



FROZEN SHOULDER:

Information for patients to help in making decisions about treatment

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About the shoulder

There are three bones which together make up the shoulder;

- 1. The upper arm bone (humerus)
- 2. The shoulder blade (scapula)
- 3. The collarbone (clavicle)

The upper arm bone (humerus) and the shoulder blade (scapula) create the main 'ball and socket' shoulder joint. This joint is formed where the rounded top of the humerus bone (the ball) fits into a dipped part of the shoulder blade (the socket), known as the glenoid.

The main shoulder joint enables your arm to move. The large range of movement which the shoulder can have is made possible by the loose and flexible structure of the shoulder lining (also known as capsule). This structure covers this main 'ball and socket' joint and acts as a protective layer.



What is frozen shoulder?

Frozen shoulder (also known as adhesive capsulitis) is when the shoulder lining of the 'ball and socket' joint becomes inflamed, thick and tight. The inflammation, thickening and tightening tend to restrict shoulder movements and also lead to a build up of pain and stiffness.

Symptoms of frozen shoulder include;

- Pain and stiffness in your shoulder, often felt on the outer side at the top of your arm.
- Difficulty moving your arm as a result of the pain – pain occurs at times of rest but is worse when moving your arm.
- You have trouble carrying out daily activities as a result of discomfort or pain – for example, bathing, driving, or lying on your shoulder while sleeping.

How does frozen shoulder occur?

The protective layer (the shoulder lining) around the 'ball and socket' shoulder joint becomes inflamed. This is followed by the shoulder lining becoming thicker and tighter. As the shoulder lining is usually a loose and flexible structure, this makes it possible for the shoulder joint to have a large range of movement. However, with the inflammation, thickening and tightening of the lining, this can gradually begin to restrict shoulder movement given that the lining cannot stretch as much.

Frozen shoulder tends to occur gradually, as typically there is a three phase process;

- Freezing phase (ranging from 0-6 months) – Pain slowly begins to build up and the range of shoulder movement is reduced.
- Frozen phase (ranging from 6-24 months) – Pain decreases but the shoulder joint becomes more and more stiff. Twisting

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movements in particular can feel tight. Movement can be reduced by up to 50%.

 Thawing phase (several months or more) – This is associated with recovery, where the pain and stiffness begins to settle.

Causes of frozen shoulder?

It is not completely understood why frozen shoulder occurs, however, several links have been made to possible causes, including;

- An injury or surgical procedure where the arm and shoulder have been kept immobilised may cause the lining to become tight from not having been moved.
- Generally not moving the arm and shoulder for long periods of time.
- Various health conditions, such as diabetes, underactive thyroid, stroke and dupuytren's contracture (thickening of connective tissues in hands and fingers).

 The occurrence alongside other shoulder problems, such as a rotator cuff tear.

Treatment of frozen shoulder?

There are various options for the treatment of frozen shoulder, however it is possible that frozen shoulder can improve and heal on its own. Paracetamol or anti-inflammatory painkillers (such as ibuprofen) can help to ease and control your pain symptoms (particularly in the freezing phase). GPs may be able to prescribe stronger painkillers if necessary.

An intervention to treat the symptoms of frozen shoulder can help in reducing pain and improving movement in the shoulder until it heals. It has been suggested that the benefits of treatment can be in line with the three phases (i.e. freezing, frozen, thawing). For example, painrelief can often be the focus for treatment in the freezing phase.

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What are the treatment options for frozen shoulder?

1. Watch and wait

This involves waiting for the shoulder to heal on its own without any intervention. It would include altering daily activities in line with the level of pain and stiffness. Typically, an improvement can be seen after 18-36 months, although this varies between individuals. For some patients, frozen shoulder can interfere with daily life so severely that this treatment option might not be practical.

2. Physiotherapy

Physiotherapy can help at all phases of frozen shoulder in a variety of ways. This does not mean that recovery will be quicker (tends to be 18-36 months), but it may help in the management of symptoms.

During the freezing phase, physiotherapy is aimed mainly at easing pain. Physiotherapists can suggest general changes to day-to-day activities and also carry out pain-relief treatment methods.

When the frozen phase is experienced, physiotherapy can help to prevent

a further reduction of shoulder function while working to maintain the muscle strength in the shoulder. Physiotherapists will guide you through tailored shoulder exercises and more general changes to activities (e.g. sports adjustments and posture). Through exercises and other treatment methods, a physiotherapist would work with you to maintain the strength in your shoulder muscles and adapt the way in which you carry out activities. Maintaining the strength in your muscles helps to improve your shoulder function.

While in the thawing phases, movement is slowly increasing. Physiotherapy can help to enhance this gradual increase with similar exercises, general changes and other treatment methods as above.

After meeting with a physiotherapist, you would continue to work on the exercises and other changes at home in order to improve your shoulder function. To benefit from the physiotherapy, it requires a regular commitment and engagement with exercises and general changes at home for at least 3 months.

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Side effect of physiotherapy;

 Pain as a result of exercising may occur, however this is expected when the joint is being worked and should be short-lived.
Painkillers could help to reduce the pain, as well as applying heat (for example, with a heat pillow or water bottle) and using ice packs.

