

pt connection

by Orthopedic & Sports P.T. Assoc. OSPTA
Volume 4: Issue 16 Winter 2001

The Cervical Spine: Part III: Treatment

INTRODUCTION

Treatment of the cervical spine is based on the integration of the evaluation findings into a plan that focuses on the science of soft tissue healing and age related changes in spinal tissues. The most effective clinician can integrate the science of soft tissue healing, the psychosocial influences on the cervical problem, and the patients' willingness to accept responsibility for their condition.

Correlating the evaluation findings to a treatment plan and communicating the information to the patient is important for obtaining a successful outcome.

GOALS AND TREATMENT STRATEGY

Setting and attaining realistic short term goals is the key to gaining patient confidence. After the short term goals are achieved, realistic long term goals are set.

There are several components of treatment goals:

- Educate the patient regarding their condition
- Maximize the healing potential
- Restore the anatomical relationship between injured and non-injured tissues
- Avoid excessive strain on the injured area

PATIENT EDUCATION

After the clinician has evaluated the upper quarter, a discussion of the evaluation findings should begin with the patient. This process provides the patient with an understanding of the treatment plan. More importantly, this will promote the idea that the patient and the clinician should work together in determining the direction and progression of care. This educational process is one of the most important steps toward directing responsibility for the treatment outcome from the clinician to the patient.

MAXIMIZING THE HEALING POTENTIAL

The patient should have a thorough understanding that inflammation is a natural process after injury that needs to be controlled with a proper balance of rest and activity and the initiation of early therapeutic exercise. The patient needs to understand the concept that the healing environment can be maximized by a treatment plan that is designed to restore normal fluid dynamics. The most effective way to minimize fluid congestion and stasis is through active movement. The clinician must convey to the patient that controlled active movement is necessary for the healing process to occur in a normal recovery period.

RESTORING ANATOMICAL RELATIONS BETWEEN INJURED AND NON-INJURED TISSUES

The third goal of treatment is for the clinician to make sure that the cervical injury doesn't significantly change function. Depending on a patient's pain threshold, an injury to the cervical spine can alter movement patterns. This can cause problems at other distal sites (shoulder and/or thoracic spine). A balance must exist between activity and rest, after the injury. This will

ensure that the injured region does not alter the function of other anatomical sites. The sooner an injured area is moved into a painful range of motion without further injury, the sooner the patient with cervical spine pathology will recover. The successful physical therapist will obtain patient confidence and comfort by permitting movement into the painful range without exacerbation of the problem.

One of the main reasons that a successful treatment outcome is prevented is when the patient permits a cervical spine injury to interfere significantly with normal activities. One of the primary goals that a therapist must establish is to assist the patient in performing activities that maintain movement in surrounding tissues.

AVOID EXCESSIVE STRAIN ON THE INJURED AREA

The next strategy for treatment of the cervical spine is to assist the patient in completing activities of daily living without causing further injury. Patients must understand that a one-hour treatment in physical therapy that occurs on a three times per week basis will be approximately 5% of their waking hours. The patient must recognize that the treatment does not stop when they leave the physical therapy office. Patients must understand that overuse and exacerbation of their injury occurs because of the accumulation of forces across the injured area. Patients must use good judgement regarding ADLs and work restriction to enable a successful recovery. Again, a balance between rest and movement is essential.

OBJECTIVES OF TREATMENT

Once the treatment goals are clearly established, the objective of treating the cervical spine can be defined. Various treatment approaches have been developed and implemented. The following treatment objectives are based on current scientific knowledge of the healing process.

OBJECTIVE 1: PAIN MODULATION

The patient that arrives at the physical therapist's office with cervical spine pain will have one primary goal: to gain control of their pain. Therefore, the first objective of treatment will be to help the patient decrease their pain level. Any patient that responds quickly to pain management treatment has the greatest success in the treatment program.

Pain can be modulated by several methods of treatment: thermomodalities, electromodalities, and medications.

Thermomodalities: Providing analgesic effects with the use of heat and ice is appropriate as an initial treatment technique. The clinical benefit of using ice and heat in the treatment of cervical spine injuries is to alter the pain-spasm-pain cycle. This initial alteration of the neurophysiology of pain is needed for

the successful management of the cervical spine.

Electromodalities: The use of electricity in the treatment of cervical spine dysfunction has been an integral part of physical therapy pain management. As with thermomodalities, electromodalities should be used in the initial phases of pain management. The use of electrical modalities in the disruption of the pain-spasm-pain cycle occurs by means of stimulation of the afferent neural pathways which inhibit the protective guarding mechanisms that optimize tissue fluid dynamics.

Medications: The medications used to manage cervical spine injuries are nonsteroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, analgesics, and psychotherapeutic medications.

OBJECTIVE 2: GENERATE CONTROLLED FORCES TO PROMOTE NONDESTRUCTIVE MOVEMENTS

The second objective of the treatment process represents another way to alter the pain-spasm-pain cycle by way of gradual, progressive movement. There are various forms of manual therapy that provide this effect. Generating controlled forces through the cervical spine can be divided into three categories: manual techniques, mechanical devices, and active assistive motion.

Manual Techniques: This category of manual therapy can include massage, soft tissue mobilization, myofascial release, manipulation, traction, passive stretching, and acupuncture. The intended outcomes of each of these techniques are similar. Each of the techniques will alter the afferent neural input, and is an effective method of maintaining fluid movement. The patient is gradually moved in a controlled manner into the painful range. These procedures are used to help define the motion barriers.

