Scholars Journal of Medical Case Reports (SJMCR) **ISSN 2347-6559 (Online)**
Abbreviated Key Title: Sch. J. Med. Case Rep. **ISSN 2347-9507 (Print)**

A United of Scholars Academic and Scientific Society, India

Simultaneous Complete Bilateral Rupture of the Quadriceps on Tendonopathy: A Case Report

Mohammed Nasri*, M. Lahsika, S. Sanhaji, M. Kacimi, M. El Idrissi, A. El Ibrahimi A. EL Mrini
Department of Osteoarticular Surgery B4, HASSAN II Teaching Hospital, Fes, Morocco

***Corresponding author**
Mohammed Nasri

Article History
Received: 04.04.2018
Accepted: 18.04.2018
Published:30.05.2018

DOI:
10.36347/sjmcr.2018.v06i05.008

Abstract: Quadriceps rupture is a disabling injury mostly seen in men over 40 years of age. Bilateral quadriceps rupture is a rare injury that is often secondary to predisposing medical conditions. We report the case of a healthy 64-year-old, without a notable pathological history, male who presented with bilateral simultaneous complete quadriceps rupture, following a direct trauma of the knees. Surgical treatment in one step and functional rehabilitation have allowed recovery of knee functions and walking. Prompt diagnosis and early surgical repair are needed for an optimal end result.
Keywords: Bilateral simultaneous, quadriceps tendon, rupture.

INTRODUCTION

Quadriceps tendon rupture is a rare traumatic pathology of the extensor apparatus. It comes after patella fractures and ruptures of the patellar ligament is a disabling injury mostly seen in men over 40 years of age, bilateral quadriceps tendon ruptures can occur spontaneously or following minimal trauma. Approximately 30% of bilateral simultaneous quadriceps rupture cases happen to patients with underlying medical predispositions [1]. The common predisposing medical conditions related to quadriceps rupture are diabetes, chronic renal failure and hyperparathyroidism. Crystal arthropathy, inflammatory arthritis and obesity are also proven to be predisposing conditions [2] Taking drugs such as quinolones and undergoing systemic steroid therapy are other underlying causes.

The literature on bilateral quadriceps rupture also shows systemic steroid use, systemic lupus erythematosus, pseudogout and occupational trauma as the aetiology of this condition [3]. Chronic enthesopathy of the quadriceps can present as an anterior knee pain and the superior pole of the patella is the site of pathology in 25% of patients [1]. Our study reports a clinical observation concerning traumatic bilateral rupture in an elderly patient without a notable pathological history.

CASE REPORT

We report the case of a healthy 64-year-old, without a notable pathological history, who consulted for management of pain and functional impotence of both knees, whose history of the disease goes back a 1 month where the patient was the victim of a fall of stairs with direct impact on both knees, who had caused sudden syncopal pain, a crunching sensation, followed by functional impotence with the impossibility of standing on both lower limbs.

At clinical examination bilateral patellar depression was found (fig1), with amyotrophy of the quadricepsbut without any real increase in the volume of the knee. He also objected to an impossibility of active extension of the knees, with patela bass. There were no menisco-ligament signs, the neurological examination the lower limbs was strictly normal. Standard knee radiographs showed patella bass, calcifications at the superior pole of the patella may be an indirect sign of tendinopathy of the quadricipital tendon and therefore a predisposition to breaking (fig2), with indirect signs of quadricipital rupture at the insertion at the superior pole of the patella. Ultrasound confirmed the diagnosis (Fig 3).

Surgical exploration with spinal anesthesia by an anterior approach, had confirmed the total rupture at the tendinous insertion on the left , and right subtotal rupture with continuity of vastus medialis fibers (fig4), the surgical procedure consisted of the realization of a transosseous reinsertion using U points in the opposite direction with Vicryl 2 and reinforced with overcasting, of quadricipital that was torn from the patellar base (Fig 5), elongation plasty in VY was not required bilaterally. A postoperative immobilization by cruropedous plaster in slight flexion was made during 45 days. Isometric rehabilitation started early and is active after 6 weeks. The patient was seen at the 6th month. He presented a functional complaint that was moderate and consistent with his usual activity (knee

pain with discomfort on the stairs and walking). On clinical examination, knee flexion was quantified at 110 ° in bilateral with an active extension deficit of 5 ° right side and 10 ° left side and quadriceps strength was rated 3 bilaterally. . At the 12-month follow-up, the results were very good in both sides with a score IKS at 85.

