Author's response to reviews

Title: The Posterior-Anterior-flexed View is essential for the Evaluation of Valgus Osteoarthritis. A prospective study on 134 valgus knees

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Author's response to reviews:

Editor Comments:

"It mentioned that “The current study investigates the following research questions: Is the PA-flexed view more accurate for the Kellgren and Lawrence grading of valgus osteoarthritis?” It is not clear whether this study included only knees with valgus osteoarthritis. If it is not the case, how many knees had valgus osteoarthritis? It might be more informative to perform analyses stratified by knee alignment (varus, neutral, valgus), and by medial and lateral femorotibial compartment.

The present study studies knees with valgus osteoarthritis exclusively. In a prior study, we investigated the value of PA-flexed view radiographs in the assessment of osteoarthritis of the knee for different alignment (varus, neutral and valgus knees). We concluded that PA-flexed view is most beneficial in valgus osteoarthritis (Rueckl, Boettner et al. 2017). This study “The Posterior-Anterior-Flexed View is essential for the Evaluation of Valgus Osteoarthritis. A prospective study on 134 valgus knees” takes up these results by investigating whether this benefit is affected by the extend of valgus alignment of the knee.

“In 53 (62.4%) of 85 knees with mild to moderate OA on AP radiographs (K/123 L-score ≤3), the minJSW on the PA-flexed view decreased compared to the AP view and resulted in an increased K/L-score of 4 (Fig. 1).” It is not clear whether the minJSW is for medial or lateral femorotibial compartment. Data need to be presented.
We thank the reviewer for this important comment. The difference in K/L-grading was based on differences in the lateral minJSW. We added the according data and corrected the sentence.

Lines 97ff: In 53 (62.4%) of 85 knees with mild to moderate OA on AP radiographs (K/L-score ≤3), the lateral femorotibial minimal joint space width (minJSW) on the PA-flexed view (2.0mm, SD 1.1) decreased highly significant (p<0.001) compared to the AP view (0.1mm) and resulted in an increased K/L-score of 4 (Fig. 1).

It is not clear why <5.0 deg., 5.0-9.9 deg., 10.0 - 14.9 deg., and ≥15.0 deg. were used as the cut-offs of mechanical valgus deformity.

Valgus deformity of the knee has been classified by Ranawat as Grade I to III (Ranawat, Ranawat et al. 2005), but alternative classifications have been proposed, i.e. by Rodriguez-Merchan (Rodriguez-Merchan 2019). However, excessive valgus deformity, that correlates with a greater risk of failure seems not congruent with the afore mentioned classifications (Ritter, Davis et al. 2013). In conclusion, there is no ultimate consensus on how to most appropriately classify valgus deformity.

Thus, for the present study, we adopted our classification, which has been published just recently in a comparative analysis between valgus and varus knees on the outcome after TKA (Kahlenberg, Trivellas et al. 2018).

We updated the methods section.

Lines 75ff: Knees were grouped by the extent of mechanical valgus deformity (<5.0 deg., 5.0-9.9 deg., 10.0 - 14.9 deg., ≥15.0 deg.) as previously described (Buckland-Wright, Macfarlane et al. 1995).

Reviewer reports:

Kent Carlson (Reviewer 1): The authors have made all of the minor corrections that I requested during my initial review. I believe the paper is now suitable for publication. Interesting work!
We thank the reviewer for this positive feedback to the revised manuscript.

Assistant Editor Comments:

1. Overlap
We note that the current submission contains some textual overlap with other previously published works, in particular: Rueckl, Kilian, et al. "The posterior–anterior flexed view is better than the anterior–posterior view for assessing osteoarthritis of the knee." Skeletal radiology 47.4 (2018): 511-517. While we understand that this is work that you have previously published, and some of the same ideas are contained in these publications, please be aware that we cannot condone the use of text from previously published work. Please be informed that we cannot
proceed with handling your manuscript before this issue is resolved, and the sections of text in question have been reformulated.

For methods and studies you have previously done please summarise and reference the original study instead.

We updated the methods section.
Lines 73ff:
Radiographic Protocol

Radiographic protocols and measurements were performed as described before (Rueckl, Boettner et al. 2017). In brief, standardized AP, PA-flexed, Merchant and Standing hip-to-ankle (HA) radiographs were available for each knee. Knees were grouped by the extent of mechanical valgus deformity (<5.0 deg., 5.0-9.9 deg., 10.0 - 14.9 deg., ≥15.0 deg.) as previously described (Buckland-Wright, Macfarlane et al. 1995). The minJSW was measured for the medial and the lateral compartment in the AP and PA flexed radiographs with digital templating software (Sectra AB, Linköping, Sweden) as previously described (Buckland-Wright, Macfarlane et al. 1995, Rueckl, Boettner et al. 2017). The medial, lateral and patellofemoral compartment was graded according to the Kellgren and Lawrence (K-L) classification system (Kellgren and Lawrence 1957). Inter-observer reliability and intra-observer correlation were 0.96 – 1.00 and 0.77 – 0.95 respectively (Rueckl, Boettner et al. 2017).

Statistical analysis

Variables were depicted as means and ranges. All variables were evaluated for normal distribution with either the Kolmogorov-Smirnov or Shapiro-Wilk test. Means were tested for homogeneity of variance with the Levene test. Comparison of means or medians was done with the Wilcoxon signed rank test in case of dependent, nonparametric values and with the paired t test for dependent, parametric values, respectively. Level of significance was set at p <0.05 and of high significance at p <0.01. Power calculation revealed a sample size of 58 knees for a power of 80% with G*Power, version 3.1.9.2. Statistic calculations were performed with IBM SPSS® version 25.0.0.0 (SPSS, Chicago, USA).

2. Ethics approval and consent to participate
In your “ethical approval and consent to participate” section, please confirm whether informed consent obtained was written or verbal.

We updated the ethics section:
Lines 197ff: The study received IRB approval by the institutional review board at the Hospital for Special Surgery, New York, NY, USA (IRB number: 2017-0418). Written informed consent was obtained from all individual participants included in the study.
3. Consent for publication
Currently, the statement in your “Consent for publication” section of your declarations is not suitable. Consent for publication refers to consent for the publication of identifying images or
other personal or clinical details of participants that compromise anonymity. Seeing as this is not applicable to your manuscript please state “Not Applicable” in this section.

We updated this section:

Line 201: Not applicable.

References:

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