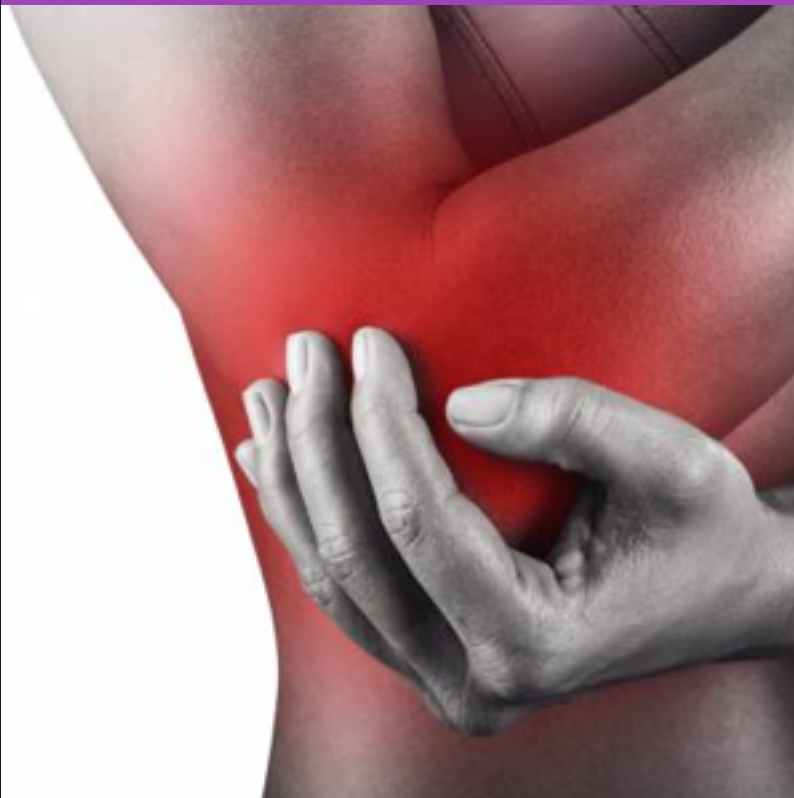


# Elbow Surgery Handbook



This hand book has been developed by Orthopaedic Physiotherapists, experi-



**9815 2555**

*[glenferriessc@me.com](mailto:glenferriessc@me.com)*



# Section 1:

## Pre-Operative Information

### **Are you fit for your operation?**

You can do a few things before and after your operation that can assist with your recovery.

### **Exercise**

Speak to your Physiotherapist about suitable exercises to perform before your surgery. In some cases, exercises will be encouraged. In other circumstances, you may be advised to rest in the lead up to your surgery.

Practice transferring out of bed without the use of your involved arm. This will help you to become familiar with how to transfer following your surgery when you will likely be wearing a sling and unable to use your arm.

### **Alcohol**

Decrease alcohol intake as it can affect medications you will be taking.

### **Smoking**

Cease smoking; it increases the risks for anaesthetics and impairs healing of your elbow. There are numerous products that can help you do this.

### **Watch your weight**

Reducing your weight and healthy eating will assist in the recovery process. A dietician can assist you

to commence a weight control program pre-operatively.

### **Medications**



If you are on any medications, this will need to be discussed beforehand with your doctor and staff in the pre-admission clinic. Some medications will need to be ceased before your operation.

### **Pathology**

There may be some tests organised for you in the weeks prior to your procedure. These will include an ECG, a blood test and perhaps a urine test. This is to ensure you are well prior to your surgery.

### **Physician**

Your surgeon may wish for you to see a Physician before and during your admission. If you see one of the hospital Physicians, they will follow you through your admission. The Physician is a general medicine specialist who will assist in treating and monitoring complex conditions.

## **Essentials to Bring into Hospital**

# Admission Information



You should remember to bring into hospital with you the following items. Any **x-rays** that may be pertinent to your admission, all the medications that you are required to take regularly. These should be in their original packaging to avoid confusion.

You should also bring in a **small toiletry bag** including items you would routinely use.

