

Simultaneous Bilateral Quadriceps Tendon Rupture in a Patient Undergoing Long-Term Hemodialysis: A Case Report

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Abstract

Case Report

Bilateral quadriceps tendon ruptures are rare lesions. Atraumatic forms, or those following low-energy trauma, are much rarer and occur on pre-existing lesions. We report a case of bilateral and simultaneous rupture of the quadriceps tendon in a 45-year-old hemodialysis patient with secondary hyperparathyroidism (PTH: 1642 pg/ml). He underwent surgical repair with good evolution after rehabilitation. Spontaneous and simultaneous bilateral ruptures of the quadriceps tendon are exceptional. A pathology that weakens the tendons, such as secondary hyperparathyroidism, which is common in dialysis patients, remains the most common cause.

Keywords: Quadriceps Tendon, Bilateral Rupture, Hemodialysis.

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INTRODUCTION

Bilateral quadriceps tendon ruptures are rare. They occur indirectly, through contracture of the extensor apparatus [1]. When there is no evidence of trauma, a systemic disease that may weaken the tendons should be sought [2]. We report the case of a patient with a bilateral and simultaneous rupture of the quadriceps tendon.

PATIENT AND OBSERVATION

This was a 45-year-old patient, chronically hemodialysed for 6 years on undetermined nephropathy with secondary hyperparathyroidism (PTH: 1642 pg/ml, Calcium: 97 mg/l, Phosphorus: 40 mg/l), admitted to our training facility for management of pain in both knees with total functional impotence of both lower limbs following a low-energy trauma (motorcycle MVA). The patient was autonomous prior to this symptomatology, with a body mass index of 15.7 kg/m². Clinical examination revealed bilateral suprapatellar depression, painful to palpation, with active extension deficit in both

knees. There was no skin opening or vascular involvement. Standard profile X-ray of both knees showed lowering of both patellas without associated fracture (Figure 1). Ultrasound scans of both thighs and knees showed bilateral medial patellar fin rupture. MRI of both knees showed bilateral quadriceps tendon rupture with elongation of the ACL and subchondral impaction fractures of the lateral tibial plateau on the left (Figure 2). After a full preoperative workup, the patient was admitted to the OR under local anaesthetic, supine, via a longitudinal medial anterior approach centred on the superior border of the patella for both knees. On exploration, he had a bilateral subfacial mimic hematoma, with complete rupture of tendon fibers with jagged edges. The patient underwent evacuation of the hemarthrosis, saline lavage, edge avivement, then edge-to-edge suturing using "U" stitches with trans-osseous stitches bearing on the patella, and closure over a suction drain. Both knees were immobilized in knee braces for 3 weeks, with local care every other day, and staples removed after 21 days. The patient underwent rehabilitation with good functional results.

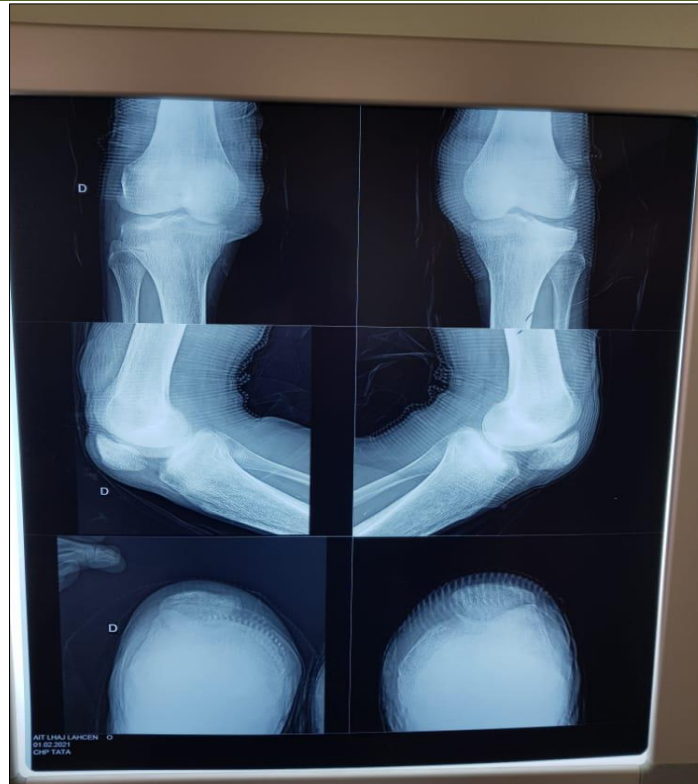


Figure 1: Plain radiographies of both knees showing a patella baja with bilateral suprapatellar effusions without fracture.

