

# **Getting Athletes with Elbow Injuries Back on Track**

## **Physical Therapy in Fremont, Carbon, and Sweetwater Counties for Elbow Conditions**

When it comes to ulnar collateral ligament (UCL) injuries in overhead throwing athletes, the authors of this study bring a wealth of experience to the table. After performing surgery on 1,281 patients, their success rate is much higher than reported in other published studies.

The ulnar collateral ligament is located at the elbow. It supports the humerus-to-radius connection and helps stabilize the elbow. The humerus is the upper arm bone. The radius is one of the bones in the forearm. Without this ligament, the force generated by the throwing motion on the medial side of the elbow (side closest to the body) is enough to potentially dislocate the joint.

So, why did the patients in this study do so well compared to others? Well, the authors no longer just repair the damaged ulnar collateral ligament. Instead, they perform a reconstructive procedure called the Tommy John surgery.

In this operation, the ulnar nerve is moved away from the bone and a piece of fascia (connective tissue) is used like a sling to hold the nerve in its new place. During the same procedure, the damaged ulnar collateral ligament (UCL) is replaced with a piece of graft tissue.

After years of trying various tendon grafts, these surgeons have settled on using the palmaris longus tendon from the wrist and forearm. This tendon is easy to harvest, stabilizes the nerve well, and is easier than other tendon grafts to get the correct tension. For patients who do not have a palmaris longus tendon, the gracilis (hamstring) tendon or plantaris tendon in the foot can be used instead.

Most of the patients in this study were baseball pitchers. The Tommy John surgery was used when the loss of an intact ulnar collateral ligament resulted in an unstable elbow joint. Overhead throwing athletes must have a stable, intact elbow in order to have the speed and accuracy needed for the wind up, cocking, acceleration, deceleration, and follow-through phases of overhead pitching.

The goal of this type of reconstructive surgery is to return the athlete to his (or her) previous top level of performance (i.e., performance level before injury). Of the 942 patients in this study, 83 per cent were able to get back to their sport at full participation. Besides baseball pitchers, a smaller number of athletes were included. There were baseball catchers, outfielders, and infielders. Athletes involved in other sports included football players, javelin throwers, tennis players, wrestlers, soccer players, gymnasts, cheerleaders, and pole vaulters.

The surgery was done after at least a three-month trial of conservative (nonoperative) care. Rest, pain relieving medications, and rehab exercises were part of the nonsurgical treatment. Some athletes made the decision for an earlier surgical date based on where they were in the season (beginning, in-season, post-season).

Surgery was always preceded by magnetic resonance arthrograms (MRAs). This type of MRI uses a contrast dye injected into the area to show the presence of bone spurs or other damage. The surgeon could address any of these additional problems at the time of the reconstructive procedure. Arthroscopic exam before

surgery was also done to confirm elbow instability.

Surgery wasn't the end of treatment. Rehabilitation in four phases began right after surgery and continued until the athlete was able to resume full sports participation. The rehab program used at this facility was based on research performed by a well-known Physical Therapist (Kevin Wilk). Working with a Physical Therapist, the athlete can expect to get full, painfree motion back five to six weeks after surgery.

Strengthening, stretching, and sport-specific exercises were carried out during the next phase. The entire upper extremity is involved in the rehab program (not just the elbow). By the end of the rehab program, the athletes were involved in activities and exercises that integrate the entire body (arms, legs, trunk, abdomen). Stability, strength, motion, and endurance were all restored fully before returning to sports action.

Not only was there an 83 per cent success rate (athletes returning to pre-injury level of play), almost half of the patients (41 per cent) advanced to a higher level of play. Some of the athletes were able to move from a minor league to major league; others moved up from amateur to professional baseball. Only a small number of patients (11 per cent) did not return to sports participation at all.

The time from surgery to throwing was about four and a half months. Some patients advanced to throwing skills as early as the third month. Others took up to a full year to achieve this milestone. Full participation at a competitive level was longer in coming (ranging from three to 72 months).

It should be noted that despite these good results, there was a fairly high rate of complications (20 per cent or one in every five players had a problem after surgery). Some of the problems were minor and temporary (e.g., loss of ulnar nerve function). Others suffered more major sensory and motor loss with numbness and weakness. Fracture of the bone through which a tunnel was drilled to place the tendon graft was reported in five patients. The fracture complication rate was only 0.5 per cent.

The authors conclude by saying that ulnar collateral ligament (UCL) injuries of the elbow in throwing athletes are so common, it's being labeled an "epidemic". With their opportunity to treat more athletes with UCL injuries has come the chance to develop an improved technique and better final results.

Diagnosis can be difficult and delayed because the symptoms of UCL tear are not always the same from player to player. But once discovered, instead of putting a player out of the game permanently, the Tommy John procedure makes it possible to restore players to full function once again.

Future studies are needed to focus on better diagnostic testing for this problem. With earlier identification, it may be possible to prevent stretching and tearing of the UCL in more athletes affected by this problem. And it isn't just baseball pitchers anymore but a wide range of athletes (as described) who can be affected. For any athlete with an ulnar collateral ligament injury, the future may also bring improved surgical techniques with greater success rates and fewer complications.

Reference: E. Lyle Cain, Jr, MD, et al. Outcome of Ulnar Collateral Ligament Reconstruction of the Elbow in 1281 Athletes. In The American Journal of Sports Medicine. December 2010. Vol. 38. No. 12. Pp. 2426-2434.