

Percutaneous Medial Collateral Ligament Release Improves Medial Compartment Access During Knee Arthroscopy

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Introduction:

Adequate arthroscopic examination and intervention requires complete visualization of the accessible intra-articular anatomy. Certain areas of the knee, specifically the posterior medial compartment, can be challenging to access for full visualization or allow for instrumentation without causing iatrogenic cartilage damage. The percutaneous, outside-in technique of “pie-crusting” the medial collateral ligament is one technique that allows for improved access to the posterior medial compartment. Our group’s published systematic review on percutaneous medial collateral ligament release found that there is very little short- or long-term morbidity associated with this procedure, but there is a paucity of data quantifying how much additional working space is produced in the medial compartment with its performance. It also remains unclear how long any iatrogenic laxity takes to resolve or whether bracing is required postoperatively. The purpose of this study was to quantify intraoperative joint space widening afforded by the outside-in, percutaneous release of the medial collateral ligament, and to evaluate its impact on medial compartment width and functional outcomes at six-week follow-up for patients undergoing a partial medial meniscectomy without postoperative bracing.

Methods:

Institutional Review Board approval was obtained. Patients met criteria for inclusion in this study if they were identified as having a posteromedial meniscus tear, with no evidence of ipsilateral knee pathology, and were electively undergoing partial medial meniscectomy. Patients were excluded if the operative knee was identified as having pre-existing varus or valgus laxity, had undergone prior ligamentous reconstruction, had malalignment greater than five degrees, or had Kellgren and Lawrence grade 3 to 4 arthrosis. Intraoperatively, medial compartment width was quantified with fluoroscopy before and after performance of the percutaneous MCL release with an 18-gauge spinal needle proximal to the joint line. At six-week follow-up valgus stress radiographs re-evaluated medial compartment width. IKDC and PROMIS scores were completed pre-operatively and at six-week follow-up to evaluate functional outcomes in patients undergoing MCL release. A paired sample t-test performed at a 95% confidence interval was utilized to compare these variables.

Results:

Forty-two patients, with a mean age of 55.3 ± 10.7 years, were available for analysis of intraoperative medial compartment widening. Medial compartment width increased from a mean of 5.95 ± 1.32 mm to 11.09 ± 1.74 mm intraoperatively following the MCL release. At six week follow-up, radiographic assessment demonstrated a mean medial compartment width of $5.85 \pm .99$ mm, which represented an insignificant change in comparison to the preoperative value (CI[-.68-.33], $p=.474$). PROMIS and IKDC scores significantly improved from baseline, with increases of 6.9 ± 12.4 (CI[2.0-11.8], $p=.008$) and 11.7 ± 17.8 (CI[4.7-18.8], $p=.002$), respectively.

Conclusions:

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Percutaneous MCL release during knee arthroscopy improves visualization and facilitates instrumentation by providing an almost two-times wider working space within the medial tibiofemoral joint. In this study, the performance of percutaneous MCL release did not result in any complications. Radiographic and clinical resolution of iatrogenic laxity is demonstrated by six-weeks postoperatively, without the use of postoperative bracing.