Comparison of Segmental Lordosis Gain with standard LLIF or PTP.

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The lateral lumbar interbody fusion (LLIF) is a safe and effective technique to treat a vast range of lumbar disorders. However recent reviews of the literature point out that the technique might not be able to improve the segmental lordosis in the proportion that was thought.

A new technique that sets the patient in a prone position to perform the lateral approach may provide additional lumbar lordosis gain to the standard LLIF approach.
Methods

Retrospective, Multi-center, Non-comparative, Non-randomized study

Inclusion:
Patients that underwent one-level LLIF in lateral position or prone position (without levels restrictions) in the last year (2019-2020).

Exclusion:
Patients that received anterior ligament release or three-column osteotomies. And patients lacking pre or postoperative lateral X-rays

58 LLIF patients after query
33 PTP patients after query

exclusion

27 patients included
32 patients included

1 patients due to ALL rupture
31 not at the last year

Outcomes
Segmental Lordosis Gain

Measures
Segmental Lordosis PosOp – Segmental Lordosis PreOp

Comparisons
Intra and Between Groups; T.Test
• In the PTP group 32 two patients were included in the study, making up to 43 levels. In the LLIF group 27 patients were included making up to 27 levels.

• Every patient had all radiological (both preoperative and postoperative) images enabling the intended measures

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<th>PTP</th>
<th>LLIF</th>
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<tbody>
<tr>
<td>N° of operated levels (Patients)</td>
<td>1 – (23); 2 – (6); 3 – (2); 4 – (1)</td>
<td>1 – (27)</td>
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<tr>
<td>Operated Levels (Number)</td>
<td>L4L5 (19); L3L4 (14); L2L3 (11); L1L2 (1)</td>
<td>L4L5 (19); L3L4 (5); L2L3 (2); L1L2 (1)</td>
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The prone transpsoas promoted a mean gain of 6,1° segmental lordosis gain. While the LLIF promoted a gain of about 1,6° (p<0,05).
When comparing the gain of segmental lordosis per level the prone transpsoas promoted significantly more gain at both L4L5 and L3L4 (p<0.05).
Recently several review articles have pointed out that despite the LLIF promotes a higher segmental lordosis gain than other techniques (except ALIF), it does not promote a significant segmental lordosis increase, with values ranging from $2.0^\circ - 4.0^\circ$.

To improve the amount of segmental lordosis gain, Pimenta et al., 2019 proposed a new approach to the standard LLIF. With the patient now placed in a prone decubitus over a Jackson Table with the hip and legs extended, theoretically enhancing the natural segmental lordosis, therefore allowing the insertion of more lordotic cages.

Our work showed that the PTP was able to produce a considerable amount of segmental lordosis gain $6.1^\circ$, while the LLIF prompted a gain around $1.6^\circ$.

The limitations of our work include that it was a retrospective design that might cause the loss of patients or bias in the study. Another limitation was we include only patients that received one-level LLIF in the last year.
The prone transpsoas were able to promote a significantly higher segmental lordosis gain than the standard LLIF.