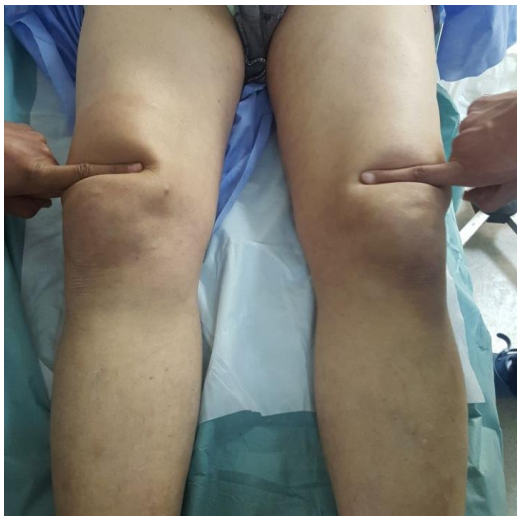

Fig-1: Clinical aspect with depression objectified bilaterally

Fig-2: The initial X-rays revealed only the patellar spur at the superior pole of the patella and some calcification in the quadriceps tendon

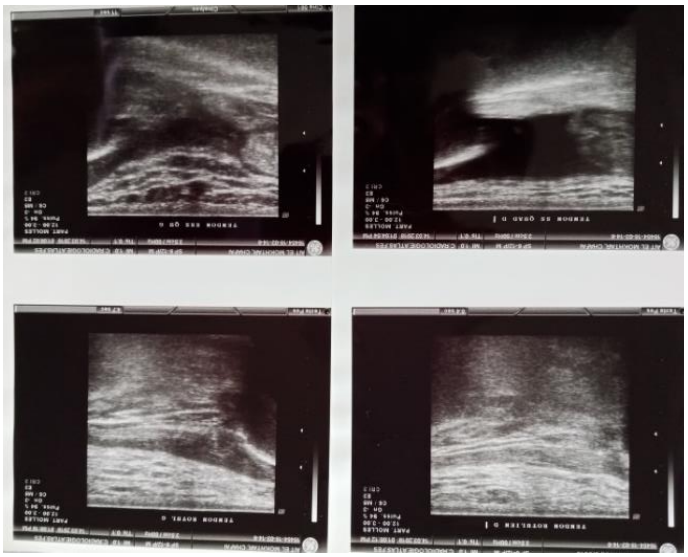

Fig-3: Ultrasound appearance of tendon ruptures in bilateral

Fig-4: after the surgical approach

Fig-5: Patella transosseous reinsertion with resorbable wire, with U points

DISCUSSION

The quadriceps tendon is an inherently very strong structure that is extremely resistant to heavy load. The first bilateral simultaneous quadriceps rupture was reported by Steiner and Plamer in 1949. Since then, just over 100 such cases with different etiopathologies have been reported in the English and German literature [3]. Degenerative changes commonly occur in the tendons as the ageing process causes their architecture to change. However, quadriceps tendon rupture is rare even among older people [1]. An array of conditions has been reported to predispose the rupture by either changing the tendon ultrastructure or affecting the vascularity to the tendon [8]. Thirty percent of bilateral ruptures are spontaneous [3]. Pre-existing degeneration has been implicated as a risk factor in acute tendon rupture. Ruptures of the quadricipital tendon are generally encountered in patients over 40 years old [1]. Thus, other underlying factors, and not age, predispose the tendon to rupture. The most commonly reported trauma is a sudden eccentric reflex contraction of the quadriceps, with the foot anchored to the ground and the knee flexed. The patient typically describes severe knee pain and functional impotence. If there is no

