78 Board #1 May 29 9:30 AM - 11:30 AM

Is Shoulder Joint Rom Or Ucl Thickness A Predictor Of Medial Elbow Joint Space?

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(No relationships reported)

UCL injuries among baseball athletes are an extremely common pathology. It is well documented that baseball athletes typically exhibit an increase in shoulder external rotation range of motion (ERRM) and a decrease in internal rotation range of motion (IRRM) while maintaining total rotational range of motion (TROM). Loss of TROM and ERRM may be associated with increased risk for UCL injury. Ultrasound imaging allows clinicians to evaluate UCL thickness and medial joint space (MJS) opening non-invasively.
PURPOSE:To examine if shoulder joint motion (ERRM, IRRM, TROM), or the thickness of the UCL at the mid substance and apex of trochlea predicts medial elbow joint space (MJS) in asymptomatic collegiate baseball pitchers.
METHODS:Twenty-nine NCAA Division I pitchers participated in this follow-up study. Ultrasound images were obtained of the MJS and UCL on the participant's throwing arm using a GE LOGIQ e ultrasound unit. Participants were placed supine with a wedge placed underneath their pitching hand to maintain elbow position at 30 degrees. A 3 kg valgus force, as measured by a hand-held dynamometer, was applied 20 cm distal to the medial epicondyle. Ligament thickness measurements were performed at the mid-substance of UCL and at the apex of the trochlea. Imaging measurements to evaluate MJS opening were performed from the apex of the trochlea to the apex of the ulna. Standard goniometric procedures were performed with the athlete in a supine position to obtain ERRM, IRRM, and TROM values. Three stepwise linear multiple regression analyses were performed to determine if shoulder ROM or UCL thickness measures of the mid-substance and apex of the trochlea could predict MJS.
RESULTS:Shoulder joint range of motion were not able to significantly predict MJS [R^2= .05, F (2,25) = 0.58, p=0.56,]. UCL thickness at the mid-substance [R^2= .04, F (1,25) = 0.10, p=0.76], and at apex of the trochlea [R^2= .00, F (1, 25) = 0.03, p=0.95] were not able to significantly predict MJS.
CONCLUSIONS:Results further supported prior research that shoulder ROM did not predict MJS, and new to this study, UCL thickness measured at two points were unable to predict MJS in asymptomatic baseball pitchers. Further research is recommended to perform multiple imaging sessions throughout the competitive season to further determine predictors of UCL injuries.

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Do Outcomes or Subsequent Injuries Differ Following Ulnar Collateral Ligament Reconstruction Using Palmaris vs. Hamstring Autograft?

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PURPOSE: Ulnar collateral ligament reconstruction (UCLR) is a successful procedure in professional baseball players. It is unclear if results differ based on graft choice. The purpose was to determine the performance and return to sport (RTS) rate in professional baseball players following UCLR and compare performance and RTS rate, as well as injury rates, between players who underwent UCLR with hamstring vs. palmaris autograft. The authors hypothesize that there is a high RTS rate in professional baseball players following UCLR with no significant difference in injury rates, RTS rate, or performance, specifically related to primary outcome performance variables: WHIP ((walks +hits)/innings pitched), fielding independent pitching (FIP), and wins above replacement (WAR)) between those who had UCLR with a palmaris vs. hamstring autograft.
METHODS: All professional baseball players between 2010-2015 who underwent UCLR using hamstring autograft were included. Surgical details of their procedure were recorded using operative reports. Players with a hamstring UCLR were compared to a matched control group of players who underwent UCLR with palmaris autograft.
RESULTS: Overall, 191 players underwent UCLR using hamstring autograft. No differences in RTS rates or timing to RTS existed between the hamstring vs. palmaris groups. Significantly more subsequent lower extremity injuries were seen in the hamstring group (p=0.040). More subsequent upper extremity injuries existed in the palmaris group, although this difference was not significant (p=0.052). No consistent differences in performance metrics upon RTS existed between hamstring and palmaris groups, although both groups significantly declined in many performance metrics following surgery. Both groups showed a decline in post-operatively in WAR and WHIP; FIP did not decline. No significant difference in WAR, WHIP, or FIP existed between groups post-operatively.
CONCLUSION: Baseball players who undergo UCLR with hamstring autograft are more likely to sustain a subsequent lower extremity injury while those who undergo UCLR with a palmaris are more likely to sustain an upper extremity injury. No difference in performance or RTS rates existed between groups. Both groups significantly declined in WAR and WHIP after UCLR.

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80 Board #3 May 29 9:30 AM - 11:30 AM

Quantity Time: Identifying The Benefit Of Ulnar Collateral Ligament Reconstruction In Major League Baseball

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(No relationships reported)

Reconstruction of the ulnar collateral ligament (UCL), known colloquially as Tommy John surgery, was first performed in 1974. Today, approximately 30 Major League Baseball (MLB) players undergo this procedure annually; however, 57% of recipients are youth, age 15-19. Despite the abundance of subjects and accessibility of statistics, few investigations have studied its long-term effects on performance.
PURPOSE: To evaluate changes in pitching performance following UCL reconstruction.
METHODS: We compared 3 samples of MLB pitchers: 1) Underwent UCL reconstruction (REC), 2) Sustained an injury without surgical care (INJ), and 3) Never injured (NON). The REC sample was selected at random from a list of players who had pitched at least 2 seasons prior to the operation and at least 2 seasons post-surgery. Matched samples of INJ and NON were created; there were 50 subjects in each group. Mixed ANOVA with repeated measures compared first season statistics to final season statistics, and means of the first 2 seasons to the last 2. Linear regressions tested the effect of UCL reconstruction on changes in performance across those periods, holding all potential confounders constant.
RESULTS: Among all 150 pitchers, during the first 2 seasons, they won 53.6% of games, struck out 0.88 ± 0.23 batters per inning, and had an earned run average (ERA) of 4.01 ± 1.14. Between the first 2 and last 2 seasons, REC subjects experienced a 5.7% decrease in win percentage (p=0.063) but struck out 4.7% more batters per inning (p=0.015). Linear regression, evaluating the change from first to last season, found UCL reconstruction to improve winning percentage by 14.4 percentage points (p=0.026); there was no effect on strikeouts per inning (p=0.339) or ERA (p=0.892). UCL reconstruction failed to elicit significance on the change in performance between the first 2 and last 2 seasons in any variable. The ANOVA models found no group effect between first and last season with win percentage (p=0.190), strikeouts per inning (p=0.428), or ERA (p=0.600). Similarly, there was no group effect between the first 2 and last 2 seasons in win percentage (p=0.454), strikeouts per inning (p=0.961), or ERA (p=0.496).
CONCLUSION: UCL reconstruction does not appear to compromise the quality of pitching performance, but does prolong the quantity of pitches in a player's career.