



Background

- Multiligamentous knee injuries including concurrent tears of the anterior cruciate ligament (ACL), lateral collateral ligament (LCL), and/or posterior cruciate ligament (PCL) are frequently associated with meniscus damage.¹
- Multiligament reconstruction / repairs carry post operative risks including graft failure and recurrent ligamentous injury.²
- In contrast, an isolated meniscal tear of previously intact medial meniscus following multiligament reconstruction, with all previously injured structures intact are not well documented.

Case Presentation

- First Injury
 - A 17 year old female presented to our clinic complaining of knee pain, decreased range of motion, as well as numbness and tingling in the dorsum of her right foot. All of which began four months earlier after a fall while at dance practice.
 - Initially at another clinic the patient was diagnosed with a dislocated patella based on X-ray findings.
 - Due to Psychological/Social/Behavioral limitations including a move across state, the treatment timeline was prolonged. After obtaining a stress X-ray, MRI, and physical exam, and it was determined that the patient had a multiligamentous injury including a torn ACL, PCL, LCL, with traction injury to the common fibular nerve.
 - On arthroscopic exam a bucket-handle tear of the posterior horn was also diagnosed.
 - Following surgery due to patient limitations she had difficulty completing her physical therapy and maintaining follow up appointments.
- Second Injury
 - Five and a half months post-op from her multiligamentous reconstruction and lateral meniscus repair the patient fell while intoxicated on a party bus. Falling into knee flexion.
 - She represented to our clinic with complaints of right knee swelling and pain. Based upon another MRI and physical exam she was diagnosed with a **complete radial tear of the posterior root of the medial meniscus**. All other structures remained intact.



Figure 1. Patient Upon Presentation
Stress view x-rays showing laxity of the PCL (a) and the LCL (b).

	At the Time of the First Procedure		At the Time of the Second Procedure	
ACL				
PCL				
LCL				
Lateral Meniscus				

Figure 2. Table of images of the torn ACL, PCL, LCL, and Lateral Meniscus. As shown, the ACL was reconstructed, the PCL was also managed with a double bundle reconstruction, and the LCL was also reconstructed. The Lateral meniscus was managed with a bucket handle repair. All of these remained intact at the time of the second injury as shown in these images.

	At the Time of the First Procedure	At the time of the second Procedure			
Posterior Horn of the Medial Meniscus		Tear of the posterior horn of the medial meniscus			Posterior horn of the medial meniscus repair

Figure 3. Series of images showing the posterior horn of the medial meniscus over time. Figure 3a shows an arthroscopy image of the intact medial meniscus at the time of the first surgery. Figure 3b is an MRI showing a ghost sign due to torn medial meniscus. Figure 3c is an MRI showing the torn posterior horn of the medial meniscus circled in red, which is once again shown in an arthroscopic view on figure 3d. Figure 3e shows an arthroscopic view of the repaired posterior horn of the medial meniscus and figure 3f is an X-ray image showing the fixation point circled in red.

Intervention

- First Injury (Multiligament Injury)
 - The patient underwent an ACL reconstruction, PCL double bundle reconstruction, LCL and PLC reconstruction, and Inside Out Lateral Meniscus Bucket Handle repair.
 - Of note during the PCL reconstruction a successful effort was made to loosen some of the joint capsule of the knee in order to protect the neurovascular structures, namely the popliteal artery and tibial nerve.
- Second Injury (Posterior Root Tear)
 - Clinically the patient was found to have arthrofibrosis and a new injury of the posterior horn medial meniscus root tear.
 - Due to the patient's difficulties maintaining appointments it was decided to manage both of these diagnoses during the same surgery.
 - Patient underwent a posterior horn medial meniscus root repair. As well as lysis of adhesions and manipulation under anesthesia to address the arthrofibrosis.

Discussion

- Graft failure rates of multiligament injuries are under 7%.³
- However an isolated medial meniscus posterior root tear after multiligament reconstruction **without graft failure** is rarely reported.
- Our patient was at increased risk of a meniscal tear due to the Psychological/Social/Behavioral limitations delaying her PCL reconstructive surgery.⁴
- Capsular release during PCL reconstruction is appropriate in order to protect neurovascular structures. However this procedure may increase the risk for damage of the posterior horn of the meniscus.⁵
- While retears and graft failures are somewhat common following reconstructions and repair, tearing of previously healthy tissue is unusual. This underscores the importance of future research related to this pattern of injury in order to better understand potential influence of large multiligament surgery and the health of adjacent healthy structures as well as the grafts and repaired tissue.

Conclusion

- This case highlights the unusual occurrence of an isolated medial meniscus root tear after a multiligamentous knee reconstruction without graft failure or other associated postoperative complications. It is common to suspect graft failure when evaluating a patient for knee pain during their postoperative months. However, this case can be presented as a vote of confidence on modern day multiligament knee injury surgical techniques. It is also important to further assess the stability of the medial meniscus postoperatively in these cases.

References

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