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REPLY TO LETTER TO THE EDITOR

Findings at the Bone-Component Interface in Symptomatic Unicompartmental Knee Arthroplasty and the Relationship to Radiographic Findings

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We thank Sabour et al. for their interest in our study and thoughtful comments. They indicate that to assess agreement or reproducibility of a qualitative variable, using Cohen's kappa statistic (κ) is not always appropriate, since a κ value depends on the prevalence in each category and on the number of categories. When a variable with more than two categories or an ordinal scale is used, the weighted κ would be more optimal to assess inter-rater agreement. In our study, the presence or absence (nominal variable) of each magnetic resonance imaging (MRI) finding was scored and used to calculate the inter-rater agreement of all findings (bone marrow edema, fibrous membrane, osteolysis, and loosening) [2]. Two of these findings were graded according to an ordinal scale: bone marrow edema as the volume of marrow that was involved and fibrous membrane as the percentage of the implant interface that was involved [1].

We agree that using a weighted κ to assess inter-rater agreement would be a good option, as both findings have been scored using ordinal scales. Therefore, in addition to the Cohen's κ, we have calculated weighted κ values [3] of bone marrow edema and fibrous membrane. When assessing the inter-rater agreement at the femoral component, the weighted κ was 0.771 for bone marrow edema and 0.742 for fibrous membrane. At the tibial component, the weighted κ was 0.725 for bone marrow edema and 0.640 for fibrous membrane.

Taking into account all results and current methodology, we deem MRI with the addition of multiacquisition variable-resonance image combination (MAVRIC) to be a valuable tool in assessing symptomatic medial unicompartmental knee arthroplasty (UKA) that can help to quantify appearances at the bone–implant interface, as we found substantial inter-rater agreement for both components at minimum. Therefore, this MRI protocol can be helpful in the evaluation of symptomatic cemented UKA, especially in the setting of unremarkable conventional radiographic findings.

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Compliance with Ethical Standards

Conflict of Interest: Laura J. Kleeblad, MD, and Hendrik A. Zuiderbaan, MD, PhD, report no conflicts of interest. Andrew D. Pearle, MD, reports receiving personal fees from Stryker Corp., Exactech, and Zimmer Biomet, outside the submitted work.

Human/Animal Rights: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2013.

Informed Consent: Informed consent was waived from all patients for being included in this study.

Required Author Forms Disclosure forms provided by the authors are available with the online version of this article.

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