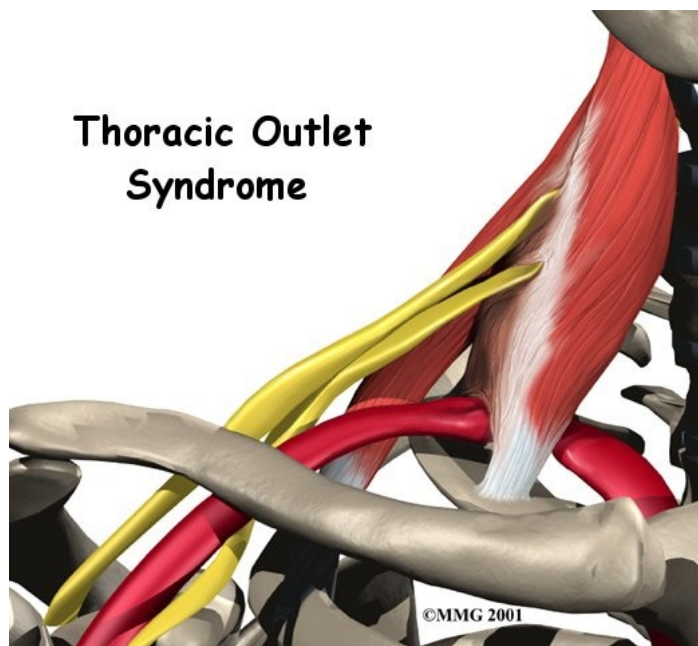


Thoracic Outlet Syndrome

Introduction

Physical Therapy in Newburgh and Orange County New York for Shoulder



Welcome to Peak Physical Therapy's patient resource about Thoracic Outlet Syndrome.

Thoracic outlet syndrome (TOS) can cause pain and numbness in the shoulder, arm, and hand. Testing for TOS is difficult. There is no one test to accurately diagnose TOS, and other conditions can have similar symptoms. You will need to go through several tests to find out if TOS is actually the cause of your pain. Making the right diagnosis often takes time and can be a cause of frustration, both for you and your doctor.

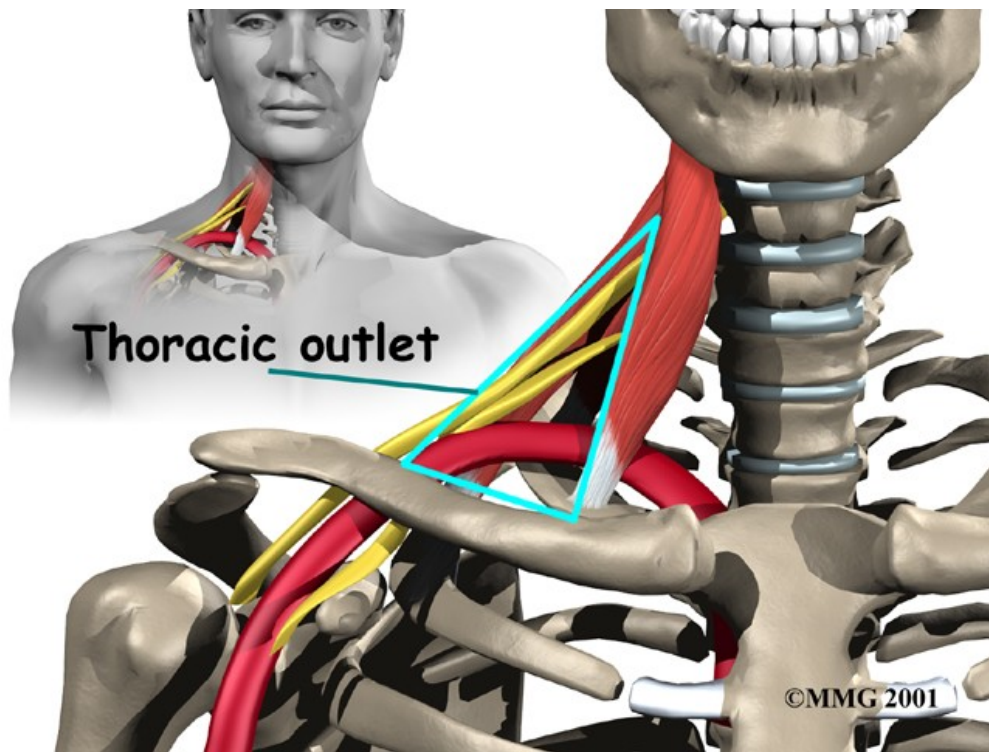
This article will help you understand:

- what happens to cause TOS
- what tests will be used to diagnose the condition
- what can be done to relieve your pain

Anatomy

What is the thoracic outlet?

