

Distal Triceps Repair

CLINICAL CARE GUIDELINE

Background

Indications for distal triceps repair include partial or complete tendon ruptures. Repair is preferably performed within the first three weeks for the best outcomes. Rehabilitation following distal triceps repair will progress more slowly over the first 6 weeks to protect the healing triceps tendon. Consultation with the surgeon as well as a review of the operative report should be completed prior to initiation of rehabilitation.

***Find surgeon preference of brace settings and ROM limitations in op note. If it is not in the op note, contact surgeon.**

Disclaimer

Progression is time and criterion-based, dependent on soft tissue healing, patient demographics and clinician evaluation. Contact Ohio State Sports Medicine at 614-293-2385 if questions arise.

Summary of Recommendations

Risk Factors	<ul style="list-style-type: none"> • Subsequent surgeries • Lack of adherence to surgical precautions • Secondary comorbidities
Precautions	<ul style="list-style-type: none"> • No aggressive stretching of the triceps • Splint for first 2 weeks • Light soft tissue mobilization, not directly on the scar, to improve blood flow and reduce edema • Limit passive shoulder flexion to <90 degrees for 6 weeks • No isolated triceps contraction with elbow extension or shoulder extension for 6 weeks • No <u>resisted</u> elbow extension or shoulder extensions/rows for 10 weeks • No weight bearing through the surgical extremity (<u>pushing open a door, pushing up from a chair</u>) for 12 weeks
Manual Therapy	<ul style="list-style-type: none"> • PROM exercises and GH joint mobilizations (phase I & II) • Scar massage is appropriate in phase III
Corrective Interventions	<ul style="list-style-type: none"> • Cryotherapy for pain and inflammation • Manual Therapy
Functional Outcome Measures	<ul style="list-style-type: none"> • Disability of Arm Shoulder and Hand (DASH) Questionnaire • Kerlan-Jobe Orthopaedic Clinic (KJOC) Questionnaire
Criteria for discharge	<ul style="list-style-type: none"> • >90% with patient-reported outcome • Full AROM, strength, and able to demonstrate pain-free, sports specific movements without compensatory movements



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Phase I: Protection to PROM (0-2 weeks)

Pain and Edema Management	<ul style="list-style-type: none"> • Education: No elbow AROM, incisions clean and dry, hinged brace <u>per physician instructions</u> • Vaso and E-stim for pain and edema control • No soft tissue mobilization or cross friction massage directly on the scar • No weight bearing through surgical extremity for 12 weeks
Restore Passive Shoulder and Elbow ROM	<ul style="list-style-type: none"> • Limit shoulder flexion to 90° for 4 weeks • Elbow flexion limited to 30 degrees in brace • Gentle shoulder PROM (pulleys, self-passive ranging with uninvolved extremity, table slides) • Gentle elbow PROM (therapist guided ranging, self-passive ranging with uninvolved extremity)
Home Exercise Program	<ul style="list-style-type: none"> • Posture education • Arm immobilized per <u>physician instructions</u> • Scapular control exercises (sidelying clocks, seated retractions, scapular PNF) • PROM elbow flexion locked at 30 degrees in hinged brace • No active elbow extension • AROM wrist/ hand (gripping, wrist curl, pronation/supination)
Criterion to Progress to Phase II	<ul style="list-style-type: none"> • Protect the repair • Minimal to no edema

Phase II: PROM progression to AROM (2-6 weeks)

Pain and Edema Management	<ul style="list-style-type: none"> • No soft tissue mobilization or cross friction massage directly on the scar for 6 weeks • No active elbow extension for 6 weeks • Vaso and E-stim for pain and edema control
Post-op Weeks 2-4	<ul style="list-style-type: none"> • Week 3: Unlock brace to 30-60 Degrees • Week 4: Unlock brace to 15-90 degrees • No shoulder flexion >90 degrees for 4 weeks • PROM-AAROM within limits at shoulder and elbow (therapist guided ranging, self-passive ranging with uninvolved extremity) • No scar mobilization
Post-op Weeks 4-6	<ul style="list-style-type: none"> • Week 5: unlock brace to 0-120 degrees • Week 6: unlock brace to full AROM • No forced elbow flexion PROM until 6 weeks • Initiation of shoulder submaximal-isometrics (initiate at 25%-50% effort, pain-free): except shoulder extension • Progress shoulder AAROM-AROM (Pulleys, wand, self-passive ranging with uninvolved extremity)
Criterion to Progress to Phase III	<ul style="list-style-type: none"> • Pain-free, full shoulder AROM with good scapular control • Pain-free, full PROM elbow flexion (do not push ROM) • Minimal to no edema



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Phase III: Initiation of Elbow AROM and Strength (6-12 weeks)

