

Performance, Return to Play, and Career Longevity After Ulnar Collateral Ligament Reconstruction in Professional Catchers

Nathan E. Marshall, M.D., Toufic R. Jildeh, M.D., Kelechi R. Okoroha, M.D., Fabien Meta, B.S., Vincent A. Lizzio, B.S., Vasilios Moutzouros, M.D., and Eric C. Makhni, M.D., M.B.A.

Purpose: The purpose of our study was to evaluate return to play and postinjury performance of professional catchers who sustained an ulnar collateral ligament (UCL) rupture requiring surgical reconstruction. We looked to evaluate these players to determine the rate of return to play, the level of return to play, and career longevity after surgery as well as how statistical performance is affected by reconstruction. **Methods:** Twenty-five professional catchers who underwent UCL reconstruction between 1985 and 2015 were identified and compared with an age-, position-, and competition-matched control group. Priority was placed on level of play, year of injury, age, and years played prior to injury in matching controls. Injury information and demographic data (age at injury, level of play, and career length) were collected from publicly available team websites and press releases. Offensive and defensive performance statistics were collected for 3 years prior to injury and 3 years after return. Return to play, return to level of play, and career after return were also analyzed. **Results:** The average age at time of UCL injury was 24.4 (standard deviation, 4.5) years old. Return to play for all catchers was 80% (20/25), with only one player not returning to the same previous level of play (95%). Average years in Major League Baseball (MLB) after return was 2.3 years versus 2.6 years in the control group ($P = .07$), with 4.3 years total (MLB and minors) versus 3.8 years total in the control group ($P = .28$). There were no changes in offensive or defensive performance before and after injury. **Conclusions:** UCL reconstruction in professional catchers can lead to successful outcomes. Catchers can expect a high rate of return to play with high rate of return to previous level of play, similar performance, and no change in career longevity following return from UCL reconstruction. **Study Design:** Level III, case-control series.

Injury to the ulnar collateral ligament (UCL) of the elbow is a significant injury in high-level throwing athletes that typically results in surgical reconstruction and significant time away from competitive play.¹⁻⁴ The UCL functions as the primary restraint to valgus stress on the elbow from 30° to 120° of flexion, making it

particularly prone to injury due to significant stresses placed on the elbow during the throwing motion.⁵⁻⁷ UCL reconstruction, commonly known as Tommy John surgery, has shown successful results in returning throwing athletes back to high-level athletics, leaving most players out of play for up to a year after reconstruction.⁸⁻¹² Previous studies have shown that Major League Baseball (MLB) pitchers who undergo UCL reconstruction return to previous level of play at a rate anywhere from 80% to 95%, with a high rate of satisfaction after reconstruction.^{9,11,13} However, there have been conflicting reports on performance statistics after return of these MLB pitchers, with some studies showing maintained performance and others showing declines in performance following reconstruction.^{11,14,15}

Extensive research has been performed in the evaluation of the pitching population, with much less information on position players in baseball. Although baseball pitchers have the highest rate of UCL injury,

From the Department of Orthopedic Surgery, Henry Ford Health System (N.E.M., T.R.J., K.R.O., V.M., E.C.M.); and Wayne State University (F.M., V.A.L.), Detroit, Michigan, U.S.A.

The authors report that they have no conflicts of interest in the authorship and publication of this article. Full ICMJE author disclosure forms are available for this article online, as [supplementary material](#).

Received July 6, 2017; accepted January 2, 2018.

Address correspondence to Eric C. Makhni, M.D., M.B.A., Henry Ford Health System, Department of Orthopedic Surgery, 2799 West Grand Boulevard, Detroit, Michigan 48202, U.S.A. E-mail: emakhni1@hfhs.org

© 2018 Published by Elsevier on behalf of the Arthroscopy Association of North America

0749-8063/17835/\$36.00

<https://doi.org/10.1016/j.arthro.2018.01.008>

position players are at significant risk for UCL injury as well. Catchers, in particular, rely heavily on their strong throwing ability in order to be an effective defensive catcher. Very little has been studied on the effect of UCL injuries in MLB catchers and the results of reconstruction after injury.