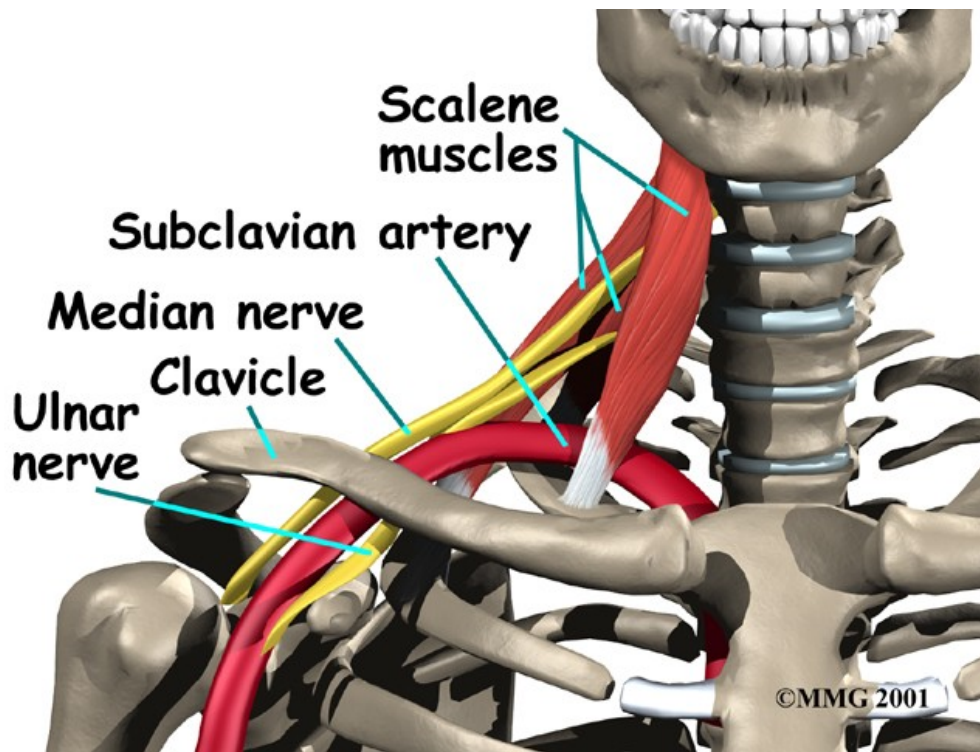
Thoracic Outlet



The nerves and blood vessels that go into the arm and hand start at the side of the neck. Nerves come out of the spine through small openings along the side of each vertebra. These openings are called *neural foramina*.

The nerves and vessels travel between muscles in the neck called the *scalene muscles* and over the top of the rib cage. The *thoracic outlet* is this opening between the scalene muscles and the rib cage. The nerves and blood vessels then go under the collarbone (also known as the *clavicle*), through the armpit (the *axilla*), and down the arm to the hand.

