

Total Shoulder Replacement



Online Version

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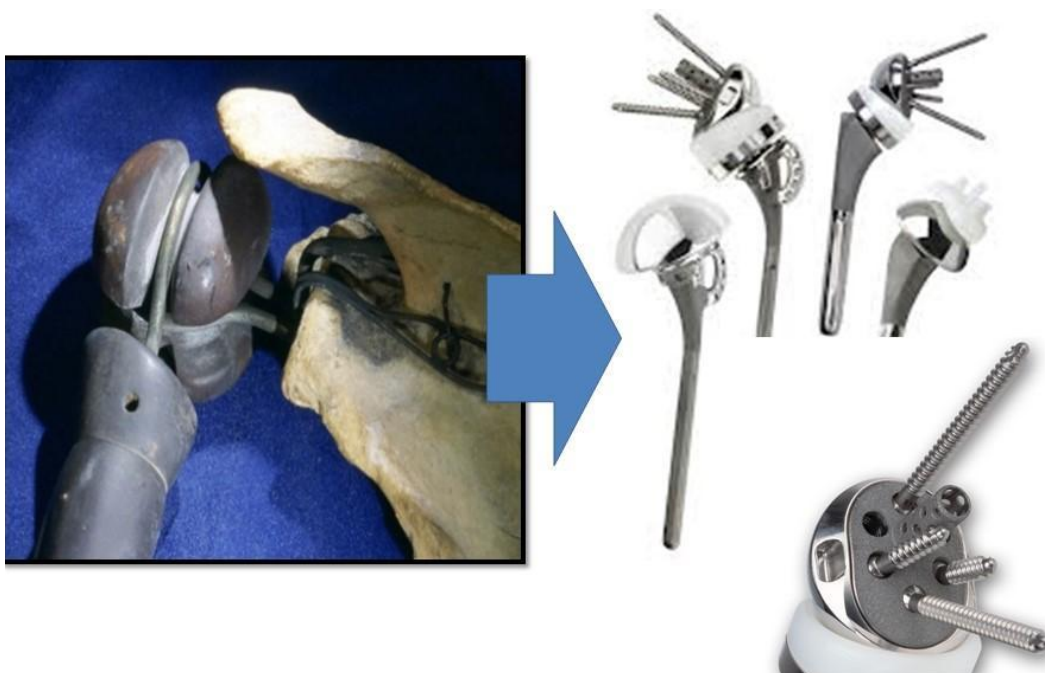
This information booklet is to inform you about the procedure and the recovery to help achieve the maximum benefit from your shoulder replacement. It is not a substitute for professional medical care and should only be used in association with treatment under the care of Dr Mark Haber. Individual variations requiring specific instructions not mentioned here may be required.

Total shoulder replacement (TSR) is a very successful procedure for treating severe pain and stiffness as a result of severe degeneration of the cartilage and or tendons (rotator cuff) of the shoulder joint. The primary goal of shoulder replacement surgery is pain relief, with a secondary benefit of restoring motion, strength, function, and assisting with returning to normal activities.

It is an effective procedure that has transformed the lives of many people. Many of those who once suffered from severe pain can return to activities such as swimming, bowls, and golf.

The surgery involves replacing the head of the humerus (or joint "ball") and the glenoid ("socket"). Metal on plastic surfaces are the most common components in shoulder replacement implant systems. Partial shoulder replacement (or hemi-replacement) is performed occasionally and requires the replacement of the ball component only. Further information is on page 36.

The development of total shoulder replacement began over 40 years ago (below left) and has undergone significant improvements, especially since 2017 with the introduction of three-dimensional imaging of the shoulder with preoperative planning and computer navigation. This will be discussed below in more detail.



Indications for Shoulder Replacement

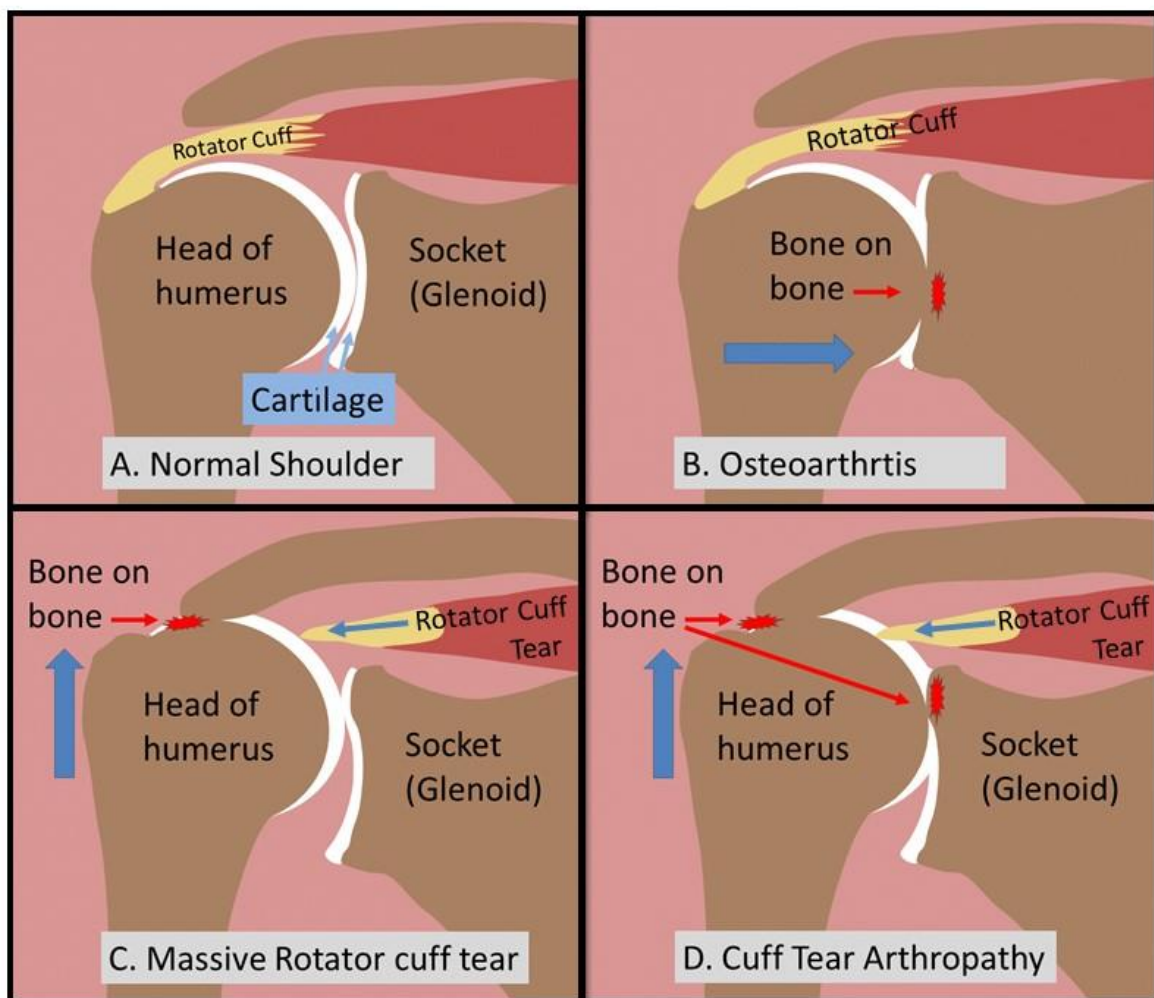
When conservative methods of treatment fail to provide adequate relief of the pain from your shoulder arthritis or irreparable rotator cuff tears, total shoulder replacement is considered.

Normal shoulders (A.) have cartilage covering the humeral head and socket (glenoid) and the rotator cuff tendons maintain joint stability.

Osteoarthritis (B.) is a condition characterised by the wearing out of the cartilage that overlies the ends of the bones in the joint. This results in the joint space narrowing and the bones rubbing together, referred to as bone-on-bone. This causes pain, swelling and stiffness.

In a massive rotator cuff tear, (C.) the absence of the rotator cuff tendon allows the head of the humerus to migrate upwards, resulting in bone-on-bone of the humeral head onto the overlying bone (acromion).

Cuff tear arthropathy (CTA) (D.) develops when long-term massive rotator cuff tears damage the shoulder joint causing osteoarthritis as well.

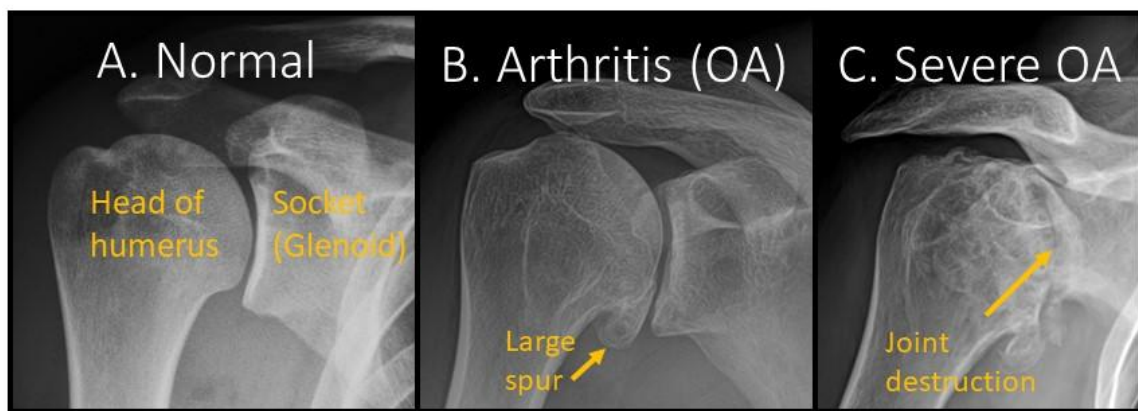


Advanced Osteoarthritis (OA)

While osteoarthritis of the knee and hip (the weight-bearing joints) are common, osteoarthritis of the shoulder joint is a relatively uncommon condition. Nevertheless when it does occur it is at least as painful and debilitating. You may know many friends who have undergone hip and knee replacements, yet have not heard of a shoulder replacement.

The results of a shoulder replacement are at least as good as that for the knee or hip. Now, the number of shoulder replacements being performed is increasing faster than any other joint replacement.

Osteoarthritis is usually diagnosed with an X-ray. The space between the bones seen in a normal shoulder (A.) is the cartilage. As arthritis progresses there is increasing wearing out of the cartilage and the joint space narrows until the bones start rubbing together (B.). In the shoulder, one sees a classic spur form, which is a sign of significant wear and tear. Once there is bone on bone, destruction of the joint progresses over time causing severe destruction of the joint (C.)



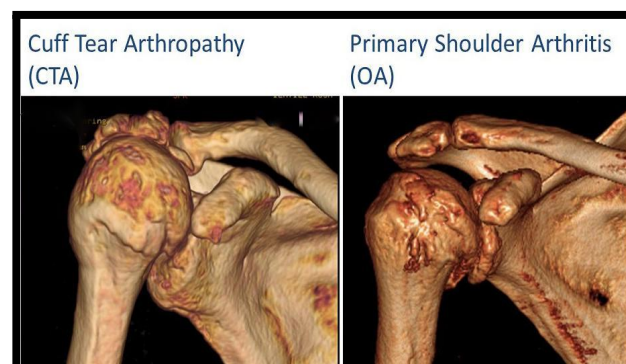
Massive rotator cuff tear

Wear and tear of most joints result in the wear of cartilage (osteoarthritis). The shoulder joint differs in that wear and tear of the tendons around the joint is far more common. The tendons, known as the rotator cuff tendons, are commonly torn as a consequence of wear and tear and age. However, if the wear and tear are too advanced, repair may not be possible. This tear can be compared to a worn sock that develops a large hole and cannot be repaired. When the rotator cuff has a large tear, the shoulder migrates upwards because the tendons responsible for holding the joint in position (the rotator cuff) have failed. This results in pain and severe restriction in being able to lift the arm up called a pseudoparalysis.

This is usually diagnosed with an ultrasound or MRI as x-rays cannot visualise tendons.

Cuff Tear Arthropathy (CTA)

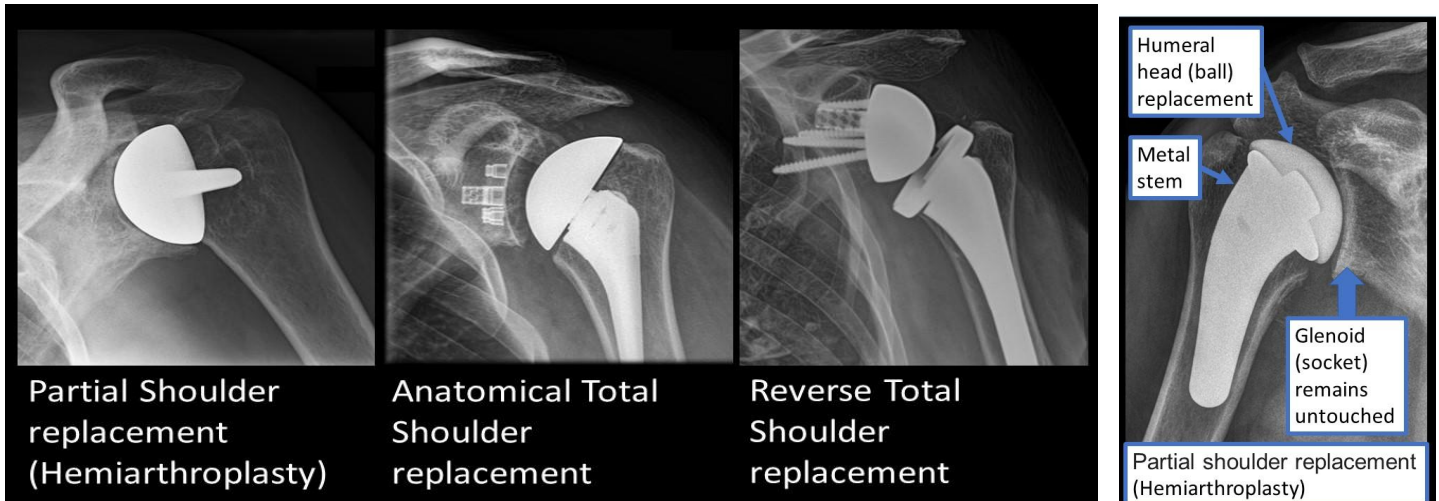
Arthritis which develops because the rotator cuff has failed is called a cuff tear arthropathy (CTA). It is possibly the most common form of “arthritis” in the shoulder and is now the most common reason shoulder replacements are performed. Like osteoarthritis, it is usually diagnosed with an X-ray. An ultrasound or MRI may also be required to visualise tendons.



