

# Bilateral chronic quadriceps tendon tear secondary to repeated seizures

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## ABSTRACT

Chronic bilateral quadriceps tendon tear is an uncommon clinical entity when it is associated and caused by epilepsy resulting in repeated falls. We describe here a young male who presented with the inability to walk and a long history of seizures. The clinical exam, with plain radiographs and magnetic resonance imaging allowed accurate diagnosis as well as proper management.

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Chronic quadriceps tendon tear is an uncommon clinical entity particularly when bilateral and secondary to repeated falls in patients with epilepsy. The best method of diagnosis is by MRI. We present a young man with a long history of epilepsy with the clinical and radiological diagnosis of bilateral chronic tendon tear. Our objective in presenting this case is to describe the imaging findings of plain radiographs and MRI in diagnosing this entity.

**Case Report.** A 22-year-old male presented to the outpatient clinic with the complaint of inability to walk for 2 years. His past medical history is significant due to a long history of grand mal seizures for the past 7 years. His mother observes that when he gets up on his feet, he repeatedly falls on his knees after which his gait becomes unsteady. He was diagnosed in an outside center to have unilateral left quadriceps tendon tear 3 years ago. He continued to limp, with seizures uncontrolled. An attack 2 years ago left him wheelchair bound with no specific diagnosis according to the family. Upon examination, the patient is wheelchair bound with normal neurological status and muscle power according to the Medical

Research Council scale for grading muscle strength in both upper limbs score of 5/5, namely, normal, and in both lower limbs scoring 1/5, namely, muscle belly moves but the joint does not move. A muscle biopsy performed revealed normal findings, as did his blood chemistry, erythrocyte sedimentation rate and C Reactive Protein. Lateral computed radiographs (**Figure 1**) demonstrate a patella Baja (low lying patella), and calcification of the tip of a ruptured retracted quadriceps tendon bilaterally. The calcification indicates chronicity. An MRI of the right and left knee (**Figures 2 & 3**) confirmed the rupture bilaterally with the right quadriceps tendon retracted by approximately 7 cm, and the left retracted by approximately 8 cm, with evidence of a low lying patella bilaterally (patella Baja).

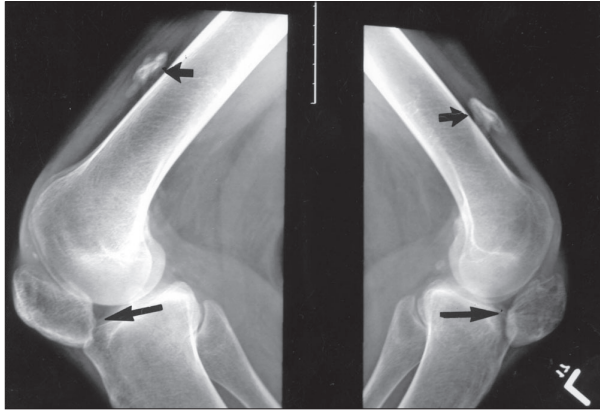
**Discussion.** The anatomy of the quadriceps tendon is somewhat complex, as it has a trilaminar configuration formed by a superficial layer from the rectus femoris, middle layer from the vastus lateralis and medialis, and a deeper layer from the vastus intermedialis.<sup>1,2</sup> There are several factors making a muscle susceptible to strain including: a) fusiform

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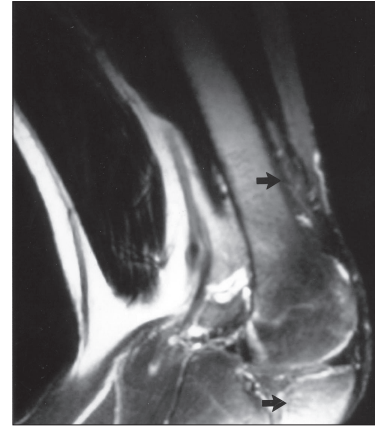
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**Figure 1** - Lateral computed radiographs demonstrating a patella Baja (low lying patella), (long arrows) and calcification of the tip of a ruptured retracted quadriceps tendon bilaterally (short arrows).



**Figure 2** - Magnetic resonance image of the right knee demonstrating the calcified tip of a ruptured retracted quadriceps tendon (upper arrow), and a low lying patella (lower arrow).



**Figure 3** - Magnetic resonance image of the left knee demonstrating the calcified tip of a ruptured retracted quadriceps tendon (upper arrow), and a low lying patella (lower arrow).

shape, b) eccentric action, c) composition of type II fibers, and d) extension across 2 joints.<sup>3-6</sup> Repetitive trauma, as in our case, lead to a bilateral quadriceps tear, and complete rupture may occur as a result of repetitive microtrauma or secondary to weakening by other underlying conditions such as diabetes, collagen vascular disease, gout, and hyperparathyroidism.<sup>7</sup> Strong deceleration and sport injuries have been reported as causes of rupture.

With its superb soft tissue contrast resolution, MR imaging is the imaging modality of choice for evaluation of acute and chronic traumatic musculotendinous injuries of the knee. With MR, myotendinous strains can be classified based on the extent of disruption.<sup>4</sup> A first-degree strain is a minor degree of disruption, with interstitial edema and hemorrhage present at the myotendinous junction.<sup>3,4</sup> Second-degree injuries are characterized by a partial tear with no retraction; a hematoma maybe observed. Third-degree strains involve a complete rupture of the myotendinous unit. The MR is useful when pre-operative assessment of the extent of retraction is needed.

In summary, a quadriceps tendon tear should be thought of and entertained in patients who have a long history of seizures resulting in repeated falls.

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