

RADIAL NERVE PALSY: LOW PROFILE CUSTOM ORTHOSIS

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RADIAL NERVE PALSY

- Most frequently injured of the three peripheral nerves in the upper extremity
- The most common cause of radial nerve palsy
 - Direct trauma
 - Humeral fracture
 - Elbow dislocation
 - Direct pressure
 - Axilla pressure
 - Other potential factors

RADIAL NERVE

- Originating from the posterior cord of brachial plexus (C5 – T1)
- Motor innervation to the dorsal arm, extrinsic extensors of the wrists and hands
- Lies superficial and wraps around the spiral groove of the humerus



RADIAL NERVE PALSY (CONT.)

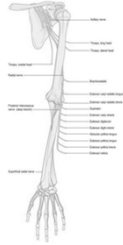
- Signs of radial nerve palsy
 - "wrist-drop deformity"
 - Inability to extend wrist
 - Loss of digit extension at the metacarpophalangeal joints (MCP)
 - Inability to extend and abduct the thumb

Wrist Drop (Radial Nerve Injury)

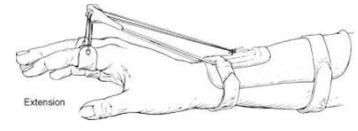


BIOMECHANICS

- Functional impairments to the hand are significant
- Imbalance of intrinsic and extrinsic musculature
- Decreased reciprocal tenodesis grasp
- Spontaneous recovery



VARIOUS COMBINATIONS



SPLINTING FOR RADIAL NERVE PALSY

- Splinting during the recovery period has the potential of establishing almost normal functional use of the hand (Colditz, 1984)
- Ideal brace
 - Recreate consistency of tenodesis action
 - Finger extension with wrist flexion
 - Wrist extension with finger flexion

LOW PROFILE ORTHOSIS

- Low profile & Effective during daily routine
 - Functional, comfortable wrist position
 - Partial sensory input can be achieved
 - Aides in digit extension
 - Light-weight, durable, and easy to don/doff



QUICK, EASY, AFFORDABLE

- 1" hook Velcro - 6in long
 - Make a horizontal slit at 1.25in from the end to be able to attach the Velcro strip to the D-ring
 - Attach finger loops to rubber bands
 - Loop rubber bands around D-ring
- Place loops on digits
- Attach the Velcro strip to the dorsal aspect of the wrist cock-up
 - Place Velcro strap with appropriate tension to achieve a good tenodesis grasp pattern of fingers and thumb



CONCLUSION

- Occupational therapy and education in the treatment of radial nerve palsy can significantly improve an individual's functional independence
- Splinting following an injury to the radial nerve is necessary
 - Recommended to improve tenodesis pattern of the hand during recovery phase
- Various splint designs
 - The new low profile orthosis presented today is a great alternative to use for patients experiencing radial nerve palsy

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