International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

Effectiveness of Cranial base Release and Gong's Mobilization in the Management of Text Neck Syndrome: A Case Study

Anjali Carpenter

M.P.T. Scholar, Department of Physiotherapy

Peoples College of Paramedical Science and Research Center

Peoples University, Bhopal, M.P., India

Abstract

Background: Text neck syndrome is a postural and movement-related cervical condition commonly associated with prolonged smartphone, laptop, and tablet use. Sustained lower cervical flexion with upper cervical extension increases load on the posterior cervical soft tissues, encourages forward head posture, reduces cervical extension tolerance, and may produce suboccipital pain, headache, upper trapezius tightness, and disability in daily work. Manual therapy is often used when pain, muscle guarding, and joint restriction prevent active correction. Cranial base release is directed toward reducing suboccipital tightness, improving cranio-cervical mobility, calming protective muscle tone, and restoring a more comfortable head-on-neck relationship. Gong's mobilization is a specific mobilization approach directed toward cervical extension mechanics, facet gliding, and correction of forward head posture through a controlled passive movement strategy.

Presentation of Case: This case study describes a 26-year-old female office employee and postgraduate student who presented with four months of posterior neck pain, heaviness around the suboccipital region, intermittent frontal headache, reduced cervical extension, and difficulty using a mobile phone and laptop for prolonged periods. She reported eight to ten hours of screen exposure per day, frequent use of a handheld phone with neck flexion, and poor ergonomic awareness during online work. Baseline assessment showed forward head posture, rounded shoulders, tenderness in suboccipital muscles, upper trapezius and levator scapulae tightness, reduced active cervical range of motion, reduced deep neck flexor endurance, and functional limitation in reading, typing, driving, and sleeping.

Intervention: The patient received a four-week supervised physiotherapy programme consisting of cranial base release, Gong's mobilization, pain-free cervical mobility training, postural correction, deep neck flexor activation, scapular stabilization, pectoral stretching, ergonomic education, and a home exercise schedule. Treatment was provided five sessions per week, approximately forty minutes per session. Cranial base release was applied initially to decrease guarding and suboccipital overactivity. Gong's mobilization was then used to improve cervical extension, joint glide, and tolerance to upright head position. Exercise and activity

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

modification were progressed according to pain response, movement quality, and functional tolerance.

Outcome Measures: Pain was recorded with the Numeric Pain Rating Scale. Cervical disability was assessed with the Neck Disability Index. Cervical range of motion was measured by goniometric and inclinometer-based clinical assessment. Forward head posture was documented through craniovertebral angle observation. Deep neck flexor endurance, muscle tenderness, sleep disturbance, work tolerance, and patient-specific functional activity scores were recorded at baseline, week two, and week four.

Results: After four weeks, pain reduced from 7/10 to 2/10, Neck Disability Index improved from 42 percent to 12 percent, craniovertebral angle improved from 40 degrees to 49 degrees, cervical extension increased from 32 degrees to 58 degrees, and deep neck flexor endurance increased from 10 seconds to 31 seconds. The patient reported improved sitting tolerance, less headache frequency, better sleep, reduced upper trapezius tightness, and greater awareness of neutral screen posture. No adverse response was reported during or after treatment.

Conclusion: The combined use of cranial base release and Gong's mobilization was associated with reduction of pain and disability, improvement in cervical posture, and better functional tolerance in a patient with text neck syndrome. The findings support the use of manual therapy followed by corrective exercise and ergonomic retraining when suboccipital tightness, forward head posture, and cervical extension limitation are prominent.

Keywords: Text neck syndrome, cranial base release, Gong's mobilization, forward head posture, cervical pain, Neck Disability Index, deep neck flexor endurance, physiotherapy.

Background

Text neck syndrome refers to a group of cervical symptoms associated with prolonged flexed-neck use of mobile phones, tablets, laptops, and similar digital devices. The condition is not limited to one anatomical structure. It commonly involves postural strain, muscular imbalance, altered cervical loading, reduced movement variability, and poor ergonomic habits. The posture usually includes forward translation of the head, increased upper cervical extension, reduced lower cervical lordotic control, rounded shoulders, protracted scapulae, and thoracic flexion. In this position, the head is held in front of the line of gravity, so the cervical extensor muscles remain active for long periods to prevent further collapse into flexion. Over time, the suboccipital muscles, upper trapezius, levator scapulae, cervical erector spinae, pectoralis minor, and sternocleidomastoid may become overactive or shortened, while the deep neck flexors and scapular stabilizers may become underactive.