Types of Shoulder Replacement

There are three types of shoulder replacement surgeries:

1. Total anatomic shoulder replacement: a Total shoulder replacement
2. Reverse shoulder replacement: Total shoulder replacement
3. Partial shoulder replacement: called Hemiarthroplasty where only the ball gets replaced.



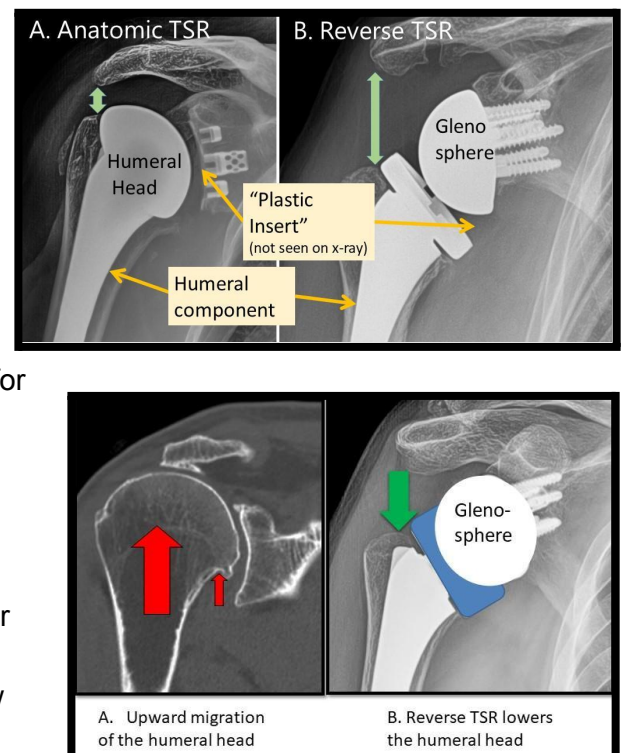
Partial Shoulder Replacements

If the surgeon only uses a humeral (upper arm bone) component and does not replace the socket (glenoid), the procedure is called a hemi-arthroplasty or half replacement. This is typically done only in the very young when there are concerns of premature wearing on the plastic component. Not replacing the socket can however may compromise the result in terms of pain relief and range of motion but last longer than a TSR.

Total shoulder replacements

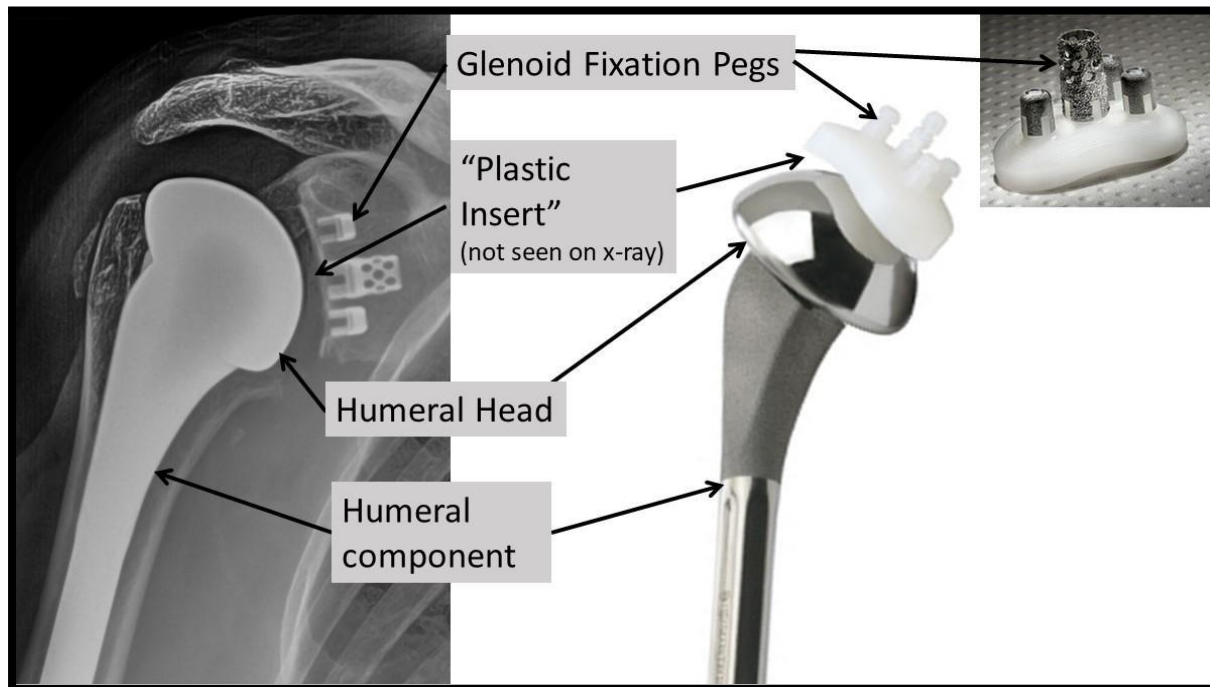
A total replacement is when both the humeral components and the glenoid socket prosthesis are inserted. There are two broad types of total shoulder replacement procedures. They are either what is called "Anatomic" or "Reverse". As the name implies, an anatomic replacement replaces the worn out ball (humeral head) with a metallic ball and the socket (glenoid) with a plastic insert. An anatomic replacement is for arthritis where there is no wear and tear of the rotator cuff tendons at all which is rare.

The reverse was designed to treat arthritis associated with potential rotator cuff tears or with secondary damage to the shoulder joint because the cuff has failed, called a Cuff Tear Arthropathy (CTA). In a CTA, the absence of the rotator cuff often results in upward migration of the humerus (red arrow below). This is corrected in a reverse replacement (green arrow).

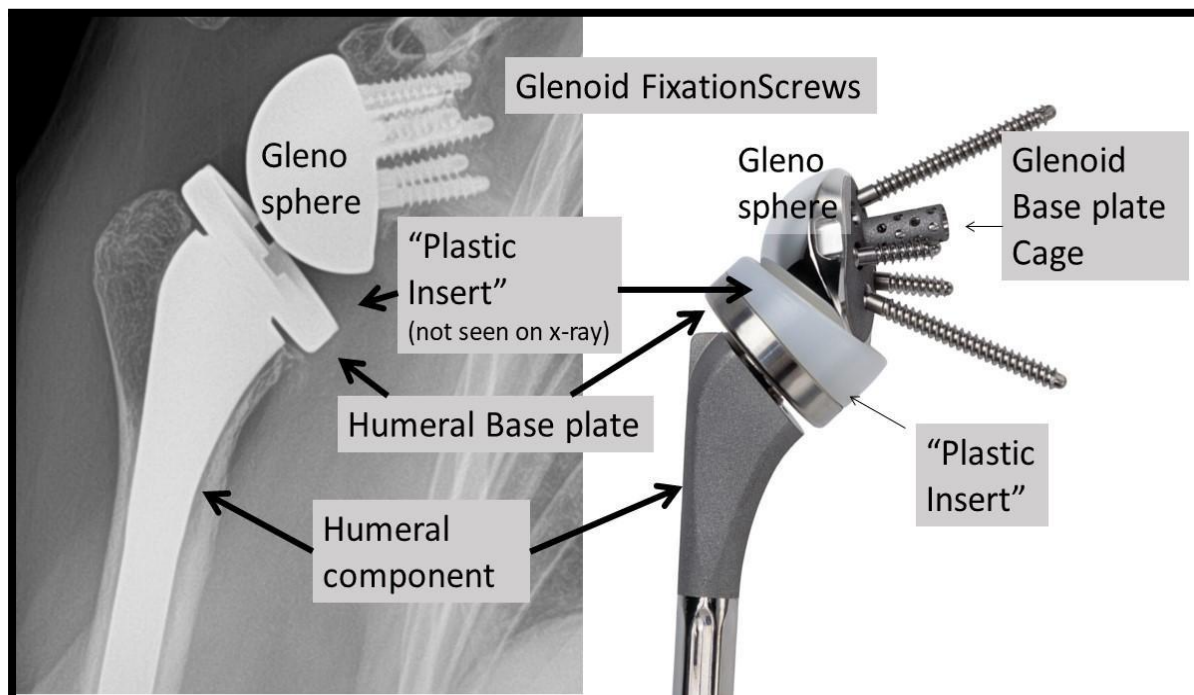


Components of Total Shoulder Replacements

1. An anatomic replacement

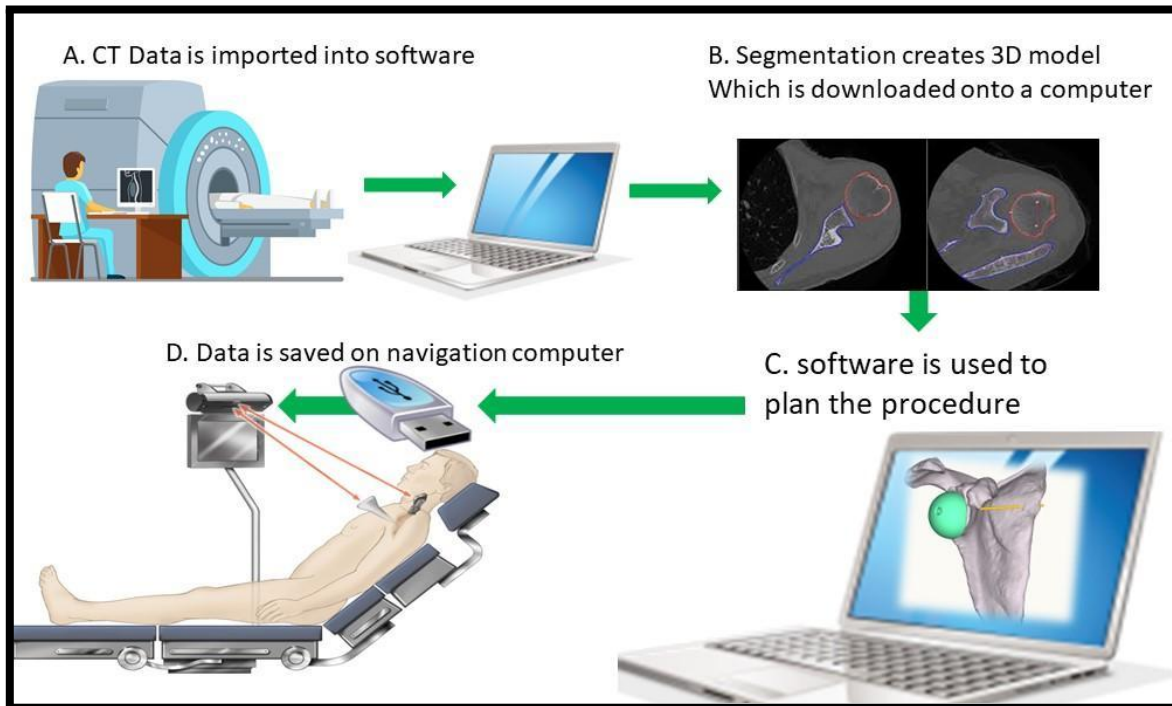


2. The reverse replacement

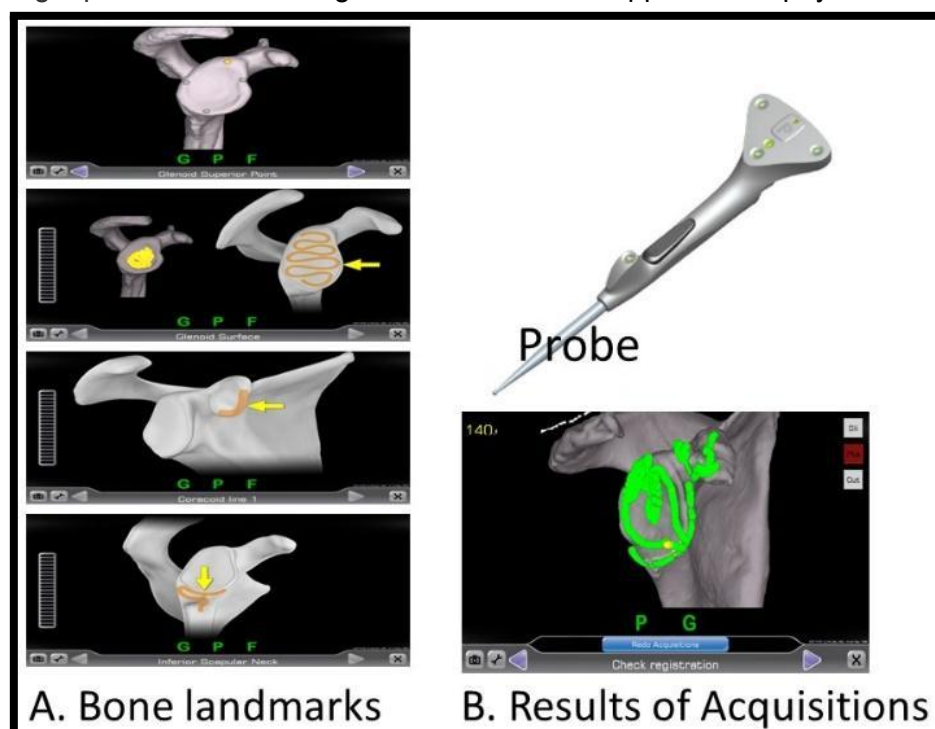


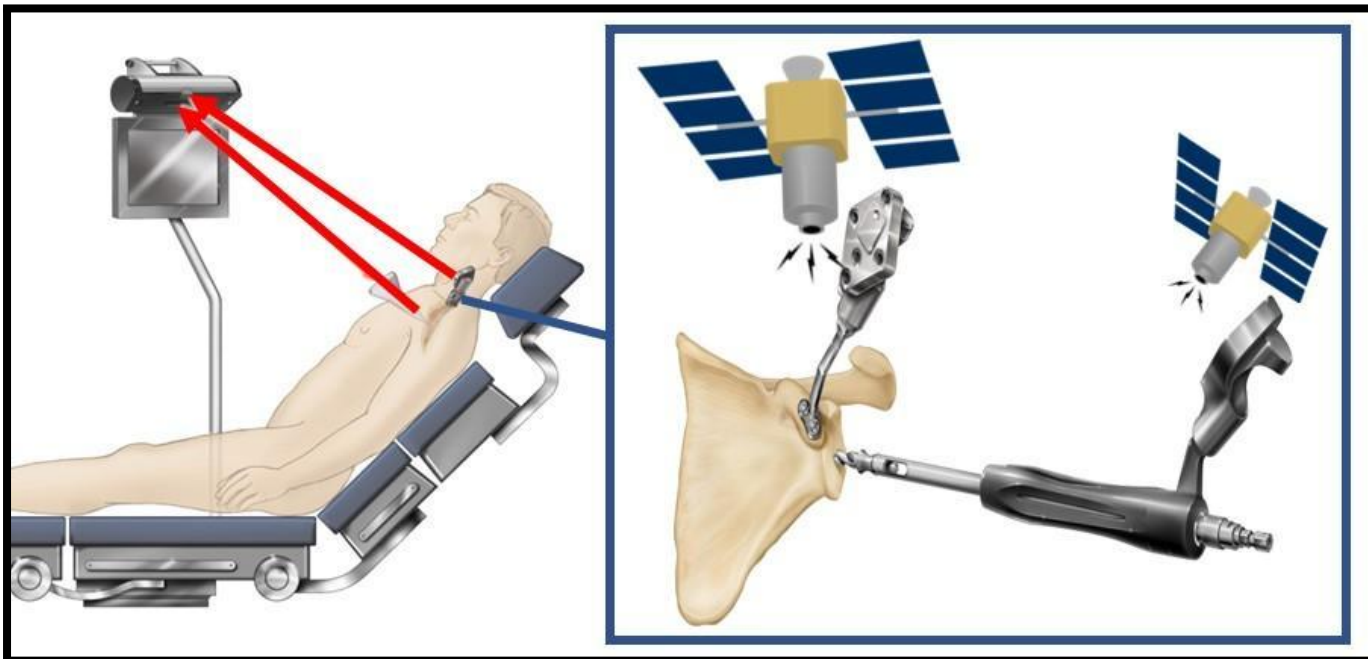
Computer-Assisted Shoulder Replacement

This surgical technology assists us in delivering precision and reproducibility in performing shoulder replacements.

