

Tendon Force Estimates Following Hand Surgery

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The need for quantitative methods for assessment of tendon forces following tendon reconstructive surgery arises because of the side effects of current post-operative therapy. The classical therapy over the past 50 years has been to insulate the hand from potential injury in a cradle of bandages. This method was originally introduced because movement of the hand following surgery was felt to result in failures of the repaired tendons which have a very limited strength. The subsequent stiffening of the joints, and reduction in the gliding action of tendons is exacerbated by the swelling and inflammatory processes resulting from the surgery. In recent years, a new post-surgical therapy has been introduced that dra-

matically improves the range of motion and reduces the time to clinical release of the patient. This procedure is similar to that used prior to the current conservative therapy, but better analytical methods have allowed restrictions to be imposed on the active motion of the hand following surgery.

The force analysis that has led to new guidelines for post-surgical hand therapy for flexor tendons is presented here. A graphical user interface is also presented which allows the user to study various external force loadings and obtain rapid feedback on the resulting tendon forces at user-defined joint angles. This is shown in Figure 1.

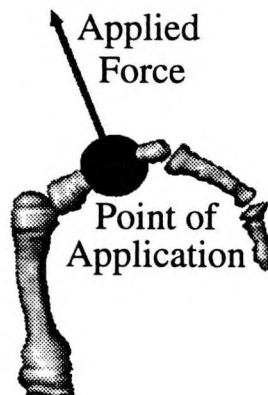


Figure 1: Interactive graphical finger loading.