



LATE PATELLAR TENDON RECONSTRUCTION - NOVEL TECHNIQUE

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ABSTRACT

Traumatic rupture of the patellar tendon occurs in the young and is caused by sudden contraction of the quadriceps against resistance. The lesion usually occurs at the point where the patellar tendon is attached to the lower pole of the patella. We present a 26-year-old male patient who presented to our hospital 4 months after history of bike accident. Following which the patient was unable to walk immediately. Patient was treated with native bandage for a month after which patient was able to weight bear. On walking patient had pain, instability, locking and inability to extend the knee. Clinically, patient had a swelling over infra patellar region with extensor lag of 25-30 degrees. X-ray of the knee showed no bony injury and MRI showed complete tear of the patellar tendon. Patellar tendon rupture repaired with modified Ecker technique using hamstring graft. Post-op operatively, he was immobilized with above knee slab for 2 weeks after which patient was made to weight bear partially. At 10 weeks, full weight bearing with knee brace was started and at the end of 3 months patient had near normal range of movements.

Key Words: Patellar tendon rupture, Patellar tendon repair, Modified ecker technique, Hamstring

INTRODUCTION

Surgical management of neglected patellar tendon rupture is more challenging than that of acute ruptures, and the results are less promising because of proximal patellar migration and retraction, atrophy of the quadriceps (1-3). Several methods to relocate the patella anatomically have been proposed including preoperative traction, quadricepsplasty and external fixation (1-8). We present a case with a neglected patellar tendon rupture which was treated successfully with a modified Ecker technique (7) and adjustable knee brace postoperatively. Good functional result was achieved with intensive rehabilitation.

CASE REPORT

A 26-year-old male was admitted to our hospital with a complaint of inability to extend his left knee. His history revealed a road-traffic accident 4 months earlier, after which the patient was unable to walk immediately, he went in for native treatment where 2 bandages around knee each for 15 days has been applied. After which the patient was able to walk with pain, instability, locking and inability to extend knee.

On examination, swelling seen over infra-patellar region and patella was migrated proximally. Passive range of motion was full with an extension lag of 25-30 degree. Radiographs showed no evidence of any bony injury. MRI of the knee joint revealed complete tear of the patellar tendon. With all the clinical and radiographic findings we diagnosed as patellar tendon rupture.

Pre-anesthetic workup was done and planned for surgical reconstruction of patellar tendon using modified ECKER technique.

An anterior midline incision was given to expose patella and tibial tuberosity. Then two transverse tunnel was drilled in patella with a thick K wire and another one in tibial tuberosity with 4 mm drill bit. Holding the knee in extension a circular wire was passed from the tunnels and tightened until obtaining an adequate distance between patella and tibial tuberosity, considering Insall-salvati ratio (normal patellar tendon is approximately equal to the length of the patella) (9). Semi-tendinosus and Gracils tendon grafts were harvested by open end tendon stripper. The semi-tendinous tendon was prepared and passed through the tunnel drilled in the tibial tuberosity and the inferior tunnel drilled in the patella, then sutured. Then, the gracilis tendon was passed through the same tunnel in tibial tuberosity and

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superior tunnel of patella and sutured to the semitendinosus tendon graft. Circulage wire removed after the repair was completed. With Hip in 45 degree of flexion, the knee could be flexed to 20% with gravity of the leg and the repair was found to be stable. The knee was immobilized by plaster slab in extension post-operatively.



Figure 1: Intraoperative picture showing complete patellar tendon rupture.



Figure 2: Patellar tendon repaired with semitendinosus-gracilis graft.



Figure 3: Post-operative Xray.

DISCUSSION

Fresh patellar tendon ruptures require immediate repair of the extensor mechanism for optimum results. End to end repair with circulage wiring or with non-absorbable suture material and cast immobilization for 6-8 week is recommended (3). Better outcome has been reported in early repair of patellar tendon with no extension lag and quadriceps strength (3). Neglected rupture of the patellar tendon is a rare condition [5–8,10]. Patellar tendon rupture is often missed in patients with multiple injuries, especially in obese population. End to end approximation is difficult in neglected rupture cases. Late the presentation greater the chances of quadriceps retraction and proximal patellar migration. It is difficult to locate the ruptured ends in neglected cases due to fibrosis, in such conditions it is recommended to reconstruct patellar tendon with fascia lata, hamstring tendons (commonest) or Achilles tendon (11-12). Several techniques have been reported for relocation of patella to its anatomical position in cases with severe quadriceps contracture and migrated patella with external fixation using pins and Ilizarov technique(5). Mandelbaum et al. [2] proposed 'Z' lengthening for the quadriceps tendon and 'Z' shortening for the patellar tendon with augmentation using semitendinosus and gracilis tendon grafts. Postoperatively immobilized in plaster with knee in full extension for 4 weeks followed by 10 degree per week of knee flexion in a hinged knee brace reporting 130 degree flexion at end of 1 year follow up.

Even though being a neglected rupture, intraoperatively we did not have any difficulty in moving the patella in spite of no preoperative traction. Semitendinosus-gracilis graft were used to reconstruct the patellar tendon without any circulage wiring. Postoperatively immobilied in above knee plaster with full extension for 4 weeks followed by 10 degree per week of flexion in a hinged brace. At the end of 12 weeks patient had 120 degree of knee flexion with no extension lag and good strength of quardiceps was acheived.



Figure 4: At 12 weeks no extensor lag and full flexion

CONCLUSION

Modified Eckar technique is a good and promising procedure in reconstruction of neglected patellar tendon rupture. Outcome will be better if treated earlier. Still a good result can be obtained in reconstruction of the patellar tendon using an autologous tendon graft along with intensive rehabilitation.

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