

Letter to the Editor

Coordination of Thumb Pronation and Palmar Abduction During Opposition Movement



We read the article “Biomechanical Evaluation of Opponensplasty for Low Median Palsy: A Cadaver Study” by Iwase et al¹ with great interest. The authors performed the Camitz,² modified Camitz,³ and Burkhalter simulation methods on cadaveric hands and measured the palmar abduction and pronation angles of the thumb during the opposition movement. The Camitz method produced a poorer pronation angle than the other methods. Interestingly, the Burkhalter simulation method resulted in a smaller abduction angle than the modified Camitz method when the tension was weak and the largest palmar abduction angle as tension increased. Based on this result, the authors suggest that the Burkhalter simulation method may improve pronation. We commend this excellent study and would like to make an additional comment.

We have previously reported on the measurement of palmar abduction and pronation angles of the phalanx during thumb opposition movement using a sensor, in healthy and carpal tunnel syndrome (CTS) groups.^{4,5} The data showed that in about half of the healthy

group palmar abduction and pronation reached their maximum angles almost simultaneously but was less in the CTS group. Furthermore, the simultaneous index of the time at which palmar abduction and pronation reached their maximum angles and the severity of CTS showed a weak negative correlation, as measured by Spearman's correlation coefficient (-0.36 , Fig.). This result suggests that in a healthy hand the palmar abduction and pronation reach the highest angle almost simultaneously during thumb opposition.

Focusing on the Burkhalter simulation method from Iwase et al, while palmar abduction reached its maximum angle, the pronation maximum angle looked to be similar. These small differences mean that the opponensplasty did not sufficiently mimic the healthy opposition movement.

We hope that the authors can improve on this method, which is important for improving pronation, and develop a new method that would allow the thumb opposition movement to be closer to normal.

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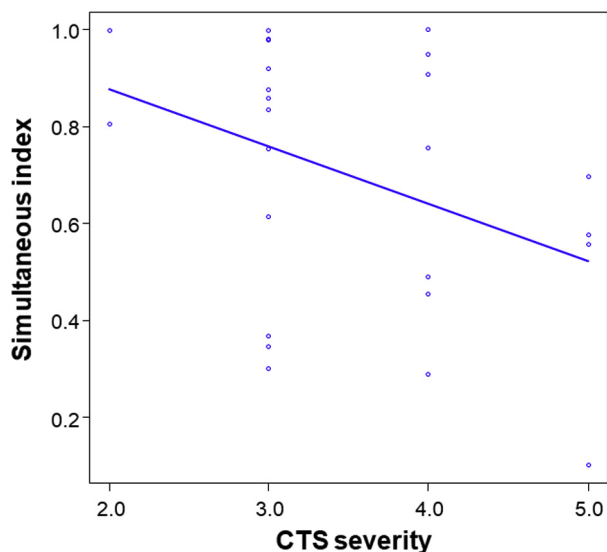


Figure. Correlation plot of the simultaneous index of the time at which the palmar abduction and pronation reached their maximum angle and the severity of CTS. There was a weak negative correlation on the Spearman's correlation coefficient ($R = -0.36$).

Declaration of interests: No benefits in any form have been received or will be received related directly or indirectly to the subject of this article.

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