

SPINAL FUSION FOR ADOLESCENT IDIOPATHIC SCOLIOSIS: DOES FUSION AT T2, T3 OR T4 AFFECT THE RANGE OF MOTION OF CERVICAL SPINE AND THE FUNCTIONAL OUTCOME AT THE CERVICAL SPINE?

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Purpose:

This study aimed to evaluate the relationship between upper instrumented vertebra (UIV) level and correlate with cervical range of motion and its functional outcomes in Adolescent Idiopathic Scoliosis (AIS) patients, treated with posterior instrumentation.

Materials and Methods:

Forty-nine AIS patients that underwent posterior fusion with pedicle screw instrumentation were retrospectively evaluated. Patients were divided into three groups according to UIV level (T2, T3, T4). Range of motion (ROM) of neck including flexion, extension and lateral bending were measured using cervical range of motion (CROM) device. Clinical outcomes were assessed using scoliosis research society (SRS) -22, questionnaires.

Results:

Post-operative ROM for the cervical region shows less degree of flexion (55.93), extension (45.21), right lateral bend (37.79) and left lateral band (37.43) of UIV at T2 compared at T3 flexion (61.27), extension (53.80), right lateral bend (40.67) and left lateral band (41.60) and flexion (60.85), extension (52.65), right lateral bend (39.40) and left lateral band (39.40) of UIV at T4. For the assessment of SRS22R, there was no significant difference between the groups.

Discussion:

Achieving balanced spinal fusion, preventing further deformity and preserving motion segments have always been the desirable goals. Neck mobility is essential for many activities of daily living (ADL) and also to maintain quality of life. Loss of spinal mobility could be detected following extensive vertebral fusion, and scoliosis patients with spinal fusion have been proven to have reduced spinal mobility.

Conclusion:

AIS patients that were treated with UIV selected at T2 are more likely to develop reduction in cervical ROM. However, these changes did not affect the clinical outcome scores. Hence, extending the fusion to appropriate level for shoulder balance seems reasonable.