

# Outcomes of Operative and Nonoperative Treatment for Adult Spinal Deformity (ASD): A Prospective, Multicenter Matched and Unmatched Cohort Assessment with Minimum 2-Year Follow-Up

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## Introduction

Adults with spinal deformity typically present with pain and disability.

## Aim

Our objective was to compare outcomes for operative (op) and nonoperative (nonop) treatment for ASD based on a prospective, multicenter patient population.

## Material and Methods

This is a multicenter, prospective analysis of consecutive ASD patients electing for op or nonop care at enrollment. Inclusion criteria: age > 18 year and ASD. Propensity scores were used to match op and nonop patients based on baseline (BL) ODI, SRS22, maximum thoracolumbar/lumbar Cobb angle, pelvic incidence to lumbar lordosis mismatch (PI-LL), and leg pain numeric rating scale (NRS) score.

## Results

A total of 689 patients met with the criteria, including 286 op and 403 nonop, with mean ages of 53 and 55 years, minimum 2-year follow-up rates of 86 and 55%, and mean follow-up of 24.7 and 24.8 months, respectively. At BL, compared with nonop, op patients had significantly worse HRQL based on ODI, SRS22, SF36, and leg and back pain NRS ( $p < 0.001$ ) and had worse deformity based on pelvic tilt, PI-LL, and C7SVA ( $p \leq 0.002$ ). Before reaching minimum 2-year follow-up 38 nonop patients converted to op treatment and were analyzed in the op group. At minimum 2-year follow-up all HRQL measures assessed significantly improved for op patients ( $p < 0.001$ ), but none of these measures improved significantly for nonop patients ( $p \geq 0.11$ ). Total 97 matched op–nonop pairs were identified based on propensity scores. At last follow-up the 97 matched op patients had significant improvement in all HRQL measures assessed ( $p < 0.001$ ), but the 97 matched nonop patients lacked significant improvement in any of the HRQL measures ( $p \geq 0.20$ ). Paired op–nonop analysis demonstrated the op patients to have significantly better HRQL scores at follow-up for all measures assessed ( $p < 0.001$ ), except SF36 MCS ( $p = 0.058$ ). Overall minor and major complication rates for op patients were 53 and 40%, respectively.

## Conclusion

Op treatment for ASD can provide significant improvement of HRQL measures at minimum 2-year follow-up. In contrast, nonop treatment appears to at best maintain presenting levels of pain and disability.