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Original article**Anterior lumbar sagittal alignment after anterior or lateral interbody fusion**

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Abstract

Purpose: Anterior or lateral interbody fusion is a treatment option for lumbar disc disease. A segmental change occurs after such surgery. This study was designed to evaluate the changes in the lumbar regional alignment after a single or two-level standalone anterior or lateral interbody fusion (ALIF or LLIF).

Methods: Data from patients referred to our institution between March 2013 and November 2015 for standalone ALIF or LLIF for low-grade isthmic spondylolisthesis or degenerative discopathy were retrospectively included in our analysis. Patients with a history of spinal fusion were excluded. Global and regional alignments were analyzed pre and postoperatively. Pelvic tilt (PT), sacral slope (SS), Sagittal Vertical Axis (SVA), Lumbar Lordosis (LL), index segmental lordosis (ISL) and L4S1 lordosis were compared. Three groups according to the pelvic incidence (PI) (low, normal and high) were separately analyzed then compared.

Results: Forty one women and 27 men (mean age was 46 years - range 25 - 66) were included. The mean follow-up was 10.8 (range 3-34 months). The patients were globally well balanced preoperatively and remained after surgery (SVA stagnated from 16.76 ± 28.42 mm to 15.97 ± 28.20 mm $p=0.75$). PT and LL did not vary. L4S1 lordosis, and ISL were significantly increased respectively from 30.56 ± 8.59 to 34.58 ± 7.47 ($p=0.0026$) and from 5.94 ± 5.25 to 12.99 ± 5.87 ($p<0.0001$) at latest follow-up.

Conclusion: Despite effective changes in the segmental lordosis at the index levels, our findings suggest that one or two-levels standalone ALIF or LLIF had no effect on the global balance and the lumbar lordosis. The three groups behaved similarly, the regional lordosis was redistributed in a better harmony (L4S1/LL ratio went up from 55% to 61%, $p=0.01$).

Study type: Retrospective study

Reference level: Niveau 4

Keywords:

spinopelvic alignment; sagittal balance; anterior lumbar interbody fusion; lateral lumbar interbody fusion; segmental lordosis

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