

# The Presence of a Trochlear Bump and Patella Alta may Predict the Risk of Recurrent Instability after Isolated Medial Patellofemoral Ligament Reconstruction: A Systematic Review and Meta-Analysis

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## INTRODUCTION:

Medial patellofemoral ligament reconstruction (MPFLR) is an excellent surgical option for recurrent patellar instability. This technique has demonstrated significant improvements in patient-reported outcomes, high rates of return to sport, and low rates of failure. However, there is debate regarding the use of isolated MPFLR in the setting of concomitant pathoanatomic features such as patella alta, trochlear dysplasia, or a lateralized tibial tubercle.

The purpose of this study is to estimate the overall relative effect sizes as well as strength of evidence supporting described risk factors for recurrent instability following isolated MPFLR.

**METHODS:** A systematic review was performed in accordance with PRISMA guidelines. PubMed, EMBASE, Cochrane, and Ovid/MEDLINE databases were queried. Clinical studies for outcomes of isolated MPFLR reporting recurrent instability and associated risk factors were included. Data for each risk factor analyzed by at least two studies was extracted and the heterogeneity of studies was determined by I<sup>2</sup> value. For variables evaluated in studies determined to have fair homogeneity defined as I<sup>2</sup> less than 25%. DerSimonian-Laird random-effects models were generated and effect sizes were represented as mean differences (MD) or odds ratios (OR).

**RESULTS:** A total of 9 studies examining risk for recurrent instability after isolated MPFLR were identified, with five overlapping risk factors with low heterogeneity between studies: age, sex, tibial tubercle to trochlear groove (TT-TG) distance, Caton-Deschamps Index (CDI), and trochlear dysplasia. There was strong evidence to support the risk of recurrent instability associated with CDI >1.3 (OR 3.24, p=0.01) and dysplasia with a trochlear bump (DeJour B/D, OR 3.13, p=0.002). Age, sex, and TT-TG distance did not cause an increased risk of recurrent instability with currently available aggregate data.

## DISCUSSION AND CONCLUSION:

A total of 9 studies examining risk for recurrent instability after isolated MPFLR were identified, with five overlapping risk factors with low heterogeneity between studies: age, sex, tibial tubercle to trochlear groove (TT-TG) distance, Caton-Deschamps Index (CDI), and trochlear dysplasia. There was strong evidence to support the risk of recurrent instability associated with CDI >1.3 (OR 3.24, p=0.01) and dysplasia with a trochlear bump (DeJour B/D, OR 3.13, p=0.002). Age, sex, and TT-TG distance did not cause an increased risk of recurrent instability with currently available aggregate data.

Figure 1. Range of pathoanatomy included among studies, with dotted lines depicting threshold CDI 1.3 and TT-TG distance 20 mm. Kita et al. reported Insall-Salvati ratio values for patellar height.

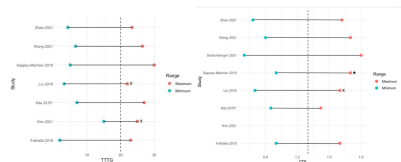


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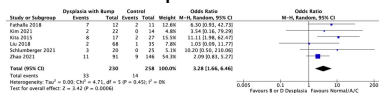


Figure 2. Forest plot demonstrating significant difference in risk of failure based on presence of a trochlear bump (DeJour B or D, OR 3.28).

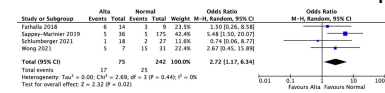


Figure 3. Forest plots demonstrating the significant effect of patella alta at a threshold of CDI  $\geq$  1.3 (OR 2.72, p=0.02).