

Case Report

Simultaneous Rupture of Quadriceps Tendon and Contra-Lateral Patellar Tendon: A Case Report and Review of Literature

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ABSTRACT: Simultaneous rupture of quadriceps and contra-lateral patellar tendons represents an extremely rare injury in healthy individuals. Several systemic diseases predispose patients to this type of condition such as chronic renal failure, rheumatologic disease and hyperparathyroidism. However, there are very few cases in the English literature where a healthy individual presents with this condition. The pathophysiology of this disease is not well known despite numerous hypotheses. Sutures with or without anchors of the quadriceps and patellar tendons seems to lead to satisfactory outcome with knee flexion greater than 100°.

KEYWORDS: Simultaneous rupture, quadriceps tendon, patellar tendon, knee injuries.

Introduction

Extensor mechanism disruption of the knee are uncommon but serious disease [1].

Patellar tendon injury typically occurs in athletic patients aged below 40 years [2] while, quadriceps tendon injury usually occurs in elderly individuals with pre-existing degenerative changes in the tendon [3].

Simultaneous rupture of quadriceps and contra-lateral patellar tendons represents an extremely rare injury. Several systemic diseases predispose patients to this type of condition such

as chronic renal failure, rheumatologic disease and hyperparathyroidism [4].

There are very few cases in the English literature where a healthy individual presents simultaneous rupture of quadriceps and contra-lateral patellar tendons

Case Report

A 55-year-old Caucasian man was admitted to our emergency room with a forced decubitus in flexion of the lower limbs after a fall down the stairs.

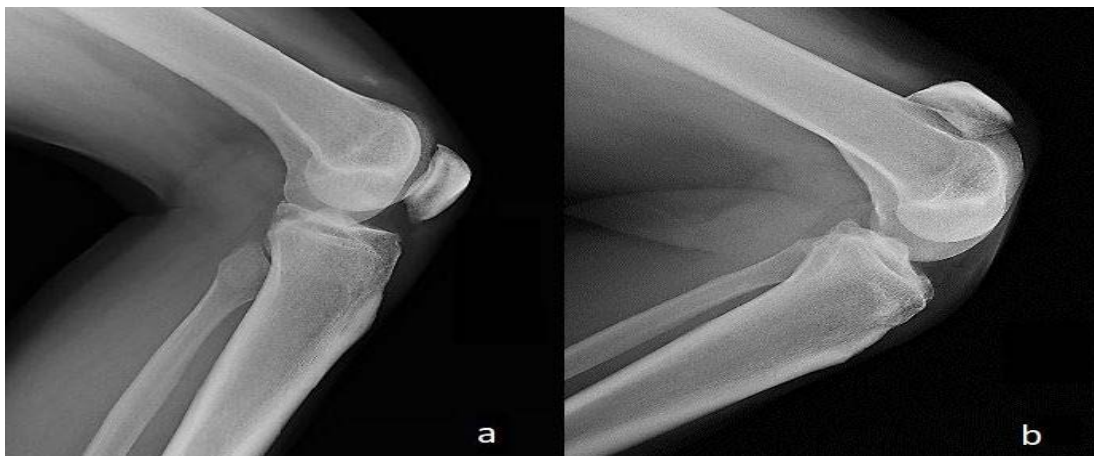


Figure 1. a. Preoperative lateral radiography of the right knee showing a patellae baja. b. Preoperative lateral radiography of the left knee showing a patellae alta.

He had an unremarkable past medical history and had no history of steroid use.

Inspection showed an abnormal anatomic profile of both knees with a flexion of both knees.

On palpation, there was an important gap proximally to right patellae and distally to the left patellae.

Palpation of the quadriceps tendon and patellar tendon was painful bilaterally.

The ballottement test was positive bilaterally.

Active extension of the knees was impossible from any flexed position.

The lateral knee radiography reveals patellae baja on the right side and patellae alta on the left side (Figure 1 a-b).

Because of the hemarthrosis, both knees were aspirated, and they were placed in above-knee braces until the operation that was performed 48 hours later.

The MRI was not available so the patient underwent a bilateral CT scan of the knees which revealed a complete rupture of the patellar tendon on the left and the quadriceps tendon on the right.

In the operating room, the patient was placed in the supine position.

The surgical area was cleansed and draped.

