



# DISTAL BICEPS TENDON REPAIR

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## Distal Biceps Tendon Repair Protocol

Sling	From Day 1	Restrictions	Strengthening
4-6 weeks for comfort	AROM of unaffected joints. Passive and Active Elbow ROM supine in 90 degrees shoulder flexion	Avoid overpressure at end of range for 2/12	Local biceps loading at 8 weeks. Gripping exercises from day 1

Factors that may affect progression rate: Consider referrals to other services if appropriate.

- Tissue Quality inc Tendon and bone health
- If Autograft / Allograft was used to augment the repair
- Traumatic
- Age
- Metabolic conditions such as Diabetes, Thyroid etc.
- Smoking and Alcohol status

Treatment Note: Timescales are general guidelines and are dependent on the patients individual factors and pre-operative history / status. When considering dose of prescribed exercise consider aim of the exercise and the individual patient – consider they may need to build up to desired dose and manipulating the F.I.T.T principles.

Phase 1 (Day 1 - 6 weeks) Initial in hospital and on discharge exercises

**Aims/Goals:** Pain and effusion reduction. Protection of surgical repair and optimised tissue healing. Increase ROM.

**Avoid:** Overloading with resistance.

Exercise:	Dose:
PROM <ul style="list-style-type: none"> <li>• Elbow F – E patient guided in a comfortable position.</li> </ul> After two weeks progress to - <ul style="list-style-type: none"> <li>• Supine overhead in 90degrees shoulder flexion. Active pronation/ supination. Active extension and eccentric flexion to maximise triceps activity and</li> </ul>	



reduce biceps activity - progress range as able <sup>1</sup> .	
<b>AROM</b> <ul style="list-style-type: none"> <li>• Pronation and supination in the sling as pain allows.</li> <li>• Hand and wrist AROM in all directions.</li> <li>• Shoulder short lever – flexion, abduction and LR as pain allows.</li> </ul>	
<b>Strengthening</b> <ul style="list-style-type: none"> <li>• Gripping a towel/small ball/ pair of socks.</li> </ul>	

**Treatment Note:**

- Reminder on importance of pain control.
- Use of ice pack
- Sling removed at 4-6 weeks – patient guided weaning.
- Sutures are deep to the skin and absorbable therefore do not need to be removed.
- Follow up with Orthopaedics at 6-8 weeks following surgery.
- Patient can still engage with CV, lower limb rehab and strengthening of the non-operated side to facilitate recovery<sup>2</sup>.

**Driving**

- To return to driving once sling is removed and full extension against gravity is achieved.
- As with all shoulder/elbow surgery, patients should inform their insurance company regarding the injury and subsequent surgery.
- As a general rule, patients should be able to carry out an emergency stop (this should not be a problem in this case) and maintain safe control of the steering wheel should they need to avoid a pedestrian or other obstacle in the road.

**Phase 2 (6 weeks-12 weeks)**

**Aims/Goals:** Full pain free ROM by 6 weeks. Increase strength locally and throughout the upper limb.

**Avoid:** Heavy lifting and overload of biceps beyond the patients capacity.

Exercise:	Dose:
Active Assisted ROM	



<ul style="list-style-type: none"> <li>Flexion – Extension supine or standing.</li> <li>At 8 weeks AROM Elbow Flexion - Extension</li> </ul>	
<b>AROM</b> <ul style="list-style-type: none"> <li>Shoulder long lever flexion, abduction.</li> </ul>	
Continue: Gripping a towel/small ball/ pair of socks.	
<b>Submaximal Isometric Contractions.</b> <ul style="list-style-type: none"> <li>Supination in mid range.</li> <li>Flexion in mid range – start in pronation and if comfortable progress to supination.</li> <li>Triceps in mid range.</li> </ul>	
Press ups against the wall – consider foot position to increase load in the UL	

**Treatment Note:**

- Patient can still engage with CV, lower limb rehab and strengthening of the non-operated side to facilitate recovery<sup>2</sup>.

