

A 38 year-old Man presents with pain and swelling in his left calf. He just started to work out with his 11 year old daughter and felt a sudden onset of pain in the calf quite near his knee. He took acetaminophen but the symptoms become worse. He notes that the pain is worst when he tries to walk, but bearing weight is a little less painful. He is now walking with a limp. He and his wife are quite concerned about a 'blood clot.'

What differential diagnosis would you consider from this history?

How would you differentiate each of these problems in the Emergency Department?

Are there any available tests that would help you with this?

Your differential diagnosis should include:

★Calf muscle injury

One of the most common problems that causes sudden acute pain the calf is a tear of the medial head of the gastrocnemius muscle. This injury is more common in men and is typical in the male who is unaccustomed to regular exercise. The injury occurs when the leg is weight bearing and the person is running, jumping, or pushing off with the leg. An audible pop or tearing sensation may be felt in the upper medial aspect of the calf. The calf is suddenly painful and weight bearing is difficult.

★Plantaris rupture

The plantaris muscle is a vestigial structure that comprises a small muscle belly just above the gastrocnemius muscle and a long tendon. Rupture of the plantaris also is suddenly painful. The findings are much less specific.

★Ruptured Baker's cyst

A Baker's cyst is an outpouching of the synovium of the knee joint which occurs in patients with an inflammatory or degenerative arthritis. Early symptoms are often a sense of fullness in the popliteal fossa. When the fluids leak out of the synovium, there is an intense inflammatory response that causes pain and swelling.

★Achilles tendon rupture

Partial or complete rupture of the Achilles tendon occurs suddenly. The usual site of the Achilles tendon injury is about 6 centimeters above the insertion into the calcaneus. The site of the pain is quite distinct from the above rupture of the gastrocnemius tendon.

In a typical case, there will be a palpable gap between the ends of the rupture associated with swelling at the site of the rupture. Squeezing the calf fails to produce plantar flexion movement at the ankle. Pointing the toes may cause increased pain and may not be possible.

★Deep venous thrombosis

The signs and symptoms of DVT depend on the degree of inflammation and obstruction of the veins. In contrast to an injury, the onset is usually slow and insidious. Aching, tenderness and swelling will develop over the

course of a few days. Virchow's triad is venous stasis, vessel wall injury and increased susceptibility to clotting. These findings are associated with prolonged immobility, surgery or injury, cancer, and other causes of thrombophilia.

Other causes of calf pain that are NOT suggested by this history are:

- ★ Referred pain from the back
- ★ Popliteal aneurysm
- ★ Arterial insufficiency (claudication)
- ★ Cellulitis

The patient has localized tenderness over the medial head of his gastrocnemius muscle and bruising (ecchymosis) to the calf. This suggests a gastrocnemius muscle tear or a plantaris tear as a cause.