You only need to bring in a **small amount of change** for newspapers etc. Keep **reading material** light as it can be difficult to concentrate for long periods following your operation. Please do not bring your valuables into the hospital, or ask staff to lock them away for safe keeping. A button up shirt or zip up sweater is handy to wear initially as it may be difficult at first to get a t-shirt on and off comfortably.

## Section 2: Basic Elbow Anatomy:

### Which tissues may be involved?

#### Coming to Hospital

It is usual to be admitted to the hospital on the day of surgery or occasionally the day prior. Your Surgeon will have provided you with details about when to present to hospital.

*If hair removal is necessary, it will be attended to before your surgery.*

*Please do not shave the operation site yourself as this can in-*

#### *crease the risk of infection.*

If you have requested a single room, every effort will usually be made to accommodate you. However due to clinical demand and need, these rooms may not always be available and you may be asked to share a room until one becomes free.

#### **The Anaesthetic Review**

You will usually be required to fast for 6-8 hours prior to

#### **BACKGROUND:**

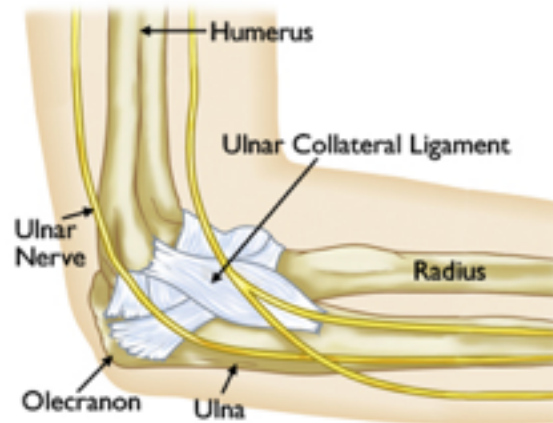
Elbow surgery is performed for a number of clinical conditions. When considering having elbow surgery, it is important to have a basic understanding of the elbow, the operation, and what to expect during recovery.

The elbow is one of the most complex joints in the human body. For this reason, it is one of the more difficult joints to rehabilitate, and often there are pre existing range of motion issues.

The elbow is actually composed of more than a single joint. It is better understood as a 'complex', composed of a number of differ-

ent structures.

1. The humerus (upper arm bone)
2. The ulna (forearm bone)
3. The radius (forearm bone)
4. The joints that link each of these structures together



The joint is essentially designed to serve the hand, to enable us to place our hand where we need to in order to perform daily tasks (e.g. eating, dressing, lifting, playing sports).

Bending (flexion) and straightening (extension) the elbow joint allows us to position our hand, bringing our hand closer to our body, or further away. Rotation (supination and pronation) at the elbow also provides further movement, allowing the hand to perform a wider range of tasks.

Soft tissues (muscles, tendons, ligaments) have a large role to play in facilitating this 'teamwork'. Where there is a deficit in any of these tissues, pain and movement limitation can result.

## **Types of Injuries/conditions:**

### **Elbow Arthritis**

Elbow arthritis is a condition that degrades the cartilage lining of the joint, causing damage that is painful and debilitating. There are three common types of arthritis that affect the elbow: osteoarthritis, rheumatoid arthritis, and post-traumatic arthritis.

### **Osteochondritis Dissecans**

Osteochondritis dissecans involves a loss of blood supply (or death) to part of the cartilage within the elbow joint. Osteochondritis is most often found in adolescents ages 10-18 and is commonly associated with certain sports.

## Olecranon Bursitis

Olecranon bursitis is a condition in which swelling and inflammation occur in a small fluid-filled sac (the bursa) at the tip of the elbow. Olecranon bursitis is also known as "student elbow" and "baker's elbow."

## Contracture

A contracture is said to occur when normally elastic/stretchy soft tissues become non-elastic/stiff, limiting normal movement. Contracture can develop naturally in some people, alternatively following traumatic injury or in some cases following surgery.