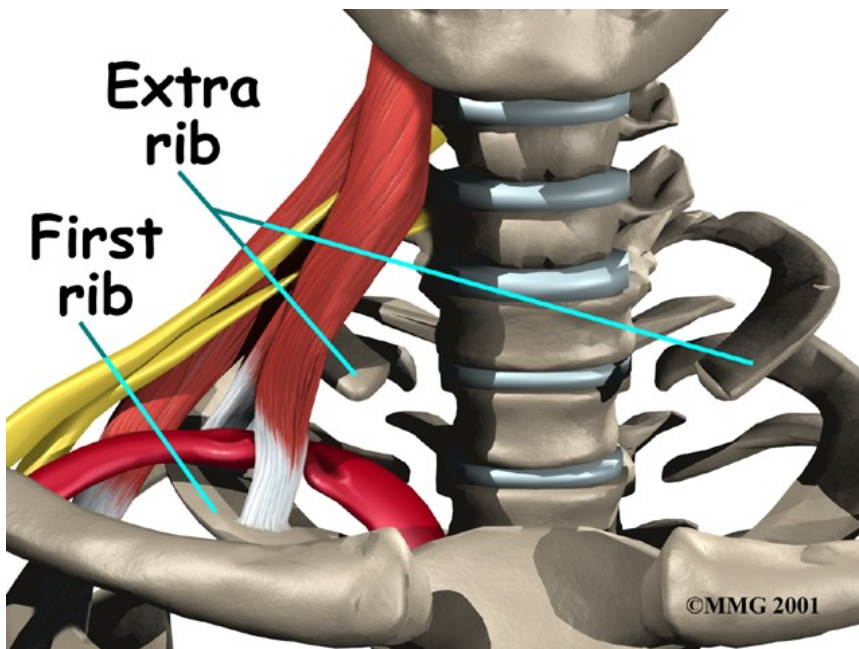
Nerves and Vessels



Related Document: [Peak Physical Therapy's Guide to Shoulder Anatomy](#)

Causes

What causes TOS problems?



The main cause of TOS is that the nerves and blood vessels going to the arm and hand get squeezed near the thoracic outlet. This can occur for

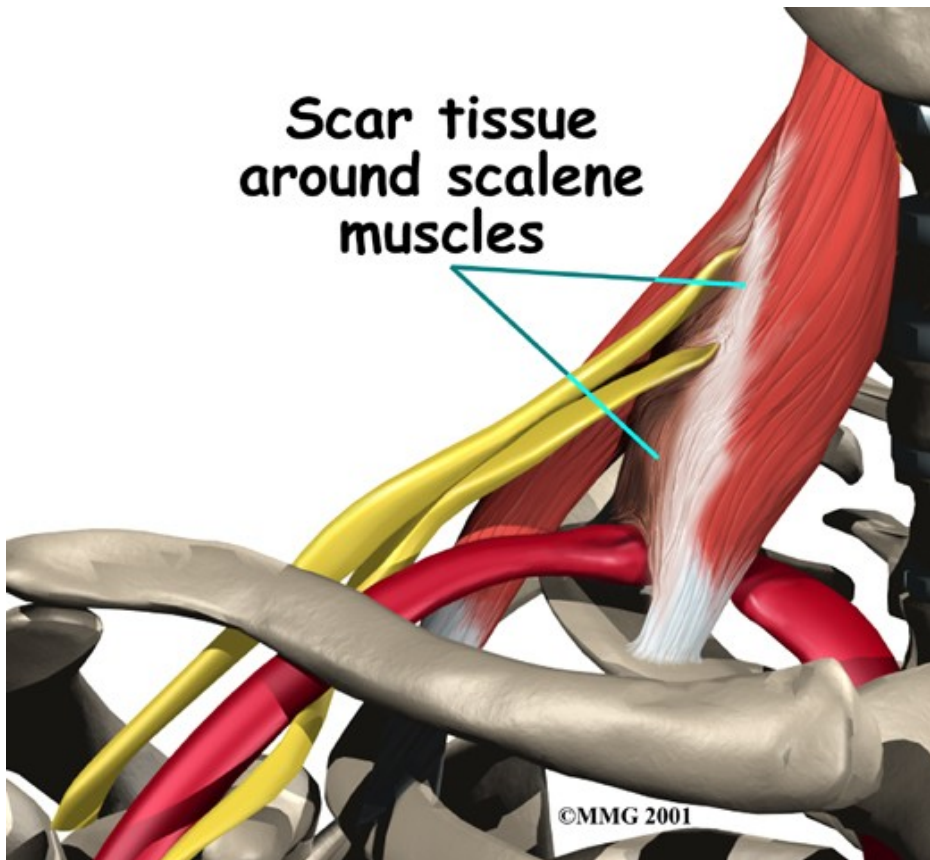
many reasons.

Pressure on nerves and vessels can happen in people who have fractured their clavicle. It can also happen in people who have an extra first rib, although this doesn't always result in TOS.

Extra muscle or scar tissues in the scalene muscles can put extra pressure on the nerves and arteries. Heavy lifting and carrying can bulk up the scalenus muscles to the point where the nerve and arteries get squeezed.

