

Editorial Commentary: The Best Medial Patellofemoral Reconstruction May Include Components of Both Quadriceps and Patellar Attachments



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Abstract: Given different functions of the medial quadriceps tendon–femoral ligament and medial patellofemoral ligament components of the proximal medial patellar restraints, reconstructions to the midpoint of the medial patellofemoral ligament and medial quadriceps tendon–femoral ligament are probably optimal, combining the benefits of both in surgical treatment of recurrent patella instability.

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The study by Christian, Redondo, Cancienne, Shewman, Farr, Cole, and Yanke, “Differential Contributions of the Quadriceps and Patellar Attachments of the Proximal Medial Patellar Restraints to Resisting Lateral Patellar Translation,”¹ emphasizes behaviors of the proximal medial patellar restraints (PMPRs) of the medial patellofemoral complex,² which is what most surgeons reconstruct to prevent recurrent patella dislocation. One decade ago, we only thought of the medial patellofemoral ligament (MPFL) but now understand that anatomy of the medial patellofemoral retinaculum is more complex. Understanding the proximal PMPR or medial quadriceps tendon–femoral ligament (MQTFL) has led to eliminating risk of patella fracture by reconstructing the MQTFL instead of the MPFL.^{2,3} The study of Christian et al. study further differentiates these 2 components of the medial patellofemoral complex by reporting their unique mechanical behaviors. This study, then, is very important in our understanding of how best to perform medial patella stabilization surgery.

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The method of medial patellofemoral reconstruction that I prefer orients the reconstruction graft to the midpoint, as described by Tanaka,^{2,3} of the PMPR. This midpoint is just below the top of the patella (the most proximal patella) and is just at the junction of the proximal and distal PMPR components studied by Christian et al., thereby incorporating biomechanical behaviors of both. I prefer to anchor the reconstruction graft into the vastus medialis obliquus tendon and the most distal/medial vastus intermedius and rectus femoris tendons, always keeping the graft at the PMPR midpoint, below the top of the patella, and incorporating components of both the proximal and distal components of the PMPR, otherwise called MQTFL and MPFL.

The technique is called an MQTFL reconstruction,^{4,5} as it attaches to the quadriceps tendon and not the patella, but the orientation is to the proximal patella and Tanaka’s midpoint of the PMPR and thereby incorporates benefits of both MQTFL and MPFL reconstruction. No anchors or drill holes are placed in the patella, thus eliminating risk of patella fracture, a catastrophic problem that is pretty uncommon but devastating. Patella fracture has occurred from anchor socket drill holes into the patella but is most commonly associated with larger drill holes.⁶

The study of Christian et al. suggests that a graft oriented into the distal PMPR, which is oriented to the proximal patella, would likely achieve superior resistance to lateral translation of the patella in the first 90° of flexion when compared with a graft

reconstructing the proximal PMPR, which functions best toward extension (therefore in early knee flexion which is so important for centering a patella into its trochlea upon initiation of knee flexion).

The take-home message I see is this: Keep the orientation of your reconstruction graft to the proximal patella, to Tanaka's^{2,3} midpoint of the PMPR, with few if any exceptions, to gain benefits of the proximal and distal PMPR component mechanical behaviors. How you attach the graft to the extensor mechanism is up to you. I prefer attaching it to the distal quadriceps tendon at the level of Tanaka's point, looping the graft into the quadriceps tendon, as described previously, through the quadriceps tendon expansion at the proximal medial patella, never above the patella and never into the patella itself. This is why it is called an MQTFL reconstruction, as the graft does not go into the patella and also incorporates MQTFL orientation.

An MQTFL reconstruction graft should be anchored at the proximal patella junction of the MPFL and MQTFL for optimal results, same for an MPFL reconstruction; it's just a matter of how you attach the graft. I thank Christian et al. for clarifying mechanical behaviors of the MPFL and MQTFL, bringing greater

focus on anatomical precision in patellofemoral instability surgery. Think midpoint of the PMPR!

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