This lecture will focus on critical components of clinical decision making in the treatment of the injured and repaired flexor tendon. Cases will be presented which represent the considerations for orthotic geometry, the application of controlled forces, and progression of these forces. A good review is a detailed article: Evans, RB. Managing the Injured Tendon: Current Concepts. J Hand Ther: 2012; 25:173-90. (Special Edition on Basic Science). This is supplemented with the below updated bibliography.

Orthotic geometry and the application of stress to the repair will be dependent on timing of injury/surgery, associated injury, known skill of the surgeon, the strength of the repair, and assessment of the patient's ability or will to be compliant. Specific questions for the surgeon: what is the core suture strength, status FDP, FDS (one or 2 limbs repaired); tension on repair, status of pulley’s, injury to nerve (tension?); vessel? bone?

Reestablishing functional tendon excursion without creating a gap or rupture at the repair site is “all about the numbers”. My clinical decisions, as I apply controlled stress to a repair site, are based on the strength of the core suture and epitenon repair, the drag of edema, adhesion which elevates internal tendon tension, and my faith in the quality of repair. This determines management with position of splinting, position of exercise, and angles of flexion.

Selected updates to my attached review article (2012) can be found in the below listed bibliography: Key research themes over the past several years include:

- Continued basic science research to enhance the intrinsic pathway of healing and suppress the extrinsic pathway of healing, and the manipulation of frictional resistance to tendon gliding (Loiselle AE, 2016; Zhao 2016; Linderman 2016; Ji X 2015 ).


- Continued support for the use of multi-strand repairs in combination with early active motion (Mehling IM 2014; Rajappa S 2014 Savvidou C 2015). Results of a recent survey of hand surgeons in US found that while most use a 4 strand core, and 20% use the “wide awake” approach, that older surgeons still use a 2 strand and passive motion (Gibson PD 2016). Active tension for FPL repairs can be applied with a 4 strand or greater core suture (Rappaport PO 2015; Giesen T 2009 ).

- Wide Awake surgery as described by Lalonde is gaining popularity (Lalonde 2016; Higgins 2016; Tang 2015); with support for initiating motion at PO day 3 as inflammation subsides with motion to 50% sufficient to control limiting adhesion (Lalonde 2016;).

- Continued study of internal tendon forces as they relate to joint position supporting previous work of Savage 1988: Place and hold and active finger flexion with the wrist in the neutral position or tenodesis generates the lowest forces; isolated flexion of these tendons generated higher forces along
A significant number of papers are reporting on tendon complications associated with volar plate fixation in the treatment of distal radius fractures (Chilelli BJ 2013; Fan J 2016).

At this time, the stronger repair techniques and the application of controlled stress remain the best and most well supported intervention following tendon injury and repair in the recovery of functional tendon excursion and joint range of motion. (Khor WS 2016) The hand therapist’s role in this process remains a critical component contributing to satisfactory outcomes.

Selected Updated Bibliography


Evans RB Clinical Decision Making in the Management of flexor Tendons 2017 Update