The clinical picture of text neck syndrome is often gradual. Patients usually complain of dull aching pain in the posterior neck, heaviness at the base of the skull, stiffness after screen use, difficulty looking upward, headache, upper back discomfort, and fatigue during study or office work. Some patients also report clicking, eye strain, sleep disturbance, or pain radiating toward the shoulder girdle. The complaint may initially improve with rest, massage, or analgesic medication, but it often returns when the same digital posture is repeated. Therefore, treatment should address pain as well as the mechanical and behavioral factors maintaining the problem.

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

The cranial base region is clinically important in text neck syndrome because the suboccipital muscles attach between the upper cervical spine and skull. These muscles are small but highly active in head positioning, eyehead coordination, and upper cervical extension control. When a person keeps the head forward and looks down at a phone, the lower cervical spine may flex while the upper cervical spine may remain relatively extended in order to keep the eyes oriented toward the screen. This can produce sustained suboccipital compression, tenderness, headache, and restriction in cranio-cervical flexion. Cranial base release is used to provide gentle sustained contact under the occiput and upper cervical region so that the soft tissues can relax, circulation can improve, and protective tone can reduce before active movement retraining begins.

Gong's mobilization has been described as a manual therapy technique used to improve cervical posture and cervical extension range where forward head posture and restricted cervical mobility are present. The technique uses a controlled passive mobilization strategy that encourages cervical extension mechanics while minimizing excessive movement at non-target segments. In a patient with text neck syndrome, its clinical purpose is to improve joint glide, reduce stiffness, restore extension tolerance, and help the patient experience a more neutral head position. When applied after cranial base release, the mobilization can be better tolerated because soft-tissue guarding has already been reduced.

Current physiotherapy management of mechanical neck pain favors multimodal care. Manual therapy may reduce pain and mobility restriction, but sustained improvement usually requires active exercise, postural awareness, work modification, and self-management. Deep neck flexor training improves the ability to hold the head in a neutral position without excessive superficial muscle activity. Scapular stabilization improves the base on which the cervical spine rests. Pectoral stretching and thoracic extension mobility reduce the tendency toward rounded shoulder posture. Ergonomic training reduces exposure to the repeated mechanical stress that created the condition. Therefore, the present case study focuses on cranial base release and Gong's mobilization as the main manual therapy components, while also documenting essential supporting exercises and lifestyle correction.

The relevance of this case lies in the growing number of young adults and office workers who develop neck pain during intensive digital work. Many patients are not severely injured, but they are functionally limited because symptoms affect concentration, productivity, driving, reading, and sleep. Early physiotherapy management can prevent progression from episodic posture-related pain to persistent neck disability. A detailed case format is useful because it shows the assessment findings, treatment reasoning, weekly progression, measurable outcomes, and clinical interpretation in a practical manner.

Epidemiology and Clinical Relevance: Neck pain associated with digital device use is clinically relevant because it affects students, desk workers, and professionals who spend many hours in static postures. The syndrome commonly reduces work efficiency, causes repeated discomfort during study, and encourages dependence on pain medication or passive rest. Poor posture may also contribute to upper crossed pattern, headache, and reduced thoracic mobility. Early management can reduce pain and teach the patient how to maintain mobility during

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

unavoidable screen exposure. Scope of the Study: This case study focuses on one patient with text neck syndrome managed over four weeks. It examines pain, posture, cervical mobility, deep neck flexor endurance, functional activities, and patient adherence. The case emphasizes manual therapy using cranial base release and Gong's mobilization, followed by exercise and ergonomic education to maintain gains.

Clinical Presentation

Patient Data

The patient was a 26-year-old female office employee who was also completing postgraduate study through online and evening classes. She reported posterior neck pain for approximately four months. The onset was gradual and not associated with trauma, fall, fever, or neurological illness. Her symptoms were worse after prolonged mobile phone use, laptop work, online lectures, and reading notes on a tablet. She usually worked at a desk during office hours and then studied at home for two to three hours. She frequently used the phone while sitting on a bed with the neck flexed and shoulders rounded.

The main complaint was dull pain at the base of the skull and upper neck, rated 7/10 during aggravating activities. She also reported a feeling of heaviness in the head, morning stiffness, intermittent frontal headache two to three times per week, and difficulty maintaining concentration during online work. Pain was relieved temporarily by lying down, self-massage, and hot application. She denied dizziness, fainting, visual blackout, upper limb numbness, progressive weakness, bowel or bladder symptoms, unexplained weight loss, or history of inflammatory joint disease. Her general health was satisfactory.

