Summary:

Surgeons should be aware of this phenomenon and aim for a uniform C-arm position for every MPFL reconstruction.

Data:

Background: Medial patellofemoral ligament (MPFL) reconstruction is an established procedure in the treatment of patellar instability. However, femoral tunnel misplacement is responsible for 38.2% of cases in revision surgery. Different methods are published for the identification of the femoral MPFL insertion site. In clinical practice, the Schottle technique, using C-arm can be considered the gold standard. Purpose: The purpose of the study was to evaluate the influence of the C-arm position on the radiographic femoral MPFL positioning. Study Design: Descriptive laboratory study. Methods: Ten cadaveric knees were dissected, the femoral MPFL insertion site was identified and marked using 10 mm eyelets. According to possible clinical scenarios, true lateral radiographs in two different C-arm positions (ML5: 5cm from the receptor with X-ray beam from medial to lateral, LM25: 25cm from the receptor with X-ray beam from lateral to medial) were taken. At each radiograph, the eyelet position was recorded as the distance (proximal-distal and anterior-posterior) from the optimal radiographic insertion point according to Schottle et al..

Differences were calculated using the Wilcoxon signed-rank test (2-related sample), and a p-value of less than 0.05 was considered significant. Results: The anatomical femoral MPFL insertion in the ML5-position was located a mean of 2.3 ± 2.4 mm (range, 0.2-5.8) proximally and 4.1 ± 6.0 mm (range, -6.2-3.6) anteriorly to the Schottle point. This resulted in an absolute distance of 7.2 ± 12.6 mm (range, -18.6 to 3.6-13.6). In the LM25-position it was located a mean of 0.6 ± 1.8 mm (range, -3.2 to 5.6) distally, and 2.7 ± 5.7 mm (range, -8.4 to 9.8) anteriorly, which resulted in an absolute distance of 5.5 ± 3.1 mm (range, 1.1-9.8). The mean distance of the eyelet in both positions – ML5 compared to LM25 - was 3.0 ± 2.3 mm (range, 0.7-3) proximally and 1.4 ± 2.3 mm (range, -2.7 to 4.8) anteriorly with an absolute distance was 4.1 ± 2.1 mm (range, 2.4 to 8.8) in the ML5-position. Wilcoxon signed-rank test (2-related sample) showed a significant difference between the two C-arm setups in the x-axis (proximal-distal). No significant differences could be determined when comparing the distance in the y-axis (anterior-posterior) or the absolute distance between Schottle point and the anatomical attachment of the MPFL. Conclusion: Intraoperative C-arm positioning in MPFL reconstruction, does affect femoral anterior-posterior tunnel positioning. Surgeons should be aware of this phenomenon and aim for a uniform C-arm position for every MPFL reconstruction.

Category: Knee - Patellofemoral

Post-Operative Apprehension and J-Sign Predict Poorer Outcomes After Isolated Medial Patellofemoral Ligament Reconstruction for Patellar Instability

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Summary:

In this prospective study for patients undergoing isolated MPFL reconstruction for recurrent patellofemoral instability, patients with post-operative J-signs showed worse PROMs at 2-years, a higher percentage of patients who had pre-operative knee hyperextension and post-operative apprehension did not RTS and patients who had post-operative apprehension did not experience recurrent instability.

Data:

Objectives: A multicenter prospective trial is currently underway to identify which subset of patients with recurrent patellofemoral instability would benefit from a concomitant bony realignment procedure in addition to a medial patellofemoral ligament (MPFL) reconstruction. The aim of this study is to investigate if post-operative apprehension is measure of sub-optimal outcomes to determine if this may be an additional indicator of patients who may need bony realignment in addition to an isolated soft tissue procedure. Post-operative J-sign, a clinical exam finding that may indicate patellar maltracking was also investigated.

Recurrent instability, return to sport (RTS), and patient reported outcome measures (PROMs) were used as outcomes for this study. Methods: Patients with recurrent patellar instability were prospectively enrolled in an institutional registry beginning March 2014. All patients underwent primary, unilateral, isolated MPFL reconstruction regardless of their bony anatomy. Radiographic measurements including TT-TG, Caton-Deschamps Index (CDI), Patellar Trochlear Index (PTI), Trochlear Depth Index (TDI), Patellar Tendon to Lateral Trochlear Ridge (PT-LTR) and Tibial Tuberose to Lateral Trochlear Ridge (TT-LTR) were obtained at baseline. Recurrent instability, patient outcomes including PROMs, and return to sport (RTS) were obtained annually. Presence of post-operative apprehension, post-operative J-sign, and knee hyper-extension were also collected. Independent samples t-tests and chi-square analyses were used to compare continuous and discrete variables, respectively, between groups. Results: 138 patients (72% female; mean age 20.1 ± 6.1 years) underwent isolated MPFL reconstruction between March 2014 and December 2019. Mean Beighton Score was 5.3 ± 3.0 and knee hyperextension was 5.4 ± 2.8 deg. Eighty-nine patients (65%) had pre-operative knee hyper-extension. At 2-year follow up, six patients (5%) reported an episode of recurrent instability, nine patients (8%) reported post-operative apprehension, and 44 patients had a post-operative J-sign (37%). No patients with post-operative apprehension reported recurrent instability. By 2-year follow-up, 89% of patients were able to return to sport (RTS). 50% of patients who had pre-operative knee hyper-extension and post-operative apprehension did not RTS (p = 0.034). While not statistically significant, a higher percentage of patients who had recurrent instability or apprehension did not RTS (40%) compared to those who did not (11%). Patients with post-operative J-signs had significantly worse IKDC (p = 0.022), KOOS-PS (p = 0.011), and Kujala (p = 0.035) at 2-years. For patients with recurrent instability or post-operative apprehension, Kujala was statistically significantly lower at 1-year compared to those without (84.9 vs. 91.7, p = 0.019). At 2-year follow-up the difference was still maintained between the two groups (83.6 vs. 91.6). Conclusion: Patients with post-operative J-signs showed worse PROMs at 2-years post-operatively. A higher percentage of patients who had pre-operative knee hyperextension and post-operative apprehension did not RTS. Patients who had post-operative apprehension did not report a recurrent instability event at most recent follow up. These findings support the need to further investigate if post-operative J-sign and apprehension may be important markers of sub-optimal outcomes after isolated MPFL reconstruction for recurrent instability, which in turn, may help identify patients that may benefit from concomitant bony realignment procedures at the time of their index procedure.

Category: Knee - Patellofemoral

Body Mass Index Does Not Affect Outcomes Following Medial Patellofemoral Ligament Reconstruction: A Retrospective Analysis of 161 Knees

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Summary:

Class 1 obesity does not affect radiographic, clinical, or patient-reported outcomes following MPFL reconstruction.

Data:

Introduction: Dislocations of the kneecap may cause significant pain and disability, with recurrent dislocations often requiring surgical reconstruction. Medial patellofemoral ligament reconstruction (MPFL-R) has been developed to achieve stability in such knees. Body mass index (BMI) is a known risk factor for a variety of conditions, yet there exists a lack of data regarding the influence of BMI on radiographic, clinical, and patient-reported outcomes (PROs) following MPFL-R. The purpose of this study was to evaluate the outcomes from obese and non-obese patients undergoing MPFL-R without tibial tubercle osteotomy (TTO). We hypothesized that patients with a BMI ≥ 30 would exhibit worsened outcomes across all variables. Methods: A billing query identified all patients from one