

Guidelines for the management of primary EPL repairs

There are a number of different regimes that could be selected for rehabilitation following primary EPL repair. The literature does not heavily weigh in favour of a particular regime although a dynamic approach has the most support in the literature. There may be specific factors depending on zone of injury, surgery and the patient. These are guidelines based on the current available evidence and anatomical factors. Always use clinical reasoning to select a regime, protecting the tendon repair is the primary consideration.

General Considerations

- Mechanism of Injury – ? clean cut vs crush
- Zone of Injury
- Length of time from injury to repair
- Length of time from repair to therapy
- Quality of tendon and repair – ? frayed ? attenuated ? suture technique
- Other structures damaged – ? tendons ? nerves ? bone
- Multiple levels of injury
- Patient factors that would affect ability to comply with a certain regime
- Therapist skill level in splinting
- Oedema – if excessive oedema around the repair site active tendon forces will increase
- Wound –? tethered, ? indurated – active tendon forces will increase

Considerations Specific to Zone

- Zone I
 - Consider whether there has been a breach of the IP joint. If so there will be increased risk of joint stiffness. A dynamic regime (with sling support over the distal phalanx) or a SAM regime immediately or after 3 weeks may be appropriate
 - The EPL tendon has a different structure to the terminal extensor tendon of the fingers. Consider the suture that has been applied. If core suture and epitendinous – stronger repair therefore more likely to be able to use dynamic or SAM type regime rather than a mallet.
 - The decision to proceed with a certain regime is not just based on anatomical and surgical factors but on patient factors/preference. A discussion should be had with the patient regarding which regime to choose. If the patient is a construction worker then their aim may be to get back to work as soon as possible and therefore

they may prefer to be in a mallet splint rather than a dynamic or a SAM regime. A discussion regarding risk of stiffness/risk of rupture/size of splint should be had before a decision is made.

- Zone II (EAM preferred)
 - Should generally not be treated as a mallet unless there are factors that would exclude movement. Likely to be suitable for EAM (zone II) regime or a dynamic regime. Do consider the type of suture that has been applied.
- Zone III (DYNAMIC PREFERRED)
 - Consider whether there has there been a breach of the MCP joint. If so a dynamic regime should be considered as this allows early MCP joint flexion and may prevent joint stiffness.
 - Is there a combined EPB/APL repair? If so a dynamic regime could be selected but it may be appropriate to have a volar strap or thermoplastic block across the MCP joint to limit MCP joint flexion. Look at the patient – how do they move normally? Do they have more MCPj or IPj flexion?
- Zone IV (EAM PREFERRED)
 - Not involving an open joint therefore suitable for EAM regime (PREFERRED). See above for considerations re: combined EPB/APL repair
- Zone VII (zone V EPL) (DYNAMIC PREFERRED)
 - In this zone the tendon passes ulnar to Lister's tubercle – tight vertical septa forming the 3rd compartment. EPL crosses obliquely over the tendons of ECRL/B
 - Where is the repair?
 - Under the retinaculum, by Lister's tubercle, over ECRL/B?
 - Has the retinaculum been released or has EPL been left subcutaneous to the retinaculum? If the EPL has been repaired under the retinaculum and this has not been released considerations are:
 - Already tight space – now repaired tendon: suture material, swelling. May lead to increased risk of rupture and increased risk of adhesions. Dynamic regime may increase the glide through this area whilst decreasing the active forces through the tendon.
 - Has there been a combined ECRL/B repair? Audit carried out in 2014/2015 demonstrated increased risk of rupture if this was the case therefore a dynamic regime may be more appropriate
 - Has there been a combined EPB repair?

- Consider that there are 2 tendons running through the same extensor compartment. This could increase the risk of rupture and increase risk of adhesions therefore a dynamic regime may be more appropriate

How to choose a regime

- Review the anatomical, surgical and patient considerations.
- If unsure about the quality of the repair d/w surgeon
- Immobilisation regime should only be selected if the repair is very fragile, there are associated unstable fractures, there has been a delay from surgery to initial hand therapy appointment of greater than 10 days or if the patient is unable to comply with an exercise regime. Should consider whether it is possible to do a partial mobilisation regime. Try not to immobilise the whole thumb.
- Even if there are unstable fractures consider whether it would be possible to mobilise the IP joint with the rest of the thumb and wrist immobilised to maintain some glide – limited active movement protocol.
- If an immobilisation regime has been selected, if there has been a breach of MCP joint but a combined EPB repair/other factors that mean a dynamic regime wasn't appropriate then consider whether you can start mobilising at 3 weeks.

Available Protocols

- Mallet protocol zone I
- Early active movement zone II
- Early active movement zone II to VII
- Dynamic EPL zone I-VII
- Limited AROM zone III-VII
- Immobilisation zone II-VII

References

- Green's Operative Hand Surgery 6th Edition 2011
- Wiesel's Operative Techniques in Hand, Wrist and Forearm Surgery (2010)
- Ghee. Attrition Rupture of the Extensor Pollicis Longus tendon following Becker Repair of Extensor Carpi Radialis Brevis tendon. Journal of Plastic, Reconstructive and Aesthetic Surgery (2009) 62. e592-e593
- Elliot and Southgate. New Concepts in Managing the Long Tendons of the Thumb after Primary Repair. Journal of Hand Therapy (2005) Apr-Jun; 18; 2

- Miller and Crosbie. The Benefits of Early Active Motion on Thumb Range of Motion following Extensor Pollicis Longus tendon repair in zones TIII-TV: A prospective comparison pilot study
- Khandwala et al. Immediate Repair and Early Mobilization of the Extensor Pollicis Longus Tendon in zones 1-4. *Journal of Hand Surgery* (2004) 29B; 3; 250-258
- Burr and Pratt. Early Active Motion Rehabilitation versus Immobilisation for Thumb Extensor Tendon Repairs: A Review of two case studies. *The British Journal of Hand Therapy* (2006) 11; 4
- Ip and Chow. Results of Dynamic Splintage following Extensor Tendon Repair. *Journal of Hand Surgery* (1997) 22B; 283-287.
- Chinkchalkar et al. Postoperative Management of Extensor Pollicis Longus Repairs within close vicinity to or within the Extensor Retinaculum. *Journal of Hand Therapy* (2010)
- Wood et al. A systematic review of rehabilitation protocols following surgical repair of the extensor pollicis longus. *Hand Therapy* (2013) 18(1) 3-10.
- Germann et al. Early dynamic motion versus postoperative immobilization in patients with extensor indicis proprius transfer to restore thumb extension: a prospective randomized study. *Journal of Hand Surgery* (2001) 26A; 1111-5
- Giessler et al. Early free active versus dynamic extension splinting after extensor indicis proprius tendon transfer to restore thumb extension: a prospective randomized study. *Journal of Hand Surgery* (2008) 33A; 864-868.