



# PIPS *Steps*

A PUBLICATION OF THE PITTSBURGH INSTITUTE OF PLASTIC SURGERY

## repetitive stress

**Y**ou may ask why a plastic surgeon is writing an article about Repetitive Stress. After all, isn't Repetitive Stress the province of psychologists and psychiatrists? Well, the Repetitive Stress this article concerns relates to the body's musculoskeletal system and disorders, some of them very incapacitating, which develop (or at least are thought to develop) from repeated intense physical activity/motion.

Let me cite an example you're sure to recognize. Tennis Elbow is nothing more than a tendonitis (tendon inflammation) of a tendon attached to the proximal (elbow) end of the ulna, one of two forearm bones (the other is the radius). The repeated tug upon the tendon by the corresponding muscle to which that tendon is attached (as in swinging a tennis racket or twisting a screwdriver) translates to tendon tears, swelling and pain (or tendonitis). Heat, rest, etc. may resolve the problem but, as any athlete knows, once a tendon is injured, that tendon is injured more easily a second time, a third time and so on.

The most common problem which seems to be related to Repetitive Stress and which we plastic surgeons see with some regularity is Carpal Tunnel Syndrome. The carpal tunnel is a space, for lack of a better word, through which tendons bound for the digits of the hand and the all-important Median Nerve (more later) travel from the palm side of the forearm into the palm of the hand and beyond. The floor of the carpal tunnel is the surface created by the carpal (wrist) bones, which sit alongside each other almost like floor tiles, and the roof of the tunnel is the necessarily tough volar carpal ligament, which hugs the structures which pass beneath it, allowing them just enough room to slide gently against each other.

Without a doubt the key to most hand function, in terms of sensation, strength and dexterity, is the Median Nerve. It serves as a two lane highway, transmitting electrical energy from the brain to a number of hand muscles, particularly those of the all-important thumb, and sensation from the thumb and index and long fingers, and corresponding areas of the palm, to the brain.

When we subject our hands and wrists to repetitive motion, particularly "high speed" repetitive motion involving our thumbs and fingers, the

friction of tendon against tendon in the carpal tunnel translates over time into swelling of the tendons, as well as the volar carpal ligament, which in turn results in compression of the Median Nerve by and against the underside of the unyielding volar carpal ligament. The end result is hand numbness and weakness, much as might be expected from a tourniquet around the wrist. The solution, if "conservative" treatment, such as rest, splinting, etc. doesn't help, is surgical "decompression" of the carpal tunnel, achieved by dividing the volar carpal ligament to expand the size

of the carpal tunnel. Such a procedure is one normally undertaken under local anesthesia (similar to that which a dentist employs to fill a decayed tooth) on an outpatient basis and usually results in immediate, or at least prompt, relief of all symptomatology associated with Median Nerve compression. Delay in treatment of Carpal Tunnel Syndrome can lead to a dead Median Nerve and a severely compromised, permanently disabled hand.

Diagnosis of Carpal Tunnel Syndrome is not difficult owing to not only the consistency of symptomatology from sufferer to sufferer but also the ability to test the "health" of the Median Nerve by portable nerve conduction monitors. As the Median Nerve becomes progressively compressed by the overlying volar carpal ligament, it conducts nerve impulses to/from the brain less rapidly, a measurable change in nerve function which can be employed to assess not only a "sick" nerve but also a "recovered" nerve following surgical decompression of the carpal tunnel.

Keep in mind that, like any medical problem, some individuals are more prone to Carpal Tunnel Syndrome than are others. And repetitive stress can affect other areas of the body. A problem similar to Carpal Tunnel Syndrome which involves the foot is known as Tarsal Tunnel Syndrome. Furthermore, Carpal Tunnel Syndrome often goes hand in hand (pardon the pun) with other hand problems, such as Dupuytren's Contracture and Trigger Finger.

How can you avoid Carpal Tunnel Syndrome? Simple. When you undertake activities which require repetitive motion of your hands/wrists, (1) avoid using your wrists in a flexed, extended or twisted position for long periods of time; (2) vary the speed of your activity; and (3) periodically rest your hands/wrists.

*For more information about this and other cosmetic and non-cosmetic procedures, please call The Pittsburgh Institute of Plastic Surgery at 1-800-321-7477 or The Plastic Surgery Information Service at 1-800-635-0635.*

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