Ulnar Collateral Ligament Surgeries in Professional Baseball Players

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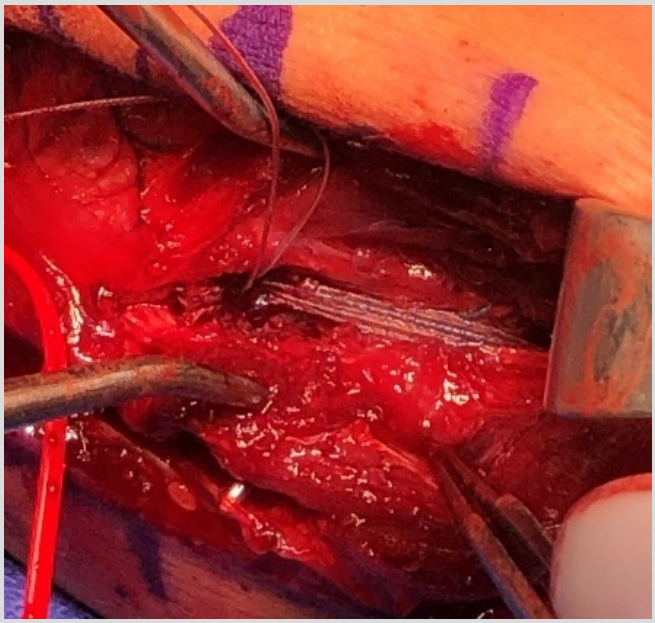
Among professional baseball pitchers, Ulnar Collateral Ligament (UCL) injuries are among the most common issues. UCL injuries are due to a valgus stress force on the elbow; they are often due to overuse but can also be caused by an acute event in the elbow. The UCL is the major stabilizer to the medial elbow and supports the elbow when throwing. An injury to the UCL can eventually lead to reconstructive surgery, usually referred to as Tommy John Surgery. The number of these surgeries has continued to increase over the years and the surgical techniques have evolved.

The goal of any type of UCL surgery is to restore stability to the elbow. The first UCL reconstruction surgery was performed in the 1970s by Dr. Frank Jobe. The medial UCL, when unable to be repaired, is reconstructed with autograft tissue via a “Docking” or “Modified Jobe” (Figure of 8) technique through bony tunnels that are drilled into the humerus and ulna. Allografts (tissue from a cadaver) can be used, but for professional baseball players an autograft (tissue from the person’s own body) is used. A palmaris longus or hamstring tendon graft is often used, although some surgeons use other tissue.

Following a traditional UCL reconstruction there is a lengthy rehab process. The pitcher will rehab, begin a throwing program 4-6 months after the surgery and finally return to pitching between 10-18 months. The timeline can vary depending on many factors, but it is expected to miss at least 12 months.

Over the last 20 years, we have begun to see UCL repairs rather than traditional reconstructions. In a UCL repair, there is no graft used. More simply, a repair is performed using an anchor at the site of the tear (proximally or distally), using the patient’s own good quality UCL tissue. This repair is then augmented with a braided suture that is placed in anchors both proximally and distally with the ligament, much like a seatbelt.

The main benefit of UCL repair vs reconstruction is that the surgery is less invasive and the recovery times are much quicker. The rehab process is shorter and it is possible to return to pitching in as little as 6 months. However, UCL repair is not suitable for all injuries. The results are best on partial tears and avulsion injuries



UCL Repair with Internal Brace

to the proximal or distal ends of the ligament. If the ligament has many degenerative changes or poor tissue quality the UCL repair will often be less successful than the reconstruction.

In recent years, there has been a large increase in the number of hybrid procedures. In these surgeries, a UCL reconstruction is performed and augmented with an internal brace. As with a traditional reconstruction, a graft will be harvested and used to reconstruct the UCL. Some surgeons elect to augment this reconstruction with an internal brace, a braided non-absorbable suture, via anchors.