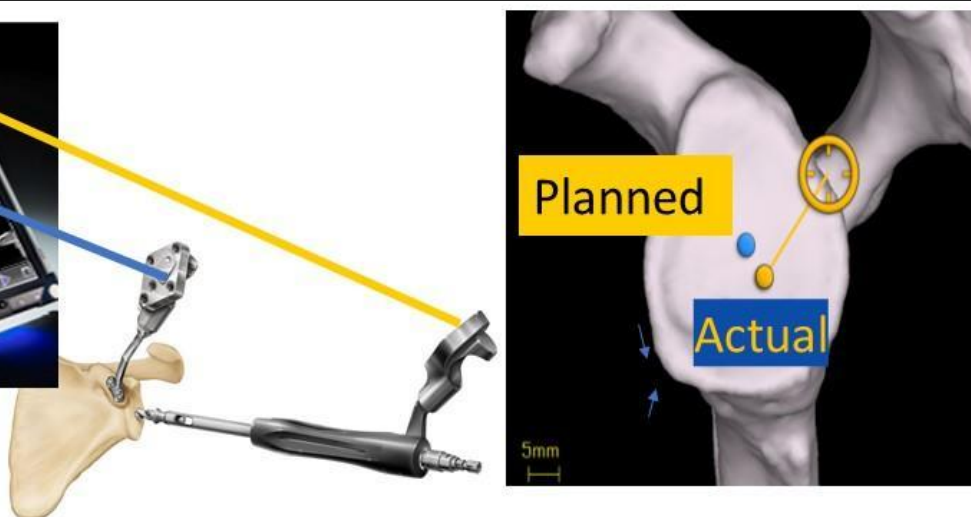


A 3-dimensional digital model specific to the patient is created by having a CT scan (A.) The data from the scans is then uploaded into a software programme that creates a digital 3D model (B.). This is then downloaded onto a PC so the surgeon can plan the patient-specific procedure and decide the optimum components of the replacement and the positioning of the bone for your shoulder (C.). This plan is then saved onto a memory stick and saved onto the navigation computer which is attached to the surgical bed (D.). The operation then proceeds and the bones of the shoulder are exposed. Acquisition of the bony landmarks are then obtained using a probe so that the digital model can be snapped to the physical bone.





The computer can then track where the surgical instruments are on the bone. This is much like the GPS in a car, obtaining information from the satellites the GPS unit can track exactly where your car is. The surgeon will during the surgery reference the computer. By making sure the yellow dot (where the instruments are) is on the blue dot (the preoperative plan) they can achieve incredible accuracy. So this is not actually “robotic” as the surgeon still does the operating but uses the computer to navigate the procedure to improve the accuracy. A project we published confirmed we can achieve within one millimetre and one degree of accuracy to the preoperative plans using this system.



Having a shoulder replacement.

I will cover the three main topics, preparation before the procedure, what happens during the procedure, and after the procedure.

Preparation for the surgery.

Booking In

I work at a number of hospitals both in Sydney and the Illawarra region. My staff will discuss with you what date the procedure can be performed and in which hospitals. We will prepare the booking forms during the consultation when surgery is decided. Once the booking forms are complete and a date has been decided, please book into the hospital as soon as possible. You may email, fax or book online with your booking forms. Please ask our reception staff if you need help with this. When possible, please take the original booking forms that we have given to you to the hospital.

Preparation



It is important to wash your shoulder area with an anti-bacterial wash 48 hours prior to the surgery. This may be provided by the hospital when booking in. However, the skin around the shoulder has different bacteria than other parts of the body, called C. Acnes, especially in men. As the name suggests, this is the bacteria that also causes acne in teenagers. The best wash for men having shoulder surgery is Benzac AC Wash Acne Treatment. Use with care, keep away from eyes, lips, mouth and the sensitive area of the neck. Make sure you apply it around your shoulder and into your armpit. Be aware Benzoyl peroxide can cause fabric to discolour on contact. You may have to obtain this wash from a local pharmacy.

Be prepared! Think about how difficult it will be with one arm completely out of action. You may need to purchase shampoo and conditioner with a pump pack and sometimes a scrubbing brush can be of some benefit. If you are responsible for your own meals think about preparing these before your surgery.



Medications

It is vital that you cease blood-thinning medications which may cause excessive bleeding during surgery. There are a number of medications that can affect your body's ability to form a clot. There are also non-pharmaceutical products that can have a similar effect. We can advise you but we don't want to interfere with directions given by your GP or specialist, such as a cardiologist.



Blood-thinning drugs

Nonsteroidal anti-inflammatory drugs (NSAIDs) such as Voltaren, Nurofen, Mobic, Naprosyn and Celebrex. These need to be ceased approximately 48 hours prior to surgery. Blood-thinning antiplatelet drugs include Clopidogrel, (Iscover, Plavix) and aspirin (Cartia etc). These need to be ceased about 7 days before surgery. Warfarin needs to be ceased one week prior to surgery but may require a short-acting anticoagulant to prevent the risk of forming a blood clot prior to surgery. The newer agents such as Pradaxa, Eliquis and Xarelto only need to be ceased 48 hours prior to surgery. Natural blood thinners, including Turmeric, Ginger, Cinnamon, Cayenne peppers, omega-3 fish-oil supplements and vitamin E need to be ceased 1 week prior to surgery.

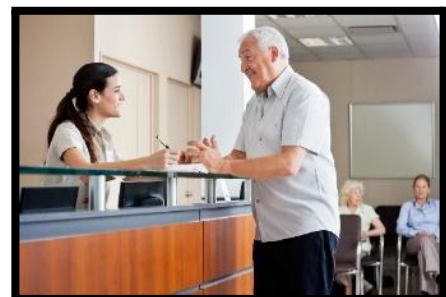
Be careful

Stopping blood thinners suddenly can be dangerous.

Always consult your GP or specialist before making any changes to these medications.

Pre-admission clinic

Some of the hospitals run a clinic prior to your surgery to assess your fitness for the procedure. If we suggest you attend the **pre-admission clinic**, please make an appointment at the relevant hospital at least 2-3 weeks prior to the surgery. You can book in for your surgery at the same time, so please take your completed booking forms with you if you did not book in online. This clinic can help you complete the necessary medical testing and paperwork for hospital admission.



Preoperative Investigations

If you do not attend a pre-admission clinic, we will organise your preoperative blood tests.

- No 1 Pathology form, as soon as possible, prior to surgery.
 - These tests are **FBC LFT UEC ESR and ECG**. These can be done at your local pathology clinic
- No 2 Pathology form 1-3 days prior to surgery
 - Gp and Hold, which must be done at the specified pathology clinic (dependent on the hospital). This is done so that a sample of your blood is available if you require a blood transfusion during or after the surgery. This is just a precautionary measure as this is extremely rarely required.

Radiology

Take the X-Ray of your shoulder to the hospital on the day of the surgery. If you do not have them please let us know so we can make sure we have a digital copy. We do not need other investigations such as MRI, ultrasound and CT scans (as we have all the images we need in a digital format. We request the CT scan usually at least 2 weeks prior to surgery.

Day of Surgery

Fasting



You must fast prior to your general anaesthetic. Unless told otherwise, you must commence fasting 8 hours prior to the planned starting time of your operation. If you have your operation in the morning you may be instructed to fast from midnight. If your operation is in the afternoon you may be instructed to have an early breakfast. The hospital usually notifies you the time to fast and present to the hospital the day before the procedure. If you are not sure please contact the hospital or this practice. If you have not adequately fasted prior to a general anaesthetic, the procedure cannot proceed due to the risk of "aspiration". If you have prescribed medications to take while you are fasting you may take these with a sip of water unless instructed otherwise. It is very important you take your blood pressure tablets when they are due irrespective of fasting. It is safe to take these with a sip of water.



Arriving

Usually the day before the procedure you will be given a time slot to book into the hospital. Please arrive early. Hospital operating rooms are on a tight schedule, so please leave yourself plenty of time. If you have any problems, please call the hospital as soon as possible.

The Pre-op. Room



Once you have presented to the hospital on the day of your surgery, you will be taken to the preoperative room where you will get changed into a gown. Your shoulder will be cleaned with an antiseptic solution and covered by a drape and the shoulder will be marked. This is sometimes done in the operating theatre. Your anaesthetist, who is the doctor responsible for putting you to sleep and monitoring you during your anaesthetic, will see you prior to the procedure to check on your general health and fitness for the procedure. He will also

discuss and prescribe the medications for pain following the surgery. Then he will put a drip in your arm and make sure you are comfortable and relaxed prior to taking you into the operating theatre. My assistant or I will usually greet you and confirm your details prior to your anaesthetist giving you any significant sedation.

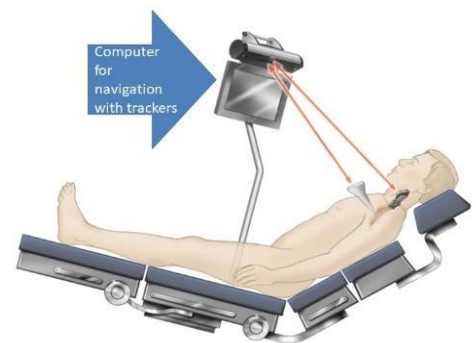
The Operation



You will be transferred to the operating theatre. You may not remember anything after the sedation is given to you. In the operating room, you are assisted onto the operating theatre bed and placed in what we call the lazy beach chair position.

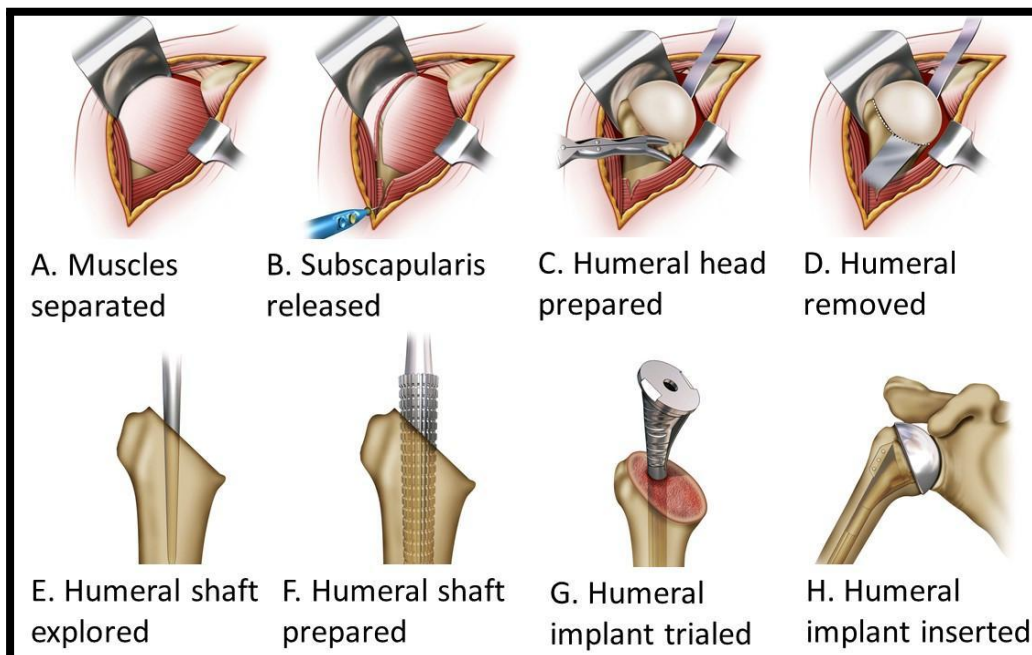
Lazy Beach Chair Position

You will have an incision made from your collarbone to your armpit called a bra strap incision, so when it heals, the scar would be barely visible and easily covered by a singlet etc.



