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## ***Lower Extremity Morel-Lavallée Lesion in an NFL Player: A Case Study***

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### ***OBJECTIVE***

A 28-year-old, fifth year running-back in the National Football League (NFL) presented with a burning sensation superoanterior of the patella. The onset of the condition started when the athlete grazed his left knee along grass surface while running with the ball. The patient (pt) attempted to continue practicing but noticed rapid swelling as well as pain while walking and reported to Head Athletic Trainer (HAT). Suprapatellar swelling was noticed, and his range of motion was 0 degrees to 80 degrees of knee flexion due to the pronounced suprapatellar swelling. Pt. had 5/5 strength, quadriceps tendon was intact, no palpable defects were found, and had no pain with knee extension resistance or single leg squats. There was also no knee joint effusion or instability.

### ***MEDICAL HISTORY***

An important piece of the athlete's prior medical history revealed that he had been treated for a left pre/suprapatellar contusion initially 10 days prior in which he was treated conservatively and resolved. Whether or not that injury played a part in the mechanism of injury or the healing process is unknown. Another notable piece of medical history is that he has been known to bruise easily.

### ***DIFFERENTIAL DIAGNOSIS***

Prepatellar Bursitis, Suprapatellar Contusion, Myositis Ossificans, Quadriceps Contusions, Compartment Syndrome, Abscesses, Fat Necrosis, and Soft Tissue Sarcomas. The team physician and head athletic trainer detected an internal degloving injury called Morel-Lavallée Lesion (MLL) due to team physician's previous experiences with similar symptoms. MLL is an internal degloving injury where the skin is sheared from its underlying fascia

which is later filled with lymphatic fluid and blood. Early imaging is key in early detection in order to prevent the condition from worsening.

### ***RELATED LITERATURE***

Morel Lavallée Lesion was first described by French physician Maurice Morel-Lavallée in 1853. The presentation of MLLs are explained by the mechanism of injury. MLL occurs when subcutaneous tissues are stripped away from the underlying fascia, usually with shearing type forces. This causes the blood and lymphatic vessels and nerves to sever, which makes the lesions swell and is sometimes pain free, typically in subacute and chronic presentations. The fluid that collects is susceptible to infection, thus infections of MLL represent real and important sequelae. MLL can occur in all levels of athletics but seems to be diagnosed more in the NFL. A study done on NFL athletes reported 27 cases over a 13-year span from 1 team.

### ***TREATMENT***

The initial treatment after the injury occurred was an intermittent ice compression machine called GameReady®, application of a compression wrap, and was sent to team physician for further evaluation where aspiration was warranted. After the aspiration, the pt. was given a GameReady® unit to take home. The following day, the pt. came in to get the lesion aspirated again and to get a magnetic resonance image (MRI). The MRI results confirmed their prognosis and made the official diagnosis as MLL. The MRI revealed that the lesion had an anteroposterior dimension of 2.17cm and a craniocaudal dimension of 10cm. The pt. did high volt stimulation, GameReady® therapy, and used compression wraps to help with the

pain and swelling. Five days after the onset of the injury, the team physician performed an injection called, 'doxycycline sclerodesis' that is essential to help the layers of fascia bind together and heal faster. Doxycycline is a member of the tetracycline antibiotic group and sclerodesis can be broken into two parts: sclero-hardness and desis-binding. The majority of sclerodesis agents cause cell destruction within the lesion, which subsequently induces fibrosis, basically forming scar tissue. This process begins with aspiration, using either a 16g or 18g needle, to remove the blood and lymphatic fluids. Then, an injection of a desired mg of doxycycline, normally diluted in sterile saline is performed. Finally, an optional low dose of lidocaine can be administered. The pt. was put into a knee immobilizer for nearly a week to ensure that the doxycycline sclerodesis healing process was not being disrupted. The pt. continued the normal GameReady® therapy, compression wraps and occasional aspirations until the swelling was controlled and could begin working on his range of motion. During the entire treatment tenure, there was 6 total aspirations for a total of 350cc of blood and lymphatic fluid aspirated, 1 injection of doxycycline sclerodesis, and was able to return to practice with limitations 13 days after the injury occurred.

### **UNIQUENESS**

This case study is unique because it is a rare posttraumatic, internal degloving injury that is often misdiagnosed acutely. This injury is primarily a traumatic injury from motor vehicle crashes but can occur in contact sports. With MLL primarily seen in vehicle accidents, the odds of an athletic trainer coming across it are slim. Contact sports are known to have traumatic injuries that present the casual edema and hematoma which is why it is misdiagnosed so frequently. Other unique

aspect of this study is that the athlete is an NFL player who is not only at the highest level of athletics but also received the highest level of care by some of the most experienced healthcare professionals in the league.

### **CONCLUSION**

An early detection by the HAT and team physician prevented possible infections, pseudocyst formations, and/or cosmetic deformities. When sustaining an MLL in the National Football League, the biggest difference that an MLL has compared to a non-athletic MLL is that the athlete is trying to get back on the field, therefore the pt. usually choses the more aggressive treatment route. By the team physician being so quick to aspirate the lesion, he prevented the inflammatory response from organizing granulation tissue into a fibrous capsule. This is such a key point in a speedy recovery because when that fibrous capsule is formed, it can impede the absorption of the fluid and is thought to be the cause of recurrent fluid collection even after drainage. Using an MRI as the primary diagnostic tool is the best modality of choice. Doxycycline Sclerodesis is known as the most effective way to treat this condition, which was evident in this mild athletic case. MLL is an injury that is under most athletic trainers' radar, no matter the experience or setting. With MLL being such a rare condition, it was probably not taught in most undergraduate programs and is why majority of athletic trainers are not aware of it. If we, athletic trainers, do not know what the signs and symptoms are or how to treat it, this condition can get drastically worse. The athletic training profession needs to become more aware of this injury by implementing it into the education programs. By doing this, athletic trainers will be able to provide better care to their athletes if the rare condition occurs.

**KEY WORDS:** *Athletic Training, Certified Athletic Trainer, Doxycycline Sclerodesis, Morel-Lavallée Lesion, Differential Diagnosis, Post-Traumatic, Internal Degloving Injury*