Functional limitations included inability to use the mobile phone continuously for more than fifteen minutes without pain, difficulty completing one hour of laptop work without changing position, discomfort during twowheeler driving, and sleep disturbance when using a high pillow. She avoided exercise because movement felt stiff. The patient was motivated for physiotherapy because symptoms were interfering with work performance and study preparation. She agreed to participate in supervised sessions and follow a written home programme.

Inclusion Criteria Applied to This Case:

- Age between 18 and 35 years with neck pain related to digital device use.
- Forward head posture observed clinically with suboccipital tightness and cervical stiffness.
- Pain present for more than six weeks but without acute traumatic injury. • Ability to understand instructions and perform corrective exercises.
- No signs of cervical myelopathy, serious pathology, or unstable medical condition.

Exclusion Criteria Considered:

- Recent cervical fracture, dislocation, whiplash trauma, or cervical surgery.
- Progressive neurological deficit, radiculopathy with marked weakness, myelopathy, or positive red flags.

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

- Vestibular disorder, vertebrobasilar insufficiency symptoms, uncontrolled hypertension, or severe dizziness.
- Inflammatory arthritis, malignancy, infection, or systemic disease causing neck pain.
- Unwillingness to follow ergonomic advice or home exercise instructions.

Clinical Examination and Findings

Observation in standing showed forward head posture, rounded shoulders, mild thoracic kyphotic attitude, and protracted scapulae. The ear lobe was visibly anterior to the acromion line. In sitting, the patient tended to rest with the chin poked forward and the laptop screen below eye level. When asked to correct posture, she could temporarily retract the chin but could not maintain the corrected position for more than a short period because of fatigue and stiffness. Palpation revealed tenderness over the suboccipital region, upper cervical paraspinals, upper trapezius, and levator scapulae. The suboccipital muscles felt tight and sensitive to deep pressure.

Pectoralis minor tightness was present bilaterally, more on the dominant side. Joint mobility assessment suggested restriction in upper cervical flexion and lower cervical extension. Thoracic extension was reduced during seated correction. Active cervical extension and rotation produced a pulling sensation at the base of the skull but did not produce arm symptoms. Neurological screening was normal. Myotome strength in the upper limb was symmetrical, dermatomal sensation was intact, reflexes were not abnormal, and Spurling-type provocation did not reproduce radicular pain. Upper limb tension testing was not suggestive of neural mechanosensitivity. The main impairments were mechanical and postural: forward head posture, suboccipital tightness, extension restriction, reduced endurance of deep neck flexors, and excessive activation of superficial cervical muscles during attempted correction.

Table 1: Baseline Demographic and Lifestyle Profile

Variable	Finding	Clinical Relevance
Age / Sex	26 years / Female	Young adult with high screen exposure
Occupation	Office employee and postgraduate student	Prolonged sitting and digital work
Dominant hand	Right	Frequent phone use in right hand
Duration of symptoms	4 months	Subacute to chronic mechanical presentation
Daily screen exposure	8-10 hours	Major aggravating factor
Primary aggravating activity	Mobile phone and laptop use	Sustained flexed neck posture
Relieving factors	Rest, hot pack, lying supine	Suggests mechanical and soft-tissue component

Table 2: Baseline Postural and Cervicothoracic Observation

Observation	Baseline Finding	Interpretation
Craniovertebral angle	40 degrees	Forward head posture present
Shoulder position	Rounded and protracted	Upper crossed postural tendency
Thoracic posture	Mild flexed attitude	Reduced extension base for cervical correction
Chin posture	Forward chin poke at rest	Poor deep neck flexor control
Scapular position	Protraction with mild downward rotation	Reduced postural support
Posture correction tolerance	Less than 2 minutes	Endurance deficit and stiffness

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

Table 3: Baseline Cervical Active Range of Motion

Movement	Normal Reference	Baseline Value	Symptom Response
Flexion	0-45 degrees	0-42 degrees	Mild pulling posterior neck
Extension	0-60 degrees	0-32 degrees	Pain and stiffness at cranial base
Right rotation	0-80 degrees	0-52 degrees	Tightness left upper trapezius
Left rotation	0-80 degrees	0-49 degrees	Tightness right levator region
Right lateral flexion	0-45 degrees	0-24 degrees	Stretch discomfort left side
Left lateral flexion	0-45 degrees	0-22 degrees	Stretch discomfort right side

