Reverse Shoulder Replacement

Shoulder arthritis

Shoulder arthritis alone is relatively rare. With an aging population, it is apparent that long standing torn tendons in the shoulder can lead to arthritis. Pain and weakness are the most common reasons for a referral to an orthopaedic surgeon for treatment. The inability to move the arm is called pseudo-paralysis.

Non-operative treatments can include paracetamol, anti-inflammatory medications and activity modification. Modifications include moving objects from overhead cupboards into easily accessible ones, and the use of clothes dryer & clotheshorse.

Before having a shoulder replacement it is important to have a severe enough problem that the surgery is likely to improve the problem, and the benefit exceeds the risk.

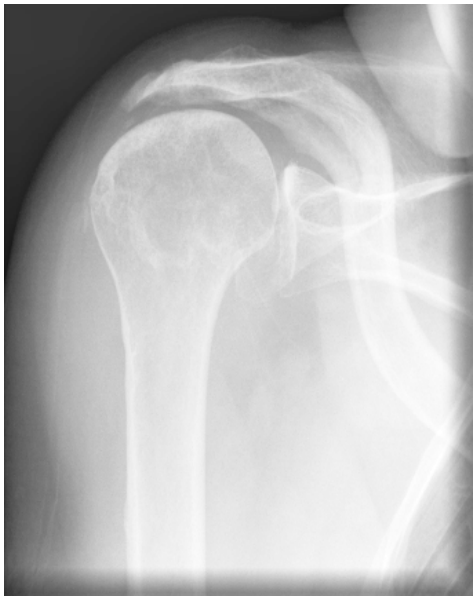

Figure 1. CUFF ARTHROPATHY

Cuff Arthropathy

This x-ray demonstrates the ball part of the joint has migrated upwards. The tendons that usually keep it in place must have torn many years ago. Arthritis develops between the humeral head and the bone directly above it.

Weakness is a common problem because the deltoid muscle doesn't have a well-centred joint (or fulcrum) to work against.

The Delta Reverse Shoulder

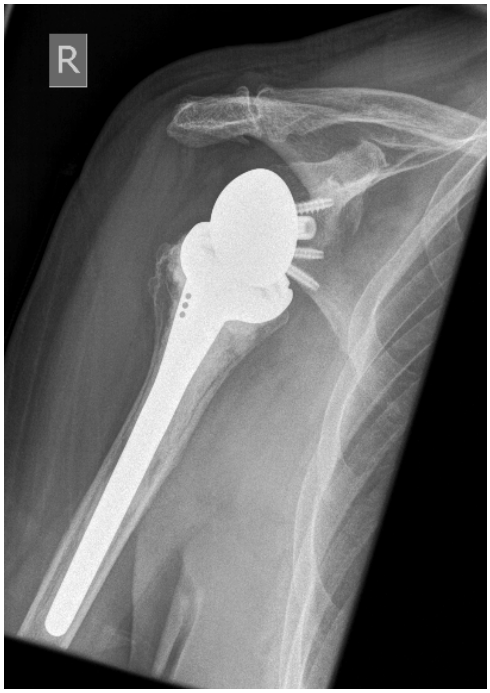

Figure 2. REVERSE REPLACEMENT.
A ball replaces the socket, a socket replaces the ball, and the arm has a fulcrum again.

Traditional shoulder replacements require the tendons that maintain the shoulder joint centred to be normal. In people over 80 years, it is most unlikely the tendons can be repaired. Some people even in their mid 60's might not be suitable for a regular shoulder replacement. The functional improvement can be tremendous. A good proportion of people requiring this operation are unable to even get their arm to move forward enough to turn on or off a tap. After surgery, most people are able to get their hand up enough to brush their hair. Some people can get to overhead cupboards and washing-lines. Delta is a design that has been barely unchanged since 1991 and is doing well in the Australian Joint Replacement Registry. None the less, the

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improvement in shoulder function might only last for 7-10 years

Downsides of surgical treatment

Firstly, it is not as good as a 'normal' shoulder. In particular, the tendons on the front & back of the shoulder that are needed for turning the arm in (eg to reach a hip pocket or to do up a bra) may be completely deficient.

