

# **DOC TALK – CASE STUDY; A Functional Approach to Cervicogenic Headaches**

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## **ABSTRACT**

Patients often present with either acute or chronic vertebrogenic related headaches of biomechanical origin. There are usually complaints of associated neck and upper thoracic pain as well as muscle imbalances. The originating mechanism of injury is often a sprain/strain; however, this problem can present as either an acute or chronic condition. The presentation includes either an anterior or posterior head translation. Medication and/or passive therapy usually only provide palliative short-term relief. An intensive program of in-office rehabilitation including gym ball stability exercises, endurance training, and conditioning was administered. Initially, a brief course of passive therapy including therapeutic modalities was utilized. The patient was quickly transitioned to a phase II rehabilitation program and eventually transitioned into a phase III rehabilitation program. During Phase II and III of the rehabilitation program manipulation was utilized to address noted joint dysfunction as necessary. The cases reviewed proved effective in providing a long-term resolution of the postural deficits, provided long term resolution of the patient's symptoms and most important, improved the patient's capacity for occupational, recreational, social and daily activities.

## **KEY WORDS**

Cervicogenic Headaches, Phase II & III Rehabilitation, Chiropractic, Low Tech, Outcome Assessment

## **INTRODUCTION**

Spinal manipulation has been shown to provide palliative relief in the treatment of cervicogenic headaches. Patient activation and rehabilitation concepts of treatment are key components in the emerging quality care paradigm. In order to provide proper neuromusculoskeletal care, the healthcare practitioner must know when to manipulate and move from passive to active care. Passive modalities, such as thermal or electrical physical agents that are applied for pain relief or to reduce inflammation, have a limited role in the management of musculoskeletal problems. There is a definite tendency to overemphasize the promotion of tissue healing and reduction of inflammation, which results in an overemphasis on passive modalities beyond the early stages of acute care. The danger of the injury/inflammation model is that it promotes overuse of physical agents and results in the physical and psychological deconditioning that leads to chronicity.

The primary focus of functional restoration opposes the application of an injury/inflammation model. The active care model embraces emerging rehabilitation standards. Functional restoration addresses improper motor control (spinal instability), joint dysfunction and muscle dysfunction. Such rehabilitation focuses on the entire locomotor system. Its focus is to restore function in the locomotor system using a multifaceted approach involving dynamic therapeutic activities, education and manipulation. It is recognized however, that most patients do not seek this type of treatment for their condition.<sup>(1)</sup> Instead, they seek treatment of their symptoms and often depend on ineffective measures such as bed rest or medication to solve their problem.<sup>(2)</sup> Unfortunately, 30% of these patients will develop chronic problems. In those cases, where re-occurrence or persistence history of cervicogenic headaches, decreased strength, muscles imbalances, abnormal posture, poor endurance and lack of flexibility are implicated in the development of the condition.<sup>(3)</sup> This suggests that a comprehensive rehabilitative program including exercise for flexibility, trunk strength, endurance, and stability can significantly reduce the risk of functional loss.<sup>(4)</sup>

Current research shows that it is beneficial to proceed to a rehabilitative phase of care as rapidly as possible, and to minimize dependency upon passive forms of treatment. Prolonged periods of inactivity are related to increased risk of failure in returning to pre-injury status. Studies indicate that low-tech rehabilitation protocols produced significant improvements with the longest periods of relief.

It was the most cost effective and the method of choice recommended for the management of chronic pain patients.

The following case study demonstrates the value of early activation and transition from Phase II to Phase III rehabilitation. It further demonstrates the necessity of functional evaluation so as to determine the appropriate protocol of rehabilitative treatment. Finally, it demonstrates the achievability of the long-term functional outcomes that are demanded by patients and carriers alike.

## **CASE REPORT**

### **History:**

A 35-year-old right-handed female presented with complaints of chronic neck pain with intermittent right shoulder radiation. Her neck pain started about 12 years ago. At that time it was localized. Since the initial incident, she has had numerous episodes of neck pain lasting anywhere from a few days to a few months. She states that each episode has become progressively worse. She additionally reports a history of headaches that have increased in intensity and frequency. (Anterior translation)

\*Note: Acute presentations of Anterior and Posterior translations can occur post MVA.

