

Carpel Tunnel Syndrome

Background:

- Carpel Tunnel Syndrome is characterized by pain, tingling, or a numb feeling in the hand and wrist.
- The syndrome got its name from the area of the body it affects: the carpel tunnel. The carpel tunnel refers to a tunnel like passageway with 8 bones and ligaments located where the hand meets the wrist. It contains the median nerve, which is the key nerve involved in carpel tunnel syndrome.
- Carpel Tunnel occurs when the median nerve is compressed, whether from pressing, squeezing, irritation, or inflammation, it then causes the pain, weakness, and numbness.
- The median nerve is what controls the palm side of the hand, as well as the thumb, ring finger, and index finger.
- It usually affects the dominant hand first, but can affect the non-dominant hand, or both hands.
- According to OSHA, “repetitive strain injuries are the nation's most common and costly occupational health problem, affecting hundreds of thousands of American workers, and costing more than \$20 billion a year in workers compensation.”
- According to the U.S. Bureau of Labor Statistics, “nearly two-thirds of all occupational illnesses reported, were caused by exposure to repeated trauma to workers upper body (the wrist, elbow or shoulder). One common example of such an injury is carpal tunnel syndrome.”
- According to the CDC, people suffering from Carpel Tunnel complain of feeling like their fingers are swollen, even though there is no physical swelling. They cannot differentiate hot and cold by touch. They may also appear clumsy since they lack sensations in their fingers.
- Carpel Tunnel can be a result of many different things, including:
 - i. Illnesses (for example, hypothyroidism, rheumatoid arthritis, and diabetes)
 - ii. Pregnancy
 - iii. Obesity
 - iv. Repeated similar hand movements when wrist is bent (computer work or gardening, for example)

- v. Wrist injuries
- vi. Smoking (it reduces blood flow to the median nerve)
- vii. Congenital Disposition (some people are born with a smaller median nerve)
- viii. Cyst or tumor in the carpal tunnel
(WebMD)

- Carpal Tunnel can be prevented by stretching the wrist and hand, taking frequent breaks during strenuous work, wearing a wrist splint if pain starts to occur, wearing fingerless gloves to keep hands warm, use tools whenever possible instead of using hands, and rotate jobs when dealing with assembly jobs.
- Carpal Tunnel can be diagnosed with several different methods and procedures:
 - Questions from your doctor involving recent injuries, health problems, pregnancy, daily routines, and recent activities
 - Checking for any abnormalities in the way the neck, shoulders, arms, wrists, and hands feel or look.
 - Each finger is tested for sensations
 - Laboratory tests and X-rays
 - Tinel Test- tapping on the median nerve. If positive, the patient will feel a tingling and shock sensation in the wrist and hand.
 - Phalen Test- also known as wrist flexion, the patient holds arms upright and places the fingers down and back of hands together. If they feel sensations within one minute then the test is positive.
 - Electro diagnostic tests- using electrodes placed on hand and wrists and applying shocks to measure pain and discomfort.
 - Ultrasounds- show the movement of the nerve and determine any abnormalities.
- There are numerous treatments for carpal tunnel syndrome, surgical and non-surgical.
- Surgical Treatments should only be taken into consideration if the symptoms last longer than 6 months. These surgeries:
 - Reduce the pressure put upon the median nerve.
 - Local anesthesia is used in these procedures, and many do not require an overnight hospital stay.
 - There are two main types of surgical procedures:
 1. Open Release Surgery- the most typical surgery relating to Carpal Tunnel. There is a two-inch incision in the wrist, and then the carpal ligament is cut. This is done so that the median nerve can enlarge.

2. Endoscopic Surgery- has a faster recovery, and less invasive. Two small incisions are made in the wrist and palm, and a camera is inserted into the incisions. They then use a screen showing pictures from the camera to perform the surgery.
- Full recovery from surgery can take months. Any patient who receives surgery is asked to seek physical therapy to speed up the recovery process.
 - There are also non-surgical ways to treat Carpel Tunnel. These are normally for the less severe cases, but they help in tremendous ways. They may seem more like prevention techniques than treatments, but they are very effective at reducing the symptoms of Carpel Tunnel. These non-surgical methods include:
 - Simply stopping activities that cause pain
 - Resting longer between strenuous activities
 - Icing the wrist for 10-15 minutes, 1-2 times every hour (WebMD)
 - Taking non-steroidal anti-inflammatory drugs (including aspirin, Ibuprofen, or non-prescription pain relievers) to reduce inflammation and pain.
 - Wearing a wrist splint and keeping the wrist in a neutral position. (When holding a glass of water, this is considered a neutral position).
 - Taking Diuretics, also known as water pills, to reduce swelling.
 - Taking Corticosteroids, which can be taken orally or be injected, to relieve the pressure on the nerve and provide instant relief (If you are diabetic, do not use this method as it is known to further decrease Insulin levels).
 - Taking Vitamin B6 may reduce chances of getting Carpel Tunnel.
 - Exercising the muscles whenever possible to prevent stiffness
 - Use your whole hand to hold objects, not just the fingers. (WebMB)
 - When typing, keep wrists straight, with wrists lower than the hands.
 - When arms are hanging freely at the sides, relax the shoulders. (WebMD)
 - If possible, switch hands often when repeating movements. (WebMD)
 - Therapies
 1. Acupuncture and Chiropractic therapies can offer relief, as well as
 2. Yoga, which reduces pain and improves grip strength.

