academic medical center who were twelve to eighty-five years-old and had undergone MPFL-R over an 8.5-year period. Records were reviewed for demographic, physical exam, radiographic, surgical, and clinical outcomes data. PROs included the Norwich Patellar Instability (NPI) grade, Marx activity rating, and Knee Injury and Osteoarthritis Outcome Score (KIOOS). Descriptive statistics, Chi-squared analysis, and linear regressions were performed to assess the effects of BMI as a categorical and continuous variable. Results: A total of 161 MPFL-Rs without TTO were included. Of this cohort, 115 were BMI < 30 and 46 were BMI = 30. Clinical follow up was 66.2 and 54.4 weeks among the non-obese and obese cohorts, respectively (p = 0.07). Functional outcomes (time in brace, time to weight bearing, return to sport) and postop complications (deep vein thrombosis, infection, pain, repeat dislocation/instability) were similar between both cohorts (p > 0.50). When comparing between BMI of 30, PROs were all similar (p > 0.10). Linear regression fit BMI and NPI with r² = 0.0622, p = 0.0137; and BMI and Marx with r² = 0.0525, p = 0.0239. When comparing cohorts with a BMI cutoff of 35, NPI and Marx were significantly worse in the obese cohort (p = 0.0184 and p = 0.0108, respectively). Conclusion: To our knowledge, this is the largest study to date to assess the effects of BMI following MPFL-R. Among our cohort, BMI = 30 was not associated with worsened outcomes, yet BMI = 35 may be associated with worsened PROs. Surgeons may consider MPFL-R and more invasive procedures such as TTO among obese patients without fear of worsened outcomes. Future outcomes studies among morbidly obese patients may be warranted.

Category: Knee - Patellofemoral

Isolated MPFL Reconstruction Results In Similar Postoperative Outcomes As Concomitant MPFL Reconstruction and TTO in the Setting of Elevated TT-TG Distances

Abstract ID# 22659
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Summary: Isolated MPFLR leads to similar anterior knee pain and similar redislocation rates in patients with TT-TG distances greater than 15mm, suggesting this procedure as a possible alternative to MPFLR combined with TTO in this patient population. Data: Introduction: To determine the effect of isolated medial patellofemoral ligament reconstruction (MPFLR) versus concomitant MPFLR and tibial-tuberular osteotomy (TTO) on patient-reported functional outcomes, rate of patellar redislocation, and rate of return to sport in skeletally mature patients with recurrent patellar instability and elevated tibial-tuberular trochlear groove (TT-TG) distance. Methods: Three databases MEDLINE, PubMed and EMBASE were searched from inception to July 10th, 2022 for literature outlining the management of patients with TT-TG indices greater than 15mm with either isolated MPFLR or concomitant MPFLR and TTO procedures. The authors adhered to the PRISMA and RAMSTAR guidelines as well as the Cochrane Handbook for Systematic Reviews of Interventions. Data on functional outcomes via the Kujala anterior knee pain score, redislocation rates, return to sport rates, and complications were recorded. The MINORS score was used for all studies in order to perform a quality assessment of included studies. Results: A total of 31 studies comprising 1405 patients (1452 knees) were included in this review. The mean pooled redislocation rate in 19 studies examining isolated MPFLR procedures comprising 948 patients was 3.1% (95% CI 2.1%-4.4%; I² = 7%) as opposed to 3.2% (95% CI 1.9%-5.0%; I² = 0%) in 15 studies comprising 486 patients in the concomitant group. The mean Kujala score in 13 studies comprising 848 total patients in the isolated MPFLR group was 85.0 (range 80.9 - 97.5) compared to a score of 83.7 (range 77.2 - 94.0) in 14 studies comprising 459 patients in the concomitant group. The mean pooled return to sport rate in seven studies with 472 total patients in the isolated MPFLR group was 82% (95% CI 78%-86%; I²=16%) compared to a score of 92% (95% CI, 78%-99%, I²=58) in four studies comprising 54 patients in the concomitant group. There were similar complication rates between both treatment groups, including range of motion deficits, fractures, infections, and graft failures. Conclusion: Isolated MPFLR leads to similar anterior knee pain, similar redislocation rates and lower return to sport rates than concomitant MPFLR and TTO procedures in patients with TT-TG distances greater than 15mm. Information from this review can aid surgeons in their decision to perform a concomitant TTO in patients with recurrent patellar instability and elevated TT-TG distances.

Category: Knee - Patellofemoral

Isolated Medial Patellofemoral Ligament Reconstruction In Patellar Instability: Does The Distance Between Tibial Tuberosity - Trochlear Groove Make A Difference?