Traumatic injury from a car accident can also cause problems that lead to TOS. In an accident, the shoulder harness of the seat belt can strain or tear the muscles. As they heal,

Scar Tissue



can build up, putting pressure on the nerves and blood vessels at the thoracic outlet.

Neck and arm positions used at work and home may contribute to TOS. People who have to hold their neck and shoulders in awkward alignment sometimes develop TOS symptoms. TOS symptoms are also reported by people who have to hold their arms up or out for long periods of time.

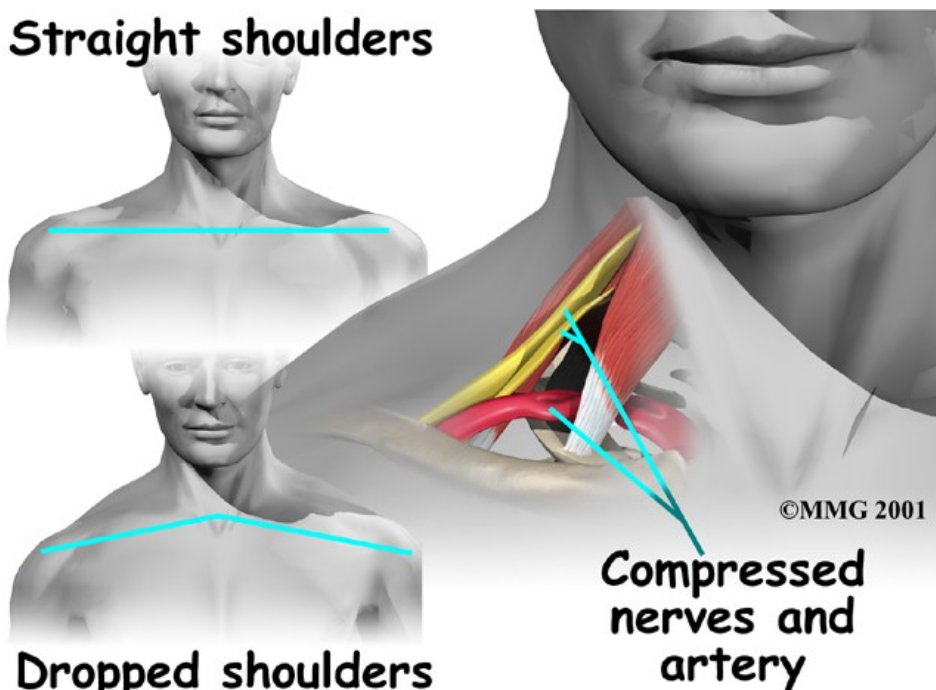
People with TOS often slouch their shoulders, giving them a drooped appearance. The

Poor Body Alignment

Straight shoulders



Dropped shoulders



of slouching can compress the nerves and arteries near the thoracic outlet. Being overweight can cause problems with posture, and women who have very large breasts may also have a droopy posture. For some reason, TOS affects three times as many women as men.

Symptoms

What symptoms does TOS cause?

TOS causes pain along the top of the clavicle and shoulder. The pain may spread along the inside edge of the arm. Occasionally pain spreads into the hand, mostly into the ring and pinky fingers. Numbness and tingling, called *paresthesia*, may accompany the pain, especially in the early hours of the morning before it's time to wake up. Symptoms tend to get worse when driving, lifting, carrying, and writing. The arms may also feel tired when held overhead, as when using a blow dryer. It may be harder to hold and grip things, and the hand may feel clumsy.

Symptoms related to the blood vessels are less common. If the blood vessels are causing symptoms, the arm and shoulder may feel heavy and cold. The arm may become somewhat blue (*cyanotic*), and the constriction of vessels can cause the arm and hand to swell. Problems with the blood vessels that go to the arm are serious. If you experience these symptoms, you should call your doctor right away.

TOS symptoms are similar to the symptoms of many other conditions. A herniated disc in the neck, carpal tunnel syndrome in the hand, and bursitis of the shoulder can all cause symptoms very much like those of TOS.

Diagnosis

Because TOS doesn't have any unique symptoms, it can be difficult to diagnose. The diagnosis of TOS involves getting as much information as possible to eliminate other possible causes of your pain.

When you visit Peak Physical Therapy, our Physical Therapist will take your medical history and do a thorough physical examination. Because TOS is so difficult to diagnose, we will rely heavily on what you report about your symptoms and medical history.