**Phase 3 ( 12 weeks-16 weeks)**

**Aims/Goals:** Increase functional strength within the upper limb

**Avoid:** Overloading beyond patients capacity.

Exercise:	Dose:
Bicep curls: Focus on light weight and gradually build up as able.	
Weighted Pronation – Supination in 90 degrees elbow flexion (start supported with elbow on table and hand off the edge. If this is ok then progress to unsupported). Focus the eccentric pronation to concentric supination.	
Press ups against the wall with feet further away from the wall. Progress as able to against the table, onto knee and	



then full press ups over time.	
Low Row	
Consider rotator cuff strengthening: such as resisted abduction against a threaband and take the shoulders in to GHJ F.	

**Treatment Note:**

- Consider the Borms et al. (2016) article (within reference list) when selecting exercise to increase loading in biceps.
- Patient can still engage with CV, lower limb rehab and strengthening of the non-operated side to facilitate recovery<sup>2</sup>. Consider adding in LL exercises with UL exercises such as Squat whilst performing low row (patient dependent and consider their level of activity / functional ability / functional demand.

**Phase 4 (16 weeks +)**

**Aims/Goals:** Return to sporting activities and heavy manual work.

**Avoid:** Overloading beyond patients capacity.

Exercise:	Dose:
Bicep curl variations: Hammer, traditional, reverse and side curls.	<p><i>Consider position if strengthening – reps to fatigue – weight to be challenging (8-12 reps as a guide). 3 sets with 1 minute between sets. Consider tempo depending type of MM contraction required (constrict/isometric/eccentric) – pt to be aware of form and momentary muscular failure). 3 x per week.</i></p>
Triceps extensions	
Rotator cuff and periscapular strengthening	<p><i>Consider building in compound movements such as deadlift to military press. Gradual loading – repositions to fatigue 3 x per week. Ensure you are clear on what rehabilitation goal is – power, endurance, strength etc to be able to manipulate the training variables.</i></p>
Sports specific activity	<p><i>Consider the activity as a whole movement incorporating the kinetic chain as well as the elbow locally. Consider the environment and psychological load required.</i></p>



Continue to consider Lower Limb and trunk strength.	<i>If patient is not going to the gym use online material e.g NHS fitness studio.</i>
Continue to consider CV fitness	<i>If patient is not going to the gym use online material e.g NHS fitness studio.</i>

Treatment Note: Aim for function specific rehabilitation considering manipulating training principled for power and endurance. Loaded cuff strengthening and kinetic chain rehabilitation if appropriate. Speed work needs to be incorporated within the rehabilitation at this point to restore function of the tendon.

### **Appendix: Procedure Summary**

The biceps is responsible for elbow flexion and forearm supination. When ruptured, it results in a functional deficit that is often not tolerated well by active individuals and is also more noticeable in right handed patients who use a rotating instrument (e.g screw driver) in their right hand since this requires supination. The aim of surgery is to reattach the tendon back to its bony insertion on the radius. If this is done within two-three weeks it involves a single incision over the forearm but if the rupture is more chronic, then an additional incision may be required to find the retracted tendon stump. Reattachment can be achieved using a suture anchor device, which fastens the tendon within the radius. Following surgery it is relatively common for there to be altered/reduced sensation along the lateral aspect of the forearm because the lateral cutaneous nerve supplying this area of skin is in the immediate vicinity of surgery, and therefore temporary dysfunction can occur.

### **Reference List**

1. Lee, A., Schrupf, M., Choi, D., Meyers, K., Patel, R., Wright, T., Hotchkiss, R. & Duluiski, A. (2013). The influence of gravity on the unstable elbow. *Journal of shoulder and elbow surgery*, 22, p81-87. Doi:10.1016/j.jse.2012.08.012.
2. Logan, Shahien, Haber, Foster, Farrington & Provencher (2019). Clinical Commentary: Rehabilitation following distal biceps repair. *The international journal of sports physical therapy*, 14(2). P308-17. Doi:10.26603/ijsp20190308.



3. Borms, D., Ackerman, I., Smets, P., Van den Berge, G. & Cools, A. (2016). Biceps disorder rehabilitation for the athlete; a continuum of moderate – to – high-load exercises. *The American journal of sports medicine*, 45(3), P642-650. Doi:10.1177/0363546516674190.