Sensible Physical Limitations after Epidural Patching Procedures or Surgery

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Introduction

• Spontaneous Intracranial Hypotension Patient
• Wife and Mother
• Physical Therapist (Belpre, OH)
What Are The Common Treatments For CSF Leaks?

- Bedrest
- Abdominal Binder
- Fibrin Glue Injection
- Epidural Blood Patching
- Surgical CSF Leak Repair
What Does the Research Tell Us About Physical Therapy Rehabilitation?
The Phases of Inflammation and Healing

- **Inflammatory phase** - prepares the wound for healing
- **Proliferation phase** - rebuilds the damaged structures
- **Maturation phase** - modifies the scar tissue into its mature form
The Acute Phase (Inflammatory Phase)

- Heat
- Swelling
- Redness
- Pain
Inflammatory Phase Continued Day 2-4

- Inflammation starts to subside
- Reabsorption of the clot
- Increase in granulation tissue (new healthy tissue)
Proliferation Phase (Day 4-21)

- Scar formation begins
- The wound is covered
- The wound regains strength
- New blood vessels are formed
Maturation and Remodeling (Day 21-60)

Remodeling of the scar

Collagen thickens and strengthens
Guiding Principles

1. Allow time for healing/scarring to occur
2. Do not strain, stretch, or shear weak dural tissue
3. Increasing intraabdominal pressure increases intracranial pressure
After A Patch or Repair

You may experience pain
You need to communicate your needs with your healthcare team
You may be encouraged to lay flat
You may be issued precautions
Common Precautions Immediately After a Procedure

<table>
<thead>
<tr>
<th>Avoid</th>
<th>Keep</th>
<th>Face</th>
<th>Sit</th>
<th>Weight</th>
<th>Use</th>
<th>Walk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid bending, lifting, and</td>
<td>Keep your back straight during all</td>
<td>Directly face the tasks you are</td>
<td>Sit using correct posture</td>
<td>Maintain your weight lifting</td>
<td>Use a pillow between your knees</td>
<td>Try to take short walks throughout the day (avoid prolonged sitting or laying)</td>
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<tr>
<td>twisting</td>
<td>movements (bend from knees and hips)</td>
<td>performing</td>
<td></td>
<td>restriction</td>
<td>when you are on your side</td>
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</table>
Getting Into A Car

- Stand facing away from the seat
- Reach back to ensure you are in contact with the surface
- While keeping your spine straight, pull your legs into the car
Getting Out of A Car

- Keep your spine straight as you move your legs out of the car
- Scoot to the edge of the chair and slowly stand up while keeping your back straight
Sitting Down From Standing

- Make sure you feel your bed or chair on the back of your legs
- Keep your back straight as you SLOWLY lower yourself
- Do not bend trunk forward
Getting Back In Bed

- Sit on the edge of your bed
- Keeping your spine straight, slowly lower yourself toward your pillow as you lift your legs into the bed
- Roll as a unit onto your back
Moving In Bed

• Turn your body as a unit without twisting
Getting Out of Bed

• Log roll and lower your legs over the edge of the bed
• Push yourself into a sitting position while keeping your spine straight
Standing Up From Sitting

- Move to the edge of the bed
- Ensure your back remains straight
- Use your arms to push yourself upright
Picking Something Up From the Floor
Washing Your Face

- Stand up straight while you wash your face.
- Use one wash cloth for soap
- Use a clean wash cloth to rinse
- Do not bend forward
Brushing Your Teeth

• Use two cups:
  • One for rinsing
  • One for spitting
• Do not bend over to spit in the sink
Bathing
Guiding Principles for Rehabilitation

- Avoid activities that cause dural tension
- Avoid joint traction/distraction
- Avoid joint mobilizations around injection or surgical site
- Avoid deep myofascial release/massage around injection or surgical site
- Avoid breath holding during all strengthening activities
- Avoid the use of machines for therapeutic exercise
- Avoid rotational core stabilization activities
- Avoid increased headache with therapeutic exercise
- Avoid using force to increase ROM
- Avoid sit-ups (stabilization should be performed in neutral with gentle abdominal stabilization)
Dural Tension Tests

- Straight Leg Raise
- Seated Slump
Dural Tension
Straight Leg Raise Test

To increase tension:
- Cervical flexion
- Hip internal rotation
- Ankle dorsiflexion

