TRANSVERSE SLIDING OF THE MEDIAN NERVE IN THE CARPAL TUNNEL

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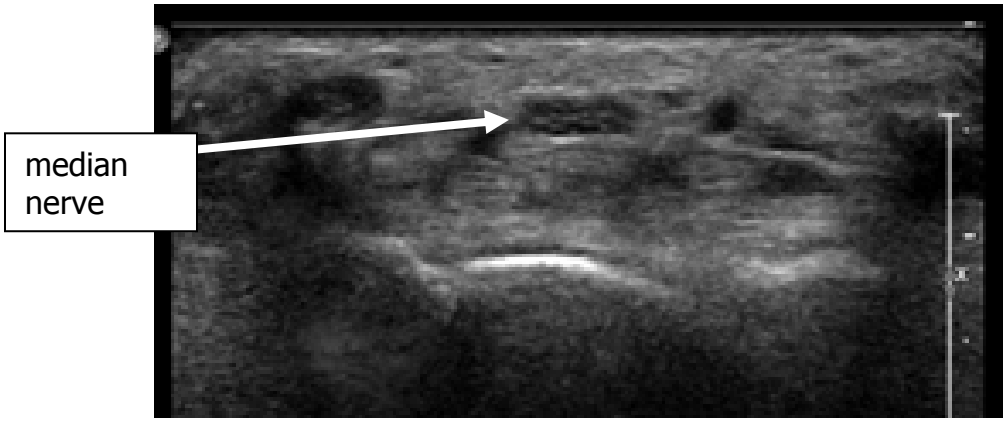
Background: Carpal tunnel syndrome (CTS) is the most common nerve compression syndrome of the upper extremity with over 463,000 surgical decompressions performed in the United States every year. Iatrogenic nerve injuries are rare but devastating, and commonly are a consequence of "blind" operative maneuvers. We utilized ultrasound to clarify the median nerve's positional anatomy at the wrist to minimize the potential of these injuries.

Methods: Median nerve ultrasounds were acquired in 33 healthy volunteers with no history of CTS. The proximal wrist crease was the most clinically relevant landmark for obtaining images. The videos were obtained with passive flexion and extension to replicate an operative setting. We graded the transverse sliding of the median nerve on a 1-3 scale based on the degree of movement.



Results: Flexion produces the greatest degree of transverse translation of the median nerve. Significantly, 85% of the nerves moved radially and dorsally. When radial movement occurred, the average grade was 2.5. With extension, the nerve most commonly moved ulnarly (42%) with 49% not moving at all. The average grade of ulnar movement was 1.5.

Conclusion: The median nerve moves significantly with changing positions of the wrist. Wrist extension often places the nerve within the operative path, while flexion tends to keep the nerve protected. Though we recommend avoiding blind maneuvers, if they are used for releasing the proximal portion of the carpal tunnel and the antebrachial fascia, the wrist should be held in a flexed position to minimize the risk of iatrogenic nerve injury.