Shoulder Instability

Instability is a condition where, either the ball comes out of socket of the shoulder and, for a period of time, stays out; or where the joint comes partly or totally out of joint and this causes chronic pain. It is a pathological condition, rather than a normal physiologic variant such as loose jointedness. Elite swimmers and pitchers all have lax shoulder joints that allow them to have a large range of motion and, when examined, their shoulders can be shown to be loose. These shoulders however, are not considered unstable. Where the problem is pathologic and symptomatic, the treatment is to tighten the joint, repairing any tears in the capsule, and pleating up the capsule if necessary. Where the socket has been extensively damaged, or where there has been a significant recurrence, a procedure that involves bone grafting of the socket, to restore its integrity, may be required. This latter type of procedure is sometimes also considered first up in contact athletes.

Anterior dislocation

This is the commonest of the shoulder instability problems. It is generally an acute injury in which the shoulder is pushed out of the front of the joint and, frequently, it stays out of joint. It happens when the arm is fully elevated above the head and then pulled back a little further, such as occurs when going for a mark at football and then having an opponent pull the arm back from behind. It can also happen with the arm out to the side, such as in a rugby tackle or in a fall. Again, the arm is pulled backwards as the opponent goes past, and this induces a dislocation.

Normally the shoulder is held in joint by the capsule, which is a thick, bag like structure, surrounding the joint. This contains some thickened areas within it, which are the ligaments of the shoulder. As a normal joint is taken to the end of its range of motion, the capsule (and ligaments within it) become tight, thus stopping the motion from going any further, and thus preventing dislocation. The bigger the capsule the larger the range of motion but, as a consequence, the joint is potentially easier to dislocate. Hence, those with loose ligaments and loose joints are more at risk of this problem.

When a shoulder is forced out of joint, the capsule becomes torn. Usually this tear occurs at the edge of the socket (glenoid rim), the capsule and labrum (the thickened bit of capsule that is around the socket and acts like a bumper to make the joint more stable) literally being pulled away from the bony socket. Occasionally however, the tear is more in the central capsule or even at the humeral (ball) end.

In most athletes in our community, if there is a tear, it is at the socket end. Only in 1%, is the tear at the humeral end, the so called HAGL lesion (humeral avulsion of the gleno-humeral ligaments). In rugby dominated states however, the incidence of HAGL lesions rises to about 6% or more. The reason for this is the nature of the rugby injury where a tackler has his arm brought back at shoulder level, rather than in the overhead position. This is something that is much less common in AFL.
In the elderly the tear is often of the more central type, and this is thought to be one of the reasons why the recurrence rate in this age group is so low.

**The loose joint**

In some people, the shoulder is sufficiently loose that it can come out of joint almost without injury, and with no tear. For this to happen, the capsule must be large and loose, not tightening sufficiently at the end of the range of motion to prevent dislocation. Sometimes this goes hand in hand with a generalised ligamentous laxity where every joint is loose. Usually however, it just relates to the shoulder joint.

More often than not, this is a posterior dislocation rather than anterior, but both are possible: and some can dislocate in both directions. Often, if this is mostly a posterior dislocation, the individual concerned can put the shoulder in and out at will, almost like a party trick. When first this happens, it is usually not symptomatic. With time and multiple recurrences however, this can start to become painful, and hence, may then need surgery to deal with the problem. Similarly, if it gets very loose, the shoulder may start to come out every time that the arm is stretched forwards; such as in reaching out for something, or with every swimming stroke.

Instability due to capsular laxity may first occur in childhood. More usually however, it occurs in teenagers and young adults. The looser the joint however, the earlier the problem commences.

**The pathology of traumatic dislocation**

In the usual scenario, when a shoulder dislocates, the capsule and labrum tear off the socket (see diagrams on next page), creating what is usually known as a Bankart tear. Sometimes however, as the humeral head gets pushed out of the socket, it knocks off the bottom corner of the socket (known as a Bony Bankart). This can be quite a large fragment and, if it represents more than a quarter of the socket width, we know that the recurrence rate is going to be higher. We also know that, just a straight repair of the tear, without restoring the socket to full size, has a higher chance of recurrence.

