2031: Single-Level Posterior Cervical Surgery in the Sitting and Prone Positions

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Disclosures

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Introduction

• The sitting position has long been employed in neurosurgery to allow for improved, retraction and visualization in certain procedures, particularly cranial surgeries in the posterior fossa and pineal region. This approach has also been employed for posterior cervical spine surgeries to allow for more anatomic patient positioning and improved retraction.

• However, concerns regarding complications involved in sitting cases, particularly venous air embolism (VAE) and positioning palsies, have prevented its widespread adoption.

• We sought to compare a cohort of patients undergoing similar procedures in the sitting and prone positions at a single institution in order to better characterize the risk of complications in the sitting position in posterior cervical surgeries.
Methods

- Patients undergoing single-level non-instrumented cervical spine procedures at a single hospital from 2001-2016 were included, identified using institutional electronic medical record data abstraction tools (DataMart). Intradural cases and those involving instrumentation were excluded.

- Primary outcomes included 30-day readmission and return to operating room and development of significant postoperative complications (including postoperative hematoma, surgical site infection, stroke or other neurologic injury, and acute kidney injury).

- Intraoperative variables, including procedure time, blood loss, fluids administered in the operating room, intraoperative VAE.

- Postoperative events while recovering from anesthesia, including reintubation, unplanned ICU admission, and hypoventilation were also collected.
Results – Demographic data

- 750 cases were included
  - 480 sitting cases
  - 270 prone cases
  - Multiple surgeons contributed cases to both cohorts
- No significant differences in age, BMI, or American Society of Anesthesiologists (ASA) class
Results – Intraoperative Details

No episodes of clinically-significant VAE were noted, defined as episodes of VAE requiring and intervention by the surgical or anesthesia teams.

Sitting cases entailed statistically-significantly longer total OR times, as well as anesthesia and operative time.

Prone cases were associated more episodes of postoperative apnea and hypoventilation.
Results – postoperative complications

- No difference in 30-day readmission and mortality
- Complications were similar between the two groups
  - Slightly fewer cases of new nerve deficits and surgical site infections were observed in the sitting cohort.

<table>
<thead>
<tr>
<th>Variable</th>
<th>All N = 750</th>
<th>Prone N = 270</th>
<th>Sitting N = 480</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-day mortality, n (%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>&gt; .99</td>
</tr>
<tr>
<td>30-day return to the OR, n (%)</td>
<td>27 (3.60%)</td>
<td>13 (4.81%)</td>
<td>14 (2.92%)</td>
<td>0.26</td>
</tr>
<tr>
<td>30-day readmission, n (%)</td>
<td>28 (3.73%)</td>
<td>13 (4.81%)</td>
<td>15 (3.12%)</td>
<td>0.33</td>
</tr>
<tr>
<td>Complication, n (%)</td>
<td>46 (6.13%)</td>
<td>29 (10.7%)</td>
<td>17 (3.54%)</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>
Discussion and Summary

• In settings with significant institutional experience, the sitting position may be safely employed in posterior cervical surgeries.

• In our series, the rates of intraoperative and postoperative complications were similar between our two cohorts, and in fact slightly fewer complications were observed in the sitting cohort, though the overall numbers are low enough that this likely represents a statistically but not necessarily clinically significant difference.

• No cases of clinically significant VAE were observed in sitting cervical surgeries in our series.