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Increased Femoral Anteversion Influence Over Surgically Treated Recurrent Patellar Instability Patients

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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: Fourty-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.