Introduction

The sport of baseball has been around for decades, but injury to the ulnar collateral ligament (UCL) in its throwing athletes has been on the rise in recent years (Redler, Degen, McDonald, Altchek, & Dines, 2016). While the evidence suggests that repetitive overhead throwing may be a risk factor for UCL injury in baseball athletes, bone spurs have not been well documented as a precursor for UCL injury as well. Research suggests that the olecranon and humerus are more prone to inflammatory changes than the elbow joint. When the force on the ulnar collateral ligament exceeds the physiological limits of the ligament, significant injury can occur (Hibberd, Brown, & Hoffer, 2015). Bone spurs that have developed in the elbow joint can cause additional irritation to the surrounding tissue, thus leaving the overhead throwing athlete in an even greater state of injury vulnerability (Weeks & Dines, 2015). Additionally, it is crucial as a resource for baseball and throwing athletes alike who present with a bone spur. These athletes should be made aware that a preexisting bone spur could manifest as a precursor to UCL injury in the future.

Purpose

The overall purpose of this research is to explore the incidence of an olecranon bone spur as a precursor to ulnar collateral ligament injury in baseball athletes. Because the ulnar collateral ligament is located on the medial aspect of the elbow, it is particularly susceptible to valgus stress. When the forces of the elbow joint, such as the oblique ligament, do not cross the elbow joint when the valgus stress was applied. The Golfer’s Elbow Stress Test, used to detect medial epicondylitis, and Tinel’s Test, used to detect ulnar nerve neuropathy, were found to inhibit the pain cycle until further evaluation. Upon arrival at the athletic training room two days post injury, the athlete presented with tenderness upon palpation centered on the ulnar collateral ligament (UCL) and with full AROM. The athlete was referred to the team physician for further evaluation. The orthopedic surgeon’s evaluation led to a conclusive finding of a complete rupture of the ulnar collateral ligament at the sublime tubercle attachment of the right elbow. Differential Diagnosis: medial epicondylitis, ulnar nerve neuropathy, UCL rupture. After further evaluation, the athlete received UCL reconstruction surgery. The palmaris longus was the choice for tendon graft and the surgeon removed the bone spur. The athlete is following Andrews’ post-operative rehabilitation protocol. Outcomes or Other Comparisons: The athlete is currently in Phase I of his rehabilitation protocol. Conclusions: This was a Level 3 exploration case with concentration on the diagnosis, treatment, and rehabilitation of recovery of an athlete with a complete UCL rupture preceded by a bone spur. This case highlighted the unique findings of an osteophyte that may have predisposed the athlete to the tendon rupture. This case provides an instance of the uncommon, poorly documented precursor to UCL injury, bone spur. After UCL reconstruction and removal of the olecranon osteophyte, the rehabilitation of the elbow remains the same as the typical presentation; however, it is important to monitor the athlete once the throwing program begins. Clinical Bottom Line: A bone spur may manifest as a precursor to UCL injury.

Treatment

Non-operative treatment is one available option to all baseball players with this injury. Athletes who present with a bone spur and a pitcher with further stimulus of elbow or olecranon spur manifestation should be used in a variety of combinations. This can help to decrease pain and improve functional mobility. However, most bone spurs are not found in athletes until being evaluated by a health care professional following an injury to the elbow. Operative intervention may be warranted when an ulnar collateral ligament injury presents. Additionally, if a bony abnormality is identified, then surgery is required if the baseball athlete wishes to return to full competition. Surgical reconstruction of the medial elbow ligament’s instability is most often performed in grade two or three tears and is referred to as “Tommy John” surgery (Hibberd, Brown, & Hoffer, 2015). In this procedure, the anterior and posterior muscle mass is detached from its attachment on the medial condyle, while a submuscular ulnar nerve transposition is performed, and function of the anterior band of the UCL is restored by drilling bone medially to create a graft. This surgery was first performed in 1974 on pitcher Tommy John, there have been several other modifications to Dr. Frank Jobe’s technique. However, what is most important is the post-operative rehabilitation protocol, as well as modifying the throwing mechanics. Additional strengthening and consistent rehabilitation program is required for baseball athletes who wish to return to sport and minimize long-term effects. In this review, the evidence will provide valuable information to bone spur and ulnar collateral ligament injury.

Anatomy

The ulnar collateral ligament (UCL), also known as the medial collateral ligament (MCL) of the elbow, is located on the inside of the elbow joint. The elbow is a synovial hinge joint comprised of three articulations: the humeroulnar, the radiocubital, and the radioulnar. These articulations provide great stability to the elbow and are supported by several muscles and ligamentous structures. These include the radial collateral ligament, the ulnar collateral ligament, the anterior oblique ligament, the posterior oblique ligament, and the transverse ligament. The anterior oblique ligament is thicker than the posterior oblique ligament and plays a primary stabilizing role against valgus stress. The transverse ligament, also known as the oblique ligament, does not cross the elbow joint and is generally believed to confer stability against a varus stress. The ulnar collateral ligament, also known as the oblique ligament, does not cross the elbow joint and is generally believed to confer stability against a varus stress. This case highlights the unique findings of an osteophyte that may have predisposed the athlete to the tendon rupture. This case provides an instance of the uncommon, poorly documented precursor to UCL injury, bone spur. After UCL reconstruction and removal of the olecranon osteophyte, the rehabilitation of the elbow remains the same as the typical presentation; however, it is important to monitor the athlete once the throwing program begins. Clinical Bottom Line: A bone spur may manifest as a precursor to UCL injury.

Discussion

The presented case study and literature review outlines and provides as an instance of the uncommon, poorly documented precursor to ulnar collateral ligament injury, bone spur. Because osteophyte formation is rarely documented prior to a physical examination being warranted, baseball players are unaware of their underlying medical condition. Therefore, these athletes are not taking the appropriate preventative and conservative treatment measures to avoid injuring the ulnar collateral ligament. Additionally, there is no way of knowing without question that the bone spur did not cause the medial elbow injury. After careful review, it can be concluded that a bone spur may manifest as a precursor to ulnar collateral ligament injury in baseball athletes.

References

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