Quad Weakness: When Does It Matter?

To the Editor:

We read the recent study by Kim et al. with great interest. The question that they sought to answer, namely, whether adductor canal blocks can provide noninferior analgesia to femoral nerve blocks after total knee arthroplasty while at the same time decreasing the quadriceps weakness, is an important one. We commend them in particular on their noninferiority study design regarding pain scores and opioid consumption, as well as their use of dynamometers to objectively measure quadriceps strength. Given our own practice experience, we are not surprised to see confirmation of similar analgesia.

We have some concern with the interpretation and conclusions drawn from the dynamometer data. The dynamometer readings for the adductor canal group had a much wider range (3.5–10.9) than those in the femoral nerve group (0.00–3.9) at the 6- to 8-h postoperative assessment time. Some of this could be explained by variable patient anatomy in the adductor canal. However, it could also be explained by variability in block efficacy.

Furthermore, the concomitant use of epidural local anesthetics during postoperative assessments clouds the picture. It is not clear from the data how much postoperative epidural local anesthetic was used by each group. The similar analgesia levels reported by both groups could be a consequence of the epidural infusion combined with the multimodal agents given. It is also not clear how much intraoperative epidural local anesthetic was given. Standardizing all patients to receive a spinal anesthetic without an epidural would have eliminated this concern.

Outside of the 6- to 8-h postanesthesia assessment, the authors did not find any difference in quadriceps strength. This is of particular interest in the total knee arthroplasty population because, in the case series by Atkinson et al., cited by the authors, the two patients who underwent knee arthroplasty sustained their falls at 20.5 and 21.5 h postoperatively. While the observed reduction in quadriceps weakness at 6–8 h is consistent with results seen in healthy volunteers, the clinical relevance of this finding is uncertain, especially considering the assessment performed by Kim et al. was in the postanesthesia care unit, where patients are not ambulating and are not, therefore, at high risk for falls.

The authors’ results are contrasted by those of Jaeger et al., who compared continuous adductor canal blocks to continuous femoral nerve blocks for total knee arthroplasty and found less quadriceps weakness at 24 h postoperatively in the adductor canal group with equivalent pain scores and opioid consumption. These findings could be explained by the fact that Jaeger et al. performed continuous blockade, while the authors performed single-injection blocks with epidural infusions. Neither study was powered adequately to study the relatively rare complication of falls, but based on the two together it is reasonable to conclude that if continuous peripheral nerve blocks are the preferred technique over epidural infusions at a given institution, quadriceps weakness may be less pronounced with adductor canal blocks at the start of ambulation. If the less conventional approach of Kim et al., in which an epidural infusion is combined with a single-injection peripheral nerve block, is preferred, the data do not yet support the idea that quadriceps strength is any better preserved with adductor canal blocks at the time of ambulation.

Competing Interests

The authors declare no competing interests.

Eric S. Schwenk, M.D., Kishor Gandhi, M.D., M.P.H.
Jefferson Medical College, Philadelphia, Pennsylvania
(E.S.S.). eric.schwenk@jefferson.edu

References


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Is an Adductor Canal Block Simply an Indirect Femoral Nerve Block?

To the Editor:

It is with interest that we read the study by Kim et al. and the accompanying editorial by Mariano and Perlas.

The patients involved in this study received effective multimodal analgesia, which included effective continuous

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