The published complication rate for this surgery is 14%- ie one in seven patients will have something go wrong.

Dislocation of the shoulder joint can occur. Just putting it back in place may not be enough treatment, and further surgery may be required. If the problem can't be rectified, the ball might be removed, and a ball put on top of the humeral head again. The desired functional improvement will not occur.

Infections seem more common after shoulder replacement surgery compared to more traditional joint replacement surgery. Risks of infections are minimised with the use of laminar flow operating suites and space suits for the surgical team. Ideally surgery is performed when the patient is free of pre-existing infection.

The surgery intentionally makes the arm longer. This is required to make the shoulder stable and puts the deltoid muscle under increased stretch, compared with a normal shoulder. It is said after 7 years, the deltoid muscle may fail.

In patients who have no pain prior to the surgery, we take a risk that the improvement in function justifies the pain of surgery.

In patients that use a walking frame or wheeled walker, there is a risk that early return to using this may damage the shoulder replacement. By three months, that risk is gone, but most people needing a mobility aid need it immediately after surgery.

Alternate Treatments

Non-operative treatments

Modifications to your house can assist greatly. These may include streamlining the layout of the kitchen and laundry. Overhead cupboards are generally inaccessible in patients with bad shoulders. Traditional twist taps on the wall might be replaced with modern "mixer" taps. Washing clothes may be easier with front-loading washing machines. Washing lines that are overhead will be inaccessible. Some people are better with a traditional hills-hoist, tumble dryer or clotheshorse.

Repair of rotator cuff

Small tears of the rotator cuff can be repaired. The recovery from a small cuff tear is typically six weeks of not lifting your arm using the muscles of that arm to do so, but it is OK to do things with your arm by its side.

Repair of large cuff tears have around a 20% chance of obvious failure at the time of surgery, and the success of "tight" repairs is doubtful to be 50%. The arm would need to be in a sling for six weeks, and might be 4 months before useful function returns. Typically, surgeons and patients prefer operations with a 90% or higher success rate. Rotator cuff repair in the elderly is nothing like this.

Arthroscopic clean up

Where pain and catching are the main problem, arthroscopy might have some benefit.

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Shoulder replacement & cuff repair

It is rare to have a small tear and arthritis. Most patients either have arthritis or torn tendons. Elderly patients with arthritis because of torn tendons are beyond repairing the tendons.

Extended articulation replacement

We have been disappointed that these don’t improve function enough.

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The Process of having a Shoulder replacement

Other health issues before surgery

Dental infections / planned dental clearance should be addressed well prior to surgery.

Unless you have already seen a physician, we may not have fully been informed of your history of angina, strokes, peptic ulcer symptoms and recent infections. If you are aware of any health issues that may impact on the surgery – let us know!

Physician Assessment

Physicians are doctors specializing in adult internal medicine. Most patients having a shoulder replacement will not need a physician unless they have other serious health issues.

Getting your house ready for going home

Remove tripping hazards - mats & rugs. A handrail in the shower may be beneficial if balance is an issue. Sitting options include using slightly higher chairs to make it easier to get out of. The pre-admission clinic will also go over these requirements.

Pre-admission Clinic

At St John of God Hospital, most patients attend the pre-admission clinic to ensure all the required tests have been done (including a urine test) and that you are familiar with the hospital, and where to go. Sometimes this is arranged by telephone alone.

What to bring to hospital

You will only be staying a few days, so don't bring too much. Wear to hospital the clothes you will wear home. Loose fitting pyjamas allow for ease of dressing, access to the wound & top up of wound catheters with local anaesthetic agents. A second set of night attire allows for any drama like needing to wash the first set. Bring some magazines or book, but don't bother with laptops. There a both negatives & positives to bringing your mobile phone. Aim not to bring any jewellery.

Admission to hospital

Typically patients are admitted on the day of surgery to the hospital through the Surgical Admission Unit. Same day admission has successfully reduced post-operative infections. You will be advised when to "fast" from prior to admission, it is important to have an empty stomach for safe anaesthesia. No solid food is permitted for six hours, clear fluids 2 hours.