Table 4: Baseline Muscle and Soft Tissue Findings

Structure / Test	Finding	Clinical Meaning
Suboccipital palpation	Tender and tight bilaterally	Cranial base involvement
Upper trapezius	Hypertonic with trigger point sensitivity	Sustained postural loading
Levator scapulae	Shortened and tender	Pain with rotation and side bending
Pectoralis minor length	Reduced bilaterally	Rounded shoulder contribution
Deep neck flexor endurance	10 seconds	Poor cervical stabilization
Thoracic extension mobility	Reduced	Limits upright head alignment

Table 5: Baseline Functional Outcome Measures

Outcome Measure	Baseline Score	Clinical Meaning
Numeric Pain Rating Scale	7/10 during screen work	Moderate to severe activity-related pain
Neck Disability Index	42 percent	Moderate disability
Patient-Specific Functional Scale: laptop work	3/10	Reduced work tolerance
Patient-Specific Functional Scale: phone use	2/10	Marked limitation
Patient-Specific Functional Scale: driving	4/10	Functional discomfort
Headache frequency	2-3 episodes/week	Suboccipital and postural contribution
Sleep disturbance	3 nights/week	Pillow and neck position sensitivity

UNIQUE FEATURES OF THE STUDY

This case study is distinctive because it combines a soft-tissue approach at the cranial base with a specific cervical mobilization method directed toward posture and extension mechanics. Many patients with text neck syndrome receive only general stretching or advice, but this case documents a structured sequence: pain and guarding reduction, mobilization for movement restoration, neuromuscular control training, and ergonomic correction. The sequence is clinically important because patients with suboccipital tenderness may not tolerate aggressive exercise at the beginning, while patients with joint stiffness may not maintain postural correction unless mobility is restored. The case also uses multiple outcome measures that reflect different levels of recovery. Pain score alone would not show whether the patient improved posture, endurance, or functional screen tolerance. Therefore, the assessment included pain, Neck Disability Index, cervical range of motion, craniovertebral angle, deep neck flexor endurance, headache frequency, sleep disturbance, and patient-specific activities. This broader outcome profile helps explain the effectiveness of the combined programme more clearly.

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

Investigations and Findings

The patient did not require radiological investigation because no red flags, history of trauma, progressive neurological features, or systemic symptoms were present. Clinical screening was sufficient to identify a mechanical postural neck pain presentation. Blood pressure and general health observations were within safe limits for physiotherapy. Cervical neurological examination did not indicate radiculopathy or myelopathy. The working physiotherapy diagnosis was text neck syndrome with forward head posture, suboccipital tightness, reduced cervical extension, and poor deep neck flexor endurance. Functional examination during laptop use confirmed the main aggravating pattern. The patient sat with the laptop placed low on the table, shoulders rounded, elbows unsupported, and chin forward. During phone use, the device was held near the lap with sustained cervical flexion. Correcting the screen height and supporting the forearms immediately reduced perceived neck effort, indicating that ergonomic modification was likely to support treatment gains.

Table 6: Summary of Relevant Medical and Functional Findings

Investigation / Finding	Result	Clinical Interpretation
Red flag screening	Negative	Suitable for conservative physiotherapy
Upper limb neurological screen	Normal	No radicular pattern identified
Spurling-type provocation	Negative for arm symptoms	No clear nerve root irritation
Cervical movement pattern	Extension and rotation restricted	Mechanical mobility impairment
Workstation observation	Low screen, unsupported arms	Maintaining factor present
Phone posture observation	Neck flexed, shoulders rounded	Primary text neck loading pattern
Treatment safety	No contraindication found	Manual therapy appropriate

Physiotherapy Management

Treatment was provided for four weeks, five sessions per week, with each session lasting approximately forty minutes. The programme was planned to reduce pain, restore upper cervical and lower cervical movement, improve posture, build endurance, and change daily screen habits. The patient was educated that manual therapy could reduce symptoms and stiffness, but long-term recovery depended on active correction and reduced exposure to sustained flexed posture. Each session began with symptom review and ended with a brief reassessment of pain, motion, and posture tolerance.

The intervention emphasized two principal manual components: cranial base release and Gong's mobilization. Cranial base release was applied first because the patient showed clear suboccipital tightness and headache symptoms. Gentle sustained pressure was given under the occiput with the patient supine, allowing the head to rest comfortably while the therapist monitored breathing, guarding, and symptom response. The goal was to reduce tone rather than force movement. Gong's mobilization was introduced once the patient could tolerate relaxed supine positioning and active postural correction without symptom increase. It was applied in a controlled, pain-free manner to encourage cervical extension, improve facet glide, and reduce forward head posture.

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

Supporting exercises were used to maintain manual therapy gains. These included chin tuck in crook lying, cranio-cervical flexion activation, scapular setting, wall-supported posture correction, thoracic extension over a towel roll, pectoralis minor stretching, and gentle active cervical range of motion. The home programme was short and repeated frequently because the patient worked long hours. Ergonomic corrections included elevating the laptop screen, using an external keyboard when possible, keeping the phone closer to eye level, taking microbreaks every thirty minutes, using a chair with back support, and avoiding prolonged phone use while lying on the bed.

Cranial Base Release Component

The patient was positioned supine with a small towel support under the neck as required for comfort. The therapist placed the finger pads just inferior to the occipital ridge and allowed the tissues to soften gradually. Pressure was gentle, sustained, and adjusted according to the patient's tolerance. The hold was maintained for short intervals, followed by reassessment of breathing, pain, and neck relaxation. The technique was used for six to eight minutes in early sessions and reduced gradually as symptoms improved. It was not performed as a forceful traction maneuver. The clinical focus was reduction of suboccipital guarding, improvement of craniocervical flexion comfort, and preparation for active chin tuck practice. During the first week, cranial base release produced an immediate decrease in perceived heaviness at the base of the skull. The patient reported that the head felt lighter after treatment. By the second week, headache frequency reduced and the patient could perform chin tuck without excessive superficial muscle contraction. This allowed progression to endurance-based deep neck flexor training.

Gong's Mobilization Component

Gong's mobilization was applied as a controlled cervical mobilization strategy to improve extension and postural alignment. The patient was placed in a comfortable supported position. The therapist guided the head and neck toward a more neutral starting position and applied graded mobilization within pain-free limits. Early sessions used low-grade mobilization for pain modulation and patient confidence. As pain reduced, the mobilization was progressed to encourage greater extension range and smoother return from flexed posture. The technique was never forced into pain or end-range compression. Clinical monitoring during Gong's mobilization included pain response, dizziness, nausea, headache increase, guarding, and post-treatment soreness. No adverse response occurred. The patient initially felt stiffness during extension but no sharp pain. By the end of week two, extension range improved sufficiently to allow functional practice such as looking at a higher screen, checking traffic while driving, and maintaining a neutral head position during reading.

Phase I: Pain Control, Relaxation, and Postural Awareness (Week 1)

The first week focused on reducing pain and helping the patient understand the relationship between posture and symptoms. Treatment included heat application when required, cranial base release, gentle cervical mobility, lowgrade Gong's mobilization, breathing relaxation, and education regarding screen height. Chin tuck was introduced in crook lying for five-second holds. Scapular setting was performed in sitting with tactile cueing. The patient was instructed

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

to avoid prolonged phone use in bed and to take microbreaks during work. At the end of the first week, pain during screen work reduced slightly and the patient became more aware of the forward head position. The therapist emphasized that correction should be gentle and repeated, not rigid or painful. The patient was taught to recognize early signs of overload such as suboccipital pressure, shoulder elevation, and jaw clenching.

Phase II: Mobility Restoration and Deep Neck Flexor Activation (Week 2)

The second week progressed manual therapy and active control. Cranial base release continued but with reduced duration as tenderness improved. Gong's mobilization was applied with greater attention to cervical extension and rotation tolerance. Active range exercises were performed after mobilization so the patient could use the newly gained movement. Deep neck flexor activation was progressed from five-second to eight-second holds. Thoracic extension over a towel roll and pectoral stretching were added to reduce rounded shoulder influence. By mid-programme assessment, pain had reduced to 4/10 during work, NDI had improved, and the patient could maintain an upright corrected sitting posture for approximately ten minutes with reminders. Headache frequency reduced to once per week. The patient reported better confidence because pain no longer increased immediately when she looked upward or adjusted screen height.

Phase III: Endurance, Functional Correction, and Work Simulation (Week 3)

The third week emphasized endurance and carryover into functional positions. Manual therapy was applied at the beginning of sessions only when stiffness was present. Gong's mobilization was followed by active extension, rotation, and posture correction in sitting. Exercises included wall chin tuck, scapular retraction with breathing control, resisted scapular rows using light resistance, thoracic extension mobility, and functional practice at a desk setup. The patient practiced typing with a raised screen and elbows supported, then checked symptom response after ten to fifteen minutes. The home programme included microbreak alarms, phone-to-eye-level practice, three sets of chin tuck endurance daily, and pectoral stretch twice per day. The patient was encouraged to divide study periods into blocks. This week shifted the focus from therapist-dependent relief to self-management. Pain flare-ups became shorter and were linked to identifiable posture lapses.

Phase IV: Functional Independence and Prevention (Week 4)

The final week consolidated gains. Cranial base release was used only briefly as needed. Gong's mobilization was applied to maintain extension range and reinforce the corrected head posture. Exercises were progressed to longer deep neck flexor holds, scapular endurance, work-simulation sitting, and self-correction without continuous therapist cueing. The patient practiced reading, laptop work, mobile use, and driving posture strategies. The final home programme was designed to be realistic for her work schedule. Before discharge from supervised treatment, the patient was educated about recurrence prevention. She was advised to continue microbreaks, avoid low screen placement, change position frequently, use a supportive pillow, and perform corrective exercises at least five days per week. She was also instructed to seek review if pain returned with neurological symptoms, persistent headache change, dizziness, or progressive functional limitation.

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

Table 7: Comparative Summary of Intervention Content

Rehabilitation Element	Cranial Base Release	Gong's Mobilization	Supporting Component
Main emphasis	Soft-tissue relaxation at cranial base	Cervical extension and joint glide	Posture and motor control
Primary target	Suboccipital tightness and headache	Forward head posture and extension restriction	Endurance and functional carryover
Patient position	Supine and relaxed	Supported sitting or supine as tolerated	Supine, sitting, standing, desk setup
Intensity	Gentle sustained contact	Graded pain-free mobilization	Low load with repetition
Progression criterion	Reduced tenderness and guarding	Improved pain-free ROM	Improved endurance and independence
Home link	Self-relaxation and pillow advice	Use gained extension in daily posture	Microbreaks, chin tuck, scapular setting

Table 8: Weekly Treatment Protocol

Week	Manual Therapy Focus	Exercise Focus	Functional / Ergonomic Focus
Week 1	Cranial base release; low-grade Gong mobilization	Gentle ROM, chin tuck, scapular setting	Screen height correction and microbreak education
Week 2	Progressed Gong mobilization for extension	Deep neck flexor activation, thoracic mobility, pectoral stretch	Corrected sitting practice for short periods
Week 3	Manual therapy as needed for stiffness	Endurance chin tuck, scapular rows, wall posture correction	Desk work simulation and phone posture practice
Week 4	Maintenance mobilization and brief cranial release	Longer holds, independent corrective sequence	Work routine planning and recurrence prevention

Goals

Short-Term Goals

1. To reduce posterior neck pain and suboccipital tenderness during work-related activities.
2. To decrease headache frequency and feeling of heaviness at the cranial base.
3. To improve pain-free cervical extension, rotation, and lateral flexion.
4. To improve awareness of forward head posture and ability to self-correct in sitting.
5. To initiate deep neck flexor activation without excessive sternocleidomastoid substitution.
6. To educate the patient regarding phone use, laptop height, microbreaks, and pillow posture.

Long-Term Goals

7. To reduce Neck Disability Index score to a mild disability level.
8. To increase craniovertebral angle toward a more neutral head position.
9. To improve deep neck flexor endurance and scapular postural support.
10. To allow laptop work for at least one hour with planned microbreaks and minimal pain.
11. To allow mobile phone use without sustained neck flexion and repeated symptom flare.
12. To establish an independent home programme for prevention of recurrence.

Results

The patient completed all twenty supervised treatment sessions over four weeks. Compliance with the home programme was good, although she missed exercises on two days during an office deadline. No adverse response occurred. Mild post-treatment soreness was reported after

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

the first progressed mobilization session, but it resolved within a few hours and did not require treatment modification. Improvement was documented at week two and week four. Pain reduction was the earliest reported change. The patient noted reduced heaviness at the base of the skull after the first week and less frequent headache after the second week. Cervical extension improved gradually, and the patient became able to look upward and adjust her screen without immediate pain. Functional tolerance improved in parallel with ergonomic correction. At the end of four weeks, she could work at the laptop for forty-five to sixty minutes with microbreaks and could use the phone for essential tasks while keeping it closer to eye level.

