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Isolating the Effect of the Lateral Approach in Combined Anterior and Posterior Surgery for Adult Spinal Deformity: A Radiographic Analysis

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Summary: Adult spinal deformities frequently require anterior and posterior procedures to achieve desired correction. Acceptable (40%) deformity correction can be seen in patients with advanced adult lumbar scoliosis with the use of XLIF. Even greater correction (66%) can be achieved using combined XLIF + posterior spinal fusion.

Introduction: Adult patients with significant spinal deformities frequently require combined anterior and posterior procedures to achieve desired correction. The use of XLIF has recently become a surgical alternative to the traditional anterior approach; however, quantifying the degree of deformity correction after the XLIF procedure has not yet been performed. The purpose of this study was to examine the isolated radiographic results immediately after XLIF in combined anterior and posterior surgery.

Methods: Radiographs and chart review was conducted at single institution on all patients who underwent multilevel XLIFs for adult lumbar deformity. Only patients who had full length scoliosis radiographs immediately following the XLIF procedure were included. All patients had the posterior procedure performed as a second stage 3-5 days later.

Results: Fifteen patients were included in the study. 10 had combined XLIF and posterior spinal fusion while 5 were stand-alone. For all patients, average age was 63 years (range 24 to 82) and average number of XLIF levels was 3.6 (3-5). Mean pre-op Cobb angle was corrected from 48° (range 22° to 92°) to 27° (range 14° to 53°) immediate post XLIF (43%). Mean lumbar lordosis was corrected from 36° (range 6° to 62°) to 44° (range 15° to 63°) immediate post XLIF. Mean pre-op Cobb angle within the XLIF levels was reduced from 40° to 21° (47%) and mean pre-op lordosis within the XLIF levels was restored from 17° to 28°. The second stage posterior fusion (PSF) reduced the Cobb angle an additional 26%.

Conclusion: Multilevel XLIFs alone can provide acceptable immediate post-operative radiographic correction (40%) in advanced adult lumbar scoliosis. Using a combination of XLIF and PSF procedures provides an average immediate post-op Cobb angle correction of 66%.

Significance: Acceptable deformity correction (40%) is seen in patients with advanced lumbar adult scoliosis with the use of XLIF. Even greater correction can be achieved with combined XLIF/posterior spinal fusion (66%). These results show XLIF combined with PSF can successfully correct lumbar scoliosis and is similar to previously reported results with traditional open anterior and posterior surgery.