correction surgery for AIS in our cohort. Reduction of number of screws has a potential to reduce surgery time and blood loss for AIS surgery.

### **Disclosure**

Nothing to disclose for all authors.