Anaesthesia

Most patients have a combination of general and regional anaesthesia to ensure minimal pain after you wake from the general anaesthetic. The anaesthetist will meet you before you go to the operating theatre to discuss any concerns. If you are a 'high risk' patient, it may be appropriate to meet the anaesthetist some weeks prior to surgery.

Recovery room

Typically you will wake up in the recovery room, adjacent to the operating theatre. The nurses there closely monitor you. Ice packs may be applied to the wound. Occasionally a top-up of the local anaesthetic mix is given in recovery.

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Shoulder block
The anaesthetist will probably have used a technique of anaesthetic called a 'shoulder block'. This usually means when you wake up from the anaesthetic, the whole arm is numb, and usually the muscles don't work. It wears off 12-24 hours after surgery. During that time, a sling is useful to give you some control of the arm.

Tubes
We aim to have the minimum number of tubes connected to you. The drip is usually left in until the day after surgery. Oxygen may administered in the first 24 hours, but is not required all of the time. Occasionally a urinary catheter is required if you have trouble voiding.

Orthopaedic Ward
You are moved to the ward on your bed. When you are alert, start getting some Gatorade drink into your stomach. A light diet only for the day after surgery is recommended.

Physiotherapy
Typically our intention is to have you out of bed on the day of surgery to minimize the risk of chest infection and blood clots. 90% of people are independent by 24 hours from surgery. If you usually use walking aids (eg a wheeled frame) it is usually acceptable to use these after surgery. This viewpoint needs to be confirmed at surgery & sometimes an x-ray is required

The physiotherapist will show you exercises to get the arm going. The physiotherapist might not see you until the day after surgery, after the 'shoulder block' has worn off.

Getting on with recovery
Using your hand is acceptable, indeed preferable. It helps reduce the swelling in the arm. Although some tendons may have been stitched back to the bone, it is most unlikely that light activity will disrupt the stitches.

Do I need to go to inpatient rehabilitation?
The majority of people DO NOT need inpatient rehabilitation. We have found that even people over 80 years old are right by 4 days to go directly home – if there will be someone with them. We use a system called RAPT score to check that you'll be OK.

Going to a friend's house is not always ideal, as it may not have a rail in the shower to hang on to. Preferably the shower can be walked directly into, rather than needing to step into a shower/bath.

Going home

Tablets & things to take home
You will take home some tablets – some as background pain killers, and some to top up with if having significant pain. Older patients may need a raised toilet seat, handrail in shower and higher sitting options such as carver chairs.

Living Alone?
Everyone is best to have someone stay with them for the first night. You will need to stock up the freezer before going to hospital, and someone to check on you daily (bring some milk/bread/newspaper etc). Obviously if the corner shop is an easy walk away, you can do this quite soon after the surgery. A Safety Link necklace could theoretically be used for a couple of weeks after the surgery.

Back up plan
A key part to going home is having someone to contact if you have concerns. During Business hours you can call the rooms on **5332 2969.**

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Out of hours you can call the St John's Orthopaedic Ward on 5320 2140, or the Ballarat Base Hospital ward on **5320 4640.**

Most problems only require advice, but perhaps one person per year needs to go to the emergency department.

Bowels

Constipation is a problem best avoided by eating plenty of fruit and walking frequently. Panadeine Forte, and other analgesics, can potentially lead to constipation and are best avoided. Prune or cloudy pear juice is a classic remedy and probably should be taken on day two (Saturday after a Thursday operation). If your bowels haven't worked within three days of surgery please seek advice from your local Pharmacy. If they still haven't worked the next day – contact your surgeon.

The wound dressing

Typically when people go home after shoulder replacement a spare dressing is provided. We recommend doing this in the shower recess on a plastic chair. If the dressing is leaking blood out the edge, remove it, shower, and pat the wound dry. Put the new dressing on. It should not need changing again.

What will the arm be like?

