Paper #49



Do Demographic or Anthropometric Factors Affect Tibial Tubercle Lateralization in a Diverse Population? A MRI Study

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Introduction: The tibial tubercle-trochlear groove (TT-TG) distance, a measure of the lateral offset of the TT relative to the TG, is commonly used to evaluate and guide treatment for patellar instability. Limited data exists regarding variability of the TT-TG distance based on patient demographic and anthropometric factors. The aim of this study was to evaluate whether TT-TG distance varies based on patient race, gender, and body size.

Methods: Magnetic resonance imaging (MRI) studies of the knee were retrospectively reviewed for 384 consecutive adult patients. TT-TG was measured using a method well described in the literature. Demographic information (age, gender, ethnicity, height, and body mass index {BMI}) was gathered from the electronic medical record. ANOVA, Tukey's, Student t-test and Pearson's r was used for comparison and analysis.

Results: The study included 253 females, 131 males. Mean age 44.2 years, mean height and weight 169.3cm and 87.2kg, respectively. Mean BMI 30.5kg/m2. 206 patients were African-American, 76 Caucasian, 49 Hispanic, 53 were listed as 'other'. Mean TT-TG interval was 12.7 mm. It was significantly correlated with height (p=0.010) and weight (p=0.012). There was no significant correlation between TT-TG and sex (p=0.854), BMI (p=0.187) or age (p=0.100). Race did significantly effect TTTG (p<0.001). TT-TG in African Americans was statistically different than in Hispanics (p=0.001) or 'other' (0.006). A backward linear regression model showed that height and African American race were independent predictors of TT-TG (p=0.008 and p<0.001, respectively).

Conclusions: TT-TG distance was significantly greater in African American patients and in taller patients, though not significantly associated with age, sex, or BMI. Previous clinical studies have demonstrated African American and Caucasian race to be significant risk factors for patellar dislocation. The morphological findings in our study may help explain these differences and can establish 'norms' for patients of various ethnic and anthropometric variability.