In addition to the above, when the humeral head comes out of joint, it wedges up against the edge of the socket. The socket can then indent the head at the back, creating a triangular defect called the Hill-Sachs lesion. This defect, if large, can significantly increase recurrence and difficulty of repair because, as the arm rotates out, it can engage the edge of the socket again, hence levering the humeral head out of joint.

A combination of the Hill-Sachs defect and the bony Bankart lesion (loss of some of the socket), will almost certainly ensure recurrence, hence making earlier surgery more necessary.

**Why doesn't the tear heal?**

When the capsule tears off the glenoid (socket), the joint fluid comes to lie in the tear (the gap between the bone and the capsule). This fluid prevents blood clotting, and hence, if there is no clot formed, there can be no scar and, ultimately, no healing. Because of this, the recurrence rate in the under 25 year old group is over 90%, and perhaps even over 95%. Certainly if it recurs once, it will probably continue to happen again and again, given the right circumstances.

Over the age of 26 years the recurrence rate starts to fall, and...
indeed, recurrence is quite uncommon in the elderly. One of the reasons for this, is that the pathology in the elderly is different, with tears occurring in the substance of the capsule itself. This area is more protected from the joint fluid, and the healing rate is therefore higher. In addition, the elderly play less overhead sports and less contact sports, and hence put their shoulders at risk much less often.

The problem in the elderly is usually not the capsule because this is not the weakest area in that age group. What tends to give away in this group is the bone and the tendons. Hence, fractures of the humeral head and neck, and/or, tears of the rotator cuff tendons, are more usually found: and these often need surgical intervention.

**Rotator cuff tendon injury**

Tears of the rotator cuff tendons occasionally occur in the young, but only if the force dislocating the shoulder is high, or the shoulder has been taken a long way out of joint. Getting dumped in the surf, and water skiing injuries, are the commonest cause of this problem. If the tendon tear is bad enough, it may be found that the arm cannot be lifted up under its own power (after the shoulder has been reduced). In this situation, early repair of the rotator cuff tendons is advised, knowing that substantial delay in repair may lead to these tendons becoming unrepairable, leaving a permanently weak shoulder.

Tears of these tendons in the elderly are much more common because the tendon structure is substantially weaker than in the younger patient. Again, if after reduction of the dislocation, the patient cannot raise his or her arm, then this injury should be suspected. Investigation, possibly including MRI scanning, should then be carried out. Even though a recurrence of the dislocation may not happen in this age group, all tendons should be repaired if torn. This will restore power and active motion to the shoulder.

**Axillary and other nerve injuries**

Dead arm syndrome is a condition whereby, after dislocation, the arm feels transiently dead or flail. The arm may immediately go back into joint but, the nerves to the arm have had an acute stretching injury. This stretch causes a temporary numbness and paralysis of the arm, which fortunately passes quickly. With increasing numbers of dislocations however, this problem may worsen, and recovery time may increase.

Injury to the axillary nerve occurs when the shoulder comes out of joint. It is a stretching injury and, fortunately, generally recovers completely. When examined closely with electrical tests of nerve function, some series show that up to 30% - 40% of patients have some initial deficit. Complete axillary nerve palsy is much less common but, nevertheless, does occur. The injury causes a small area of numbness on the side of the arm, over the deltoid, and weakness of the deltoid itself (the muscle covering the point of the shoulder). Rarely is the nerve damaged to the degree where it doesn’t recover, albeit that recovery may take 3 months or more. If it hasn’t recovered by 3 months however, then formal electrical studies of nerve function need to be undertaken. If there is no sign of recovery by then, or over the following 3 months, investigation looking towards exploration and repair of the nerve may be undertaken.

