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Background: Thoracic pedicle screw application is common for posterior spinal fusion (PSF) in adolescent idiopathic scoliosis (AIS) cases. Little has been published addressing the direction of pedicle screw insertion, particularly in the sagittal plane. This study addressed a simple and novel free-hand technique of directing the sagittal inclination of thoracic pedicle screws, without the use of intraoperative monitoring, in AIS patients. **Methods:** A prospective radiographic and clinical study was conducted. Thoracic pedicle screw insertion between T1-T12 was performed in 66 consecutive AIS patients (N=510 pedicle screws) who underwent PSF. Intraoperatively, a right-angle, "Langenbach" retractor was utilized to define the sagittal direction of insertion. After surgery, the positions of the screws were evaluated using lateral radiographs. Screw location was described as the position of the screw tip with reference to three vertebral body zones (A, B, & C). Additionally, the screws were categorized as unacceptable if they perforated the pedicle or violated the superior or inferior disc spaces. **Results:** There were 15 males (22.7%) and 51 females (77.3%), with a mean age of 15.0 years. Pedicle screws were inserted between T1-T12, with a mean of 7.7 screws inserted per patient. 501 screws (98.2%) were located in Zones A or B, and only 9 screws in Zone C (1.8%). None of the patients had intra- or postoperative neurological sequelae. **Conclusion:** We report a simple, free-hand technique of directing the sagittal inclination of pedicle screws, without the use of intraoperative radiographic monitoring in AIS patients.