Peer Review File
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Reviewer A:
Excellent and important review

Reviewer B:
This is a review article written for the purpose of synthesizing current knowledge on the relationship between the spine and hip joints with a focus on information obtained from alignment parameters (spinopelvic parameters and the anterior pelvic plane), motion/mobility, and the effect of surgical intervention.
Overall Concept & Impact:
As orthopedic surgeons continue to understand and consider the global ramifications of spine and hip pathologies and their treatments separately, this article offers a guide to the general orthopedist and spine surgeon to consider the interplay between the spine and hips as extensions of each other, rather than separate entities. Knowledge-sharing between information gained from each specialty may further the understanding of the complex relationship between the spine and hips, particularly when considering the timing of and planning for surgical intervention of either or both.

Content Comments:
Comment 1: Similar to the image you provided demonstrating the spinopelvic parameter measurements, it would be beneficial to include a similar image demonstrating the anterior pelvic plane measurements discussed in lines 122-128.

Reply 1: Thank you for your comments. We have added an additional figure demonstrating the anterior pelvic plane (Figure 3).

Comment 2: In lines 173-175 you reference an ‘increasing’ number of patients undergoing both THA and lumbar fusion – can you provide a statistic to give the reader a better understanding of the depth of the problem?

Reply 2: Thank you for your comments. We have added a percentage (2%) to better illustrate the prevalence of these patients in the population.

Comment 3: In lines 191-193 you mention an increased risk of progression to hip OA after multilevel fusion – from the studies that reported this, are you able to quantify the risk (relative risk, odds ratio, hazard ratio)? This would give the reader a better feel for the magnitude of the risk.

Reply 3: Thank you for your comments. We have reported a standardized beta coefficient and p-value (coefficient: 0.374, $p<0.0001$) as reported by Kawai et al. in their multivariate regression analysis.

Comment 4: In lines 197-199 you mention the Kim et al. study demonstrated a significant decrease in pelvic and lumbar mobility per the change in SS at 1 year following THA – can you quantify the

decrease in mobility in loss of degrees or the %change over the year? Are you able to determine from the study if the measured decreased mobility resulted in a functional loss of mobility/motion or led to further ramifications (spinal issues)? Are you able to define the sample population from this article to give the reader an idea of the type of spine patients evaluated, such as none had prior spine surgery, the level of pre-existing degeneration, any pre-existing PI-LL mismatch issues?

Reply 4: Thank you for your comments. We have described the loss in SS and LL after THA as cited by Kim et al. These changes are described in change between standing and seated-flexed and seated-relaxed positions. The study did not detail whether these changes led to further ramifications from a clinical perspective. We have also further defined the patient population and noted there was no significant difference in PI-LL mismatch preoperatively and at one-year follow-up.

Comment 5: In lines 241-243, are you able to provide any additional information that will allow the reader to draw conclusions on why the Yang et al. findings were different from the other similar studies mentioned? For example, including the study design, patient population, differences in surgical technique may help.

Reply 5: Thank you for your comments. We have described the differences in the two studies that may partially explain the different conclusions between Yang et al. and Malkani et al., including private insurance vs. Medicare patients and differences in multivariate regression model construction. All 3 studies used databases and thus were not able to comment on surgical approach, a limitation that we also have commented on.

Comment 6: Have the authors considered adding information regarding the spine-hip relationship after lumbar disc arthroplasty? Although the information provided surrounding lumbar fusion is beneficial, it would be of great interest and timely to understand if there are additional benefits to maintaining lumbar motion with LDA vs. fusion in reference to the hip joints (both native joints and after THA). If no similar studies exist, the suggestion of future studies looking at which motion-preserving procedure comes first, THA or LDA could be made.

Reply 6: Thank you for your comments. We have found no evidence that describes the relationship of hip mechanics before or after lumbar disc arthroplasty. We have added a sentence to suggest future studies looking at this relationship.

Structural Comments:
Comment 7: Line 176: I believe you are missing “and” after spinal fusion.

Reply 7: Thank you for your comment. We have changed the structure of the sentence to read more clearly.

Comment 8: Line 195: change to Kim et al. instead of Kim et. al (and check convention is maintained throughout).

Reply 8: Thank you for your comment. We have changed our notation to use this convention

throughout the paper.

Comment 9: Line 369: change relive to relieve.

Reply 9: Thank you for your comment. We have implemented this change.