
Jiro Kato1, Masahiro Nozaki1, Hiroaki Fukushima1, Syunta Hanaki1
1Nagoya City University, 1 Kawasaki, Mizuho-cho, Mizuho-ku, Nagoya city, Aichi, Japan.
kjiro@gmail.com

Disclosures: Jiro Kato(N), Masahiro Nozaki(N), Hiroaki Fukushima(N), Syunta Hanaki(N)

Introduction: Medial meniscus ramp lesion (MMRL), lateral meniscus posterior root tear (LMPRT), and anterolateral complex injury (ALCI) are specific injuries to anterior cruciate ligament (ACL) injury and each injury is regarded as secondary stabilizer of ACL. However, the influence of their combination to knee stability was unknown. The purpose of this case-control study was to investigate the effect of the number of concomitant secondary stabilizer injuries on knee instability in patients undergoing ACL reconstruction.

Methods: Of 552 ACL reconstruction surgeries performed within 1 year of injury between January 2017 and April 2023, 321 patients who underwent quantitative assessment of knee instability under anesthesia were included. Patients with other ligament injury, knee joint laxity, history of contralateral knee injury, and meniscus injuries other than MMRL and LMPRT were excluded (Figure 1).

Results: Finally, one hundred forty-two patients were included in this study (mean age: 25.6 years old, male 55%). MMRLs were found in 52 knees (36.6%), LMPRTs in 22 knees (15.5%), and ALCIs in 81 knees (57.0%). Isolated ACL injury was 37 patients (26.1%), dual was 63 patients (44.6%), triad was 34 triad knees (24.3%), and 8 tetrad knees (5.6%). There were no significant differences in age, gender, BMI, Tegner activity scale, time from injury to surgery, or time from injury to MRI among the four groups. The percentage of High-grade pivot-shift increased as the number of complicating injuries increased (Figure 2).

Quantitative evaluations with the inertial sensor, AVER had a significant difference between single and tetrad (single 201.4[95% CI: 192.0-269.5], dual 361.7[95% CI: 278.9-528.1], p=0.033), and CA was significantly lower in the isolated ACL injury than in all other groups (Figure 3). There was no significant difference in the amount of ATT between the groups.

Discussion: The most important finding in this study is that as the number of the secondary stabilizer injuries increase, rotatory instability in ACL-deficient knee was increased. To put it another way, Patients with high-grade pivot-shift had an increased probability of concomitant secondary stabilizer injury. Other studies have reported that Secondary stabilizer also affects ATT, but no association was found in this study. The findings of this study support the idea that increased rotatory instability in patients with combined damages to secondary stabilizers may deteriorate the outcome of ACL reconstruction.

REFERENCES:

ACKNOWLEDGEMENTS: None

IMAGES AND TABLES: