

Benefits of Slump Mobilisation Combined with Suboccipital Myofascial Release on Pain, the Range of Motion, and Quality of Life in Cervicogenic Headache: A Case Report

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ABSTRACT

Cervicogenic Headache (CGH) is classified as a secondary type of headache with both muscular and neurological impairments. There are many physiotherapeutic interventions for its management like spinal manipulation, mobilisation, Myofascial Release (MFR), postural correction exercises, and electrotherapy but evidence for sustained long-term effects remains limited. Slump mobilisation is an emerging technique that can alleviate pain by targeting dural tension in the spine, restoring mobility, reducing pain, and addressing underlying musculoskeletal and neural dysfunctions. This case report aims to evaluate the effects of Slump mobilisation combined with suboccipital MFR on pain, cervical ROM, and overall Quality Of Life (QOL) in an individual with CGH. A 36-year-old female having CGH as diagnosed by (CGH International Study Group, CHISG) criteria since one year came with neck stiffness and pain in neck radiating to the head and forehead. Stress, watching television, and using mobile phone aggravated her symptoms, while analgesics relieve them. Slump mobilisation was performed in three sets, each consisting of 30–40 repetitions over two minutes, with one-minute breaks between sets, suboccipital MFR was given for four minutes for three days/week for four weeks. Pain was assessed using Headache Impact test- 6 (HIT-6) and the Pain Pressure Threshold (PPT) was assessed by algometer to assess tenderness of splenius capitis, rectus capitis and upper trapezius muscle and Cervical Range of Motion (CROM) by using universal goniometer. The QOL was assessed using 36-Short-form questionnaire at baseline and post-intervention. Significant improvements were observed on HIT-6 (66 to 50), PPT of trapezius (right) from 1.59 to 3.46, trapezius (left) from 1.57 to 2.49, splenius capitis (right) from 1.65 to 2.89, splenius capitis (left) from 1.46 to 2.72, rectus capitis (right) from 1.53 to 2.52, and rectus capitis (left) from 1.42 to 2.57. Cervical ROM also showed improvement in all the movements. Additionally, the SF-36 scores improved from 40.37% to 84.87%. The present case highlights that slump mobilisation combined with suboccipital MFR can be used as an effective intervention in the management of CGH.

Keywords: Headache, Myofascial release therapy, Mobile phone, Quality of life, Range of motion

CASE REPORT

A 36-year-old female visited neurophysiotherapy Out-patient Department (OPD) with the complaint of unilateral headache radiating to orbital and temporal region since one year.

The patient worked as a clerk, which involved prolonged hours of desk work and repetitive neck movements while doing paper work that contributed to the persistence of her symptoms. She presented with constant, throbbing pain in neck muscles particularly in suboccipital muscles, which worsened during neck movements. Her medical history was notable for no significant past issues, although she was currently taking a dose of muscle relaxant daily. She had no relevant traumatic events, surgical history, or family medical concerns and led a non-alcoholic, non-smoking lifestyle. She was relying on medications only, and was getting temporary relief from it.

The patient reported feeling anxious and frustrated due to her inability to perform her usual daily activities. She described moments of agitation, particularly during tasks that were previously easy but now exacerbate her pain.

The patient had a mesomorphic body build. Postural examination revealed rounded shoulders with a forward head posture. Grade 2 tenderness was present over C2 -C3 process, over the trapezius muscle, and over the suboccipital muscles. Cervical ROM was also decreased. Motor and sensory examination of the cervical spine

was normal. The patient was diagnosed with CGH according to the diagnostic criteria of the CGH International Study Group [1].

Pre-intervention: Active cervical ROM (flexion, extension, bilateral lateral flexion and rotation) was measured using universal goniometer, Headache Impact test-6 (HIT-6) [2] score was calculated to observe pain during Activities of Daily Living (ADLs). PPT for splenius capitis, rectus capitis and trapezius muscles were estimated using pressure algometer and 36 item Short Form Healthy Survey (SF-36) [3] score was calculated to assess QOL.

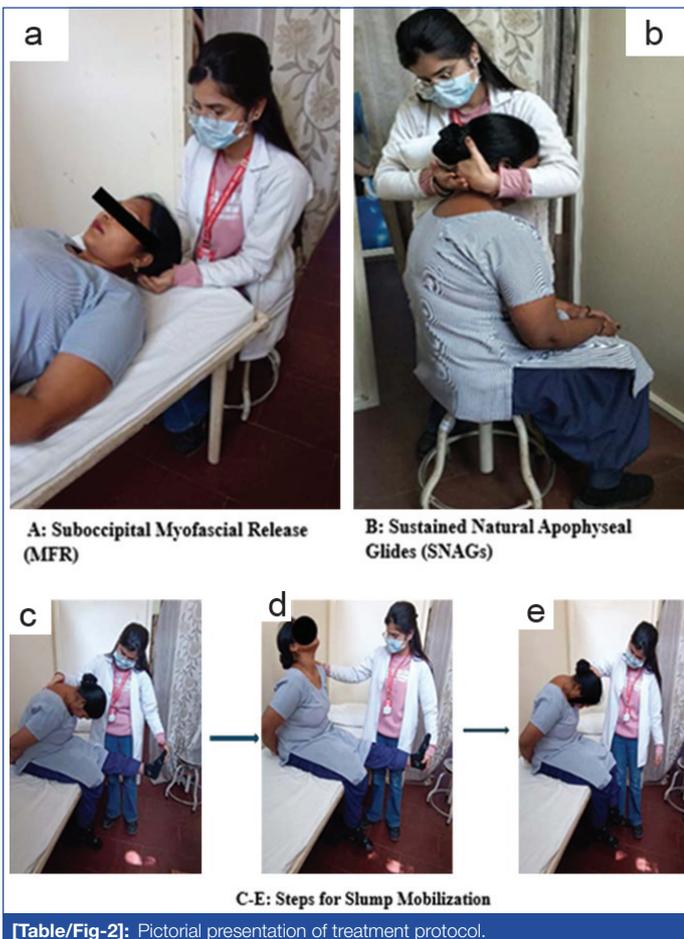
After taking patient's written informed consent, the patient was given suboccipital MFR, Sustained Natural Apophyseal Glides (SNAGs) and slump mobilisation for three days per week for four weeks [Table/Fig-1,2] [4].

The patient adherence to the treatment resulted in reduced pain scores, improved cervical ROM and QOL, as patient was coming to the OPD regularly for the treatment and during and after the treatment no side-effects and discomfort was experienced by the patient. After three weeks of intervention, the patient's condition was reassessed which showed significant improvements. The HIT-6 score dropped to 50, reflecting a notable reduction in

pain. The Pre-post intervention scores of PPT, cervical ROM and SF-36 are depicted in [Table/Fig-3] indicating improvements in PPT, ROM and QOL.

Intervention	Method	Duration/ Repetition
Suboccipital Myofascial Release (MFR)	Person lies on back and the therapist applies pressure under the base of skull by tips of finger.	3 - 4 minutes per session
Sustained Natural Apophyseal Glides (SNAGs)	While the patient is seated, the therapist stands behind and stabilises head while applying a gentle forward pressure to the C2 spinous process using their thumb. This creates controlled slide of C2 under C1.	3 reps x 5 sets with the hold of 3- 10 sec
Slump mobilisation	<p>Patient in slump position in high sitting</p> <p>↓</p> <p>Then the therapist passively extends the knee with ankle dorsiflexion</p> <p>↓</p> <p>Then knee is passively flexed by the therapist while patient flexes the neck</p> <p>↓</p> <p>Then therapist again extended the knee while extending the neck</p> <p>↓</p> <p>The same procedure is repeated slowly for 2 minutes, maintaining a rhythm of 30-40 repetitions</p> <p>↓</p> <p>One minute break will be given then again same procedure will be repeated for 2 more times</p>	30-40 repetitions for 2 minutes per session

[Table/Fig-1]: Treatment protocol for treating Cervicogenic Headache (CGH).



[Table/Fig-2]: Pictorial presentation of treatment protocol.

Cervical Range Of Motion (ROM)		
Variables	Pre-treatment	Post-treatment
Flexion	43	51
Extension	35	43
Rotation (right-side)	49	65
Rotation (left-side)	46	68
Lateral flexion (right-side)	34	45
Lateral flexion (left-side)	39	46

Pain Pressure Threshold (PPT)		
Trapezius (right-side)	1.59	3.46
Trapezius (left-side)	1.57	2.49
Splenius capitis (right-side)	1.65	2.89
Splenius capitis (left-side)	1.46	2.72
Rectus capitis (right-side)	1.53	2.52
Rectus capitis (left-side)	1.42	2.57
HIT- 6	66	50
SF-36	40.37%	84.87%

[Table/Fig-3]: Pre-Post intervention scores of all outcome measures.

*Abbreviations: HIT-6: Headache impact test-6, SF-36- Short form questionnaire

DISCUSSION

The CGH is classified as secondary type of headache associated with both muscular and neurological symptoms [5]. Out of those, around 15-20% of all headaches are of cervicogenic origin affecting women more than men [6,7].

CGH arises from the activation of the trigeminal autonomic system originating from the craniocervical region. The trigeminocervical complex, a neural network connecting the trigeminal and upper cervical nerves, facilitates the transmission of pain signals from the neck to the head and face. Hence, pain in individuals with CGH is often referred to regions like eyes, temples, and orbits [8].

Management of CGH often involves a multi-faceted approach encompassing pharmacological [9], manipulative [10], anaesthetic [11], and surgical interventions [12]. Physical therapy techniques like stretching exercises [13], spinal manipulation [10], mobilisation [14] and MFR [15], along with electrotherapy modalities [16], complementary therapies like deep breathing, yoga, and acupuncture [17], have been shown to effectively alleviate CGH symptoms but are unable to produce long lasting effects. CGH is a neuromusculoskeletal disorder that arises from the existence of fascial links between components of the upper cervical spine and the dura leading to tension in the dura. Consequently, slump mobilisation might be beneficial in its management [18]. So the aim of this intervention was to improve pain, ROM and QOL in individuals with CGH.

This case highlights the effectiveness of a multimodal physiotherapy approach involving suboccipital MFR, SNAGs, and slump mobilisation in the management of CGH. We found that the combination of suboccipital MFR, SNAGs, and slump mobilisation is more effective as it targets muscular, articular, and neural structures. Both MFR and SNAG are therapeutic techniques that address musculoskeletal limitations.

In our case, cervical ROM and pain improved significantly as MFR alleviated fascial restrictions, enhancing ROM and thereby reducing pain whereas SNAGs have been specifically effective in increasing cervical ROM for patients with CGHs [15,19]. These findings are supported by the previous study on tension-type headache where a combination of neural mobilisation and soft tissue technique helped in reducing pain. This could be possible by activation of both peripheral and central receptors facilitating an interaction between mechanical and neurophysiological mechanisms thereby enhancing mechanosensitivity of the involved structures, ultimately leading to a reduction in pain levels [20].

CGH arises from the interplay of adverse neurodynamics and altered biomechanics in the cervical spine. Neural or dural mobilisation can improve neural flexibility, enhance altered blood and axoplasmic flow, and reduce mechanical sensitivity, sliding, and tension to the nerves, leading to an analgesic effect [21]. In contrast to previous studies, this case incorporated a neural mobilisation component due to the technique's ability to activate inhibitory mechanisms that regulate the mechanosensitivity of the neuromusculoskeletal tissues [22]. The decrease in mechano-sensitivity of the nervous tissue by

slump mobilisation can lessen the muscle responses intended to protect the nerve tissue from tension and deformation caused by movement [21]. So, in this case report improvements on pain and tenderness can be attributed to slump mobilisation.

In a study on chronic radicular low back pain, pain and disability both improved when slump neural mobilisation was given in combination with lumbar stabilisation exercises and shortwave diathermy after three weeks [23] whereas in another study on healthy subjects contralateral mobilisation of knee in slump position improved knee extension ROM after single session [24]. These findings of the previous studies are in accordance with the results obtained in this case report. Reduction in pain and improvement in cervical ROM will directly positively affect patient's QOL as demonstrated in present case report. Recognising the importance of addressing the role of the dura mater in CGH, our treatment focused on reducing tension in the cervical spine and surrounding structures. Slump mobilisation incorporated passive motion of the upper cervical spine thereby alleviating tension on the myodural bridges and spinal nerves, hence improving headache symptoms and thereby QOL of individuals with CGH [25].

This case sets an example that slump mobilisation is a beneficial intervention technique that targets the root cause of CGH along with SNAGs and suboccipital MFR as per the notable improvements on cervical ROM, PPT, pain intensity and QOL. This case report also depicted that a comprehensive treatment strategy has a tendency to maximise the positive outcome by addressing muscle tightness, joint restrictions and neural tension together, the treatment provided comprehensive and lasting benefits compared to using a single technique.

CONCLUSION(S)

This case report concluded that using a combination of suboccipital MFR, SNAGs, and slump mobilisation can be effective in improving pain, PPT, cervical ROM and QOL in individual with CGH.

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