Symposium: 2014 Knee Society Proceedings

CORR Insights®: The Chitranjan Ranawat Award: Periarticular Injections and Femoral & Sciatic Blocks Provide Similar Pain Relief After TKA: A Randomized Clinical Trial

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Where Are We Now?

In the modern era of TKA, the concept of improving the patient experience in the perioperative period has garnered much interest. The potential to decrease pain immediately after surgery has perhaps received the most attention, and many pain relief strategies including multimodal analgesia,

peripheral nerve blockade, and local periarticular injection with a myriad of drugs have shown effectiveness in reducing patient postoperative pain levels. Unfortunately, each of the above-mentioned strategies also has drawbacks. Peripheral nerve blocks, for example, provide excellent pain relief but may suffer from technique-related issues, limited early patient mobility

from quadriceps inhibition, and most concerning, patient falls. In contrast, local periarticular injections can also decrease pain, but carry the shortcomings of nonstandardization of injectable medications and possibly a higher rate of breakthrough pain requiring rescue with parenteral or oral analgesics. Add the recent introduction of novel injectable medications such as liposomal bupivacaine [4], along with growing array of peripheral nerve block techniques like adductor canal blocks, and it is understandable that there is currently a vigorous debate about how best to provide early postoperative pain relief after TKA.

This CORR Insights® is a commentary on the article “The Chitranjan Ranawat Award: Periarticular Injections and Femoral & Sciatic Blocks Provide Similar Pain Relief After TKA: A Randomized Clinical Trial” by Spanghehl and colleagues available at: DOI: [10.1007/s11999-014-3603-0](https://doi.org/10.1007/s11999-014-3603-0)

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Where Do We Need To Go?

The paper by Spanghehl et al. [8] is an excellent addition to the growing body of literature addressing this topic. The authors concluded that patients who received periarticular injections showed similar pain scores, shorter length of stay, lower rates of peripheral

Symposium: 2014 Knee Society Proceedings

nerve dysesthesia, but greater narcotic use compared to patients who received peripheral nerve blocks. These results support the use of periarticular injections, and are in agreement with several other recently published studies that also favored this approach [1, 5, 9]. However, there are several issues with the paper that deserve comment. First, the continuous femoral nerve blocks were performed with nerve stimulation rather than with ultrasound guidance [2, 6]. Second, the concentration local anesthetic in the peripheral nerve blocks was 0.2–0.5% ropivacaine, as opposed to a lower dosage like 0.25% or even 0.125%, as reported by other authors [3, 7]. Both of these factors could have contributed to the high rate of dysesthesia reported in the nerve block group. Finally, the constitution and concentrations of local anesthetic, ketorolac, and morphine used in the periarticular cocktail injection are different than previous reports [1, 5, 9]. There is still substantial debate about the effectiveness of nonsteroidal anti-inflammatory and centrally acting mu-opioid agonists (morphine) when injected into local tissues. The variability in the constitution of injection cocktails makes comparison to the results of existing studies challenging. These limitations highlight the variability in methodology for both periarticular injection and peripheral nerve blockade. Recent reported

success [4] with novel agents such as liposomal bupivacaine introduces yet another pain relief modality that will need further study to document evidence of safety and perhaps superiority over existing techniques.

How Do We Get There?

The current debate goes something like this: Peripheral nerve blocks provide excellent pain relief but are limited by technique issues, increased cost, quadriceps inhibition, and increased rate of patient falls. Periarticular injections allow earlier return of quadriceps function and early ambulation at the expense of more-variable (and perhaps less-effective) pain relief and lack of standardization of the ideal cocktail. Additionally, most comparative studies to date have used variable metrics such as length of stay, readiness for discharge or early pain ratings for assessment of superiority. Going forward, it would seem that well-designed randomized studies comparing contemporary peripheral nerve block techniques (ultrasound guidance with more dilute local anesthetic concentrations and diligent postoperative patient mobilization protocols) with standardized periarticular injection cocktails would be an important next step. Perhaps of equal importance would be to evaluate broader

measures of the overall patient experience (rather than single metrics such as length of stay or isolated pain scores) in the early postoperative period as a way to more thoroughly assess the superiority of the available perioperative pain-management strategies. Surgeons and patients should be cognizant of the fact that all of the methods of early pain management discussed here — multimodal approaches, periarticular injections, and peripheral nerve blocks — have vastly improved the early TKA experience compared to the days of patient controlled analgesia and intravenous narcotic medication alone.

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Symposium: 2014 Knee Society Proceedings

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