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CORR® Insights: Is Local Infiltration Analgesia Superior to Peripheral Nerve Blockade for Pain Management after THA: A Network Meta-analysis

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Where Are We Now?

Taking every reasonable measure against postoperative pain is a foremost ethical obligation of all healthcare providers.

This CORR Insights® is a commentary on the article "Is Local Infiltration Analgesia Superior to Peripheral Nerve Blockade for Pain Management after THA: A Network Meta-analysis" by Jiménez-Almonte and colleagues available at: DOI: 10.1007/s11999-015-4619-9.

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In the field of joint replacement surgery, effective pain control has also been shown to result in faster mobilization and earlier patient discharge, reduced complication rates, and increased patient satisfaction [11]. In an era when the quality of medical care is tightly interwoven with economic considerations [1], the implications of those findings are obvious for surgeons and medical institutions alike.

Through the years, the trend has been to move away from using opioids in patients undergoing hip and knee arthroplasty typically because of high rates of gastrointestinal complications and cognitive side effects [13]. In general, intravenous patient-controlled analgesia and neuraxial analgesia have largely been surpassed by or used in combination with peripheral regional nerve blocks [5]. Indeed, nerve blocks

reduce and can occasionally eliminate the need for opioids [6] when used as part of multimodal pain management approach; however, they are technically demanding, somewhat costly, and have their own set of potential adverse effects (nerve injury, bleeding, and infection), while the resultant prolonged motor blockade may delay rehabilitation [3, 5]. In approximately the last 5 years, intra-operative periarticular injections have been introduced in the hopes of overcoming the aforementioned shortcomings. Is their use worthwhile compared to the standard of care, namely peripheral nerve blocks? In short, this is the question the study by Jiménez-Almonte et al. [7] attempts to answer.

Where Do We Need To Go?

We have to develop standardized protocols that will be less dependent on opioids, while providing acute pain management after hip replacement surgery in a safe, efficient and cost-effective manner. Such a protocol has the

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potential to gain acceptance by physicians worldwide, and to make pain management as routine as the operation of hip arthroplasty itself. The paper by Jiménez-Almonte et al. [7] addresses three research questions, of which the third—whether local infiltration analgesia is favored over nerve blocks—is the most critical. Infiltration analgesia is advantageous mainly by way of its ease of administration and would likely be the most attractive option to be included in a preemptive, multimodal pain management pathway. Jiménez-Almonte et al. [7] employed the statistical technique of network meta-analysis which allowed them to include 10 more randomized control trials, for a total of 2296 patients. Still, they found no statistically significant differences in pooled effects between the two methods, although local infiltration was most likely to be superior in rank-order analysis. Despite the robust methodology of the study, the authors duly acknowledge limitations such as high heterogeneity, imprecision in the effect estimates and indirectness, all undermining confidence in the effect estimates and probability rankings [2, 4, 7]. The multitude of different interventions used in published randomized control trials is the major driver of the observed heterogeneity, which ranged from 66% to 97%, while complete lack of head-to-head comparisons creates indirectness. Indirectness limits

certainty in the results in a network meta-analysis [2].

How Do We Get There?

Assessing the effects of interventions on pain severity is difficult. Perception of pain is subjective and may be influenced by psychosocial and genetic factors [12]. The limitations of the available evidence summarized in the network meta-analysis by Jiménez-Almonte et al. [7] highlight the need for well-designed randomized control trials directly comparing infiltration analgesia to regional nerve blocks with respect to postoperative pain relief, opioid requirements and in-hospital duration of stay. Extrapolating from research in total knee arthroplasty, opioid requirements beyond the first 24 hours may be worth investigating: Recent data indicate that, when infiltration analgesia is used, the need for opioids is substantially reduced following the day of surgery [10]. Further unresolved issues with local infiltration analgesia include the nature and incidence of associated complications [7], the optimal composition of the solution injected [9], the injection sites best corresponding to neural anatomy [9], the application of the technique in revision surgery, and the effectiveness of the newer, long-acting liposomal bupivacaine [1]. These could all be

topics of future randomized or case-control studies. Once these aspects are clarified, rigorous health economic analyses should be conducted to confirm previous investigations on the fiscal sustainability of this technique [8]. Certainly, much needs to be done. Despite difficulties inherent to the nature of the subject, current research shows we are on the right track.

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