## Tennis Elbow and Golfer's Elbow (Epicondylitis)

Tennis elbow (also called lateral epicondylitis) and golfer's elbow (also called medial epicondylitis) are both painful conditions that most commonly result from overuse or repetitive stress to the tendons of the elbow.

## Elbow Dislocation

Elbow dislocation occurs when the elbow experiences a large trauma, such as in a fall or motor vehicle accident, which dislodges the bones from their normal position.

## Ulnar Collateral Ligament (UCL) Injury

The UCL is located on the inside of the elbow and connects the bone of the upper arm (humerus) to a bone in the forearm (ulna). With repetitive throwing motion and overuse, the ligament stretches to the point where it tears and can no longer hold the bones tightly together.

## Cubital Tunnel Syndrome

Cubital tunnel syndrome is compression or pinching of the ulnar nerve on the medial (inner side) of the elbow. Compression of the ulnar nerve usually results in tingling and numbness running down the forearm into the ring and small fingers.

## Distal Biceps Tendon Rupture

A distal biceps tendon rupture is a tear of the tendon from the forearm bone (radius). Ruptures of the distal biceps tendon are almost always caused by a sudden injury to the elbow. A ‘pop’ is often felt. A bulge can develop in the upper arm as the muscle recoils.

## Elbow Fracture

An elbow fracture is a break in one of the three bones in the elbow — the upper arm bone (humerus) or one of the two forearm bones (radius and ulna).

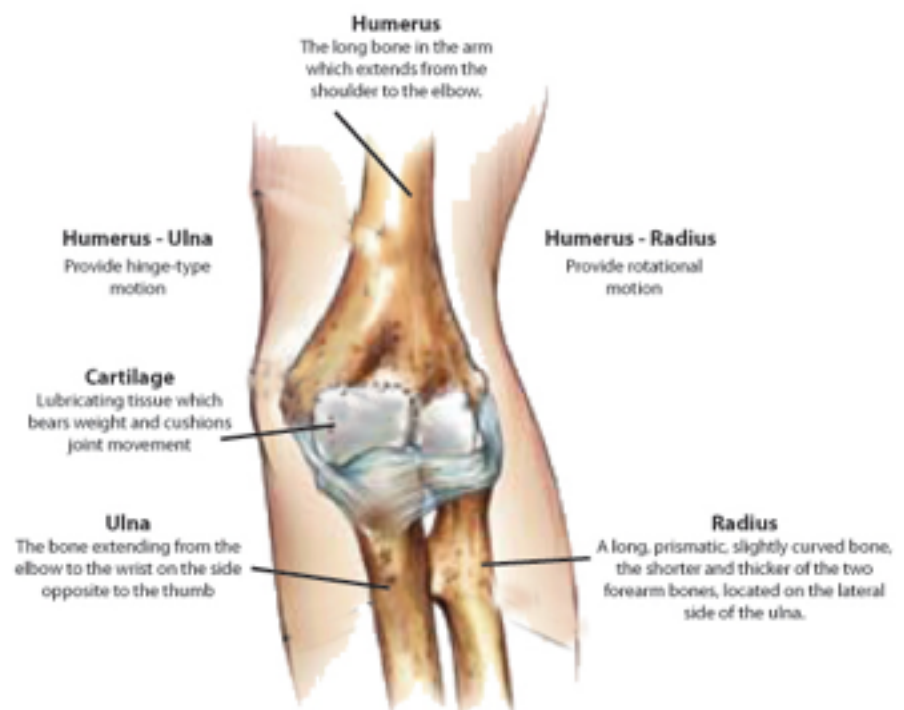
## Section 3: Indications for elbow surgery:

### Why operate?

When tissues are damaged through injury or natural age-related ‘wear and tear’, some have a natural ability to heal. Other tissues, however, have a poor healing capacity, and surgery may be required to reduce pain, restore movement and enable a return to home, work and leisure activities.