The arm will be swollen and bruised underneath the bandaging. When the bandaging comes off there will be indentations from the bandaging.
The edges of the wound are usually a bit pink for about a centimetre – this is normal healing and not infection. The shoulder will be warm, even hot – as part of the healing reaction. Ice packs (or frozen peas) are very helpful in the first week.

What to do in the first week:

Take the Panadol four times a day, Mobic 7.5mg twice a day. Leave the patch on until the clips are removed. If soreness is worse on the Wednesday after the surgery, phone the surgeon in the morning so an additional patch can be arranged. Most people do not need it though.
You should walk every hour when awake.
It is preferred that you use your arm – not to do heavy things, but light activity.

Second week:

You should walk every hour. You should use your hand. Gripping things (eg a stress ball) helps pump excess fluid back into the circulation & out of your arm. The swelling is usually at its worst about a week after the surgery.

The metal staples holding the skin together are removed at about ten days from the surgery. This is typically at the consulting rooms at 707 Mair Street, but sometimes we arrange a district nurse to visit you, or the rehab department will attend to it.

Third week

Hopefully at this stage you have "cut even". You will still have some pain, but hopefully better function with the shoulder than before surgery.

Resuming Life!

Having a shoulder replacement is to improve your pain and disability. Now you've had it done, you should get on with life. Walking up and down the street should be undertaken as soon as possible, probably the day you go home from hospital. Then you know you can do it, and know that you will be able to do a bit more the next day. Some people feel they should stay inside their house – this makes no sense. We would rather that you walked every hour

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to help minimise complications (clots in legs, chest infections).
Obviously the first time, someone should be with you. A mobile phone if you are going a distance is wise.

In short, it is possible to resume "life" as soon as you go home. If you want to tinker in the shed, fine. If you want to cook, fine. If you want to go and visit a friend, fine. If you need to take a tablet to achieve these things, fine. It is better to be active, even though it will make you tired.

Sleeping

In Bed-a pillow under your elbow takes the stretch off the deltoid muscle and should be done in the first 10-14 days. Usually the Tramal helps get some sleep if pain is the issue.

An occasional patient can't use Tramal. The use of Endone may be an alternative. Sometimes we use Temazepam to help people sleep. About 5% of people have pain or disturbed sleep that warrants the use of Endep 10-20mg at night, or Lyrica 75mg twice a day.

Driving after a Shoulder Replacement

There is a recommendation from the Arthroplasty Society of Australian that patients cannot drive for six weeks after surgery. Discuss return to driving with your surgeon.

When you start driving you should:
• Have mobile phone turned off
• Have radio/music turned off
• Start with short distances
• Avoid peak hour traffic
• Avoid tailgating – your reaction times will be off by 0.8sec & this could translate to 50m more stopping distance.
For a left shoulder, an automatic car is easier.

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By the Sixth week:

It is now the time to start work on strengthening the shoulder. In particular lifting a small weight in front of you, like lifting a 1kg bag of sugar into an overhead cupboard.

Stretching exercises should be increased. Trying to get your hand behind your back, using the opposite hand to help pull it around. Use a broomstick to help rotate the hand away from the body.

By the 3rd month

Strengthening the muscles that get your hand behind your back, and the ones that help you rotate the hand away from the body.

By the 6th Month

Unrestricted activities. The tendons that were expected to heal should have healed by now.

When will my shoulder be normal?

Shoulder replacement is a major operation. It is basically right at SIX MONTHS from surgery. It will continue to improve until 3 years, but even by three months it should be better than pre-operatively.

A small number of people are never satisfied with their shoulder replacement. These fall into the categories of wrongly selected for surgery, wrong expectations of the patient, complications, and a group where no reason is ever found.

What to ring us about…

- Nausea / vomiting
- Constipation not fixed by three days
- Black bowel motions
- Increasing redness or discharge from the shoulder wound

Avoiding Sources of Infection

Dental Procedures

Some dental work is particularly risky for getting infection into a joint replacement. Dental infections can get into a joint. The most common recommendation is to take 2-3g of amoxicillin one hour prior to procedures where there is a risk. (Aust Dent J 2005:50 Suppl 2S45-S53)

Skin wounds

Rose thorns, shin cuts and open foot injuries are all high risk. Gardening is potentially hazardous. The risk never completely goes away. Gardening gloves are essential and long sleeves add safety for pruning. Mowing should be done in trousers and appropriate foot protection.

