

Patient Information

First Rib Resection and Cervical Rib Resection for Thoracic Outlet Syndrome (TOS)

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Why do I need the operation?

Thoracic outlet syndrome is a condition where the nerves, arteries or veins leading from the root of your neck to your arm can become compressed. This space is often quite narrow and these structures become compressed between the clavicle (collar bone) and the first rib. Occasionally, an extra rib (cervical rib) can cause similar symptoms. There are two small muscles called the scalene muscles which join to the first rib and are also partly responsible for the compression. The operation is to remove the first or cervical rib and divide the scalene muscles creating more space for the structures to pass to the arm without being compressed (Figure 1).

What are the symptoms?

Because the space in the armpit is small, even people without TOS can get similar symptoms when the arm is in an awkward position (such as when you are asleep), waking up with numbness and tingling in the fingers.

Proper TOS is most common in middle aged women but can occur in men. In 1 in 10 people, it can occur on both sides. In most cases, the symptoms are related to nerve compression rather than compression of the vessels. These include pain or numbness along the shoulder, upper arm and tingling in the fingers. The symptoms are often made worse by lifting or carrying heavy objects.

Occasionally, the arm and hand may go cold, especially on use. If the vein from the arm is compressed, the arm and hand may look blue and swollen. When the doctor examines you in the clinic, he will test the nerves in the arm and test to see if the pulses disappear when the arm is raised above the head and exercised and when the head is turned to the opposite side.

What is the cause?

In most people there is no obvious cause for the compression. A cervical rib is found in about 1 in 100 of the population but not all of these people have symptoms. Occasionally, it is due to an extra rib or occurs after an injury to the shoulder or a whiplash injury.

What tests will I have to make the diagnosis?

Unfortunately, in this condition the tests are not always helpful and the diagnosis is often made by specific questions the doctor will ask you about your symptoms (your “history”).

We often do:

- Chest x-ray or “thoracic inlet views” to look for an extra cervical rib;
- An MRI or CT scan of the root of the neck. This is not always helpful in seeing the cause of TOS but can be useful in excluding other causes such as a disc prolapse in the neck;
- A vascular ultrasound scan (Duplex) to look at the arteries and veins especially when the hand is raised above the head;
- Nerve conduction studies are often normal in TOS but the test is useful to exclude other causes of nerve irritation such as from the neck (cervical spondylosis) or from nerve compression at the wrist (carpal tunnel syndrome);
- An angiogram (where dye is injected into the arteries to visualise them). This test is not routinely performed but, on occasions, may be useful;
- A venogram (where dye is injected into the vein in the hand to see compression of flow at the level of the 1st rib).

What is the treatment?

Wherever possible, we would try and manage this condition without an operation because the results of surgery are not always predictable. The symptoms often resolve with physiotherapy or become manageable with pain killers. Your doctor will certainly want you to undergo a period of extensive physiotherapy before embarking on surgery. If you do come to an operation, this will be discussed with you in great detail by the Surgeon prior to surgery.

What is the prognosis?

This is a bit variable and unpredictable. On the whole, about 8 out of 10 people will have an improvement in their symptoms and up to 5 out of 10 will have complete relief of their symptoms. Over time, however, about 1 in 3 people will see a return of their symptoms which we think is due to scar formation in the arm pit.

Before your operation

Before TOS surgery, there are a number of tests that need to be done. Pre-operative tests include blood tests, a heart tracing (ECG) and completing the paperwork. These tests are usually completed at a pre-admission visit to the hospital a few days before your operation. They are sometimes done when you are admitted for the operation.

Coming into hospital

Please bring all the medications that you are currently taking with you. You will be admitted to your bed by one of the nurses who will also complete your nursing record.

You will be visited by the Surgeon who will be performing your operation and also by the doctor who will give you the anaesthetic. Your operation, in exceptional circumstances, may be performed by a Vascular Consultant who did not assess you in clinic.

Physiotherapists may also visit to give you information about your post-operative care. If you have any questions regarding the operation, please do not hesitate to ask.

The Anaesthetic

The first part of the operation involves giving you an anaesthetic. The operation can only be done with you asleep. A tiny needle is placed in the back of your hand. The anaesthetic is injected through the needle and you will be asleep within a few seconds. A drip is placed into a vein in your forearm to give you some fluids during and following surgery.

The Operation

During the operation, we do a lot of lifting of the arm to expose the armpit and this can make it a bit sore for the first few days after surgery. You will usually have one cut either in the armpit or one above the collar bone. The first rib or cervical rib and the muscles attached to them are removed. We have to take care to identify and preserve all the important structures in the neck and take care not to damage them. The wounds are closed with a dissolvable stitch under the skin and there will be a drain coming out the skin near the incision to allow any blood to drain out. This is usually removed the next day. The usual stay in hospital is 2-3 days.

What are the risks of this operation?

Your surgeon is experienced in this type of surgery and will have spoken to you about the risks and benefits in the out patients department. They will take your consent on the day of your surgery, mark the correct side, answer any of your questions and will do everything they can to minimise the risks for you. We have a team of surgeons with experience in this type of surgery who can help each other out if necessary.

Pain early on is quite common but we will provide you with painkillers and physiotherapy. Long term pain is possible but unusual.