Other individual nerve injuries are much less common without very severe or open dislocations. Any injury to the nerves however, is of concern, and any of the above
problems would lead one to consider surgery to prevent dislocation from recurring, thus protecting the nerves from permanent injury.

**Treatment for the first time dislocation**

**Enlocation.** Clearly, the primary objective at the time of dislocation is to put the shoulder back into joint. There are lots of different ways of doing this, of which, one of the best ways, is by injecting a volume of local anaesthetic into the joint. This not only numbs the joint up, but the volume of fluid swells the joint, and often the shoulder will just fall back into place. Obviously other anaesthetic techniques will also work, but this one is safe and reliable.

If no one else is around, the shoulder can often be enlocated by lying face down near the edge of a table, and letting the arm hang down vertically towards the ground. If the muscles are relaxed for a second or so, whilst the arm is in this position, the shoulder will often pop back in.

**Conservative care.** As stated above, the capsule and labrum do not heal back to the bone, at least not in their normal position. Hence, once the shoulder is back in place, it is irrelevant whether or not a sling is used. When the arm is in a sling, resting by the side, the anterior capsule is loose. All the internal bleeding will then distend it, and it will be pushed away from the bone (see middle diagram opposite). Even if it had the capacity to heal within the joint therefore, it would heal in an abnormal position, and would not be tight enough to prevent further episodes of instability. Therefore, the use of an ordinary sling is for comfort only, and there is no point in staying in it for any length of time.

On the other hand, because the arm is most at risk in the overhead position, it is generally recommended that this position be avoided for 6 - 8 weeks. Again, this is a reasonable precaution, but it has not been shown to affect the recurrence rate. Essentially, if the tear does not heal, and it is big enough, re-dislocation will recur.

**External rotation bracing** was devised by Itoi, and it makes a lot of sense from an anatomic stand point. In essence, this Japanese Orthopaedic Surgeon looked at the role of bracing the arm in full external rotation (turned right out), for a period of time, to try and get the capsule healed again. What this does is to tighten the anterior structures (capsule and labrum) and to then pull them tight across the front of the glenoid (socket). If tight enough, the capsule is then pressed onto the bone, thereby, not only keeping it where it should be, but also keeping the joint fluid out of the gap between them, allowing direct healing (see lower diagram opposite).

The Itoi protocol requires the shoulder to be braced, in full external rotation, within the first 48 hours and then held there full time for 4 weeks. It has to be done at the outset in order to squeeze the blood out from between the capsule and the glenoid, and hence to get the best coaptation of the soft tissues to the bone. These tissues then need to be held in that position until healing commences, which is about 2 weeks. A further 1 - 2 weeks is then required to get some strength in the repair. Sport is avoided for 3 months, but strengthening can begin at the 4 week mark, under supervision.

Unfortunately, external rotation is an awkward position to be held in. The arm sticks out, it gets caught on doors as you walk through them, and it makes sleeping difficult. Because of this, compliance is not all that good. When it is carried out to the letter however, the recurrence rate falls from around 85%
percent (in the under 25’s), to 10% or so (results depending on the study reviewed and the nature of the splint). Clearly therefore, if surgery is not mandated by the pathology, this is worth serious consideration.

**Surgery.** In the last 20 years, techniques for repair of dislocating shoulders have improved considerably. For most problems, we can deal with the problem arthroscopically, and we know that the best results seem to be when this is done earlier rather than later. On the other hand, recurrent dislocation does not usually cause much more damage to the shoulder joint itself and, it is by no means certain that surgery will be necessary in an individual case. Where the damage is not too extensive therefore, a conservative program should be tried first.

**Those who benefit from, and should be offered surgery, are:**

1) those with a significant sized fracture of the glenoid which can be internally fixed (screwed back on)

2) those who have a very high likelihood of recurrence (the young patient with a very large Hill-Sachs defect, or a combined glenoid rim fracture and significant Hill-Sachs defect)

3) those with tears of the rotator cuff tendons (usually the elderly)

4) some of those with complex fracture dislocations (usually the elderly)

5) recurrent dislocators

**Surgery for dislocation**

Over the years, many operations have been described. Most of the older procedures involved tightening of the joint capsule and/or tightening of the muscles across the front of the joint. Whilst the success rate of these procedures was high from a recurrence point of view, these procedures had associated problems, the most notable of which was to make the shoulder too tight. This tightness restricted motion and, in some cases, led to early arthritis of the joint.

