Thoracolumbar Pain in a Female Collegiate Gymnast
Almeida M, Stobierski R, Rothbard M, Hannah C: Southern Connecticut State University, New Haven, Connecticut

Background: A 22 y/o female gymnast complained of immediate severe sharp thoracolumbar pain without the presence of radiating pain, unusual sounds, or sensations secondary to landing on her thoracolumbar spine forcing spinal hyperflexion after failing to perform a full twisting front tuck somersault from the balance beam. The patient was unable to walk and reported that pain was aggravated by movement and alleviated by rest. Visual inspection revealed patient apprehension for movement without the presence of swelling or deformity. Physical examination elicited palpable tenderness over the thoracolumbar spinous processes with associated spinal extensor muscle spasm. Range of motion was severely restricted by pain and spasms and subsequently not performed. Neurological screening was able to rule out associated spinal cord injury. The patient’s medical history was not significant for traumatic injuries to the spine or surrounding area. Differential Diagnosis: vertebral body compression fracture, spinous process fracture, transverse process fracture, vertebral arch fracture, spinal ligament sprain, facet casulary sprain, erector spinae (iliocostalis, longissimus, and spinalis) strain, and internal organ derangement. Treatment: After initial evaluation, emergency medical services was summoned, the patient was immobilized with a full backboard, and transported to a local emergency medical facility for further evaluation. Thoracolumbar radiographs were obtained and revealed a decreased anterior border vertebral height without subsequent interspinal space increases. She was diagnosed with a T12 and L1 compression fracture and was placed in a thoracolumbar sacral orthosis (TLSO). Early rehabilitation consisted of spinal immobilization to relieve pain, spasms, and soft tissue restrictions for 12 weeks. Status post 12 weeks, the patient was removed from the TLSO and a more aggressive rehabilitation program was implemented which included restoring hip muscle balance, flexibility, strength, and muscular endurance. Status post 18 weeks, the patient was functionally stable and core stabilization and strengthening with application for gymnastic activities was incorporated into the rehabilitation program. Status post 26 weeks, the patient was discharged from rehabilitation; however, she was unable to return to competitive gymnastics due to the exceptional physical and mental demands of the sport. Uniqueness: Thoracolumbar spinal fractures are very rare in athletics. Common causes are high velocity high-energy impacts such as car accidents. Other susceptible populations are older individuals with osteoporosis or spinal tumors, and in younger individuals with a history of steroid use. Specifically, in this case, the young and otherwise healthy patient suffered a career ending injury. Also, the mechanism of injury was very unique. The dismount caused her torso to remain in motion, forcing the spine in hyperflexion, resulting in the fracture. Furthermore, this pathology did not affect ligamentous stability or cause secondary spinal cord injury. Lastly, based on the literature, management for this pathology required an additional 6 weeks of non-operative bracing due to a lack of complete osseous healing. Conclusion: In the sport of gymnastics, when situations go awry in the air, gymnasts are instructed to perform a tuck and roll maneuver to ensure a safe landing to prevent injury. Unfortunately, the gymnast could not complete this maneuver in sufficient time, causing injury. The mechanism of injury in this case is very important to recognize in order to identify the clinical presentation, give appropriate immediate care, and provide proper post-injury management. Thoracolumbar fracture management can include non-operative bracing for neurologically intact pathologies. Disability from this pathology can last up to 6 months. With no neurologic damage, patients may return to full athletic participation provided they are free of pain during activity and core stability and strength is adequate to meet the specific demands of the participant’s activity. Word Count: 583