Statement of the Problem:

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- A main goal of Healthy People 2010 is to “eliminate health disparities among segments of the population, including differences that occur by gender, race, or ethnicity, education or income, disability, geographic location, or sexual orientation”
 - This directly relates to Carpal Tunnel in numerous ways. Women are three times more likely to get CT than men. People of Caucasian background

are far more likely to get CT than any other background. There are further statistics to prove these points located in the “Epidemiologic Picture of the Problem” section of this paper.

- Carpal Tunnel is considered an unintentional injury on the workforce because it can potentially expose a person to injury, but they do not necessarily always cause it. According to Healthy People 2010, “Nonfatal occupational injuries are defined as any injury involving loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment other than first aid. For this objective nonfatal occupational injuries include those to workers regardless of age that involve days away from work as well as those without lost workdays.”
 - “In 2001, CTS cases involved a median of 25 days away from work compared with 6 days for all nonfatal injury and illness cases” (BLS 2003a)
 - In relevance to this statistic, Carpal Tunnel is considered a nonfatal occupational injury. It also restricts work and motion and can in some cases require medical treatment, such as therapy or surgery.

- According to Healthy People 2010, “The rate per 100 full-time workers is computed by (1) dividing the number of occupational injuries reported by the total number of hours worked by all employees during the calendar year, and (2) multiplying the result by 200,000. The factor 200,000 represents the hours worked in a year by 100 full-time equivalent workers (working 40 hours work per week, 50 weeks a year).”
 - This also holds true for the number of reported nonfatal occupational injuries and illnesses due to overexertion or repetitive motion involving days away from work among workers aged 16 years and older, which directly relates to carpal tunnel syndrome.

- According to Healthy People 2010, “In 1995, the cost of injury... in the United States was estimated at more than \$224 billion per year. These costs include direct medical care and rehabilitation as well as productivity losses to the Nation’s workforce.”
 - With each person affected by Carpal Tunnel at the workforce, their contribution to the productivity of their job decreases. They also may need to seek medical care to aid in their recovery.

Epidemiologic Picture of the Problem:

- Women are three times more likely than men to have carpal tunnel syndrome because they naturally have smaller carpal tunnels. (OSHA)

- The syndrome typically only happens in adults.

- The U.S. Department of Labor has concluded that Carpal Tunnel Syndrome is the "chief occupational hazard of the 90's" (OSHA)
- It affects over 8-million Americans (OSHA)
- It is the most reported medical problem, accounting for about 50% of all work-related injuries (OSHA)
- Most common in people who do assembly line work (work involving manufacturing, sewing, cleaning, finishing, etc.) They are three times more likely to have carpal tunnel than any other job.
- It is most common in service or transportation and material moving occupations (245,150 cases and 239,710 cases respectively).
- It is more common when the length of service with the employer range from 1-5 years (394,870 cases), or more than 5 years (361,250).
- White, non-Hispanic workers accounted for the majority of cases (15,335 or 75.4%). Black, non-Hispanic workers accounted for 2,704 cases or 13.3%, and Hispanic workers accounted for 1,794 cases or 8.8%
- According to the National Center for Health Statistics, "Musculoskeletal disorders, including carpal tunnel syndrome, are among the most prevalent medical conditions in the U.S., affecting 7% of the population. They account for 14% of physician visits and 19% of hospital stays." (Kugal, 2005)
- According to the National Center for Health Statistics, "Approximately 260,000 carpal tunnel release operations are performed each year, with 47% of the cases considered to be work related." (Kugal, 2005)
- The average lifetime cost for each injured person is \$30,000 (this takes into account all medical bills and the money/time lost from missing work)
- "In 2001, CTS cases involved a median of 25 days away from work compared with 6 days for all nonfatal injury and illness cases" (BLS 2003a)

Solution to the Problem:

- Most of the current research is targeted at prevention and rehabilitation. The National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) is funding research on carpal tunnel syndrome.