3. Steroid injection (also known as corticosteroid injection)

This involves an injection into your shoulder to inject steroid (a manmade type of hormone) into the area of pain and discomfort. This can help to ease the pain and stiffness felt in the shoulder.

It can be carried out using ultrasound guidance (gel is placed on your skin and an instrument is rubbed over the gel to generate an image on a screen to see the soft tissue, including the rotator cuff) in order to direct the injection at the exact area within the shoulder.

Typically, after a 24 hour period of rest, you should gradually be able to return to day-to-day activities.

However, while the injection provides a period of pain relief, physiotherapy is required during this time to maintain muscle strength and shoulder function, as the effect of an injection tends to weaken generally after around 6-12 weeks. Stopping with any exercises after having the injection may result in the pain returning.

Possible risks and side effects of having a steroid injection;

- It is possible to repeat steroid injections, however, too many injections are not good for the tendons
- A flare up of pain for a week after the injection is not unusual
- Most patients experience pain and discomfort in the shoulder for a couple of days after the injection
- Temporary bruising or bleeding (particularly if you take blood thinning medication, such as warfirin)
- Paler skin and dimples where the injection was given – this could be permanent
- Blood sugar levels may increase for a few days if you are diabetic
- Blood pressure may increase

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for a few days if you have high blood pressure

- Infection (noticeable by redness, swelling and pain)
- Allergic reaction (anaphylactic shock) extremely rare

4. Hydrodilatation (also known as arthrographic distension)

Hydrodilatation is a procedure where an injection is given at high pressure to reduce inflammation and stretch the shoulder lining. This is done through x-ray guidance where a needle would be placed into the shoulder joint.

Local anaesthetic (vou would be awake and the shoulder area would be numbed), a contrast medium (a substance which expands the joint and helps the shoulder structures to be visible through x-ray to check the position of the needle – usually contains iodine) and corticosteroid (a man-made type of hormone) would be injected through the needle. After this, saline (a salt and water solution) would be injected at high pressure through the same needle in order to clean the joint and remove any scar tissue. The removal of any scar tissue helps to stretch the shoulder lining. The procedure would take about 15

minutes and usually you would go home the same day. It may be that the procedure could result in pain or discomfort and feelings of tightness and heaviness down your arm.

It is required that at 3-5 days after the injection patients begin to engage in gentle exercise to build up the range of shoulder movement. This would involve a regular commitment to physiotherapy.

Possible risks and side effects of having hydrodilatation;

- 3 in 10 patients do not experience an improvement
- The procedure can be uncomfortable
- The shoulder and arm feeling weak for up to 24 hours after the injection. It is recommended not to drive for up to 6 hours afterwards (if possible bring someone along or use public transport)
- Moderate ache and discomfort after the injection for a couple of days
- Flushing of the face, similar in look to sunburn which can last 2-3 days

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- Infection (noticeable by redness, swelling and pain)
- Temporary bruising or bleeding (particularly if you take blood thinning medication, such as warfirin)
- Blood sugar levels may increase for up to 10 days if you are diabetic

5. Surgery – Arthroscopic capsular release

Frozen shoulder can improve with time, either by itself or with the above non-surgical treatment options, however occasionally if the symptoms are particularly slow in settling or cannot be helped or eased with the non-surgical treatments then a surgical option may be suggested.

What does the operation involve?

This involves a controlled release of the shoulder lining (capsule) and also removing any tissue to reduce inflammation, tightness and thickening of the lining. The procedure is carried out under general anaesthetic (you will be asleep) and generally lasts 30-60 minutes. It is done arthroscopically (keyhole surgery), where the surgeon would make two or three small cuts



of about 1cm in length around your shoulder. A small telescope would be inserted through one of the small cuts for the surgeon to see inside the shoulder and examine the joint. Through the other one or two small cuts, the surgeon would insert surgical instruments to split the thickened

and tight shoulder lining (capsule). Splitting the capsule where it is tight and thickened provides a release. This release of the capsule can help to increase the range of shoulder movement.

After the operation

You will experience a degree of pain after the operation, but this is typical until the shoulder has fully healed. It is expected that patients engage in a process of rehabilitation after the operation, as recovery takes several months. This would involve committing to physiotherapy for several months after the surgery. Most patients experience an improvement in 6 weeks, but there is a need to continue with an exercise regime for many more months.

Overhead activities should be avoided for at least 3 months after the operation, but it is important to engage in gentle exercise as soon as possible. This however needs to be carefully considered in order to protect the shoulder which will be healing. Physiotherapy will help with this through gradually improving the range of shoulder movement and strength.

Risks and side effects of the operation

All surgeries can involve an element of risk, below are the risks associated with this surgery;

- Approximately 1 in 20 patients still experience stiffness – this risk is higher for those with type 1 diabetes
- Anaesthetic risks; 1 in 100 patients have sickness and nausea. Less than 1 in 100 patients have more serious complications such as cardiac, respiratory or neurological problems
- The risks from surgery increase if you have other conditions, such as heart or lung disease, are a smoker or are overweight.
- Complications such as infection, excessive bleeding, blood clots and nerve or blood vessel injury are rare but may occur in less than 1 in 100 patients.

Right arm seen from the side



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