

## Left Knee Pain Resulting from a Fall

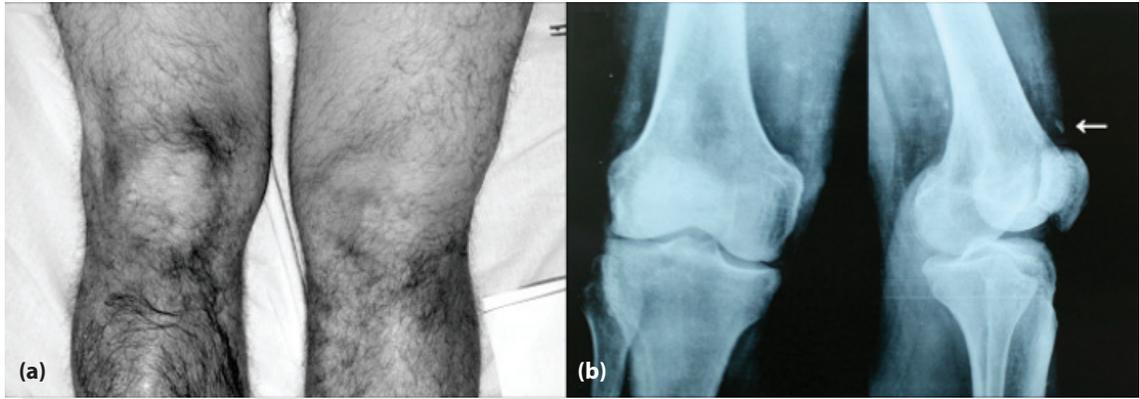
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A 68-year-old patient presented to the emergency department, complaining of the inability to ambulate and deformity on the left knee after a mechanical fall he sustained while walking on the sidewalk. He felt a distinct popping sensation and pain on his left knee as he hit the ground. He had no history of knee injuries or surgery. His significant medical history included atrial fibrillation, and his only medication was daily aspirin. On examination, soft tissue

edema and mild tenderness to palpation of left quadriceps was noted. The patient could not actively extend his knee (Figure 1a). However, his knee could be passively moved through a full range of motion, and distal pulses were intact. Conventional X rays (anteroposterior and lateral views) (Figure 1b) and magnetic resonance imaging of knee were obtained.

[For the diagnosis and teaching points, see page 79]



**Figure 1.** There was soft tissue edema, mild tenderness to palpation of left quadriceps on physical examination (a), soft tissue defects and calcific densities (arrow) near the musculotendinous junctions (b).

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## DIAGNOSIS: Rupture of Quadriceps Tendon

Upon examining the radiographs and magnetic resonance imaging (Figure 2) of the left knee remarkable soft tissue defects and calcific densities near the musculotendinous junctions, consistent with quadriceps rupture were noted. Orthopedic surgery was consulted, and they admitted the patient for open repair which was performed later that day. He was discharged to acute rehabilitation on 4th day post surgery.

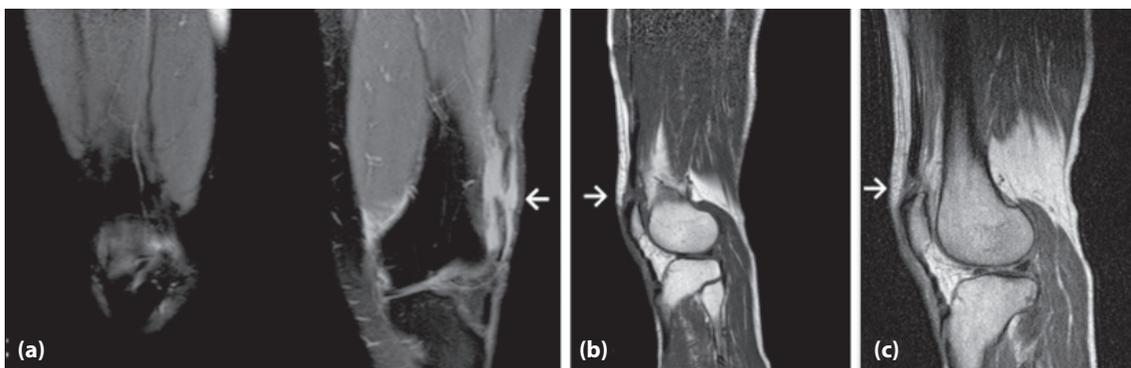
Quadriceps tendon ruptures are among the uncommon but serious knee injuries. They are more commonly seen in older (>40 years) individuals<sup>[1]</sup> and are associated with advanced age, steroid use, and chronic medical conditions, including hyperparathyroidism, renal insufficiency, systemic lupus erythematosus, and diabetes mellitus.<sup>[2,3]</sup> The typical mechanism for quadriceps rupture is deceleration with the knee semiflexed and the foot planted, as can occur due to stumbling while walking.<sup>[4]</sup> Clinical findings typically include the triad of acute pain, impaired knee extension, and a suprapatellar gap.<sup>[1]</sup> Bedside diagnosis may be limited because extension can still be intact with partial ruptures.<sup>[4]</sup> The diagnosis is often complicated because of limited physical examination due to edema and pain, the insensitivity of

radiographs, and the unavailability of non-emergent magnetic resonance imaging.<sup>[5]</sup>

Rupture of the quadriceps tendon requires prompt diagnosis and early management including surgery if indicated. Although partial ruptures can be managed conservatively with immobilization and rehabilitation, complete ruptures are best treated with early surgical repair.<sup>[1,4]</sup> A delay in diagnosis and treatment has been shown to cause significant morbidity.<sup>[5]</sup>

### References

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**Figure 2.** The rupture in musculotendinous junction of vastus lateralis is viewed in T2 fat-suppressed T2-weighted coronal MR image (a), and the view consistent with full-layer rupture in quadriceps tendon in T1-weighted (b) and in proton density-weighted sagittal images. (c) Fluid is present between tendon fragments.