Some patients may be referred to a doctor for further diagnosis. Once your diagnostic examination is complete, the Physical Therapists at Peak Physical Therapy have treatment options that will help speed your recovery, so that you can more quickly return to your active lifestyle.

Our Treatment

Non-surgical Rehabilitation

It is best to begin treating your pain conservatively, without surgery or other invasive procedures. When you begin your Peak Physical Therapy rehabilitation program, our Physical Therapist may recommend some simple ways to help you combat TOS. For example, decrease the tension of the shoulder strap of your seat belt. Take rest periods to avoid fatigue.

Overweight patients should seek help with weight loss, and women with especially large breasts may benefit from using a strapless long-line bra. Avoid heavy lifting, pulling, or pushing. Rapid breathing and stress can worsen symptoms. Avoid looking up, bending the neck back, or holding your arms up for long periods of time. And don't carry a purse or bag on the affected shoulder.

Your Physical Therapist at Peak Physical Therapy may start you on some basic exercises that you can do at home. A home exercise program is essential to the treatment of TOS. This is true even if the cause of your TOS is an abnormality in the bones and muscles. You must consistently do your exercises to get the most benefit.

Our exercise program may begin with a few exercises to loosen up tight muscles and joints around the compressed nerves and blood vessels. To help restore normal mobility, our Physical Therapist may prescribe stretching for the joints, muscles, and nerves. We can also help you find ways to manage your pain and avoid future problems.

You will also be given exercises to strengthen the muscles of your shoulder and upper back and to stretch the muscles in the front of the chest and shoulders. Our exercise program will focus on helping you sit and stand with good posture. Good posture is critical to managing TOS symptoms. Swimming can help some patients, but the backstroke and full breaststroke may worsen the condition.

Our Physical Therapist can also give you tips to help avoid TOS pain. For example, you should limit the length of time the arms are used in outstretched or overhead positions, and don't do heavy carrying and lifting. Simple things like taking frequent breaks, changing positions, stretching, or using a hand truck or cart can bring relief. Our Physical Therapist can help you with any specific tasks that cause you pain.

In most cases Physical Therapy can be very effective. However, Physical Therapy may not help much if your symptoms are so severe that the muscles of the hand or forearm have *atrophied* (shrunk).

Post-surgical Rehabilitation

Your rehabilitation will likely be more complex after surgery. Patients wear a sling after surgery to support the shoulder and arm. Passive movements can begin soon after surgery. But there should be no active motion for about two weeks, to allow the soft tissues time to heal.

Our TOS patients usually start doing resistive exercise and activities after three to four weeks. These treatments help improve motion in the shoulder blade and arm. Posture and strengthening exercises help prevent future TOS problems.

Our Physical Therapist will give special attention to the type of work you do, and may have suggestions to help you avoid work postures and activities that could cause problems. We'll show you strategies to take care of any future symptoms and avoid further problems.

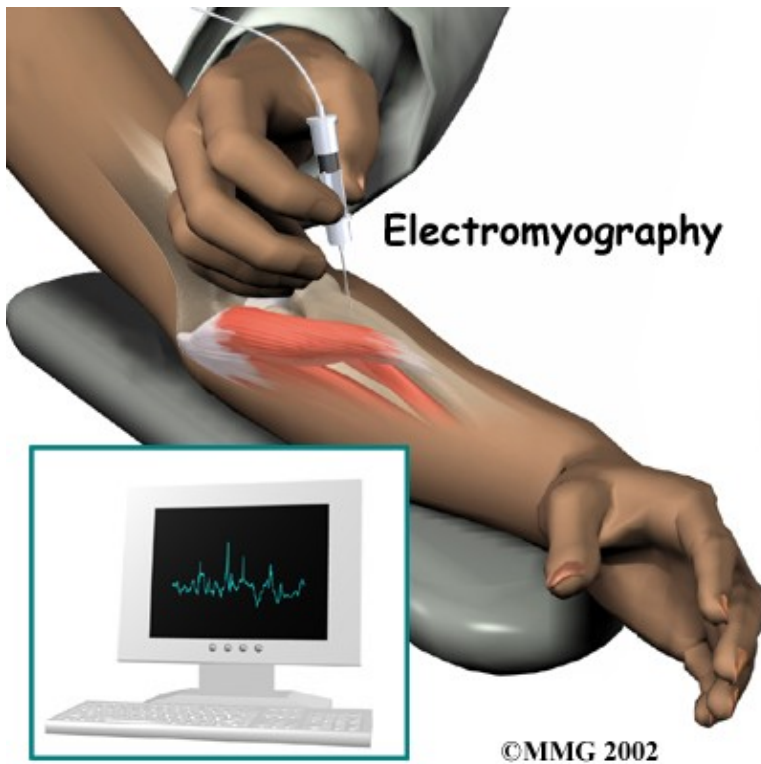
When your recovery is well under way, regular visits to Peak Physical Therapy will end. Although we will continue to be a resource, you will eventually be in charge of doing your exercises as part of an ongoing home program.