**Anatomic repair.** This is where an attempt is made to restore the shoulder back to normal. That is: if there is a tear, it is repaired; if there is no tear but the capsule is too loose to be competent, it is tightened. These two procedures are known respectively as a Bankart repair (after the man who initially described the tear seen in dislocations) and a capsular shift (or more usually nowadays, a capsular plication, where the capsule is pleated up to make it tighter). In most shoulders, a combination of the above is required to both repair a tear, and to deal with any stretch up (or previous laxity) in the remaining capsule.

Repairing a Bankart tear requires the capsule to be re-attached to the glenoid (socket). This is done by placing anchors into the edge of the glenoid (socket) and then suturing the capsule and labrum back to it (see diagram opposite). It is an endoscopic technique, which means that the shoulder does not need to be opened at all. Despite this however, the stitches that are put in are tight, and often quite sore, for a few days. Hence, it is usual to spend one night in hospital before going home.

This sort of repair needs a lot of care in the post operative period. It needs 4 weeks in a sling, keeping the arm very still, particularly in the first 2 weeks. If the shoulder is moved too much, too early, then joint fluid will be pumped into the repair site, and this will stop it healing. The stitches will then fail, and re-dislocation will occur.

The sling is usually removed at 4 weeks, but the arm still has to be protected. At 6 weeks, therapy to begin strengthening is begun. It is important however, that the strengthening is done within the available range of motion, and that the shoulder is not stretched to get motion back sooner. It takes about 3 months to get 90% of range back and, if anything, the longer it takes the better.

At 3 months, non-contact sport can be commenced. Contact sport is then possible at 5 - 6 months.

**Bone block and Laterjet procedures.** Having done anatomic repairs for 20 or so years, we now have some idea of who best benefits from this sort of technique. In essence, those who have good bone stock, including a fairly normal glenoid without major fracture, and only a small Hill-Sachs defect, should consider this option first. It has a very good chance of restoring stability, and should provide a near normal range of motion when fully healed. Also, it burns no bridges.

If the glenoid is deficient, having lost 25% or more of its...
width because of fracture (see the 3D CT picture at the bottom of the previous page), then, whilst an anatomic repair may work, the chances are reduced. We now know that, in this situation, some sort of bony restoration to the glenoid is more likely to prevent recurrence. This can either just be a simple bone graft, screwed onto the front of the glenoid, restoring it to full size (or larger) or, as has been popularised by the French, a Laterjet procedure. In this, a piece of the coracoid process (of the scapula) is taken off, with tendons still attached, passed through a split in the middle of the sub-scapularis muscle, and fixed onto the glenoid at the site of the defect (see diagrams opposite).

The advantage of the Laterjet procedure is that the recurrence rate is very low. It actually makes the glenoid larger than the original, so the humeral head is harder to push out over the front. It also pins the lower half of subscapularis down, over the bottom of the joint, so that this muscle acts like a sling to reinforce the capsule in that area. The downside of this procedure is that it makes the shoulder anatomy somewhat different to normal, it frequently reduces motion a bit, and it can make any further open surgery difficult and dangerous, because of the way it moves the nerves around at the front of the shoulder. For those with significant glenoid bone loss and/or a large Hill-Sachs defect however, this is the procedure of choice. It is also quite a good choice for revision surgery, and for those involved in contact type sports such as Rugby, where the nature of the sport requires more than an anatomic repair. On the other hand, it is not a great choice for those athletes requiring a large range of motion (tennis players, gymnasts, and some AFL players, who need to reach high up).

