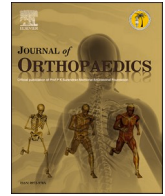


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Patellofemoral instability: Current status and future perspectives

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ABSTRACT

The patellofemoral joint is complex, and the management of the first patellar dislocation is not well decoded. The progression to recurrent instability is common. Bony anatomy, muscle tone, and soft tissues are essential stabilizers to preserve the physiological patellar tracking, and they should be carefully evaluated when facing patients with instability.

Acute patellar dislocations are common,¹ and in predisposed individuals, the first acute patellar dislocation typically occurs during adolescence.² Several risk factors known to predispose a joint to instability have been described. These include patella alta, genu valgum, patellar and trochlear dysplasia, generalized hyperlaxity, increased tibial external rotation and femoral anteversion.^{3,4} The therapeutic algorithm following the first patellar dislocation is still debated, and no consensus has been reached.

After the first patellar dislocation, patients may present with osteochondral lesions.⁵ In patients without severe osteochondral damage or free loose bodies, conservative management is often advocated. However, high-quality recommendations or international guidelines are missing, and the most appropriate conservative modality is still debated. Following conservative management, more than half of patients develop recurrent patellofemoral instability.⁶ Patellar dislocations, and symptomatic osteochondral lesions, reduces activity levels and impair the quality of life in patients with recurrent patellofemoral instability.⁷

Moreover, chondral defects and recurrent damage to the articular surface might increase the risk of early-onset osteoarthritis (OA). After the first patellar dislocation, the medial patellofemoral ligament (MPFL), the essential medial restraint to the lateral patellar dislocation during the first 30° of flexion, is damaged in almost all cases.⁵ In this respect, especially for adolescents, preventing recurrent patellofemoral instability is crucial, and identifying the patients who may develop recurrent patellofemoral instability is challenging.

At clinical examination, the apprehension test is sensitive and specific. High patellar motility and the J-sign are not sensitive but specific for patellofemoral instability. Long leg anteroposterior radiographs are recommended if a genu valgum deformity is present. The presence of pathoanatomical risk factors should be evaluated first using pain radiography or computer tomography (CT). The presence of patella alta is quantified using the Install-Salvati or Chaton-Deschamps indices. The presence of patellar or trochlear dysplasia is evaluated using the Weber and Dejour classification. Tibial external rotation, a common cause of patellofemoral instability, can be assessed by evaluating the trochlear

groove-tibial tubercle (TT-TG) distance. Threshold values for these pathoanatomical predisposing factors have been extensively investigated but should not be considered in isolation or absolute terms. Most patients present the combination of two or more concomitant pathoanatomical predisposing factors, which may synergistically predispose to instability. Cut-off values for patients with multiple concomitant pathoanatomical predisposing factors have not yet been established, and no guidelines exist. It is possible that the presence of multiple pathoanatomical predisposing factors might have an additive effect, and the resulting forces to patellar lateralization might be amplified. Therefore, even without an evident pathoanatomical predisposing factor, the additive effect of minor bony abnormalities may predispose to dislocation. This hypothesis should be clinically validated by future investigations.

Given its outstanding outcomes, several authors advocated MPFL reconstruction following the first patellar dislocation.⁸ MPFL reconstruction may be performed safely and efficiently in cases with open physes and those with minimal to moderate pathoanatomical risk factors.⁹ MPFL can be safely and efficacy combined with other proximal realignments, such as the medial patella-tibial ligament (MPTL) and the medial quadriceps tendon–femoral ligament (MQTFL). Future investigations should evaluate the role of proximal realignments in patients with different combinations and the extent of pathoanatomical risk factors. Previously popular isolated lateral retinaculum release in recurrent patellofemoral instability is not recommended these days.¹⁰ Isolated lateral retinaculum release reduces the forces that displace the patella 10 mm laterally approximately by 10–20% within the first 30° of flexion. However, an isolated release of the lateral retinaculum increases patellar instability by decreasing the joint contact pressures and the tendency for patella lateralization. However, the benefits of a combined lateral retinaculum release with other proximal alignments remain unclear. Several authors combined the lateral retinaculum release with the MPFL reconstruction to increase patellar centralization on the trochlea; however, the effects exerted by the release of the lateral retinaculum on the surgical outcome have not yet been fully clarified.

The patellofemoral joint is complex, and this special collection of

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articles on this topic that were published in the Journal of Orthopaedics in the recent past. We are hopeful that with increasing knowledge of the first patellar dislocation, the queries related to its management will be decoded soon.

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