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Does Prehabilitation Prior to Ulnar Collateral Ligament Surgery Affect Return to Sport Rate or Time in Baseball Players with Partial UCL Tears?


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Introduction

- Those who suffer a partial thickness ulnar collateral ligament (UCL) tear often undergo a period of nonoperative management including physical therapy rehabilitation. This treatment is aimed at optimizing range of motion (ROM) and strengthening the supporting structures around the elbow to help offload the UCL.
- Unfortunately, some of these patients fail nonoperative management and require surgical intervention. This provides a unique set of patients who essentially underwent “prehabilitation” prior to their UCL surgery.
- Prehabilitation is considered a period of structured physical therapy rehabilitation aimed at strengthening structures surrounding an injured tendon or ligament, to allow for dissipation of stress away from the repaired structure after surgery.
- Prehabilitation has been studied extensively and implemented into the clinical practice of anterior cruciate ligament (ACL) rehabilitation, with prehabilitation being studied for other injuries as well.¹⁻³
- However, the efficacy of prehabilitation for UCL surgical patients with partial thickness UCL tears has not been evaluated.

Objectives

- To determine if baseball players with partial UCL tears who completed at least 4 weeks of prehabilitation prior to surgery (Prehab) had better return to play (RTP) rates and quicker return to sport (RTS) time than players who attempted 0-3 weeks of physical therapy prior to UCL surgery (No Prehab).
- To compare revision, reoperation, and patient-reported outcomes between Prehab and No Prehab players.

Methods

- Baseball players of all competitive levels who underwent primary UCL reconstruction (UCLR) or UCL repair (CPT codes 24345 and 24346) at one institution before December 31st, 2019 were included.
- Physician chart notes and operative notes were screened to confirm primary UCLR or UCL repair, and to identify whether conservative treatment was attempted preoperatively
- Patients were contacted via RedCap to collect post-operative outcomes (reoperation, revision, complications, RTP, RTSP, RTP duration, RTSP duration) and patient-reported outcomes (Kerlan-Jobe Orthopaedic Clinic [KJOC] score, Andrews-Timmermann score, Conway-Jobe score, satisfaction).
- Patients who did not respond to RedCap were screened for post-operative outcomes via post-operative chart notes.

Post-Operative Variable	No Prehab (n=60)	Prehab (n=58)	P Value
Revision	1 (1.67%)	1 (1.72%)	1.000
Re-operation	2 (3.33%)	3 (5.17%)	0.677
Presence of post-op ulnar nerve symptoms	1 (1.67%)	2 (3.45%)	0.615
Symptom Status			0.661
Resolved completely	24 (68.6%)	19 (70.4%)	
Improved	10 (28.6%)	6 (22.2%)	
No change	1 (2.86%)	2 (7.41%)	
Subsequent shoulder injury	6 (10.0%)	8 (13.8%)	0.725
Subsequent elbow injury	5 (8.33%)	5 (8.62%)	1.000
RTP	46 (88.5%)	48 (94.1%)	0.488
RTSP	22 (96.6%)	18 (75.0%)	0.123
Months to return to game	12.4 (4.96)	13.9 (4.17)	0.105
SANE Score	82.7 (19.1)	85.9 (17.6)	0.641
Satisfaction Score	92.6 (17.0)	95.5 (8.30)	0.777
KJOC	82.8 (15.4)	79.3 (16.4)	0.398
A/T Score	89.1 (11.7)	91.0 (11.9)	0.325
Conway score			0.218
1	29 (82.9%)	19 (65.5%)	
2	1 (2.86%)	3 (10.3%)	
3	5 (14.3%)	5 (17.2%)	
4	0 (0.00%)	2 (6.90%)	

RTP=return to play, RTSP=return to same level of play, SANE=single assessment numeric evaluation, KJOC=Kerlan-Jobe Orthopaedic Clinic, AT=Andrews-Timmermann. Categorical data presented as n (%), continuous data presented as mean (standard deviation).

Results

- 118 baseball players were included with an average age of 19.1 ± 2.0 years, with 58 players in the Prehab (average 9.3 weeks of prehab) and 60 players in the No Prehab (average 0.2 weeks of prehab) group followed up at 3.5 ± 2.5 years postoperatively.
- The study cohort consisted of 105 pitchers, 3 catchers, 4 infielders, and 5 outfielders. 7 players underwent UCL repair, and 111 players underwent UCLR.
- All demographics were similar between groups except the prehab group more frequently received a gracilis graft (76% vs. 52%, p=0.037).
- All postoperative outcomes were similar between groups, including revision, RTP, and patient-reported outcomes (Table 1).
- Postoperative outcomes were similar between groups when evaluating both proximal and distal UCL tears in isolation.
- Postoperative outcomes were also similar between groups when isolating baseball pitchers.

Conclusions

- Baseball players who attempt rehabilitation prior to UCL surgery have similar postoperative outcomes compared to baseball players who do not attempt rehabilitation prior to surgery.
- Purposeful prehabilitation may not be necessary in baseball players undergoing UCLR/UCL repair, however, rehabilitation still has an important role in players who may succeed without surgery.

References

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