International Journal of Orthopaedics Sciences

E-ISSN: 2395-1958
P-ISSN: 2706-6630
IJOS 2020; 6(2): 930-932

www.orthopaper.com
Received: 21-01-2020
Accepted: 22-02-2020

Dr. Azzelarab Bennis
Professor in Orthopedic Surgery and Traumatology, Department of Orthopedic Surgery and Traumatology, Military Hospital Mohammed V (HMIMV), Faculty of Medicine and Pharmacy, Mohammed V University of Rabat, Morocco

Dr. Jalal Youssef
Orthopedic Surgery and Traumatology, Department of Orthopedic Surgery and Traumatology, Military Hospital Mohammed V (HMIMV), Faculty of Medicine and Pharmacy, Mohammed V University of Rabat, Morocco

Dr. Naoufal Elghoul
Orthopedic Surgery and Traumatology, Department of Orthopedic Surgery and Traumatology, Military Hospital Mohammed V (HMIMV), Faculty of Medicine and Pharmacy, Mohammed V University of Rabat, Morocco

Dr. Ali Zine
Professor in Orthopedic Surgery and Traumatology, Department of Orthopedic Surgery and Traumatology, Military Hospital Mohamed V (HMIMV), Faculty of Medicine and Pharmacy Mohammed V University of Rabat, Morocco

Dr. Mansour Tanane
Professor in Orthopedic Surgery and Traumatology, Department of Orthopedic Surgery and Traumatology, Military Hospital Mohammed V (HMIMV), Faculty of Medicine and Pharmacy, Mohammed V University of Rabat, Morocco

Dr. Abdeloihab Jaafar
Professor in Orthopedic Surgery and Traumatology, Department of Orthopedic Surgery and Traumatology, Military Hospital Mohammed V (HMIMV), Faculty of Medicine and Pharmacy, Mohammed V University of Rabat, Morocco

Dr. Mohammed Benchakroun
Professor in Orthopedic Surgery and Traumatology, Department of Orthopedic Surgery and Traumatology, Military Hospital Mohammed V (HMIMV), Faculty of Medicine and Pharmacy, Mohammed V University of Rabat, Morocco

Dr. Salim Bouabid
Professor in Orthopedic Surgery and Traumatology, Department of Orthopedic Surgery and Traumatology, Military Hospital Mohammed V (HMIMV), Faculty of Medicine and Pharmacy, Mohammed V University of Rabat, Morocco

Corresponding Author:
Dr. Azzelarab Bennis
Professor in Orthopedic Surgery and Traumatology, Department of Orthopedic Surgery and Traumatology, Military Hospital Mohammed V (HMIMV), Faculty of Medicine and Pharmacy, Mohammed V University of Rabat, Morocco

Simultaneous rupture of the quadriceps tendon with contralateral patellar tendon: A rare combination

Dr. Azzelarab Bennis, Dr. Jalal Youssef, Dr. Naoufal Elghoul, Dr. Ali Zine, Dr. Mansour Tanane, Dr. Abdeloihab Jaafar, Dr Mohammed Benchakroun and Dr. Salim Bouabid

DOI: https://doi.org/10.22271/ortho.2020.v6.i2o.2163

Abstract
Although spontaneous rupture of the Knee extensor mechanism is frequently described in patients with uremia undergoing maintenance hemodialysis, simultaneous ruptures of bilateral knee extensor tendons is a rarely reported condition. In this report, we present a case of simultaneous quadriceps and patellar tendon rupture in a 53-year-old man with chronic renal failure, who was treated surgically by osteotendinous repair on both sides, with supplemental cerclage wire fixation for the patellar tendon rupture with satisfactory results.

Keywords: Quadriceps tendon, patella tendon, simultaneous rupture

Introduction
Ruptures of quadriceps or patellar tendons are common and serious Knee extensor mechanism injuries, however simultaneous rupture of either the infrapatellar tendon or contralateral quadriceps tendon is rare. This condition is usually described in subjects with systemic diseases such as gout, rheumatoid arthritis, chronic renal failure systemic, lupus erythematosus (SLE), rheumatoid arthritis, hyperparathyroidism, hereditary disorders of the connective tissue (like Ehlers-Danlos syndrome) or who are receiving long-term corticoid and fluoroquinolones treatment [1, 2]. In this report, we describe a case of Concurrent Rupture of the Patellar Tendon with Contralateral quadriceps tendon in a chronic hemodialysis patient.

Materiel and method
A 53 years-old patient with chronic renal failure secondary to membranous glomerulonephritis for the last 15 years, who had been receiving maintenance hemodialysis (three times per week since that time) was referred to our hospital with complaints of pain and swelling in both his knees after a fall. The patient reports having dropped its height with reception on both knees flexed, following a sensation of instability of the right knee without notion of trauma or stumbling. Clinical examination revealed bilateral severe effusion around the both knees with two large gaps, one below the right patella and one above the left patella (Fig 1). Loss of the active extensor mechanisms of both knees was also noted. Bilateral knee x-rays (Fig 2), obtained at 30° of flexion showed patella alta on the left side and patella baja on the right side, according to the Insall-Salvati method [3].