Knee extension
Hip flexion
Activities That Mimic Straight Leg Raise

- Shaving in the Shower
- Standing Hamstring Stretching
- Incorrectly Bending
Dural Tension
Seated Slump Test

- Full thoracic and lumbar flexion
- Neck flexion
- Knee extension
- Ankle dorsiflexion
- Hip internal (medial rotation)
Activities That Mimic Seated Slump

- Hamstring stretching
- Reading with feet elevated in recliner
- Long sitting in a bathtub
- Long sitting in bed
Preferred Sitting Position

- Make sure hips touch the back of chair
- Make sure feet touch the floor
- Support your spine
Preferred Sleeping Positions

• When on your back, use a pillow under your knees to align your spine
• When on your side, use a pillow between your knees to align your spine
Avoid Joint Traction/Distraction

A force applied to the body to separate the joint surfaces and elongate soft tissue.
Avoid Joint Mobilization or Deep Massage

Skilled manual techniques applied to joints at varying speeds and amplitudes to decrease pain and increase joint capsule range of motion.
Avoid Holding Your Breath

Increased intraabdominal pressure increases intracranial pressure
Avoid Using Machines
Avoid Using Force to Obtain ROM

We do not want to strain, stretch, or shear weak dural tissue
Avoid Sit Ups
Goals of Phase 1

1. Ensure independence with ADLs and IADLs
2. Decrease post-surgical inflammation, pain, and muscle guarding
3. Decrease local sensitivity
4. Minimize deconditioning
5. 10 pound lifting restriction during therapy and ADLs
<table>
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<tr>
<td><strong>Education regarding ADL limitations/modifications</strong></td>
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<tr>
<td><strong>Modalities to decrease inflammation, pain, muscle guarding (ultrasound, electrical stimulation, ice)</strong></td>
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<tr>
<td><strong>Gentle massage/scar desensitization (avoid deep massage)</strong></td>
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<tr>
<td><strong>Graduated treadmill walking program is initiated (avoiding surgical site pain or headache)</strong></td>
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<td><strong>Home TENS instruction if indicated</strong></td>
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Criteria for Progression to Phase 2

- Compliant with ADL limitations/modifications
- Compliant with pain management techniques
- Independent with TENS application
Goals of Phase 2

- Decrease residual pain and muscle guarding
- Advance aerobic conditioning
- Initiate gentle ROM (mid-range)
- Introduce unresisted postural stretching and strengthening
- 20 pound lifting restriction during therapy and ADLs
**Phase 2 – Protective Reactivation**

Continue modalities to decrease inflammation, pain, muscle guarding if indicated

Continue gentle massage/scar desensitization if indicated

Progression of treadmill walking program (avoiding surgical site pain or headache)

Introduce postural stretching/strengthening progression (avoiding activities that promote dural tension)
Criteria for Progression to Phase 3

- Independent/compliant with HEP
- Independent with pain management techniques
- Ability to perform a minimum of 20 repetitions of each activity without surgical site pain or headache exacerbation

- Ability to ambulate for a 10 minute duration without surgical site pain or headache exacerbation
- Demonstration of proper postural alignment without cueing
Goals of Phase 3

01. Advance aerobic conditioning
02. Slowly ween from lifting restrictions
03. Progress strengthening/stabilization
04. Education regarding body mechanics during functional and job tasks
05. Initiate gentle work reconditioning if indicated
## Phase 3 – Strengthening

- **Progress aerobic conditioning as tolerated (may include treadmill, stationary bike, and elliptical trainer)**

- **Advance strengthening/stabilization incorporating external resistance (exercise band and dumbbell weights only)**

- **Education regarding posture during work/leisure activities**

- **Education regarding correct lifting mechanics**

- **Initiate and progress work simulated activities (lifting, pushing, pulling, and carrying) in order to ensure a safe return to work.**
Criteria for Discharge from Physical Therapy

1. Independent with HEP
2. Independent with pain management techniques
3. Ability to perform all therapeutic exercise without surgical site pain or headache exacerbation
4. Ability to ambulate for a 20 minute duration without surgical site pain or headache exacerbation
5. Demonstration of proper postural alignment without cueing
6. Ability to perform all work simulated activities without surgical site pain or headache exacerbation
The Restrictions Debate

- Mechanism of Injury
- Connective Tissue Disorder
- Prior Level of Function
- Type of Repair
- Comorbidity
- Age
- Nutrition
- Psychological Factors
- Persistence of Pain
Questions