INCIDENCE AND INFLUENCE OF DEPRESSION AND ANXIETY ON CLINICAL OUTCOME BEFORE AND ONE YEAR AFTER SPINE SURGERY FOR DEGENERATIVE DISC DISEASE

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Objective
It is widely accepted that psychiatric comorbidities have a negative influence on clinical outcome following spine surgery for degenerative disc disease. However, most published data is restricted to postoperative measurements and data from preoperative settings in lacking. We previously demonstrated that mental comorbidities at 3 months follow up are very common and negatively influence clinical outcome. Aim of this study was to assess the incidence and influence of mental comorbidities on clinical outcome one year after surgery.

Methods
A prospective study of patients undergoing elective spine surgery performed. Evaluation for depression (ADS-K score) and anxiety (STAI-S, STAI-T and ASI-3 scores) were done before and one year after surgery. In addition SF36 physical composite score (PCS), Oswestry Disability Index (ODI), EuroQOL 5D and pain visual analog scale (VAS) were completed preoperatively, 3 and 12 months follow up. Incidence and influence of these psychiatric comorbidities on clinical outcome were examined.

Results
184 patients met the inclusion criteria. 52.7% were male, mean age was 59.4 years. Abnormal anxiety scores were observed in 59.2%, 36.8% and 40.1% of cases before, at 3 and 12 months follow up, respectively. 25.0% of the patients showed abnormal ADS-K scores preoperatively compared to 10.5% and 14.5% at 3 and 12 months follow up, respectively. However, only 10.6% and 6% of patients developed anxiety and depression only following surgery, respectively. At one year follow up patients with abnormal anxiety scores showed a reduced clinical outcome compared to their counterparts (SF36 PCS: 34.7 vs 41.0, P=0.005; EuroQol Index: 0.66 vs 0.82, P=0.001; ODI: 30.3 vs 17.8 p=0.008). Moreover abnormal ADS-K scores at one-year follow up were also associated with reduced clinical outcome (SF 36 PCS: 33.5 vs 39.7, P=0.01; EuroQol Index: 0.55 vs 0.79, P=0.001; ODI: 34.3 vs 19.4 p=0.008).

Conclusion
The incidence of depression and anxiety disorders in patients undergoing elective spine surgery is very high. This was also associated with unfavourable outcome one year after surgery. The standard scores for mental health seem highly nonspecific in the preoperative period. Spine specific screening tools are needed.

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ADJACENT SEGMENT DEGENERATION AFTER LUMBAR TOTAL DISC REPLACEMENT: 5-YEAR RESULTS OF A MULTICENTER, PROSPECTIVE, RANDOMIZED STUDY WITH INDEPENDENT RADIOGRAPHIC ASSESSMENT

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Introduction: One of the potential benefits of lumbar total disc replacement (TDR) over fusion for the treatment of painful disc degeneration is the possibility of reducing adjacent segment degeneration (ASD). There has been little investigation into this area in large prospective studies. The purpose of this study was to analyze pre- to post-operative changes of the disc adjacent to the level receiving a TDR at 5 year follow-up.

Methods: Patients from 14 sites were enrolled in the study, 218 assigned to the investigational group, activL® and 106 assigned to the control group, ProDisc-L. All patients were treated for single-level symptomatic disc degeneration non-responsive to non-operative care.

Flexion/extension, neutral lateral and anteroposterior radiographs were made at each study visit. Pre- and 5-year post-operative radiographs were available for 135 patients in the investigational group and 63 patients in the control group. All radiographs were evaluated by an independent lab specializing in image assessment. Measurements made from the radiographs included adjacent segment degeneration based in the Kellgren-Lawrence scale and the scale described by Zigler et al. (JNS 2012), range of motion, disc height, and translation.

Results: When compared to pre-operative images, 8.8% of the investigational group and 19.0% of the control group had increased ASD scores at 5-year follow-up (p<0.05). Results were the same using either the Kellgren-Lawrence or the Zigler ASD scale. Figure 1 provides the percentage of patients in the investigational group with increased ASD scores from pre-operative to 5 year post-operative for each degree of range of motion at the TDR level at 5 years. For each additional degree of range of motion, there was a consistent decrease in the percentage of patients with ASD. The rate of ASD was significantly greater in patients more than 40 years of age than those aged 40 years or less (19.6% vs. 5.0%; p<0.01; data pooled for investigational and control groups).

