

## **UCL Repair vs. Reconstruction: Rationale and Outcomes**

**Orr Limpisvasti, MD**

**Kerlan-Jobe Orthopaedic Clinic**

### **Javelin Injuries**

- A. Most early reports of injuries in throwers are in **javelin** which began during the Ancient Olympic Games in 708BC
- B. Prior to the mid 1880s, the acceptable baseball pitch was 'underhand, with a stiff wrist and stiff elbow'

### **History of UCL Injuries**

- A. "The question is: should they be regarded as the results of repeated **traumas** or of **continuous wear** and strain?"
- B. Waris, 1946
- C. Red Cross Hospital of Finland

### **History of UCL Injuries**

- A. Descriptive studies of the throwers shoulder and elbow
- B. Bennett, 1947 and 1959
- C. Baccarini, 1968
- D. King, 1969

### **Extending the careers of pitchers**

- A. Complete game pitching fades with the appearance of a bullpen
- B. The age of the reliever
  - Firpo Marberry 1923-1936 (age 40)
- C. Post WWII era
  - Relief pitching develops further and extends the careers of starting pitchers

### **Frank Jobe and Tommy John 1974**

### **Original UCLR series 1974-1985**

## Outcomes of UCLR

- A. Wide variation of reported success (return to play)
- B. 70-95% success rate
- C. Reported return to play in 11-13 months
- D. Highly visible surgery

## Elite Throwers

- A. Gibson et al, AJSM 2007
- B. Cohort of 68 major league pitchers
- C. **82%** return to play
- D. Mean of 18.5 months post-op

## Elite Throwers

- A. Erickson et al, AJSM 2013
- B. Cohort of 179 MLB pitchers
- C. 83% returned to MLB at a mean of 20.5 months post-op
- D. 3.9% revision rate
- E. Performance declined before surgery and improved after surgery

## Makhni et al, AJSM 2014

- A. Cohort of 147 MLB pitchers
- B. **67%** returned to the same level
- C. Mean 16.8 months
- D. 57% returned to the disabled list

## Revision UCLR?

- A. Dines et al, AJSM 2008
- B. 33% returned to same level for one year
- C. 40% complication rate
- D. Marshall et al, AJSM 2015
- E. 65.5% returned to same level
- F. Decreased innings pitched and wins

## Where are we now with UCLR?

- A. Long track record of success as the 'gold standard'
- B. Wide variability in reported outcomes for UCLR
- C. Depending on the level of participation and metrics used to measure success, the outcomes may not be as good as in early reports and less than in the lay press.
- D. May take longer to recover than the one year timeline commonly quoted to patients
- E. Revision UCLR does not carry a high success rate

## Epidemiology

- A. The number of UCLR surgeries continues to rise
- B. Liu et al, JSES 2016

## Youth Epidemic?

- A. Number of UCLR surgeries is increasing
- B. The age group between **15-19** is the most common and fastest growing segment
- C. Erickson, AJSM 2015

## Youth pitchers feeling the pinch of Tommy John surgery epidemic

-USA Today Sports

## Non-operative Treatment

- A. Rehabilitation and physical therapy
  - Address GIRD and kinetic chain
  - Dines et al, AJSM 2009
- B. 84% RTSP with rehabilitation of **incomplete tears**
  - Ford et al, AJSM 2016
- C. Biologic Injections
  - 73% good-to-excellent results with PRP injections for partial UCL tears
  - Dines et al, AJO 2016

## Acute UCL tears-a new subgroup?

- A. Acute injuries
- B. Avulsions more than intrasubstance
- C. Less attritional 'wear' from repetitive microtrauma
- D. More partial tears
- E. Younger athlete with better biology

## Primary UCL Repair

- A. Savoie et al, AJSM 2008
- B. Proximal or distal avulsions
- C. 60 patients
- D. Mean age 17.2 years
- E. Suture anchor repair
- F. **93% good-to-excellent results**
- G. Argo et al, AJSM 2006
- H. 19 female athletes with medial instability
- I. 18 underwent UCL repair
- J. 17 returned to sports

### **Primary UCL Repair**

- A. Erickson et al, OJSM 2017
- B. Meta-analysis 92 patients
- C. **87% return to sports**
- D. 6 month timeline

### **UCL Repair with Internal Brace**

- A. Jeff Dugas, AJSM 2016
  - UCL repair and internal brace prevented gap formation better than conventional reconstruction

### **Clinical Results**

- A. Dugas, AJO 2016
  - 40 athletes, 97.5% RTP at 1 year
  - Avg. 21 weeks for return to baseball
  - Longer follow-up in progress

### **Repair with Posterior Band Internal Brace**

- A. Internal bracing of the posterior band along with repair
- B. SutureTape and 2.9 mm short Pushlock anchor
- C. Attempt to spare bone on the ulnar footprint for future tunnels

### **UCL Repair and Modified Internal Brace**

#### **UCL Repair (Internal Brace)**

- A. Excellent published results for UCL repair alone for the treatment of avulsion-type injuries in younger athletes
- B. The addition of the Internal Brace appears to offer significant biomechanical advantage
- C. Early results of the combined repair and IB have been excellent

### **UCL Injuries- A Bipolar Pathology?**

- A. Chronic repetitive microtrauma
- B. Older athlete performing at a higher level
- C. 'Diseased tissue'
- D. → UCLR
- E. Traumatic injury
- F. Younger athlete
- G. Avulsion injury
- H. 'Healthy tissue'
- I. → UCL Repair