This procedure requires the bone block to unite on the front of the glenoid. This probably takes about 2 months, but full healing may take longer. Nevertheless, if it does heal, then sometimes return to full sport can be as short as 3 months. Even when it doesn’t fully heal however, or when the whole bone block resorbs and disappears, it still seems to function well, perhaps because of the conversion of the lower subscapularis muscle into a static sling.

**Post surgery**

Most patients can leave the hospital within 24 hours of surgery, whichever sort of surgery is undertaken. A modified sling is provided to help protect the arm. This is left on for 4 weeks but, even early on, the arm can be taken out of the splint to eat or shower, provided that the elbow is left at the side, and the arm not turned out too far. The less it is out in the first 2 - 3 weeks however, the better. Too much movement early on, will lead to failure.

At 4 weeks following surgery, the sling can be permanently removed, and motion below the shoulder can be started. At 6 weeks, if everything looks good when reviewed, a physiotherapy and strengthening program can be introduced. The aim of this is not to regain motion too quickly, but rather to introduce strengthening within the range available, allowing the movement to gradually return at its own pace. Again, the weakest part of the shoulder is the repair, so trying to stretch to early, can pull the repair apart.

**Range of motion**

Initially the range of motion is restricted. Mostly, this range will return with time but, sometimes, for certain pathologies, a deliberate restriction of range is necessary. Even with this however, most people eventually get a near full range of motion and can play normal sport.
For those whose sports require an abnormally large range of motion, such as swimming or pitching, the situation is more complicated. It does take longer to get that much range and, if the shoulder does stretch up to allow that range, then there is a risk of re-dislocation. For this reason therefore, people who play these sports at the elite level, need to understand that, the price of stability may be a restriction of motion to a more normal level. If this occurs, then of course there is a percentage chance that they will never be able to return to their sport at the same level. On the other hand, with a dislocating shoulder, they may not be able to play their sport in any case. Hence, a choice may not really exist.

**Traumatic posterior dislocation & subluxation**

**Traumatic posterior dislocation** (coming out of the back of the shoulder) is much less common than anterior (coming out the front). It usually involves a significant injury, generally with the shoulder being hit from the front. In addition, unlike anterior dislocation, the shoulder may stay out of joint and yet remain undiagnosed. It is frequently missed, even on X-ray, and generally requires urgent surgery to get the shoulder back into joint. Once reduced, recurrence, fortunately, is not common.

**Posterior subluxation** from a direct blow on the shoulder, causing a posterior Bankart tear, occurs but is uncommon. It generally comes from body contact in one of the football codes, and usually goes on to give symptoms. Generally the symptoms are of posterior pain rather than recurrent instability, but both can be seen. Treatment is by repair of the tear and, often, by a slight tightening of the posterior capsule.

**Posterior subluxation and MDI (the loose joint)**

**Posterior subluxation**, where the shoulder comes partly out of joint, particularly when elevating the arm towards the front, is not uncommon. It is due to a large capsule at the back of the joint and, generally, is not caused by an injury. Mostly, it does not cause trouble and, although aware of it, most patients do not experience pain or restriction in sporting activity. It is most common in teenage girls, but can be seen in males as well.

Sometimes an injury, or repetitive episodes of instability, makes posterior subluxation symptomatic (painful), whereas before the injury it was not. In this situation, the other shoulder may be shown to be just as loose, but not symptomatic. The reason why some of these become symptomatic and do not settle down is not clear, but when this happens, surgery may be required.

**MDI - (multi-directional instability)** is uncommon. Whilst a number of people are loose in many directions (laxity as against instability), there is usually only one direction that causes problems. For this reason, the shoulder can often be dealt with by plicating (pleating) the capsule on the side of the greatest problem (front or back). When there is a truly multi-directional problem however, surgery to both sides of the shoulder may be necessary. This can be done at the same procedure but, a successful recovery requires one to be very careful with the arm to protect both repairs. Also, recovery may be slow because the joint often starts out fairly tight, and then has to slowly stretch up over the months.