Abstract ID# 22338
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Summary: Isolated Medial Patellofemoral Ligament Reconstruction in patellar instability presents a functional improvement, with a low rate of complications and failure, regardless of the pre surgical Tibial Tuberosity – Trochlear Groove distance. Data: Introduction: Medial patellofemoral ligament reconstruction (MPFLR) is used in most patellar instability surgeries, there is controversy on adding a tibial tuberosity osteotomy (TTO). Objective: To describe the results of isolated MPFLR in Patellar instability according to the Tibial Tuberosity - Trochlear Groove distance (TT-TG) Methods: Retrospective study of patients with patellar instability with a mature skeleton in one center between 2016 and 2021, using isolated MPFLR. Patients with incomplete clinical and/or radiological records and follow-up less than one year were excluded. Pre-surgical demographic and radiological data (TT-TG, Caton-Deschamps (CD) index, patellar tilt, trochlear dysplasia) was recorded. Patients were divided in three groups according to TT-TG distance (Group 1: <17mm, Group 2: 17-19, Group 3: ≥20mm). A pre and post surgical Kujala score was performed. Local complications, satisfaction, recurrence and/or reintervention were recorded. Pre-surgical variables between groups, intra and inter-group Kujala differences were compared using Bartlett’s test. Consent from the patients and approval from the local ethics committee were obtained. Results: 67 patients met the selection criteria, mean age of 23 years, 70% were women. There were no pre surgical, radiological nor follow-up differences between the groups (average 27 months). Pre and post surgical Kujala score, respectively: Group 1: 37 - 78 - Group 2: 37 - 78 - Group 3: 39 - 79 All groups had a significant improvement (p < 0.05), there were no significant differences in improvement between groups (p > 0.05). There were three patients with a redislocation episode, all in group 1. One patient had a mobilization under anesthesia due to an arthrofibrosis (Group 2). 97% of all cases reported being satisfied. Conclusion: Isolated MPFLR in patellar instability presents a functional improvement, with a low rate of complications and failure, regardless of the pre surgical TT-TG.

Category: Knee - Patellofemoral

The Prevalence and Predictors of Articular Cartilage Damage at the Time of Medial Patellofemoral Ligament Reconstruction

Abstract ID# 22350
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Summary: Substantial cartilage injuries are present in 56% of patients who undergo primary isolated MPFL reconstruction, with medial patellar lesions being the most common. Increased age at surgery is associated with an increased risk of substantial cartilage damage. Data: Introduction: Recurrent patellar instability is a debilitating condition that is often managed surgically with reconstruction of the medial patellofemoral ligament
(MPFL) among other procedures. Damage to the articular cartilage of the patella and trochlea can occur with these injuries and recent work has demonstrated poorer outcomes of MPFL reconstruction in patients with articular cartilage damage. The goals of this study are to quantify the prevalence and location of articular cartilage injuries in patients treated for patellar instability with MPFL reconstruction and to identify factors associated with cartilage damage. Methods: 199 patients undergoing isolated MPFL reconstruction at 6 centers on 5 continents between 2016 and 2020 were prospectively enrolled. All procedures were performed for recurrent patellar instability. Patients treated with bony procedures (tibial tubercle osteotomy, trochleoplasty, or other osteotomy) were not included. Indications for bony procedures were the presence of a jumping j-sign on examination, unloadable chondral defects, patellar alta with a Caton-Deschamps index (CDI) greater than 1.30, or severe trochlear dysplasia that the surgeon felt warranted a trochleoplasty. Patient history (age at surgery, number of prior dislocations, time from injury to surgery) and demographic (age, sex, BMI, Beighton score) variables were collected at enrollment and imaging measurements were collected from plain films (CDI) and MRI (trochlear sulcus angle and depth, patellofemoral index [PTI] tibial tubercle-trochlear groove [TT-TG] distance, Dejour classification). All patients underwent a diagnostic arthroscopy and articular cartilage of the patellofemoral joint was assessed according to the International Cartilage Restoration Society (ICRS) system. Cartilage damage location on the patella was recorded. Patients with articular cartilage damage of ICRS grade 2 or greater in the patellofemoral joint were defined as having substantial cartilage damage. Patient and injury factors were compared based on the presence or absence of cartilage damage and a multiple logistic regression model was created to identify predictors of cartilage damage. Results: 111 patients (56%) were noted to have substantial patellofemoral articular cartilage injury (72 grade 2, 27 grade 3, 12 grade 4). Most of these patients (106) had patellar cartilage damage, with trochlear damage less common (19 patients). Sixty-nine of the 106 patients with patellar cartilage damage (65%) had medial patellar damage. The cartilage damage group demonstrated significantly increased age at surgery (p = 0.022) and trends toward higher BMI (p = 0.059), lower Beighton score (0.059), more severe trochlear dysplasia (p = 0.16), higher patellofemoral index (p = 0.20), and a higher incidence of contact injury (p = 0.16). Logistic regression demonstrated that increased age at surgery (OR = 1.079, p = 0.010) was the only significant predictor of substantial cartilage injury. Each one year increase in patient age was associated with a 7.9% increase in the odds of having substantial cartilage injury. Conclusion: Substantial cartilage injuries are present in 56% of patients who undergo primary isolated MPFL reconstruction, with medial patellar lesions being the most common. Increased age at surgery is associated with an increased risk of substantial cartilage damage.

