

Abstract: 277

Evaluation of Hip Flexion Strength Following Extreme Lateral Interbody Fusion: Is the Psoas Muscle Seriously Injured?

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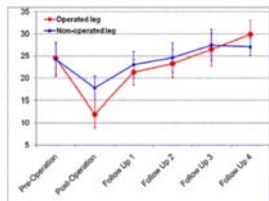
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Background: Extreme Lateral Interbody Fusion (XLIF/DLIF) is a minimally invasive procedure designed to enable the surgeon to achieve both restoration of the degenerative disc height and a solid interbody fusion while minimizing the damage to the surrounding soft tissue. Although short term results have been promising, little data has been published to date regarding its risks and complication rate. Among the potential risks during XLIF are injuries to the psoas muscle, exiting ventral nerve root and the genitofemoral nerve. Injury to the psoas muscle is an inherent part of this procedure, caused by the insertion of dilating instruments during discectomy and cage insertion. This may result in postoperative muscle atrophy and unilateral hip flexion weakness.

Objective: To evaluate the extent of injury to the psoas muscle following XLIF procedure by measuring hip flexion strength.

Method: Hip flexion strength is measured using a hand-held digital dynamometer, while the patient is seated on a chair and the examiner holds the device against his/her attempt to flex the hip. Both sides are measured to compare the operated and non-operated psoas muscles. Each side is measured 3 times and the average force (in lbs) is recorded. Measurements are done pre-op and post operatively on day 2-3, 2 weeks, 6 weeks, and 3 and 6 months.

Results: Ten subjects were recruited for the first phase of study. Mean pre-op hip flexion strength values were 30.55 ±3.47 lbs and 27.05±4.31 lbs for operated and non-operated legs, respectively, with no significant difference. With a mean of 13.15±2.24 lbs on post-op measurement, the operated side showed significant reduction of strength (p= .025). Non-operated side was also weaker post-operatively, but not significantly (Mean=19.12±1.74; p=.097). From the first follow up visit (2 weeks post-op), the values were not significantly different from pre-op values on either side (Figure). Number of levels operated on did not have any meaningful influence on the results.



[Hip flexion strength before and after XLIF]

Discussion: Hip flexion was weakened immediately following the XLIF procedure, which may be attributed to the psoas muscle injury during the procedure. However, this damage is temporary, with almost complete return to baseline values after 2 weeks.