

“An Emerging Musculoskeletal Disorder in the Digital Era: A Case Review on Text Neck Syndrome”

Text Neck Syndrome in the Digital Era: A Case Review

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ABSTRACT

The increasing dependence on smartphones and handheld digital devices has led to the emergence of technology-related musculoskeletal disorders, notably **Text Neck Syndrome (TNS)**. TNS is a repetitive stress injury caused by prolonged forward head posture during device use, resulting in excessive biomechanical load on the cervical spine. To highlight the etiology, risk factors, pathophysiology, clinical manifestations, diagnosis, prevention, and management of Text Neck Syndrome as an emerging musculoskeletal disorder in the digital era. This descriptive review is based on existing literature, surveys, and clinical observations related to handheld device usage and its impact on cervical spine biomechanics and musculoskeletal health. Evidence suggests a high prevalence of TNS among adolescents and young adults, particularly those with screen time exceeding four hours daily. Forward head flexion increases cervical spine load from approximately 10–12 pounds in a neutral position to nearly 60 pounds at 60 degrees of flexion. This sustained stress leads to muscle imbalance, postural alterations, cervical disc degeneration, nerve compression, and chronic pain. Common symptoms include neck and shoulder pain, headaches, stiffness, and upper limb paresthesia. Diagnosis is primarily clinical, supported by postural assessment and imaging when necessary. Text Neck Syndrome is a growing public health concern linked to modern digital lifestyles. Early recognition, ergonomic interventions, posture correction, regular breaks, and therapeutic exercises are essential for prevention and effective management.

Keywords: Text Neck Syndrome, Smartphone Use, Forward Head Posture, Cervical Spine Biomechanics, Musculoskeletal Disorders, Digital Device Use, Neck Pain, Ergonomics, Postural Imbalance, Repetitive Stress Injury.

INTRODUCTION

Nowadays, the mobile phone is the most popular and widely used device for various daily activities such as exchanging information, accessing the internet, watching movies, using social media sites, gaming, and a variety of other activities. A survey had shown that 79% of the 18-44- year-old people spend most of their time with smartphones.¹

The term “Text neck” was coined by Dr. Dean L. Fishman, who is a US chiropractor. The term text neck is used to describe a repetitive stress injury or an overuse syndrome where a person has his/her head hung or

flexed in a forward position and is bent down looking at his/her mobile or other electronic device for prolonged periods of time .²

The incidence of musculoskeletal disorders (MSD) of hand, wrist, forearm, arm and neck has been increasing all over the world due to prolonged, forceful, low amplitude, repetitive use of hand held devices (HHD). Continuous repetitive movements with the thumb and fingers have all been identified as risk factors which may lead to disorders of the thumb and its musculature like tendinosis of the extensor pollicis longus or myofascial pain syndrome in the hand. Studies have shown a relation between mobile design and anthropometry of the user in causing discomfort and fatigue in hand, elbow and shoulder while using the HHD.³

DEFINITION

Text neck syndrome refers to a repetitive stress injury to the neck caused by having your head in a forward position for extended period. The forward pending posture affects the curvature of the cervical spine, the neck and shoulder muscles, and supporting ligaments. According to a review from [EC Orthopaedics](#), “Text Neck directly affects the spine while flexing the head forward at varying degrees: when the head tilts forward 15 degrees, the force on the neck surge to 27 pounds, at 30 degrees 40 pounds, at 45 degrees 49 pounds and at 60 degrees 60 pounds.” To give you an idea of how much extra stress is going through your neck, imagine carrying an 8 year old around your neck for two to four hours.

INCIDENCE & PREVALENCE

- A survey of 100 students found a **75% prevalence of Text Neck Syndrome (TNS)**, with high rates of associated neck (68%), shoulder (54%), and headache (40%) pain. TNS symptoms correlated strongly with screen time exceeding 4 hours per day.
- Another study on 300 students used the Neck Disability Index, revealing **41.7% with mild, 30% with moderate, and 12.7% with severe TNS**.
- A review of 15 studies showed a point prevalence of ~7.6% and a lifetime prevalence of ~48.5% for TNS. This rate was **higher (60%) among adults in India** who use smartphones frequently.

