

Peer review file

Article information: <https://dx.doi.org/10.21037/jss-21-29>

Reviewer A

Comment: This study looked at the risk of complications in osteoporosis patients and found an increased risk of PE and minor complications in osteoporosis patients. This study contributes important information to the current literature. The methods of the manuscript are appropriate and the manuscript is written well. I don't have any comments.

Reply: None.

Reviewer B

Here the authors employ the Pearldiver database to evaluate the impact of CPT-diagnosed osteoporosis on complications following either ALIF or posterior instrumented fusion. The authors find that using a matched cohort design (matching on age, gender, BMI, comorbidities), the osteoporotic patients had higher rates of PE and minor complications, but did not have higher rates of revision operation. Below are my queries and thank you for the opportunity to review the present manuscript:

Comment 1: the authors state that the literature supports their finding that osteoporosis is associated with increased PE risk; however, none of the articles cited actually support this: Breart et al (population-level dataset suggesting that osteoporotic adults are greater risk for VTE = DVT + PE than non-osteoporotic --> doesn't specifically look at surgical patients or PE), Huang et al (does not provide results supporting this conclusion), and Abdel-Razeq (doesn't even mention osteoporosis in the article). Can the authors provide citations supporting their claim that osteoporosis increases PE risk? If not, then the results should be presented as speculative and the part about them being consistent with the literature should be removed.

Reply 1: Comment addressed. The authors appreciate the reviewer bringing the oversight to our attention. Manuscript changed to appropriately outline the cited articles. “The association of OP and post-operative complications following ALIF/PSIF is consistent with previous literature. 16, 39”

Comment 2: The authors do a reasonable job attempting to match osteoporotic and control patients on BMI, gender, age, and medical comorbidities. But there is risk conferred by transfusion and surgical invasiveness. Are the authors able to additionally match based upon these metrics?

Reply 2: Comment Addressed. Single level fusions only were accounted for to decrease variability of surgical invasiveness. “A retrospective review of the Mariner Claims Database was conducted on patients who underwent a single level ALIF (CPT 22558) and PSIF (CPT 22840) between 2011 and 2017”.

Comment 3: Are the authors able to extract any details about treated vs. untreated osteoporosis?

Reply 3: Comment addressed. “Patients receiving medications prior to surgery had no differences in rates of PE within 90 days of surgery compared to those not receiving medications ($p>0.05$, Table 4). There were also no differences in medical complications and two-year revision rates between these two cohort ($P>0.05$). (page 10, lines 12-15)

Comment 4: Does the Pearldiver database employed afford the authors the data granularity to determine reasons for reoperation i.e. mechanical complication/implant failure vs. other?

Reply 4: The reviewer makes a valuable point. Unfortunately, the Pearldiver Database is a claims database which collects patient related information based on ICD-9 and Current Procedural Codes relating to a particular diagnosis and subsequent procedure. We acknowledge this limitation to the study and value this feedback as a future direction for additional research.

Reviewer C

Comment: This is a great study that examines the impact of osteoporosis on postoperative outcomes and the utility of anti-osteoporotic medications preoperatively. The large study sample further reinforces the safety of using such medications prior to surgery. I believe this study deserves publication.

Reply: None.