Progression of coronal varus knee deformity is related to pelvic posterior tilt and distal tibia varus

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INTRODUCTION: The study investigated the relationship between age-related knee alignment changes, as classified by the coronal plane alignment of the knee (CPAK) classification, and the alignment of the pelvis and ankle joint. METHODS:

This cohort study involved 62 women in their 50s and 60s, who underwent two voluntary resident examinations. Radiographic data from the first and second screenings, conducted 5 years apart, were used to assess 16 alignment parameters. SPSS software was used for statistical analysis.

RESULTS: The CAPK classification: Group I: 1st - 15.3%, 2nd - 23.6%. Group II: 1st - 16.9%, 2nd - 16.4%. Group IV: 1st - 15.4%, 2nd - 22.4%. Group V: 1st - 30.6%, 2nd - 18.0%. Changes from 1st to 2nd screening indicated varus alignment. Group I showed larger mechanical LDTA than Groups IV or VII (P<0.005). Smaller SS (36±10°) and larger PT (25±13) were observed in the varus alignment group. Those shifting to varus (n=17) exhibited greater SAPPA (18.4±13.0°), implying pelvic posterior tilt. The group with increased osteophytes differed significantly in mLDTA (93° and 91°) and mMPTA (86° and 88°) compared to the invariant group (P<0.05).

DISCUSSION AND CONCLUSION:

This study demonstrated that progression varus knee is related to pelvic posterior tilt and distal tibia varus.