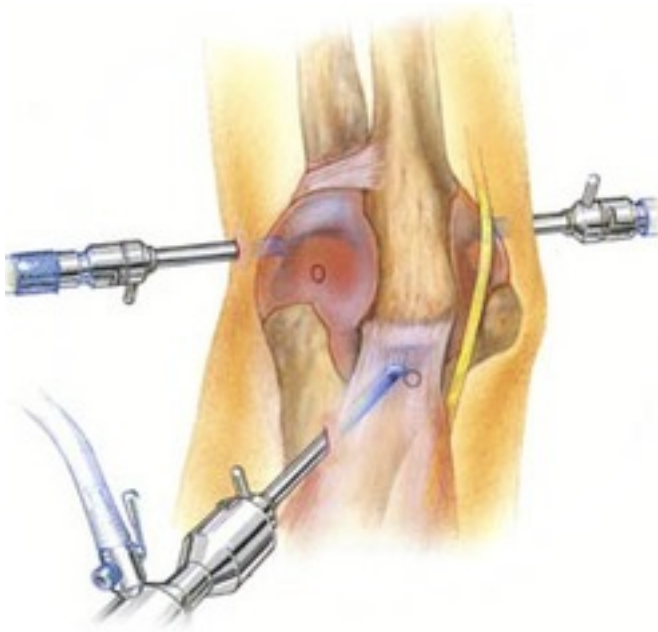
In some circumstances, tissues simply need to be trimmed or ‘tidied up’, to reduce irritation and improve comfort. In other circumstances, tissues need to be repaired.

NB: In a later section of this handbook, recovery timeframes will be discussed. For the purpose of understanding the different types of operations, operations will be classified as either (i) ‘tidy up’, (ii) ‘tissue repair’ or (iii) ‘other’.



## Section 4: Elbow Surgery: What does it involve?

This section of the handbook considers several examples of the types of surgery which can be performed to address the injuries/conditions previously discussed.



Elbow surgery can be performed either arthroscopically or via an open procedure.

Arthroscopic elbow surgery is a form of keyhole surgery in which a small telescope attached to a video camera is used. An open procedure involves a larger incision in the skin, to gain access to the tissues which require repair.

In the majority of cases, an arthroscopic surgical technique can be used. In some instances however, your surgeon may need to utilise an 'open procedure'. Your surgeon will advise you as to which approach is required given your unique cir-

cumstances, in order to achieve the best possible outcome.

## TYPES OF ELBOW OPERATION:

1. Removal Of Loose Bodies
2. Osteochondritis Dissecans (OCD)
3. Joint Debridement
4. Elbow Replacement
5. Synovectomy
6. Manipulation/ Release
7. Tendon Release (e.g. for Tennis Elbow)
8. Tendon Repair (e.g. for distal bicep rupture)
9. Ligament Reconstruction
10. Nerve Transposition
11. Open Reduction Internal Fixation (ORIF)

### Removal of Loose Bodies

Sometimes, small pieces of cartilage and / or bone can break off and float free in the elbow joint. These are known as "loose bodies". These pieces of





bone and cartilage can cause the following problems:

- Elbow pain
- Locking of the elbow
- Stiffness of the elbow

When loose bodies have formed in an elbow joint, they have usually formed because of some other problem in the elbow joint, with osteoarthritis being the most common cause.

People can often live with loose bodies in their elbow and not have any problems. When they do start to cause the problems listed above, the

problem can be solved by removing the loose bodies from the elbow joint. This can be done via minimally invasive techniques, using elbow arthroscopy. Using these techniques causes less surgical trauma to the muscles and allows an earlier rehabilitation and recovery.

## Osteochondritis Dessi-



## cans (OCD)

Osteochondritis dissecans (OCD) is a fragmentation and possible separation of a portion of the cartilage of the joint.

This usually presents during adolescence.

Symptoms are pain aggravated by motion, limited motion, clicking,

and swelling.

It may be caused by injury, but not always. A history of significant trauma can be elicited in approximately 50% of patients. Males are more commonly affected with a ratio of 3:1.

The osteochondral fragment may 1) remain in situ, 2) be slightly displaced or 3) be loose within the

joint cavity. If the fragment remains attached to the underlying bone, healing can occur. If completely detached, complete healing does not occur. The loose cartilage body may increase in size and cause locking and clicking of the joint. In some cases, the fragment may become absorbed. Treatment of this lesion depends on the status of the fragment.

