Reply to the Letter to the Editor

Reply to the Letter to the Editor: The 2013 Frank Stinchfield Award: Diagnosis of Infection in the Early Postoperative Period After Total Hip Arthroplasty

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To the editor,

We thank Drs. Alshameeri and Khanduja for their comments regarding our study. We are glad our work is contributing to the ongoing effort to accurately diagnose and treat periprosthetic joint infection (PJI).

We would respectfully disagree with Drs. Alshameeri and Khanduja

regarding whether patients can be divided into three groups after surgery with respect to infection. The authors comment that some are “easily diagnosed” with an early infection based on “serological and radiological tests.” We are unaware of prior data that have outlined criteria for the diagnosis of infection in the early postoperative period following THA, with the only available data on knees of which we are aware having been published by Bedair et al. [1] and Christensen et al. [3]. Additionally, we

are not aware of any data on the utility of radiological tests for the diagnosis of infection in the early postoperative period. One of the reasons we performed this work is to highlight the general difficulty of early diagnosis of periprosthetic joint infection.

Likewise, we disagree with their objection that our study cohort should have only reflected those patients who are “clinically well but have developed an inflamed and possibly leaky wounds with normal or mild elevation of serological markers.” First and foremost, we wanted to study all patients who underwent evaluation for PJI in the first 6 weeks postoperatively—regardless of initial clinical suspicion. This is because PJI can be present in revision THAs that have low preoperative suspicion for infection [2]. Accordingly, it is important to exclude the diagnosis of PJI in all patients undergoing a revision THA—not just those who have moderate or high clinical suspicion. As we believe that PJI must be ruled out in all revision THAs, our institutional protocol has been to routinely evaluate

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any revision THA for PJI, which guided our decision to include all patients who underwent revision THA in the first 6 weeks postoperatively. For the same reason, we did not mention suspicions regarding PJI in those patients in our study who underwent reoperation for periprosthetic fracture of instability. We suspect PJI in all patients, regardless of reason for revision. Furthermore, without some assessment of what “normal” is in the early postoperative period for a hip that is not infected, how does one determine a baseline? We are unaware of prior data that have examined what the synovial fluid white blood cell count and differential should be in the early postoperative period in a hip that is not infected.

Regarding the second observation about the risk of inoculating a healthy joint by introducing a needle through a superficially infected wound, some do argue that is a clinical dilemma. We believe a strength of our paper is that it suggests that the serum C-reactive protein can be extremely useful in determining who to aspirate. If the C-reactive protein is above or near the ideal threshold for the diagnosis of PJI (93 mg/L), an aspiration would be warranted, while if the number is lower

(say less than 50 mg/L), assuming the clinical suspicion is low, an aspiration should be avoided. Additionally, in most cases, it is possible to perform an aspiration outside the area of erythema. That being said, we are unaware of solid scientific evidence that an aspiration through an area of erythema definitely leads to harm (although logically, we avoid it if possible). In questionable situations, we would recommend an aspiration to definitively rule in or out PJI nonetheless.

We did perform regression analysis that took into account combinations of the serological and synovial tests for the diagnosis of PJI to assess whether or not we could have increased diagnostic performance. In our *Methods* section, we state “Combinations of diagnostic variables were included simultaneously in the models to evaluate any incremental use” [4]. However, we found no significant improvement in diagnostic performance with combinations at predetermined cutoffs, which is why we did not report any specific numbers. Part of the “problem” we faced was the excellent performance of the serum C-reactive protein and the outstanding performance of the synovial fluid white blood cell count.

Thank you again for your observations and comments regarding our work.

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