

Shoulder Pain After a Stroke

Have you ever noticed that many stroke survivors develop shoulder pain on their affected side? In fact, shoulder pain after a stroke is a common complication that affects up to 72 per cent of stroke survivors in the first year. So what is causing it and what can be done?

Designed for mobility, not stability

The shoulder is a ball and socket joint that is designed for mobility, not stability. Compare how many different directions you can move your shoulder compared to your hip, which is also a ball and socket joint. The shoulder joint has a much shallower socket compared to the hip joint. This allows for more movement at the shoulder, but it also provides less support. While other ball and socket joints have strong ligaments to support the joint, the shoulder receives its support mainly from the muscles that surround it.

When a person has a stroke, the shoulder muscles can be affected and may not be able to properly support the shoulder and arm. This means the shoulder may not be aligned correctly and there is a risk for injury if it is not properly handled and positioned.

What are the common causes of shoulder pain?

After a stroke, the shoulder is an extremely fragile area. It can be easily injured, causing pain and loss of function. There are several reasons why many stroke survivors develop shoulder pain.

Shoulder–hand syndrome

Shoulder–hand syndrome occurs in 12 to 34 per cent of stroke survivors. Stroke survivors who develop this syndrome will first complain of shoulder pain. As this persists, they will begin to develop a stiff, swollen and painful hand and wrist. The range of motion

at the shoulder and hand will also be decreased. Some stroke survivors with shoulder–hand syndrome recover spontaneously. If the symptoms persist for longer than six months, however, it becomes more difficult to treat.

Shoulder subluxation

A subluxed shoulder is very common in stroke survivors. Weak or low-tone shoulder muscles may not be able to hold the head of the humerus (the ‘ball’) in place against the socket. ‘Gapping’ or separation of the joint may occur as a result. This is called shoulder subluxation. This gapping or subluxation of the shoulder joint causes stretching of the soft tissue around it and may result in pain. If a stroke survivor does have subluxation, you will often see a ‘step-like’ deformity at the shoulder.

Shoulder subluxation is most often caused by lack of support to the shoulder joint; pulling on the arm during transfers and functional activities; and the effect of gravity pulling down on the arm. It is important to remember that shoulder subluxation may not always cause pain, especially if survivors have sensory loss or lack awareness of their arm.

Spasticity

A stroke can affect muscle tone, which is the resting tension in a muscle. Sometimes this resting tone increases, leading to spasticity or high tone. Spasticity at the shoulder can affect the joint in several ways. For example, it creates abnormal arm postures that prevent the arm from moving in its usual manner. This may cause the shoulder to become stiff and painful. In addition, the increased tension in the shoulder muscles may cause the upper arm to be pulled into the chest wall, making it difficult to move the arm. When this occurs, moving the arm may cause pain and damage to the soft tissues around the shoulder.

Central post-stroke pain (nerve pain)

Some stroke survivors complain of a burning, tingling or stabbing pain in their affected shoulder and arm. This type of pain—known as neuropathic or nerve pain—results from the damage that occurs in the

brain as a result of the stroke. It can be constant or it can come and go.

Other conditions

Stroke survivors can also develop a painful shoulder due to conditions that may have been present before their stroke. These include tendonitis, rotator cuff tear, arthritis, bursitis and arm fractures.

How does shoulder pain affect the stroke survivor?

The presence of shoulder pain can affect stroke survivors in many ways. It can affect their ability to use that arm and hand, including their ability to participate in activities of daily living and in recreation programs. Some people experience sleeplessness and even develop depression. For many, shoulder pain decreases their quality of life. It is important to remember that stroke survivors are all unique and the effects of shoulder pain will vary from person to person.

How do you prevent or properly handle a painful shoulder after a stroke?

Shoulder pain is not a result of the stroke, but it actually happens sometime after the stroke. Therefore, health care providers play an important role in preventing shoulder pain and properly managing pain when it occurs. Table 1 describes the dos and don’ts of handling the shoulder of a stroke survivor.

Arm slings: Apply correctly and use consistently

Many stroke survivors are given slings to support their affected arm while transferring or standing. A sling that is applied for transfers should be removed once the transfer is complete. The arm should then be positioned in bed using pillows or in the wheelchair using an arm trough, lap tray or other prescribed device. Leaving the sling on survivors for indefinite periods of time can lead to joint limitations, affect body image and cause tightness and loss of movement of the arm, which will restrict their ability to use what function they have in their arm. If a stroke survivor has been given a sling, it is likely that the arm is fragile and at risk for injury.

by Alda Tee and Sharon Trottman

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TABLE 1

Handling tips for the shoulder after a stroke.

