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Complex made Simple...clinically relevant education by Judy C. Colditz, OT/L, CHT, FAOTA

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ClinicalPearls

No. 15

THE STUBBORN FLEXOR POLLICIS LONGUS

Have you experienced significant frustration when helping a patient regain normal glide of the flexor pollicis longus (FPL) following repair? In my experience, the patient rarely regains full active interphalangeal (IP) joint flexion. Why this does happen?

The FPL is the only tendon which is able to flex the interphalangeal joint of the thumb. But proximal muscles must stabilize the CMC and MP joints so that the glide of the FPL is directed distally to move the IP joint. This works easily in the normal thumb, but following repair the FPL becomes adherent at the repair site. When the patient contracts the FPL it pulls on the tendon but only moves the joints between the point of origin of the muscle and the point of adherence. Put simply, the part of the tendon that is free moves to maximum and there is no glide that occurs distal to the point of the adherence. We have often seen this in the clinic: the CMC and/or MP flexes to maximum but there is little IP joint flexion.

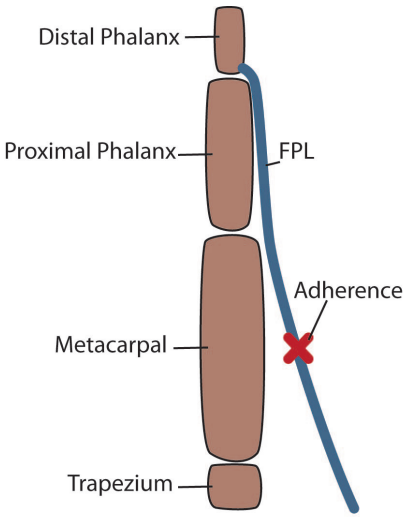
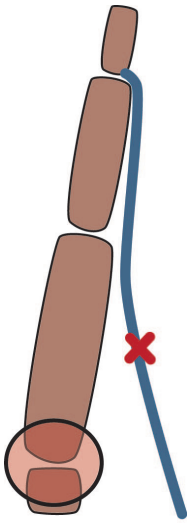
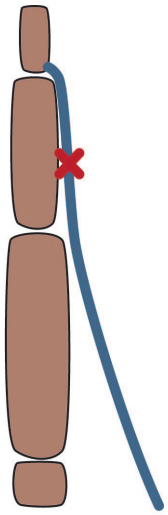


Figure 1

Perhaps these schematic drawings will explain. Note the FPL moves away from the bone when it is proximal to the pulleys so it can traverse the wrist through the carpal tunnel. This location of the FPL creates a greater moment arm for CMC joint flexion.

Figure 1 represents the thumb in neutral extension and adherence of the FPL has occurred at the mid-metacarpal level. In Figure 2 the FPL is pulling on the point of adherence but cannot pull past the adherence to create MP or IP joint flexion. All motion occurs at the CMC joint as indicated by the circle. In Figure 3 the adherence is over the proximal phalanx and the unrestricted part of the tendon crosses the CMC and the MP joints, but still cannot reach the IP joint to create flexion.


Figure 2


Figure 3

...continued

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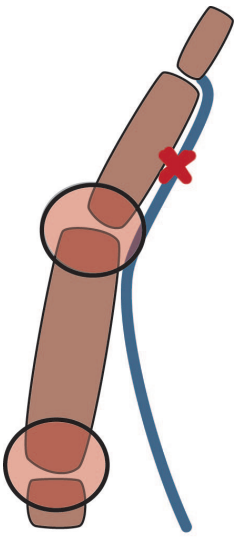


Figure 4

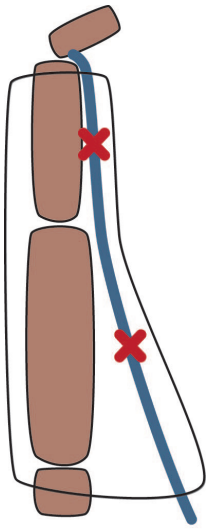


Figure 5

In Figure 4 when the FPL muscle contracts, both the CMC and the MP joints flex but no IP joint flexion occurs.

So how can these two scenarios be altered? The answer is to prevent the highly mobile CMC and MP joints from moving which will divert the FPL glide to move the IP joint.

Figure 5 diagrams an orthosis which prevents CMC and MP joint motion, directing glide across the proximal phalanx and metacarpal. This maneuver decreases adherence, and creates IP joint flexion.

The final desired result following a FPL repair is full active thumb CMC, MP and IP joint flexion, but the place to start is to re-establish glide at the site of adherence. Many are concerned that "blocking" a repaired tendon is dangerous, providing excessive resistance. (It can be!) It is not common practice early after a tendon repair nor am I saying it should be.

Typically, passive place and active hold requiring flexion of all three joints simultaneously is the initial exercise. Instead, consider a place-and-hold exercise of isolated IP joint flexion with the CMC and MP relatively extended.

The isolated IP joint flexion exercise re-establishes glide of the FPL at the site of adherence (where it is most needed). As the exercises progress, MP and CMC joint flexion are added to the exercise routine.

Suggested reading regarding FPL glide: Brown & McGrouther: The excursion of the tendon of the flexor pollicis longus and its relation to dynamic splintage (J HAND SURG 9A:787-91, 1984).

CAUTION: *There are circumstances where early active motion of a tendon repair is not appropriate and as a trained therapist you must decide when early motion is both safe and appropriate.*

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