

## Case Report

# Patellar tendon mid-substance tear after total knee arthroplasty: a case report

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### ABSTRACT

Extensor mechanism of knee plays important role in successful long term functional outcome after total knee arthroplasty (TKA). Any injury to extensor mechanism during or after surgery can cause functional disability which can be devastating for patients. Patellar tendon injuries are not very common after TKA. The author reported a rare case of patellar tendon mid-substance tear after TKA, which was successfully managed by reconstruction using grafts without any implant.

**Keywords:** Degenerative osteoarthritis, Extensor mechanism, Semitendinosus, Gracilis

### INTRODUCTION

Extensor mechanism of knee consists of quadriceps muscle, quadriceps tendon, patella, patellar retinaculum, patellar tendon and adjacent soft tissue. Intact extensor mechanism after TKA is not only important for normal knee joint function but also for longevity of implant. Disruption of the extensor mechanism during or after TKA is not very common complication. The incidence of extensor mechanism disruption ranges from 0.17% to 2.5%.<sup>1,2</sup> Patellar tendon rupture has prevalence of about 0.17%.<sup>3</sup> Mid-substance tear of patellar tendon is less common as compared to avulsion.<sup>4</sup>

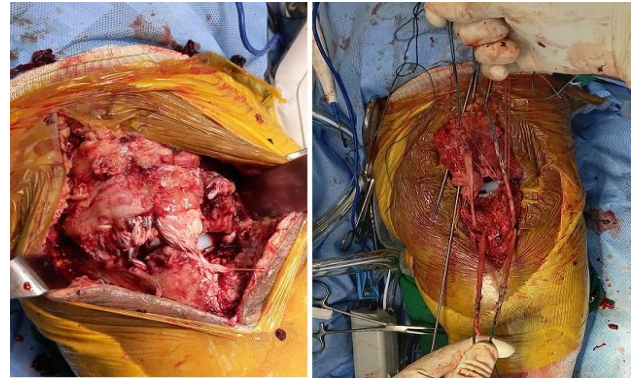
We reported a rare case of patellar tendon mid-substance tear in a 62 years old female patient operated for TKA. Tear was managed by reconstruction using semitendinosus and Gracilis grafts.

### CASE REPORT

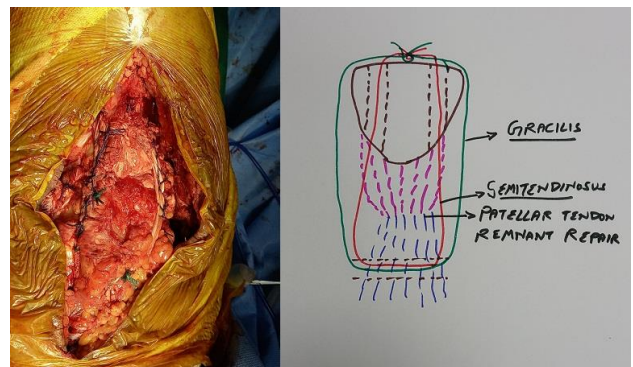
A 62 year old female patient was diagnosed with degenerative osteoarthritis on both knees. Patient was

operated for TKA both knee in single sitting in March 2021. The procedure was uneventful. Post-operative check X-rays were done (Figure 1). Post-operative physiotherapy was started and patient was mobilized. Patient was discharged after 6 days in satisfactory condition. After 19 days patient came with history of fall at home due to slip with complain of pain left knee. On examination patient had lacerated wound around 1×1 cm over post-operative scar area. Patient was not able to extend her knee. Left knee X-rays suggested of proximal migration of patella (Figure 2). Patient was diagnosed with patellar tendon injury left knee. Patient was taken in operation theatre with plan of patellar tendon repair or reconstruction as per intra operative findings. Skin incision was given over previous scar area, margins of wound were debrided, it was found to be mid substance patellar tendon tear. Tear margins were evaluated, primary repair was not possible due to friable tear ends, so reconstruction was decided. Hamstring grafts were harvested from same incision. Grafts were prepared and thickness was measured, then one medial to lateral tunnel was made in tibia about 1 cm posterior to tibia tuberosity. Width of tunnel was decided according to the total thickness of both grafts. Then vertical tunnels were made in patella. Both grafts were

passed through tibia tunnel (Figure 3). Then medial and lateral ends of semitendinosus graft were passed through vertical patellar tunnels. Patella was brought to its anatomical position which was confirmed by C-arm lateral view with knee in 30° flexion. Then both end of semitendinosus graft was tied at superior pole of patella with each other and quadriceps tendon. Then gracilis graft ends were weaved through patellar tendon remnant on medial and lateral sides and was tied at superior pole of patella with each other and quadriceps tendon same as semitendinosus graft. Both medial and lateral sides of gracilis were sutured with retinaculum for extra strength. We did not use any implant for graft fixation. Then remnants of proximal and distal ends of patella tendon were also repaired with fibre wire (Figure 4). Intra operative range of motion was checked. Reconstruction was found to be stable. Intra operative Fluid and tissue sample was taken for culture and sensitivity testing. Check X-rays were done next day, which showed patella back to its anatomical position (Figure 5). Cultures were sterile. Patient was given extension brace for 6 weeks. After 6 weeks knee flexion-extension exercises were started gradually. Patient was able to achieve complete knee extension and flexion up to 120° after 3 months. Patient is currently under follow up and is doing well.



**Figure 3: Intra operative picture showing mid substance tear with friable tear margins and passage of grafts through tibial tunnel.**



**Figure 4: Showing final repair.**



**Figure 1: Immediate post-operative X-rays.**



**Figure 5: Post-operative X-rays showing patella at normal position.**



**Figure 2: Knee X-rays after injury showing proximal migration of patella.**

**DISCUSSION**

Extensor mechanism injury can vary from involvement of quadriceps tendon or patella bone or patella tendon. Cause of extensor mechanism injury can be multifactorial. Injury can occur during or after surgery. Some common causes are injury to tendon during exposure, intra operative patella fractures and forceful eversion of tendon leading to avulsion. Post-operative disruption can be due to any fall, trauma, infection or due to component mal-positioning.<sup>5</sup> Extensor tendon disruption is more common in revision TKA as compared to primary.

Historically different methods have been reported for management of patellar tendon injury. Types of surgery depend on many factors such as site of tear, degree of tear (partial or complete), local tissue condition or any associated injuries.<sup>6,7</sup> Treatment methods include direct primary repair of tendon, reconstruction with graft augmentation with or without implant.

Different grafts used for reconstruction are autograft, allograft or synthetic grafts. Various autograft available for reconstruction are semitendinosus, gracilis and tensor fascia lata grafts. Allografts such as Achilles tendon or extensor mechanism allograft and some synthetic grafts such as Dacron were also reported to be used.<sup>8</sup> Allografts are generally used when autograft harvesting is not possible due to any cause. Use of allograft decreases donor site morbidity and provides extra strength. But it has its own disadvantages such as increase chances of immune reaction and infection.

Various different graft fixation methods have been described in literature with or without implants. Implants such as circlage wires, metal staples or suture anchors have been reported to be used for reconstruction. In our case we did not use any implant for graft fixation and were able to achieve secure fixation.

## CONCLUSION

Patellar tendon mid-substance tears after TKA are uncommon but quite disabling. Early identification and proper management is warranted for successful long term outcome. Care should be taken at every step of primary surgery to avoid any intra operative injury to tendon. Cause of injury in our patient was fall, so patients should be guided to be cautious during early post-operative period to avoid any trauma.

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