Discussion: The results of this prospective, 5-year follow-up study found that the rate of adjacent segment degeneration was 8.8% for the activL® device. This is similar to the rate of 9.2% reported in another TDR study with 5-year follow-up (Zigler et al, JNS, 2012). That study found ASD to be significantly less with TDR than with fusion. The rate of ASD declined with increasing range of motion at the TDR level, possibly suggesting a protective effect of motion. The higher rate of ASD among older patients may suggest that some changes in adjacent level discs may be attributable to the aging process. The current study adds further support that increased motion reduces the occurrence of adjacent segment degeneration.

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A PROGNOSTIC MODEL OF THE OUTCOME OF SURGERY FOR DISC HERNIATION

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Introduction
Spine surgeons need to be able to make evidence-based predictions regarding the outcome of their surgical procedures, based on reliable prognostic information. The risks and benefits of different treatment modalities must be adequately communicated to the individual patient. This is particularly important in view of recent developments towards shared decision-making, where physicians and patients both actively participate in selecting the therapeutic intervention. There is a lack of validated prognostic tools to support the spine surgeon in daily practice. Some evidence is available regarding various predictors of surgical outcome; however, to date no studies have developed comprehensive clinical prediction models for spine surgery. We used Spine Tango registry data collected in our own clinic to develop prognostic models for patients with lumbar herniated disc to predict their outcome 12 months after spine surgery.

Methods
Predictor variables were drawn from the Spine Tango surgery forms and patient forms of the registry. Potential predictors included patient sex and age, extent of lesion, number of previous surgeries, surgeon experience and specialty (neuro/ortho), insurance type (private/semi-private/general), morbidity state (ASA), BMI, smoking status, patient’s declared main problem (back pain/leg pain/sensory disturbances/other), preoperative Core Outcome Measures Index (COMI) score, preoperative back pain, and preoperative leg pain. Outcome variables were recorded on the 12-month patient questionnaire and included COMI score and back and leg pain. Prediction models were fitted with the least absolute shrinkage and selection operator (lasso) coefficient shrinkage method using the full cohort.

Results
A total of 1127 patients (43% female; median age 48, range 15-89) with lumbar herniated disc were identified. The median preoperative COMI score was 8 (range 1-10), median back and leg pain were 4 (0-10) and 7 (0-10). Postoperative, the median COMI score was 2.5 (0-10), back pain 2 (0-10), and leg pain 1 (0-10). Predictors of better outcomes were 1) single-level surgery, 2) no previous spine surgery, 3) leg pain as main problem (as opposed to back pain or sensory disturbance), 4) private or semi-private insurance, 5) non-smoker.

Conclusion
The prediction models will provide reliable estimates to enable a tailored prediction of the outcome of surgery for individual patients. The statistical models form the basis of an online prognostic tool that will improve access and usability of prognostic information in clinical practice, for the purposes of joint decision-making. In the long-term, this should help improve the safety and effectiveness of spine surgical treatment and thereby reduce costs. It should also improve patients’ satisfaction with surgery, since their expectations can be better managed with “bespoke” predictions of outcome in relation to their own particular condition/circumstances.

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TIMING OF PATIENT-RATED FOLLOW-UP AFTER SURGERY FOR DEGENERATIVE LUMBAR DISORDERS

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Introduction
Patient-rated measures have become the gold standard for assessing spine surgery outcomes. However, the frequency and length of follow-up is not standardized due to a lack of information on the dynamics/evolution of the course of change. Journals and study protocols often demand a minimum 2-year follow-up, but the indiscriminate application of this principle may not be warranted. We examined the course of change in patient outcomes up to 5 years postoperatively.

Methods
The data from 3'334 consecutive patients (1'789 women, 1'545 men; aged 61±15 years) undergoing first-time surgery between 1.1.2005 and 31.12.2010 for differing lumbar degenerative disorders were evaluated, using data from our in-house Spine Outcomes registry, linked to Spine Tango. The multidimensional Core Outcome Measures Index (COMI) was completed by 3'124 (94%) patients preoperatively, and 3'164 (95%) at 3 months' follow-up, 3'153 (95%) at 1 year, 3'112 (93%) at 2 years, and 2'897 (87%) at 5 years follow-up. 2'502 (75%) completed COMI at all five timepoints.

