

The Role of Lateral Retinacular Release in the Treatment of Patellar Instability

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Abstract: In the last 2 decades many authors have described the use of an isolated lateral retinacular release for the treatment of patellar instability. This review analyzes the published long-term results of this procedure for the treatment of patellar instability. The isolated use of a lateral retinacular release of the patella has not proven to be of long-term benefit for the treatment of patellar instability. It may be used as an adjunct procedure to a proximal or distal realignment of the extensor mechanism. Various pitfalls of a lateral release for patellar instability are discussed.

Key Words: patella instability, lateral release, patellar realignment

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Anterior knee pain is generally perceived as a difficult condition to treat for Orthopedic surgeons. Treatment regimens have been described for several centuries.¹ Even though our understanding of the extensor mechanism and the patellofemoral joint has improved tremendously many questions remain open and continue to be investigated. One of these questions is the role of a lateral retinacular release in the treatment of anterior knee pain. This procedure, performed open, miniopen, or arthroscopically has been proposed as an isolated procedure, in combination with proximal realignment procedures of the patella or in combination with distal realignment procedures.²⁻¹⁷ Although several authors have been able to show that the isolated lateral release can be a successful procedure in patients with isolated lateral patellar tightness the role of lateral release for the treatment of patella instability is much less clearly established.

The goal of this review article is to shed light on the role of the lateral retinacular release for the treatment of patellar instability.

DIAGNOSIS OF PATELLA INSTABILITY

The clinical diagnosis of patella instability can be challenging. Merchant and Mercer⁹ described the first lateral retinacular release in 1974 but did not emphasize the importance of history and physical examination findings for the indication of this procedure. Hughston et al¹ first stressed the importance of history and physical examination findings and also described what they called the "passive lateral hypermobility" of the patella. They described a "loose" and a "tight" retinaculum. Post¹⁸ outlined the key physical examination findings that need to be established for the evaluation of clinical instability in his review.

In brief, the entire involved lower extremity has to be taken into account. Factors such as core weakness, increased valgus alignment, generalized ligamentous laxity, and increased foot pronation as well as increased femoral anteversion have shown to be factors that can contribute to anterior knee pain and patella instability. History of the initial onset of pain, symptoms of subluxation, specific injuries or painful positions or activities (ie, ascending/descending stairs) have to be recorded. It has been clearly established that muscular tightness (quadriceps, hamstring, iliotibial band, and hip extensors) plays a significant role for patellar stability. The muscle balance of the vastus medialis obliquus muscle versus the vastus lateralis is important because a significant imbalance between vastus medialis obliquus and vastus lateralis can lead to a dynamic instability of the patella during active extension of the knee. This can be assessed clinically by looking for the J-sign. This describes the course of the patella coming from full extension and a lateral position and suddenly reducing to a medial or centered position in the trochlea with further flexion. This inverted -J course of the patella is called the "J-sign." Although the true anatomic correlation of this phenomenon is unclear Johnson et al¹⁹ showed that this is a finding that is unique to patients with abnormal patella tracking. Patella mobility is another major factor that needs to be evaluated. The assessment of medial/lateral patella glide (also known as "Sage sign")²⁰ as well as patellar tilt help determine if the peripatellar soft tissue restraints [medial retinaculum, medial patellofemoral ligament (MPFL)] may be insufficient and predispose the patella to lateral subluxation. The assessment of the overall extensor alignment can be performed by assessing the Q-angle.²¹ This should be done at 30 degrees and 90 degrees to assess the dynamic component of the Q-angle. This dynamic assessment of the Q-angle mimics what may

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happen when a patient plants their foot, flexes the knee, and externally rotates the tibia. Post concludes that the simple determination of the position of the tibial tubercle in line or lateral to the midline of the patella may be just as helpful because no reliable data exists that determines the exact value of a “pathologic” Q-angle.¹⁴

Once the clinical diagnosis of patella instability has been made imaging modalities may help to corroborate the clinical findings.

IMAGING

Although static imaging of the patellofemoral joint is helpful one has to keep in mind that the pathology may be mainly a dynamic one. The examiner, therefore, has to take the physical findings into account while assessing the radiographic studies.