Introduction to AROM	<ul style="list-style-type: none"> No pain or reactive edema with initiation of active elbow extension Avoid resisted elbow extension and shoulder extensions/rows for 8 weeks
Post-op Weeks 6-8	<ul style="list-style-type: none"> Continue progressing AROM of shoulder, gaining muscle endurance with high reps, low resistance Week 6: Initiate active elbow extension (no resistance) in pain-free range <ul style="list-style-type: none"> Begin multi-angle isometrics Week 8: initiate light strengthening with tubing resistance through pain-free range Isotonic IR and ER light resistance resisted movement (at neutral) Supine ABC & SA punches with high reps, low resistance Gentle soft tissue mobilization (light scar massage of hypomobile)
Post-op Weeks 8-12	<ul style="list-style-type: none"> Initiate prone scapular series at week 8 Initiate light, sub-maximal triceps isometrics (25%-50% effort, pain-free) at week 8 Allow for eccentric triceps activity, pain-free (no resistance) Gradual progression of biceps strengthening Resisted IR and ER at 30° ABD progressing to 90° abduction Resisted SA punch & bear hugs, standing Rhythmic stabilization for shoulder (supine progressing to various positions) Week 10-12: progress triceps isotonic's beyond tubing resistance <ul style="list-style-type: none"> must meet >50% MVIC
Return to Activity After Week 10	Stationary bike and light jogging
Criterion to Progress to Phase IV	<ul style="list-style-type: none"> Pain-free, full AROM of shoulder and elbow 5/5 MMT for shoulder /rotator cuff strength 5/5 MMT for scapulothoracic musculature

Phase IV: Return to Sport/Recreational Activity (weeks 12-16)

- Goal: Return to sport at 5-6 months at earliest

Goals	<ul style="list-style-type: none"> Maintain full, non-painful AROM Progress isotonic strength of the triceps and surrounding musculature Introduce light pressing activity (pushups progression, bench press, overhead press) Return to sports progression: throwing/ swimming/lifting Analysis of sports specific movements
Exercises 12+	<ul style="list-style-type: none"> Week 12: CKC UE weight bearing (start with 25% weight bearing, wide hand position, 0-10 degrees of elbow flexion to limit stress on triceps): wall weight shifts, quadruped rocking Gentle, short duration UBE (2-3 minutes initially, progressing as pain allows) Week 14: Introduce pushup progression; inclined height, quadruped OR modified push up position <ul style="list-style-type: none"> limit to 0-45 degrees elbow flexion initially, progress into pain free ranges as tolerated Week 16: Initiate plyometric training below shoulder height with progressing to overhead: begin with both arms and progress to a single arm



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Criterion to Return to Sport Activity, Weeks 12+

- 5/5 MMT for triceps strength
- >80% strength on hand held dynamometry of contralateral limb
- Pain-free, stability & control with higher velocity movements including sports specific patterns and change of direction movements
- Proper kinematic control transfer from the hip & core to the shoulder with dynamic movement

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References

Blackmore SM, Jander RM, Culp RW. Management of distal biceps and triceps ruptures. *Journal of Hand Therapy*. 2006; 19(2): 154-169. Doi: 10.1197/j.jht.2006.02.001

Demirhan M, Ersen A. Distal triceps ruptures. *EFORT Open Rev*. 2016;(1):255-259. DOI:10.1302/2058-5241.1.000038.

Dunn JC, Kusnezov N, Fares A, Rubin S, Orr J, Friedman D, Kilcoyne K. Triceps tendon ruptures: a systematic review. *Hand*. 2017;12(5): 431-438. Doi:10.1177?1558944716677338

Giannicola G., Bullitta G., Sacchetti F.M., Scacchi M., Merolla G., Porcellini G. (2016) Triceps Repair. In: Pederzini L., Eygendaal D., Denti M. (eds) *Elbow and Sport*. Springer, Berlin, Heidelberg

Keener JD, Sethi PM. Distal Triceps Tendon Injuries. *Hand Clin*. 2015; (31): 641-650. Doi:10.1177/155894471667733810.1016/j.hcl.2015.06.010

Kocialkowski C, Carter R, Peach C. *Shoulder & Elbow*. 2018;10(1): 62-65. Doi:10.1177/1758573217706358

Marinello PG, Peers S, Sraj S, Evans PJ. A Treatment Algorithm for the Management of Distal Triceps Ruptures. *Techniques in Hand & Upper Extremity Surgery*. 2015; (19): 73-80. Doi: 10.1097/BTH.0000000000000082

Redler LH, Dines JS. Elbow Trauma in the Athlete. *Hand Clin*. 2015;31(4): 663-681. Doi:10.1016/j.hcl.2015.07.002



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