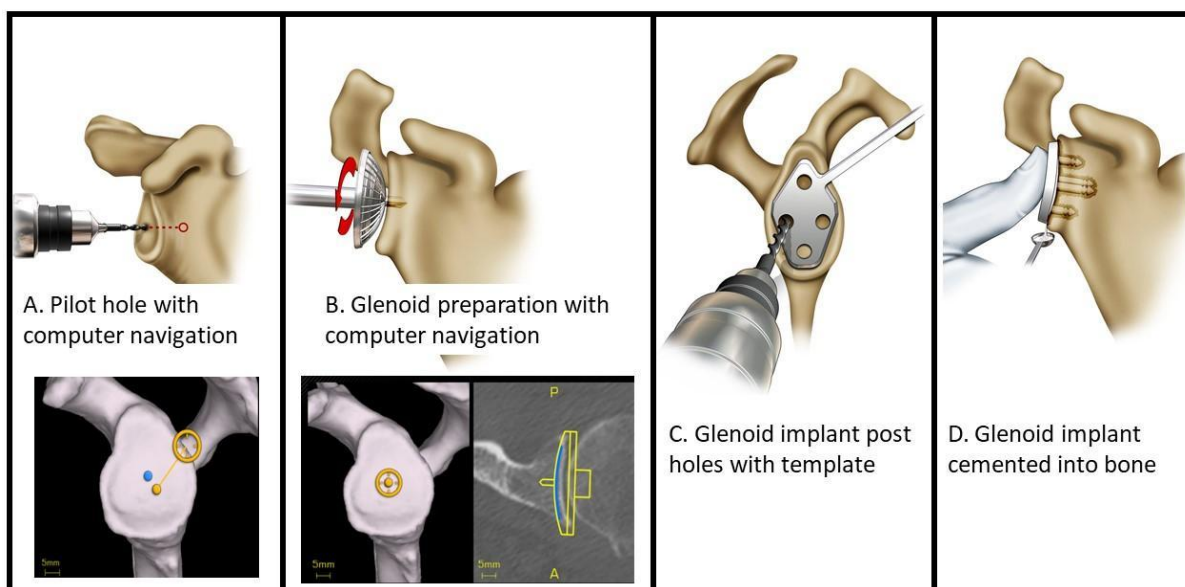
How the Operation is Performed

1. The humeral side



The Deltoid and Pectoral muscles are separated through a natural plane (A.) to expose the Subscapularis tendon. This is released from the bone to expose the inside of the shoulder joint (B.). The humeral head (ball) is then prepared, removing the spurs (C.). The head is then removed (D.) so that the hollow shaft of the arm bone (humerus) is explored (E.). The shaft is then prepared by pacing gentle reamers down the shaft (F.) to identify its width so a trial implant (G.) of the correct thickness can be inserted. Once everything is prepared on the humeral side and the socket (Glenoid) side the definitive implants can be inserted (H.).

2. The glenoid (socket side)



After the humeral side is prepared we turn our attention to the Socket (Glenoid) side. In most cases we use computer navigation for this part of the operation (details in the end section). We make a pilot hole in the position which was planned with the assistance of computer navigation. We move the instrument which appears as the yellow dot on the computer so it overlies the blue dot which is the planned position to make the pilot hole. We then prepare the socket (Glenoid) using a reamer to smoothen off the socket to accommodate the implant. The angle of the reaming is also assisted by computer navigation (B.). Holes are then inserted (again with computer navigation) to insert the glenoid components. Once the glenoid is completed the definitive humeral components are inserted. Once this is complete the subscapularis is reattached and the muscles are sutured into position and the skin closed.

Once the surgery has been completed, I am happy to message your next of kin. This needs to be organized prior to the day of surgery if possible.

After the Procedure



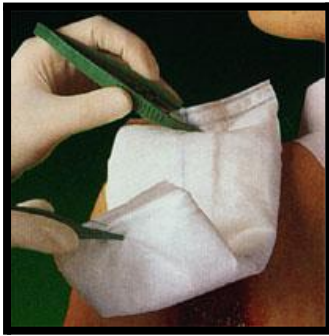
After the procedure is complete you will be transferred to the recovery ward. This is where you will wake up. When you are fully awake you will be transferred back to the ward where you can be visited by your next of kin. A check x-ray is usually performed in the first 24 hours after surgery. You usually remain in the hospital until you are comfortable to go home. This is usually in 1- 2 days following the surgery although this can vary significantly.



Physiotherapy following the Surgery

While in hospital you will be visited by a physiotherapist who will give you exercises to perform while you are in hospital and after discharge. Please keep doing these exercises after you go home. See Page 21.

The Dressings



After the surgery there will be a large bulky white dressing (combine dressing) which may be changed a number of times as oozing of the wounds is very common. This outer dressing is usually removed 24-48 hours following surgery prior to your discharge. When you leave the hospital, you will have 2 layers of dressing. There will be a waterproof dressing over the steri-strips. You may shower at this stage, but we would not recommend bathing.

The waterproof dressings should, if possible, remain intact for at least 7 days following surgery. If the waterproof dressing leaks and gets wet or is starting to come loose it will need to be replaced. This can usually be done by your GP's practice if it is prior to your post-operative appointment at our clinic. This appointment is usually 1-2 weeks following the procedure and is always pre-booked. If you are not sure when this appointment is, please ring the rooms.

Please do not touch the inside of the waterproof dressing. These dressings will be taken off and the dissolvable suture end will be removed on your first post-operative appointment to Dr Haber's Rooms

Following your discharge home, there are a number of things you will need. We have tried to include these in a little pack. If you have not received this pack prior to the surgery please let us know. In the pack, there is information about your surgery. There is a cold pack, a sling and a ball to squeeze for your exercises.



We would strongly recommend a review by your GP approx. 3-4 days after the operation to discuss ongoing medications and review the dressings if needed. It would be worth booking this appointment before your operation.

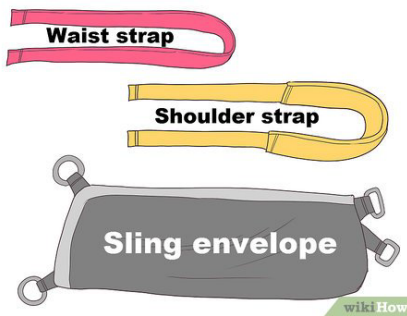
Ice Packs



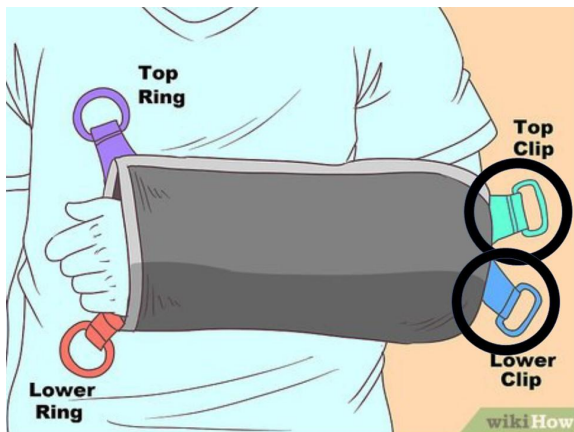
Ice pack therapy helps alleviate pain following surgery. We recommend you place the pack over your shoulder for at least 20 minutes or until the ice has melted. You may need a spare pack which you can use while the other is freezing. A packet of frozen peas works very well.

There are no hard and fast rules about how often and for how long you need to place the pack on your shoulder. Be aware ice packs are used to relieve pain and aid in your comfort so do what feels right for you.

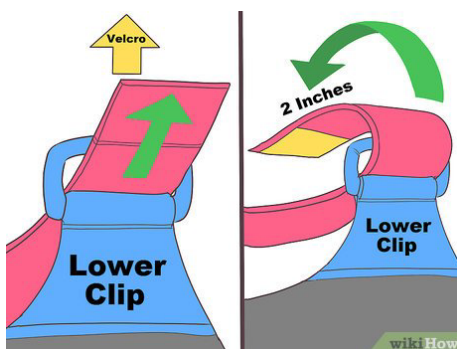
Putting Your Sling On



This sling we use for shoulder surgery comes with a sling envelope and two straps. One strap goes around your waist and the other strap over your shoulder.



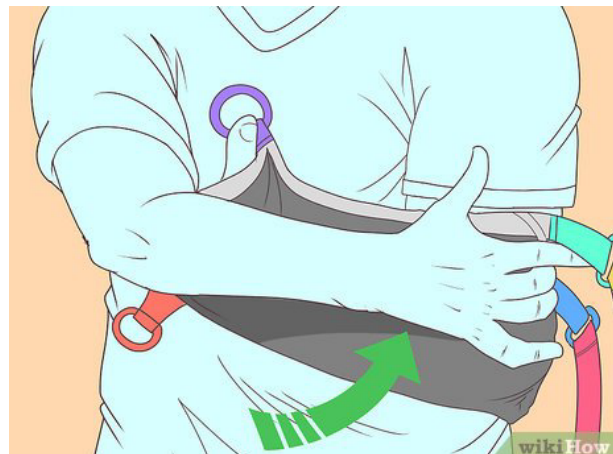
The two straps are attached to the elbow side of the sling. The lower clip is for the strap around your waist. The upper clip is from one that goes over your shoulder.



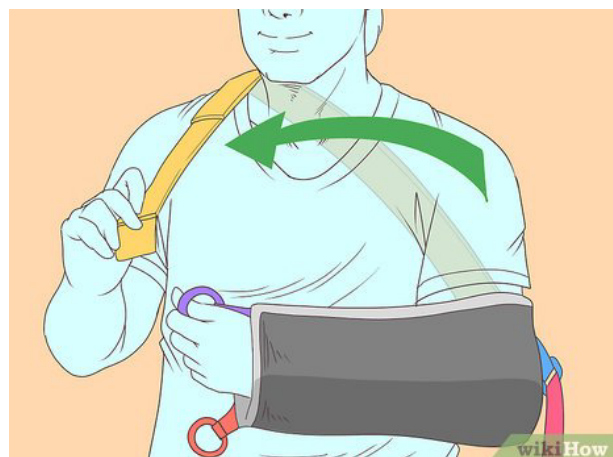
They usually have Velcro to secure them into position. Make sure the Velcro is on the outside facing away from your body so doesn't irritate your skin.



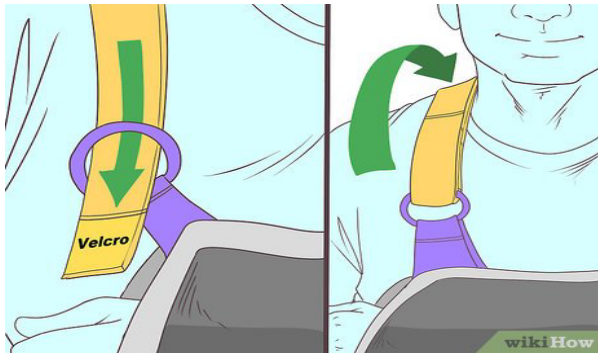
So when you put your sling, hold the sling in your good arm and pass your operated arm through the sling hole and press it against your chest.



Then pull the sling over your elbow and your arm with your non-operated hand. If the sling is the correct size it should support your wrist as well.

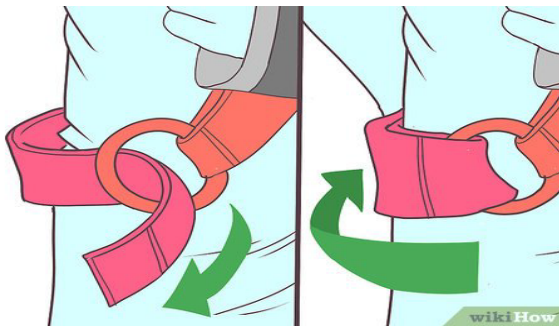


Once you have your arm in the sling past the shoulder strap across your operating shoulder and over your neck and wrap it over your non-operated shoulder. You may need to have someone help you perform this part. Make sure

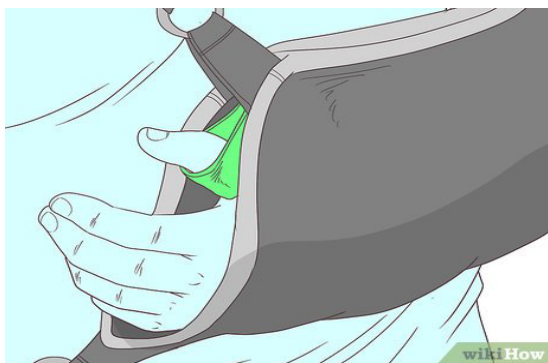


that the Velcro is facing outward away from you

Pass the shoulder strap through the top loop so that you can secure the Velcro.



Repeat this procedure for the strap that goes around your waist. Pull it around your waist like a belt, and only make it as tight as it feels comfortable.



This sling comes with a loop for your thumb and this prevents your arm from sliding out of the sling. Don't use this loop if it makes you thumb sore.



You can tighten the strap over your shoulder to keep your operated arm well supported keeping the forearm approximately in the horizontal position. It only needs to be as tight as necessary to be comfortable.



However, if you keep your elbow bent for prolonged periods you may develop pins and needles in your hand. We would recommend you straighten your elbow by resting out of the sling all loosening the shoulder strap so your elbow can be less bent up.

The sling can be removed when you need to shower or are resting in a chair and your arm is fully supported or you are doing the exercises the physiotherapist showed you. Otherwise, it should remain on until your first post-operative visit with Dr. Haber.

Putting a T-shirt on



1. Place the shirt face down on your lap with the collar at your knees.



2. Gather the hole of the left sleeve and place on your lap.



3. Lean forward and place your left arm into the sleeve hole.



4. Pull the sleeve up your arm and over your elbow using right arm.



5. Place your right arm into the right sleeve hole.



6. Grasp the shirt and pull it over your head using right arm.



7. Push the shirt over your left shoulder.



8. Adjust the shirt, by pulling it down in the front and the back.

Regular medication



If you are taking any regular medications, for example, blood pressure tablets, It is important you don't miss a dose. Please take them as prescribed with a sip of water before surgery even if you are fasting and resume them after your surgery. This includes blood thinners such as aspirin and Warfarin unless specified otherwise.

Activities of daily living (ADL's)

The activities of daily living (ADL's) are the basic tasks of everyday life: Eating, Bathing, Dressing, Transferring

Taking a Shower



You can start having a shower the day after surgery. You may remove your sling and hold your arm with the opposite hand and gently let your arm hang down. You can gently lean forward to bring your arm away from your body so you can wash under your arm. Make sure you dry yourself properly under your arm and if the weather is remotely hot, leave a washer in your armpit to prevent a sweat rash. This is extremely common after surgery and can be very uncomfortable. You can use your operated arm to help do up your buttons as long as you keep your arm relaxed against your body and just use your elbow, hand and wrist. It may be a good idea if you have to dress yourself to obtain a shoehorn to help you get your shoes back on.



Sleeping

Sleeping can be difficult after surgery as it often was prior to surgery. You will generally be more comfortable sleeping as upright as possible and many people find sleeping in a recliner much more comfortable. Many people find it advantageous to rent a recliner for 4 to 6 weeks following surgery.