Peak Physical Therapy provides services for Physical Therapy in Newburgh and Orange County New York.

Physician Review

When diagnosing your problem, your doctor may order an X-ray. The X-ray could show an extra cervical rib or other problems with the bones and joints, such as arthritis. Your doctor may also ask you to get an *magnetic resonance imaging* (MRI) scan or other imaging tests. MRI scans use magnetic waves to show pictures of the bones and soft tissues of your body in slices. X-rays and other imaging tests are mostly used to rule out other problems.

Your doctor may recommend electrical tests, called *electromyography*, of the nerves in the arm. These tests are used to find out if the nerves between the neck and hand are being pinched.



To confirm the diagnosis, doctors may do special tests of the blood vessels that run along the nerves. These tests are frequently negative, but it is important that your doctor rule out other causes of your pain.

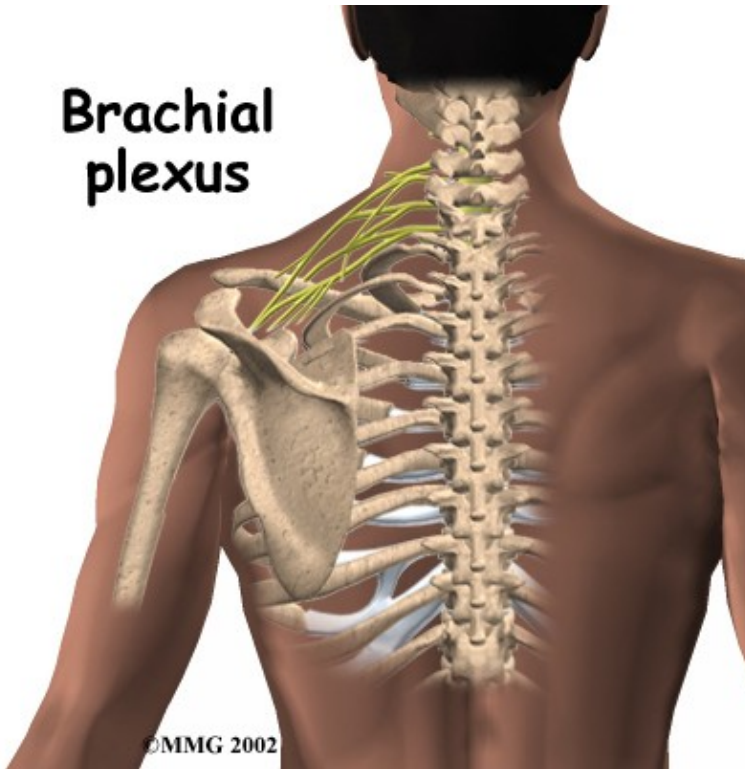
Your doctor can prescribe some types of medicine to ease your discomfort. *Nonsteroidal anti-inflammatory drugs* (NSAIDs), such as aspirin and ibuprofen, can relieve pain and inflammation, and muscle relaxants can relieve muscle spasm. Some patients who experience chronic pain, such as the pain of TOS, end up battling depression. In these cases, anti-depressants can be very helpful.

Surgery

Surgery for TOS is usually a last resort. The surgery is directed at removing the source of compression on the nerves of the:

Brachial Plexus

Brachial plexus



The brachial plexus is the network of nerves that go to the hand and forearm. If there is an extra rib, it is usually removed. Otherwise, surgery consists of simply releasing the constricting elements and scar tissue around the nerves.

Surgery is usually done through an incision under the arm. The surgery will require a *general anesthetic*, which will put you to sleep. You will probably need to spend at least one night in the hospital.

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