

# Editorial Commentary: Two Fixation Points Are Better for Medial Patellofemoral Ligament Reconstruction—To Minimize Complications, Bone Tunnels Should Be Avoided



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**Abstract:** Medial patellofemoral ligament (MPFL) reconstruction has gained in popularity over the past 15 years, with most studies showing a clear advantage over techniques such as MPFL repair or medial imbrication for the treatment of patellar instability. A debate continues as to the type of fixation on the patella, tunnel versus suture anchor, as well as the number of fixation points. In fact, some senior patellofemoral surgeons have opted away from patellar bony fixation altogether to avoid complications associated with patellar fixation such as fracture or penetration of the articular cartilage. In my practice, I prefer to use 2 all-suture suture anchors for patellar fixation as there is minimal risk of fracture or significant cartilage damage compared with tunnel drilling or placement of larger suture anchors. The graft choice for MPFL reconstruction has been shown to be relatively unimportant, and for this reason, I typically choose gracilis allograft to avoid graft-site morbidity and hamstring weakness.

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There are many debates in orthopaedic surgery, some of which have gone on for years and some that have emerged as we develop new techniques, for example, hamstring versus patellar tendon for anterior cruciate ligament reconstruction, an anterior versus posterior approach for hip replacement, and fracture repair versus arthroplasty for proximal humeral fractures. Recent research reported by Qiao, Xu, Ye, Chen, Zhang, Zhao, Xu, and Zhao,<sup>1</sup> in the study entitled “Double-Tunnel Technique Was Similar to Single-Tunnel Technique in Clinical, Imaging and Functional Outcomes for Medial Patellofemoral Ligament Reconstruction: A Randomized Clinical Trial,” aims to settle a debate in the patellofemoral sphere of study: Are 2 tunnels or points of fixation in the patella better than 1?

First, one must ask, Why is this important and will this change my practice? Because the complications associated with medial patellofemoral ligament (MPFL) reconstruction are primarily associated with the patella, I would suggest that studies focusing on patellar fixation are necessary and timely. Prior studies have reported complications associated with the patellar fixation technique, such as patellar fracture, patellar chondral damage from anchor or tunnel penetration, and patellar bone loss due to nonisometric graft placement.<sup>2</sup> There is a good argument to place less hardware or make fewer tunnels in the patella as this may reduce complications associated with MPFL surgery.

Other authors have studied the importance of patellar fixation in MPFL surgery, with studies that support both techniques.<sup>3</sup> Systematic reviews as well as randomized controlled studies have shown that both single- and double-tunnel constructs can result in excellent outcomes.<sup>4,5</sup> The study by Qiao et al.<sup>1</sup> compared clinical and imaging outcomes of single- and double-tunnel techniques. Unfortunately, this study was limited by the fact that tibial tubercle osteotomy (TTO) was also performed in some but not all patients (83 of 90 patients). In my opinion, to accurately evaluate the difference between the 1- and

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2-tunnel techniques, the patients would have undergone isolated MPFL reconstruction.

In this article, Qiao et al.<sup>1</sup> argue that tunnel reconstruction is favored owing to better outcomes; however, there are many studies that show that this is not true.<sup>6,7</sup> Furthermore, they report better functional outcomes in patients who underwent the double-bundle technique according to the Lysholm score and Knee Injury and Osteoarthritis Outcome Score for symptoms and knee-related quality of life but show no significant difference in the percentage of patients achieving the minimal clinically important difference between the 2 groups. The authors note in their discussion that transpatellar tunnel fixation techniques are preferable owing to stronger fixation; however, there are also several studies that show excellent outcomes with suture anchor fixation.<sup>6,7</sup> The authors, however, point out that the patellar tunnel fixation technique is associated with knee stiffness and patellofemoral pain, and unsurprisingly, this was noted in their study, with average range of motion postoperatively of 0° to 125° (single tunnel) or 0° to 127° (double tunnel) and 4.8% to 8.3% of patients complaining of anterior knee pain postoperatively.

The technical aspects of this study are noteworthy. First, the graft used in this study was a split-thickness peroneal graft. The use of several grafts has been described in the literature; gracilis, semitendinosus, and quadriceps tendon autografts are common, as is allograft tendon. A split thickness peroneus longus autograft is considerably less common; in fact, I am not aware of any surgeon who uses this graft for MPFL reconstruction. The authors state that their preference was due to low donor-site morbidity and a quick harvest time (5-10 minutes). This should be studied further, perhaps comparing peroneal graft with hamstring graft. Second, because many of these procedures are performed in freestanding surgical centers, there is a real need to analyze cost; the authors' technique uses an adjustable-loop button as well as an interference screw for femoral fixation while eliminating implants on the patella. While saving money on patellar fixation, they increase the cost by using 2 implants for femoral fixation, which I think is unnecessary. Third, it is interesting that all patients were treated with an arthroscopic lateral release; I would argue that most patellofemoral surgeons, myself included, would limit lateral release to patients who show a tight lateral retinaculum. A final note on the technique regards the TTO, which was performed in 83 of the patients, who were selected because of a tibial tubercle–trochlear groove (TT-TG) distance of 15 mm or greater. There is no consensus on the exact cutoff for the TT-TG distance that mandates combination MPFL reconstruction–TTO; however, I see this as a somewhat aggressive approach to surgical treatment of patellar instability. Furthermore, I find it unusual that the osteotomies were fixed with K-wires

and patients were allowed to bear weight immediately in a brace, which impressively was not associated with any cases of delayed healing or fracture. I use 2 cortical screws for fixation of TTOs and would suggest that this is preferable when allowing immediate range of motion. It is hard to believe that the bone healed in all cases with just K-wire fixation.

In conclusion, the merits of this study are the high number of patients, single-surgeon database, and randomization of the groups. As we aim to find the ideal procedure for MPFL reconstruction, our goals should be to optimize outcomes, minimize costs, and develop the most easily reproducible techniques. I agree that 2 fixation points on the patella are preferable—however, with small suture anchor or all-suture anchor fixation instead. I do not think that all patients with a TT-TG distance of 15 mm require TTO as well as MPFL reconstruction, nor do I think the morbidity of autograft is merited if allograft is available to the surgeon.

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