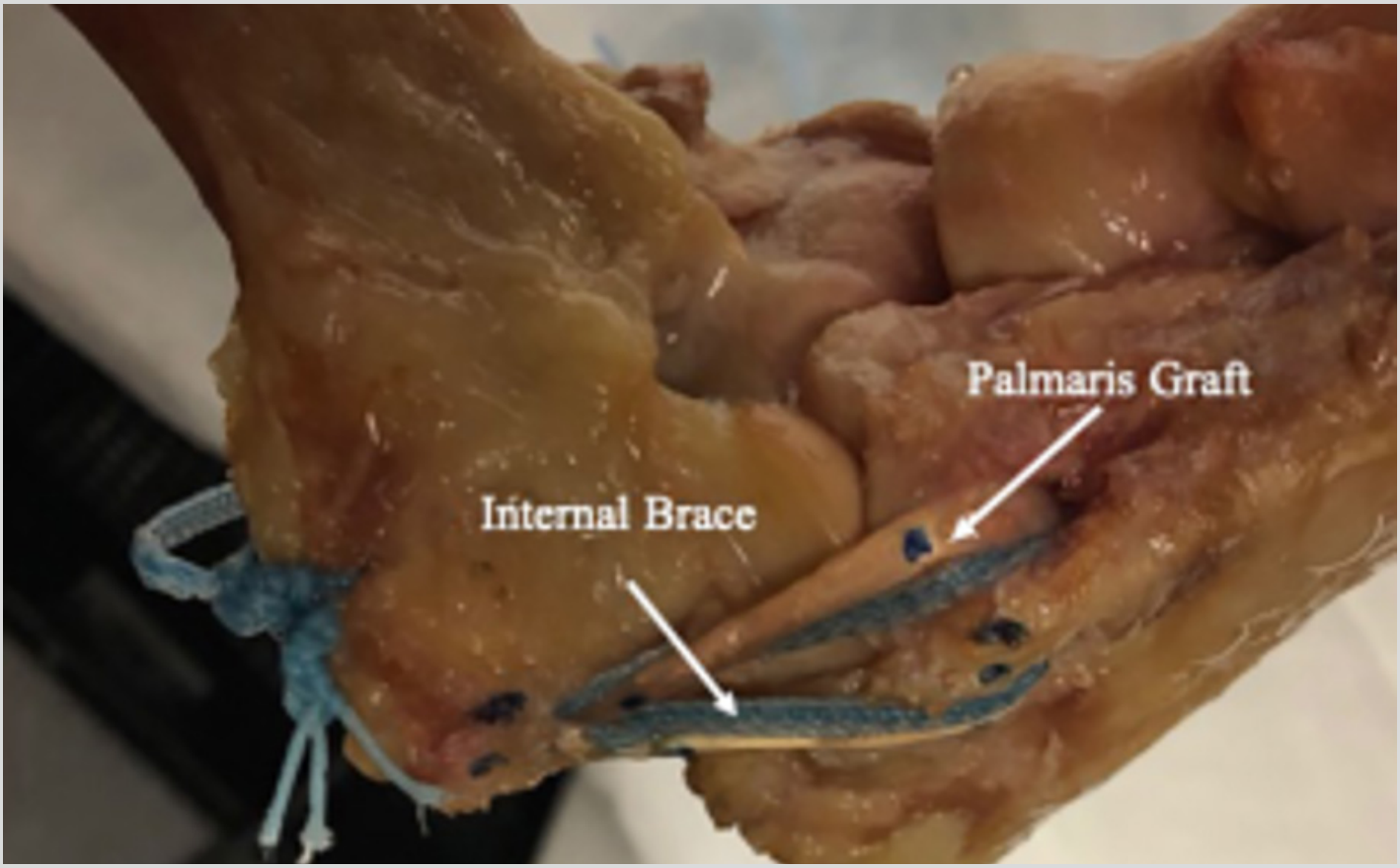
This is often performed in revision scenarios or primarily in high velocity (>95 mph) pitchers. Though shown to be a much more robust construct, the clinical implications of this augmentation are unknown. The goal with this surgery is to have the reliability of a reconstruction with some benefits from the internal braces – the player may return to pitching sooner with less risk of damaging the graft and a lower chance of needing an additional surgery.

UCL Reconstruction with Internal Brace

The gold standard for UCL surgery remains the traditional reconstruction. However, after years of that being the only option we are now seeing other surgical techniques. The UCL repair is a quicker rehab, but only certain injuries are good candidates for this technique. The UCL reconstruction with an internal brace has become widespread in professional baseball in the last few years. More research is being done to look at long term outcomes for the hybrid technique. There are many factors that go into choosing a surgical procedure, but all three options will continue to be seen in baseball.

References

1. Smith, Matthew V , Bernholt David L. Ulnar collateral ligament injury in the elbow: current trends for treatment. Annals of Joint 2020 Vol 5



Cadaveric specimen showing a standard docking technique UCL reconstruction with incorporation of a strong braided suture passed through standard tunnels to serve as an internal brace. (Source Reference 1)