

## UPPER INSTRUMENTED VERTEBRA TILT ANGLE IN LENKE 1 AND 2 ADOLESCENT IDIOPATHIC SCOLIOSIS PATIENTS WITH POST-OPERATIVE MEDIAL SHOULDER BALANCE

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### INTRODUCTION:

Adolescent Idiopathic Scoliosis (AIS) is the commonest form of all idiopathic scoliosis. One of the main goals of scoliosis surgery is to improve cosmesis. Nevertheless, post-operative shoulder imbalance is a common phenomenon, with incidence reported up to twenty-five percent. Medial shoulder asymmetry is reflected clinically by trapezium prominence and radiologically by T1 Tilt, first rib angle whereas lateral shoulder asymmetry is represented clinically by clavicle angle. UIV tilt angle is calculated based on cervical supine side bending radiographs. In our centre, this radiography procedure is performed by orthopedic residents with maximal passive side bending of neck with neck in neutral rotation. This pre-operative radiography protocol is not routinely performed in other centres to the best of our knowledge.

### METHODS:

A retrospective study was conducted between June 2021 and December 2021, evaluating all Lenke 1 and 2 AIS patients who underwent posterior spinal fusion between January 2013 and June 2019. Radiological parameters (UIV tilt angle, clavicle angle, T1 tilt, cervical axis, coronal balance, coronal Cobb angle and sagittal Cobb angle) were measured on digital software PACS system. Radiological measurements of medial shoulder balance were done post-operatively and at 24-month follow-up.

### RESULTS:

A total of 109 AIS patients were recruited in this study. 93 of them were female adolescents (85.3%), while 16 (14.7%) were male adolescents. Sorted by Lenke type, there were 28 patients with Lenke 1 negative

pattern, 47 patients with Lenke 1 positive pattern while the remaining 34 patients had Lenke 2 curve pattern.

Table 1: Final UIV tilt angle that produced medial shoulder balance are shown in table below

Lenke types	Final UIV tilt angle
Lenke 1 negative	-6.6 ± 1.9° (-11,1)
Lenke 1 positive	-4.5 ± 3.8° (-11,3)
Lenke 2	-4.5 ± 3.8° (-11,3)

### DISCUSSION:

Post-operative shoulder imbalance is one of the known causes of major dissatisfaction among AIS patients and parents after posterior spinal fusion surgery. Final UIV tilt angle that approximates pre-operative optimum UIV tilt produces favourable medial shoulder balance in Lenke 1 and 2 AIS patients.

### CONCLUSION:

Achieving post-operative medial shoulder balance is possible by thorough pre-operative planning and evaluation from properly-performed cervical supine side bending radiographs.

### REFERENCES:

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