Endoscopic lumbar decompression appears to ameliorate risks associated with obesity that have been previously reported with more traditional approaches: Analysis of a large United States administrative database

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INTRODUCTION:
Endoscopic spine surgery (ESS) is a surgical approach that allows lumbar decompression through small percutaneous incisions, minimizing muscle disruption and potentially mitigating peri-operative risks and healthcare utilization that have been previously associated with obesity in spine surgery. While ESS utilization is increasing internationally, it's utilization in the United States is slower to rise. The present study evaluated 90-day complications, healthcare utilization, and overall insurer-payments in obese versus non-obese patients undergoing endoscopic lumbar decompression within a large, administrative database.

METHODS:
The current study was a retrospective cohort analysis that utilized the January 2010 to April 2023 PearlDiver M170 claims database. Adult patients (> 17 years of age) who underwent lumbar endoscopic decompression were identified using the Current Procedural Terminology code 62380. Exclusion criteria were < 90 days of post-operative database activity, or a diagnosis of trauma, infection or neoplasm related to the spine within 90 days pre-operatively.

Cohorts were stratified by pre-operative obesity, defined by body mass index (BMI) > 30 kg/m², using the most recent coded BMI in the database. Demographics, including age, sex, Elixhauser Comorbidity Index [ECI], and preoperative smoking status were then abstracted.

Ninety-day aggregated any adverse events, healthcare utilization (emergency department [ED] visits, readmissions, and physical therapy [PT]), and overall 90-day insurer-payments (encompassing all healthcare spending within 90 days following the index surgery), were then compared. Statistical comparisons included univariable tests and multivariable logistic regression that adjusted for age, sex, ECI, and smoking status. Significance was defined as $p < 0.05$.

RESULTS:
Overall, 1,989 patients undergoing ESS were identified, of which 1,618 (81.3%) were non-obese and 371 (18.7%) were obese. Obese patients were on average younger (57.1 versus 60.0 years, $p = 0.0016$), more often female (58.2% versus 49.6%, $p = 0.0030$), sicker (ECI: 6.6 versus 4.5, $p < 0.0001$), and more often a smoker (28.3% vs 17.7%, $p < 0.0001$) compared to non-obese patients.

In univariable analyses, there were no significant differences in 90-day any aggregated adverse events or healthcare utilization, including ED visits, readmissions, or PT visits. Multivariable regression also demonstrated no increased odds of any of the analyzed 90-day adverse events or healthcare utilization measures. However, obesity was correlated with higher 90-day insurer-payments (median: $3,310 versus $2,563, $p = 0.0003$).

DISCUSSION:
The present study identified a large United States cohort of almost two thousand lumbar endoscopic decompression patients. Unlike prior reports from non-endoscopic procedures, obesity was not associated with increased perioperative adverse events, ED visits, readmissions, or PT utilization, but was associated with increased costs. Overall, minimally invasive ESS appears to ameliorate the risks associated with obesity that have been previously reported with more traditional approaches.

SIGNIFICANCE/CLINICAL RELEVANCE:
Endoscopic lumbar decompression appears to provide comparable short-term safety for obese and non-obese patients, supporting its use in this growing patient population. Although obese patients incurred higher 90-day insurer payments, the absence of increased complications suggests that ESS may be particularly valuable in the setting of obesity, where other approaches have previously been reported to have increased issues.