Table 9: Pain, Disability, and Posture Changes

Outcome	Baseline	Week 2	Week 4	Clinical Interpretation
NPRS during screen work	7/10	4/10	2/10	Marked pain reduction
Neck Disability Index	42 percent	24 percent	12 percent	Moderate to minimal disability
Craniovertebral angle	40 degrees	45 degrees	49 degrees	Improved head posture
Headache frequency	2-3/week	1/week	Occasional mild	Suboccipital symptoms reduced
Sleep disturbance	3 nights/week	1 night/week	None in last week	Better pillow and neck comfort

Table 10: Cervical Range of Motion Changes

Movement	Baseline	Week 2	Week 4	Change
Flexion	42 degrees	45 degrees	46 degrees	+4 degrees
Extension	32 degrees	46 degrees	58 degrees	+26 degrees
Right rotation	52 degrees	63 degrees	72 degrees	+20 degrees
Left rotation	49 degrees	61 degrees	70 degrees	+21 degrees
Right lateral flexion	24 degrees	32 degrees	40 degrees	+16 degrees
Left lateral flexion	22 degrees	31 degrees	39 degrees	+17 degrees

Table 11: Strength, Endurance, and Soft Tissue Response

Variable	Baseline	Week 2	Week 4	Interpretation
Deep neck flexor endurance	10 seconds	20 seconds	31 seconds	Improved stabilizing capacity
Posture correction tolerance	<2 minutes	10 minutes	25 minutes	Better endurance
Suboccipital tenderness	Marked	Mild to moderate	Mild	Cranial base irritability reduced
Upper trapezius tone	Increased	Reduced	Mild residual tightness	Less protective overactivity
Pectoralis minor length	Restricted	Improving	Mild restriction	Rounded shoulder influence reduced

Table 12: Functional Activity and Patient-Specific Changes

International Journal of Advanced Research and Multidisciplinary Trends (IJARMT)
An International Open Access, Peer-Reviewed Refereed Journal
Impact Factor: 7.2 Website: https://ijarmt.com ISSN No.: 3048-9458

Activity / Measure	Baseline	Week 2	Week 4	Functional Meaning
Laptop work tolerance	20 minutes with pain	35 minutes	45-60 minutes with breaks	Improved study and office tolerance
Phone use tolerance	15 minutes	30 minutes	55 minutes with posture correction	Better self-management
Driving comfort	4/10 PSFS	6/10 PSFS	8/10 PSFS	Improved rotation and posture
Reading tolerance	25 minutes	40 minutes	60 minutes with stand breaks	Reduced neck fatigue
Patient confidence	Low	Moderate	High	Improved self-correction ability

Outcome Measures

Improved selfcorrection ability Pain was recorded using the Numeric Pain Rating Scale, where zero indicates no pain and ten indicates worst imaginable pain. The patient reported pain during the most aggravating screen-related activity rather than at rest alone, because activity pain was more relevant to her complaint.

Functional disability was assessed using the Neck Disability Index. This tool was selected because it records the effect of neck pain on daily activities such as personal care, lifting, reading, headache, concentration, work, driving, sleeping, and recreation. It helped quantify the change from moderate disability to minimal disability over the treatment period.

Cervical active range of motion was measured in flexion, extension, rotation, and lateral flexion. Extension and rotation were especially important because these movements were restricted during posture correction, driving, and screen-height adjustment. Craniovertebral angle was used clinically to monitor forward head posture. Although simple clinical observation has limitations, repeated measurement under the same conditions helped track postural change.

Deep neck flexor endurance was assessed through the patient's ability to maintain a low-load cranio-cervical flexion position without obvious substitution. The purpose was not to test maximal strength, but to assess endurance and control needed for prolonged sitting. Patient-Specific Functional Scale scores were used for laptop work, phone use, and driving because these activities represented the patient's most important daily limitations.

Discussion

The findings of this case study indicate that a combined programme of cranial base release and Gong's mobilization produced clinically meaningful improvement in text neck syndrome. Cranial base release was useful in the early phase because the patient had marked suboccipital tenderness, headache, and protective guarding. Reduction in cranial base tightness allowed more comfortable chin tuck practice and reduced reliance on superficial cervical muscles. Gong's mobilization appeared to contribute most to extension recovery, smoother cervical movement, and improved head alignment. The largest range gain was seen in extension, which matched the patient's main mechanical restriction. However, manual therapy alone was not treated as sufficient. Deep neck flexor training, scapular stabilization, thoracic mobility, pectoral stretching, and ergonomic correction helped maintain the improvements during work and study. Pain reduction was accompanied by better NDI score, increased craniovertebral

angle, improved endurance, and higher patient-specific function. The case supports a staged approach in which soft-tissue relaxation prepares the cervical region, mobilization restores motion, and exercise changes daily control. The main limitation is that improvement in one patient cannot prove effectiveness for all patients. Still, the pattern of change was consistent with the identified impairments and treatment goals.

