

HAND OR FINGER PAIN

The hand is composed of all the structures distal of the wrist joint. They include bones, muscles, ligaments, tendons, blood vessels, lymphatics, nerves, dermal layers, and fingernails. The bones that provide structure include the carpals (the triquetrum, lunate, navicular, pisiform, capitate, hamate, trapezium and trapezoid bones), the five metacarpals, and the phalangeal bones (two for the thumb and three for each of the rest).

The muscles in the hand include the lumbricals, dorsal and palmar interossei, abductor digiti quinti, flexor pollicis brevis, abductor pollicis brevis, adductor pollicis (obliquus and transversus), opponens pollicis, and opponens digiti quinti. While these muscles help to provide the dexterity associated with movements of the fingers and thumb, muscles proximal to the wrist whose tendons cross the wrist to insert on the various bones provide the real strength. The flexor carpi radialis and flexor carpi ulnaris muscles cause wrist flexion. The flexor digitorum sublimis, flexor digitorum profundus, and flexor pollicis longus muscles cause finger and thumb flexion. Wrist extension is caused by contraction of the extensor carpi radialis longus, extensor carpi radialis brevis, and extensor carpi ulnaris muscles. Finger and thumb extension is caused by contraction of the extensor digitorum communis, extensor indicis proprius, extensor digiti quinti proprius, extensor pollicis brevis, and longus muscles. Strong thumb abduction is caused by the abductor pollicis longus.

The median, ulnar, and superficial radial nerves provide innervation of the hand structures. Blood is primarily supplied to the hand by the ulnar, radial, and volar interosseus arteries.

Hand or finger pain may be a direct result of trauma to the soft tissues or joints, including burns and bacterial infection. Pain may be referred to the hand or fingers from trigger point formations in or proximal to the hand (forearm and shoulder) or from interspinous ligaments (C6, C7 and C8). *Hand or finger pain* may result from disease processes that restrict blood supply to the hand or fingers (Berger's or Raynaud's diseases, for example). It may also develop because of injury to peripheral or central nervous system structures including nerve severance or impingement, cerebral concussion, cerebral vascular accident, or diseases that block nerve impulses.

Hand or finger pain may have psychogenic origins, as in some forms of hysteria or psychosis. It may also occur as a symptom of a psychosomatic defense mechanism, often termed conversion hysteria. In such cases, the pain may be imagined, but it is more often real and has a physical basis. Such pain may be the result of an anxiety reaction, in which case the pain may be induced voluntarily (though it may be unconsciously derived, as in some trigger point formation phenomena) or normal non-painful sensory feedback may be perceived (through subconscious distortion) as pain.

Treatment

Hand or finger pain may arise from nerve root impingement of the C7 spinal nerve root by calcific bony formation, which is usually associated with osteoarthritic changes or ruptured or bulging discs. Treatment centers on reducing any associated inflammation or calcific deposit, relieving any coincidental contributory trigger point formations or extrafusal muscle spasm, and increasing vertebral joint space. Neuromuscular hypertonicity of associated musculature has often been found to contribute to nerve root impingement occurring in the cervical area. In such cases, cervical traction enhanced by electrical stimulation or vibration has proven to be helpful (refer to Horizontal Cervical Traction, Electrical Stimulation Enhancement, Vibration Enhancement, or Electrical Stimulation and Vibration Enhancement in Combination).

Trigger Points

The following trigger point formations may, singly or in combination, refer pain into the fingers or hand: Scalenus, Scalenus (minimus), Infraspinatus, Coracobrachialis, Latissimus dorsi (upper portion), Serratus posterior superior, Serratus anterior, Subclavius, Pectoralis major (sternal portion), Pectoralis minor, Medial triceps (deep fibers), Lateral triceps, Brachialis, Extensor carpi radialis longus, Extensor carpi radialis brevis, Extensor carpi ulnaris, Middle finger extensor, Fourth finger extensor, Palmaris longus, Flexor carpi radialis, Flexor carpi ulnaris, Brachioradialis, Pronator teres, Extensor indicis proprius, Flexor digitorum sublimis (radial head), Flexor digitorum

sublimis (humeral head), Flexor pollicis longus, Abductor digiti quinti, Second dorsal interosseus, Opponens pollicis, Adductor pollicis, and First dorsal interosseus.