The routine standing anteroposterior views may help in the overall assessment of knee alignment but generally do not yield much information concerning the stability of the patella. More informative is the evaluation of patellar height, the relationship of the patella to the trochlea, and the anatomic shape of the trochlear groove in the 30 degree flexion lateral view of the knee. This view allows the assessment of patellar height by any of the published parameters (Insall/Salvati, Blackburn/Peel, or Caton/Deschamps). In addition this view allows for the analysis of the trochlear groove as described by Dejour in Jack Hughston’s book entitled “patella subluxation and dislocation.” The requirements are a perfect lateral radiograph (posterior condyles overlapping). The sunrise view of the patella in 30 degrees of flexion (Merchant view) has been advocated to evaluate patellar tracking in the trochlea. Teitge et al²² described a bilateral stress-radiograph in this position using a standardized lateral force.

A computed tomography (CT) scan of the patellofemoral joint at 0, 15, 30, and 45-degree knee flexion providing precise midpatellar transverse images has been found helpful and sensitive in the evaluation of patellar instability.^{23,24} In addition, if a CT scan slice of the trochlear groove is overlaid with a CT slice of the proximal tibia showing the tibial tubercle, the trochlear groove tibial tubercle distance can be determined. This parameter helps to diagnose excessive lateralization of the tibial tubercle.²⁵

An magnetic resonance imaging (MRI) scan may provide useful information about the status of the lateral retinaculum (thickening) or the medial restraints (MPFL) and cartilage injuries in the patellofemoral joint. In case of suspected cartilaginous injuries to the patellofemoral joint, an MRI arthrography may be helpful. The patella tilt can be assessed on a CT scan or MRI according to the criteria as described by Escala et al (Fig. 1).²⁶

ISOLATED LATERAL RELEASE FOR PATELLA INSTABILITY

Throughout the last 2 decades it became clear that anterior knee pain is more than just one entity. The

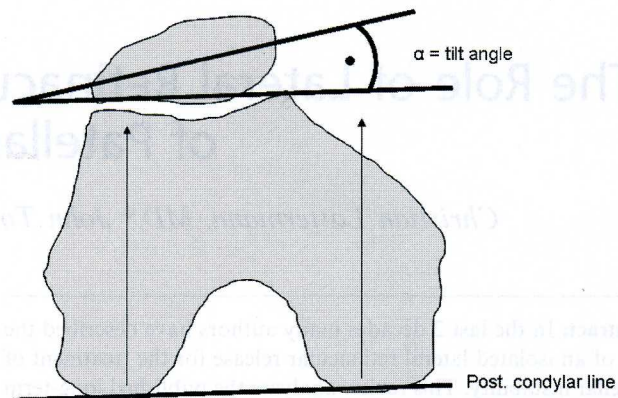


FIGURE 1. On the basis of an MRI or CT scan the lateral tilt of the patella can be assessed objectively. The tilt angle α is calculated based on the axial CT or MRI images of the trochlear groove and patella. The slice showing the maximum extent of the medial/lateral patella extension is chosen. Then the posterior condylar line is drawn as a tangential to the medial and lateral posterior condyle. A line is drawn from the most medial to the most lateral expansion of the patella. An additional line is drawn parallel to the posterior condylar line to intersect the midpatellar line. The angle formed by these 2 lines is the patellar tilt angle α . A normal tilt angle should be less than 5 degrees.

history of the isolated lateral retinacular release portrays this evolution of knowledge in a typical fashion. The lateral retinacular release was initially indiscriminantly used for anterior knee pain, patella instability, and also as a treatment for osteoarthritis of the patellofemoral joint.²⁻¹⁷ Ficat²⁷ introduced the concept of the “excessive lateral pressure syndrome” which helped to redefine the indication for an isolated lateral release. It has now been recognized that this condition is an acceptable indication for an isolated lateral retinacular release that yields reproducible and predictably good results.²⁸

To this date there are no published randomized controlled clinical trials (level 1 evidence) assessing the effect of an isolated lateral retinacular release on the outcome of patellar instability. All currently available material is at best level 4 evidence (retrospective case series, or review articles). A formal systematic review is, therefore, not possible.

Evaluating the published case series, numerous authors have reported their results. Although some authors initially reported acceptable success of this procedure for patella instability most studies showed disappointing mid and long-term results. The average percentage of satisfaction of patients in studies with more than 4 years follow up is only 63.5% whereas the short-term (< 4 y) satisfaction is 80% (Table 1). Aglietti et al²⁹ compared 3 different treatment options for recurrent patella dislocations in a retrospective study. He found that the isolated lateral release showed by far the worst long-term outcomes and led to recurrent dislocations in 35% of their patients. This finding is corroborated by Dainer et al³⁰ who showed that an isolated lateral release