Results
COMI decreased significantly from pre-op to 3 months' follow-up (3.7-points), and from 3 months' to 12 months' follow-up (0.4-points), then levelled off up to 5 years' follow-up (0.04-0.05 point-change). The course of change up to 12 months differed slightly depending on pathology/whether fusion was done. Individual patient COMI change-scores from pre-op to 3 months' follow-up showed a significant correlation with those from pre-op to 12 months' (r=0.65;p<0.0001), 24 months' (r=0.57;p<0.0001), and 5 years' (r=0.51;p<0.0001) follow-up. Similarly, the change scores from prep to 12 months' follow-up correlated with the change scores from pre-op to 24 months' (r=0.74;p<0.0001) and 5 years' follow-up (r=0.65;p<0.0001). Similar results were observed when analysing individual achievement of the minimum clinically important change (MCIC) score: the proportion of patients achieving this rose from 68.6% at 3 months to 72.5% at 12 months, and then stayed at approximately the same level up to 5 years' postoperatively (73.2% at 24 months and 72.8% at 5 years).

Discussion
Stable group mean COMI scores were seen from 1-year postoperatively onwards. These findings should be taken into consideration when planning the followup schedule in clinical studies involving this patient population. As the early post-operative results appear to herald the longer-term outcome, a 'wait and see policy' in patients with a poor initial outcome is not advocated. Analysis of reasons for the failure to achieve a good result should begin at 3 months' postoperatively. This may avoid unnecessary suffering on the part of the patient.

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LUMBAR MICRODISCECTOMY FOR SCIATICA IN TOBACCO SMOKERS: A MULTICENTER OBSERVATIONAL STUDY
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Background:
The aim of this study was to compare clinical outcomes following single-level lumbar microdiscectomy in daily tobacco smokers compared to non-smokers with lumbar disc herniation (LDH).

Methods:
Data were collected through the Norwegian Registry for Spine Surgery. The primary endpoint was change in Oswestry Disability Index (ODI) one year after surgery. Secondary endpoints were changes in quality of life measured with Euro-Qol 5D (EQ-5D), back pain numerical rating scale (NRS), leg pain NRS and complications.

Results:
Among 5514 patients, there were 3907 non-smokers and 1607 smokers. A significant improvement in ODI was observed for the whole population (31.1 points, 95% CI 30.4-31.8, p<0.001). Non-smokers experienced a larger improvement in ODI at one year compared to smokers (4.1 points, 95% CI 2.48-5.66, p<0.001). Non-smokers were more likely to achieve a minimal important change (MIC), defined as ≥10 points ODI improvement, compared to smokers (85.5% vs 79.5%, p<0.001). Compared to smokers, non-smokers experienced larger improvements in EQ-5D (0.068; 95% CI, 0.04-0.09; p=<0.001), back pain NRS (0.44; 95% CI, 0.21 to 0.66; p=<0.001) and leg pain NRS (0.54; 95% CI, 0.31 to 0.77; p=<0.001). There was no difference between groups in the overall complication rate (6.2% vs 6.7%, p=0.512). Smoking was identified as a negative predictor for ODI change in a multiple regression analysis (p<0.001).

Conclusion:
Non-smokers reported a larger improvement in ODI at one year following microdiscectomy for LDH, and smokers were less likely to experience a MIC. However, it should be emphasized that significant improvement was found also among smokers.

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Table. Outcomes at one year in patients operated for single-level lumbar disc herniation

