Non Contact Femoral Tibial Dislocation With Peroneal Nerve Palsy in a High School Football Linebacker

Briles MW, Tew BJ, Mason RA, Xerogeanes JW: Emory Sports Medicine, Atlanta, GA

Background: The patient is a 17 year old, male, high school American football linebacker with no previous injury history to his right knee who suffered a non contact femoral tibial dislocation during football practice. **Differential Diagnosis:** The school's athletic trainer provided initial on site care as the patient was in excruciating pain and his knee visibly dislocated at the femoral tibial joint. The injury was sustained when he stepped in a hole on the football practice field causing him to trip and fall, creating a simultaneous transverse and varus force at the knee without external contact. The emergency action plan was activated, and the athletic trainer performed a lower leg neurovascular assessment and found that both myotomes and circulation were compromised. When applying a straight leg immobilizer, the knee spontaneously reduced, and vitals were subsequently rechecked and had not improved. EMS arrived and removed the immobilizer and applied a vacuum splint to the patient's leg. The patient was taken to a level one children's trauma center where MRI and further evaluation took place. **Intervention & Treatment:** An MRI of the injury revealed tearing to the ACL, PCL, LCL, and MCL; EMG revealed right peroneal sensorimotor neuropathy with a severe axonal loss with distal muscles showing signs of denervation and no voluntary activity. Additional follow up occurred with the team's orthopedist early the following week for evaluation, bracing, and referral to physical therapy centered on regaining range of motion and quadriceps activation. A lack of resolution to the patient's foot drop was noted at three months and an EMG was carried out to assess peroneal nerve function. In the weeks following the EMG, an orthopedic surgeon was brought in and carried out reconstruction of the ACL with a quad tendon autograft, repaired the LCL using a tibialis anterior allograft, and repaired the posterolateral corner of the right knee. The patient continued a course of physical therapy consistent with ACL reconstruction. Two weeks after his surgery, he met with an additional orthopedic surgeon to discuss a peroneal tendon transfer to address the foot drop associated with the peroneal nerve palsy and is presently scheduled for surgery. At the time of abstract submission, the patient was doing very well with regards to his knee. Though fighting an extension lag, his rehabilitation was progressing normally, and he was able to accomplish activities of daily living utilizing an ankle and foot orthosis. However, the extent of his nerve damage was severe and the prognosis for regaining full function of the peroneal nerve, even with surgery, was poor. **Uniqueness:** Knee dislocations are a rare injury that can have serious complications including irreparable nerve damage and amputation of the affected limb. They have an estimated prevalence of <0.02% and of these injuries, 14 40% have an associated peroneal nerve palsy. This is due to the peroneal nerve's anatomical location tight against the fibular head and its poor tolerance to accommodate stretch and shear forces. Non surgical interventions for peroneal nerve injuries are associated with long term use of an ankle and foot orthosis and alteration of gait into a vaulting or circumduction pattern, thus affecting lower extremity function and satisfactory activities of daily living. If the popliteal artery is compromised and the injury is not treated within 8 hours, the chance of amputation of the limb is 86% compared to 11% with prompt treatment. Failure to recognize and correctly manage a knee dislocation can cause catastrophic damage through these neurovascular complications. **Conclusions:** Recognition and appropriate acute treatment of this rare, but serious injury are paramount for preventing loss of limb, resuming normal activities of daily living, and having any chance of returning to previous levels of competitive athletics.