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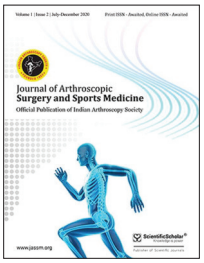

Case Report

Bilateral patella tendon rupture in young female on oral steroid: A case report

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ABSTRACT

Rupture of bilateral patella tendon has been discussed in case reports. We present a case of young female with bilateral patella tendon rupture with a history of oral steroid intake for 10 weeks before injury. She was able to join office job 6 months after surgical repair and intensive rehabilitation. Despite unclear pathophysiology, the use of steroids has been associated with tendon injuries.

Keywords: Bilateral Patella Tendon Rupture

INTRODUCTION

Unilateral patella tendon rupture is usually seen in individuals under 40 years age. Rupture of bilateral simultaneous patella tendons is uncommon and mostly described in literature as case reports.[1-4]

We present a case of a 24-year-old female. She tripped while playing fun cricket with office colleagues. She could not stand up immediately after she tripped trying to dive and had feeling of give way. The patient had no history of rheumatoid arthritis, diabetes, or connective tissue disorder. For 10 weeks before injury, she was on steroid (Betnesol Forte) which was prescribed for skin disease. On examination, there was palpable infrapatellar defect with absent SLR on both sides.

Most of case reports suggest semitendinosus and gracilis augmented end-to-end repair.[5,6] In view of thin hamstring graft associated with Indian subcontinent females,[7,8] we used fiber tape as internal brace to protect semitendinosus and gracilis augmented repair in early post-operative period.

Investigation

Bilateral knee lateral radiograph showed high riding patella [Figure 1].

Surgical technique

After tourniquet inflation, standard midline incision was made. Semitendinosus and gracilis graft was harvested with open tendon stripper with attached tibia insertion. Tendon margins were

freshened. Mediolateral tunnel (5 mm) was made at tibial tuberosity. Similar tunnel (5 mm) was made in patella at junction of middle and lower third [Figure 2]. Under C-arm guidance patella was brought down and held with reduction clamp. No. 2 fiber tape was looped across patella and tibial tunnels and knotted to secure height of patella under C-arm guidance.

End-to-end repair of patella tendon was done after freshening the margins. Free ends of hamstring graft was stitched together and passed across tibial tunnel medial to lateral. Graft was then taken through patella tunnel from lateral to medial and stitched over itself at medial tibial tunnel opening. Graft was secured at tibial tunnel with 5.5 mm twin loaded anchor over medial and lateral graft exit [Figure 3]. Tissue sample was sent for histopathology which was reported as dense fibrous connective tissue with non-specific inflammatory repair process (granulation tissue) and fibrosis.

Guarded rehabilitation was started with post-operative long knee immobilizer for 4 weeks. Static quadriceps was started on the 1st post-operative day. Partial weight-bearing with immobilizer and walker was started on the 2nd post-operative day.

Passive ROM 0–30 was aimed from 4 to 6 weeks. After 6 weeks, active range of motion and straight leg raise were started and the patient regained full ROM at 3 months. At 6 months post-operative, the patient joined her office job with good quads and ROM [Figure 4]. Post-operative X-ray at 6 months was satisfactory with well-maintained patella height and MRI at 6 months showed intact healing graft in both knees [Figure 5].

DISCUSSION

Patellar tendon is a strong ligament with force 17.5 times the body weight required to rupture the tendon.[9] Activities of daily living as climbing stair generate force of 3.3 times the body weight,[10] whereas athletic activities

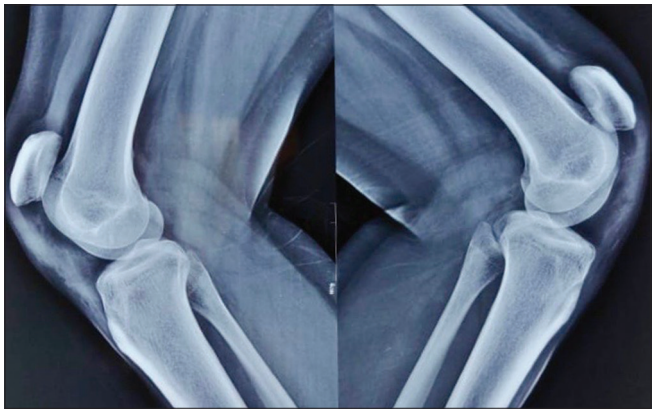

Figure 1: High riding patella.

Figure 2: Hamstring harvested and tibial and patellar tunnels created.

Figure 3: Final repair with augmentation.