<table>
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<tr>
<th>Variable</th>
<th>Baseline</th>
<th>One year</th>
<th>Mean change</th>
<th>Baseline</th>
<th>One year</th>
<th>Mean change</th>
<th>Difference in mean change between groups (95% CI)</th>
<th>P-value</th>
</tr>
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<tr>
<td>ODI</td>
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<td>12.9</td>
<td>-32.2</td>
<td>47.1</td>
<td>19.9</td>
<td>-28.1</td>
<td>4.1 (2.5, 5.7)</td>
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<tr>
<td>EQ-5D</td>
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<td>0.79</td>
<td>0.50</td>
<td>0.27</td>
<td>0.70</td>
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<tr>
<td>Back Pain NRS</td>
<td>6.0</td>
<td>2.4</td>
<td>-3.6</td>
<td>6.4</td>
<td>3.5</td>
<td>-3.2</td>
<td>0.4 (0.2, 0.7)</td>
<td>&lt;0.001</td>
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<tr>
<td>Leg Pain NRS</td>
<td>8.6</td>
<td>1.5</td>
<td>-7.1</td>
<td>7.1</td>
<td>2.7</td>
<td>-4.4</td>
<td>0.5 (0.3, 0.8)</td>
<td>&lt;0.001</td>
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Mixed linear model analyses (N=5510)

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<th>Variable</th>
<th>Baseline</th>
<th>One year</th>
<th>Mean change</th>
<th>Baseline</th>
<th>One year</th>
<th>Mean change</th>
<th>Difference in mean change between groups (95% CI)</th>
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<td>ODI</td>
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<td>46.6</td>
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<td>EQ-5D</td>
<td>0.29</td>
<td>0.78</td>
<td>0.50</td>
<td>0.26</td>
<td>0.69</td>
<td>0.43</td>
<td>0.06 (0.04, 0.09)</td>
<td>&lt;0.001</td>
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<tr>
<td>Back Pain NRS</td>
<td>6.0</td>
<td>2.4</td>
<td>-3.6</td>
<td>6.4</td>
<td>3.5</td>
<td>-3.1</td>
<td>0.5 (0.3, 0.7)</td>
<td>&lt;0.001</td>
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<tr>
<td>Leg Pain NRS</td>
<td>8.6</td>
<td>1.6</td>
<td>-7.0</td>
<td>7.0</td>
<td>2.7</td>
<td>-4.3</td>
<td>0.8 (0.4, 0.6)</td>
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SURGICAL DECOMPRESSION FOR FORAMINAL AND EXTRAFORAMINAL LUMBAR DISC HERNIATION USING THE FAR-LATERAL APPROACH: PATIENT-RATED OUTCOME DEPENDS ON THE INVOLVED SEGMENT

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Background/ introduction:
Decompression for lumbar foraminal to extraforaminal nerve compression is commonly performed using a far-lateral transmuscular approach (FLA), and is typically associated with good patient outcomes. Results are usually reported as the average for all lumbar levels; however, clinical results may be less predictable for surgery at the lumbosacral level, due to its unique anatomic features.

Purpose of the study:
To compare patient-rated outcomes after far-lateral decompression at the lumbosacral level with higher lumbar levels.

Materials and Methods:
This was a retrospective study of prospectively collected data from 115 consecutive patients (73 m, 42 f; mean age 62±11 yrs) who had undergone surgery at a single level (N=89 at L1 to L5, and N=26 at L5/S1) from 1.1.2005-1.6.2014. 1482 patients from the Spine Tango database, who had undergone removal of disc herniation (non-FLA approach) served as controls. The multidimensional Core Outcome Measures Index (COMI), including scales for leg pain (LP) and back pain (LBP), was completed before surgery, and up to 2 years after surgery.

Results:
94% of the patients had completed a baseline COMI, 88% a 2-year; 83% had completed both timepoints. In the FLA group, at the 2-year follow-up, the reduction in LP was significantly (p=0.03) less for those operated at L5/S1 (2.6±2.9 points) than for those operated at L1/2 to L4/5 (4.2±3.4 points) unlike in the control group (4.5±3.2 points for L5/S1 and 4.2±3.3 points for L1/2 to L4/5). A 2-point MCIC score for LP was achieved by 77% patients in the control group, both for those operated at L5/S1 and those operated at higher lumbar levels alike. In the FLA group, the corresponding figures were 63% (L5/S1) and 81% (higher lumbar levels)(p=0.11). The reduction in COMI score showed a similar pattern to that for LP, but without statistical significance: at L5/S1, FLA 3.5±2.4 points vs control 4.6±3.0 points reduction; at higher lumbar levels, FLA 4.8±3.0 vs control 4.8±2.9 points). There were no significant differences (p>0.05) dependent on group or lumbar level for the improvement in LBP.