Limitations of the Study

- Only one patient was included, so findings cannot be generalized to all individuals with text neck syndrome.
- There was no comparison group receiving exercise alone or a different manual therapy approach.
- Posture measurement was performed clinically and did not include advanced motion analysis.
- Follow-up was limited to the four-week treatment period, so long-term maintenance is unknown.
- Workload, stress, sleep, and daily device exposure may have influenced symptom changes.
- The intervention included supporting exercises and ergonomic advice, so the isolated contribution of each manual technique cannot be separated completely.

Conclusion

The combined use of cranial base release and Gong's mobilization improved pain, posture, cervical mobility, deep neck flexor endurance, and daily functional tolerance in this patient with text neck syndrome. The approach is useful when suboccipital tightness, forward head posture, and extension restriction are dominant clinical features.

Future Scope of the Study

Future studies should examine the combined effect of cranial base release and Gong's mobilization in larger groups of patients with text neck syndrome. Participants may be stratified according to duration of symptoms, age, level of screen exposure, degree of forward head posture, headache involvement, and baseline neck disability. A comparison with exercise-only care, ergonomic education alone, and other mobilization techniques would help identify the specific added value of the manual therapy combination. Longer follow-up is required to determine whether improvements are maintained after supervised treatment ends. Text neck syndrome is strongly influenced by repeated daily posture; therefore, recurrence prevention should be measured along with short-term pain reduction.

Future research may include objective posture analysis, smartphone usage tracking, electromyographic assessment of deep and superficial cervical muscles, sleep quality, work productivity, and quality of life. Studies may also compare different frequencies of manual therapy and determine the minimum effective dose for busy students and office workers. A structured self-management protocol can also be developed from this case. Such a protocol may include a brief cranial base relaxation method, posture correction drills, microbreak planning, deep neck flexor endurance progression, thoracic mobility work, and ergonomic

checklists. Digital reminders and tele-rehabilitation follow-up may improve adherence among patients who spend long hours at screens.

References

1. Gong W, Hwang Bo G, Lee Y. The effects of Gong's mobilization on cervical lordosis, forward head posture, and cervical ROM in abnormal posture of the cervical spine of college students. J Phys Ther Sci. 2011;23(3):531-534.
2. Harsulkar SG, Khatri SM, Rao K, Iyer C. Effectiveness of Gong's mobilization in cervical spondylosis: a prospective comparative study. Int J Community Med Public Health. 2015;2(1):38-44.
3. Polavarapu LBS, Pundarikaksha P, Apparao P, Swamy CG. Effectiveness of Pilates and Gong's Mobilization on pain, range of motion and function in text neck syndrome among young adults. Int J Health Sci Res. 2023;13(4):138-154.
4. Hansraj KK. Assessment of stresses in the cervical spine caused by posture and position of the head. Surg Technol Int. 2014;25:277-279.
5. Blanpied PR, Gross AR, Elliott JM, Devaney LL, Clewley D, Walton DM, et al. Neck pain: revision 2017 clinical practice guidelines linked to the International Classification of Functioning, Disability and Health. J Orthop Sports Phys Ther. 2017;47(7):A1-A83.
6. Childs JD, Cleland JA, Elliott JM, Teyhen DS, Wainner RS, Whitman JM, et al. Neck pain: clinical practice guidelines linked to the International Classification of Functioning, Disability, and Health. J Orthop Sports Phys Ther. 2008;38(9):A1-A34.
7. Jull GA, O'Leary SP, Falla DL. Clinical assessment of the deep cervical flexor muscles: the craniocervical flexion test. J Manipulative Physiol Ther. 2008;31(7):525-533.
8. Falla D, Jull G, Hodges PW. Feedforward activity of the cervical flexor muscles during voluntary arm movements is delayed in chronic neck pain. Exp Brain Res. 2004;157(1):43-48.
9. Ylinen J. Physical exercises and functional rehabilitation for the management of chronic neck pain. Eura Medicophys. 2007;43(1):119-132.
10. Hanten WP, Olson SL, Butts NL, Nowicki AL. Effectiveness of a home program of ischemic pressure followed by sustained stretch for treatment of myofascial trigger points. Phys Ther. 2000;80(10):997-1003.
11. Youdas JW, Carey JR, Garrett TR. Reliability of measurements of cervical spine range of motion: comparison of three methods. Phys Ther. 1991;71(2):98-104.
12. MacDermid JC, Walton DM, Avery S, Blanchard A, Etruw E, McAlpine C, et al. Measurement properties of the Neck Disability Index: a systematic review. J Orthop Sports Phys Ther. 2009;39(5):400-417.