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Bilateral quadriceps tendon rupture and coexistent femoral neck fracture in a patient with chronic renal failure

Kronik renal yetmezlikli bir hastada femur boyun kırığı ve iki taraflı kuadriseps tendon kopması

Cemal KAZIMOGLU, Serhan YAGDI, Hasan KARAPINAR, Muhittin SENER

İzmir Atatürk Training and Research Hospital, Department of Orthopaedic Surgery

İki taraflı kuadriseps tendon kopması genellikle kronik renal yetmezliği veya diğer sistemik hastalıkları olan kişilerde ortaya çıkan oldukça nadir bir yaralanmadır. Kronik renal yetmezlikteki metabolik asidoz tablosu tendon dejenerasyonuna neden olabilmektedir. Otuz yedi yaşında, kronik renal yetmezlik nedeniyle iki yıldır hemodiyaliz tedavisi gören kadın hasta, şiddetli sol kalça ağrısı ve yürüyememe yakınmaları ile başvurdu. Hasta, iki ay içerisinde iki kez düştüğünü belirtti. Fizik muayenede her iki suprapatellar bölgede boşluklar vardı ve hasta dizlerini aktif olarak ekstansiyona getiremiyordu. Ayrıca, sol kalça hareketleri oldukça ağrılıydı. Diz grafilerinde sol femur boyun kırığı olduğu görüldü. Diz ultrasonu ve manyetik rezonans görüntülemede her iki kuadriseps tendonunun patellaya yapışma yerinden kopmuş olduğu izlendi. Ameliyat sırasında her iki dizde kuadriseps tendonunda görülen tam kat yırtığı Tycron transpatellar dikişlerle onarıldı. Hastanın eşlik eden hastalığı nedeniyle kalça kırığına internal fiksasyon düşünülmedi ve sol kalçaya aynı seansta bipolar endoprotez uygulandı. Ameliyat sonrası altıncı ayda hastanın diz fonksiyonları tama yakın düzelmişti ve hasta desteksiz yürüyebiliyordu.

Anahtar sözcükler: Femur boyun kırığı; böbrek yetmezliği, kronik/komplikasyon; kuadriseps kası; tendon yaralanması/cerrahi.

Simultaneous bilateral quadriceps tendon rupture is a very rare injury mostly seen in patients with chronic renal failure or other systemic chronic diseases. Metabolic acidosis in chronic renal failure predisposes these patients to tendon degeneration. A 37-year-old woman who received hemodialysis for chronic renal failure for two years presented with complaints of severe pain in the left hip and inability to walk. She had a history of two consecutive falls in the past two months. On physical examination, there were joint spaces in both suprapatellar areas, active extension of both knees was inhibited, and movements of the left hip were quite painful. Knee ultrasonography and magnetic resonance imaging showed bilateral quadriceps tendon rupture from patellar attachment. At surgery, full-thickness quadriceps tendon tears were repaired with Tycron transpatellar suture anchors. Internal fixation was not considered for hip fracture due to the presence of chronic renal failure, so hemiarthroplasty with bipolar endoprosthesis was performed in the same session for femoral neck fracture. Six months after the operation, the patient was able to walk without support and almost regained her normal knee functions.

Key words: Femoral neck fractures; kidney failure, chronic/complications; quadriceps muscle; tendon injuries/surgery.

Bilateral simultaneuous quadriceps tendon rupture is an uncommon injury generally tend to occur in patients with chronic renal failure and with other systemic chronic diseases (gout, rheumatoid arthritis, diabetus mellitus). The underlying mechanism causing quadriceps tendon rupture in uremia is poorly understood. Metabolic acidemia may cause tendon degeneration in these patients. Also the structure of Protein-polysaccharide complex which is responsible for the tendon maturation is affected. Seconder hy-

Correspondence / *Yazışma adresi:* Dr. Cemal Kazımoğlu. İzmir Atatürk Training and Research Hospital, Department of Orthopaedic Surgery, İzmir.
Phone:+90232 - 244 44 44 Fax: +90232 - 243 15 30 e-mail: ckazimoglu2000@yahoo.com

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perparathyroidism causing calcifiactions and subperiostal bone resoption weakens the osseotendinus juntions leading tendon ruptures to occur with minor travma or spontaneously. Amyloidosis, elastosis and uric acid crystal deposition are the other contributory factors leading to tendon pathology in uremia.

We present a case of bilateral simultaneuous quadriceps tendon rupture and femoral neck fracture in a 37 year old women with chronic renal failure in this report. We prefered osseotendinous repair with suture anchors for both quadriceps tendons and cemented hemiarthroplasty for femoral neck fracture for this case.

Case report

A 37 year women with chronic renal failure was admitted to our hospital with complaints of pain in left hip and inability to walk. There was a history of two consecutive falls in two months. Although she had effusion and weakness on both of her knees, she was able to walk after the first fall. Two months later, she couldn't arise during dressing and fell down again. The patient had been receiving hemodialysis because of renal failure for two years. On examination there was a palpable gap above on both her patellas. She was unable to extent her knees and she had a intense left hip pain also. Lateral radiographs of bilateral knees revealed patella alta on both knees and pelvic radiographs revealed left femoral neck fracture (Fig 1a,b). We couldn't take lateral radiographs at 30 degree flexion because of the femoral neck fracture. Ultrasonography and magnetic resonance images of both knees revealed complete rupture of quadriceps tendons at the patellar insertions (Fig 2a).