- “The National Institute of Neurological Disorders and Stroke (NINDS), is studying the chronology of events that occur with carpal tunnel syndrome in order to better understand, treat, and prevent this ailment”.
- “By determining distinct biomechanical factors related to pain, such as specific joint angles, motions, force, and progression over time, researchers are finding new ways to limit or prevent carpal tunnel syndrome in the workplace and decrease other costly and disabling occupational illnesses” (NINDS)
- The National Institute for Occupational Safety and Health (NIOSH) is sponsoring a study on carpal tunnel among construction workers. To date, they have yet to receive the data, but they are hoping it will provide more information on the specific work factors associated with the disorder. They are also hoping it will “assist in developing strategies to prevent its occurrence among construction and other workers”

Addition Internet Sources:

- American Chronic Pain Association (ACPA): ACPA@pacbell.net
<http://www.theacpa.org>
- Occupational Safety & Health Administration: <http://www.osha.gov>
- American Society for Surgery of the Hand: info@assh.org
<http://www.assh.org>

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- NIAMS. Retrieved March 30, 2008, from National Institute of Arthritis and Musculoskeletal and Skin Diseases Web site: <http://www.niams.nih.gov/>
- National Carpal Tunnel Syndrome Statistics. Retrieved March 30, 2008, from The Safe Zone Web site: <http://thesafe-zone.com/stat.html>

Back to Betty C. Jung's Web site	http://www.bettycjung.net/
Back to Fact Sheet Directory	http://www.bettycjung.net/Pch202fs.htm

Carpel Tunnel Syndrome Handout

Background:

- Characterized by pain, tingling, or numbness in the hand and wrist over a period of time.
- Received its name from the area of the body it affects: the carpal tunnel. The carpal tunnel refers to the narrow passageway of 8 bones and ligaments at the base of the hand. It contains the median nerve, which is the key nerve involved in carpal tunnel syndrome.
- When the median nerve is compressed, whether from pressing, squeezing, irritation, or inflammation, it causes the pain, weakness, and numbness.
- According to the CDC, people suffering from Carpal Tunnel complain of feeling like their fingers are swollen, even though there is no physical swelling. They cannot differentiate hot and cold by touch. They may also appear clumsy since they lack sensations in their fingers.

Causes:

- Illnesses pregnancy, obesity, repeated similar hand movements when wrist is bent, wrist injuries, smoking (it reduces blood flow to the median nerve), Congenital Disposition (some people are born with a smaller median nerve, or a cyst or tumor in the carpal tunnel)

Treatments:

- Surgical Treatments:
 - Open Release Surgery or Endoscopic Surgery
- Examples of Non-Surgical Treatments:
 - Mostly targeted toward prevention and rehabilitation, used before surgical is even considered. If these treatments do not work for over 6 months, think about surgical.

Healthy People 2010:

- A main goal of Healthy People 2010 is to “eliminate health disparities among segments of the population, including differences that occur by gender, race, or ethnicity, education or income, disability, geographic location, or sexual orientation”
- Carpal Tunnel is considered an unintentional injury on the workforce because it can potentially expose a person to injury, but they do not necessarily always cause it. According to Healthy People 2010, “Nonfatal occupational injuries are defined as any injury involving loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment other than first aid. For this objective nonfatal occupational injuries include those to workers regardless of age that involve days away from work as well as those without lost workdays.”

Statistics:

- Women are three times more likely than men to have carpal tunnel syndrome (OSHA)
- The syndrome typically only happens in adults.
- Currently, Carpal Tunnel Syndrome affects over 8-million Americans (OSHA)
- Carpal Tunnel Syndrome is the #1 reported medical problem, accounting for about 50% of all work-related injuries (OSHA)
- Most common in people who do assembly line work (work involving manufacturing, sewing, cleaning, finishing, etc.) They are three times more likely to have carpal tunnel than any other job.
- According to the National Center for Health Statistics, “Musculoskeletal disorders, including carpal tunnel syndrome, are among the most prevalent medical conditions in the U.S., affecting 7% of the population. They account for 14% of physician visits and 19% of hospital stays.” (Kugal, 2005)
- According to the National Center for Health Statistics, “Approximately 260,000 carpal tunnel release operations are performed each year, with 47% of the cases considered to be work related.” (Kugal, 2005)
- According to the U.S. Department of Labor, “Occupational Safety and Health Administration (OSHA), repetitive strain injuries are the nation’s most common and costly occupational health problem, affecting hundreds of thousands of American workers, and costing more than \$20 billion a year in workers compensation.”

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- Most of the current research is targeted at prevention and rehabilitation. The National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) is funding research on carpal tunnel syndrome.