Chronic Patellar Tendinitis and Partial Patellar Tendon Tear in a Female Collegiate Soccer Athlete

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Abstract

Background: This case presents a 20-year-old female collegiate soccer midfielder that had initial complaints of persistent left anterior knee pain. She came to the athletic trainer (AT) last November and was diagnosed with chronic patellar tendinitis. The following April, she received a platelet-rich plasma (PRP) injection in the left knee. She was immobilized for six weeks following the injection of which she spent at home. Immediately after the rehabilitation period concluded, she returned to soccer. In July, she had a recurrence of left knee Pain. Upon reassessment, the AT referred her for an MRI scan. The MRI scan displayed a partial patellar tendon tear in an area that had not been thoroughly seen previously. The athlete was then scheduled to receive an arthroscopic debridement and was referred to a team physician for imaging. Differential Diagnosis: Patellar Tendinitis, Quadriceps Tendinitis, Patellar Tendon Strain. Treatment: Following surgery, the athlete underwent a 12-day immobilization period. A rehabilitation plan with short and long term goals was established for the athlete. The athlete only experienced a 7-day set back, two months post-operative of which the rehabilitation protocol was adjusted. The athlete was successful despite set backs and was able to return to sport after five months. Uniqueness: Limited research is available pertaining to partial thickness tears and surgical repair methods. Partial thickness tears are typically treated conservatively. However, this case presents a surgical tendon suture method in the repair of a Grade 2 patellar tendon tear. Conclusion: The results of this case report suggest that an arthroscopic debridement and tendon suture repair can be successful methods in facilitating a healthy return-to-sport for athletes with a partial patellar tendon tear. During the rehabilitation process, the athlete reported 2 times a day where multiple modalities and therapeutic exercises were implemented. With the exception of a seven-day time loss, no other set backs were acquired during the rehabilitation period. This is a broad explanation of a complex injury and the recovery process from an injury that is typically treated conservatively, yet was treated surgically and may therefore be considered.

Introduction

The knee is a joint that is commonly injured in athletics. Contact sports along with repetitive motions and high physical demands of the knee predispose an athlete to injury. The patellar tendon is a tendon of the quadriceps muscles and an essential component of the extensor mechanism of the leg, which functions to allow the athlete to extend the knee and stabilize the patellofemoral joint. Injury to this tendon can be detrimental to an athlete’s ability to sufficiently function biomechanically. Patellar tendinopathy, an overuse injury that can result in weakening of the tendon, affects 14 percent of the athletic population (Kruckeber, et al., 2017). This prevalence warrants proper diagnosis, treatment, and appropriate medical care for patellar tendinopathy and other knee injuries are crucial for an athlete’s recovery and return to optimal knee health. Understanding the anatomy in relation to the patellar tendon and extension mechanism of the knee is essential for understanding the injury and radiographic findings. Understanding the quadriceps and patellar tendons work in conjunction to extend the knee. The quadriceps muscles all join into one distal tendon that lies on top of the patella and connects to the patellar tendon at the inferior pole of the patella. The patellar tendon then connects the inferior pole to the tibial tuberosity. Contrary to popular belief, the quadriceps muscles acts as a pulley on the patella, resulting in knee extension.

Case Report

Patient: This Division I soccer midfielder player is a 20-year-old athlete that had initial complaints of anterior knee pain in November two seasons prior. She was diagnosed with patellar tendinitis. She received a PRP injection the following April in which she was instructed to follow a modified immobilization protocol. She returned to soccer activities immediately at the conclusion of the immobilization period. She had recurrent knee pain 6 months later, leading to a referral for MRI scans. She underwent an arthroscopic debridement and was referred to a team physician where she underwent imaging. MRI scans were taken to assess the integrity of the ACL; both were negative. McMurray’s special test was performed to assess the integrity of the ACL; both were negative. The athlete experienced substantial knee pain. After consulting with the surgeon, the protocol consisted of four phases with physical therapy and “surfing” sessions. Phase I incorporated, as well as static proprioception training. Light straight leg raises, and glute activation exercises were progressing to the next phase.

Rehabilitation and Results

Following the athlete’s surgical procedure, the athletic trainer devised a rehabilitation protocol based on guidelines given by the surgeon. The protocol consisted of four phases:

Phase I: Goals—diminish pain and inflammation, restore range of motion (ROM), and maintain muscular strength. Instruction: no active range of motion, weight-bearing gait with crutches and brace locked in full extension. Pain and inflammation were reduced via daily modality treatments, including GameReady and electrical stimulation. The athlete also took pain medications as prescribed by the team physician. Once the athlete had minimal pain and inflammation, range of motion exercises were incorporated.

Phase II: Goals—restore pain-free ROM, progress to full weight bearing with normal gait, progressively increase muscle strength and endurance, increase proprioceptive function. Instruction: At the beginning of this phase, unlock brace to 90°, progressed to gait w/o crutches as quad strength allows. Previous modalities were utilized as needed. Quad isometrics, straight leg raises, and glute activation exercises were incorporated, as well as static proprioception training. Light walking on the treadmill was allowed with adequate quad strength. This phase was reduced near the end of this phase to prepare the athlete for phase III.

Phase III: Goals—restore muscular and cardiovascular endurance, increase range of motion, and tendon suture repair. These operative methods followed by a period of tendon suture repair. This phase included progressive strengthening and proprioception exercises, plyometrics, agility drills, and bike intervals. This is also the phase in which the athlete’s recovery and return to optimal health. Unfortunately, more severe injuries might occur as a result of an undertreated patellar tendinopathy. According to a study by Hsu and Siewiec (2019), a mere 0.5 percent of the American population sustains a patellar tendon rupture each year. The literature contains extensive data on various operative methods for the treatment of patellar tendon rupture; however, literature pertaining to operative methods for partial tears is limited. This case presented an athlete that sustained a grade 1 patellar tendon tear and chose operative repair. The purpose of this case study was to assess the athlete’s recovery and return to sport success as a result of the respective operative method chosen.

Discussion and Summary

The patellar tendon is a crucial component of the knee. Overuse of the knee can lead to inflammation and ultimately weaken the tendon over time, resulting in patellar tendinitis. Patellar tendinopathy affects 14 percent of the American athletic population (Kruckeber, et al., 2017). This prevalence warrants proper diagnosis, treatment, and appropriate medical care to ensure an athlete’s recovery and return to optimal health. Unfortunately, more severe injuries might occur as a result of an undertreated patellar tendinopathy. According to a study by Hsu and Siewiec (2019), a mere 0.5 percent of the American population sustains a patellar tendon rupture each year. The literature contains extensive data on various operative methods for the treatment of patellar tendon rupture; however, literature pertaining to operative methods for partial tears is limited. This case presented an athlete that sustained a grade 1 patellar tendon tear and chose operative repair. The purpose of this case study was to assess the athlete’s recovery and return to sport success as a result of the respective operative method chosen.

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