

# Systematic Review of Neurological Complications Following Surgical Treatment of Lumbar Spondylolisthesis in Adults

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## Introduction

While there are several studies examining total complication rates following surgical treatment for lumbar spondylolisthesis, the data specifically addressing neurologic complications remains limited. The aim of this study was to perform a systemic review of all current studies that assessed neurological complications in treatment of spondylolisthesis and to identify associated predictive factors.

## Methods

A comprehensive review of the all publications mentioning surgical treatment, neurological complications, and lumbar spondylolisthesis between 2007 and 2017 inclusive from electronic databases was performed. The following variables were determined: neurological complication rate, age, grade and percentage of spondylolisthesis reduction, surgical approach, transient versus permanent neurological deficit, mean blood loss, and mean operative time.

## Results

A total of 23 studies meeting the inclusion criteria were identified. Of these, 14 studies met a priori inclusion criteria. Of a total of 78,598 patients, 767 (0.98%) experienced neurological deficits post operatively including acute, delayed, transient, or permanent new sensory or motor deficits. Mean age was 62 years with mean operative time of 185 minutes and mean blood loss of 480 mL per level. The most prevalent surgical technique involved a posterior lumbar interbody fusion (PLIF) with or without reduction, compared with decompression or postero-lateral arthrodesis. The majority of deficits (75.4%) were transient and involved new sensory deficits. The majority of these resolved in the early post-operative period (range 3-25 weeks). The average reduction of spondylolisthesis achieved was 14%. When weighted for sample size, there was significant correlation between complication rate and mean age, blood loss and operative time, but not degree of slip reduction.

## Conclusions

There is a paucity of data specifically examining neurological deficits following surgical treatment for lumbar spondylolisthesis. In this systematic review, we demonstrate

## Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) Appreciate the available literature describing the incidence of neurological deficits following surgical treatment of lumbar spondylolisthesis.
- 2) Discuss the complication rate and likely risk factors identified from a systematic review of current literature
- 3) Identify any such risk factors statistically associated with the development of neurological deficits - in particular the degree of slip reduction

## References