Antidepressant Use Does Not Impact Intraoperative Blood Loss in Lumbar Fusion

Michael McCurdy1, MD, Rajkishen Narayanan1, MD, Yunsoo Lee2, MD, Jeremy Heard3, MD, Nicholas Pohl1, MS, Grace Bowen1, BS, Yoni Dulitzki1, BS, Abbey Glover1, BS, Saurav Sumughan1, BS, Emmanuel Dean1, BS, Emma Boyajieff1, BS, Alec Giakas1, MD, Jose Canseco1, MD, PhD, Alan Hilibrand1, MD, Alexander Vaccaro1, MD, PhD, MBA, Gregory Schroeder1, MD, Christopher Kepler1, MD, MBA
1Department of Orthopaedic Surgery, Rothman Orthopaedic Institute at Thomas Jefferson University, Philadelphia, PA

Presenting author Email: Michael.mccurdy@rothmanortho.com


INTRODUCTION
In recent years, mental health has increasingly been recognized as an influential determinant of patient outcomes after surgery across many specialties. Patients with back pain, a common manifestation of spine pathology, experience high concomitant rates of depression. Roughly a quarter of patients undergoing spine surgery are regularly taking antidepressant medication, which has been associated with longer hospital stays and increased cost. The impact of antidepressants on surgical outcomes, particularly in relation to blood loss, is an important consideration in spine surgery. To our knowledge, no study has comprehensively examined the relationship between antidepressants and their effects on intraoperative blood loss in patients undergoing lumbar fusion. Therefore, this study aims to investigate the impact of antidepressants on intraoperative blood loss during lumbar fusion procedures.

METHODS
After approval was obtained by the Institutional Review Board, patients undergoing primary 1-3 level lumbar fusion at a single, tertiary care institution from 2017-2021 were retrospectively identified. Patient characteristics, surgical details, and surgical outcomes were collected via chart review. Antidepressant use was collected based on current medication lists at the patient’s preoperative and first postoperative appointment. Patients were considered to be "taking antidepressants" only if they were listed as current medications at both appointments. To report blood loss, we calculated total blood loss (mL) rather than reporting estimated blood loss (EBL) to account for hidden blood loss that occurs in surgery. Total blood loss (mL) was calculated using the formula proposed by Gross et al. in order to account for hemodilution secondary to fluid resuscitation.

RESULTS
Of the 1,812 patients included in the study, 496 were taking antidepressants perioperatively. Female (64.7% vs. 45.5%, p=0.001) patients were more likely to take antidepressants than their male counterparts. Patients in the antidepressant group were more likely to be discharged to an inpatient rehabilitation facility than patients without antidepressant use (11.3% vs. 4.5%, p=0.001), but LOS was not different between the two groups (3.70 vs. 3.74, p=0.618). Surgical characteristics were not significantly different between PLDF (1,255 vs. 1,254, p=0.986), and ALIF (1,237 vs. 1,210, p=0.660) groups. After approval was obtained by the Institutional Review Board, patients undergoing primary 1-3 level lumbar fusion at a single, tertiary care institution from 2017-2021 were retrospectively identified. Patient characteristics, surgical details, and surgical outcomes were collected via chart review. Antidepressant use was collected based on current medication lists at the patient’s preoperative and first postoperative appointment. Patients were considered to be "taking antidepressants" only if they were listed as current medications at both appointments. To report blood loss, we calculated total blood loss (mL) rather than reporting estimated blood loss (EBL) to account for hidden blood loss that occurs in surgery. Total blood loss (mL) was calculated using the formula proposed by Gross et al. in order to account for hemodilution secondary to fluid resuscitation.

DISCUSSION
Recent studies have similarly tried to elucidate the effects of antidepressant use on surgical interventions within orthopaedic surgery. Interestingly, the present study found that patients on antidepressants were more likely to be discharged to inpatient rehabilitation facilities than patients not using antidepressants (11.3% vs. 4.5%, p=0.001), but LOS was not different between the two groups (3.70 vs. 3.74, p=0.618). Surgical characteristics were not significantly different between PLDF (1,255 vs. 1,254, p=0.986), and ALIF (1,237 vs. 1,210, p=0.660) groups. All procedures were performed at a single, tertiary care institution. Patients were considered to be taking antidepressants only if they were listed as current medications at both appointments. To report blood loss, we calculated total blood loss (mL) rather than reporting estimated blood loss (EBL) to account for hidden blood loss that occurs in surgery. Total blood loss (mL) was calculated using the formula proposed by Gross et al. in order to account for hemodilution secondary to fluid resuscitation.

SIGNIFICANCE/CLINICAL RELEVANCE
Current evidence in the literature is mixed concerning the impact of antidepressant use on intraoperative blood loss. We observed no difference in our lumbar fusion cohort between patients taking antidepressants and those who were not, suggesting patients can safely continue taking antidepressant medication in the perioperative period.

ACKNOWLEDGEMENTS: None.

TABLES
Blood Loss (mL) by Procedure and Antidepressant Use

<table>
<thead>
<tr>
<th>Procedure</th>
<th>No Antidepressants</th>
<th>Antidepressants</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Procedures</td>
<td>1255 (897)</td>
<td>1253 (911)</td>
<td>0.976</td>
</tr>
<tr>
<td>PLDF (n=744)</td>
<td>1255 (950)</td>
<td>1246 (879)</td>
<td>0.730</td>
</tr>
<tr>
<td>TLIF/PLDF (n=651)</td>
<td>1252 (871)</td>
<td>1292 (1173)</td>
<td>0.695</td>
</tr>
<tr>
<td>ALIF/PLDF (n=417)</td>
<td>1237 (846)</td>
<td>1210 (514)</td>
<td>0.660</td>
</tr>
</tbody>
</table>

*Indicates statistical significant with p-value <0.05. Abbreviations: : PLDF = posterior lumbar decompression and fusion, TLIF = transforaminal lumbar interbody fusion, ALIF = anterior lumbar interbody fusion.