Mechanical Devices: Traction machines, mobilization tables, cervical pillows, and cervical collars can be used to control the forces through the cervical spine and to minimize the forces that can place excessive strain on the injured area.

Active Assistive Movement: To further provide controlled forces into the cervical region, active techniques are often used to enhance the healing process. Techniques such as muscle energy, strain-counterstrain, and contract-relax techniques can be issued by the physical therapist. By using muscle contraction to increase the afferent input into the nervous system, fluid dynamics are enhanced. Again, the goal of these techniques is to generate controlled forces in a nondestructive range of motion.

OBJECTIVE 3: ENHANCING NEUROMUSCULAR AND MUSCULOSKELETAL PERFORMANCE

In the upper body, it is important that muscle contraction be synchronized in a way that minimizes compression and tensile forces to all the tissues in the cervical spine. Muscles can

greatly assist in attenuating these forces. By increasing the strength, power, and endurance of the upper quarter musculature, the forces of the head can be counterbalanced during the day. Strengthening is also important to stimulate tissue growth and prevent reinjury.

The following principles are designed to maximize the training effect and improve the coordination and motor learning that is required to perform ADL's and work tasks. They can help return an injured patient to recreational activities.

1. Utilize Submaximal Workloads in Leading to Progressive Resistive Exercises

The physical therapist will design a therapeutic exercise program that will maximize the use of muscles as shock absorbers and develop movement patterns that do not exacerbate the injury.

The exercise is initiated by using submaximal workloads. The therapist focuses on teaching each patient the principles of performing safe and complete movement patterns while beginning to build strength, power, and endurance. The muscles that act on the cervical spine must react quickly and be able to endure many prolonged positions of the head and neck.

2. Exercise until Momentary Fatigue

Even though a patient is often asked by the physical therapist to perform a therapeutic exercise for a specific number of repetitions, the progression toward an understanding of repetitions to substitution is important. The focus is on the movement pattern that the patient is performing, instead of the number of repetitions. Once a desired position or posture is lost and the movement pattern of the exercise changes because of fatigue, the exercise should cease. Once the patient understands this concept, their chance of reinjury decreases.

3. Vary Loads and Angles of Resistance

By varying the weight and angle of resistance, the motor learning and muscle sequencing that is responsible for controlled movement is best accomplished.

4. Progress to More Functional Positions

Exercising to fatigue and attempting to isolate muscles are important concepts in the early phases of rehabilitation. However, a progression toward positions and movement patterns that are used during everyday activities is key to preventing reinjury.

There are four important questions that must be considered when designing an exercise program for a patient that is recovering from a cervical spine injury.

How Much? When discussing the number of sets and repetitions that should be performed, the patient needs to be able to assess his/her current state of injury at the time of

exercise. The patient must be able to make that decision based on morning stiffness, the amount of protective guarding, and the ability to maintain prolonged positions.

How Many? With therapeutic exercise following a cervical spine injury, it is important to establish a number of repetitions with the amount of weight that makes the last repetition somewhat difficult. Low weight with high repetitions (20-30) should be initiated. As the patient's technique improves, the number of repetitions is de-emphasized and greater effort is placed on repetitions to fatigue or substitution of muscle function.

How Often? The answer is how often exercises are performed should be based on the time required for total recovery. This will depend on the state of the healing process and how easily the condition varies. If the cervical spine injury is easily affected by activities, then the recovery time will be prolonged. In this case, exercising every other day is appropriate. However, if the healing status does not vary with activity, the exercise program should be performed daily. Once the exercise program reaches this point, the program should be carried out for at least 4 weeks.

What Position? The positions that a patient exercises in following a cervical spine injury is determined by the examination findings. When determining the best positions for therapeutic or training exercises, the physical therapist analyzes the biomechanics of each exercise, and makes a determination for the patient regarding body position and range of motion permitted.

OBJECTIVE 4: BIOMECHANICAL COUNSELING

Biomechanical counseling is an important part of the patient education process. It refers to assisting the patient in establishing the intensity, frequency, and duration of loads that are directed toward the cervical spine while minimizing destructive movement patterns that will aggravate the problem.

The therapist will discuss sleeping postures with the patient and offer suggestions regarding the use of a cervical pillow. The patient will be instructed to position the head so that it remains in a midrange position throughout the night.

SUMMARY

Treatment of the cervical spine by a physical therapist follows a comprehensive history and evaluation of the upper-quarter. With a "hands-on" approach to treatment, a progressive therapeutic exercise program, and proper patient education, each patient can return to an active and healthy lifestyle.



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NEWS *briefs*

OSPTA continues to emphasize patient satisfaction and clinical outcomes. For the 3rd quarter, patient satisfaction was 98%, and our clinical pathways were met 71% of the time. For all diagnoses, the average number of visits was 9.16. Our patient's functional status improved 44%, their perceived improvement was 71%, and they experienced a 57% reduction in their pain.

For more information concerning OSPTA clinical outcomes, please feel free to call any of our offices.

OSPTA opened the Perryopolis office on November 4, 2000. Currently, patients are being treated Monday and Wednesday evening and Tuesday and Thursday morning.

VOR Speers was opened on November 11, 2000. Mark Kerestan, PT is the managing PT. The office is open daily with evening hours available on Tuesday and Thursday.

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