Surgery for this condition is generally successful, though clearly, the results of repair are not as reliably good as for a repair of a traumatic tear of the anterior capsule. Also, a lot of those who have this condition, have loose joints and
ligaments: and hence, they may ultimately stretch up the capsule again, leading to recurrent instability.

**Inferior instability** (downward dislocation into the arm pit) is rare in isolation. Generally it is seen with multi-directional problems and, in those instances, a capsular tightening procedure, where both the anterior and the posterior capsule is pulled upwards to remove the pouch at the bottom of the shoulder, will generally correct the problem.

**Complications of surgery**

Fortunately, complications with this type of surgery are uncommon. As with all surgery however, there are still some risks.

**Bleeding and bruising** is fairly frequent with this surgery, notably when open procedures such as the Laterjet are performed. The shoulder is very vascular and does bleed easily. Mostly however, the problem is minor and self limiting but, very occasionally, a bruise develops which is large enough to require exploration and drainage.

**DVT’s** (deep vein thromboses) are very uncommon in all upper limb surgery, even when these have occurred with other previous surgery. Accordingly, unless there are known predisposing risk factors for this problem, routine, prophylactic anti-coagulation is not performed.

**P.E.** (pulmonary embolism) is where the clots occur in the lungs, or spread to the lungs from a DVT. This is extremely uncommon in upper limb surgery but can occur. Whilst this is perhaps the most serious complication of all surgery, it is known that routine prophylaxis for DVT’s does not reduce the risk for, or incidence of, P.E. Hence, the risk of increased bleeding, associated with anti-coagulation, is generally regarded as outweighing the benefits. Again therefore, prophylaxis is only given to at risk individuals.

**Infection** is very uncommon, with only a small percentage of people even developing a minor superficial wound infection. This rarely requires anything more than a few days of antibiotics to settle, and it does not interfere with the repair. Deep infection occurs in well less than 1% of cases, and this is mostly because all patients undergoing this procedure have prophylactic antibiotics given to them before the commencement of their surgery. If deep infection does occur however, it may require removal of the bone anchors and other hardware. Despite this, the repair may still succeed.

**Injuries to nerves** are the most worrisome of all the complications. Whilst these are rare with arthroscopic surgery, these are more common with open surgery such as the Laterjet procedure. The nerves are in close proximity to the area of surgery and, whilst they are not usually seen, they are frequently retracted with other tissues to provide adequate exposure for surgery.

The most common injury is a minor nerve stretch that leads to temporary numbness and/or weakness in the distribution of the nerve (like having anaesthetic at the dentist). Because the nerve is stretched, recovery can be expected, usually over a few hours to days. Longer recovery times may be seen if the procedure has been very difficult, and if the nerve has been stretched over a longer period of time. One could therefore expect this to be more common with a difficult open revision procedure than with a primary procedure.

The vast majority of nerve injuries are temporary, with recovery ensuing over days to weeks. Permanent injury is rare.

**Failure of the procedure** is the commonest long term problem, occurring in 5% - 15% of all anterior instability surgery. It is highest in sports such as Rugby League and similar contact sports, and no surgery can totally prevent re-dislocation if the injury is big enough.

It turns out that, if one shoulder has dislocated, the other has a 12% chance of also dislocating at some stage. This is because of a predisposition that some individuals have for this problem, be that due to having a large loose capsule, generalised ligamentous laxity, a small socket or whatever. As such therefore, an anatomic repair to make the injured shoulder the same as the uninjured shoulder, will have a 12% recurrence rate (or thereabouts). To improve on this, where the capsule is loose, it can be tightened at the same time as the repair; but, if there is a generalised ligamentous laxity, stretch up may subsequently occur, leading to recurrence. For this reason, in this situation, procedures like the Laterjet may have a role as a primary repair because it changes the anatomy to make it different from the other side.