At operation median Parapatellar incisions were made in both knees. There were full thickness tears in the osseotendineous junctions on both knees. The tendon attachment sides on bone were smooth and competely free of tendon tissue on both sides. We performed soft tissue releases and later refreshed the tendon ends. Then we opened two transpatellar drill holes in each patella for suture anchors and repaired the tendon ruptures with tycron transpatellar sutures. Because of the poor medical status of the patient and the need for hemodialysis before the operation the surgery could only be performed three days later. We didn't prefer internal fixation for the hip fracture as the patient was taking steroid therapy, the bone structure was very osteoporotic and the type of fracture was transservical. We also thought that the postoperative rehabilitation program for quadriceps tendons could be hindered after the internal fixation of the hip. Taking into consideration of these circumstances we performed cemented hemiartrhroplasty with bipolar endoprothesis in her left hip.

Long leg casts were used for immobilization postoperatively for six weeks. Full weight bearing were allowed after the removal of the casts. Thereafter quadriceps strengthenging exercises and full range of motion exercises were started. Physical examination were revealed normal tendon continuity after the removal of the casts. At three months follow magnetic resonance images also revealed tendon continuty and

Figure 1.(a) Bilateral lateral radiographs of both knees revealing patella alta, **(b)** Anteroposterior radiograph of left neck showing left femoral neck fracture

Figure 2 **(a)** Preoperatif sagital magnetic resonance images showing tendon ruptures at osseotendinos junctions. **(b)** Sagital magnetic resonance images revealing tendon continuity and incorporated suture anchors at three months potoperatively.

incorporation of suture anchors (Fig 2b). She has regained almost her normal knee functions 6 months after the surgical repair (Fig 3).

Discussion

Bilateral simultaneous tendon rupture is a very rare injury mostly seen in chronic renal patients. Many of the cases reported recently in the literature have shown us that up to 50% of bilateral quadriceps tendon rupture may be misdiagnosed.[1-3] Most of these patients complain of knee pain, inability to stand and swelling occurring spontaneously or after falls. Differential diagnosis for knee pain is very extensive, causing difficulty for early diagnosis. Since Central nervous system is affected in most uremia patients, quadriceps tendon ruptures have been misdiagnosed as neurologic disorders, such as stroke and paralysis.[1,4] What we have learned from this case is that , some patients with bilateral quadriceps tendon rupture may able to stand and walk continuing their routine sedentary life. Because of the delayed diagnosis of tendon ruptures the patient had a second fall which resulted with a femoral neck fracture. To our knowledge this is the first case in the litrature with bilateral quadriceps tendon rupture associated with femoral neck fracture.

The awareness of risk factors and clinical features are very important for the correct diagnosis. After a proper clinical evaluation a palpable gap in the suprapatellar region and loss of active knee extension can easily be determined. Ultrasonography is an important dignostic tool which can easily and quickly be done at emergency room.[5] Bilateral tendon incontinunity was detected on both knee ultrasonography in our patient. Surgery is the choise of treatment for quadriceps tendon ruptures. We prefered transosseos suture repair for both sides which is the standard reconstruction procedure for knee extensor mechanism. We used suture anchors instead of cerclage wiring, because suture anchor method provides adequate strength for tendon repair with less operation time. Also there is no need to an other operation for implant removal.[6,7]

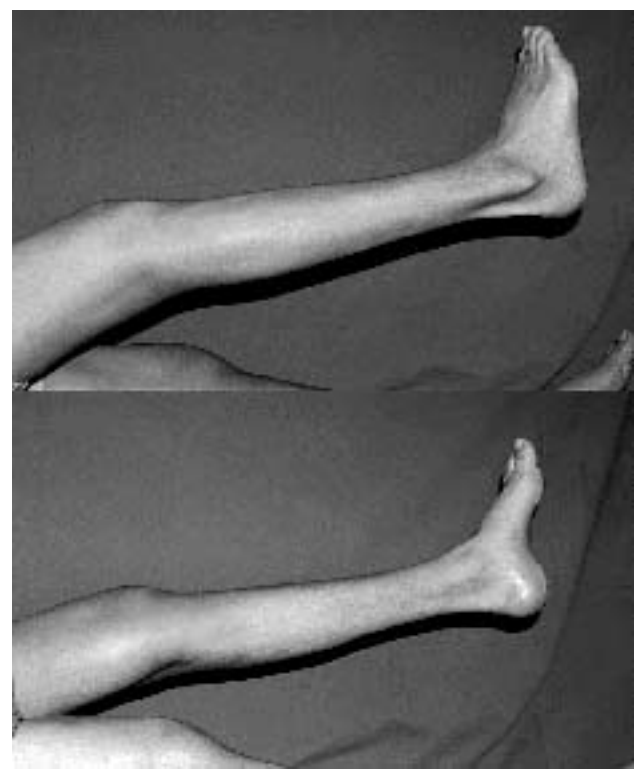

Figure 3. Nearly full knee extansions were obtained at six months postoperatively.

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