Management of Chronic Ankle Instability and Multiple Ankle Dislocations in a Female Collegiate Gymnast

Background: An 18 year old female gymnast complained of chronic instability of her left ankle. She described two previous dislocations prior to arrival at college. She was cleared for full participation by the team physician after passing functional testing during pre-participation examination. She began a prophylactic ankle strengthening and balance program and denied any increased pain or limitations during the first couple months of practice. She sustained a third dislocation upon landing a vault dismount approximately two months into the season. She was referred to the emergency room, where the dislocation spontaneously reduced after about one hour. Due to the history of previous ankle injury, the team physician ordered an MRI which indicated injury to the anterior talofibular, and deltoid ligaments, along with bony contusions to the talus, calcaneus and navicular without fracture. Due to the lack of acute fracture, the team physician recommended a plan of continued ankle strengthening and balance training. She achieved full ROM and strength within 6 weeks of this third dislocation. Based upon her full strength and function, the team physician cleared her to gradually progress into gymnastics activity and ultimately cleared her for full participation approximately three months after this third dislocation. Two days later, she sustained another dislocation while attempting a dismount from the balance beam. Differential Diagnosis: Ankle dislocation with an associated fracture, Grade 3 sprain of ATF/CF/PTF.

Treatment: Immediate treatment of the fourth dislocation was stabilization and referral to an ankle specialist. The specialist’s exam noted full strength, ROM, and function with mild anterolateral impingement signs with a 2+ anterior drawer. No fracture was noted on radiograph, with ATFL tear and some signal on deltoid on MRI. The specialist recommended proceeding with ankle surgery (Brostrom-Gould Repair) utilizing a gracilis graft to reconstruct the lateral ligament complex. Surgery was performed two months post injury, after the academic semester was completed. The post-surgery rehabilitation plan consisted of gait and balance training, ankle, knee and hip strengthening, and joint mobilizations to improve overall function of the ankle joint and entire lower extremity. Full pain free range of motion, normal strength and full weight bearing has been achieved along with a consistently negative anterior drawer. Continued progression toward return to full gymnastics activity is expected in the next few months. Uniqueness: Recurrent dislocations of the ankle are extremely rare, especially without concomitant injury. In this case, after each dislocation, she presented with the classic signs of a grade 2 ATFL sprain. The absence of associated fractures after her third dislocation, along with the complete return of strength and function in her ankle, allowed for return to full gymnastics participation after only six weeks. The fourth recurrent dislocation occurred regardless of her functional status. The recurrence of dislocations without functional deficits supports that the deficient mechanical support of the lateral ligament complex was responsible for injury recurrence rather than functional insufficiencies such as strength or balance deficits. Conclusion: This case highlights the significance of the lateral ligament complex of the ankle. This gymnast clearly had a mechanical deficit within the lateral aspect of the ankle, yet displayed both full strength and function prior to each episode. In this case, the primary stabilizers (ATFL) of the lateral ankle were clearly deficient, and the strong secondary stabilizers (muscles/tendons) were unable to prevent repeat joint derangement. Due to this, surgical stabilization was the most logical choice for intervention. More research needs to be conducted to determine the criteria for surgical management of recurrent dislocations. In this case, surgical intervention was conducted after her fourth dislocation, and she is currently rehabilitating in order to facilitate a return to competitive gymnastics. Word Count: 597.