

Medial Soft-Tissue Realignment Versus Medial Patellofemoral Ligament Reconstruction for Recurrent Patellar Dislocation: Systematic Review



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Purpose: To compare the clinical outcomes between medial soft-tissue surgery and medial patellofemoral ligament (MPFL) reconstruction for recurrent patellar dislocation without any evident predisposing factors. **Methods:** A literature search was performed on the established medical databases MEDLINE, EMBASE, and the Cochrane register. The inclusion criteria were as follows: English-language papers for recurrent patellar dislocation without any evident predisposing factors, clinical trial(s) with clear description of surgical technique, adult subjects, medial soft-tissue surgery or MPFL reconstruction without combined surgery, and a follow-up longer than 2 years. The methodological quality of all articles was assessed by 2 authors according to the Coleman methodology score. **Results:** Thirteen studies (mean Coleman methodology score value, 74.1; standard deviation, 11.5) were included in the analysis. Five studies reported the outcomes of patients undergoing medial soft-tissue surgery, compared with 7 studies reporting MPFL reconstruction. Overall, 109 patients underwent medial soft-tissue surgery with a minimum 2-years follow-up, compared with 308 patients of MPFL reconstruction. There was one direct comparative study between medial soft-tissue surgery and MPFL reconstruction. Of the patients who received medial soft-tissue surgery, 0 to 9.7% experienced redislocation, compared with 0 to 10.7% of the MPFL reconstruction group. The ranges of differences in Kujala scores were 23.6 to 31.7 points in patients who underwent medial soft-tissue surgery and 23.11 to 38.8 points in patients who underwent MPFL reconstruction. The ranges of postoperative congruence angles were -14.4° to 8.2° for medial soft-tissue surgery and -7.7° to -5.2° for MPFL reconstruction. The ranges of postoperative lateral patellofemoral angles were 7.9° to 9.4° for medial soft-tissue surgery and 5° to 5.3° for MPFL reconstruction. **Conclusions:** All studies on medial soft-tissue surgery and MPFL reconstruction for recurrent patellar dislocation without predisposing factors showed satisfactory outcomes despite the use of numerous surgical techniques, graft types, and follow-up periods. **Level of Evidence:** Level IV, Systematic Review.

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Patellar instability is often multifactorial, with osseous and soft-tissue abnormalities leading to recurrent lateral dislocations. According to the causes of dislocation, different surgeries are adopted. In cases of severe trochlear dysplasia, trochleoplasty may be

indicated.¹⁻³ If extensor mechanism disorders such as increased distance from the tibial tubercle to the trochlear groove (TT-TG) or patellar alta are present, proximal realignment, distal realignment, or combined surgery follow. For lower-limb malalignment (high

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Q-angle) or patella alta, distal realignment surgery is indicated. Ideal candidates for proximal soft-tissue procedures have a normal Q-angle, insufficient medial structures, and initial instability resulting from a traumatic event.^{2,3} Proximal soft-tissue procedures seek to balance the medial and lateral soft tissues. The rationale behind these procedures is that recurrent patellar dislocation is due to anatomical vulnerability of the medial structures including the medial patellofemoral ligament (MPFL), medial retinaculum, vastus medialis obliquus (VMO), and tightness of the lateral structures such as the retinaculum or the iliotibial band.⁴⁻⁶ Although various proximal soft-tissue procedures have been proposed, there is no consensus on the most effective procedure.

Recently, MPFL reconstruction has become a popular treatment option for recurrent lateral patellar dislocations, as this ligament is the primary passive restraint to lateral patellar translation of early knee flexion. But medial soft-tissue surgery such as medial imbrication, reefing, and medial retinaculum plasty (MRP) has also shown good results, with numerous reports citing its simplicity and relatively easy manipulation of tension.⁷⁻⁹

The purpose of this study was to compare the clinical outcomes between medial soft-tissue surgery and MPFL reconstruction for recurrent patellar dislocation without any evident predisposing factors. Our initial hypothesis was that MPFL reconstruction would effect superior outcomes.

Methods

Literature Search

Two of the authors (J-G.S., J-H.H.) independently performed comprehensive online literature searches of the MEDLINE, EMBASE, and Cochrane Library databases between August 3, 2014, and August 10, 2014. The following search protocol (modified for each of the

Table 1. Search Protocol

	Search Terms	Results
1	Patella dislocation [Mesh]	535
2	"Patella[tiab] AND (dislocation [tiab] OR subluxation[tiab] OR instability[tiab])	1,507
3	1 OR 2	1,780
4	("Medial patellofemoral ligament" [tiab] OR MPFL[tiab]) AND reconstruction[tiab]	253
5	("Medial patellofemoral ligament" [tiab] OR MPFL[tiab])	369
6	"Medial reefing" [tiab]	
7	"Medial augmentation" [tiab]	
8	"Medial plication" [tiab]	
9	"Medial imbrication" [tiab]	
10	"Quadricepsplasty" [tiab]	
11	"Proximal realignment" [tiab]	
12	6 or 7 or 8 or 9 or 10 or 11	182
13	4 OR 5 OR 12	542
14	3 and 13	292

tiab, title/abstract.

other databases) was employed (Table 1). The same 2 authors independently screened the title and abstract of each search-returned article and then reviewed the full text of each article that had been selected on the basis of the inclusion and exclusion criteria (Table 2). If whole-patient data were obtainable from the articles, those patients who also satisfied the inclusion criteria were selected for reanalysis. In cases of two or more studies by the same author, we determined whether the patients were duplicated or not. If duplicated, we included only the latest study.

Quality Assessment

The methodological quality of each of the studies included in the analysis was evaluated by two of the authors (S-B.K., D.S.) individually according to the Coleman methodology score.¹⁰ Each study was assessed for each of the methodology's 10 criteria, resulting in a final score ranging anywhere from 0 to 100. A perfect score of 100 indicated a study design that largely avoids the influence of chance, various biases, and confounding factors. Each author scored the methodological quality of the studies twice, with a 10-day interval between assessments. In cases of disagreement, the 2 authors debated the controversial score until reaching a consensus.

Data Abstraction

The studies were evaluated by 2 independent review authors for methodological quality. To extract data from the papers, we used a standardized form including the following: first author, publication year, publishing journal, study type, demographic factors, sample sizes, and results of research. Data were then extracted and cross-checked for accuracy. Subjects within the studies were divided into 2 treatment groups: those undergoing medial soft-tissue realignment and those undergoing MPFL reconstruction, respectively. Study data including (1) mean age of patients, (2) average dislocation before surgery, (3) surgical technique (medial soft-tissue surgery, MPFL reconstruction), and (4) follow-up are summarized in Table 3. The radiological and clinical outcome data extracted from studies included (1) overall radiological outcomes, (2) overall clinical results, (3) redislocation rates, and (4) complications, as summarized in Tables 4 and 5. The clinical and radiological outcome measures as a range of all included studies specifically recorded for the systematic review included (1) redislocation rates (at final follow-up), (2) Kujala score (mean difference of preoperative and postoperative score), (3) patellar tilt (at final follow-up), and (4) congruence angle (at final follow-up).

Results

Literature Search

The electronic search initially identified 673 articles. Critical application of the inclusion and exclusion

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