TT-TG Measurements Obtained In Weight Bearing and Non-Weight Bearing States are Different

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Summary:
The same knees with patellar instability were imaged with CT in weight bearing and non-weight bearing states and the measured TT-TG distances were different.

Data:
Background There are multiple aspects of lower extremity alignment that can contribute to patellar instability. Physicians regularly consider TT-TG distance when planning treatment for patients with patellar instability. TT-TG has been classically measured on non-weight bearing magnetic resonance imaging (MRI) or computed topography (CT) scans, but more recently clinicians have been obtaining these measurements on weight bearing CT scans. Literature has not previously compared TT-TG measurements obtained in weight bearing and non-weight bearing positions. This study compares TT-TG measurements performed in weight-bearing vs. non-weight bearing positions of the same knees. Materials and Methods The images of patients with patellar instability who obtained weight bearing and non-weight bearing CT scans between the dates of January 1st, 2014 and December 31st, 2021 were measured for TT-TG distance. A paired two sample t test for means was utilized to compare the measurements. Results Thirty knees had both a weight bearing and non-weight bearing TT-TG length CT scan performed that could be used to measure TT-TG distance. The weight bearing group, with an average of 15.2 mm, was significantly greater than the non-weight bearing group, averaging 10.2 mm (p<.0001). Additionally, the variance in measurements for knees under the weight bearing positions (37.6 mm) was more than twice as large as the variance for measurements obtained in the non-weight bearing position (16.5 mm). Conclusion TT-TG distance is routinely used while diagnosing and planning treatment of patients with patellar instability. In this study, TT-TG distance was found to be significantly greater in the weight bearing position compared with the non-weight bearing position of the same knee. This fact is both critical to understand and useful in planning the appropriate instability procedure. Dynamic motion, rotation and axial loading play a role in patellar instability and need to be evaluated to arrive at the appropriate treatment algorithm.

Category: Knee - Patellofemoral