

Lateral Interbody Fusion for Low-grade Spondylolisthesis without Pedicle Screw Supplementation: Does the Spondylolisthesis Progress?

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Introduction

The authors investigated whether lateral lumbar interbody fusion (LLIF) without supplemental pedicle screw fixation is associated with progression of the degree of spondylolisthesis.

Methods

A retrospective chart review was performed on every patient at the University of Pittsburgh Department of Neurosurgery with low-grade degenerative lumbar spondylolisthesis treated with lateral lumbar interbody fusion (LLIF) without supplemental pedicle screw instrumentation between 2008 and 2015. Measurements of the degree of spondylolisthesis based on the alignment of the posterior vertebral body cortex divided by the maximal anteroposterior diameter of the inferior level as popularized by Wiltse was obtained pre and postoperatively using standing radiographs. A paired t-test was used to compare changes in degree of spondylolisthesis at preoperative, postoperative, six month, and long term (>1 year) follow up.

Results

Twenty eight patients representing 31 instrumented levels were identified who met inclusion criteria and had sufficient pre and postoperative imaging. Three patients developed graft subsidence or endplate fractures requiring revision surgery in the form of pedicle screw fixation. The remaining 28 levels represented a mean age of 62.8 years with 7.21 mm (17.76% of endplate) of anterolisthesis. Twenty-three were grade I and five were grade II. Two were identified to have instability (>3mm on flexion). Immediate postoperative measurements improved to a mean of 6.1mm (15.25% of endplate)($p=.0033$) of lithesis and remained improved at 6 months ($p=.0004$) and >1 year ($p=.0015$). Changes in degree of lithesis at 6 months ($p=.069$) and >1 year (.14) compared to immediate postoperative measurements were not statistically significant.

Conclusions

Patients undergoing LLIF without supplementary pedicle screw fixation for low-grade degenerative spondylolisthesis experienced significant and durable reduction without slip progression.

Learning Objectives

By the conclusion of this session, participants should be able to 1) Describe various surgical management of degenerative spondylolithesis 2) Identify which patients may benefit from a stand-alone LLIF without supplemental pedicle screw instrumentation