Result
The diagnosis of a Simultaneous rupture of the quadriceps tendon with contralateral patellar tendon was retained. In our case, we did not find that it is necessary to do other complementary examinations such as ultrasound or MRI given their cost and therapeutic delay they cause. The patient underwent surgical repair of both tendons through a midline knee approach. In the right side, the patellar tendon was avulsed from its proximal insertion (Fig 3a,). Refreshment of the surface of the proximal pole was made. Repair was performed using tendoosseous sutures passed through three longitudinal holes 2.0 mm in diameter (Fig 4a, 5). In addition, a wire strapping making a frame between the patella and the tibial tuberosity can

adjust the height of the patella under fluoroscopic control with obtaining a Caton-Deschamps Index around 1. On the left, surgical exploration showed a rupture of quadriceps tendon just above the insertion to the patella (Fig 3b). It was repaired by the same steps but without cable augmentation (Fig 4b, 5). Postoperatively, both knees were immobilized in removable splints for 6 weeks. Isometric quadriceps and straight-leg-raising exercises was undertaken since second day in a range of mobility of 0°-40° by arthromotor. At the 4 week post-operatively, the patient started doing partial weight-bearing with crutches and at the third month, he underwent an active rehabilitation, and the range of movement was 0-85 degrees and 0-110 degrees on the right and left respectively. At the forth month, the strapping wire was removed. Full flexion had been achieved in both knees at twenty-two weeks (Fig 6).

Fig 1: Palpable gaps; right below the right patella, left above the left patella

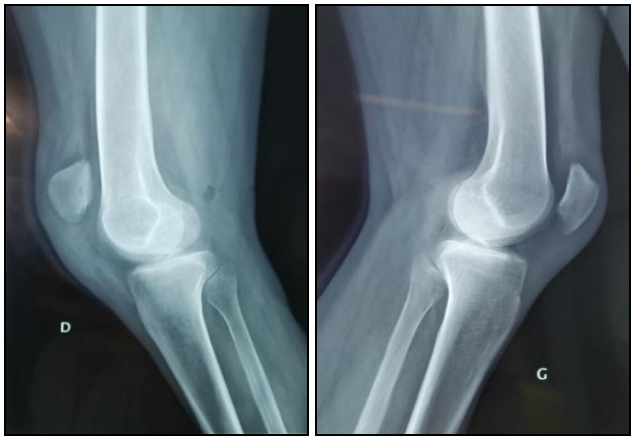

Fig 2: Lateral right and left knee radiograph at the time of injury.

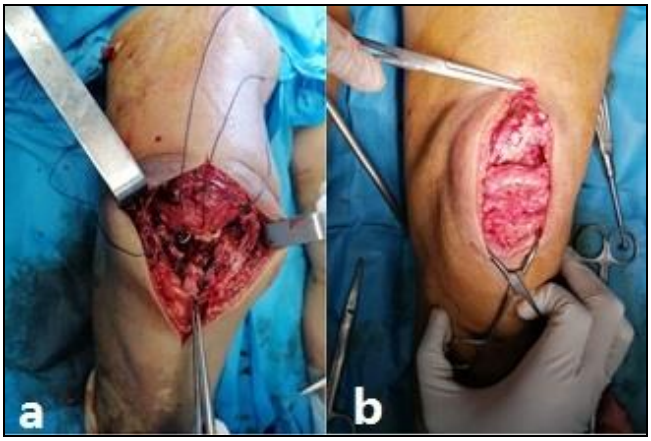

Fig 3: Intraoperative pictures,
a- Patellar tendon avulsed from its proximal insertion
b- Quadriceps tendon rupture from the insertion to the patella

Fig 4: a- Nonabsorbable sutures through the ends of the ruptured patellar tendon in the Right Knee, with Tension band wire through tibial tuberosity for reinforcing the sutures.
b- Nonabsorbable sutures through the ends of the ruptured quadriceps tendon in the left Knee

Fig 5: Final appearance after tendon repair of both knees

Fig 6: Clinical picture of our patient showing full bilateral knee flexion and extension

