Effect of Distal Femoral Osteotomy for Valgus Correction on Change in Patellar Height

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INTRODUCTION

- Distal femoral osteotomy (DFO) is used to treat valgus deformity and lateral compartment osteoarthritis, and is also performed in cases of lateral patellar instability.
- The effect of DFO on patellar height—specifically Caton-Deschamps (CD) index and Insall-Salvati (IS) ratio—is not well understood.
- This study examines whether changes in patellar height following DFO correlate with patient-reported outcomes (PROs), including function, pain, satisfaction, and return to sport.

METHODS

- Patients who underwent lateral opening wedge DFO between January 2010 and August 2023 were retrospectively identified.
- Inclusion: coronal valgus deformity (mLDFA < 86°) with lateral OA or patellar instability and ≥2 years of follow-up.
- Pre- and post-operative CD and IS ratios were measured from lateral knee radiographs.
- PROs collected included IKDC, KOOS, Lysholm, VAS (pain, satisfaction, sports), Tegner, and return to sport.
- Regression analyses were performed to evaluate associations between changes in patellar height and outcomes, adjusting for age, sex, and BMI.

Demographics	N=52
Age (years)	33.9 ± 9.9
Sex	M: 38.5% F: 61.5%
BMI (kg/m²)	30.2 ± 5.4

Outcome	**Pre-operative**	**Post-operative**	**p-value**
Caton-Deschamps Index (CDI)	0.979 ± 0.196	1.002 ± 0.171	0.203
Insall-Salvati Ratio (IS)	1.271 ± 0.223	1.266 ± 0.206	0.768

RESULTS

- Final cohort: 52 patients (mean age: 33.9 ± 9.9 years; 38.5% male; mean BMI: 30.2 ± 5.4 kg/m²).
- Average mechanical correction was 6.69 ± 3.37°, and all procedures were lateral opening wedge osteotomies.
- No significant difference was found in pre- vs. post-op CD index (0.979 vs 1.002, p = 0.203) or IS ratio (1.271 vs 1.266, p = 0.768).
- Change in patellar height was not associated with PROs at final follow-up, including pain, function, or return to sport (p > 0.05 for all outcomes).
- Logistic regression found no significant link between patellar height change and return to sport (CD p = 0.506; IS p = 0.803).

CONCLUSIONS

•DFO does not significantly alter patellar height, and changes in patellar height post-DFO do not correlate with clinical outcomes or return to sport.
•These findings suggest that patellar height metrics may be biomechanically relevant but are not predictive of patient satisfaction or recovery after DFO.
•Further research is needed to validate these results in larger cohorts and investigate additional factors influencing outcomes after DFO.