On the right side a suprarotulae longitudinal incision of approximately 10cm was performed.

A complete injury of the quadriceps tendon and medial and lateral joint capsule was observed.

The proximal end of the tendon appeared frayed and of poor consistency.

The end of the tendon has been revitalised by excising 0.5cm of traumatized tissue.

The surface of the patella was smooth, with no residual tendon tissue attached.

Afterward, two 5.5mm metallic soft-tissue anchors were placed on the proximal pole of the patellae.

A Krackow suture technique was performed with correct positioning of the patellae and then the capsule joint was repaired.

On the left side a lateral parapatellar incision was performed.

A complete injury of the patellar tendon was observed.

Proximal and distal ends of the tendon appearing frayed, with poor consistency with large median tear.

A 3.5mm metallic soft-tissue anchors were placed on the distal pole of the patellae.

A Krackow suture technique was performed with correct positioning of the patellae (Figure 2 a-b).



Figure 2. a. Postoperative lateral radiography of the right knee showing the return to normal patella height in previous patella baja. b. Postoperative lateral radiography of the left knee showing the return to normal patella height in previous patella alta.

Postoperatively, both knees were immobilized in preformed splints with 10° of flexion for 15 days and replaced with two articulated knee braces unlocked 0-20°.

Isometric quadriceps and straight-leg-raising exercises were begun 2 weeks postoperatively.

One month after surgery, patient started partial weight bearing with crutches articulated knee braces have been unlocked to get the full rom.

At 8 weeks postoperatively, the patient was able to weight bearing without crutches.

At 12 weeks postoperatively, 110° of passive flexion was possible on both sides.

At 1 years follow up, the patient was able to flex both his knees to 120° and active extend his knees to 0°.

The patient walked without pain or discomfort.

Discussion

Several systemic diseases predispose patients to simultaneous rupture of quadriceps and contra-lateral patellar tendons such as chronic renal failure, rheumatologic disease, and hyperparathyroidism [4].

However, there are only fourth cases in the English literature where a healthy individual presents this condition (Table 1).

Among the reported cases described in Table 1, there is a greater prevalence of male than female gender (4 vs. 1), with a mean age of

47.6±4.4 years, which is lower than the age of the present case.

The mean follow-up is 28.2±15.3 months which is lower than the follow up of the present case.

All authors are treated patients by suture with or without an anchor.

Table 1. Synopsis highlighting the main features of simultaneous rupture of quadriceps tendon and contra-lateral patellar tendon published so far.

Author	Year Publication	Patients	Sex	Age	Traumatic Mechanism	Surgical technique	Follow-up (week)	R.O.M
Kumar S [5]	2010	1	M	48	Fight	Sutures	28	0°-120°
Munshi NI [6]	1996	1	M	47	Squatting with weight	Absorbable sutures	9	0-85°/0°-110°
Jalgaonkar A [7]	2008	1	F	41	Walking	Absorbable anchor sutures+tension neutralizing wire	24	0°-100°
Rogers A [8]	2003	1	M	47	Running	Absorbable sutures	24	0°-110°

The pathophysiology of this rare disease is not well known.

In 2003, Rogers et al. suggested that different forces acting through the quadriceps and patellar tendon depending on position during the traumatic event may explain the rupture [8].

However, all the patients have a different traumatic mechanism.

Patellar tendon injury typically occurs in athletic patients aged below 40 years² while, quadriceps tendon injury usually occurs in elderly individuals with pre-existing degenerative changes in the tendon [3].

Simultaneous sudden contraction of the quadriceps muscle could result in rupture of the patellar tendon on the healthy side and quadriceps tendon on the side where age-related degeneration of the tendon has developed faster.

Sutures with or without anchors of the tendons seems to lead to satisfactory outcome in fact, only in one case is knee flexion less than 90°.

All the other patients present a satisfactory outcome with knee flexion greater than 100°.

Conclusion

The present case highlights the possibility that extensor mechanism disruption of the knee may manifest with a simultaneous rupture of quadriceps tendon and contra-lateral patellar tendon.

Systemic diseases predispose patients to this type of condition.

However, this condition can rarely occur in healthy patients.

Surgical repair is recommended, and extensive rehabilitation yields satisfactory outcome.

Conflict of interests

None to declare.

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