COMPARISON BETWEEN PREOPERATIVE AND POSTOPERATIVE LOCAL COBB ANGLE AFTER MONOSEGMENTAL UNILATERAL AND BILATERAL POSTERIOR LUMBAR INTERBODY FUSION (PLIF)

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Introduction

Posterior lumbar interbody fusion (PLIF), described by Cloward in 1943, is the gold standard nowadays in the treatment of spondylol is thes is and degenerative disc disease. The benefits of the procedure are secure fixation of the vertebral body, maintaining the intervertebral space height, and supporting the anterior column, thus providing satisfactory bone fusion while maintaining biomechanical stability. The unilateral pedicle screw PLIF has similar outcomes clinically. However, because the unilateral pedicle screw involves a shorter surgical time, less blood loss, decreases the stiffness of the instrumented segment, and leaving the muscles on one side undisturbed decreases postoperative pain and helps better rehabilitation. Therefore, unilateral pedicle screw PLIF might be more suitable in performing single segment pedicle screw fixation and lumbar interbody fusion. This research was conducted aiming to compare between PLIF with unilateral and bilateral fixation in restoring segmental lordosis by measuring local Cobb angle pre and post-operatively.

Aim of the work

This study aims to compare between pre and post-operative local Cobb angle after PLIF either with unilateral or bilateral fixation, using PEEK cages.

PATIENTS:

This is a retrospective study that will include 66 patients with degenerative lumbar disc disease; 33 of whom underwent PLIF with bilateral fixation while the other 33 underwent PLIF with unilateral fixation. All patients were done at the spine unit at El-Hadra Orthopaedic University Hospital, Alexandria, Egypt.

Methods:

The lateral views of each patient pre-operative and post-operative were put in surgimap software to measure the local Cobb angle and the measure is then tabulated in an excel sheet to be ready for statistical analysis. The Cobb angle will be measured between the upper and lower endplates of the operated segment. A lordotic angle is considered positive while a kyphotic angle is considered negative.

Results:

The difference in Cobb's angle:

The comparison between pre, post, and the difference in Cobb angle in the two studied groups show insignificant difference, but the difference in angle in the bilateral group was significantly higher than the unilateral group, in the unilateral group the difference was 4.95±3.13, while in the bilateral group was 6.48±3.59 ($p < 0.05$).

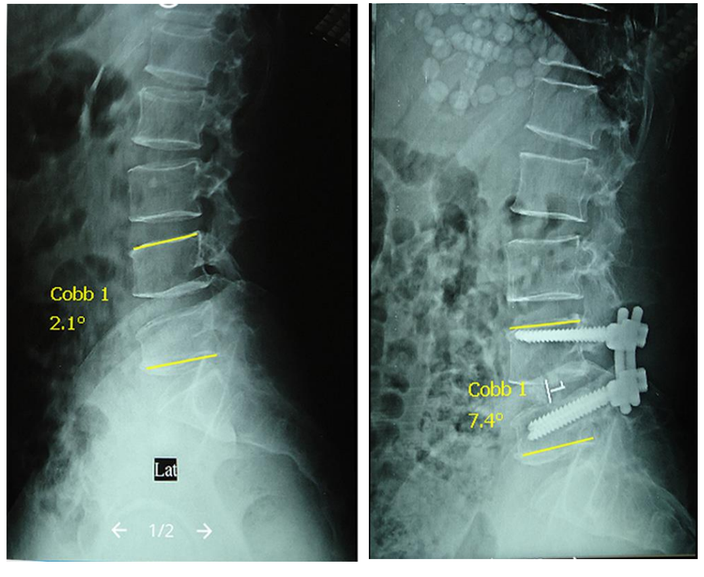

Figure :

- 52-year-old male patient.
- PLIF with bilateral fixation L4-L5 for disc prolapse.
- Preoperative Cobb angle=2.1
- Postoperative Cobb angle= 7.4

Table : Comparison between pre, post, and the difference in Cobb angle in the two studied groups.

	Unilateral	Bilateral	t	P-value
Pre Cobb angle				
Range	1.10-34.90	-.20-26.20	3.448	0.068
Mean	16.12	12.64		N.S.
S.D.	8.01	7.19		
post-Cobb angle				
Range	4.50-37.30	1.50-37.90	0.948	0.334
Mean	21.07	19.12		N.S.
S.D.	7.96	8.24		
Difference				
Range	0.90-15.00	-.40-14.40	3.435	0.042*
Mean	4.95	6.48		
S.D.	3.13	3.59		

Conclusions

Both Study groups had a better result in the correction of lordosis.
The PLIF with bilateral fixation has a better correction in mono-segmental lordotic angle. The correction of the lordotic angle in the lower lumbar segments is better than the upper lumber segments.
Still, we need to conduct this study on a larger number of patients for a longer follow-up time to assess the advantages of keeping the lordotic angle in both groups.