

A Bilateral Quadricipital Tendon Rupture in a Patient with Chronic Renal Failure

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Abstract

Bilateral quadricipital tendon rupture is a rare lesion, especially in patients with different chronic diseases. We report the case of a bilateral rupture of the quadricipital tendon in a young patient followed for chronic renal failure on hemodialysis for 17 years. Surgical repair was successfully performed using bone sutures and reinforcement by metal framing. We present our results with a literature review.

Keywords: Bilateral rupture, Quadricipital tendon, Chronic renal failure.

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INTRODUCTION

Bilateral quadricipital tendon rupture (BQTR) is a rare injury, often associated with chronic metabolic disorders. The most common of these disorders remains chronic renal failure [1]. We report the case of BQTR in a young patient on hemodialysis for end-stage chronic renal failure.

CASE REPORT

This is a 41-year-old patient with a history of chronic renal failure for which he has been on hemodialysis for 17 years. He presented to our outpatient clinic 15 days after he fell on crutches for bilateral gonalgia with difficulty walking. Symptomatic treatment was prescribed by his GP but without results, hence his consultation in our practice. On physical examination, both knees were swollen with a visible and palpable suprapatellar defect, especially on the left side (Figure 1).



Figure 1: Suprapatellar defect visible especially on the left side

The patient could not lift the heels from the bed plane with extended knees. Standard X-ray showed on the profile a defect in the shadow of the quadriceps, a low patella, tilted forward, and heterotopic bone formation in the suprapatellar region (Figure 2).



Figure 2 - X-ray of the right knee showing a low patella with anterior rocker, as well as suprapatellar ossification

Magnetic resonance imaging (MRI) confirmed the diagnosis of total quadriceps rupture (Figure 3).



Figure 3: MRI images in T1 and T2 showing the rupture of the quadriceps tendon

The patient was surgically managed under spinal anesthesia, and a median incision was made without a pneumatic tourniquet. Quadriceps tendon dissection revealed a total rupture, one centimeter from the base of the patella. The repair consisted of suturing with absorbable wire (Vicryl 2), the largest available, passing through perforated bone holes in the base of the patella. The suture was reinforced with steel framing and braided steel wire [Figure 4].

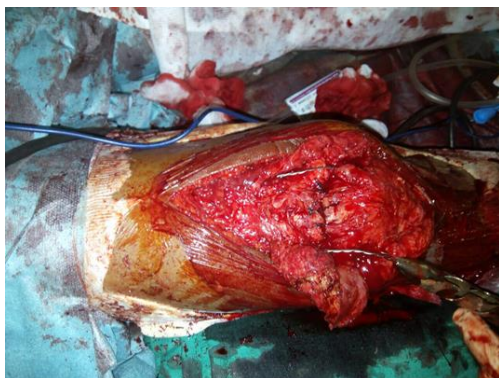


Figure 4: Intraoperative view showing the final assembly with transosseous sutures and reinforcement with a metal frame

A knee orthosis was applied for six weeks. Isometric contractions were started on day 15 and reinforced functional rehabilitation on day 45. In the sixth month, the evolution was favorable. The patient could walk without external help and bend his knees at 120°.

DISCUSSION

The quadriceps tendon is one of the widest tendons in the human body. Its rupture is rare but currently well described [2]. It mainly affects males over 50 years [1-2]. The general mechanism of tendon rupture is a brutal and violent contraction of the quadriceps, knees slightly bent, and feet stuck on the ground [3]. This rupture often occurs in the context of associated comorbidity. Documented risk factors include obesity, diabetes, gout, lupus, steroid use, chronic kidney disease (CKD), and hyperparathyroidism... [4-9]. However, CKD is considered the most important risk factor since it accounts for 40%, according to Shah M [1]. Steiner and Palmer [4], in 1949, were the first to describe a case of bilateral spontaneous rupture of the quadriceps tendon, explaining that the leading causes of this rupture are long-term hemodialysis, and secondary hyperparathyroidism. Indeed, Rysavi [10] reports that tendon rupture is secondary to its degeneration due to chronic acidosis, amyloid deposition, structural alteration, and weakness of the bone-tendon junction due to osteoclastic activity caused by secondary hyperparathyroidism.

Clinically, the diagnosis of tendon rupture is evoked in front of the classic triad, which combines:

- painful knee swelling
- a loss of extension
- a visible and palpable suprapatellar defect

On the other hand, the diagnosis is often delayed or not made at the first evaluation in more than 30% of cases [1-2]. In our case, the diagnosis was only made 15 days after the fall. For additional examinations, standard X-ray may show indirect signs of quadriceps tendon rupture, such as interruption in the shadow of the quadriceps, low patella or anterior tilt of the latter, tendon calcification, thickening of soft parts, joint effusion [16-17]. Ultrasound can make the diagnosis of tendon rupture. However, it is especially the MRI that is very useful for the diagnosis and the preoperative assessment by specifying the location and extension of the rupture [18], but also in the postoperative follow-up by confirming the good healing at six months [19]. Complete ruptures require surgical treatment, and early treatment is often associated with an excellent functional outcome [15]. Several techniques have been described for surgical repair [16-19]. In our case, we opted for sutures passing through patellar bone holes reinforced by a braided strapping thread. Postoperative immobilization by a circular plaster or orthosis is put on for six weeks, the time of

tendon healing. Then, functional rehabilitation will complete the treatment and allow for complete muscular function and knee mobility.

CONCLUSION

Bilateral quadriceps tendon rupture remains rare and misdiagnosed. Its diagnosis must be suspected whenever there is a favoring circumstance. Early and adequate surgical management followed by good functional rehabilitation will allow complete functional recovery and patient satisfaction.

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