


Time from Injury of Anterior Cruciate Ligament (ACL) to Reconstruction Has an Important Role in Saving Meniscus, a Commentary on an Article by Seyed Mohammad Javad Mortazavi et al. "Time from Injury Is the Key Predictor of Meniscal Injury in ACL-Deficient Knees"

Mir Mansour Moazen Jamshidi , Alireza Moharrami ^{*}, Behzad Nezhad Tabrizi²

¹ Assistant Professor, Department of Orthopedic Surgery, School of Medicine, Zanjan University of Medical Sciences, Zanjan, Iran

² Resident, Joint Reconstruction Research Center, Tehran University of Medical Sciences, Tehran, Iran

*Corresponding author: Alireza Moharrami; Joint Reconstruction Research Center, Tehran University of Medical Sciences, Tehran, Iran. Tel: 21-61192767, Email: a.moharrami@gmail.com

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Background

Meniscus is a structure of the knee that is the secondary stabilizer for the knee. It is well known that saving meniscus helps in preventing from osteoarthritis (OA) of the knee (1-3). The cruciate ligaments of the knee (anterior and posterior) are the primary stabilizers of the knee and recent studies showed that anterior cruciate ligament (ACL) rupture could cause medial meniscus (MM) injury over the time (4, 5).

The previous studies showed that the meniscus could be damaged in contribution with ACL tear, in the lateral meniscus (LM) and MM with the acute and chronic mechanisms, respectively (6, 7). There are many known predictors for meniscal injury in association with ACL rupture such as age, sex, obesity, and time from injury (TFI). Many studies showed that TFI might be a key predictor for MM injury but not for LM injury (3, 4, 6, 8-10). There are several studies which recognized that MM damage had association with increased TFI (7, 11). Mansori et al. showed that the mean TFI in the patients with MM damage was 5.9 months (7); moreover, Taketomi et al. revealed that TFI more than 6 months in ACL rupture could be a predictor of MM injury (12).

Mortazavi et al. in 2021 published an original article in the Journal of Knee Surgery (JKS). They determined that TFI more than 6 months significantly could predict MM damage in 111 patients with ACL rupture. Furthermore, they revealed that the bucket-handle and ramp lesion types of MM tear had significant association with increased TFI. The study was well-designed, and the receiver operating characteristic (ROC) curve analysis was used for the study with 6-month significant cut-off point for MM damage (13).

In the present paper, we aimed to comment about the advantages and disadvantages of the study by Mortazavi et al. (13) which was recently published in the JKS.

Discussion

Saving meniscus is important in preventing OA for the knee joint (1, 2). TFI of the ACL is a key predictor for MM

damage based on the previous studies (7, 11, 12). In the study by Mortazavi et al., they recognized that TFI more than 6 months could predict risk of MM damage (13), in alignment with previous studies. In the present article, we want to discuss about some advantages and some negative points of the study published by Mortazavi et al. We have five comments on this study which has recently published with well-designed method and statistical analysis.

First, Mortazavi et al. recognized that TFI of the ACL more than 6 months was a key predictor for increasing the risk of MM damage (13). They determined that LM had association with early phases of the injury (acute phase), the same as the previous studies. There were 3 well-designed studies which confirmed that TFI of 6 months was a key predictor for MM damage by Mansori et al. (7), Yan et al. (11), and Taketomi et al. (12). The study by Mortazavi et al. is in alignment with previous studies in determining the role of the TFI in MM damage. Furthermore, the study investigated the association between TFI and types of the MM injury. They recognized that bucket-handle and ramp lesion had significant association with increased TFI.

Second, the time for ACL reconstruction following the injury is controversial among the knee surgeons. Mortazavi et al. recommended that the time from the injury to 6 months later was the golden time for ACL reconstruction to prevent from secondary meniscal injury (13). Based on the study by Mortazavi et al. and many previous studies (7, 11, 12), it is suggested to perform ACL reconstruction in the first 6 months following the injury.

Third, the study did not consider the acute meniscal injury and it is a negative point for the study. The study was retrospective, and the patients' meniscus were evaluated perioperatively. Therefore, in some cases, maybe the MM had been damaged immediately following the ACL injury. Probably, it would have been better if patient's magnetic resonance imaging (MRI) in the acute phases had been considered.

Forth, because of the importance of the timing for ACL reconstruction and saving meniscus, it is important to perform larger studies and meta-analysis in evaluating the role of the TFI of ACL in meniscal damage. The study had 111



patients with pure ACL tear which were included to the study and evaluated about the meniscal injury. It is suggested to perform large meta-analysis to achieve a definite result about the role of the ACL TFI on the meniscal damage.

Fifth, the methodology and statistical analysis of the study were very strong and attractive (13). They used two types of statistical analysis for determining the golden time for ACL reconstruction to prevent meniscal damage. In the first step, they showed that the mean TFI was significantly higher in the patients with meniscal injury which showed that early ACL reconstruction could decrease the risk of meniscal damage. In the second step, they revealed that the patients with MM damage significantly had higher TFI than the patients with LM damage. In the third step, they compared the patients with and without meniscal damage with six 3-month cut-offs (3, 6, 9, 12, 15, and 18 months) and they recognized that the 6-month cut-off was highly significant for meniscal damage with t-test. Therefore, in the end step, they performed ROC curve analysis which revealed significant 6-month cut-off (with acceptable area under curve) for MM damage following ACL tear, the same as the t-test.

Conclusion

The study by Mortazavi et al. is a well-designed study which recommended the 6-month TFI as a significant key predictor for meniscal injury (13). We recommended to the authors of the study to perform a study with more patients or a meta-analysis with the same statistics as their previous study.

Conflict of Interest

The authors declare no conflict of interest in this study.

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