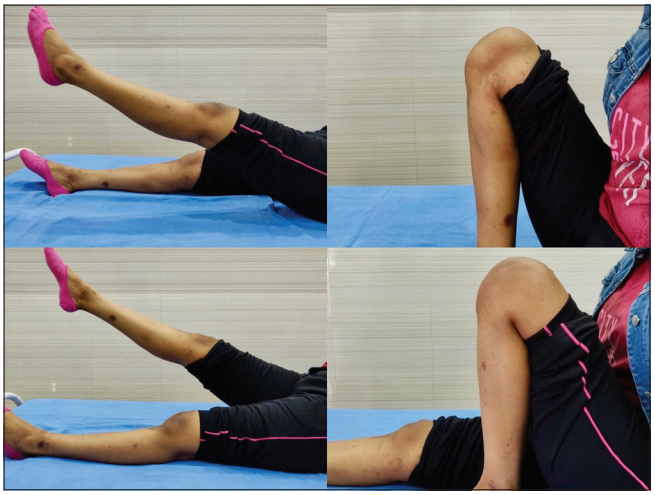

Figure 4: Six months follow-up with good quadriceps and ROM.

such as acceleration, deceleration, and jumping would generate force of 7–8 times the body weight. Bilateral patellar tendon rupture is rare in young healthy individual and is usually associated with systemic disease such as systemic lupus erythematous, inflammatory polyarthralgia, chronic renal failure, and other conditions that weaken tendinous tissues.[1-4] Role of systemic or local steroid treatment in tendon weakening has been reported in literature,[2] as corticosteroids hamper collagen synthesis, but Cooney *et al*.[3] argued that no cases have been reported in patients receiving high-dose corticosteroids for asthma, skin disease, lymphoproliferative disease, or other conditions. Role of systemic steroid in tendon rupture needs further research.

Diagnosis of patella tendon is shown to be missed in 38% of cases on initial examination.[11] Early diagnosis and treatment is important as delay in surgical repair of more than 6 weeks results in prolonged rehabilitation with poor surgical outcomes due to quadriceps atrophy.[12]

Various techniques have been described in literature ranging from end-to-end repair of tendon,[3] end-to-end repair protected with tension band wiring,[2] using allograft for repair,[13] and augmented repair of patella tendon rupture using semitendinosus and gracilis autograft.[4-6] End-to-end method of fixation requires prolonged immobilization and can lead to failure as a result of stiff knee and inadequate splinting go the tendon.[14] Hence, it is important to augment the repair.

It has been shown in anthropometric studies that female population in Indian subcontinent have small and thin semitendinosus and gracilis grafts[7,8] which sometimes are inadequate for repair. We believe internal bracing the semitendinosus and gracilis augmented repair construct with fiber tape can help protecting the repair in early post-operative period, especially in Indian population with thin and small hamstring graft. In our technique, patella tendon repair was augmented with autologous hamstring graft along with fiber tape. Fiber tape was used to restore patella height and as internal brace to protect the autograft augmented soft-tissue repair.

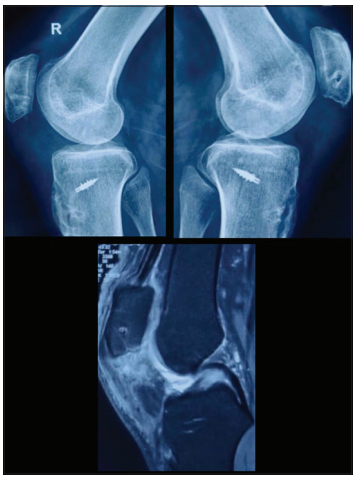

Figure 5: Six months follow-up radiology showing restored patellar height.

Some of the techniques recommend passage of graft in figure-of-8 manner.[6] Criss crossing the graft may lead to higher tension load over patella and along patellar tendon leading to potential repair failure.[5] U shape of graft passage avoids concentration of tension load over patella and repaired patellar tendon.

It has been recommended to anchor graft on either side of retinaculum and avoid drilling tunnel in patella as it may lead to fracture patella, patella baja, or patella alta due to over tightening or under tightening the construct.[5] In view of inadequacy of graft length and diameter in Indian population, we recommend creating tunnels in patella. To avoid patella baja or patella alta, C-arm-guided preliminary fixation with fiber tape should be done [Table 1]. We believe that preserving tibial insertion is important for improved vascularization and healing of repair construct.[6,15]

Rehabilitation protocols are not well described[16] and one might need to modify rehabilitation based on stability of intraoperative repair construct. We started guarded rehabilitation with post-operative long knee immobilizer for 4 weeks. Static quadriceps was started on the 1st post-operative day. Partial weight-bearing with knee immobilizer and walker was started on the 2nd post-operative day.

Passive ROM 0–30° was aimed from 4 to 6 weeks. After 6 weeks, active range of motion and straight leg raise were started and the patient regained full ROM at 3 months. At 6 months follow-up, the patient resumed her office with good range of motion and quadriceps power.

Table 1: Advantage and limitation of presented technique.

Advantage	Limitation
Use of fiber tape to secure patella height avoiding patella baja or patella alta	Risk of patella fracture
Fiber tape acting as internal brace for augmented repair construct	Risk of tibial tubercle fracture
Useful for Indian subcontinent with small and thin hamstring grafts	Costly compared to no implant technique
Autologous graft with good vascularity allows biological healing	

CONCLUSION

Bilateral patella tendon rupture is a rare injury. Role of steroid remains debatable in causation of these injuries. Early surgery is important for regaining return to function. Augmented repair helps in early rehabilitation. Fiber tape acts as internal brace to soft-tissue augmented repair. Addition of fiber tape is important, especially in Indian scenario with small and thin hamstring grafts.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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