## Joint Debridement / Removal of Spurs

Arthroscopic debridement of the elbow is a procedure used to clear damaged tissue or spurs from the elbow joint. Spurs are small bony growths that can form on the margins of the joint. A small camera called an arthroscope is used during this procedure to let the surgeon view the inside of the elbow.

If conservative treatments do not help, conditions such as tennis elbow, cartilage or bone damage, or arthritis may benefit from arthroscopic debridement of the elbow. This procedure may also be used for diagnostic purposes as well, as the use of the arthroscope lets the surgeon see the inside of the elbow joint. This makes it easier to assess damage and the correct course of treatment.

For further information on elbow arthroscopy see Section 5.

## Elbow Replacement

In patients with significant damage to the elbow, total elbow arthroplasty (joint replacement) may be performed. In many patients, this procedure provides pain relief and restoration of some joint function. However, it should be reserved as a last treatment option.

Options differ in the degree of movement they provide and other design features, including whether they are cemented in place. Most commonly used is the radial head arthroplasty,



used when the radial head is irreparably damaged in a fracture. Your surgeon will discuss with you the various options available.

Arthroplasty for the elbow can provide relief of pain, correction of deformity, and increased joint stability. However, it is less reliable than hip or knee arthroplasty. The main reason for this is that the bones of the arm are much smaller than those of the leg and hip and, as a result, it is more difficult to achieve a durable and secure anchoring of the prosthesis to these bones.

## Elbow Synovectomy

A Synovectomy is where the joint lining is debrided. It may be used to remove inflamed synovial tissue in the elbow. This procedure may be performed by open incision or arthroscopically in patients with early disease or less severe joint damage. If there is significant damage to the radial head, radial head excision (cutting away and reshaping the head of the radius) may be performed at the same time as the synovectomy.

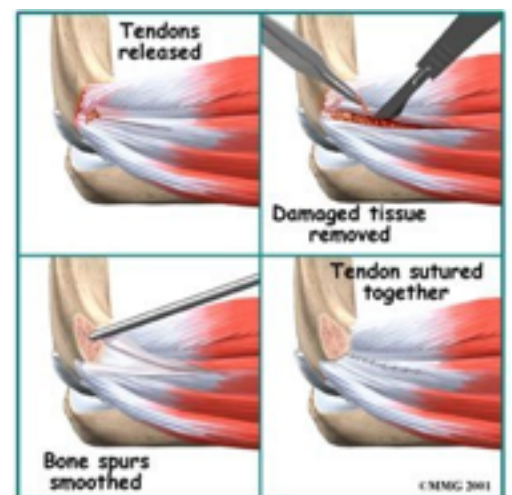
## Elbow Manipulation

Following injury the elbow may become stiff resulting in a loss of range of motion. Generally used in combination with joint debridement, manipulation is used to increase the range of the joint.

## Tendon Release (Tennis Elbow)

Tennis elbow or lateral epicondylitis is a common injury causing pain on the outside of the elbow. Despite its name, this condition is not commonly seen in tennis players but more in work related elbow injuries particularly where repetitive stress is involved.

Surgical treatment of tennis elbow consists of recessing and releasing the portion of frayed or diseased tendon, removing it from the bone whether it be on the inside for golfer's elbow or the outside for tennis elbow. More modern techniques undertake the same operation using key-hole surgery where a very small incision is made rather



than opening up the area.