There are 2 types of chairs. These include a Lift Chair and a Recliner Chair. The Lift Chair Is specially designed to assist people after surgery and if mobility is an issue this would be preferred. It is electrically controlled which would be extremely advantageous especially if your right arm

has been operated on and you, therefore, can't use it if the chair has a lever on that side. The Lift Chairs can be rented from surgical/ independent living suppliers.

Alternatively a bed wedge pillow with cushions such as a boomerang pillow will make getting into your bed more comfortable.



Your joints were made to be mobile and hate being kept still. I would therefore encourage you to passively move your operated arm into different positions. Try keeping your arm away from your body and you can rest your arm on your lap, the arm of the chair or on a pillow, et cetera. I would encourage you to keep your elbow as straight as possible for periods while your arm is out of the sling. If you keep your elbow bent upwards for prolonged periods of time it puts unnecessary



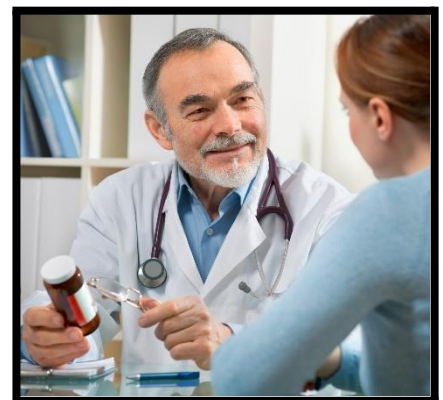
stress on the nerves in the back of the elbow (the ulnar nerve) which causes pins and needles in your ring and little fingers. It can also cause significant discomfort and stiffness of your elbow. I recommend you to keep your fingers, hand and wrist moving as soon as you feel comfortable after surgery.

You can use your hand to perform gentle tasks such as holding and unscrewing toothpaste tubes, doing up your buttons, knitting and writing et cetera.

Problems immediately after surgery

Pain Management

Your anaesthetist will speak to you prior to the procedure to discuss appropriate post-operative medications. He will organise a prescription for your medications to control your pain as well as any nausea. You should visit your GP 3-4 days after surgery for a repeat script before your medications run out.



Medication - Side effects

You may be prescribed Celebrex or other Anti-inflammatory medications. These medications can upset your stomach. They are prescribed more for pain relief than their anti-inflammatory actions. Cease these medications if they are giving you trouble or are not providing any benefit. Occasionally you may develop swelling and stiffness of your hand following surgery. This can also cause pain and pins and needles in your fingers. It is also extremely helpful to continue to perform hand strengthening as this prevents hand stiffness and general arm swelling as it aids the circulation in your arm. A stress ball or even a pair of socks works very well.

Constipation

All narcotic pain medications can cause constipation. I would recommend eating a lot of fruit and visiting your chemist if you need more help.

Risks of Shoulder Replacement Surgery

Modern techniques do minimize the risks of surgery, but cannot eliminate them completely. There are risks of general anaesthesia. These are EXTREMELY rare.

Specific to the surgery

The most significant risks of shoulder replacement surgery include:

Infection

The quoted risk of infection is less than 1%.

At the consultation where we book you into surgery, we will ask you to purchase benzoyl peroxide, a common acne cream, from a chemist. Please apply this twice a day around your shoulder and arm-pit for 3 days prior to surgery as well as the morning of your surgery. This is to reduce the amount of bacteria (especially C Acnes which is one of the most troublesome bacteria around the shoulder) which lives in the pores and hair follicles in the skin around your shoulder.

Preventative antibiotics are also routinely given just prior to commencement of the operation. If infection occurs this may require further antibiotics and surgery. **If you are feeling unwell or have developed a temperature please let us know ASAP.**

Dislocation

Rarely the shoulder joint can dislocate. This is particularly at risk in the first 6 weeks following surgery. You must be very careful using your operated arm to push yourself out of a chair. Avoid sitting in a low chair where you need to use both arms to get up. Do not put your arm behind your back for the first 6 weeks. If a dislocation occurs the shoulder joint can usually be put back in place without open surgery. A brace may be worn for some weeks. Occasionally the components can be changed to provide increased stability.

Stiffness of the shoulder

Stiffness can occur after the surgery. It may take 6 to 12 months to obtain your optimum range of motion. We stress the importance of continuing to do your stretching exercises given to you by the physiotherapist after discharge from hospital.

Complications specific to the replacement

The joint may break during surgery. A second operation will be required to repair the break. The nerves around the shoulder joint may be injured during the surgery. This causes pain and/or paralysis, which can cause permanent disability. The artificial joint may loosen which can happen over time. Possible bleeding into the wound after the surgery. This may be painful and rarely require surgical drainage. Post-operative infection can occur, needing antibiotics and further surgery. Infection elsewhere in the body can spread to the artificial shoulder joint. To prevent this, you will need antibiotics before other procedures including dental procedures. The shoulder joint may fail over time. Further surgery will be required to correct the cause of the failure.

General risks of having a surgical procedure

There are some extremely rare risks of the procedure (less than 1 in 1000) that we need to mention. These include nerve injury which can cause permanent numbness and weakness.

The general risks of a procedure associated with anaesthesia are extremely rare. These include:

- Chest infection or collapse.
- Clots in the legs or arm with pain and swelling.
- A heart attack, strokes and death are an extremely rare complication of having a procedure like this. The quoted risk of anaesthesia, from The Royal College of Anaesthetists, is around 1 death per 100,000 general anaesthetics. That makes it a lower risk than being hit by a car as a pedestrian.

Smoking

Smoking can cause a number of problems following surgery. These include an increased wound infection rate and delayed healing. It can also cause other problems to your health including things like chest infections. We would therefore strongly encourage you to stop smoking at least six weeks prior to surgery.

The Recovery From Surgery

First Days at Home

Pain management.

You may need repeat prescriptions for pain medications after discharge from the hospital. As mentioned above, it is a good idea to have an appointment with your GP 3-4 days after discharge from the hospital.

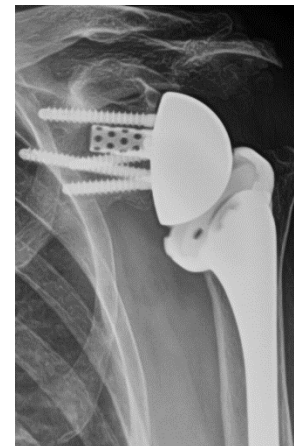
Activities of daily living

Expect to have some difficulty completing daily tasks such as getting showered, getting dressed, doing some cooking and laundry. Arrange to have help around the house for at least the first few days.



Activities protecting the implant fixation and the tendon repair

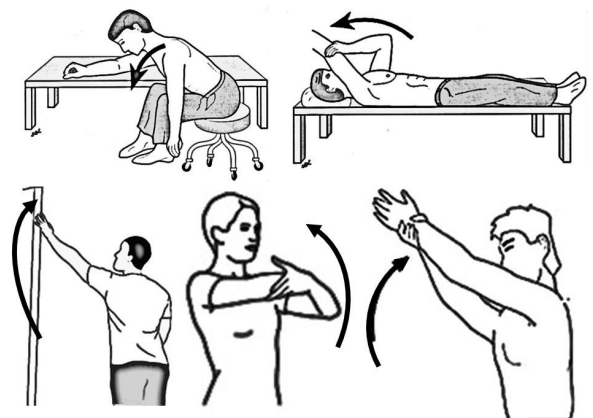
Initially, the success of the operation is dependent on the fixation of the implants. Over the subsequent 6-12 weeks, the implants and tendon repair will knit onto the bone. Protection of your shoulder during this early phase of healing is therefore extremely important. Protect the shoulder replacement by being careful not to use your shoulder actively, that is, do not lift your arm away from your side under its own power against any resistance. When performing stretching exercises, do not turn your arm out (externally rotate) further than the neutral position (see diagram).



Unless we tell you otherwise, you may use your hand for typing or writing as long as your arm is totally supported. You may rest your arm out of the sling supported on pillows for periods to let your skin breathe. However, raising the arm actively, puts excess strain on the replacement and should be avoided. We will tell you how long these restrictions need to be in effect. During this time, you should leave your sling on when you are up and about and **you should not drive!**

Exercises for preventing stiffness

While your shoulder is healing, gentle passive motion is very helpful in preventing stiffness. Passive motion means that the shoulder is moved, but not under its own power. Your operated shoulder is moved by your other hand while the muscles of the operated shoulder are completely relaxed.

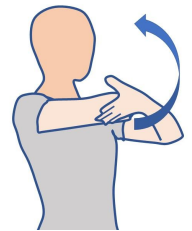


The physiotherapist in the hospital will teach you gentle exercises. You should perform these regularly when you get home to prevent stiffness. Use the pain-killers and/or ice packs to reduce the pain before you exercise. It is normal for some degree of discomfort when doing these exercises. However, if you experience severe or lasting pain (e.g. more than 30 minutes), you are probably doing too much. I would suggest you do short, frequent sessions (eg. 5–10 minutes, 4 times a day) rather than one long session. Gradually increase the range of motion that you feel comfortable with, but do not go past the recommended limits.

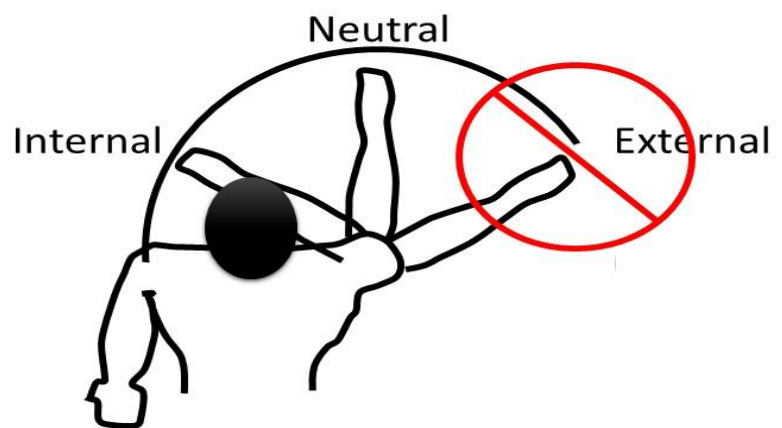
The exercises include:

1. Forward elevation

Raising your arm forward in front of you. You can move your shoulder gently by standing up and bending over at the waist, allowing the operated arm to dangle down in a relaxed way (see diagram). Your good, non-operated arm, can lift the operated arm which is relaxing, allowing the good arm to take all the weight.

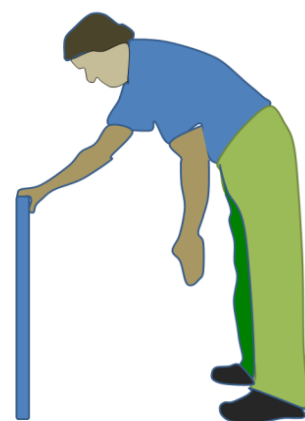
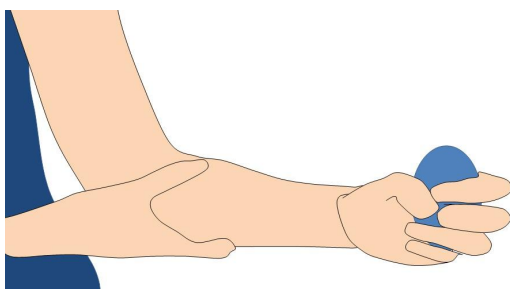


2. External rotation to neutral only turning your arm out to 0 degrees and no further to protect the subscapularis repair. Avoid internal rotation strengthening for the first 6 weeks.



3. Elbow flexion and extension, You can gently stretch out your elbow while resting your arm on your lap out of the sling. You can also stretch your elbow while showering and changing clothes or when performing pendulum exercises as described below.
4. Hand and wrist motion. It is very important to keep your hand and wrist moving as they have a tendency to get stiff and swollen if you don't use them. We give you a ball to squeeze but if this is too hard you can use a pair of socks.

5. You can perform gentle pendulum exercises. While changing clothes or showering you can lean forward so your arm dangles down. Lean over and you can use your good arm to support yourself on a table or chair. Relax the operated arm, letting it hang straight down. Let gravity gently move your arm away from your body.



Dos and Don'ts after discharge from hospital

Do

- Do wear the sling, usually for 4-6 weeks.
- Do use your hand and forearm for eating, writing etc.
- Do perform finger, wrist, and elbow movements and hand strengthening.
- Do perform your regular stretching exercises.

Don't

- Don't actively lift your arm against resistance (holding any significant weight) for at least the first 6 weeks.
- Don't lift any weights above shoulder height for at least 3 months.
- Don't use your arm to assist getting out of a chair for at least the first 6 weeks.

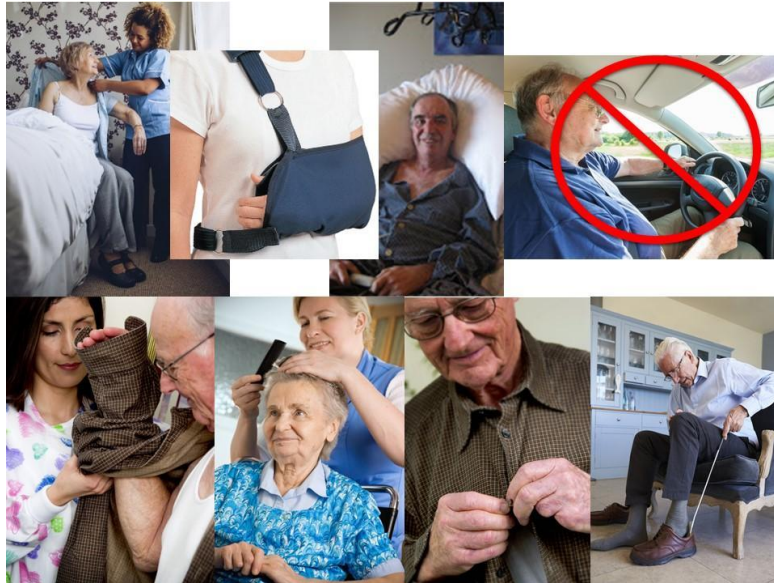


Follow-up Appointments with Dr Haber following surgery

These may vary, typically they are: Day 7-14 / 6 weeks / 3 months / As required after then. You should have an appointment organized prior to your discharge from the hospital. Please call our office if you are not sure. If it is difficult to attend these appointments, for example, due to long distances, trouble with transport etc, we are happy to perform these appointments via phone/ zoom / skype etc. Please inform the rooms if you wish to make these alternative arrangements.