Category: Knee - Patellofemoral

Pediatric Patients with First-Time Patella Dislocation. A Prospective Cohort Comparing Non-Operative and Operative Treatment

Abstract ID# 22727
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Summary:
Even though conservative management demonstrates good outcome in first time patella dislocations in pediatric patients, surgical management can be an effective treatment when risk factors for instability are present.

Data:
Purpose To compare outcomes of non-operative versus operative management in pediatric patients after first-time patellofemoral dislocation. Methods All consecutive skeletally immature patients that sustained a first-time patellofemoral dislocation were included in this prospective study. Patients were divided in two cohorts depending on management. Non-operative management consisted of bracing and physical therapy. Operative management consisted of double bundle medial patellofemoral ligament / medial quadriceps tendon femoral ligament (MPFL/MQFLL) reconstruction using the pediatric Schottle point at the femoral side, and one bony and one soft tissue attachment at the patella side. The primary outcome measured was recurrence (defined as any subsequent dislocation or subluxation event). Minimum follow-up time was 2 years. Other outcomes recorded were demographic data, risk factors for patellofemoral instability, functional outcomes (Kujala and pedi-IKDC scores), pain, activity level, return to sports and complications. A correlation analysis attempted to identify potential association of failure with risk factors. SPSS was used for statistical analysis with statistical significance set at p<0.05. Results Eighty-two consecutive patients were included in the analysis with 53 patients in the non-operative management cohort and 29 patients in the operative management cohort that met the inclusion/exclusion criteria. Mean age was 12.1±2.3 and female to male ratio was 55:27. Failure rate was 55% in the conservative group and 24% in the surgical group (p=0.01). Kujala and IKDC scores were significantly higher at the operative group versus the non-operative group (91.0±9.1 vs 83.5±10.6, p=0.001 and 88.0±10.9 vs 78.4±12.1, p=0.0007, respectively). Activity level was also higher at the operative group (6.0±1.8 vs 4.2±1.6, p=0.0001). There were 7 complications recorded in the operative group (24%). From the different risk factors analyzed, trochlear dysplasia, patella alta, pre-injury activity level, and flexibility were associated with higher risk of recurrence. Conclusions Non-operative management in skeletally immature patients with first-time patellofemoral dislocation remains a reasonable and safe option but appears to be associated with high failure rate. Operative management is an effective alternative, especially when risk factors are present, that demonstrates lower failure rate, higher functional outcome and higher activity level, but with an increased risk of complications in this cohort.

Category: Knee - Patellofemoral

The Epidemiology of Surgical Procedures for Recurrent Patellar Instability in the Jupiter Cohort

Abstract ID# 22826
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Summary:
This study describes the frequency of different surgical procedures used in the JUPITER Cohort.

Data:
Background: The JUPITER prospective study represents a cohort of patients with recurrent patellar instability. This study describes the frequency of different surgical procedures used in the JUPITER Cohort.

Results: MPFL reconstruction was performed on 1129 (79%) patients. Lateral retinacular release was performed on 469 (32%) patients and trochleoplasty was performed on 280 (20%) patients. From the different risk factors analyzed, trochlear dysplasia, patella alta, pre-injury activity level, and flexibility were associated with higher risk of recurrence. Conclusions Non-operative management in skeletally immature patients with first-time patellofemoral dislocation remains a reasonable and safe option but appears to be associated with high failure rate. Operative management is an effective alternative, especially when risk factors are present, that demonstrates lower failure rate, higher functional outcome and higher activity level, but with an increased risk of complications in this cohort.

Category: Knee - Patellofemoral

Change in Tibial Tubercle-Trochlear Groove Distance During Adolescent Growth

Abstract ID# 23047
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