



SCIREA Journal of Sociology

<http://www.scirea.org/journal/Sociology>

February 8, 2023

Volume 7, Issue 1, February 2023

<https://doi.org/10.54647/sociology840990>

Bilateral Simultaneous Quadriceps Tendon Rupture in a 92-Year-Old independently mobile patient: A Case Report and Review of the Literature.

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Abstract:

Introduction: Simultaneous bilateral quadriceps tendon ruptures are uncommon knee injuries, though reported to frequently occur in males over 50 years of age. Bilateral simultaneous ruptures are rarely associated with minor trauma (1), but often associated with certain predisposing factors like obesity, diffuse idiopathic skeletal hyperostosis, steroids use, use of anabolic steroids, chronic tendonitis, chronic renal failure, rheumatoid arthritis, systemic lupus, gout and hyperthyroidism (2)(3).

Objective: The objective of our presentation is to present a rare case of simultaneous bilateral quadriceps tendon rupture in an independently mobile elderly patient with well controlled mild hypertension and heart murmur (not on any medications for heart murmur), and the absent of known predisposing factors.

Case Report: A 92 year old, otherwise fit and healthy gentleman, apart from well controlled hypertension and heart murmur (not on any medications for heart murmur), presented at the emergency department with bilateral suprapatellar knee pain and swelling after a trivial

trauma. The patient missed a step at home while descending stair and leaned onto the wall to steady himself. The day after his presentation, 24 hours following the injury, the patient underwent a successful surgery for the repair of bilateral quadriceps tendon rupture. Following the repair, both legs were immobilised in plaster cylinder casts.

Conclusion: Minor trauma resulted in the simultaneous bilateral quadriceps tendon ruptures in an active elderly male with no commonly associated risk factors.

Keywords: Bilateral Quadriceps rupture ; Patellar tendon rupture; Female Hormones; controlled hypertension, Predisposing factors.

Simultaneous bilateral quadriceps tendon ruptures are uncommon knee injuries. It rarely occur with minor trauma (1) but reported to frequently occur in males over 50 years of age and usually associated with certain predisposing factors like obesity, diffuse idiopathic skeletal hyperostosis, local steroids injection, use of anabolic steroids, chronic tendonitis, chronic renal failure, rheumatoid arthritis, systemic lupus, gout and hyperthyroidism (2)(3).The objective of our presentation is to present a rare case of simultaneous bilateral quadriceps tendon rupture in an independently mobile elderly patient with only a well-controlled mild hypertension and the absent of known predisposing factors.

Case Report: A 92 year old, otherwise fit and healthy gentleman, apart from well controlled hypertension and heart murmur (not on any medications for heart murmur), presented at the emergency department with bilateral suprapatellar knee pain and swelling after a trivial trauma. He stated that he missed a step and stumbled onto a wall and heard pops in both knees. Clinically he was unable to actively extend the knees bilaterally, the knees were swollen and a definite gap was palpable at the superior aspect of the patella in both knees.

Radiographs of the both knees were taken and the lateral views showed irregularity of the patellar tendon, low riding patella, suprapatellar effusion, and vascular calcification behind the knees. There was also the loss of the normal quadriceps outline and calcific opacity proximal to the patella.

Further imaging (MRI /US) was not necessary because of overwhelming clinical evidence of a bilateral quadriceps tendons rupture. Clinical acumen with a good history is the main criteria in the diagnosis of quadriceps tendon rupture(4). The day after his presentation, 24 hours following the injury, the patient underwent a successful surgery for the repair of

bilateral quadriceps tendon rupture. Following the repair, both legs were immobilised in plaster cylinder casts.

Literature Review: Simultaneous bilateral quadriceps tendon rupture is a rare injury, generally occurring in men over 50 years of age who are diabetic, obese, or have age related changes in the tendon, tendinitis and/ or tendinopathy. Other risk factors include, local steroid injection, use of anabolic steroids, obesity, chronic renal failure, hyperparathyroidism, rheumatoid arthritis, systemic lupus and gout (2,3,8).

Tendon ruptures predominantly occur in males, it could be due to trauma because men are more active than women generally and suffer more tendon injuries or it could be due to a tendinopathy, and again cases of tendinopathy are fewer in women and more in men (5). There is evidence that the female hormones- oestrogen, protects women from tendon injuries and inflammation (6,7) because female tendon show less strain response to exercise than male tendons. Bilateral quadriceps tendon ruptures have been reported to predominantly occur in middle-age males and be associated with predisposing risk factors (2,3,8), the youngest reported bilateral quadriceps rupture was a 24-year old obese male patient (3).

Tendons when loaded as in walking or running undergo load induced collagen alignment, water extrusions and loss of elastic functional properties (9,10,11, 12). This observation is supported by the changes in the tendon echotexture during exercise in which both the echogenicity and entropy are altered and these have been sonographically observed and recorded (12), this is termed; Acute Transvers Strain Tendon Response due to exercise. The acute transverse strain response is a result of the exercise induced biomechanical changes in the tendon (12,13), which has a negative correlation with age (12), but independent of any anthropometric measurements. Wearing SC, et al., observed a 2% reduction in the acute transverse strain response of the patellar tendon after exercise with each decade of life, which in effect means the acute transverse strain tendon response at age 50 will be 2% less than what it was 10 years earlier at age 40. Studies have shown that age is negatively correlated to the acute transverse strain response of tendons in males and females, the more the age the less the response and vice versa (10, 11, 12, 13,14)

Conclusion: The diagnosis of quadriceps tendon rupture is based on a good history and clinical examination (4), there are characteristic findings on clinical examination that will negate a missed diagnosis except where there is a partial tear. MRI remains the gold standard in assessing the extent of tear in partial tendon ruptures but ultrasound can also be used in the

assessment and it's also cheaper and easily accessible than MRI (3). Longevity should be recognised as a risk factor to bilateral quadriceps rupture as was the case in this gentleman.

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