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Pain Management after Orthopaedic Surgery

Local Infiltration Analgesia

During joint replacement operations, local anaesthetic is infiltrated around the wound by the surgeon. This is mixed with Torodol (a NSAID), dexamethasone and adrenaline. The surgeon leaves a wound catheter buried in the bandaging so that extra drugs can be injected around the joint replacement the following morning. It has a filter on it to avoid any contamination.

Pain Patch

Norspan, a narcotic pain-patch, is applied to the skin after surgery, and gradually releases analgesia. This has allowed us to avoid having a drip – we aim to ensure it is easy to get up and about after surgery. If the patch is too hot, you may become nauseous or drowsy – typically in the shower. Try to keep the patch out of hot water. If your joint is sore you can warm up the patch by giving it a rub, or put on a jumper. The Norspan patch typically stays on until the staples are removed.

Background tablets

Mobic is used twice a day for about three weeks. For those that have a history of stomach ulcer, we ask you take an extra anti-ulcer tablet (eg Nexium) the night before, and morning of surgery.
Panadol is used for the first few weeks. Some patients benefit from Lyrica 75mg twice daily.

Pain score

Nurses in recovery and the ward will ask you whether you have any pain, and to score it out of ten. It is important that you tell them if the pain is somewhere different than where the operation was. Most patients have a score of zero in recovery. Occasionally a top-up of the local anaesthetic mix is given in recovery.

Top up medications

Tramal is our preferred drug to top up. Typically the order is 1-2 tablets 4 hourly as required. Tramal is not perfect, it can cause nausea or hallucinations, and can't be used with many anti-depressants. Usually we have had an opportunity of trying them in hospital before you go home.

Swelling control reduces pain

Everyone who has sporting injuries knows Rest, Ice, Compression, and Elevation.
Rest means not using the arm too much.
I**ce** packs are first applied in recovery, or as soon as possible after the surgery. Be a little careful with areas that have local anaesthetic that you may not be able to feel how cold it is. Do NOT apply ice directly to the skin, and apply it only 20 minutes at a time.
Compression is difficult to apply to the shoulder.
Elevation. The shoulder is higher than the heart, so it tends not to swell. The arm and hand though tend to swell when not being used. Resting it on a pillow helps.

Avoiding nausea and vomiting

Our aim is to have you drinking fluid as soon as possible after the surgery, and start eating food by six hours. We generally try to avoid fruit juices for the first day as these sweet & acidic drinks can make you vomit. Gatorade is a sugar & salt drink – this can be used up to two hours before surgery, and when you are alert after surgery.
If you feel sick, tell the nursing staff. It can usually be fixed with anti-emetic drugs. It is easier to control nausea early rather than to fix it once you have start vomiting.

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Complications following shoulder replacement

A joint replacement is a major surgical procedure. It replaces an arthritic joint with an artificial one. It carries substantial risks. This list cannot be complete, but does deal with more common problems. Accepting and minimizing these risks is a responsibility of both the patient and the surgeon. If the patient doesn't accept that a joint replacement occasionally goes wrong, then they should not submit themselves to surgery.

Scar pain and numbness

Shoulder replacement involves cutting a number of layers to do the surgery. It is common for an area on the outer (lateral) area of the skin scar to be numb. The area may become smaller with time (years) but it is usually permanent.

Scar tenderness

The scar is expected to be tender for three months, a little pink and inflamed initially. The scar takes some months to smooth out. Rubbing cream into the scar and the skin at the front of the shoulder helps.

Stiffness or Weakness

Shoulder replacement does not guarantee a normal range of movement or full strength. This is typically most obvious when trying to hang out clothing. Less than 90 degrees of forward elevation will be very disappointing to both the surgeon and the patient. Getting on with using the hand and arm as soon as possible after the surgery may reduce the risk. Some people have a fracture of the acromion, the tip of the shoulder, either prior to or after the surgery and this contributes to weakness.