Conclusion:
Decompression of extra- and intraforaminal nerve root compression using FLA results in good patient-rated outcome at 2 years. However, the improvement in LP was inferior for the L5/S1 level compared with the other levels. This may be due to its unique anatomy. These results are important in decision-making for appropriate surgical treatment and in the management of expectations during the consent process.

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Author 6: consultant: DePuy Synthes Spine, royalties: DePuy Synthes Spine
Author 7: none;
CLINICAL RELEVANCE OF A NEW CLASSIFICATION SYSTEM FOR DEGENERATIVE SPONDYLOLISTHESIS OF THE LUMBAR SPINE

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Purpose: There is no consensus for a comprehensive analysis of Degenerative Spondylolisthesis of the Lumbar Spine (DSLS). A new classification system for DSLS based on sagittal alignment was proposed. Its clinical relevance was explored.

Methods: Health-Related Quality of Life Scales (HRQOLs) and clinical parameters were collected: SF-12, ODI, low back and leg pain visual analog scales (BP-VAS, LP-VAS). Radiographic analysis included Meyerding grading and sagittal parameters: segmental lordosis (SL), L1-S1 lumbar lordosis (LL), T1-T12 thoracic kyphosis (TK), pelvic incidence (PI), pelvic tilt (PT), and sagittal vertical axis (SVA). Patients were classified according to three main types: 1A: preserved LL and SL; 1B: preserved LL and reduced SL (≤5°); 2A: PI-LL≥10° without pelvic compensation (PT<25°); 2B: PI-LL≥10° with pelvic compensation (PT≥25°); type 3: global sagittal malalignment (SVA≥40mm).

Results: 166 patients (119 F: 47 M) suffering from DSLS were included. Mean age was 67.1 ± 11 years. DSLS demographics were respectively: type 1A: 73 patients, type 1B: 3, type 2A: 8, type 2B: 22, type 3: 60. Meyerding grading was: grade 1 (n=124), grade 2 (n=24). Affected levels were: L4-L5 (n=121), L3-L4 (n=34), L2-L3 (n=6), and L5-S1 (n=5). Mean sagittal parameter values were: PI: 59.3° ± 11.9°; PT: 24.3°± 7.6°; SVA: 29.1 ± 42.2 mm; SL: 18.2° ± 8.1°. DSLS types were correlated with age, ODI and SF-12 PCS (rho= 0.34, p<0.05; rho= 0.33, p<0.05; rho= -0.20, p=0.01, respectively).

Conclusion: This classification was consistent with age and HRQOLs and could be a preoperative assessment tool. Its therapeutic impact has yet to be validated.

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INFLUENCE OF POSTURE ON PELVIC AND LUMBAR PARAMETERS: COMPARISON BETWEEN THE STANDING, SITTING AND SUPINE POSITIONS. A PRELIMINARY STUDY.

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Background: Pelvic incidence (PI) is a static anatomic reference. Postural variation influences the mobile lumbar spine but LL is commonly referenced only from standing erect lumbar radiographs. Alternative habitual postures thus play an important role in the history of spinal pathology and are investigated in this study through three positions- standing, erect sitting and lying supine.

Objective: to analyze the relationship between lumbar lordosis (LL) and pelvic parameters in standing, sitting and supine positions.

Study design: Prospective cohort study

Methods: Radiographs of 15 asymptomatic volunteers aged 18 to 50 years were analyzed to calculate pelvic and lumbar parameters in 3 positions. Mean values and standard deviations were calculated for each parameter and compared using ANOVA. Correlations were obtained using Spearman’s test.

Results: PI did not change throughout the series of positions. LL values for standing were 54.8° +/- 9.8, sitting: 15.9° +/- 14.6 and supine: 50.2° +/- 9.6. Respective values for pelvic tilt (PT) were 12.1° ± 6.3°; 7.7° ± 10.4° and 9.5° ± 5.1°. Sacral slope (SS) values were 37.1° ± 6.3°, 11.3° ± 10.8°, 41° ± 7.2°. Correlations of PI/LL (r=0.72), LL/SS (r=0.9) and PI/SS (r=0.84) are strongest in supine position.

Conclusion: While PI remains constant, orientation of the sacrum and lumbar spine change significantly throughout habitual positions, particularly in sitting. Correlations between lumbar lordosis and pelvic parameters are strongest in supine position. Lordosis adjustments during spinal fusion procedures according to the pelvic incidence value are fundamental even in patients with little physical activity.

