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ORTHOPAEDIC SHOULDER SURGEON ♦ ORTOPEDIESE SKOUCR CHIRURG

SHOULDER INJECTIONS

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Introduction:

Injections around the shoulder joint are necessary for diagnostic and therapeutic reasons in the course of evaluation of shoulder pain. The injection consists of local anaesthesia and cortisone, either separately or mixed together. It is important to note what the effect of these two substances is: local anaesthetic will usually commence its effect after a few minutes and last for any period of 20 minutes to more than 2 hours depending on the type of substance used. Most cortisone substances will gradually have an effect with a full effect usually seen by about 48 hours or longer and lasting for a few days.

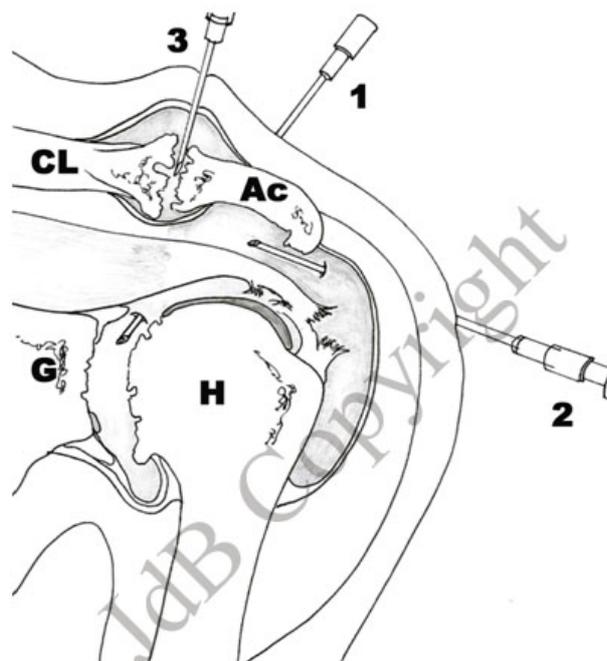
A single cortisone injection into the shoulder is seldom dangerous and has little effect on other body functions.

Patients with diabetes must be aware that such an injection can temporarily elevate their blood sugar.

The spaces around the shoulder

When referring to injections, it is important for the physician to inject into the appropriate space. As mentioned in the section on anatomy, the entire shoulder joint can be compared to a three-storey house, and each storey can be compared to one anatomic space:

1. the shoulder joint (“**ground floor** of the building”)
2. the subacromial space (“**first floor** of the building”)
3. the acromio-clavicular (AC) joint (“**attic** of the building”)



Injections in different spaces:

- 1: Injection in shoulder joint (Ground floor),
- 2: Injection in subacromial space (First floor),
- 3: Injection in AC joint (Attic)

Method of diagnosis

The clinician will do certain tests moving the arm in specific directions and have an indication of what the problem in the shoulder may be. If the fluid is then injected into the appropriate space the effect of the local anaesthetic may be apparent after a few minutes. If the tests are repeated the diagnosis can often be confirmed immediately. Such a positive response would also prove that the cortisone (which may be mixed with the local anaesthetic) is in the correct space **and may have a beneficial effect in the longer term.**

It has to be realised that the effect of cortisone in this instance is **mainly anti-inflammatory – it reduces pain and swelling in the tissues where it is injected.** In the case of an acute inflammatory condition the effect of the cortisone will therefore mostly be seen after about 2 days. **Another important feature is that the longer term effect of the cortisone would also indicate the diagnosis.** If it is merely an acute inflammatory condition the cortisone could be virtually curative, if it is a long term condition (e.g. osteoarthritis) the cortisone may have a temporary beneficial affect which will wear off. In a mechanical condition e.g. a tear of the tendon the effect of the cortisone may be short lived.

It can be seen that the effect of the injection gives the clinician the following information:

1. the effect of the local anaesthetic **suggests where the problem is located** in the joint (which anatomical space).
2. the effect of the cortisone is a further aid in **diagnosing the problem** in the joint: generally speaking *the less serious the problem the more beneficial the cortisone will be.*

It is important to note that these injections have to be done accurately to ensure that they are put in the correct space. Some clinicians might be experienced enough to do this without any help.

In our unit we often use ultrasound guidance to ensure that the needle is in the exact space to be able to reach the correct conclusion. Some clinicians, especially radiologists, may use x-rays to aid them in injecting accurately.



Ultrasound guidance improves accuracy of injection placement in the correct anatomic space.

The question of the “danger” of cortisone:

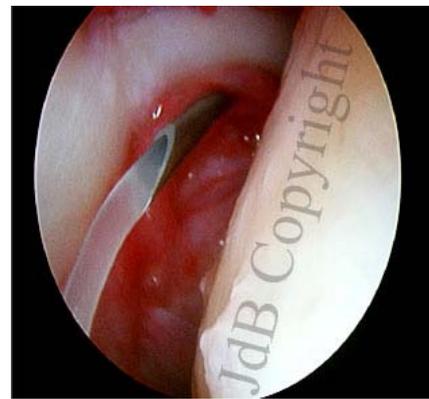
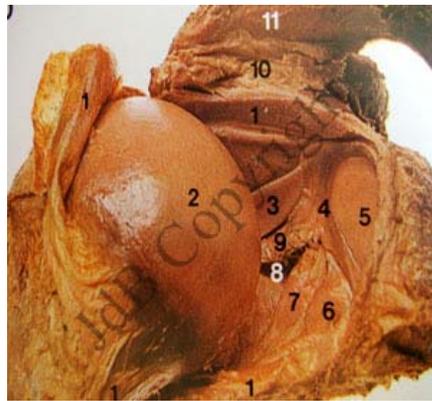
A small amount of the cortisone substance (1-2cc) has little general effect on the body and is usually safe. One must realise that the negative side effects of cortisone are mainly due to **repeated chronic medication** (especially in people taking daily oral cortisone for other conditions). In such instances the cortisone may suppress the adrenal glands to secrete the natural cortisone hormone which is vital for normal life. It is often not realised that the cortisone is a natural hormone secreted by the adrenal glands in the body. This happens only in long-term cortisone treatment.