Discussion

The knee extensor mechanism injuries include patellar fractures and tendon lesions of the extensor apparatus. They

are rare injuries, with an incidence of 1.37/100,000 per year for quadriceps tendon ruptures (QTR) and an incidence of 0.68/100,000 per year for patellar tendon ruptures (PTR) [4]. Simultaneous rupture of quadriceps tendon with contralateral patellar tendon is extremely rare and usually occur spontaneously in patients with chronic diseases which lead to the degeneration of collagen fibrils and the loss of tendon vascularization [5]. Specifically In case of chronic hemodialysis patient, Elevated levels of parathyroid hormone (PTH) in serum stimulate excessive activity of osteoclasts in the tendon–bone junction, resulting in more bone resorption than bone formation, and this condition decreases mechanical strength at these junctions [6]. Therefore, a relatively minor trauma can cause spontaneous tendon rupture at the tendon–bone junctions. In this current case of a patient with uraemia, there was evidence during surgery that the quadriceps and patellar tendon were inflamed, and weak. Clinically, in patient with Concurrent Rupture of the Patellar Tendon with Contralateral quadriceps tendon, the functional impairment of knees and defective active extension with a palpable gape on physical examination direct the diagnosis. However, cases reported in the literature have shown that up to 50% of bilateral quadriceps tendon rupture may be misdiagnosed [7]. In this condition, careful digital palpation completed by Ultrasound as well as MRI are useful tools in confirming the clinical diagnosis. Surgical repair is the standard treatment of complete rupture of the knee extensor tendon. A number of operative techniques are available for quadriceps tendon rupture. The most common method of treatment is transpatellar repair, in which the nonabsorbable sutures are passed through holes drilled in the upper pole of the patella such as in our case. In addition, the use of Dacron vascular grafts, polydioxane cord, carbon fibre, synthetic prosthetic ligaments, and suture anchors were also reported [8]. Augmentation with cerclage wiring was used in some reports [9]. For our case, the decision was a transpatellar tendon repair without augmentation because the rupture was acute, and we prefer use repair with semitendinosus tendon augmentation only for patients who have undergone previous operations. In the literature, various methods have been described to treat patellar tendon ruptures, but there is no clearcut superiority between them. End-to-end sutures alone or combined with cerclage wires, PDS cords, Ethibond sutures, cables, and soft tissues fixed to the patella are options for repair [10]. In our patient, after suturing the tendon to the patella through holes, we augmented the repair site with cerclage wiring. Postoperative immobilization is advocated by most of the authors for three to six weeks [9, 10]. Early rehabilitation, progresses slowly into strengthening, gait and balancing activities and individual patients will progress at different rates depending on pre-injury function, the extent of the injury and the commitment to the rehabilitation program. In this case, we encouraged the patient to start weight bearing as tolerated during immobilisation. Passive rehabilitation was begun since second day and active rehabilitation after removal of the cast. At the sixth month postoperatively, the patient was free of any limitation in recreational activities and he was pleased with the clinical result.

Conclusion

Simultaneous rupture of the quadriceps tendon with contralateral patellar tendon is extremely rare and require early surgical treatment with subsequent functional exercise, in order to maximize functional outcomes for the patient.

Conflict of interest: All authors declare that they have no conflict of interest.

Acknowledgment: Nil

References

1. Takata Y, Nakase J, Numata H, Oshima T, Tsuchiya H. Repair and augmentation of a spontaneous patellar tendon rupture in a patient with Ehlers-Danlos syndrome: a case report. Arch Orthop Trauma Surg, 2015, 22.
2. Benjamin C, Tancev A, Fowler T. Bilateral patellar tendon rupture at different sites without systemic disease or predisposing steroid use. Iowa Orthop J. 2009; 29:100-104.
3. Insall J, Salvati E. Patella position in the normal knee joint. Radiology. 1971; 101:101-4.
4. Clayton RA, Court-Brown CM. The epidemiology of musculoskeletal tendinous and ligamentous injuries. Injury. 2008; 39:1338-44.
5. Biagio M, Angela N, Lorenzo M, Raffaele G, Vittorio P. Spontaneous bilateral patellar tendon rupture: a case report and review of the literature. Chir Organi Mov. 2008; 91:51-55.
6. Garabed E, Adeera L, Nathan WL. National Kidney Foundation. K/DOQI clinical practice guidelines: bone metabolism and disease in chronic kidney disease. Am J Kidney Dis. 2003; 42:S77-84.
7. Trobisch PD, Bauman M, Weise K *et al*. Histologic analysis of ruptured quadriceps tendons. Knee Surg Sports Traumatol Arthrosc. 2010; 18:85-88.
8. Bushnell B, Whitener GB, Rubright JH, Creighton RA, Logel KJ, Wood ML. The use of suture anchors to repair the ruptured quadriceps tendon. J Orthop Trauma. 2007; 21:407-13.
9. Muratli HH, Celebi L, Hapa O, Bicimoglu A. Simultaneous rupture of the quadriceps tendon and contralateral patellar tendon in a patient with chronic renal failure. J Orthop Science. 2005; 10:227-32.
10. Kasten P, Schewe B, Maurer F *et al*. Rupture of the patellar tendon: a review of 68 cases and a retrospective study of 29 ruptures comparing two methods of augmentation. Arch Orthop Trauma Surg. 2001; 121:578-82.