Increased Femoral Anteversion Influence Over Surgically Treated Recurrent Patellar Instability Patients

Carlos Eduardo Da Silveira Franciozi, MD, PhD, Prof., BRAZIL
Felipe Ambra, MD, BRAZIL
Leonardo José Bernardest Albretoni, MD, BRAZIL
Pedro Debieux, MD, PhD, BRAZIL
Fernando Cury Rezende, MD, BRAZIL
Maurício Ayres de Oliveira, BRAZIL
Márcio CASTRO FERREIRA, BRAZIL
Marcus Vinicius Malheiros Luzo, MD, PhD, BRAZIL

Federal University of São Paulo
São Paulo, São Paulo, BRAZIL

Summary:
This work shows that increased femoral anteversion has a negative effect on anteromedialization tibial tuberosity osteotomy combined with medial patellofemoral ligament reconstruction in patients with recurrent patellar instability, in addition, it presents a new sign to recognize increased femoral anteversion at standard knee AP X-Ray.

Abstract:
Purpose: Verify the influence increased femoral anteversion (FA) has on recurrent patellar instability (RPI) patients treated by anteromedialization tibial tubercle osteotomy (TTO) combined with medial patellofemoral ligament reconstruction (MPFLR) presenting mid-term outcomes. Methods: From January 2008 to August 2013, skeletally mature patients with RPI and TT-TG 17mm or greater submitted to anteromedialization TTO combined with MPFLR were evaluated for J-sign, patellar glide, apprehension test, increased FA, Caton index, trochlea dysplasia, TT-TG, Kujala, IKDC, and Tegner. Increased FA was clinically determined by: difference of more than 30 degrees between hip internal and external rotation, 70o or more of hip internal rotation , and 30o or more of femoral neck anteversion. A sub-group analysis involving increased FA was made. Results: Forty-eight patients composed the study. Mean follow-up was 41.5±11.05 months. The J-sign was present in 86% before surgery and none postoperatively (p<.001). All patients had a positive apprehension test or a patellar luxation at the patellar glide test rated as grade 4 before surgery. After surgery, the mean glide was 1.29±0.45 with no apprehension (p<.001). Increased FA was present in 18.7%. Caton index before surgery was 1.11±0.21 and 0.99±0.11 postoperatively (p=0.004). Trochlea dysplasia was present in all patients. TT-TG preoperatively was 20.77±2.12mm and 11.33±1.24mm postoperatively (p<.001). Functional scores improved preoperatively to postoperatively (p<.001) with Kujala and IKDC means: 59.08 to 84.37; 52.6 to 85.5, respectively. Tegner pre-injury score was 5.4 and postoperatively was 5.2 (p=0.01). Increased FA group had worse clinically significant Kujala compared to the normal FA group and worse Kujala improvement: 77.7 and 85.89 (p=0.012), and 21.7 and 26.1, respectively (p<.001). Also of note, in patients with increased FA, a distinct appearance of the knee on AP radiographs was recognized: the inverted proximal humerus sign. This distinctive appearance was present in 89% of the increased FA group and in none of the normal FA group. Conclusions: Increased FA in patients with RPI had a negative effect on anteromedialization TTO combined with MPFLR. Combined anteromedialization TTO and MPFLR had good functional mid-term outcomes treating RPI patients with TT-TG 17mm or greater. Level of Evidence: III – comparative study.