

SUMMARY

This is a preliminary radiographic analysis of early post-op results using an expandable cage FDA approved for use in the interbody space. We compared disc expansion, disc angle, and regional lordosis of the expandable cage in 13 patients (15 discs) to a matched control group using a static rectangular PEEK TLIF cage. The expandable cage produced better post-op anterior and mid disc height and greater segmental lordosis than the control cage. Regional lordosis was unchanged with either cage.

INTRODUCTION

Posterior interbody fixation is limited by a balance between graft size and safety of insertion. An expandable TLIF cage could improve structural fill of the interspace, disc height, and segmental lordosis while minimizing risk to neural elements. This study compared change in disc height, segmental lordosis, and regional lordosis (L1-S1) with TLIF using a FDA approved expandable cage (EC) vs. a static, rectangular PEEK TLIF cage.

METHODS

Matched cohort analysis comparing patients treated with the expandable cage to a control group matched for surgical level, pre-op disc height and segmental lordosis. AP and lateral radiographs taken pre-op and 3–6 weeks post-op. Outcome variables include changes in disc height, and segmental and regional lordosis. Differences in disc heights and lordosis measures were compared using paired t-tests.

RESULTS

The study cohort included the first 13 EC patients (15 discs). EC and Control groups increased anterior, mid, and posterior disc height ($p < 0.001$) from pre-op. Both groups increased segmental lordosis (EC $p < 0.001$; control $p = 0.019$). Regional lordosis was not affected in either

group. EC group improved segmental lordosis, anterior and mid disc height more than control ($p=0.002/0.002/0.001$); EC posterior disc height also improved more than control but was not significant ($p=0.14$).

Anterior Disc Height (mm)

Expandable Cage
Control Cage

Pre Op

11.2 (4-15)

11.6 (8-15)

Post Op

16.3 (8.5-22)

13.8 (12-16)

Mid Disc Height (mm)

Pre Op

8.5 (3-11.4)

8.5 (4-11)

Post Op

13.1 (7.5-16.6)

10.6 (9-12)

Posterior Disc Height (mm)

Pre Op

5.6 (2-8.5)

5.1 (2-7)

Post Op

8 (3-11.5)

6.8 (5-9.5)

Segmental Lordosis (°)

Pre Op

11.5 (3-19)

11.7 (6-18)

Post Op

16.5 (4-22)

13.4 (8-20)

Regional Lordosis (°)

Pre Op

54.4 (41-65)

52.6 (31-68)

Post Op

54.2 (40-69)

52.8 (32-67)

CONCLUSIONS

The use of an expandable TLIF cage increased post-op anterior, mid, and posterior disc heights and average disc angle compared to a static rectangular cage. Regional lordosis was unaffected.

SIGNIFICANCE

The ability to expand an interbody cage after insertion positively impacts segmental height and lordosis.