Quality of Recovery Following Anterior THA Not Influenced by Anesthesia Technique

MAUREEN LEAHY

A study presented at the AAOS Annual Meeting compared three different types of commonly used anesthesia techniques in direct anterior approach during total hip arthroplasty (THA). The researchers found that although anesthesia technique did not affect patients’ quality of recovery, it did affect several short-term outcomes.

According to coauthor Ralph Zade, MD, no difference in quality of recovery was found among patients undergoing anterior-approach THA with either general anesthesia, combined spinal/epidural, or spinal/epidural with lumbar and sacral plexus blocks. “However, patients who received general anesthesia had significantly higher opioid consumptions and postoperative pain scores compared to the other groups,” he said. “Additionally, patients who had combined spinal/epidural without blocks achieved postoperative physical therapy goals for discharge more rapidly than patients in the other groups.”

Prospective randomized trial
Senior author Jared T. Roberts, MD, noted that institutionalized protocols emphasizing fast-track recovery in total joint arthroplasty are being developed to decrease hospital lengths-of-stay and improve patient satisfaction scores, which may ultimately lower healthcare costs. “Although ambulatory THA is becoming increasingly popular, there is a lack of evidence comparing clinical outcomes between different anesthesia techniques,” he said.

The study involved 92 consecutive patients with end-stage osteoarthritis scheduled to undergo anterior-approach THA by the senior author between July 2015 and October 2016. Patients between the ages of 18 and 64 years with an American Society of Anesthesiologists (ASA) score between 1 and 3 and a body mass index (BMI) <40 were included in the study. Patients with the following were excluded:

- Posttraumatic or rheumatoid arthritis of the hip
- Previous surgery or infection of the operative hip
- Neurologic, musculoskeletal, or medical conditions that would adversely affect the ability to comply with early weight-bearing
- Refusal of or contraindication to spinal anesthesia or peripheral nerve blocks
- True amide-type local anesthetic allergy
- Personal or family history of malignant hyperthermia
- Coagulopathy or thrombocytopenia
- Previous spine surgery
- Implantable pain management devices
- History of prescription or illicit drug abuse, chronic alcohol use, or chronic opioid medication use

Patients were randomized to receive either local-dose spinal anesthesia with lumbar and sacral plexus blocks (Group A, n = 31), combined spinal/epidural anesthesia without lumbar and sacral plexus blocks (Group B, n = 31), or fast-track general anesthesia (Group C, n = 30). Patient demographics were similar among the groups.

Preoperatively, patients in all of the groups received standardized multimodal analgesia and an intraoperative transdermal patch. They also received appropriate antiseptic prophylaxis within 1 hour of incision, 1 gram of vancomycin within 2 hours of incision, and 1 gram of tranexamic acid intravenously 5 minutes before incision.

A standardized protocol for postoperative pain was used in all patients. All patients were encouraged to sit at the side of the bed as soon as possible following surgery, and all began to ambulate with assistance at 4 and 8 hours after surgery beginning postoperative day zero.

The primary outcome measure was quality of recovery as measured by the ambulatory Quality-of-Recovery (QoR-29) questionnaire. Postoperative pain scores, opioid consumption, time to meeting discharge criteria, and time to achieving discharge physical therapy goals were also compared among the groups. Harris hip and WOMAC scores were recorded preoperatively and at 4- and 12-week follow-up.

Table 1: Summary of Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group A* (±SD)</th>
<th>Group B* (±SD)</th>
<th>Group C* (±SD)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in QoR-29</td>
<td>2.0 (±1.7)</td>
<td>1.5 (±1.3)</td>
<td>1.5 (±2.3)</td>
<td>0.994</td>
</tr>
<tr>
<td>POD 0: Opioid consumption</td>
<td>21.3 (±13.3)</td>
<td>21.3 (±16.5)</td>
<td>54.6 (±40.1)</td>
<td>0.001</td>
</tr>
<tr>
<td>POD 1: Opioid consumption</td>
<td>31.3 (±20.1)</td>
<td>26.6 (±26.3)</td>
<td>25.5 (±32.3)</td>
<td>0.753</td>
</tr>
<tr>
<td>Time to achieving discharge PT goals</td>
<td>11.1 (±8.4)</td>
<td>4.6 (±1.5)</td>
<td>10.3 (±9.1)</td>
<td>0.05</td>
</tr>
<tr>
<td>Postoperative NRS Pain</td>
<td>1.6 (±2.5)</td>
<td>1.6 (±1.8)</td>
<td>4.9 (±3.2)</td>
<td>0.001</td>
</tr>
<tr>
<td>Postoperative Nausea (%)</td>
<td>5.3%</td>
<td>21.4%</td>
<td>40.6%</td>
<td>0.012</td>
</tr>
<tr>
<td>Time to urination (in hours)</td>
<td>7.7 (±2.8)</td>
<td>6.7 (±2.2)</td>
<td>6.4 (±2.7)</td>
<td>0.292</td>
</tr>
<tr>
<td>Operative time</td>
<td>89 (±8.9)</td>
<td>90 (±11.7)</td>
<td>99.9 (±11.0)</td>
<td>0.016</td>
</tr>
<tr>
<td>Patient satisfaction</td>
<td>0.6 (±0.5)</td>
<td>0.6 (±0.4)</td>
<td>0.5 (±0.5)</td>
<td>0.273</td>
</tr>
</tbody>
</table>

*Group A: Peripheral nerve block with combined spinal/epidural; Group B: Combined spinal/epidural; Group C: General anesthesia

No differences in quality of recovery
As summarized in Table 1, analysis of variance revealed no significant differences in postoperative QoR-29 changes among the groups (*P = 0.994*). Compared to Groups A and B, patients in Group C had significantly higher postoperative day 0 opioid consumption (*P = 0.001*), significantly higher immediate postoperative numeric rating scale pain scores (*P = 0.001*), and increased incidences of postoperative nausea (*P = 0.04*).

Patients in Group B had significantly decreased time to reaching physical therapy goals and significantly lower estimated blood loss (*P = 0.05* and *P = 0.01*, respectively), compared to the other groups. Group B patients also had decreased time to meeting discharge criteria, although the difference did not reach statistical significance.

No significant differences were found in Harris hip or WOMAC scores among the groups at 4 and 12 week postoperative visits. “Patients receiving low-dose spinal/epidural anesthesia, with or without peripheral nerve blockade, required significantly less immediate postoperative opioid administration, had lower immediate postoperative pain scores, and decreased intraoperative blood loss than those receiving general anesthesia,” the authors write. “Additionally, we found no added benefit from the addition of peripheral nerve blockade and, in fact, more rapid achievement of physical therapy goals without blocks.”

“It may be beneficial, therefore, for active patients undergoing anterior THA to receive spinal/epidural anesthesia instead of general anesthesia, with no additional benefit of regional blocks in the immediate postoperative period,” said Dr. Zade.

Authors of “Does Type of Anesthesia Influence Recovery From Anterior Total Hip Arthroplasty? A Prospective, Randomized Trial” are Ralph Zade, MD; Brian Geoffrey Greenberg, MD; Jessica Rivetz; Andrea Melissa Mesiti; Eric Silverman, MD; Samik Banerjee, MD; and Jared T. Roberts, MD.

The authors’ disclosure information can be accessed at www.aaos.org/disclosure

Maureen Leahy is assistant managing editor of AAOS Now. She can be reached at leahy@aaos.org