Rehabilitation following Discharge from Hospital

Phase 1 - Weeks 1-6



You can continue to change your clothes, shower and wash even from the first day after surgery. This must be done with your operated arm remaining completely passive. Leaning forward let your arm hang away from the body so that you are able to wash and dry yourself.

When getting dressed it is a good idea to wear loose-fitting cotton clothes which will help avoid a sweat rash. If you keep your arm directly against your body it can cause severe skin irritation. When getting dressed first place your top over your operated arm and then onto your good arm.



You must wear your sling when you are up and about. However, when you are resting, I would encourage you to have your arm out of the sling resting away from your body. This will help prevent a sweat rash. As mentioned above, joints were made to be mobile and hate being kept still. Remember to move your operated arm very gently into different positions. Continue to rest your arm on your lap, the arm of the chair or on a pillow et cetera. Continue to straighten your elbow regularly. It is also critical that you keep moving your hand. It is not uncommon to develop swelling and stiffness of your hand following surgery. This can also cause pain and pins and needles in your fingers. I would also encourage you to remain active as much as you feel comfortable. You should continue to take daily walks, although in the first two weeks you may find the pain will prevent you from doing too much. When you feel comfortable you can start increasing physical activity while always keeping your arm well supported in a sling.

Exercises

I would like you to start performing some very gentle passive range of motion exercises after the first post-operative visit. I would also recommend finger walk exercises. Continue to use the stress ball or even something softer to keep your hands moving. The second postoperative visit is usually at six weeks following surgery. At that stage, you can come out of the sling and commence a regular passive range of motion exercises.



Phase 2 - Weeks 6 - 12

In the second phase (between 6 and 12 weeks) you can come out of the sling unless advised to delay this.

Do's and Don'ts

Do's:

- Do wean yourself out of the sling unless specified otherwise.
- Do use your hand and forearm for eating, writing etc.
- Do attend your physiotherapist appointments and perform the exercises regularly.

Don'ts:

- Do not overdo your exercises.
- Do not lift *any weights* away from your body.
- Do not start any shoulder strengthening with weights or bands etc.
- No supporting body weight with hands and arms.
- No sudden jerking motions.
- No excessive behind-the-back movements.

Physiotherapy

Formal Physiotherapy normally commences about 6 weeks after surgery, depending on the factors mentioned above. We will give you a physiotherapy protocol for your physiotherapist at the 6-week visit.

Exercises / Activities



Initiate raising the arm without any resistance. Gentle scapular and shoulder joint movements as indicated to regain full passive range of motion. Continue ice as needed, you may use heat before exercises. Aqua therapy is good for light exercises.

Return to Activities

At 6 weeks after surgery, you may commence very light active use of your arm, that is, without any resistance. You remain unfit for **any forceful** manual activities including or sporting activities the operated arm. You may start

performing activities such as gentle putting, bowling and you may automatic car at this stage if you have achieved an adequate comfortable range of motion and feel safe.



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Phase 3 - Early Strengthening - Weeks 12-24



At 12 weeks following surgery, resisted active use of the arm is now safe. You can commence physical activities using the operated arm. There will, however, be significant restrictions using the arm above shoulder level and away from the body. At that stage, the shoulder remains very weak. Therapy includes continued stretching and you can now safely initiate a strengthening program.

Do's and Don'ts

Do's:

- return to physical activities as comfort allows
- continued stretching and a strengthening program.

Don'ts:

- Do not overdo your exercises.
- Do not lift *heavy weights* away from your body.
- Do not do sudden lifting or pushing activities, sudden jerking motions, overhead lifting.

Exercises / Physiotherapy

Continue stretching working towards a full active range of motion. Begin VERY GENTLE resistance strengthening possibly using bands and light weights only as comfort allows. Avoid repetitive overhead use of the arm. STOP all strengthening or carrying if you develop pain afterwards. See stress fracture comments on next page. If you are female, over 75 women and especially those with osteoporosis you are at risk of stress fracture. Just go GENTLE!



Phase 4: Advanced strengthening - Weeks 24+



Do's and Don'ts

Do's:

- Maintain full non-painful active range of motion.
- Advanced conditioning exercises for enhanced functional use.
- Improve muscular strength, power and endurance.
- Gradual return to full functional activities.

Don'ts:

- Sudden heavy lifting, especially overhead
- Heavy pushing activities
- Sudden jerking motions

Exercises

- Continue stretching if motion is tight.
- Continue progression of strengthening.
- Light sports (golf, bowls, tennis ground strokes) can progress if your shoulder is comfortable.

Stress fracture after reverse shoulder replacement

Fractures occurred at an average 8 months, though very rarely before 3 months or after 12 months following surgery with 1 / 5 following an injury and 4 / 5 from overloading the shoulder with lifting (stress fracture). The people most at risk are "mature age" women and especially those with osteoporosis. So be VERY careful with sudden or heavy lifting and if you are doing strengthening exercises and develop pain STOP the exercises until the pain has completely settled.

Returning to sport after total shoulder replacement

Between 6 and 12 months it is hoped you have made enough recovery from the surgery so that you may return to pre-operative sporting activities including such activities as training in the gym, playing golf and tennis and return to full manual duties at work as comfort allows.

It is important you should have realistic expectations of the results of shoulder replacement surgery. There is no clear agreement amongst surgeons regarding the acceptable activity level after surgery. The majority of surgeons allow a return to non-contact, low-load activities after all types of replacements. There are however restrictions on high-impact sports, sports with fall risk, and contact sports.



We can divide activities into

- low-demand sporting activities such as stationary biking, using a treadmill, gardening
 - o 3/4 could return
 - medium-demand sports such as fishing, dancing, bowls, jogging and swimming
 - o 1/2 could return
 - High-demand golf and skiing
 - o 1/4 could return
-
- Overall only 20% were limited because of ongoing shoulder limitations.
 - The majority of people (60%) are able, after surgery, to return to certain desired activities, e.g. target shooting, horseback riding, running, travelling. 20% reported being unable to return to an activity they had been able to do before surgery, e.g. tennis, swimming, baseball, kayaking.
 - The most difficulty was encountered when trying to return to activities that required turning your arm up and out, e.g. tennis, kayaking, archery, combing hair.



Returning to sport will vary depending on your experience. Activities which are allowed with experience include golf, ice skating, and downhill skiing. Activities that are not recommended include contact sports such as hockey and football and high-risk sports such as rock climbing and gymnastics. It is not clear if it is advisable to return to: Baseball/softball, lacrosse, rowing, soccer, weight lifting, and singles tennis. However, doubles tennis seems more feasible.

Studies have shown that at least 60-80% of patients who participated in a sport prior to surgery could return to sports after surgery. 1/3 indicated that they were able to perform their activities at a higher level while 2/3 felt there was no change in performance.

The average time to return to full sport was about 6 months. The average times include general fitness(80%), swimming (66%), running (60%), cycling (50%), golf (50%)

Pain Management after Surgery

It's natural to have concerns about pain after having surgery — as well as the risks associated with powerful pain medications. Controlling pain and minimizing side effects are both important for post-surgical comfort, recovery and rehabilitation.

The amount of pain you may experience after surgery is extremely variable and is not dependant on the size of the surgery but many other factors. For example, pain after arthroscopic rotator cuff repair is often harder to control than a total shoulder replacement.

The effective relief of pain after surgery is of the utmost importance in the recovery.

Hence, monitoring of pain relief is has become increasingly important.

The goal for postoperative pain management is to reduce pain and discomfort as much as possible with a minimum of side effects.

When you are having surgery, your anaesthetist is a specialist physician who will give you the anesthetic and monitor you while you're unconscious during the surgery. He is a medical expert who also works with you and your surgeon and your GP to make sure you're comfortable as you recover from your surgery.



Your anaesthetist will help manage this pain using a variety of medications and nonmedication techniques.

Postoperative pain is not just annoying or unpleasant. If it's not treated correctly, it can sometimes become chronic pain.

How will the anaesthetist manage my pain?

Your anaesthetist will speak to you prior to the procedure to discuss appropriate postoperative medications. He will organise a prescription for your medications to control your pain as well as any nausea after you go home.

Your anaesthetist may also advise you after your discharge but usually after 1-2days after discharge, your GP takes over the role.

You should therefore visit your GP 4 days after surgery for a repeat prescription or before your medications run out.



Don't forget to book an apointemnt before the surgery.

Important! Do not wait until your pain is severe before you ask for pain medications. Also, if the pain medication has not significantly helped within 30 minutes, notify your nurse. Extra pain medication is available for you to take. You do not have to wait 4 hours to receive more medication.

Your role in pain control

Immediately after surgery, work with the nurses and your anaesthetist and later GP, to make your recovery as prompt and pain-free as possible. You'll need to communicate with your doctors and nurses to help them assess and adjust the pain management plan.

Be honest about the pain you feel after surgery. Let your doctors and nurses know how much pain you are in. Your healthcare team will want to know the intensity of pain on a 0 to 10 scale, where 0 is no pain and 10 is the worst pain, you can imagine. The more specific you can be, the better the nurses and your doctors can help you.

Don't ignore side effects. Tell your care team if you experience sleepiness, constipation, nausea or other side effects of the medications. A different pain medication or dose can sometimes reduce uncomfortable side effects, and these side effects can often be treated and relieved.

Keep track of your pain. It maybe helpful scoring it from 1-10



Pain Medications

Traditionally the mainstay of postoperative analgesia is opioid based. There is good evidence to support a multimodal approach (meaning using a number of different types of medications) with the intent to reduce opioid side effects (such as nausea and constipation) and improving the pain.

The different types of medications include prescription as well as over-the-counter medications such as non-steroidal anti-Inflammatory drug (NSAID) such as Ibuprofen (commonly known as Neurofen or Brufen). This is a short acting pain tablet.

Opioid-sparing techniques using different analgesic mechanisms of action is recognized as

an important component strategy for postoperative pain management. NSAIDs are useful in reducing the amount of opiates needed, thus reducing opioid side effects

Celecoxib, sold under the brand name Celebrex is also a commonly used NSAID medication but does require a script. This is a long-acting pain tablet

NSAID medications may also help reduce inflammation and swelling. Although after surgery this effect is only mild and NSAIDS should generally not be used for more than a week.

NSAIDS Side effects

You may be prescribed Celebrex or other Anti-inflammatory medications. These medications can upset your stomach. They are prescribed more for pain relief than their anti-inflammatory actions. Cease these medications if they are giving you trouble or are not providing any benefit.

Opioid based pain tablets

However, the mainstay of pain relief immediately after surgery does require is opioid based pain tablets.

Common types of opioid-based medications include codeine oxycodone (Endone or OxyContin), and tramadol.

The opioid based drug of choice these days seems to be Palexia. This drug comes in two types, Palexia SR (slow release) and IR (immediate release).

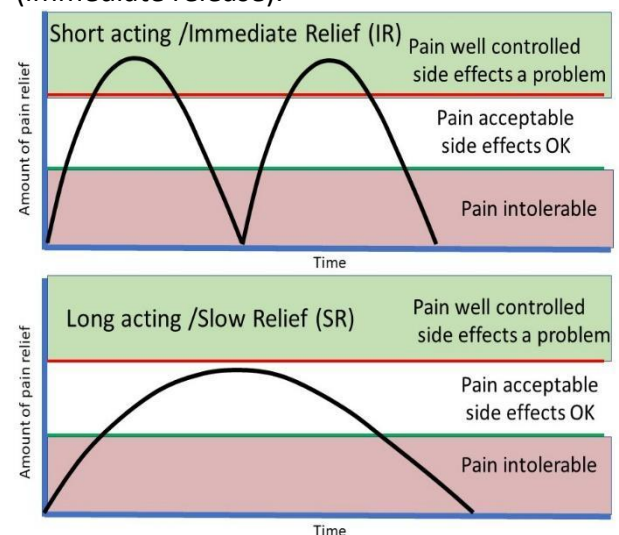
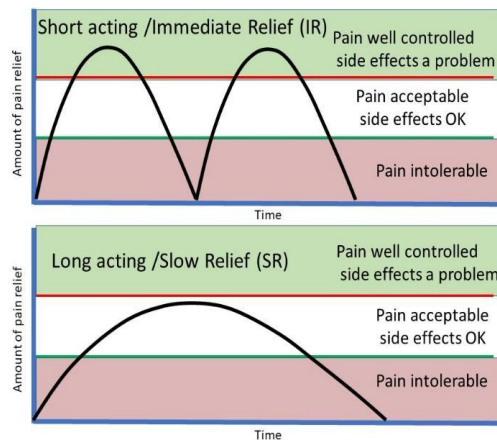


Diagram 1, Difference between short-acting



(immediate release) and long acting (slow-release) medications.

The SR tablet has a slower onset but lasts longer whereas the IR tablet works quickly but does not last long. They can therefore be used together. Using the Palexia SR (slow release) regularly to give a consistent pain relief with acceptable side effects and adding a Palexia IR (immediate release) when the pain is more severe (Breakthrough pain) and immediate relief is required.

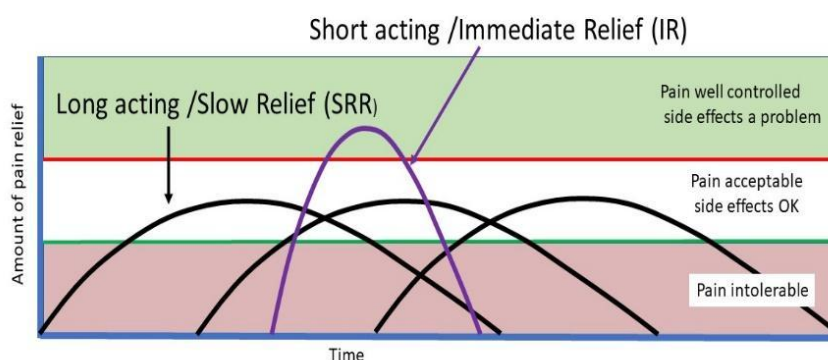


Diagram 2, Combination of short acting (immediate release) and long acting (slow release) medications.

Paracetamol's major advantages over NSAIDs are its lack of interference with the bodies clotting mechanism and safe administration in people with a history of ulcers or asthma.

Paracetamol can be taken with or without food. The usual dose is one or two 500mg tablets up to 4 times in 24 hours. Always leave at least 4 hours between doses.

