***CORR* Insights®: The Value of Valgus Stress Radiographs in the Workup for Medial Unicompartmental Arthritis**

Shuichi Matsuda MD

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Where Are We Now?

The integrity of the articular cartilage in the lateral compartment and the correctability of varus deformity are two important factors in the selection of an appropriate surgical procedure for unicompartmental knee arthritis. Stress radiographs have been used to evaluate knee conditions and aid in decision-making. The current study aimed to provide a critical evaluation of valgus stress radiographs. The authors reported that the lateral joint space width with valgus stress did not correlate with intraoperative grading of the integrity of the cartilage (using the Outerbridge scale). Although most of the knees in these cases did not

have severe cartilage damage in the lateral compartment, the current article clearly identifies the limitations of the use of stress radiographs as a tool for articular cartilage evaluation. The next question was the efficiency of stress radiographs in assessing correctability of knee deformity. Again, the authors concluded that stress radiographs do not provide any additional benefit as compared to the conventional radiographic assessment. Although there was a clear association between the correctability and mechanical alignment on AP standing radiographs, some knees were overcorrected or undercorrected to a certain extent on the valgus stress radiographs. Therefore, preoperative stress radiographs may still provide important information regarding the integrity of medial soft tissue.

This CORR Insights® is a commentary on the article “The Value of Valgus Stress Radiographs in the Workup for Medial Unicompartmental Arthritis” by Waldstein and colleagues available at: DOI: [10.1007/s11999-013-3212-3](https://doi.org/10.1007/s11999-013-3212-3).

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S. Matsuda (✉)
Department of Orthopaedic Surgery, Graduate School of
Medicine, Kyoto University, 54 Kawahara-cho, Shogoin,
Sakyo-ku, Kyoto 606-8507, Japan
e-mail: smat522@kuhp.kyoto-u.ac.jp

Where Do We Need to Go?

Currently, MRI can be considered the most effective imaging tool for cartilage evaluation [1, 2]. Recent advances in MRI, such as dGEMRIC, T1ρ mapping, and T2 mapping, are useful for examining cartilage integrity. The current paper by Waldstein and colleagues shows that stress radiographs do not provide additional benefit for the evaluation of articular cartilage. Therefore, the use of MRI should be considered for such evaluations. However, soft tissue conditions are difficult to evaluate using MRI. Stress radiographs can be used to predict postoperative alignment of unicompartmental knee arthroplasty. Additional data are required to determine how much stress should be applied in preoperative stress radiographs and how these conditions can be reproduced intraoperatively. Without these data, only ambiguous knee laxity is observed, and information important for surgical planning cannot be obtained.

How Do We Get There?

The effect of articular cartilage integrity on the clinical results of high tibial osteotomy must be investigated. This process is facilitated because high tibial osteotomy can be currently performed with greater precision. It is extremely important to know which parameters used in the MRI of knee articular cartilages are optimal in predicting osteoarthritis progression in the lateral compartment. After these investigations, a higher rate of clinical success for high tibial osteotomy is expected. In unicompartmental knee arthroplasty, an alignment almost identical to that on the preoperative stress radiograph should be achieved in unicompartmental knee arthroplasty. This is achieved through the application of approximately the same distraction forces at the medial compartment after bone resection as compared to the forces applied when obtaining stress radiographs. Furthermore, adjusting the total thickness of components to the same amount of bone gap should be considered. However, these surgical procedures may cause

“tight knee.” Therefore, further clinical studies are warranted to determine how much gap spaces between the femoral and tibial components (component gap) are required to avoid flexion contracture or instability. For example, if a component gap of approximately 1 to 2 mm is necessary, a thinner component size should be chosen in order to provide more space. More accurate and useful preoperative planning can be achieved by considering this essential laxity in using preoperative stress radiographs.

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