Posterior Column Osteotomy Increases Segmental Lordosis Vs. Prone LLIF without Osteotomy

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INTRODUCTION

Prone lateral lumbar interbody fusion (pLLIF) offers a minimally invasive (MIS) option to achieve indirect decompression, disc height restoration, coronal correction, and fusion in degenerative pathologies with potential for improved lordosis restoration compared to a traditional LLIF. Posterior column osteotomies (PCO) are often used as a mechanism for lordosis restoration by shortening the posterior elements. However, the simultaneous use of PCO with LLIF in the prone position has not been studied yet.

OBJECTIVES

To evaluate the amount of lordosis correction with pLLIF with and without posterior column osteotomies.

MATERIALS & METHODS

We reviewed the charts of the patients operated on for degenerative pathologies using an LLIF in a single prone position from January 2019 to July 2021.

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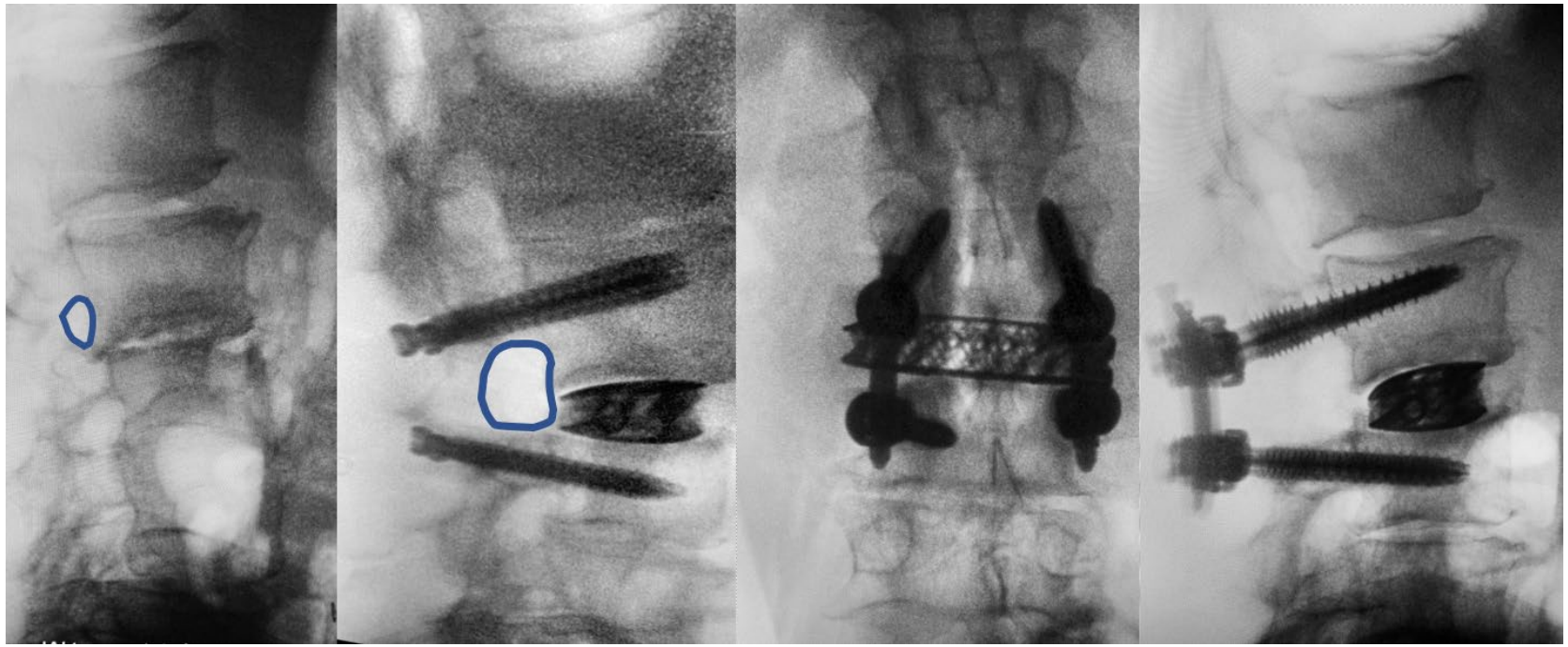
RESULTS

94 levels in 58 patients underwent an LLIF with posterior screws (n=38, single level; n=16, 2-levels; n= 8, 3-levels) in prone lateral single position over a course of 18 months. The pLLIF were divided into 2 groups: 69 Levels with PCO and 25 without it.

All patients with PCO had prior posterior surgery. In all groups, there were no significant differences in mean implant sizes, and length of stay was similar in both groups. Overall segmental lordosis correction of both groups was an average of 8.8 degrees. However, the PCO group was significantly greater than the none PCO group (5.4 degrees vs 10.6: p=0.037). Complications for the LLIF + PCO were one anterior longitudinal ligament rupture that required lateral plating and one return to OR for secondary stenosis secondary to angular correction.The overall rate of thigh dysesthesias was 12.7%, with no differences in the groups.



CONCLUSION

We found that navigated pLLIF with simultaneous PCO significantly increased segmental lordosis and can be utilized as an intermediate adjunct to anterior column realignments (ACR) and pedicle subtraction osteotomies (PSO). As with all osteotomies, it is important to recognize the capacity to destabilize or create a secondary stenosis.