adequate traumatic mechanism, we must look for a basic systemic disease in which the tendons are weakened: chronic renal failure, diabetes, gout, secondary or tertiary hyperparathyroidism [2, 3, 13]. Balik et al reported a case of quadriceps tendon rupture following epileptic seizures [4]. These patients are at high risk of having bilateral ruptures, which are fifteen to twenty times rarer than unilateral ruptures. Our patient was without predisposing chronic pathology. In athletes, the rupture is often bilateral and follows repeated solicitations of quadriceps muscles [5], or after taking anabolic steroids [6]. Our patient has not reported any medication. Fall on both knees was the mechanism involved in our patient. The diagnosis must be established on the basis of clinical data including pain and loss of active extension of the knee. Radiological examinations can help confirm and clarify the diagnosis. On a standard knee radiograph, Calcifications at the superior pole of the patella may be an indirect sign of tendonopathy of the quadricipital tendon, therefore a predisposition to breaking [7], as the case of our patient. The patella, since it is no longer subject to traction of the quadriceps, can be located lower compared to the non-injured side *(*patella baja *ou* infera*).* Ultrasound examination, rather than plain radiograph, is more sensitive in demonstrating the full extent of the tendinopathy. It is also a cheap, easy and reliable way to diagnose tendon ruptures, whether partial or complete. However, ultrasound examination is still operator dependent. A quadriceps tendon thickness of >6.1 mm, a superior pole of patella erosion, the patellar enthesophytes and intratendinous calcification are all signs of chronic tendinopathy [12]. Magnetic resonance imaging (MRI) is very sensitive and can locate the exact location of the tear, determine whether the four quadriceps tendon layers are affected or whether it is a partial rupture, and finally to see if the retinaculum are torn [1]. The repair always remains surgical [2, 3]. It must be done within 72 hours because the functional result can be compromised if the surgical procedure is performed 5 to 7 days after the trauma [9]. Early surgical repair gives the best results [1]. Various surgical techniques have been described. In the event of tendon rupture, an anatomical suture with non-resorbable thread allows excellent repair. If the rupture is close to the insertion on the patella, we can make Krackow points [10] in the tendon stump which is then passed through the patella by longitudinal bony tunnels to ensure a good hold. If they are also torn, the retinaculum must be sutured. In our case we performed a surgical repair by transosseous tip with 4 bilateral patella tunnels. A secondary rupture can occur but remains rare [11] Repair delayed by a missed diagnosis is problematic because of significant quadriceps retraction. A tendinous suture end to end becomes difficult and more complex surgical techniques are often required to fill this defect and restore continuity of the extensor apparatus. Postoperatively, the resumption of walking is done with a splint holding the knee extended for four to six weeks, this helps to protect the reconstruction until the healing of the tendon is sufficiently strong. Amplitude of 0-30 ° can be allowed and avoids adhesions. Amyotrophy of the quadriceps is frequent and difficult to recover despite physiotherapy, without having any functional repercussion in daily life [1]. Isometric contractions or electrostimulation partially prevent atrophy and muscle wasting.

CONCLUSION

The traumatic subcutaneous rupture of the quadricipital tendon is exceptional. The diagnosis must be done urgently and does not always require a last generation imaging. The adequate emergency surgical management combined with a suitable functional rehabilitation protocol, allows a complete functional recovery and patient satisfaction. The results are less good in the case of delayed repair and the complication rate is higher. Diagnosis and early treatment are essential for good healing and functional recovery

REFERENCES

1. Ilan DI, Tejwani N, Keschner M, Leibman M. Quadriceps tendon rupture. J Am Acad Orthop Surg. 2003;11:192–200.
2. Boudissa M, Roudet A, Rubens-Duval B, Chaussard C, Saragaglia D. Ruptures aiguës du tendon quadricipital: une série de 50 genoux à plus de six ans. Revue de Chirurgie Orthopédique et Traumatologique. 2014 Apr;100(2):171–4.
3. Neubauer T, Wagner M, Potschka T, Riedl M. Bilateral, simultaneous rupture of the quadriceps tendon: a diagnostic pitfall?. Knee Surgery, Sports Traumatology, Arthroscopy. 2007 Jan 1;15(1):43-53.
4. Balik MS, Erkut A, Guvercin Y, Sahin R, Keskin D. Quadriceps Tendon Rupture due to Postepileptic Convulsion. Knee SurgRelat Res. 2014 Jun;26(2):114–6.
5. Natsis K, Lyrtzis C, Noussios G, Papathanasiou E, Anastasopoulos N, Totlis T. Bilateral rectus femoris intramuscular haematoma following simultaneous quadriceps strain in an athlete: a case report. J Med Case Rep. 2010;4:56.
6. Liow RY, Tavares S. Bilateral rupture of the quadriceps tendon associated with anabolic steroids. Br J Sports Med. 1995 Jun;29(2):77–9.
7. Hardy JRW, Chimutengwende-Gordon M, Bakar I. Rupture of the quadriceps tendon; an association with a patellar spur. J Bone Joint Surg Br 2005;87:1361-3.
8. Sharma P, Maffuli N. Tendon injury and tendinopathy: healing and repair. J Bone Joint Surg Am. 2005;87:187–202. doi: 10.2106 /JBJS.D. 01850.
9. Jolles BM, Garofalo R, Gillain L, Schizas C. A new clinical test in diagnosing quadriceps tendon rupture. Ann R CollSurg Engl. 2007 Apr;89(3):259–61.

10. Krackow KA, Thomas SC, Jones LC. A new stitch for ligament-tendon fixation: Brief note. J Bone Joint Surg Am 1996;68:764-6.
11. Ramsey RH, Muller GE. Quadriceps tendon rupture: A diagnostic trap. ClinOrthop 1988;226:113-7.
12. Balint PV, Kane D, Wilson H, McInnes IB, Sturrock RD. Ultrasonography of entheseal insertions in the lower limb in spondyloarthropathy. Ann Rheum Dis. 2002;61:905–910.
13. Lejeune G. (1980) Rupture spontanée bilatérale simultanée des tendons quadricipitaux chez une insuffisante rénale chronique présentant une hyperparathyroïdie secondaire. ActaOrthopBelg 46 (1): 44-8.