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Majid Shoeibi *

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Short Communication

Finger Tendon Injuries in office Workers who work with Touch Devices

Majid Shoeibi

Yazd University, Iran.

***Corresponding Author:** Majid Shoeibi., Yazd University, Iran.

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Abstract:

Carpal Tunnel Syndrome and De Quervain's Tendonitis are two of the most common conditions caused by office jobs. Both of these conditions tend to arise due to overuse and repetitive movements in the hands and wrists from activities such as writing, typing and using the computer mouse. Carpal Tunnel, characterized by pain, numbness and/or tingling sensations in the hands and fingers, is the result of swollen tendons putting pressure on the Median Nerve. De Quervain's Tendonitis tends to affect the thumb and wrist, causing pain, numbness and restricted motion at the base of the thumb. Trigger Finger is another tendon related issue that comes with repetitive actions, typically gripping (like holding writing utensils or small objects for much of the day). If you have trigger finger, you will notice that the tendon in your index finger tightens and causes the finger to lock in a bent position when you try to straighten.

keywords: anatomy; ankle; minimally surgery; surgical options

Introduction

Moving away from the hands, the elbows and forearms can also be affected from working at a desk every day. Though we typically think of Tennis Elbow being caused by sports (like tennis and golf), it can also be caused by repeated movements at your computer. Sitting at your desk with your elbows bent to type and use the mouse puts strain on the muscles and tendons that run from the hand to the elbow. This can cause pain and swelling in the elbow just like Tennis Elbow. Another elbow condition that is a little lesser known is Bursitis, a fluid buildup in the elbow caused (in this scenario) by repeatedly leaning your elbows on a hard surface such as a desk or table. Both of these conditions tend to arise due to overuse and repetitive movements in the hands and wrists from activities such as writing, typing and using the computer mouse. Carpal tunnel syndrome (CTS), a painful wrist median nerve compressive neuropathy, is the root cause of 90% of all peripheral entrapment neuropathies [6].

Traditional rehabilitation techniques are effective in improving upper limb function, but they are time-consuming and costly, frequently requiring the use of specialized facilities that are not always widely available. Carpal Tunnel Syndrome is a condition caused by pressure on the median nerve as it passes through the carpal tunnel in the wrist. This pressure can lead to various symptoms, primarily affecting those who perform repetitive tasks such as typing or using a mouse for extended periods. Common symptoms of CTS include: Numbness or tingling in the thumb and first three fingers, pain that may radiate up the arm and weakness in the hand, making it difficult to grip objects. Symptoms often worsen at night or with prolonged wrist flexion [1],[3],[5].

Risk Factors

Office workers are particularly susceptible to CTS due to; Repetitive motions, such as typing or mouse use, poor ergonomics, including improper wrist positioning and workstation setup and forceful gripping or pressing while typing [2][3][5]. To mitigate the risk of developing CTS, office workers can adopt several strategies:

- Ergonomic Workstation Setup: Ensure that chairs and desks are at appropriate heights to maintain a neutral wrist position while typing.
- Regular Breaks: Take frequent breaks to stretch wrists and hands, ideally every hour.
- Proper Typing Technique: Use a light touch on keyboards and maintain a straight wrist position [3],[5].
- Wrist Support: Consider using wrist braces during sleep to prevent flexion that could exacerbate symptoms [5].

A study found that male office workers using touchscreen devices in the IT department of a hospital had a high prevalence of carpal tunnel syndrome symptoms, particularly in technical support and especially in those using smartphones. There was also a high prevalence of probable

De Quervain's tenosynovitis in this population, at 35% (Al-Mufaireej K.A, 2023).

De Quervain's Tendonitis involves inflammation of the tendons on the thumb side of the wrist, leading to pain and discomfort. This condition can also be prevalent among office workers who frequently use their thumbs for tasks like texting or scrolling. Symptoms typically include: pain near the base of the thumb, which may radiate up the forearm, swelling over the thumb side of the wrist and difficulty with thumb movements, especially when grasping or pinching [4].

