**Title:** **Effect of elevated joint line following medial UKA on clinical outcomes**

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**Introduction**: Joint line preservation in primary and revision total knee arthroplasty (TKA) related to satisfied clinical and functional outcomes; however, few studies addressed change of joint line in unicompartmental knee arthroplasty (UKA). We evaluated clinical outcomes following the change of medial joint line in medial UKA.

**Methods**: Seventy-three fixed-bearing medial UKAs performed in 65 patients who had a mean 10-year follow-up (FU) were evaluated. All surgeries were performed by a single surgeon using a single unicompartmental knee system with metal-back tibial tray. Anteroposterior radiographs with single-limb standing at 3-month FU were compared to those of preoperative period for joint line elevation. Patients were evaluated for clinical outcomes in relation to elevated joint line.

**Results:** The average patient’s ages were 57 years (SD, 2.1). There were 52 females (58 knees) and 13 males (15 knees). All knees had elevated joint line with a mean of 4.5 mm (range; 1-8 mm). The mean tibiofemoral angle (TFA) changed from 8° of anatomical varus (range; 14°-0° of anatomical varus) to 4° of anatomical valgus (range; 7°-0° of anatomical valgus). The joint line elevation was ≤2 mm, >3 and ≤5 mm, and > 5 mm in 18 knees, 45 knees, and 10 knees, respectively. Knees with more proximal tibial varus inclination tended to have more joint line elevation. There were no clinical differences among 3 groups, in terms of KSS clinical and function scores, VAS, and knee range of motion (ROM). Nineteen knees had incomplete radiolucent line at the tibial base plate without radiographic change at later FU. No symptomatic and radiographic findings of lateral compartment failure were detected in all patients. There was no infection. However, 14 knees with postoperative TFA of < 2° of anatomical valgus had increased varus alignment and underwent reoperation for thicker tibial insert exchange at a mean FU of 56 months. The survivorship for revision to TKA due to lateral compartment failure or patellofemoral joint failure was 100%.

**Discussion:** The present study demonstrated that medial joint line elevation was inevitable in all medial UKAs. While the joint line of the medial compartment underwent modification, the lateral compartment remained its own biomechanics and anatomy. Therefore, the biomechanics of the knee might alter due to the join line change. However, at long-term FU, all patients did not developed failure of the rest knee compartments in regardless of the amount of joint line elevation. Additionally, knees with < 2° of anatomical valgus of the postoperative TFA related to recurrent varus alignment and impaired clinical outcomes, of which, early thicker tibial insert exchange could extend the UKA longevity.

**Conclusion**: Elevated medial joint line occurred in all fixed-bearing medial UKAs without effect in long-term clinical outcomes on lateral or patellofemoral compartments.

**Keywords:** joint line, unicompartmental knee arthroplasty, UKA, outcomes