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Neurovascular injury

Passing near the shoulder are nerves and arteries. Rarely the artery could block, or a nerve be injured. That injury can result in permanent loss of function or viability of the limb.

Fracture

A fracture of the acromion can occur at the time of surgery, or after an injury. There may not be a treatment for this, and the full function of the shoulder is unlikely to be achieved.

Urinary catheterisation

As a general rule, urinary catheters are not used routinely. Since using local anaesthetic and early mobilization, most patients have been able to use their bladder normally. However, a small number of patients may still require a urinary catheter. It is usually left in overnight.

Thrombosis & pulmonary embolism.

Clots can occur within the veins of the leg and pelvis before, during or after surgery. They are associated with a risk of dislodging and moving up to the lung. It can be fatal. Even if they remain in the leg, a "post phlebetic syndrome" can leave permanent swelling of the leg and can cause ulcers to develop. Our standard approach is to use compression stockings, aspirin, and early mobilization.
If you, or a family member, have had a blood clot before, you MUST tell your surgeon to ensure additional steps are taken if required.

Infection
Infections can occur directly after an operation, or even occur out of the blue many years later. The infection rate seems to be higher in shoulder surgery than hip or knee replacement. Some patients may carry additional risk factors – tell us you have been exposed to MRSA or a bad staph infection. To minimize the risk of infection, we prepare the operation site with antiseptics, use antiseptic impregnated drapes, and use intravenous antibiotics at the time of and after surgery. At St Johns we have laminar flow operating theatres, and we use "space suits" at both hospitals.

In the first two years following surgery you must tell doctors & dentists before any procedure.

Bleeding from the stomach
We have seen this in patients who probably had an undiagnosed stomach ulcer prior to their shoulder surgery. Where a risk is perceived, Losec is given. There is clear evidence than Mobic used in combination with Losec has virtually no risk even with a history of stomach ulceration.

Bowel obstruction
Pain relieving drugs such as morphine can slow the gut action. On occasions the gut gets worse, becomes distended and may require surgical treatment. This is usually a "pseudo-obstruction" and occurs in 0.5% of cases. Since using our local anaesthetic cocktails, we haven't seen this problem.

Complex Regional Pain Syndrome
This rare diagnosis (previously know as Reflex Sympathetic Dystrophy) contributes to poor outcomes with pain and stiffness. If you have ever had this condition diagnosed in you, tell your surgeon so additional steps can be undertaken to minimize the risk. Our techniques of local infiltration analgesia and post-operative pain management minimise the risk of it occurring with this operation.

Dislocation
Shoulder replacements rely on your soft tissues to hold them in place. If it dislocates, you will need to attend hospital urgently. Obviously we have solutions to the problems, but it is unlikely the shoulder will be returned to normal, or as good as it could have been.

Scapular notching
This complication is specific to reverse shoulder replacements and occurs if the socket swings around too far under the shoulder blade. In a recent series, 70% of cases had this. It may not cause a problem, but accelerates wear and might cause fracture.

Loosening
For a variety of reasons, the fixation between the shoulder replacement and the bone may fail. This loosening may cause pain and require re-operation. An average re-operation is unlikely to be as good as an average first time operation.

Wear
The plastic insert between the humerus and shoulder blade can wear. Typically the wear rate is low enough that most people will never have a problem. Rare cases though may wear faster and require further surgery.

Dexamethasone
We administer this to help with pain & nausea after surgery. Uncommon risks include mania and avascular necrosis of their hip.

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Renal failure

To minimise pain after the surgery we use anti-inflammatory medications. Patients that have had renal failure previously are at particular risk. Please inform us if you have previously had dialysis.

Stroke

A stroke occurs in 0.2% of patients having major joint replacements, causing possibly permanent weakness, and one in four die as a result.

Other

It is not possible to provide a full list of complications. Some patients may be unhappy even if nothing can be identified as being wrong with the shoulder replacement. In these circumstances, it may be better for the patient to make the “best of a bad lot” rather than have more surgery.

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