Risk Factors

Similar to CTS, De Quervain's Tendonitis is influenced by: repetitive thumb movements, particularly in activities that require gripping or pinching and poor ergonomic practices, such as awkward wrist positions during typing or using handheld devices [4]. To reduce the risk of De Quervain's Tendonitis, workers can: Adjust Workstation Ergonomics: Ensure that devices are positioned to minimize strain on the wrists and thumbs, limit Repetitive Movements: Alternate tasks that require heavy use of the thumbs with those that do not. Also, incorporate Stretching Exercises: regularly stretch and strengthen hand muscles to improve flexibility and reduce tension [4]. Irtual reality users are exposed to expansive and inclusive environments, as well as vivid illusions of a virtual computer-generated environment in which both realistic and implausible events can occur. As a result, users may act as if they are in a physical environment, completely unaware that they are in one that is virtual. Conclusion-VR has been shown in studies to be effective for hand rehabilitation (Deepali et al, 2024). However, a new research reviews the diagnosis and treatment of flexor tendon injuries of the hand highlighting flexor tendon anatomy, important pre-operative imaging findings, surgical options, and post-operative complications.

Imaging plays a key role in guiding treatment of these difficult to manage injuries. Thus, it is important for radiologists to have a sound understanding of factors important in treatment decision-making. researchers belive that, In the pre-operative setting, accurately identifying the location of the torn proximal tendon stump in subacute and chronic injuries helps dictate whether the patient is a candidate for a primary flexor tendon repair or may require a tendon reconstruction to restore function. In the post-operative setting, the status of the repair and presence of surrounding adhesions help dictate if and when the patient will require subsequent surgery and whether that surgery will be a tenolysis, revision repair, reconstruction, or fusion [9]. The result of another study aimed to investigate the effect of evidence-based nursing interventions on wound pain and postoperative complications for finger tendon injury showed that a total of 86 patients treated with finger tendon injuries in our hospital from January 2021 to October 2023 were selected and randomly divided into two experimental groups and a control group. This study shows that the use of evidence-based nursing interventions for patients with finger tendon injury can reduce postoperative wound pain, reduce the incidence of complications, and increase patient satisfaction with nursing care [10].

Discussion and Conclusion

The tendon is a dense structural tissue that connects skeletal muscle to bone and is composed of the tendon sheath, collagen fibres, tendon membrane and paratenon. Generally, the tendon is surrounded by a synovial sheath and has the ability to conduct muscle contractions and pull the phalanges to make them move [11,12]. Common types of hand tendon injuries are primarily finger tendon injuries [13], and the tendons in the fingers mainly include the flexor tendons on the palmar side and the extensor tendons on the dorsal side [14,15].

Based on the concept of minimally invasive technology, clinicians use micro-repair suturing surgery for treatment, which can reduce the wound area at the injured finger and improve the tendon tissue repair effect [16,17]. However, clinical practice research confirms that during the postoperative recovery period, if nursing interventions are not strengthened, and preventive measures against complications and tendon rehabilitation exercises are not well done, it will lead to infection, oedema, adhesion and rupture at the site of the patient's finger tendon [18]. Not only does this prolong the recovery time for finger tendon injuries, but also it increases the level of pain, reduces compliance with rehabilitative nursing and thus affects prognostic outcomes [19].

Both Carpal Tunnel Syndrome and De Quervain's Tendonitis pose significant risks for office workers due to repetitive motions and poor ergonomics. By implementing preventive measures such as ergonomic adjustments, regular breaks, and proper techniques, individuals can reduce their likelihood of developing these conditions. Awareness and proactive management are key to maintaining hand health in office environments. After the study, the results generally show that most people use touchscreens in unnatural and incorrect positions. Stress injuries also occur when people use their bodies in ways that cause physical stress, such as bending their hands too far in or out while tapping or applying force to their wrists while typing. Carpal tunnel syndrome, perhaps the best-known condition in this category, is caused by pressure on the median nerve in the wrist.

As the simplest solution, the researcher recommends, your neck and the cervical spine that supports it are highly susceptible to poor posture, which can compress or stretch the nerves that exit the spinal cord. Resist the temptation to bend your neck forward or backward, and especially avoid turning your head or tilting it to one side or the other for long periods of time. Take frequent breaks, and if you feel pain, numbness, or tingling, stop what you're doing immediately and find a more comfortable position.

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