ULNAR COLLATERAL LIGAMENT RECONSTRUCTION

Background

Ulnar collateral ligament reconstruction (UCLr) is commonly seen in a throwing athlete; however, it is also popular in gymnasts and javelin throwers. Beyond regaining elbow ROM and focusing on the shoulder during rehab, a comprehensive approach to treat the entire kinetic chain is vital. UCLr procedures can be done with a variety of techniques by the surgeon so it is important to review the operative note. Consultation with the surgeon should be completed prior to initiation of rehabilitation.

Disclaimer

Progression is time and criterion-based, dependent on soft tissue healing, patient demographics and clinician evaluation. If you are working with an Ohio State Sports Medicine patient and questions arise, please contact the author by calling our office at (614) 293-2385.

Summary of Guideline

Precautions	Brace use for **6 weeks** Avoid valgus stress during daily activity (i.e. closing a door, pulling an object to you from the side) No loaded hamstring strengthening for **8 weeks** if gracilis graft
Outcome Tools	Quick DASH KJOC
Strength Testing	Hand Held Dynamometry for scapular and rotator cuff musculature no earlier than **12 weeks** (>80% compared to contralateral shoulder)
Range of Motion	Shoulder Total Arc of Motion <5 degrees different from contralateral shoulder Full, pain-free elbow ROM (throwers commonly lack full extension, goal is pre-injury ROM)
Criteria to initiate plyometrics	Time: no earlier than **12 weeks** Pain-free ADL's and strengthening interventions Strength $\geq$ 4/5 MMT OR $\geq$ 80% of uninvolved shoulder ROM as noted above Proper scapular control during interventions Towel drills
Criteria for return to sport	Clearance from physician Completion of strengthening and plyometrics Successful completion of throwing program Time: no earlier than 12 months

RED/YELLOW FLAGS

Red flags are signs/symptoms that require immediate referral for re-evaluation. Yellow flags are signs/symptoms that require modification to plan of care.

Red Flags	- Infection - Traumatic event (i.e. fall)
Yellow Flags	- Pain following increase in rehab intensity *Decrease intensity of therapy interventions, manage pain, education for patient on activity modification, monitor during next visit* - Persistent pinching in the elbow with ROM

Phase 1 – Immediate Post-Op Phase

Goals

1) Protect healing tissue
2) Decrease pain/inflammation

WEEK 1	**Wound Care**	Sterile gauze used at incision site. Check brace for rubbing or irritation. Compression garment at elbow to be used with physician's authorization
	Brace	At 90 Degrees
	ROM	Wrist AROM (extension, flexion, ulnar and radial deviation) Shoulder PROM and AROM, avoid valgus stress at elbow Defer to surgeon for ROM limitations
	Strength	Gripping Shoulder Isometrics EXCEPT Internal Rotation AND External Rotation Scapular Clocks with manual resistance
	Trunk/Core	Thoracic Extension Side lying Thoracic Rotation Pelvic Tilts – supine, seated, standing, single leg stance as able
	Modalities	Cryotherapy and E-stim for swelling control at elbow
	Lower Extremity	Stationary bike without upper body support

WEEK 2	**Brace**	30-90 degrees
	ROM	Elbow- 5 – 125 degrees. May progress if no pain or pinch is reported.
	Strength	Light rhythmic stabilization at end range of elbow extension T-Band – Scapular retraction exercise
	Core and Lower Extremity	Continue previous mobility Progress as able without weight bearing or stress on elbow No holding med balls/weights
	Modalities	Cryotherapy and light compression

WEEK 3	**Brace**	10-120 degrees
	ROM	Elbow 5 – 125 degrees. May progress if no pain or pinch is reported
	Strength	Light rhythmic stabilization at end range of elbow extension T-Band – Scapular retraction exercise
	Conditioning	Begin light cycling- avoid gracilis graft irritation. Core strengthening avoiding any upper extremity stress