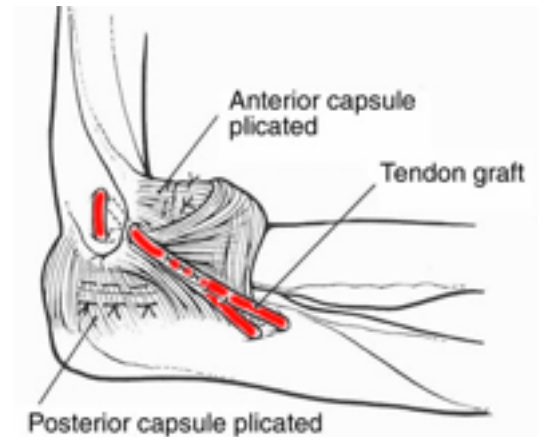
## Tendon Repair



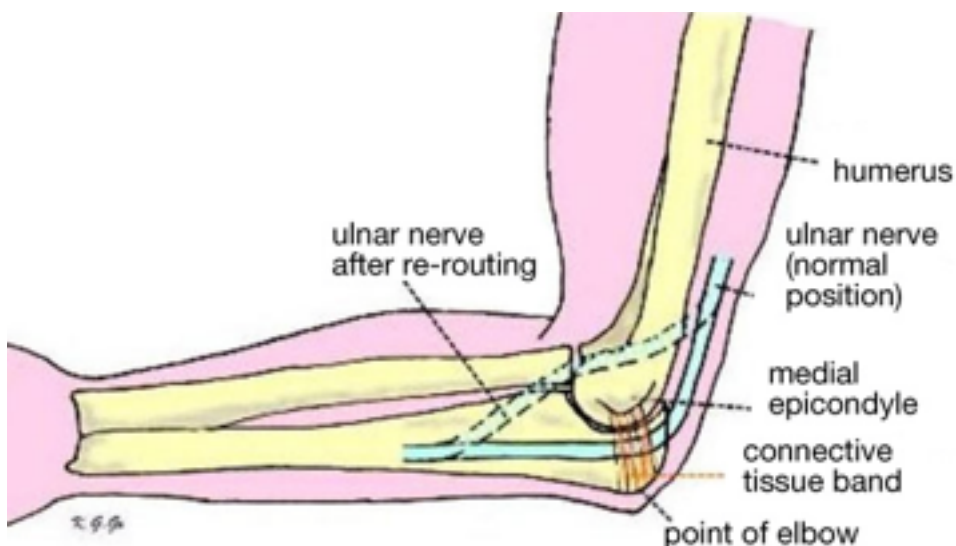
Tendons that facilitate movement of the elbow joint can tear due to natural ageing, or as a result of acute injury/trauma. An example is the biceps tendon. At the elbow joint, the distal biceps attaches to the forearm bone (radius) to facilitate bending of the elbow and also rotating (supination) the forearm. Tears can be partial or complete. A repair can be performed to re-attach the tendon to the forearm bone (radius).

## Ligament reconstruction (for Instability)

Ligament tears of the elbow are not uncommon particularly in the elite overhead athlete such as baseball pitchers, cricketers, gymnasts and tennis players. The ulnar collateral ligament is reconstructed using a tendon graft from the forearm (Tommy John procedure). Posterolateral elbow instability can develop and require a similar reconstruction.



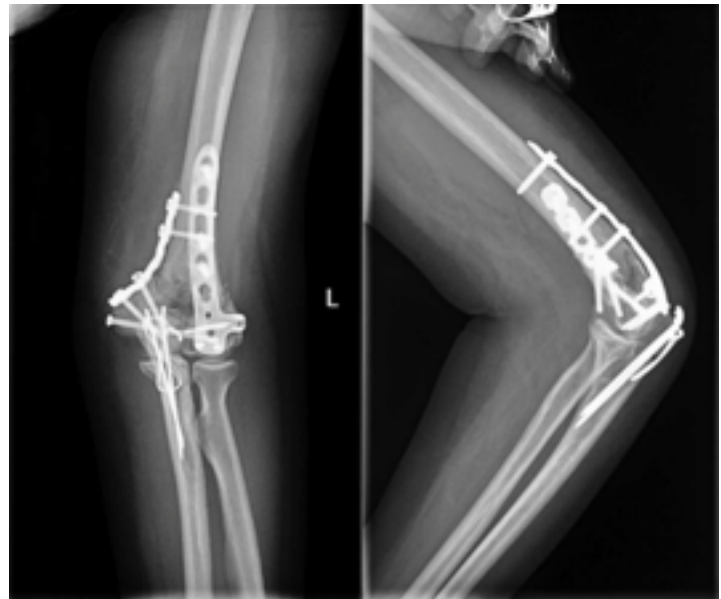
## Nerve Transposition (for Nerve Entrapment)



