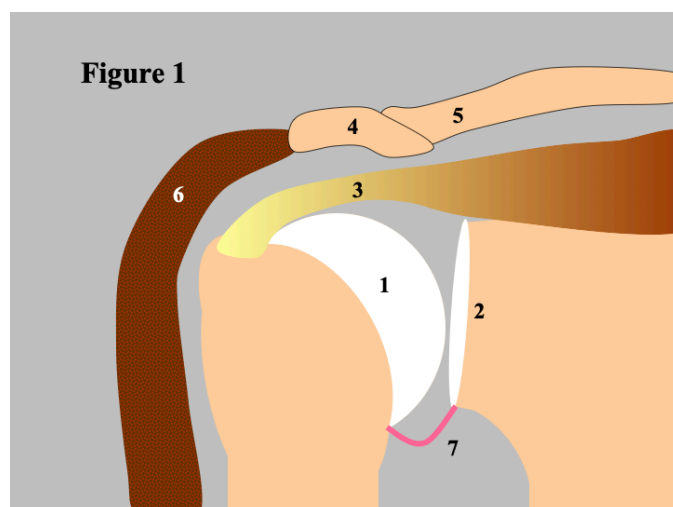


## Shoulder arthritis and shoulder replacements

Figure 1 is a cartoon diagram looking directly at a right shoulder:

- 1 - humeral head, the ball of the main ball & socket joint of the shoulder
- 2 - glenoid, the socket of the main joint
- 3 - rotator cuff, the strong tendons around the shoulder from the shoulder blade muscles
- 4 - acromion, the bony roof of the shoulder which is part of the shoulder blade
- 5 - clavicle - the collar bone which joins to the acromion as the acromioclavicular joint or ACJ
- 6 - deltoid, the big muscle around the outside of the shoulder which gives its shape
- 7 - capsule, the deepest lining of the shoulder



There are several different types of arthritis which can affect the main ball & socket joint of the shoulder just like any other joints such as hips, knees, ankles, elbows or small joints of the hands & feet. The commonest is osteoarthritis also known as OA or 'wear & tear' arthritis. Rheumatoid arthritis (RA) is a common inflammatory arthritis but there are other causes of shoulder arthritis such as following a fracture or infection.

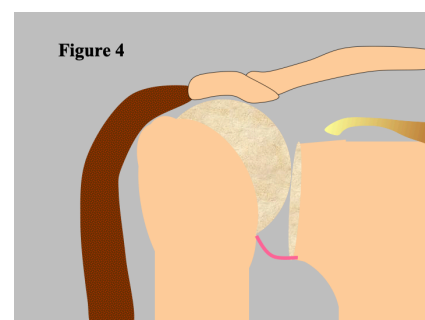
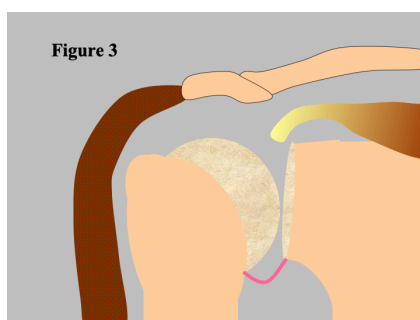
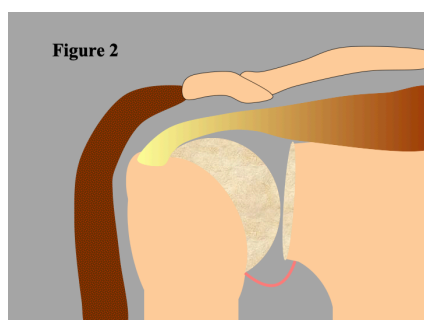


Figure 2 shows the joint surfaces of the ball & socket (humeral head & glenoid) are rough and worn out compared to the normal smooth white cartilage seen in Figure 1. The shoulder is very dependant on the rotator cuff muscles and tendons for normal function. As age advances these tendons can wear out resulting in holes or tears in thin tissue (see information sheet on Rotator Cuff Tears) as seen in Figure 3. In this situation with arthritis the torn tendons are rarely reparable and the loss of their function helping to hold the ball in the socket can result in the ball riding up and articulating with the undersurface of the roof of the shoulder the acromion as in Figure 4. This situation is called 'Cuff Tear Arthropathy'.

Patients in all three of these situations present with a deep pain in the shoulder and stiffness such that movements are restricted and make the pain worse. If the tendons remain intact as per Figure 2 the function and strength may be reasonably preserved. If the tendons are deficient as in Figures 3 & 4 the shoulder is likely to function poorly and be weak. The worst scenario is that function is so poor that the shoulder appears paralysed. Pain is often constant and made worse by any movements and activities. Sleep is disturbed and the shoulder may creak & crunch.

