Background: A 19-year-old (167.6cm, 59.1kg) female collegiate soccer player was cleated in the right hip during an international summer competition. At the time of injury, the athlete demonstrated an altered gait as a result of the trauma and was diagnosed with a hip flexor strain. The initial treatment included thermotherapy, massage, and stretching. The athlete was not restricted and continued to compete competitively. During that time the athlete re-aggravated the injury and presented with limited hip external rotation. Physiotherapy was continued and focused on thermal modalities and massage. A non-contrast MRI was ordered 5 weeks post initial injury and showed no gross pathology. The athlete was instructed to continue with her physiotherapy program until she arrived to her collegiate preseason training in the fall, 10 weeks post initial injury. At this time the athlete demonstrated limited hip external rotation and was still experiencing hip pain. The athletic training staff implemented a treatment program consisting of multi-directional hip strengthening exercises, proprioceptive exercises, stretching, an anti-inflammatory regimen, and cryotherapy. The athlete was withheld from competition during the rehabilitative program. During the treatment regimen, pain progressively increased, external rotation remained limited, and a catching sensation during external rotation was experienced by the athlete, prompting referral to a physician.

Differential Diagnosis: Labral tear, Gluteus maximus strain or contusion, piriformis strain. Treatment: A contrast MRI was ordered and revealed no gross pathology. Based on the nature and mechanism of injury the athlete was diagnosed with myositis ossificans of the external hip rotators. The diagnosis was not confirmed with imaging due to the depth of the affected tissue. Initial treatment post diagnosis included an extensive stretching program, thermo therapy pre activity, an anti-inflammatory medication regimen, a continuation of multi-directional hip strengthening within a pain free range, proprioceptive and functional exercises, and cryotherapy post activity. Hip exercises included hip flexion, extension, abduction and adduction on the Multi Hip machine. Proprioceptive and functional drills included single leg balance on a balance disc while kicking a soccer ball with the uninvolved leg. The stretching program consisted of passive stretching, mainly targeting the hip external rotators. Deep friction massage was also incorporated to attempt to break up the calcification. The athlete was able to return to competition 3 weeks after the start of preseason, 14 weeks from the initial injury. The athlete will continue with rehabilitation to increase hip flexibility and strength, while competing.

Uniqueness: While the injury was diagnosed as myositis ossificans, the diagnosis has not been confirmed because the depth of the affected tissue is too deep for imaging to be effective. The diagnosis of this injury was based mainly on the nature, mechanism of injury, and initial management of injury, namely the acute use of thermotherapy and massage. While the condition is fairly common in soccer athletes, the location and diagnosis make this particular case unique.

Conclusion: While calcification within a muscle can occur after direct trauma, this calcification is typically discovered before the development of myositis ossificans occurs. However, the depth of the affected tissue may aid in masking the signs of muscular calcification. While the condition in this study was eventually diagnosed, the negative affects of the calcification, i.e. pain and limited hip external rotation, are still present, and must be controlled through rehabilitation. This case study shows that the diagnosis of myositis ossificans within deep muscle tissue can be formulated by using injury history rather than diagnostic testing. It also demonstrates that the possibility of muscular calcification does not only occur in superficial muscles. Word Count: 582