ETIOLOGY

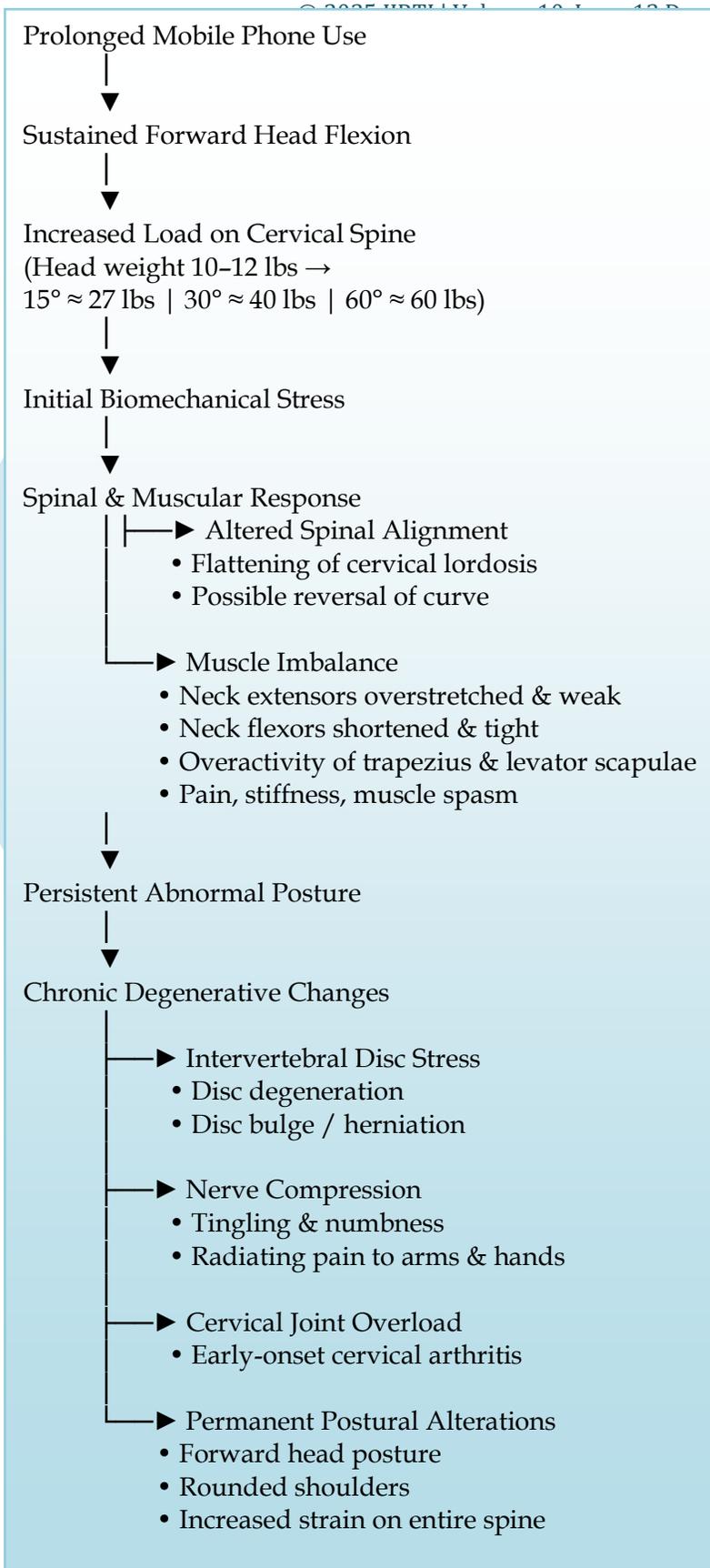
- **Forward Head Flexion:** The primary cause is bending the head down to look at a mobile or electronic device.
- **Increased Force on Spine:** Each degree of forward tilt significantly increases the weight and pressure on the neck and upper back.
- **Repetitive Stress:** Constant, prolonged strain on the muscles, ligaments, and tendons of the neck and shoulders.
- **Muscle Imbalance:** Weakening of neck extensors and shortening of neck flexors.

RISK FACTORS

- **Prolonged Device Use:** Spending many hours a day on a mobile phone or tablet.
- **Poor Posture:** Holding devices below eye level, causing a sharp neck bend.
- **Age:** Most common in teenagers and young adults due to high screen time.
- **Sedentary Lifestyle:** Lack of physical activity and weak neck/core muscles.
- **Lack of Awareness:** Not knowing about proper ergonomic posture.