Ulnar nerve entrapment at the elbow or cubital tunnel syndrome may require surgery in advanced cases and occasionally following a failed initial surgery it has to be released from scar tissue and placed safely beneath a muscle to relieve the problem. Radial tunnel syndrome is also a common condition of nerve entrapment at the elbow. It usually resolves with rest, medication and therapy but in some cases, surgical decompression may be needed. Pronator syndrome involves the compression of the median nerve at the elbow level. It is treated similarly to radial tunnel syndrome.

## ORIF (for Elbow fractures)

A fall or impact, in some circumstances, can result in a fracture to the upper arm bone (the humerus) , the hook part of the ulnar (the olecranon) and or the radial head. As such, a fracture to the humerus will influence your ability to move your arm. In some circumstances, fractures of this bone require surgery to facilitate the healing process. Surgery typically involves re-aligning the broken bone, and then stabilising it using a plate and screws. The location and extent of the fracture influences the anticipated recovery time following this type of operation.



# Section 5

## Elbow Arthroscopy and CPM

### What is Arthroscopic Debridement of the Elbow?

Arthroscopic debridement of the elbow is a procedure used to clear damaged tissue from the elbow joint. A small camera called an arthroscope is used during this procedure to let the surgeon view the inside of the elbow.

### Who needs Arthroscopic Debridement of the Elbow?

If conservative treatments do not help, conditions such as tennis elbow, cartilage or bone damage, or arthritis may benefit from arthroscopic debridement of the elbow. This procedure may also be used for diagnostic purposes as well, as the use of the arthroscope lets the surgeon see the inside of the elbow joint. This makes it easier to assess damage and the correct course of treatment.

### What are the steps in Arthroscopic Debridement of the Elbow?

Initial Incisions are Made

Local anesthesia and a sedative are administered to the patient, although sometimes general anesthesia is used. After anesthesia is applied, the surgeon makes several small incisions around the elbow. A small camera called an arthroscope is inserted into one of the incisions, while small tools are inserted in the others.

### Examining the Elbow

One of the small tools is used to pump fluid into the joint in order to expand it. This makes the procedure easier to perform by allowing the surgeon more room

and providing a clearer picture from the arthroscope. The surgeon uses the arthroscope to inspect the joint to determine the extent of damage.

### Joint Repair

Once the damage has been assessed, the surgeon uses the other tools to remove or repair any damage. Any loose bodies are removed in a process called debridement. Any bone spurs are filed down, and loose or damaged cartilage is removed.

### End of the Procedure

After debridement is completed and tools are removed, all incisions are closed with surgical staples or sutures. The elbow is then bandaged.

### CPM

The elbow CPM (Continuous Passive Movement) is a machine that is designed to move your elbow through range following your operation. This aims to consolidate the new range provided during your procedure. Depending upon the type of procedure you may be required to have the CPM following. You may also be required to come in and have the CPM as an outpatient in the ensuing weeks following your procedure to get the best outcome. This can optimally be 2 weeks for 2 hours at a time. Your Specialist will advise you on this.



*The timeframes detailed in this table are an approximate guide only. There is significant varia-*

## Section 6

### Post Operative Recovery & Rehabilitation

*tion in recovery timeframes between operations, and indeed within any category of operation. Please discuss further with your Surgeon as required, to gain an individually tailored recovery timeframe for your operation.*

OPERATION	'TYPE' OF SURGERY	CPM USE	REHABILITATION TIME-FRAME
Loose Bodies	'Tidy Up'	+/-1 day	Approx 6 weeks
OCD		+/-1 day	Approx 6 weeks – 3 months
Debridement		1 day- 6 weeks	6 weeks - 3 months
Synovectomy	'Other'	1 day- 6 weeks	Variable
Instability	'Tissue Repair'	Brace / Splint	3-6 months
Tennis Elbow		Nil	3-6 months
Replacement		Exercise	6-12 months
Nerve Transposition		Nil	2-4 months.
Fracture		Cast/ Brace	6-12 months
Tendon Repair		Cast/ Brace	3-6 months

