PATIENT CASE EXAMPLE

Patellar Tendon Rupture Repair

Full-thickness rupture of the patellar tendon, left knee, in a 72-year-old anesthesiologist with a previous history of knee chondromalacia and meniscal tear

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OVERVIEW/DISCUSSION

Nearly all patellar tendon full-thickness ruptures and tears require surgical repair in order to regain function of the knee. Importantly, early repair may prevent the tendon from scarring and contracting in a shrunken position causing limited range of motion and mobility. The goal of surgery is to restore the correct tension and positioning of the patellar tendon to restore full range of motion. Surgery is aimed at restoring function and strength. Weakness of the repaired tendon can limit movement and function making even walking difficult. Factors that impact healing include age, previous function and comorbid conditions. The addition of biologics can be an adjunct in the repair of patellar tendon ruptures to improve strength and enhance healing for patients with poor healing and/or comorbid conditions that impair healing. Below is a case presentation of a patient with increased risk for poor healing due to age, pre-existing osteoarthritis, and extensive proximal and distal tearing of the tendon with a successful repair using a biologic supplementation (AmnioFix®) applied during the open repair of the patellar tendon with single donor allogenous amniotic growth factors.

CLINICAL HISTORY

The patient is a 72-year-old male anesthesiologist, with a previous history of knee chondromalacia and meniscal tear. The patient had an injury to his left knee while on a pedal scooter and was diagnosed with a full-thickness patellar tendon rupture of the left knee, pre-operative MRI studies were completed. The patient had 0 out of 5 extension strength preoperatively, indicative of a full-thickness rupture of the patellar tendon, along with a defect of the patellar tendon attachment distally. MRI studies obtained prior to surgery showed chondromalacia and a full-thickness patellar tendon rupture. The injury occurred less than 72 hours prior to the surgery.

Figure 1
Pre-operative MRI image showing
proximal rupture (partial) of the patellar tendon.

Figure 2
MRI image showing full-thickness rupture
of the patellar tendon, distally from the tibial tubercle.

Figure 3
MRI image confirming severe patellofemoral
osteoarthritis and rupture of the distal patellar tendon.

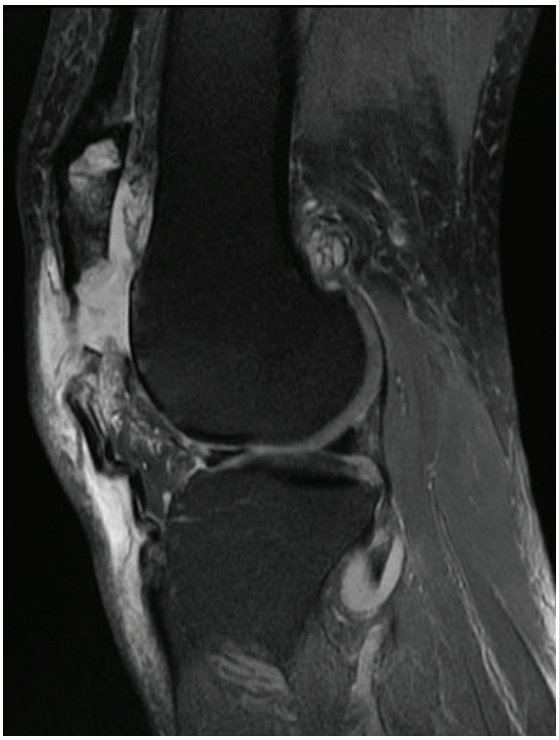

Figure 4
Pre-operative MRI image showing patella alta
secondary to full-thickness patellar tendon rupture with
severe interstitial degeneration of the ruptured patellar tendon.

SURGICAL TECHNIQUE

The patient was brought to the operating room following his patellar tendon rupture for arthroscopy of his left knee followed by open patellar tendon repair for a grade 3 rupture, full-thickness, with biologic augmentation.

The knee was initially arthroscopically inspected using the standard portals. Arthroscopic inspection revealed chondromalacia of the knee and meniscal degeneration. Appropriate debridement and chondroplasty was completed followed by open repair of the patellar tendon. A central midline approach was utilized to expose the patellar tendon, which was severely ruptured with extensive degeneration of both the proximal and distal ends. There was also significant hematoma formation and hemorrhagic changes along the medial and lateral retinacula, consistent with full-thickness tearing of both the medial and lateral retinacula.

The majority of the patellar tendon was fully ruptured off of the inferior attachment to the tubercle and a portion of the patellar tendon on the lateral side was disrupted from its proximal patellar attachment. The bulk of the tendon was disrupted inferiorly, and we initially utilized #2 FiberWire® sutures to whipstitch the proximal patellar tendon, and transosseous drill holes were utilized to anatomically repair the patellar tendon back to the tibial tubercle. This was additionally reinforced by a proximal whipstitch through the remaining portion of the tendon, and repaired through transosseous sutures on the patellar side. The medial and lateral retinacula were then repaired with #2 FiberWire sutures. Extension was noted to be 0 degrees, and flexion achieved at 90 degrees intraoperatively. There was minimal tension in the repair at 90 degrees of flexion.

Next, we grafted the patellar tendon repair with AmnioFix allograft placed superficial directly over the repair of the patellar tendon to encourage healing and minimize scar tissue formation. Placement of AmnioFix was oriented so that the amnionic side was in contact with the tendon repair and the chorionic side facing the subcutaneous tissues. Next the standard closure was completed. Non-adherent dressing along with the brace locked in full extension was then applied.

Figure 5
Intraoperative picture of ruptured patellar tendon in a 72-year-old male, showing extensive distal rupture off of the tibial tubercle and extensive proximal partial tear off of the patella.

Figure 6
Intraoperative photograph of extensive tearing of the patellar tendon, with degenerative changes.

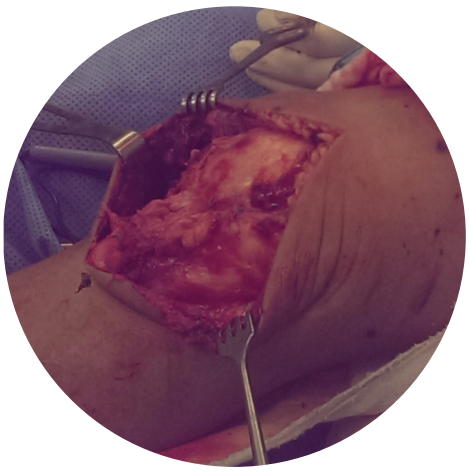

Figure 7
Repair of ruptured patellar tendon with use of AmnioFix.

CLINICAL FOLLOW UP

The patient was seen ten days post-operatively, and sutures were removed and steri-strips placed on the surgical wound. Healing was progressing as expected and the brace remained in place at full extension. No bleeding, drainage or signs of infection were noted. Gentle passive range of motion from 0 to 90 degrees was recommended for fifteen minutes three times per day.

Follow up was continued and the patient was seen at five weeks post-operatively. He was able to extend actively to 0 degrees and passively flex to 90 degrees. The brace was replaced with a neoprene low profile brace.

Final follow up conducted three months post-operatively. The examination confirms full extension. The patient has flexion of 122. He has 5/5 strength of his quadriceps without effusion. The patient was able to gradually resume his activities at this point.

CONCLUSION

This 72-year-old man with complicated full-thickness rupture of the left knee patellar tendon with previous history of osteoarthritis and meniscal tear was able to return to full activity and regained full extension and strength in his knee after surgical repair augmented with AmnioFix.

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