The purpose of our study was to evaluate return to play and postinjury performance of professional catchers who sustained a UCL rupture requiring surgical reconstruction. We looked to evaluate these players to determine the rate of return to play, the level of return to play, and career longevity after surgery as well as how statistical performance is affected by reconstruction. We hypothesized that there would be no differences in statistical performance, return to play, or career longevity in catchers who underwent UCL reconstruction compared with a matched control.

Methods

Professional catchers (MLB and minor league) who underwent UCL reconstruction from 1985 to 2015 were identified using methods similar to previous studies.^{11,14-16} Our main source was www.baseballheatmaps.com, which listed each player on the disabled list. This was then cross-referenced with team websites, press releases indicating players placed on the disabled list, personal websites, and baseball statistical websites, including baseballreference.com and fangraphs.com. To verify each pitcher's date of injury, we cross-referenced each player's reported disabled date with a gap in statistical data from public sources. Demographic data from each catcher were collected, including age at injury, current level of play (major or minor league), dominant throwing arm, and career length (total number of seasons in professional baseball). Both offensive and defensive performance statistics were then collected for the 3 years prior to injury and for the 3 years after returning from surgery. Defensive stats included putouts, assists, errors, double plays turned, fielding percentage, passed balls, stolen bases (defense), caught stealing (defense), and caught stealing percentage. Offensive stats included at bats, runs, hits, doubles, triples, home runs (HR), runs batted in, walks, strikeouts, batting average, on-base percentage, slugging percentage, games, games started, and innings. It was also documented whether players were able to return to play after surgery and to what level of play they were able to return (major or minor league). No catchers undergoing a UCL reconstruction in this time frame were excluded from this study.

A 1:1 matched control group of healthy catchers was also collected in order to provide baseline statistics and thus compensate for any changes in performance related to additional age and experience as a professional catcher. The process for choosing control catchers involved a systematic evaluation of a

UCL-injured/reconstructed catcher for characteristics such as age at time of injury, year of injury, current level of play, and number of years played before injury; this method has been used in previous studies.^{11,14-16}

With these characteristics in mind, a control catcher was identified in the same league (level-of-play match) as the UCL-injured catcher, during the same year of injury (time-era match). Subsequently, the control catcher was assessed for similar age (age match) and years played prior to injury (experience match), both qualified as ± 1 year. If these criteria were not met, the process was repeated within the same year and league until an adequate match was found. Demographic and performance statistics for control catchers were collected in the same manner as their respective injured cases. Offensive and defensive statistics for the controls were obtained for the same 3 years as their matched catchers prior to injury and the same 3 years following return to play.

Statistical Methods

The primary aim of this analysis was to compare performance measures between cases and controls over time as well as return to play and return to previous level of play. Univariate repeated-measures analysis of variance models were used to obtain least-squared means and standard errors for each performance measure by group and/or time. Data on all 50 catchers (both cases and controls) are provided using standard descriptive statistics, including means, standard deviations (SDs), medians, minimums, maximums, counts, and percentages. Statistical significance is set at $P < .05$. All analyses were performed using SAS 9.4 (SAS Institute, Cary, NC).

Results

A total of 25 major and minor league baseball catchers who underwent UCL reconstruction were identified and included in the study. Among catchers with UCL reconstructions, 14/25 (56%) of the catchers started fewer than 25 games, while 11/25 (44%) started more than 25 games during their final full year prior to injury. Additionally, 7/25 (28%) of these catchers were in the MLB at the time of injury. The average age at time of injury was 24.4 (SD, 4.5) in the UCL catchers and 24.6 (SD, 4.9) in the control group. All catchers involved in the study were right-handed throwers with surgery performed on all throwing arms. The catchers who underwent UCL reconstruction played an average of 5.0 (SD, 4.3) years at the professional level prior to injury, and the control group played an average of 5.4 (SD, 4.6) years (Table 1). During the period of study, the average number of games played by starting catchers decreased from 120 in 1985 to 107 games in 2015. The number of documented reconstructions increased, whereas only 2 documented reconstructions

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات