Effect of Meniscal Tear Patterns and Preoperative Cartilage Status on Joint Space Width After Medial Opening-Wedge High Tibial Osteotomy

Sangmin Lee, Jae Gyoon Kim¹, Sang Won Moon², Lih Wang³, Won Chul Shin⁴

¹Korea University College of Medicine, Ansan Hospital, ²Inje University, ³Dong-A University Hospital, ⁴Pusan National University Yangsan Hospital

INTRODUCTION: Medial opening-wedge high tibial osteotomy (MOWHTO) is performed to treat young adults with medial compartment knee osteoarthritis associated with varus deformity. However, factors influencing joint space width (JSW) vary according to the type of medial meniscal tear and have not yet been completely elucidated.

METHODS: This study was conducted on 134 patients who underwent MOWHTO for medial osteoarthritis and were followed up for >2 years. The patients were classified into 3 groups based on medial meniscal status: intact, nonroot tear, and root tear. The authors then measured the JSW preoperatively and at 3 months, 6 months, 1 year, and .2 years postoperatively; analyzed whether the change in JSW varied according to meniscal status; and determined the association of these changes with the preoperative cartilage grade of the medial femoral condyle (MFC) and medial tibial plateau (MTP). International Knee Documentation Committee (IKDC) scores were used to evaluate clinical function. RESULTS:

Of the 134 patients, the medial meniscus was intact in 29 patients, a nonroot tear was observed in 58 patients, and a root tear was observed in 47 patients. Postoperatively, JSW increased for all groups, but the timing of the increase varied between the groups (P < .001). JSW increased the most 6 months postoperatively in the intact group and 3 months postoperatively in the nonroot tear and root tear groups (P < .001). Additionally, the increase in JSW was the greatest in the root tear group. Preoperatively, MFC and MTP cartilage status differed among the groups; MTP status did not affect the JSW, but MFC status did (P < .001). The IKDC score increased from the preoperative to postoperative time point in all groups, but there was no significant difference between groups.

DISCUSSION AND CONCLUSION: The authors observed that the amount and timing of increase in JSW were dependent on the pattern of medial meniscal tear observed when MOWHTO was performed. In addition, the cartilage grade of MFC before surgery was associated with changes in JSW. The IKDC score was not significantly different between groups. However, a longer follow-up period is needed to analyze the correlation with the meniscal tear pattern and JSW.