PATHOPHYSIOLOGY

1. **Initial Stress:** The core cause is the prolonged and repetitive forward flexion of the head while using a mobile device. In a neutral position, the head weighs about 10-12 pounds. Tilting the head forward dramatically increases the gravitational force exerted on the cervical spine. For example:
 - A **15-degree** tilt can increase the force to approximately **27 pounds**.
 - A **30-degree** tilt can increase the force to about **40 pounds**.
 - A **60-degree** tilt can place as much as **60 pounds** of pressure on the neck.
2. **Spinal & Muscular Response:** The body's musculoskeletal system responds to this increased and unnatural load.
 - **Spinal Alignment:** The natural "C-shaped" inward curve of the cervical spine (cervical lordosis) begins to flatten. Over time, this can lead to a reversal of the curve.
 - **Muscle Imbalance:** The muscles in the back of the neck and upper back (extensors) become overstretched and weak, while the muscles in the front of the neck (flexors) become shortened and tight. This imbalance forces other muscles, like the trapezius and levator scapulae, to work harder to support the head, leading to pain, stiffness, and muscle spasms.



3. **Progression to Chronic Conditions:** If the poor posture and biomechanical stress are not corrected, they can lead to long-term degenerative changes in the spine and surrounding tissues.
- **Disc Degeneration:** The intervertebral discs that cushion the vertebrae are subjected to immense pressure, leading to premature wear and tear, and potentially, degenerative disc disease or herniated discs.
 - **Nerve Compression:** The altered spinal alignment and disc issues can compress spinal nerves, causing neurological symptoms such as tingling, numbness, or radiating pain in the arms and hands.
 - **Early-onset Arthritis:** The sustained pressure on the cervical joints can accelerate the development of arthritis in the neck.
 - **Postural Changes:** The constant forward head position can become a permanent postural alteration, leading to rounded shoulders and further strain on the entire spine

DIAGNOSIS

- **Patient History:**
 - **Screen Time:** History of prolonged mobile device use (>3 hours/day).
 - **Symptom Review:** Neck, shoulder, or upper back pain; headaches; numbness or tingling in arms/hands.
 - **Symptom Triggers:** Pain that worsens when using a device or looking down.
- **Physical Examination:**
 - **Postural Assessment:** Observation for forward head posture and rounded shoulders.
 - **Palpation:** Checking for muscle tenderness, tightness, and spasms in the neck and shoulders.
 - **Range of Motion:** Assessment of limited or painful neck movement.
- **Exclusion of Other Conditions:** Ruling out more severe causes of symptoms (e.g., disc herniation, arthritis).
- **Imaging (if necessary):**
 - **X-rays:** To show flattening or reversal of the cervical spinal curve.
 - **MRI:** To visualize soft tissue damage like disc herniation or nerve compression.

PREVENTION

- **Ergonomics:** Hold devices at eye level; use a stand to avoid looking down.
- **Posture:** Keep your head aligned over your shoulders; avoid slouching.
- **Breaks:** Follow the **20-20-20 Rule** and take regular 30-45 minute breaks from your device.
- **Exercise:** Perform **chin tucks**, neck stretches, and shoulder rolls to strengthen and stretch key muscles.

MANAGEMENT

• Pain Relief:

- **Rest:** Stop using the device to relieve immediate stress.
- **Therapy:** Use cold packs for inflammation, followed by heat for muscle relaxation.
- **Medication:** Take over-the-counter pain relievers (e.g., ibuprofen).

• Rehabilitation:

- **Physical Therapy:** Get professional guidance for targeted stretches and strengthening exercises (e.g., chin tucks).
- **Manual Therapy:** Receive massage or soft tissue work to release tight muscles.

• Ergonomic Changes:

- **Screen Position:** Hold devices at eye level to keep your head upright.
- **Breaks:** Take frequent breaks and stretch every 20-30 minutes.

• Medical Intervention:

- Consult a doctor for severe, persistent symptoms (e.g., radiating arm pain) that may require stronger medication or other treatments.

CONCLUSION

Text Neck Syndrome is a modern overuse injury caused by poor posture while using devices. It stems from the immense strain placed on the neck, leading to pain and long-term damage. The solution is simple and effective: prioritize ergonomic habits by holding your screen at eye level, take frequent breaks, and use targeted exercises to correct your posture. By taking proactive steps, you can prevent and manage this digital-age condition.

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