



## MULTI-LIGAMENT KNEE INJURY REPAIR

*Completing Surgery in a Single Procedure has Better Results than Completing Surgery in Two Procedures*



### Why We Did This Study

Multi-ligament knee injuries (MLKI) happen when at least 2 of the 4 major knee ligaments are damaged at once. The injuries are usually partial or complete tears of the ACL, MCL, PCL, or LCL. These injuries are difficult to repair and the medical community generally agrees that surgery is the best treatment. However, there is no consensus about whether the injured ligaments should be repaired in one long procedure, or if it's better to repair the injuries with multiple, shorter procedures. To get a sense of which procedure might be the best option for most people who need surgery to repair MLKI, we reviewed a national database of patients who had these surgeries done between January 2007 and December 2016.

### PROS & CONS OF THE TWO OPTIONS

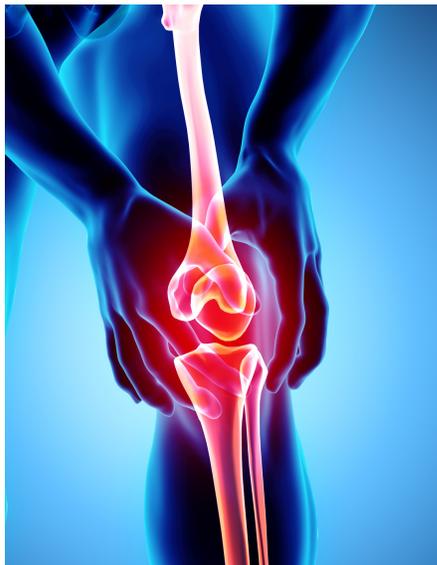
<i>Single-Procedure</i>	<i>2-Procedure</i>
Repairing knee and all ligaments in one surgery ✓ Speeds up recovery ✓ Maintains proper joint movement ✓ Lower graft failure rate ✗ Long and difficult procedure ✗ Correlated with arthrofibrosis risk	Repairing knee and all ligaments in two surgeries ✓ Shorter procedures ✓ Physical therapy in between procedures ✓ Higher patient satisfaction ✗ Longer recovery period ✗ Difficult for active patients

# WHO WERE THE PATIENTS WE STUDIED?

- The patient population we studied was generally young, predominantly male, relatively healthy, and had low rates of diabetes and obesity
- Patients in the single-procedure group had all repairs done the same day, and patients in the 2-procedure group had their repairs done no more than 12 months apart
- There were 1080 patients in the single-procedure group, and 270 patients in the 2-procedure group

Demographics	Single Procedure	2-Procedure
Average Age	27.2	27.8
Male %	65.8	65.2
Diabetes %	1.8	2.2
Obesity %	7.5	8.9

## WHAT WERE THE RESULTS?

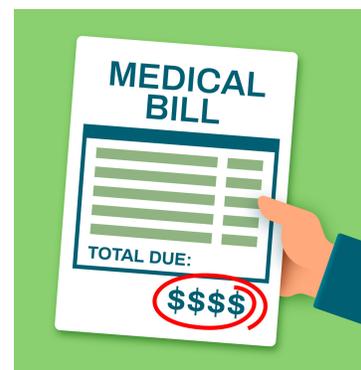


The study had the following findings:

- Rates of complications (15.9%), knee instability (5.1%), and infection (1.8%) one year after surgery for the single-procedure group were far lower than the corresponding rates of complications (25.6%), knee instability (11.1%), and infection (5.9%) for the 2-procedure group
- Single-procedure surgeries had significantly lower rates of unexpected reoperation (7.4%) within 2 years compared to 2-procedure surgeries (28.2%)
- The average cost of single-procedure surgeries two years post-op was \$24,620, and the average cost of 2-procedure surgeries two years post-op was \$39,237 (59.4% higher)

## WHAT DO THESE RESULTS MEAN?

Our analysis concluded that single procedure surgeries resulted in fewer complications, fewer return visits to the OR, and they were much less costly than 2-procedure surgeries done to repair MLKI. The rates of complications, knee instability, and infection were lower for single-procedure patients at all timepoints we examined following surgery: 30 days, 90 days, 180 days, and 365 days. Most importantly, unplanned return visits to the OR for single-procedure patients was lower at each of these timepoints as well. The study results may not affect or apply to each person. This study is one “piece of the puzzle” for this treatment; additional information may be available from other studies now or in the future.



Read more about this study at the [National Library of Medicine](#)