Patellar height and posterior tibial slope after open- and closed-wedge high tibial osteotomy: a radiological study on 100 patients.

BACKGROUND: Valgus high tibial osteotomy (HTO) may be associated with changes in the patellar height and posterior tibial slope. HYPOTHESIS: Patellar height increases and posterior tibial slope decreases after closed-wedge HTO, whereas patellar height decreases and tibial slope increases after open-wedge osteotomy. STUDY DESIGN: Cohort study; Level of evidence, 3.

METHODS: Lateral radiographs of 100 knees were assessed for patellar height (PH) (Insall-Salvati index [ISI], Caton-De Champ index [CDI], and Blackburne-Peel index [BPI]) as well as posterior tibial slope. Measurements were done before HTO (50 closed wedge [CW], 50 open wedge [OW]), direct postoperatively, and before removal of the hardware.

RESULTS: In the CW group, all 3 PH indices were increased direct postoperatively and at removal of the hardware, with changes in CDI and BPI being significant (P < .05) with a small ES each. Posterior tibial slope showed a significant (P < .05) decrease of 3.1 degrees +/- 3.4 degrees after CW HTO and a significant (P < .05) increase of 2.1 degrees +/- 3.6 degrees after OW HTO direct postoperatively. These changes did not change at the second follow-up. In CW HTO, the correlations between frontal plane correction and PH changes were moderate (CDI: r = .57; BPI: r = .64). In OW HTO, these correlations were weak (CDI: r = .44; BPI: r = .46). According to ISI, there
was no correlation (CW: r = .11; OW: r = .16). There was no correlation between PH changes and slope changes (CDI) and no correlation between frontal plane HTO correction and slope changes in both CW and OW HTO. CONCLUSION: The results confirm our hypothesis for PH and posterior tibial slope changes after valgus HTO. However, there is no strong correlation between PH changes and the degree of frontal plane HTO correction. The incidence of patella infera increases after OW HTO, whereas the incidence of patella alta increases after CW HTO. Therefore, we recommend performing CW HTO or OW HTO with the tuberosity left at the proximal tibia in cases of patellofemoral complaints or patella infera. Neither technique leads to patellar lowering. It should be borne in mind that PH and posterior tibial slope may have been altered before planning total knee replacement after HTO.