Phase 2 – Intermediate Phase

WEEKS 4-5	**Brace**	10-120 degrees Low load long duration stretch, maintaining forearm in a neutral position, if elbow extension is lacking
	Strength	Use ankle weights around wrist vs dumbbells/bands if able Initiate light resistance exercises for shoulder and elbow Wrist dumb bells – flexion/ extension/ pronation/ supination. Elbow dumb bells and light T-band - flexion and extension. Initiate lower extremity strengthening (avoid hamstring strengthening if gracilis graft) Shoulder program for rotator cuff strengthening – use ankle weights ▪ Prone Series – row/ extension/ flexion/ horizontal abduction ▪ Standing - flexion/ abduction/ scaption ▪ IR and ER ISOMETRICS in neutral ▪ Protraction supine – manual resistance proximal to the elbow ▪ UBE – low resistance ▪ Hand/gripping exercises to be continued.
	Manual Therapy	Scar massage, cupping as appropriate
	Conditioning	Initiate Elliptical and /or stepper for aerobics Begin leg press and mini lunges (unless gracilis graft) Continue Core strengthening program – no planks No upper body resistance training No lifting plate weights or holding dumbbells in hands

WEEKS 6-12	**ROM**	Full AROM/PROM – discharge brace at **6 weeks** Joint mobilizations as needed at end range with distraction Shoulder Total Arc of Motion (IR+ER at 90): dominant = non dominant
	Strength	Progress elbow strengthening – dumb bells and manual resistance CKC activity – hands on table, elbows straight initially (progress as appropriate) Side lying External Rotation with dumbbells/ankle weights Theraband OR prone scap – manual resistance or ankle weight around wrists PNF- D2 pattern (hold at elbow) rhythmic stabilization at multiple angles Rhythmic stabilization – 90/90 position Begin hamstring strengthening at **8 weeks** for gracilis graft
	Aerobics	Running may be initiated on safe surfaces. (hold if gracilis graft used)

Criteria to advance to Phase 3

1) Full Elbow AROM
2) Total Arc of Motion: uninvolved = involved
3) 5/5 MMT strength OR Hand Held Dynamometer of involved shoulder (≥ 80% of uninvolved)
    a. Shoulder external rotation in neutral
    b. Shoulder internal rotation in neutral
    c. Shoulder horizontal abduction
    d. Shoulder flexion
    e. Shoulder full can/scaption
    f. Shoulder extension
    g. Shoulder overhead flexion
4) Lower Extremity Strength 5/5 or HHD dominant=non dominant
    a. Hips all planes
    b. Knee all planes
    c. Ankle all planes
5) Ankle Dorsiflexion
    a. Equal bilaterally (ideal 10 degrees)
6) Thoracic Spine AROM
    a. 50 degrees rotation bilaterally in seated position

Phase 3 – Advanced Strengthening Phase

Goals

1) Full elbow ROM maintained
2) Progression of UE strength without exacerbation
3) Good muscular control with manual exercises
4) General conditioning progression tolerated

WEEKS 3 – 4 months	**Strengh**	Continue strengthening as above. Weight training program to be progressed (avoid pec fly's and push ups)
	Plyometrics	Double arm plyometrics no earlier than **12 weeks** (refer to shared drive for plyometric program) Progress to single arm plyometrics Towel drills

Phase 4 – Functional Activity Phase

Goals

1) Continuation of strengthening program
2) Full UE ROM maintained
3) Completion of plyometric program

4 months	**Return to Throwing**	Begin throwing progression with monitored mechanics. **Requires physician clearance to initiate** Workload management of strength training, throwing/sport specific activity Long term planning of throwing program (i.e. ramp up periods, shut down periods, etc) Typical return to sport timeline: 12 months +

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References:
Moore AR, Fleisig GS, Dugas JR. Ulnar Collateral Ligament Repair. Orthop Clin North Am. 2019 Jul;50(3):383-389. doi: 10.1016/j.ocl.2019.03.005. PMID: 31084841.

Zaremski JL, Vincent KR, Vincent HK. Elbow Ulnar Collateral Ligament: Injury, Treatment Options, and Recovery in Overhead Throwing Athletes. Curr Sports Med Rep. 2019 Sep;18(9):338-345. doi: 10.1249/JSR.0000000000000629. PMID: 31503046.