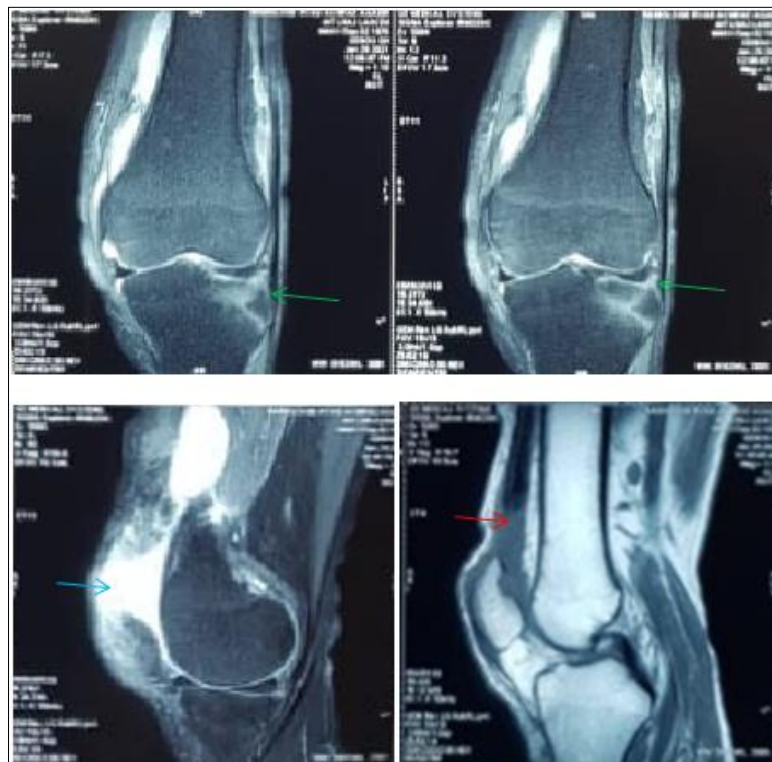


Figure 2: T1 and T2 weighted MRI images showing rupture of the quadriceps tendon (red arrow) with joint effusion (blue arrow) and edema in the tibial plateau (green arrow)

DISCUSSION

Bilateral quadriceps tendon ruptures are extremely rare and represents < 5% of all cases [2, 3], and may not be accompanied with severe pain [4]. It is

usually occurring in the elderly or in patients suffering from a chronic illness such as gout, collagen vascular disease, diabetes mellitus, hyperthyroidism, or chronic renal failure [5, 6].

Two main hypotheses have been put forward by authors concerning spontaneous tendon ruptures: firstly, the vascular hypothesis, in which reduced blood flow in the tendon caused by age and pathologies predisposing to rupture, leads to tissue degeneration, aggravated by systemic corticosteroid therapy, which, through fibrillar necrosis and disorganization of the collagen ultrastructure, predisposes to rupture. Then there is the mechanical hypothesis, in which tendon microtrauma causes tissue damage leading to tendon weakening and incomplete regeneration [7]. In some cases, although extremely rare, no predisposing factors have been identified, and rupture can occur in apparently healthy subjects with no notable pathological history and no notion of taking medication [8].

In the literature, the first case reported in renal failure dates back to 1978, in a study carried out in Nancy by Fery, Sommelet, Schmitt and Lippe. The authors showed that tendon avulsion is due to dysmorphic calcification of the osteotendinous junction as a result of secondary hyperparathyroidism, and that chronic acidosis leads to tendinosclerosis with hyaline degeneration and lipid metaplasia, considerably weakening the tendons [9].

CONCLUSION

Spontaneous bilateral quadriceps tendon ruptures remains a rare pathological entity, of which secondary hyperparathyroidism is the most frequent cause in chronic hemodialysis patients. Diagnosis is primarily clinical, and treatment is exclusively surgical. Diagnosis and treatment must be carried out at an early stage, in order to avoid neglected ruptures, which are difficult to treat and have more uncertain results.

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