

HOW DO THE SHOULDER AND NECK BALANCE PROGRESS FOLLOWING POSTERIOR SPINAL FUSION (PSF) IN LENKE 1 AND 2 ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS)?

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Background:

Shoulder/neck imbalance may lead to patients' and parents' dissatisfaction following AIS surgery. However, the progression of post-operative shoulder/neck imbalance in AIS is unclear.

Objectives:

To investigate the progression of post-operative shoulder/neck imbalance among Lenke 1 and 2 AIS patients at minimum 5-year follow-up.

Methods:

We retrospectively reviewed 60 patients. Medial shoulder balance was represented by T1 tilt and was defined as 'balanced' (MB) when $-3^{\circ} \leq \text{T1 tilt} \leq 3^{\circ}$. T1 tilt $> 3^{\circ}$ was defined as medial shoulder imbalanced positive (MI+ve). T1 tilt $< -3^{\circ}$ was defined as MI-ve. Lateral shoulder balance (LSB) was represented by clavicle angle (Cla-A) and was defined as 'balanced' (LB) when $-2^{\circ} \leq \text{Cla-A} \leq 2^{\circ}$. LI+ve was $\text{Cla-A} > 2^{\circ}$; LI-ve was $\text{Cla-A} < -2^{\circ}$. Cervical axis (CA) represented 'Neck Balance' and defined as 'balanced' (NB) if $-3^{\circ} \leq \text{CA} \leq 3^{\circ}$. NI+ve was $\text{CA} > 3^{\circ}$ and NI-ve was $\text{CA} < -3^{\circ}$. Shoulder and neck balance were compared at 6-month post-operative (FU1) and at minimum 5-year follow-up (FU2).

Results:

At FU1, 51.7% obtained MB, 33.3% had MI+ve while 15.0% had MI-ve. Among the MB group, 90.3% remained MB at FU2. 60% of patients with MI+ve at FU1 remained MI+ve; 40.0% achieved MB at FU2. Among patients with MI-ve at FU1, 88.9% remained MI-ve at FU2. Only 1 patient achieved MB. For LSB, 70% achieved LB, 26.7% had LI+ve and 3.3% had LI-ve at FU1. 81.2% of LI+ve patients at FU1 achieved LB during FU2. At FU1, 76.7% achieved NB, 20.0% had NI+ve and 3.3% had NI-ve. 95.7% of patients who had NB during FU1 remained NB at FU2. However, 41.7% of those with NI+ve at FU1 remained as NI+ve at FU2.

Conclusion:

At minimum 5-year follow-up, most patients with MI+ve and MI-ve remained imbalanced. 40% NI+ve patients remained NI+ve. However, majority of patients achieved LB.