Recurrence is most common 4 - 9 months following surgery but may occur later. This is firstly, because the shoulder is starting to loosen up and regain range, and secondly, because the level of activity is being increased. By 1 year the chances of redislocation are less, and by 2 years the chance is probably less than 5%, but it is sport and activity dependent. No matter how far down the line from surgery you are however, the redislocation rate is not zero. Given the right circumstances, and enough force, it can always happen.

Causes of failure include, failure to look after the arm in the first few weeks after surgery, failure to deal with multi-directional problems, poor quality or damaged tissue which is hard to work with, failure to make the shoulder tight enough, and substantial re-injury. As stated above, the presence of a large Hill-Sachs defect or a small damaged glenoid, will increase the risk of failure, particularly with an anatomic repair.

In general, most of these shoulders are amenable to further surgery, with a reasonable expectation of success.

**Undue tightness and loss of motion** after anatomic repair is uncommon. Some slight loss may be expected as this is, to some extent, the role of the procedure. Marked loss which does not recover with time however, is uncommon. Therefore, even if the shoulder is tight for a while, one can expect good motion to have returned by the 9 - 12 month mark. If this does not occur, then there are options to regain this. Only where there is already osteo-arthritis, is significant recovery of motion at risk.

**Capsulitis or Frozen Shoulder** is perhaps the most common complication of all shoulder surgery, probably occurring to some degree in about 10% of cases. It is an inflammatory condition that occurs some 5 - 6 weeks after surgery, and not initially. No one really understands how or why this develops, but it causes an increase in pain (particularly night pain) and a concomitant decrease in motion. The treatment of this condition is to deal with the inflammation, which means resting the shoulder and, almost always, using some cortisone (a very strong anti-inflammatory agent). This generally leads to a quite dramatic resolution of the pain and gets the shoulder motion back on track.
A problem after a stabilisation procedure however, is that the joint cannot be injected until the capsule is fairly well healed. This is because cortisone can interfere with the healing process. Generally therefore, it is about 3 - 4 months from the time of surgery before an injection can be undertaken safely. If cortisone is needed before this time, then it can be given orally for short periods of time, and this is often very effective.

We know that a lot of these shoulders will start to free up and come good at the 4 - 5 month mark, even without treatment. Some however, are more resistant, and may require more prolonged medical treatment. The best drug for this seems to be methotrexate, a powerful anti-inflammatory agent, and the mainstay of treatment for rheumatoid arthritis worldwide. Although there can be significant side effects with this, they are uncommon and, unlike cortisone, it is safe to use this drug on a long term basis.

Ultimately, frozen shoulder tends to run its course and resolve. This can take over a year to happen but, unless you are an insulin dependent diabetic, full recovery is the norm.

**Protracted pain** after surgery is uncommon and this generally represents a continuation of pre-operative problems. Most of these represent rotator cuff tendon problems (impingement etc.) and most are treatable. When the shoulder has been stabilised for pain rather than instability however, it may be just a matter of sitting this out until it improves, and this can take some months.

**Osteo-arthritis** of the shoulder can occur from the injury itself, if it is big enough, or if multiple recurrences occur. Fortunately however, this is uncommon. More often, it is seen after the older style of repairs, where the joint is deliberately made tight and motion is restricted. Consequently, with the more modern procedures, where the joint is not deliberately overtightened, it is uncommon. Mention however, should be made in regard to the Laterjet procedure whereby, if the bone block is not perfectly situated on the glenoid, and if it protrudes out above the glenoid, then the humeral head will rub excessively on it. This has been shown to cause wear of the humeral head articular surface in several studies. This wear, in essence, is osteo-arthritis.

**Precautions**

If your shoulder is liable to dislocate, the most dangerous thing that you can do is swim in the ocean. If your shoulder comes out whilst away from shore and you cannot get it in again, it is hard to both swim and wave for help. There is therefore, a serious risk of drowning.

**Questions and Concerns**

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**Further information** can also be obtained, on this and other related topics such as:
Impingement and rotator cuff disorders
Frozen shoulder
Shoulder replacement