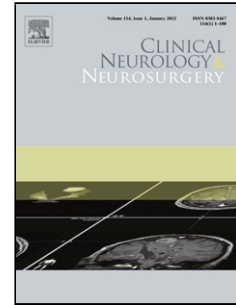


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Title: Relationship between vertebral morphology and the potential risk of spinal cord injury by pedicle screw in adolescent idiopathic scoliosis

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Abstract

Objective: We aimed to investigate the relative preoperative position of the spinal cord in AIS and explore the potential risk of spinal cord injury from placement of pedicle screws.

Patients and Methods: Twenty-seven patients with a mean age of 15 ± 1.8 years (range, 12–19 years) classified as having Lenke type 1 AIS (1A: 15 cases, 1B: 8 cases, 1C: 4 cases) were analyzed. The mean Cobb angle of the main curve was $55.9 \pm 14.4^\circ$. Axial CT myelography images were selected from the T4 to T12 vertebrae, and 243 images were analyzed. Outer cortical pedicle width, inner cortical pedicle width, pedicle length, chord length, transverse pedicle angle, the angle of rotation (RASag) of the vertebra, and the distance between the spinal cord and concave (Dc) and convex pedicles (Dv) were calculated from landmark locations.

Results: The mean concave outer cortical pedicle width was larger than the mean convex outer cortical pedicle width at T4, T5, T11, and T12 ($p < 0.05$) and smaller than the mean convex outer cortical pedicle width around the apex of the curve from T7 to T9 ($p < 0.05$). The mean concave inner cortical pedicle width was larger than the mean convex inner cortical pedicle width at T4, T5, and T11 ($p < 0.05$) and smaller than the

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