Shoulder handling DOs

DO have the resident assessed for treatment of shoulder pain. Canadian best practice recommendations for stroke care state: 'All stroke patients should be assessed for shoulder pain and, when symptoms present, have strategies implemented to minimize shoulder joint pain and trauma.'¹

DO identify those factors that may cause or aggravate shoulder pain.

Report any pain or changes in pain to the appropriate person.

DO practice proper handling of the affected arm.

- Handle the arm carefully during functional activities.
- Support the arm when walking, standing and sitting.
- Provide support and carefully move the arm when repositioning.

DO learn to apply slings correctly. Slings that are not applied correctly do not provide adequate support to the affected arm.

DO practice proper positioning.

Always position the arm to minimize shoulder pain. In sitting, support the arm on a lap tray, arm trough, pillow and/or table. Ensure the surface is not too high or too low.

DO communicate your findings to other team members.

- Speak with other members of your team such as the physiotherapist and occupational therapist for advice.
- Follow the recommendations of the therapists or health care professional involved.

DO receive proper training in passive range of motion exercises.

- To safely perform passive range of motion exercises at the shoulder, the proper rotation of the arm and movement of the shoulder blade must occur.
- Only perform these exercises if you have received formal training in this technique.

DO handle the arm correctly when assisting with dressing. Follow the 'first on, last off' rule when assisting with dressing the affected arm.

...And DON'Ts

DON'T use overhead pulleys. The use of overhead pulleys can lead to improper movement patterns and shoulder pain.

DON'T pull on the arm when transferring survivors, repositioning them in bed or assisting them to walk. Pulling on the arm during activities can cause pain and damage to the shoulder.

DON'T perform passive range of motion exercises without proper instruction.

- Passive range of motion exercises that are improperly performed can cause damage and pain at the shoulder joint.
- Avoid performing these exercises at the shoulder if you have not been instructed in the proper technique.

DON'T leave the sling on once the survivor is positioned in a chair.

- Slings are to be used to support the affected arm during transfers or while walking.
- A sling should not be left on the arm for an extended period of time as it can lead to other complications.

To be effective in supporting the arm, the sling must be applied correctly and used consistently as outlined by the occupational therapist or physiotherapist.

Proper positioning: It does make a difference

Taking care to ensure that a stroke survivor is properly positioned in sitting and in lying is important to prevent and manage shoulder pain. Careful positioning provides support to the affected arm, promotes correct body alignment, increases body awareness of the arm and provides comfort. A consistent approach to proper positioning can prevent shoulder subluxation, maintain joint movement and decrease



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FIGURE 1

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Key elements of positioning in sitting: (1) 90-degree position at the ankles, knees and hips; (2) affected arm/hand should be supported and positioned away from the body with fingers open; and (3) the shoulders should be level, with the patient in an upright posture.

shoulder pain. The Canadian best practice recommendations for stroke care state that 'Staff should position patients, whether lying or sitting, to minimize the risk of complications such as shoulder pain.'¹

For example, stroke survivors often sit with a slouched or slumped posture. This posture does not provide enough trunk support and can lead to poor alignment of the shoulder blade. This makes it difficult to position the arm correctly and can lead to shoulder pain. A wheelchair with good back support is important to provide adequate trunk support and to allow for proper positioning of the arm and increased comfort (see Figure 1). If there are any concerns about the resident's wheelchair position, speak with an occupational therapist or physiotherapist.

Making a difference

Front-line care providers have an important role to play in the prevention and management of shoulder pain post stroke. By practicing proper handling and positioning techniques for the affected arm—along with ongoing monitoring and communication with the health care team—it is possible to prevent the onset of and more effectively manage shoulder pain after stroke. **LTC**

Reference

1. Bayley M, Lindsay P, Hellings C, et al.; Canadian Stroke Strategy. Balancing evidence and opinion in stroke care: The 2008 best practice recommendations. *CMAJ* 2008;179:1247-9.

Further resources

Management of the Hemiplegic Arm: Implementing a Best Practice Protocol.

This resource contains education information, an audit tool and positioning diagrams. For more information, contact Gina Tomaszewski, SWO regional stroke education coordinator at (519) 685-8500 ext. 35268 or gina.tomaszewski@lhsc.on.ca.

Tips and Tools for Everyday Living: A Guide for Stroke Caregivers.

This manual is available from the Tips and Tools workshop series. For more information, visit www.strokestrategieso.ca/prof_whatnew.php.

Positioning, Transfer and Mobility.

This video/DVD provides a comprehensive overview of positioning techniques when in bed or sitting. For more information about this resource, contact (416) 864-6060 ext. 2815 or strokenetwork@smh.toronto.on.ca.

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