Bruising is fairly common but settles quickly. Bleeding into the wound (haematoma) is unusual but may require a return to theatre for the blood to be drained by reopening the wound.

Wound infection is not uncommon in the armpit and can usually be treated with antibiotics. Occasionally it will require reopening of the wound.

Swelling of the wound (seroma) is unusual and is due to a collection of lymphatic fluid. This is usually of no consequence but may occasionally require drainage.

A collapsed lung (pneumothorax) is uncommon and doesn't usually require any treatment as they are often small. Occasionally the whole lung can collapse making you short of breath. If this occurs we may insert a chest drain (a tube into the chest cavity) to re-expand the lung. This would make your stay in hospital a little longer. You would not be able to fly for 6 weeks after.

Bleeding into the chest cavity (haemothorax) is uncommon and may also require a chest drain and a longer stay in hospital.

Significant injury to the nerves of the arm (the brachial plexus) is rare but if this happens there could be serious long term consequences. Other nerve injuries can occur but these are also rare. Most of these are temporary due to stretching but can occasionally be permanent. These can include the nerve to the trapezius muscle in the neck, the nerve to the latissimus dorsi muscle in the back (the long thoracic nerve) and the nerve to the diaphragm (the phrenic nerve). The small nerves to the skin (the cutaneous nerves) around the wound cannot be seen and it is common to have temporary or permanent numbness in the armpit, the inside of the upper arm or just below the collar bone.

Significant injury to the arteries or veins at the time of surgery can cause rapid bleeding but is very rare. The surgeon may need to open the chest to control this (thoracotomy) or place a stent in the artery. Death as a consequence of this surgery is very rare but is usually caused by damage to the main blood vessels.

Sometimes the operation is so difficult that the surgeon may abandon the procedure to be safe. It is possible, although unusual, to remove the second rib instead of the first rib. We try to remove as much of the rib as possible but we cannot remove the whole rib and the main aim is to remove enough rib safely.

There is a very good chance of improvement of your symptoms (80%) but some patients may notice no improvement (10%) and some may feel worse off (10%) with pain and numbness and symptoms can recur many years later.

After the operation

After your operation, you will be given fluids by a drip in one of your veins until you are well enough to sit up and take fluids and food by mouth. The nurses and doctors will try and keep you free of pain by giving pain killers by mouth or by a machine that you are able to control yourself by pressing a button (PCA – patient controlled analgesia). A chest x-ray will be taken on the first day post-operatively and you will receive physiotherapy to get mobility back to the arm. You will become gradually more mobile until you are fit enough to go home.

Going home

You may feel tired for some weeks after the operation but this should gradually improve with time. Regular exercise such as a short walk combined with rest is recommended for the first few days but you should be able to return to normal activity quickly.

Driving: You will be safe to drive when you are able to perform an emergency stop. This will normally be 2-4 weeks after surgery, but if in doubt check with your own doctor

Bathing: Once your wound is dry, you may bathe or shower as normal.

Work: You should be able to return to work within 2-4 weeks of surgery. We will provide you with a sick note but if you need longer off work, please see your GP.

Medicines: You will usually be sent home on a small dose of aspirin if you were not already taking it. This is to make the blood less sticky. If you are unable to tolerate aspirin, an alternative drug may be prescribed.

What can I do to help myself?

If you were previously a smoker, you must make a sincere and determined effort to stop completely. Continued smoking is likely to jeopardise the success of any surgical operation carried out and to make recovery more difficult. General health measures such as reducing weight, a low fat diet and regular exercise are also important.

Why not take this opportunity to consult your own doctor or the practice nursing staff to seek professional help in giving up the addiction?

Further help is available locally from the

Smoking Advice Service

Tel: 01752 314040

www.smokingadvice.com

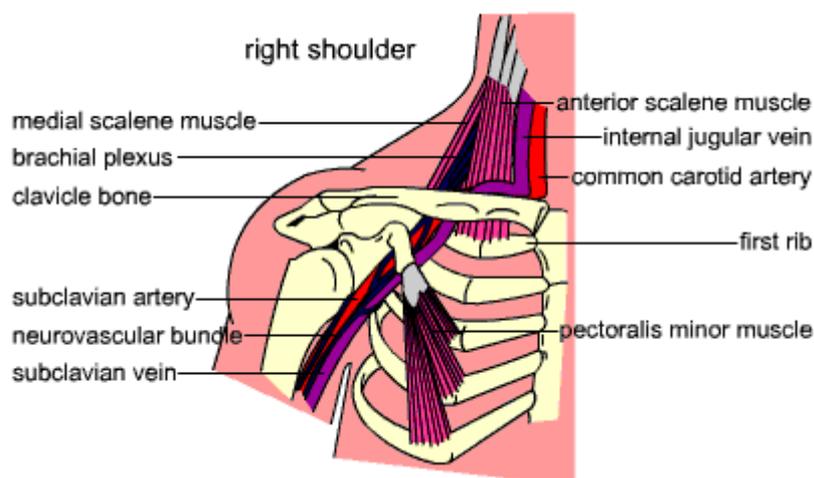


Figure 1. The thoracic inlet

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Your notes:

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