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Response to McLaughlin et al regarding: "Multimodal analgesia decreases opioid consumption after shoulder arthroplasty: a prospective cohort study"

In reply:

We thank the authors for the comments related to this article. We appreciate their comments and suggestions and agree that these studies can be challenging but can also move patient care forward. Obtaining accurate pain scores can be highly subjective and relies on patients reporting pain at a single point in time and a nurse recording the pain score accurately.[7] Although pain is subjective, our ability to enter and access the data is much less subjective. In our institution, we have a highly integrated electronic medical records system through EPIC Enterprises (Verona, WI, USA). Each time a medication is administered, it is withdrawn through computerized drug dispensing system and the patient's wrist band is scanned along with the matching ordered medication before administration. Nurses assess pain on a regular basis and record the assessments in the electronic medical records. The pain scores are recorded in conjunction with medication administration. The study that the authors have cited by McCarthy et al[8] described differences between postanesthesia care unit nursing assessments of pain scores immediately after surgery as a measurement of anesthesiologist performance. This may not accurately apply to our study because we used patient-reported pain scores recorded through the electronic health records to assess pain levels. We are not sure what other methods there are for assessment of postoperative patient pain and would welcome any suggestions by the authors to improve this, as patient-reported pain scores are the standard currently for assessment of pain levels.

In our study, the intraoperative medication was standardized for both groups, and we were fortunate to have an anesthesiologist as part of the study team. The patients also had standardized preoperative regimens including peripheral nerve blocks and premedication with acetaminophen. Intraoperatively, both groups underwent the same regimen of general anesthesia, and intraoperative opioids were withheld per protocol.

We found a small but non–statistically significant difference in time between the 2 groups. Group 1 had a mean time of 108 minutes. Group 2 had a mean time of 95 minutes. The P value for this difference was .07, which was not significant. An actual time difference of 13 minutes is also likely not clinically significant and includes some anesthesia time. However, the effect of the difference in terms of pain scores between the 2 groups was highly significant, with $P < .01$. Owing to the large differences in pain scores with no statistically significant difference in operating room times, we believe that it is unlikely that the 13-minute difference in the operating room time was a significant confounder in this study. Although a multivariate analysis could be performed to decrease the likelihood of a type I error, we did not believe it added much to the study given its prospective cohort nature.

As with many studies, there is likely considerable room for improvement. The optimal perioperative pain management protocol is very important given the importance of opioid use and abuse, as well as the push toward shorter hospital stays.[1,3] This study had several limitations including the fact that it was a cohort study, not a prospective randomized study, which would strengthen future studies as well. In addition, other forms of pain management (which have had equivocal results clinically), such as liposomal bupivacaine, could lead to different pain results.[2,4-6] Future studies could certainly benefit from different study designs, but we believe that the cohort design and statistical analysis of our study were appropriate to test the hypothesis posed for this project.

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