

Fig. E-1

Transverse computed tomography images showing the measurement of vertebral axial rotation. Line 1 was drawn perpendicular to the base of the computed tomography table. Line 2 was drawn between the anterior aspect of the midpart of the vertebral body and the spinous process. The angle A, subtended by Line 1 and Line 2, is the vertebral axial rotation angle. The vertebra is axially rotated toward to the screw side by 25°.

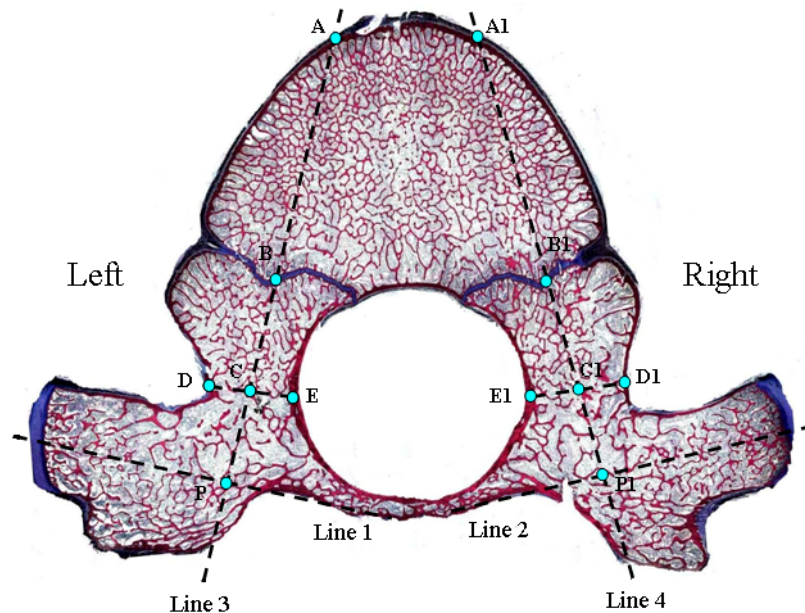


Fig. E-2

Transverse histological section of a vertebra in the control group, showing the measurement parameters of the pedicles. Line 1 was drawn through the left posterior element of the vertebra, and Line 2 was drawn through the right posterior element. B is the midpoint of the left neurocentral synchondrosis. The line between D and E is the width of the left pedicle, located at the narrowest portion of the pedicle. C is the midpoint of the line between D and E. Line 3 was drawn through points B and C. A is the point along Line 3 that intersects the anterior margin of the vertebral body. P is the point at which Line 3 intersects Line 1. The line between P and B is the length of the left pedicle, and the line between P1 and B1 is the length of the right pedicle. The line between D and E is the width of the left pedicle, and the line between D1 and E1 is the width of the right pedicle. The line between A and P is the anteroposterior length of the left pedicle, and the line between A1 and P1 is the anteroposterior length of the right pedicle.

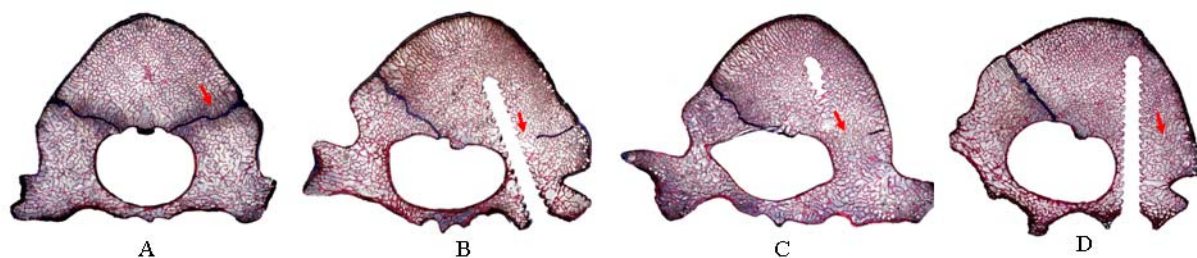


Fig. E-3

Transverse histological sections of vertebrae, showing the scale for grading the neurocentral synchondrosis on the screw side. A = grade 0: the neurocentral synchondrosis is intact and completely open (red arrow). B = grade 3: 50% closure of the neurocentral synchondrosis (red arrow). C = grade 4: 75% closure of the neurocentral synchondrosis (red arrow). D = grade 5: the neurocentral synchondrosis is completely closed (100% closure) (red arrow).