**Clinical Presentation:** Chronic Neck Pain with Radiation and Headache

**Clinical Impression:** Anterior Translation Acquired

### **Areas of Deficit**

#### **Histologic**

Usually tight, overactive muscles on the involved side.  
Inhibited or weak muscles on the opposite side.  
Forward antalgic translation

#### **Structural**

Cervical range of motion is as follows: flexion decreased, extension increased with endpoint pain, right and left rotation WNL with discomfort on the right, right lateral flexion decreased with end point pain, left lateral flexion WNL.

#### **Neurological**

Decreased proprioception

### **Outcome Assessment Forms**

General Health, Oswestry Neck, Copenhagen Neck Disability Index, Oswestry Headache, Headache Disability Index, VAS, Pain Drawing (as appropriate)

### **Functional Testing**

Postural Analysis  
Proprioception/Balance Tests  
Muscle Testing

### **Findings**

Round shoulders  
Winging of scapulae  
Elevation of shoulders  
Weak Lower and Middle Trap  
Weak Neck flexors, Serratus Anterior

Diminished proprioception on right side  
Worse with the eyes closed.  
Tight Upper Trap and Levator Scapulae, Sub Occipitals, Peck Major and SCM  
Myofascial trigger points noted in the SCM and Levator Scapulae  
Inhibited spinal stabilizers eg. Multifidus  
Strength differences greater than expected values.  
Abnormal breathing patterns. (Shallow breathing)

### **Diagnosis**

Late Effect Cervical Sp/St  
Cervical Radiculitis  
Upper Cross Syndrome  
Abnormal Posture Acquired  
Abnormal Gait  
Muscle Imbalances  
Muscle Incoordination  
Cervicogenic headaches.

### **Prescription**

#### **Concepts**

- \*SAID principal
- \*Sherrington's Law of reciprocal inhibition.
- \*Neurologic Cross Over Effect
- \*Neuromuscular Over flow (physiologic)

A one repetition maximum was obtained for abdominals, lat pull downs, back extension, thigh extension and flexion. The patient began a specific rehabilitation program focused to functional restoration, based on the patient activities of daily living. The rehabilitation program baseline began at 70% of the one repetition maximum, utilizing the Zinovieff technique with thera bands. Rehabilitation continued three times a week until the patient reached a plateau.

### **Primary Focus – Clinical Goals**

- \*Increase strength of Lower and Middle Trap, Neck Flexors, Serratus Anterior
- \*Stretch Tight Muscles: Upper Trap, Levator Scapula, Sub Occipitals, SCM, and Pectoralis Major
- \*Activate Spinal Stabilizers
- \*Increase proprioception
- \*Correct Spinal Biomechanics

### **Passive Care (3 x week for 4 visits)**

The primary focus of treatment initially was to address the acute nature of this chronic problem so that more aggressive rehabilitation could be performed with minimal upset to the patient. Outcome was improved flexibility, reduction in the onset and duration of cervicogenic headaches and improved sleep capacity.

- Manipulation was performed as needed to address joint dysfunction.
- Sequential EMS using VMS Burst and Interferential was utilized to reduce the symptoms, improve circulation and diminish spasms.
- A combination of PIR, PNF and Flex Building muscle energy techniques were utilized to stretch and strengthen the Upper Trapezius, Levator Scapula, Sub Occipitals, SCM, and Pectoralis Major
- The patient was taught correct breathing patterns beginning from the lower abdomen ending in the upper chest. (Correct breathing patterns activate spinal stabilizers)

### **Stage II (3 x week for 4 weeks) – Short Term Goals**

During this period of treatment, the focus was on core stabilization of the upper kinetic chain to develop proper cervical and upper extremity movement patterns, resolve noted tightness/weakness syndromes such that patient tolerance for sedentary and light activities was possible without upset.

