

IS DEGENERATIVE SCOLIOSIS A RISK FACTOR FOR ADULT THORACOLUMBAR SPINAL FRACTURES?: A MULTI-RACIAL ASIAN PATIENT REVIEW

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Background

Adult spinal deformity (ASD) is a three-dimensional spinal deformity and is biomechanically less stable as compared to a normal spine.

Objectives

We hypothesized that the biomechanical instability associated with ASD will increase the risk of spinal fractures.

Methods

An observational, cross-sectional, cohort study was performed. We included all patients ≥ 40 years old with DEXA scans in a single university hospital.

Results

A total of 7075 patients (6476 males, 599 females) were included in our cohort. The average age of the patients was 60.7 ± 10.6 years old. 645 patients had scoliosis (9.1%). 202 (2.9%) patients had concomitant spinal fractures, of which 67 (33.1%) had scoliosis.

Multivariate analysis showed that increasing age (OR = 1.1, 95% CI: 1.1-1.2, $p=0.00$), Chinese ethnicity (OR=2.6, 95% CI: 1.1-6.6, $p=0.036$), and osteoporosis (OR=1.7, 95% CI: 1.3-2.1, $p<0.001$) were at increased risk of spinal fractures.

Scoliosis was found to be a significant risk factor for development of spinal fractures (OR = 5.37, 95% CI=3.96-7.28, $p=0.001$). Further subgroup analysis showed that the prevalence of spinal fractures increased exponentially as the magnitude of Cobb angle increased.

The most common fracture location was at the thoracolumbar junction (T12/L1, 56.8%). A trend was noted towards spinal fractures occurring at upper end vertebra of the scoliotic curve, although it did not reach statistical significance ($p = 0.150$).

Conclusion

Patients with scoliosis are 5.4 times more likely to develop spinal fractures as compared to patients without scoliosis. Furthermore, as scoliosis worsens in severity, the risk of spinal fracture increases exponentially from 4.8 times to 6.1 times. Other risk factors included: increasing age, Chinese ethnicity, and osteoporosis.