Paracetamol is a common ingredient in many combination oral pain medications, so it is vital not to exceed the 4000 mg daily maximum dose due to the risk of damage to the liver. Using a multimodal approach (meaning using a number of different types of medications) it hoped you can be maintained in the middle area with acceptable pain and side effects.

However, with all medications, everybody is different and therefore is not one drug that suits everybody and it is sometimes a trial-and-error process to find what works for you. That is why you should therefore visit your GP about 4 days after surgery for a repeat prescription or a change to something else.

Opioid-based medication side effects

All Opioid-based pain medications can cause constipation. I would recommend eating a lot of fruit and visiting your chemist if you need further assistance. If you do require regular opioid-based pain medications, you should also be taking laxatives to prevent severe constipation.

Sleep

Sleeping when you are in pain can be difficult.

Amitriptyline (Endep) used at low dose once-daily dose of 10 mg to 25 mg is helpful to treat pain especially at night as it does cause drowsiness which will help you sleep.

Nonmedication alternatives, such as heating pads, ice packs, or relaxation techniques that help with pain or swelling, can be used instead of or along with medications.



Keeping track of your medications



Because you will commence on a number of new medication and at first after surgery, you will be in pain you **MUST** keep track of what you have taken and remember to take your regular medications when due.

I would strongly recommend you either write it down on a piece of paper or I have found a phone app is extremely useful as it reminds you when your medications are due. There are many but “Take your pills” is highly rated.

Pain management non- medication

Yes, there are other ways to relieve pain and it is important to keep an open mind about these techniques. Focused relaxation that helps create calm, peaceful images in your mind -- a “mental escape.”

For the best results, practice using the relaxation techniques before your surgery, and then use them twice daily during your recovery.

Heat or cold therapy may be an option to help reduce swelling and control your pain.

Positioning yourself with pillows, recliner etc is discussed in a separate section.

Lastly, make sure you are comfortable with your treatment plan. Talk to your doctors and nurses about your concerns and needs. This will help avoid miscommunication, stress, anxiety, and disappointment, which may make pain worse. Keep asking questions until you have

satisfactory answers. You are the one who will benefit.

Frequently asked questions on Pain management

I am nervous about getting addicted to pain pills. How do I avoid this?

With proper use, the risk of becoming addicted to pain medication after surgery is very small. If you are concerned about addiction or have a history of substance abuse (alcohol or any drug), talk with your doctors. They will monitor you closely during your recovery. However, do not deprive yourself of appropriate medication in the fear of addiction as with most shoulder procedures you will not be on opioid/narcotic medications for a prolonged period.

Should I only take pain medication when I have a lot of pain?

No. Don't wait until the pain becomes severe to take pain medication. Pain is easier to control when it is stable. You should take your pain medication regularly, just as prescribed. Sometimes this means taking your regular medicine, even when your pain is mild. When the pain is more severe (Breakthrough pain) and immediate relief is required, you can add what we call PRN medications.

PRN medical abbreviation is one of the most common abbreviations used in healthcare. PRN is an abbreviation for the Latin term *pro re nata*, and that means “as the thing is needed.”

Remember:

Pain is different for everyone. It affects blood pressure, heart rate, appetite, sleep, and general mood.

Treating pain early usually brings quicker and better control.

Healing occurs faster when pain is under control.

FAQ

When can I drive?

This is not a simple question. Traditionally we recommend that it is normally about 6–8 weeks after an operation on your shoulder that impedes its function before you can drive safely. There is the issue of damaging your shoulder if you drive and putting others on the road at risk due to your restrictions. Driving a motor vehicle requires you to be in control of your vehicle at all times.

There is no law that explicitly prohibits you from driving a car after shoulder surgery. Nevertheless, if you find it difficult to drive safely because of shoulder surgery and the weakness and stiffness, then you should not drive. The seat belt may be uncomfortable initially but your shoulder will not be harmed by it.

Will you be able to use the gear shift and steer at the same time? Roads and Maritime Services (RMS) NSW states that when driving, you “[must be able to operate all vehicle controls and have a hand on the steering wheel at all times](#).” Therefore driving a manual vehicle will take a lot longer.

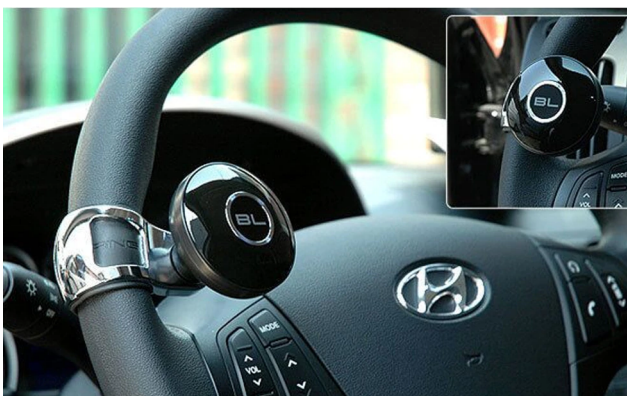
Once you start driving, you may find it is more difficult if your left arm has been operated on because of using the gear stick/handbrake. Check you can manage all the controls and it is advisable to start with short journeys.

Another important thing to consider is your insurance. It is possible that your insurance company will investigate the cause of an accident. If it's found that your shoulder surgery was the main cause of the accident, you may not be covered.

Many temporary conditions or injuries will prevent you from driving. For example, if you've been under anaesthetic, you should not drive for at least 24 hours.

Injuries such as shoulder surgery will also affect your ability to drive.

In most cases, temporary conditions will not affect your licence, and you don't need to report them to Transport for NSW.



According to the RMS, The use of only one arm may be enough to drive an automatic vehicle, but you must be able to reach and operate the major controls, without taking your hand off the steering wheel. You may need vehicle modifications, such as an extended indicator switch or an electronic indicator. A steering wheel aid, called a steering wheel knob or a spinner knob, may be helpful. According to NSW [roads-waterways.transport](https://roads-waterways.transport.nsw.gov.au)

(<https://roads-waterways.transport.nsw.gov.au/documents/roads/safety-rules/standards/vsi-21-modifications-for-disability.pdf>) these are not considered to be significant modifications and do NOT require assessing or certification if it does not affect the operation of an SRS airbag system or compliance with an ADR.

Why is my hand swollen after shoulder surgery?

It is not uncommon to develop pain, swelling and restriction in movement of the hand on the side of the operated shoulder following surgery. Indeed a recent article published in 2018 suggested that it occurs in nearly 30% of cases. This typically develops over time and usually presents approximately four weeks following surgery. The cause of the swelling is not entirely understood but it is usually due to what is referred to as Shoulder-hand syndrome. This is often associated with finger numbness on the operated side after surgery and occurs in nearly 30% of people and is usually very temporary. This is regarded as being a reflex “neurovascular” disorder meaning that there is an abnormal reaction of the nerves of the arm because of blood vessel spasm. It is regarded as being a reflex reaction to the shoulder surgery and does not mean there has been any nerve damage. This is a reaction of what is called the sympathetic nervous system. This manifests with pain, swelling and restricted movement of the hand and fingers and finger numbness.

Other conditions that can cause very similar symptoms include Carpal Tunnel Syndrome (CTS), Cubital Tunnel Syndrome (CuTS) and flexor tenosynovitis (FT). This is only very rarely associated with a condition called Complex Regional Pain Syndrome (CRPS) This is a clinical entity characterized by spontaneous pain that is disproportionate to the inciting event and by motor symptoms, such as movement limitations of the fingers and hand. The pain and swelling usually resolve at about four months following the shoulder procedure. I suspect this is because after three months you start to actively use your arm and this assists in the circulation of your arm which helps resolve the reflex “neurovascular” disorder.

When can I participate in my leisure activities?

Your ability to start these activities will be dependent on many factors such as your recovery of the post-operative pain, range of movement and strength. If you are not sure, please discuss the specific activity you wish to return to with us at your followup appointment or call the rooms.

Rough guidelines include:

- Swimming underarm 6 weeks
- Gardening
 - (light tasks e.g. weeding) 6 - 8 weeks
 - (heavier tasks e.g. digging 12-24 weeks)
- Golf and Bowls 3 - 6 months
- Tennis, badminton or squash 4 - 6 months

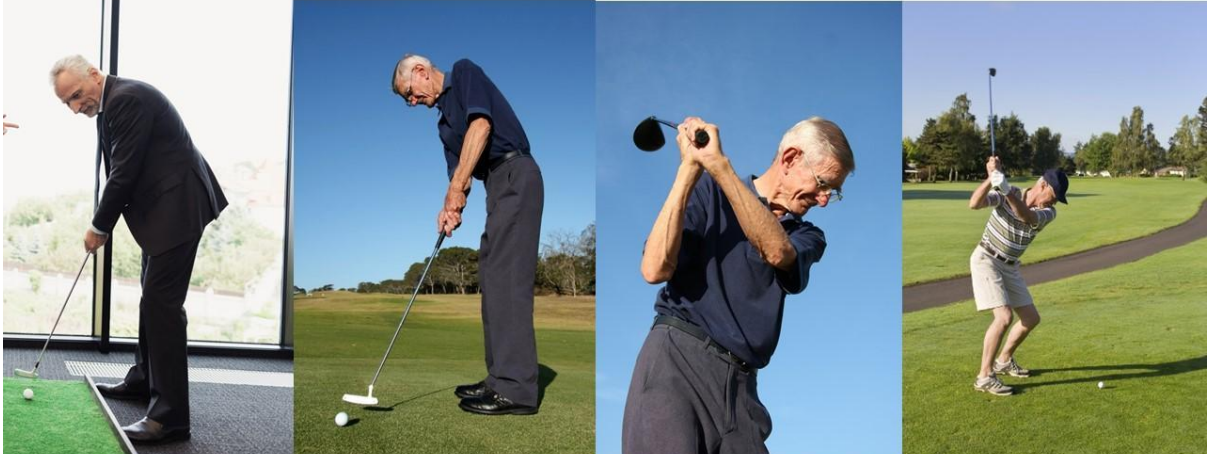
When can I return to playing golf?

6 weeks

3 months

6 months

8 months



The return to sporting activities needs to be varied based on a number of factors that may influence healing. These include diseases such as diabetes medications such as steroids, cigarette smoking, age over 70, osteoporosis etc. The return to sporting activities, therefore, is not the same for everybody.

When it comes to golf, you can start very gently putting after 6 weeks. I would not recommend any attempt at returning to golf where you swing your club (chipping) prior to 12 weeks (3 months) following surgery. Nevertheless, you must be careful handling your golf bag if it is heavy. By six months following surgery, you can return to playing a full game although it may take a few more months to regain good strength and range of motion. Typically by 8 months, you may be playing better than before your operation.

Do I need to wear a sling full-time?

The sling is for comfort and to protect the shoulder after the operation. You can take it on and off as you wish and you do not need to have your arm strapped to your body.

You may gradually wear the sling less 4–6 weeks after the surgery. Do wear your sling when you are out and about in the first 6 weeks.

You may find it helpful to wear the sling at night (with or without the body strap), particularly if you tend to lie on your side.

Alternatively, you can use pillows in front of you to rest your arm on. If you are lying on your back to sleep, you may find placing a thin pillow or folded towel under your upper arm will be comfortable.



Are there things that I should avoid?

For the first 6 weeks

1. Avoid taking your arm out to the side and twisting it backward. For example; when putting on a shirt or coat, put your operated arm in its sleeve first. Try not to reach up and behind you (e.g. seat belt in the car). It is normally too painful/difficult to do!

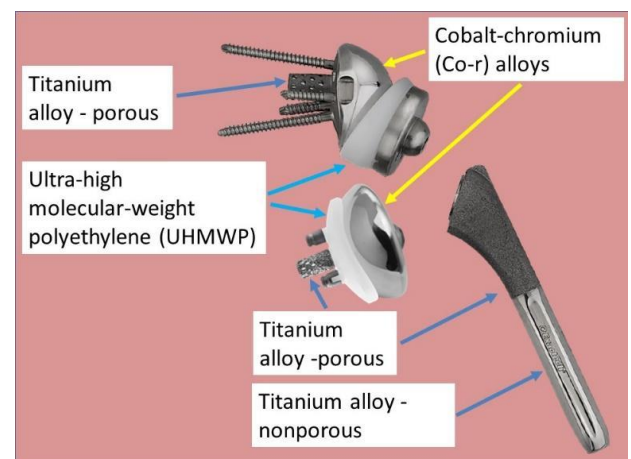
Do not force these movements for 3 months.

2. Avoid leaning with your body weight on your arm with your hand behind you. For example, leaning heavily on your arm to get out of a chair.



What materials are the replacements made from?

The materials that current shoulder replacement components are made out of (metal alloy humeral head, titanium humeral stem and highly crosslinked polyethylene glenoid component) are much better than their predecessors. Various metals including titanium, vanadium, cobalt, chromium, tungsten, nickel and molybdenum have all been tested and now are used mainly as alloys developed to resist corrosion and fatigue. All metals and alloys appear the same on radiographs.



Titanium alloy has the ability to fuse together with living bone. Parts are porous coated to aid this process. However, it does not polish smoothly enough to use as an articulating material. Cobalt-chromium alloys (CoCr) are used when there is contact and motion. It articulates with a plastic known high-density polyethylene (HDP) which is the best material for articulating with metal. It is made of a plastic known as polyethylene. The plastic articulating components are not visible on X-ray. Polyethylene is an ultrahigh molecular weight polymer and is the same material used for ski bottoms, runners on snowmobiles, and cutting boards.

How much do the implants weigh?

This depends on the size of the implant used. For example, the smallest humeral stem implants weigh between 31 grams. Medium-sized 65-85 grams The largest (very rarely used) is 112 grams. The glenoid component weighs a similar amount.

Will I run into problems with metal detectors at the airport?

I am frequently asked by my patients who have undergone shoulder replacement surgery whether there will be a problem travelling through security with the metal detectors at the airport.

The ability of the Walk-Through –Metal-Detector to detect the presence of the metal in shoulder replacement seems to be very erratic. This also depends on the airport, especially domestic versus international flights. It has been recommended, in order to minimise delays to make the screening staff aware, PRIOR to entering the screening point.

It is recommended that you remove all items from your pockets, belts, or any heavy jewellery you may be wearing. This will assist in eliminating any further metal that the Walk-Through –Metal-Detector (WTMD) will detect.