- Manipulation was performed as needed to address joint dysfunction.
- Proper clearance was obtained for endurance training. PARQ was negative for contraindication. The patient initially performed 10 and progressed to 30 minutes on the elliptical walker.
- Use PIR, PNF or Flexes muscle energy technique to stretch and strengthen Upper Trap, Levator Scapula, Sub Occipitals, SCM, and Pectoralis Major
- 2 minutes each on the Round board, Rocker board and Baps board initially with eyes open progressing to 2 minutes eyes open and 2 minutes eyes closed. Initially using small foot transitioning to standard foot. (Primary focus is strengthening spinal stabilizers in the weight bearing position. Spinal Stabilizers will activate and strength from Balance Board work.
- Gym Ball Stability exercises, one leg, bouncing, push up, crunches.
- Mirror Image exercise protocols with Thera Bands were performed in cervical flexion, extension and lateral bending to strengthen the involved muscles and enhance the balance board work.

### **Stage II (3 x week for 6 weeks) – Long Term Goals**

During this phase of treatment, the focus continued with core stabilization of the upper kinetic chain; however with the progression of more challenging exercises, the goal is improve the functional stability of the upper kinetic chain such that patient tolerance for more aggressive and stressful activities was possible without upset. Patient progress was continuously monitored through periodic functional re-evaluation and was discharged when progress reached a plateau.

- Manipulation should be performed as needed to address joint dysfunction.
- Endurance cross training continued using elliptical walker and a recumbent bike for 30 minutes.
- In addition to the above Otis Ring work training in the transverse and horizontal planes for two minutes using all three ring sizes was added.
- The patient was then transitioned to both clockwise and counter clockwise training with all three sizes of the Otis Rings in the transverse and horizontal planes for two minutes each.
- The next transition was to perform one-handed protocols in both planes, using all three ring sizes.
- The next transition for the patient was the addition of Body Blade exercises in the X,Y & Z planes using both hands for two minutes each.
- The patient was then transitioned to one-handed Body Blade protocols in all three planes for two minutes.
- The final progression was to perform the Otis Ring and Body Blade Protocols while standing on the Balance Boards.

### **Discharge to Home Care**

Patient capacity for occupational, recreational and social activities was restored. Following discharge the patient was advised of the benefits of a maintenance care program by declined to receive maintenance care at this time for financial reasons. As a means of self-care and to minimize the potential for regression in the patient's functional status, the patient was provided with specific self care stretches and exercises that are safe to perform in an unsupervised setting. The patient was

additionally instructed to return if their condition deteriorated, their function decreased or their symptoms reoccurred.

## **DISCUSSION**

It is believed that history, examination, and response to treatment were consistent with the reported symptoms (neck pain and headache). A diagnosis of Chronic Cervicogenic Headaches secondary to the noted anterior translation and late effect sprain/strain is further supported by the examination findings. It was further believed based on the findings that these conditions would respond favorably to a relatively short course of passive therapy followed by an aggressive low-tech rehabilitation program focused to restoring the biomechanical stability, mobility and functional tolerance of the cervical spine.

The approach implemented in this case involved an initial course of progressive therapy with a nearly immediate transition to Phase II rehabilitation. The primary focus was to reduce the inflammatory component of the condition while initiating correction of underlying structural component. This initial treatment permitted effective functional evaluation so that an appropriate rehabilitation aimed at providing a long-term resolution could be designed. The progression evident in the rehabilitative phase of care is based on the progress demonstrated by the patient. It also demonstrates the need to continuously reevaluate the patient and alter the rehabilitation program to fit the patient's individual needs.

## **CONCLUSION**

This patient presented with chronic cervicogenic headaches and anterior translation. This is not an uncommon problem with many patients. A low-tech rehabilitation program concentrating on proprioception training, restoration of muscle balance, endurance, joint stability and functional strength followed focused passive care of short duration. The success of this treatment and the outcome achieved was objectively evaluated and documented using "Functional Evaluation" and "Outcomes Assessment" forms completed on initiation of care, during the progression of treatment at appropriate intervals based on the patient's progress and upon discharge. This case example demonstrates the viability of functional assessment for development of a treatment program aimed at resolution of cervicogenic headaches so that the patient's functional abilities are improved. This approach, while involving more aggressive treatment in the short term, proved to be more cost effective in the long-term while at the same time providing higher patient satisfaction than previous treatment alternatives. As such, it should be considered a valuable approach in today's outcome focused healthcare environment.

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