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Author 9: grants/research support: Depuy Synthes, consultant: Depuy Synthes, medtronic, royalties: Alphatec, spineart, clariance
Author 10: consultant: Kisco, royalties: Euros
Figure 1 - 36 year-old subject, PI = 68°; Standing: PT:24°, SS:44°, LL:54°; SITTING: PT:47°, SS:21°, LL:13°; SUPINE: PT:20°, SS:48°, LL:52°
MINIMALLY INVASIVE VERSUS OPEN TRANSFORAMINAL LUMBAR INTERBODY FUSION: A PROSPECTIVE RANDOMIZED STUDY
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Background: Symptomatic spondylolisthesis patients may benefit from surgical decompression and stabilization. The standard (S) technique is a transforaminal lumbar interbody fusion (TLIF). Newer, minimally invasive (MI) techniques seem to provide similar results with less morbidity. However, prospective studies comparing S versus MI TLIF are rare.

Methods: Patients with at least 6 months of symptoms and image-confirmed low-grade spondylolisthesis (grade 1 or 2) were enrolled, at a single academic institution, between 2011 and 2015. The patients were randomized to either S or MI TLIF. Iliac crest graft, polyether ether ketone (PEEK) interbody cages, and pedicle screw-rod constructs were used in both groups. The primary outcome measure was the Oswestry Disability Index (ODI) improvement at 1 year. Secondary outcome measures included length of operation, estimated blood loss, length of hospitalization, and fusion rates at 1 year. Complications were also recorded.

Results: Forty patients were enrolled in each group. There was no crossover between groups. The age was 50.12 +/-11.09 years in the S TLIF group and 51.3 +/-9.36 years in the MI TLIF group. There were 23 and 24 females in the S and MI TLIF group, respectively. The mean operative time and estimated blood loss in the S versus MI TLIF group were 297 +/-101 versus 323 +/-85 minutes and 417 +/-211 versus 351 +/-198 ml, respectively. There were 4 transfusions in the S TLIF and 3 transfusions in the MI TLIF group. The patients were discharged after surgery at 4.12 +/-0.88 days for the S TLIF group and 1.92 +/-0.52 days for the MI TLIF group. The ODI improved from 37 +/-6 to 11 +/-6 in the S TLIF group (ODI difference: 26 +/-7) and from 38 +/-7 to 11 +/-6 in the MI TLIF group (ODI difference: 26 +/-8). The fusion was considered solid (Grade I) in 36 (90%) and partial (Grade II) in 4 (10%) patients at 1 year. There were no reoperations for pseudarthrosis or any other postoperative complication. There were 2 superficial wound infections in the standard TLIF group, which resolved with oral antibiotic treatment alone.

Conclusions: In this prospective randomized study, the standard and minimally invasive TLIF in patients with symptomatic spondylolisthesis provided similar clinical and radiological outcomes at 1 year. The patients undergoing MI TLIF had a shorter hospital stay. Both surgical techniques yielded good results at 1 year.

Disclosures:
Author 1: none; Author 2: none;
COMPARIISON OF MINIMAL INVASIVE AND OPEN TRANSFORAMINAL LUMBAR INTERBODY FUSION IN THE TREATMENT OF SINGLE LEVEL LUMBAR SPINE DEGENERATIVE DISEASES WITH MINIMUM 6-YEAR FOLLOW-UP

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Honghui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

Purpose With the development of spine minimally invasive techniques, more and more surgeons make the choice of minimal invasive posterior transforminal lumbar interbody fusion (MIS-TLIF) for treating single level lumbar spine degenerative diseases. The aim of this study was to compare the fusion rate between MIS-TLIF and open posterior transforminal lumbar interbody fusion (OPEN-TLIF), and to evaluate the safety and reliability of MIS-TLIF for treating single level lumbar spine degenerative diseases.

Methods A retrospective cohort study was performed on consecutive 148 patients who underwent MIS-TLIF or OPEN-TLIF surgical treatment with single level lumbar spine degenerative diseases from January 2009 to January 2011. Among them, 65 cases received MIS-TLIF and 83 cases received OPEN-TLIF. The operation time, intraoperative blood loss and postoperative drainage were compared between MIS-TLIF group and OPEN-TLIF group, and the fusion status of two groups were evaluated by X-ray and CT scanning. In addition, clinical outcomes in terms of back pain VAS score, leg pain VAS score, and ODI score.