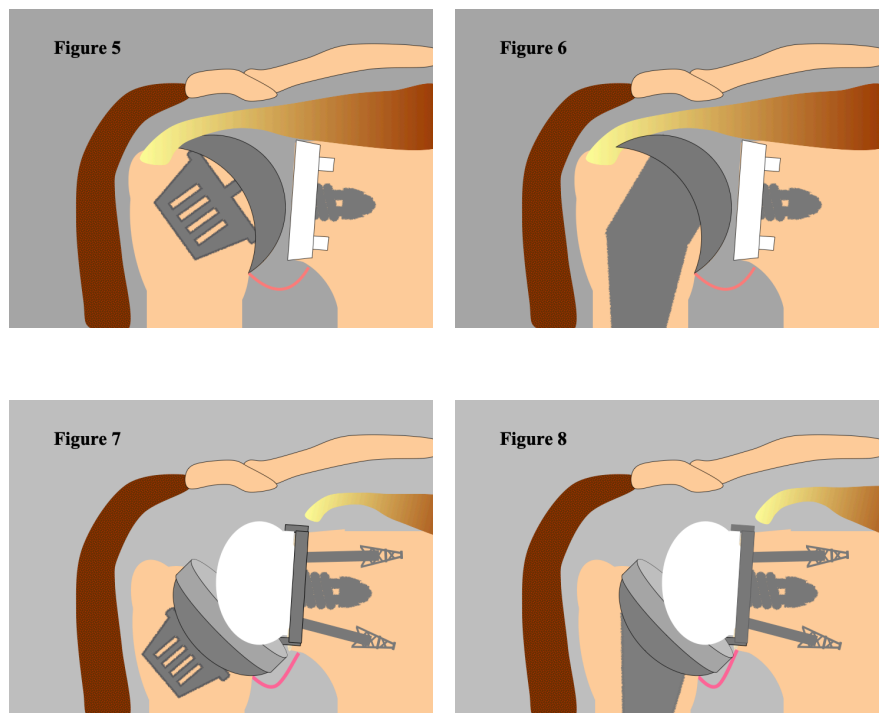
Treatment always starts with simple measures such as activity modification (avoiding the actions that bring on the pain), rest, tablet painkillers (eg paracetamol 1g = 2 tablets four times per day) or anti-inflammatories (eg ibuprofen 400mg = 2 tablets three times per day after food) and simple physiotherapy exercises. These measures can all help the pain and allow improvement in movement, strength and function but anyone with a stiff painful shoulder should be investigated with X-rays. A scan such as an ultrasound (a probe is moved over the shoulder with some jelly) or an

MRI (the patient lies still inside the body scanner tunnel) is used to confirm the diagnosis and assess the rotator cuff tendons to guide treatment recommendations.

If conservative treatment measures have been exhausted the [shoulder surgeon](#) may recommend a [shoulder replacement](#). Similar to other types of joint replacements shoulder replacements are primarily performed to help reduce pain and can be very successful in doing so. An improvement in function is a bonus and will be dependant on the state of the rotator cuff tendons and the type of joint replacement performed. Sometimes a half joint replacement is performed replacing only the ball part and leaving the native socket. This is called a hemiarthroplasty.

More often a total joint replacement will be considered. There are many different companies producing shoulder replacement implants just like there are many different makes of car on the roads. There will be minor variations in materials used, fixation methods and whether a stem is used down the humerus or a stemless component but the two main types are the 'anatomic' where the ball and socket are replaced as normal configuration or the 'reverse geometry' where a ball is fixed to the socket and a socket replaces the ball. The majority of shoulder replacements will be made of metal and plastic although other materials such as ceramics are also available.

Figures 5 & 6 show anatomic total shoulder replacements with intact rotator cuff tendons and ball & socket components as the original native anatomy. Figure 5 has a short stemless humerus implant to attach the ball to the bone whereas the Figure 6 humerus implant has a stem down the inside of the bone. In both the glenoid socket implant is mainly white plastic with a central metallic peg. Theoretically this allows easier revision to a reverse geometry total shoulder replacement as shown in Figures 7 & 8 where the rotator cuff tendons have torn or worn out. In these scenarios a ball is fixed to the bony socket and socket fixed to the humerus component. Figure 7 with a short stemless humerus implant compared to the stem down the humeral shaft in Figure 8.



Shoulder replacement is performed through an open cut at the front of the shoulder under a general anaesthetic supplemented with a nerve block at the base of the neck which gives good pain relief after the operation. A sling is worn for 3-4 weeks after surgery to allow the soft tissues to heal. Gentle physiotherapy exercises start straight away and then continue with rehabilitation as an outpatient. Whilst most patients need one or occasionally two nights in hospital, it is possible to go home the same day with appropriate support. Pain relief from the absence of the arthritis is often apparent within a couple of weeks of the operation but range of movement and function may continue to improve for beyond a year as muscles strengthen.

Major joint replacement surgery does have risks and potential complications and they include failure to achieve the desired outcome with persistent pain, weakness, stiffness, nerve or blood vessel damage (temporary bruising is normal), numbness, infection, further surgery for whatever reason, loosening of the components from the bone, wear of the components, dislocation, prolonged rehabilitation, the medical risks of any operation such as blood clots in the legs or lungs (DVT or PE), heart attack (MI) or stroke (CVA).