It is often said that no more than 3 injections of cortisone are permitted. The fact is that the injected cortisone only lasts in the body for a few days and is broken down. ***It is therefore the spacing between the injections which is important. If there are weeks to months between the injections the number that can be given is virtually unlimited.***

On the other hand if the condition needs to be treated by repeated cortisone injections one may have to admit that the cortisone is not effective for that specific condition and that other therapy may be indicated.

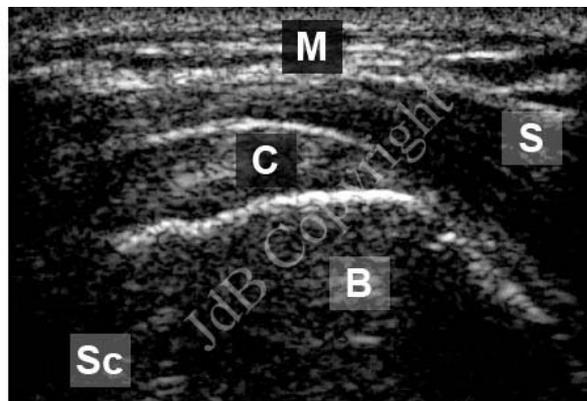
Illustrative examples of injections:

1. Level one, Ground floor, Shoulder joint (Glenohumeral)



Ball (2) and Socket (5) shoulder joint on the left. Image of solution passing thru the joint, viewed from inside the joint with an endoscope (right).

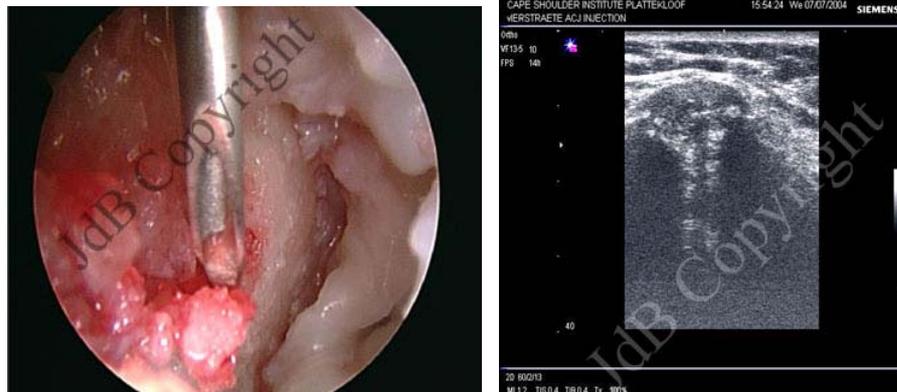
2. Level two, First floor, Subacromial space.



Left: Needle enters into subacromial space. Right: Subacromial space seen on ultrasound.

M=Deltoid muscle, Sc=socket, B=ball, C=rotator cuff muscle, S= Subacromial space.

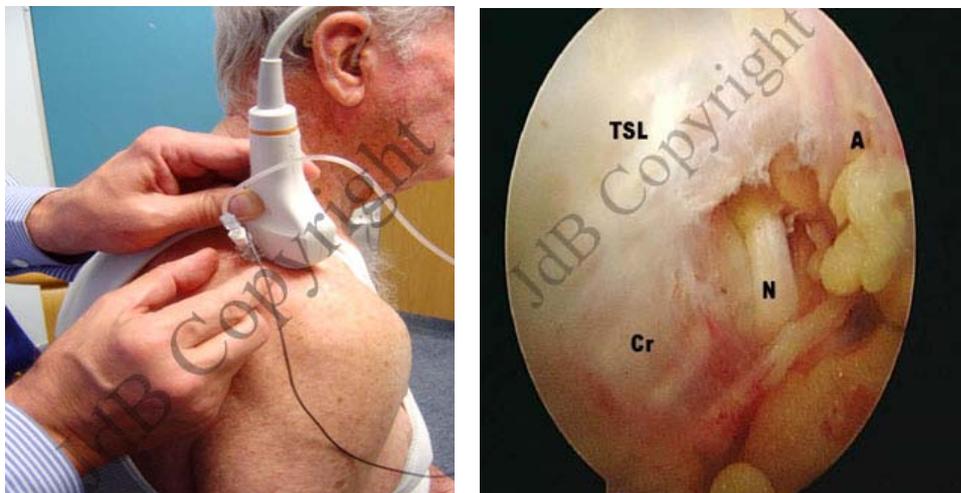
3. Level three, Attic, Acromioclavicular joint.



Left: Needle seen from within an AC joint. Right: Ultrasound shows fluid inside an AC joint.

4. Suprascapular nerve injections:

These may be given for pain relief in frozen shoulder, or to evacuate fluid from cysts (swellings) around these nerves.



Left: Ultrasound guided suprascapular nerve injection.

Right: Endoscopic visualization of the nerve (N) passing under the ligament (TSL).