

**Latin America Online Summit**

**Title: Spinal Alignment Comparison for Lateral Versus Supine L5-S1 ALIF in the Treatment of Patients with Degenerative Conditions of the Lumbar Spine**

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**Keywords:** ALIF = anterior lumbar interbody fusion; SPS = single-position surgery; lumbosacral arthrodesis, spinopelvic parameters.

**Introduction**

**Anterior lumbar interbody fusion (ALIF) is a widely accepted technique for lumbar fusion. The traditional ALIF (S-ALIF) approach utilizes a supine patient position with the surgeon approaching L5-S1 through a variety of incision starting points. With the introduction of lateral single-position surgery techniques that allow for lateral (e.g., XLIF) procedures from L4-5 and above and posterior pedicle screw fixation without prone patient repositioning, a modified ALIF via an anterolateral retroperitoneal approach (lateral ALIF [L-ALIF]) permits access to L5-S1 to extend anterior column access from a single position across the thoracolumbar to sacral spine. The objective of this multicenter, retrospective study was to assess differences in spinopelvic parameters (lumbar lordosis, segmental lordosis, restoration of disc space height, and reduction of spondylolisthesis (when present)) following L-ALIF as compared to S-ALIF at L5-S1.**

**Materials & Methods**

Radiographs from 479 consecutive patients who underwent L5-S1 L-ALIF (n=317) or S-ALIF (n=162) for degenerative lumbar conditions were included. Patients treated at L4-5 and above with other single-position interbody fusion and posterior fixation techniques were included in the analysis. Lumbar lordosis, L5-S1 segmental lordosis, L5-S1 disc space height, and reduction of L5-S1 spondylolisthesis were measured on preoperative and postoperative lateral X-ray images. Of the 479 patients included in this study, 276 (58%) patients were female, the mean age at surgery was 56.9 years, and the mean body mass index was 29.5 kg/m<sup>2</sup>.

## **Results**

From preoperative to postoperative, mean lumbar lordosis improved by 5.0° and 4.9° in L-ALIF and S-ALIF groups, respectively (p=0.874). Over the same period of time, the mean L5-S1 segmental lordosis also improved by 6.4° and 4.9° in L-ALIF and S-ALIF groups, respectively (p=0.1149). The L5-S1 disc space height also increased from preoperative to postoperative by 6.5 mm and 6.3 mm in L-ALIF and S-ALIF groups, respectively (p=0.596) and the spondylolisthesis slip reduced by 1.4 mm and 2.2 mm in L-ALIF and S-ALIF groups, respectively (p=0.146).

## **Conclusions**

The results of this study show that L5-S1 ALIF in both lateral and supine positions led to postoperative improvement in segmental lordosis, overall lumbar lordosis, restoration of disc space height at L5-S1, and reduction of spondylolisthesis. Overall improvement in radiographic outcomes following both L-ALIF and S-ALIF procedures suggests that L-ALIF appears to be a reasonable alternative to S-ALIF

for L5-S1 interbody fusions. Further, these results suggest that single-position techniques (e.g., XLIF and ALIF and posterior fixation, all in the lateral position) result in substantially equivalent discal and sagittal alignment correction.

#### References

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