Results The operation time, intraoperative blood loss and postoperative drainage in MIS-TLIF group were 218.4±38.2min, 156.4±58.6ml and 132.8±64.5ml respectively, and in OPEN-TLIF group the outcomes were 123.6±45.4min, 326.6±85.4ml and 358.2±94.4ml respectively. Although the operation time of MIS-TLIF group was longer than OPEN-TLIF group (p<0.05), the operative blood loss and the postoperative drainage of MIS-TLIF group was statistically significant less than OPEN-TLIF group (p<0.05). The mean follow-up time was 6.9±0.7 year. At the last follow-up, the VAS score decreased from 4.9±2.3 to 1.2±0.6 for low back pain and from 6.8±2.4 to 1.5±0.7 for leg pain, and the ODI score also decreased from 23.3±10.2 to 10.2±5.6 in the MIS-TLIF group. In the terms of OPEN-TLIF group, the VAS score decreased from 5.2±2.4 to 1.4±0.8 for low back pain and from 6.0±2.8 to 1.2±0.8 for leg pain, and the ODI score also decreased from 23.8±9.4 to 12.4±6.8, respectively. There were significant differences with respect to the improvement of ODI and VAS scores for two groups’ patients (P<0.05), but no significant difference (p>0.05) was noted between the two groups. Lumbar interbody fusion rate assessed by CT scanning showed 89.2% (58/65) in MIS-TLIF group and 95.2% (79/83) in OPEN-TLIF group, and the mean fusion time was 6.7±2.3 and 4.4±1.8 month, respectively. Although lumbar interbody fusion rate was no significant (p>0.05), the fusion time of MIS-TLIF group was significant longer than OPEN-TLIF group (p<0.05).

Conclusion For single level lumbar spine degenerative diseases, MIS-TLIF can achieve similar clinical results and similar lumbar interbody fusion rate compared to OPEN-TLIF. However, the fusion time of MIS-TLIF was significant longer than OPEN-TLIF due to less bone graft.

Disclosures:
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COMPARING INTERLAMINAR STABILIZATION WITH DECOMPRESSION VERSUS FUSION WITH DECOMPRESSION IN REGARDS TO ADJACENT SEGMENT DISEASES

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BACKGROUND: Decompression with instrumented lumbar fusion for the treat of lumbar spinal stenosis has been shown to be efficacious but potentially can lead to complications at adjacent segments resulting in more pain, hospitalization, and possible surgery. Interlaminar stabilization (ILS) is motion sparing and has been shown to have durable outcomes when compared to posterolateral fusion in the setting of post-decompression stabilization for stenotic patients with up to a Grade I spondylolisthesis. The purpose is to study the incidence of adjacent level surgery comparing decompression with instrumented posterolateral fusion to decompression with ILS in patients treated for lumbar spinal stenosis.

METHODS: A total of 322 patients were involved in this prospective, randomized, controlled trial conducted across 21 sites in the United States between 2006 and 2010. Patients were randomized to treatment groups in a 2:1 ratio, where 215 patients underwent decompression with ILS, while the remaining 107 underwent the standard microsurgical decompression with instrumented posterolateral fusion. Survival analysis was performed out to 60 months.

RESULTS: Reoperation at the adjacent level surgery was performed in 19 out of the 215 (8.84%) patients that underwent ILS with decompression required compared to 19 of the 107 (17.7%) patients in the fusion group (p=.0244). Those who required a reoperation on the adjacent level for the ILS group underwent reoperation an average of 28.16 (+/-16.73) months post original surgery, while the fusion group was an average of 30.84 (+/-18.47) months post-operation.

DISCUSSION: From the data collected in this study, the fusion group was twice as likely to require reoperation as the ILS group. This suggests the addition of controlled motion provided by interlaminar stabilization is more effective than fusion in preventing associated complications in the adjacent levels. Sustained clinical outcomes and reduction in surgery-induced mechanical burden at adjacent segments can be achieved with ILS leading to lower medical costs over time.

Disclosures:
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