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 [PFI] tibial trochlear-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 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
All Authors: Nikolaos K. Paschos MD, PhD UNITED STATES
Valerie Kiers CNP UNITED STATES
Colleen McAuley CNP UNITED STATES
Jon Brodeur BA UNITED STATES
Brian Grottkau MD UNITED STATES

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/MQTFL) 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 failure (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 pediatric 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
All Authors: Marc Tompkins MD UNITED STATES
Beth Ellen Shubin Stein MD UNITED STATES
Matthew William Veerkamp BA UNITED STATES
Shital N. Parikh MD UNITED STATES

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 from busy patellofemoral surgeons at 11 centers. Understanding what procedures are performed in a large cohort such as JUPITER will give an overview of the most common ways being used to address patellofemoral instability. Methods: The JUPITER prospective cohort currently includes 1437 patients. All surgical procedures are documented in the database. The database was queried to evaluate the different surgical procedures included to help stabilize the patella. The percent of patients undergoing each procedure is reported. Results: MPFL reconstruction was performed on 1129 (79%) patients. Lateral release was performed on 234 (16%) patients. Lateral retinacular lengthening was performed on 102 (7%) patients. There were several variations of the surgical procedure performed: anteromedialization 160 (11%), direct medial release 88 (6%), Maquet 6 (<1%), distalization 53 (4%). Less common procedures included trochleoplasty which was performed on 30 (2%) patients. Distal femoral osteotomy, primarily lateral opening wedge, was performed on 18 (1%) patients. Femoral derotation osteotomy was performed on 10 (<1%) patients and tibial derotation osteotomy was performed on 6 (<1%) patients. Quadricepsplasty was performed on 12 (<1%) patients. Conclusion: There are many procedures available in the armamentarium of a patellofemoral surgeon. In the JUPITER cohort, the majority of patients underwent MPFL reconstruction. A lateral retinacular procedure was included in roughly a quarter of the patients. Tibial tubercle osteotomy was part of treatment for roughly 20% of patients. Other procedures were much less frequent.

Category: Knee - Patellofemoral

Change in Tibial Tubercle-Trochlear Groove Distance During Adolescent Growth

Abstract ID# 23047
All Authors: Truls M. Straume-Næsheim MD, PhD NORWAY
Hasan Banitalebi Md NORWAY
Per-Henrik Randborg MD, PhD NORWAY

Category: Knee - Patellofemoral

Abstracts Journal of ISAKOS 8 (2023) S117-S123