

# Surgical Site Infection Following Lumbar Discectomy Does Not Change Long-term Risk Of Reoperation

Lucas Y Kim<sup>1</sup>, Scott J Halperin<sup>1</sup>, Rahul H Jayaram<sup>1</sup>, Jonathan N Grauer<sup>2</sup>

<sup>1</sup>Yale School of Medicine, New Haven, CT, <sup>2</sup>Department of Orthopaedics and Rehabilitation, Yale School of Medicine, New Haven, CT  
lucas.kim@yale.edu

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## INTRODUCTION:

Lumbar discectomy is a commonly performed surgery following which surgical site infections (SSI) may occur. Following lumbar surgery there is mixed evidence to suggest that SSI from an index surgery increases the risk of subsequent surgeries in the longer term. To our knowledge, this has not been studied specifically in lumbar discectomy. The current study aimed to assess the question of need for longer term reoperation by leveraging the scale of a large, national, administrative database.

## METHODS:

Adult patients undergoing isolated primary lumbar laminotomy/discectomy were identified from the January 1 2010-October 31 2021 PearlDiver M157 database. Exclusion criteria included: age < 18 years, additional spinal surgeries on the same day as lumbar discectomy, activity in the database < 90 days postoperative, and infection, neoplastic, or traumatic diagnoses within 90 days preoperative. Patient factors extracted included: age, sex, Elixhauser Comorbidity Index (ECI), obesity diagnosis, and patient insurance plan (commercial, Medicaid, or Medicare).

From this study population, those who developed SSI were identified based on undergoing irrigation and debridement (I&D) within 90 days after surgery. Patient factors predictive of postoperative SSI were then determined with multivariable analyses. Those with versus without SSI were then matched 1:4, and the incidence of revision lumbar surgery (re-exploration lumbar discectomy, lumbar laminectomy, or lumbar fusion) was compared at multiple time intervals after surgery (0-6 months, 6-12 months, 1-2 years, 2-5 years) using multivariable logistic regression, controlling for patient age, sex, ECI, and obesity status.

## RESULTS SECTION:

Of 323,025 lumbar discectomy patients identified that fit the inclusion criteria, SSI requiring I&D was identified for 583 (0.18%). Multivariate analysis revealed several independent clinical predictors of SSI following lumbar discectomy, including younger age (odds ratio [OR] 0.85 per decade increase), increased ECI (OR 1.22 per 2-point increase), and obesity (OR 1.30).

Looking at intervals within the five years following lumbar discectomy, those with SSI had significantly increased odds of lumbar revision in the first six months (OR 5.26,  $p < 0.001$ ), but not 6-12 months ( $p = 0.462$ ), 1-2 years ( $p = 0.515$ ), or 2-5 years ( $p = 0.677$ ) after lumbar discectomy (Figure). While the code for I&D was not included in the revision code set, other codes used at the time of I&D procedures could not be ruled out and may have affected that initial 6-month period.

## DISCUSSION:

Overall, SSI requiring I&D is a rare postoperative complication following lumbar discectomy, predisposed by younger age, higher comorbidity burden, and obesity. Following matching of those with versus without SSI, those with SSI were not at greater odds of longer-term SSI after getting through the first 6 months. These results echo previous findings that SSI led to no significant clinical difference after the first six months in lumbar fusion. While this study is limited by its retrospective nature and reliance on administrative coding, these findings are reassuring for those that require I&D following lumbar discectomy.

## SIGNIFICANCE/CLINICAL RELEVANCE:

Following lumbar discectomy, SSI requiring I&D is rare. Once beyond the first 6-month management period, the current study found that those patients were not at greater long-term rates of revision as has been found by a prior study to be the case for posterior lumbar fusion.

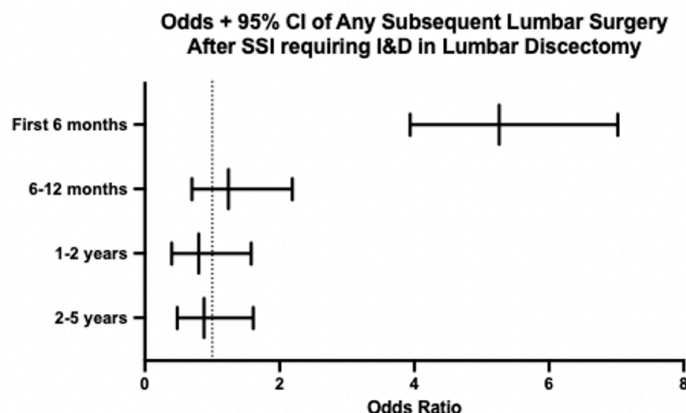


Figure: Forest plot of OR + 95% CI of odds of having any subsequent lumbar surgery in different time periods following lumbar discectomy with a surgical site infection requiring perioperative I&D compared to lumbar discectomy without surgical site infection.