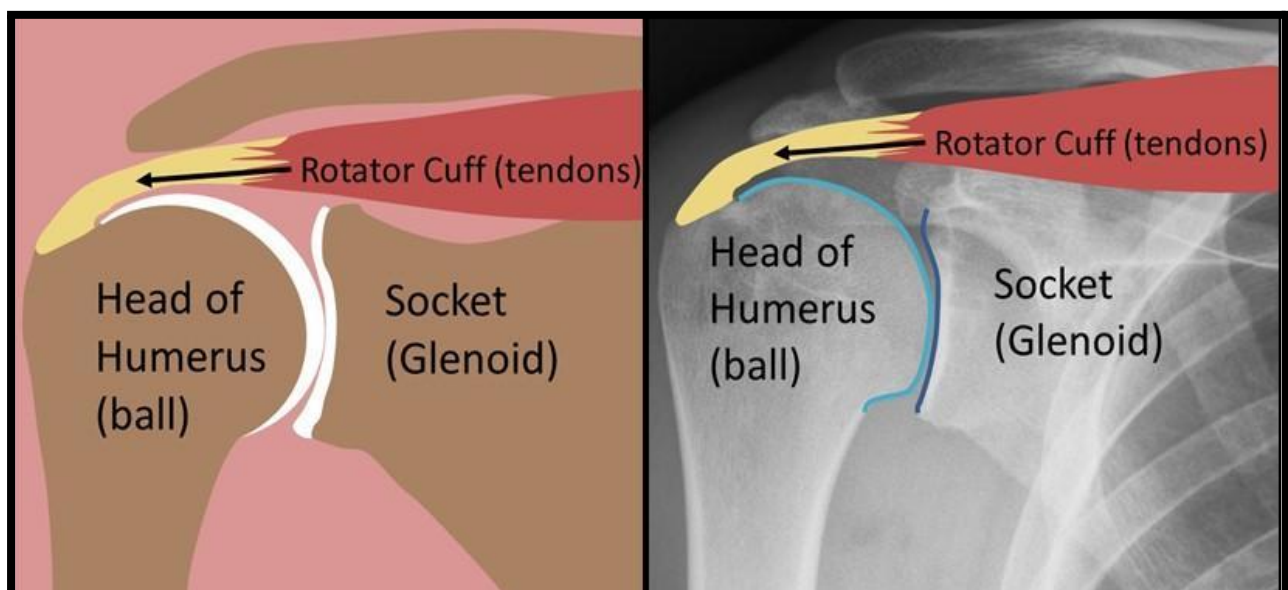
Secondary screening (frisk search) will be required if you “alarm” going through the WTMD.

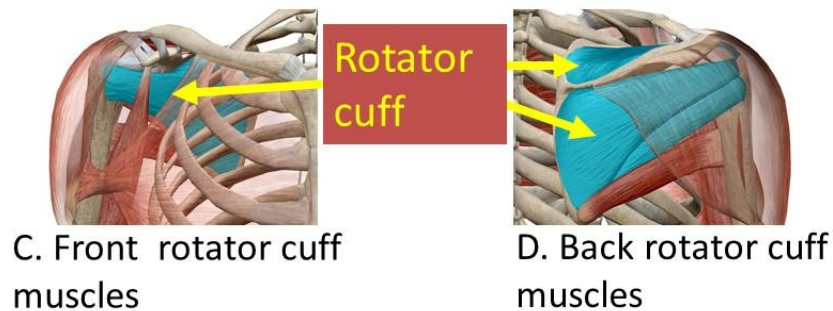
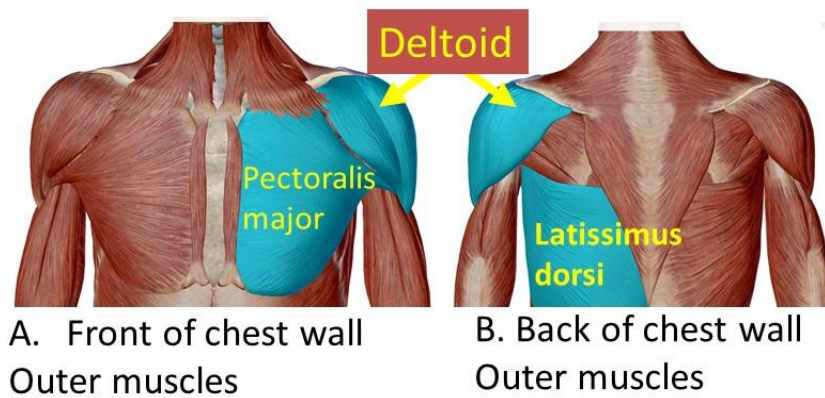
Occasionally they will perform a frisk search or secondary screening with the use of the Hand-Held-Metal Detector (HHMD). I am also asked whether you need a letter or card stating I have a joint replacement. I have been informed by patients who have travelled that security staff do not rely on a letter or card and we have therefore ceased providing these very many years ago. In conclusion, you should travel in confidence that your implant is fairly unlikely to alarm however make the screening staff aware that you have had a joint replacement prior to going through screening may save time. Airport security in Australia are generally well trained and courteous and will try to minimal disruption or inconvenience. nevertheless, give yourself a little bit of extra time when travelling through security.



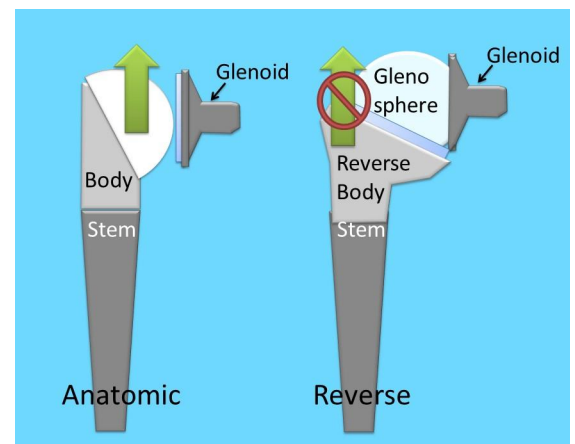
What happens to the rotator cuff in reverse shoulder replacement and does it matter if they are torn and irreparable?

The natural shoulder is possibly the most mobile joint in the animal kingdom. This is achieved by having a ball and socket joint where the ball is a spherical ball but the socket is almost flat. The trade-off is stability. What holds the shoulder joint together are the rotator cuff tendons. They hold the ball in the socket while the outer muscles provide the major power for moving the shoulder.

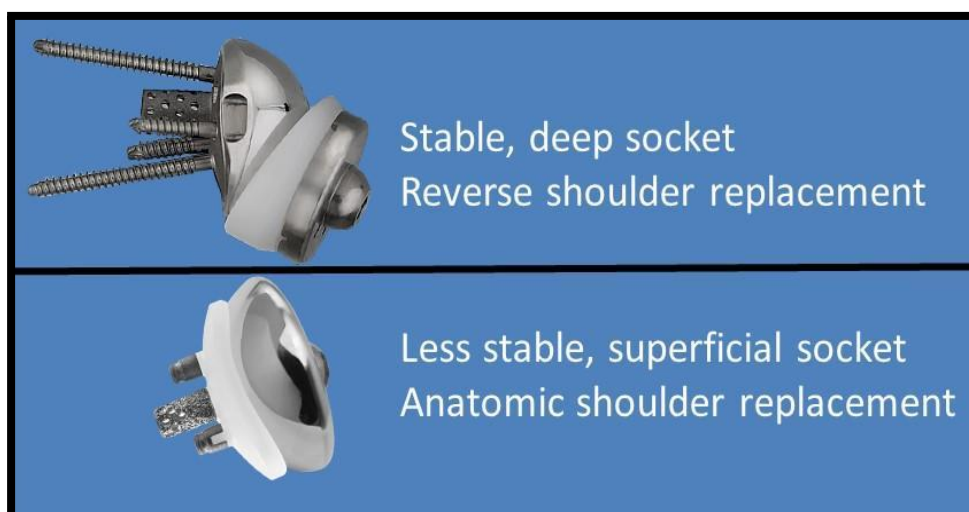




If the rotator cuff tendons are damaged or worn out there is potential instability (as discussed above on cuff tear arthropathy). The anatomic total shoulder replacement (anatomic TSR) is therefore unstable which is why the reverse total shoulder replacement (reverse TSR) was developed with a deeper socket. The reverse total shoulder replacement **does not** depend on an intact rotator cuff for stability so the stronger muscles that surround the shoulder, such as the deltoid, pectoralis major (which makes up the bulk of the front chest muscles) and latissimus dorsi (the largest muscle in the upper body) can move the shoulder with more biomechanical efficiency. The reverse total shoulder replacement has a deeper socket and therefore provides better stability (see below)



In severe rotator cuff failure the humerus rides up and bone-on-bone pain develops (see page 4) Due to the geometry of the reverse TSR, this is corrected. The implants hold the humerus down, eliminating any bone-on-bone pain.

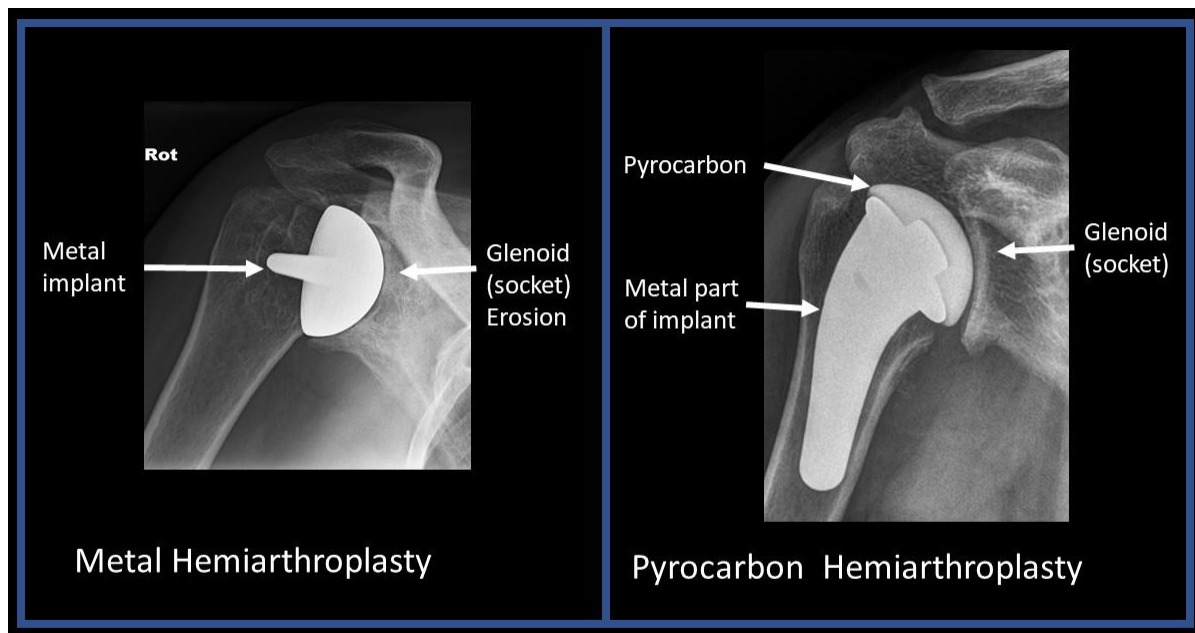


What is a Pyrocarbon shoulder hemiarthroplasty

The traditional implants are metals (cobalt-chrome and titanium) that articulates on plastic (ultra-high molecular weight polyethylene). Pyrolytic carbon, or pyrocarbon for short has been used in orthopedics since 1992 and has properties very similar to cortical bone and has excellent long-term biological compatibility.

Management of shoulder arthritis is challenging in young and active patients because of high functional demands. There are concerns over glenoid component loosening and wear in young active patients which has questioned the use of total shoulder arthroplasty in these people.

Metallic humeral head hemiarthroplasty use a cobalt chromium (CoCr) implant, and erosion of the glenoid is a concern. PyroCarbon has demonstrated more favorable wear characteristics when used as a hemiarthroplasty.



Multivitamin Use To Aid Recovery After Surgery

Deficient nutritional states may compromise the operative outcomes. Several essential vitamins, e.g., B12, C, D, and E, have demonstrated anti-inflammatory properties and promote wound healing. Multivitamins are safe, widely accessible, and inexpensive, and they appear to help in pain control and healing. Zinc is an essential mineral that is required for bone health. Check with your Pharmacist or GP that they don't interfere with your medications.

YouTube Videos on our channel about shoulder replacement:

Total Shoulder Replacement- surgical technique.

In this video, I have explained how we perform Anatomic and Reverse computer-navigated shoulder replacements. You can go on YouTube and search using: Shoulder Replacement technique haber. Or type the link:

https://youtu.be/ld__ngZEM9k

Booking into the Hospital. You can book in online or in person.

Wollongong Day Surgery

354-358 Crown Street (Cnr New Dapto Road & Crown Street), Wollongong NSW 2500

Ph 4226 6955

Fax 4229 5016

No need to make an appointment to book in. Opening hours Monday to Friday 8.00 am – 4.30 pm

[Online Admission Form](#)

Wollongong Private Hospital

360-364 Crown Street, Wollongong NSW 2500

Ph 4286 1000

Fax 4286 1306

No need to make an appointment to book in. Opening hours: Monday to Friday from 9.30 am

[Online Admission Form](#)

Shellharbour Private Hospital

27 Captain Cook Drive, Barrack Heights NSW 2528

Ph 4295 2999

Fax 4295 2900

No need to make an appointment to book in. Opening hours: Monday to Friday from 8.00 am – 5.00 pm

[Online Admission Forms](#)

Macquarie University Hospital

2 Technology Place, Macquarie University NSW 2109

Ph 9812 3180

Fax 8088 6135

No need to make an appointment to book in. Opening hours Monday to Friday from 9.00 am – 5.00 pm

<https://muh.eadmissions.org.au>

East Sydney Private Hospital

75 Crown Street, Woolloomooloo NSW 2011

Ph 9001 2000

Fax 9001 2001

No need to make an appointment to book in. Opening hours: Monday to Friday from 9.00 am – 5.00 pm

<https://www.eastsydneyprivatehospital.com>

Hurstville Private Hospital

37 Gloucester Road, Hurstville NSW 2220

Ph (02) 9579 7777

Fax 95860674

No need to make an appointment to book in. Opening hours: Monday to Friday from 9.00 am – 5.00 pm

[Online Admission Forms](#)

Feedback: How were we? If you have any comments or complaints you can help us out by leaving them [here](#) or by scanning the QR code.

