A 16-YEAR-OLD FOOTBALL ATHLETE WITH A SEGOND FRACTURE: A CASE STUDY
Carpentieri S, Gustus S: Springfield College Athletic Training Program, Springfield, MA

Background: The case presents a 16-year-old male high school football player tackled to the ground from behind with a varus force to the right knee. The patient reported someone took out his leg and his leg gave out but at the time of injury was unable to provide specific details of the event due to pain and stress. At the time of injury the patient experienced severe pain in his knee and was unable to bear weight. No tests were done at the time of injury due to muscle guarding and pain. Upon the patient reaching the sidelines, edema and effusion was already present. Five days post injury the patient was tender to palpation over the right lateral collateral ligament, lateral tibial plateau, lateral femoral condyle, lateral joint line, and medial femoral condyle.

Evaluation showed edema, with pitting edema over the fibular head. A varus stress test and anterior drawer test were positive with an empty end feel when compared bilaterally. The posterior drawer test and the valgus stress test were negative with a loose end feel. The patient was referred for an X-ray due to suspicion of a fracture involvement. The X-ray revealed a Segond fracture of the anterolateral tibia. The MRI revealed a complete tear of the anterior cruciate ligament, a complete tear of the fibular collateral ligament, a complete tear of the biceps femoris tendon at the fibular head, a severe strain of the popliteus muscle, and a complex peripheral tear of the posterior horn of the medial meniscus.

Differential Diagnosis: Anterior cruciate ligament tear, lateral collateral ligament tear, meniscus tear, medial collateral ligament tear. Treatment: Once the patient was removed from the field, the knee was iced and the patient was treated for pain and shock. The patient was fitted for crutches and sent for an X-Ray and a MRI. Once diagnosis was established, treatment involved ice, elevation, and rest.

Uniqueness: A Segond fracture is an avulsion fracture of the lateral tibial condyle of the knee. A Segond fracture has an associated anterior cruciate ligament injury 75-100% of the time because of the location of the fracture and the mechanism of injury typically associated with the Segond fracture. Segond fractures occur in 9-12% of all anterior cruciate ligament tears. The rehabilitation process for a Segond fracture is healing for the bone and then any rehabilitation for any additional injuries sustained from the initial mechanism of injury. Surgery is needed to correct the additional injuries sustained from the initial mechanism of injury. Segond fractures are found in less than 1% of knee injuries.

Conclusion: Segond fracture leaves an individual with a high rate of also tearing the anterior cruciate ligament. Due to the varus force sustained by the athlete, the Segond fracture and tear of the anterior cruciate ligament occurred. Relevant Evidence: In a study completed by Cosgrave, Burke, and Hollingsworth (2012), the researchers found a correlation between Segond fractures and anterior cruciate ligament ruptures. Cosgrave et al., (2012) found a Segond fracture is only found upon closer inspection of the initial x-rays of the patient. Usually a Segond fracture is not found initially on an x-ray. However, based upon the clinical and radiological findings, an MRI was performed. The patient from Cosgrave et al. (2012) had a MRI, which revealed a complete anterior cruciate ligament rupture with associated bone bruising of the lateral femoral condyle.

Word Count: 585.