*The following information is designed to help you anticipate when certain activities are likely to commence following your operation. It is a guide only as each Surgeon will have specific preferences for your care. Generally speaking, recovery following 'tidy up' type procedures are quicker than procedures requiring 'tissue repair'.*

**‘Tidy up’** type procedures include Debridement, Removal of Loose Bodies and OCD. Recovery time frames following these procedures are generally in the range of 2-4 months, with an initial period of sling use typically ranging between for comfort and 2 weeks (you will be advised of the exact period of sling use following your procedure by your consulting clinicians).

Recovery timeframes following capsular release and/or manipulation vary significantly. Unlike other surgeries, you will be encouraged to move immediately to minimise the likelihood of the elbow stiffening up, and as such, a sling is rarely used for any longer than 1-2 days. CPM may be recommended by your Surgeon or Physiotherapist. Please discuss your anticipated recovery timeframe directly with your Surgeon.

**‘Tissue repair’** type procedures include Ligament reconstruction, nerve transposition, fractures and muscle or tendon repairs. Broadly speaking, recovery time frames following these procedures are in the range of 4-12 months. In the instances of ‘tissue repair’ type procedures, a longer period of sling use is required, typically in the range of 4-6 weeks (you will be advised of the exact period of sling use following your procedure by your consulting clinicians). The best approach to gaining an accurate indication of your anticipated recovery timeframe is to speak directly with your Surgeon.

## Sling



Following elbow surgery, you will most likely be required to use a sling.

The Physiotherapist you see in hospital will teach you how to adjust your sling to achieve comfort.

In basic terms, when the sling is fitting you well, your elbow should sit down into the pocket of the sling, when your shoulder is relaxed. Avoid shrugging to protect your arm as this will lead to muscle tightness and pain around your upper shoulder and neck. Let your shoulder relax, and allow the sling to take the weight of your arm. Adjust the neck strap so that an angle of approximately 90 degrees is formed at your elbow, when your arm is relaxed in the sling. In some cases (i.e. where a bulky dressing or plaster backslap is used), maintaining an angle  $> 90$  degrees at your elbow joint may be required.

When showering, you can have your sling off, but unless advised otherwise, continue to cradle your arm using your good arm. When your sling is off, unless advised otherwise by your Physiotherapist, you should not reach away from your



body with your involved arm (keep your arm in close to your body). The only exception is when washing your arm pit - in this instance, you can lean forward, and allow your arm (cradled by your good arm) to come passively away from your body (with support). In this position, you can access your arm pit to wash, before standing upright.

## Posture

Posture is a critical element of your initial recovery. While wearing a sling, it is very important that you endeavour to maintain an upright sitting/standing posture, avoiding stooped/rounded shoulders. A general guide is to gently draw your shoulder blades back and together (within your comfort levels), to activate your shoulder blade muscles, and prevent other muscle groups from tightening up. Perform this gentle contraction only within comfort levels, and cease if pain is exac-



erbated. As an exercise, you can gently activate these muscles, hold for 5 seconds, then relax. Repeat 5-10 times, performing 4-6 times per day as a set exercise.

Also, stand tall, imaging there was a helium balloon attached to the top of your head. Lengthen up through the head, to avoid slouching. This will help prevent certain muscles from tightening, and will



aid your initial comfort and both your initial and ongoing rehabilitation.

## Ice

Icing is an important component of your initial recovery, and may be used as a pain-relief 'tool' during your post-operative rehabilitation. Ice helps to reduce the inflammation caused by the procedure. When there is a cast on your arm, there is little benefit in icing as it will not penetrate.

Apply ice for 20-30 minutes, every 2-3 hours in the first 72 hours following your surgery. Thereafter, use ice as required to ease residual pain, swelling, and/or inflammation. Make sure you place a tea towel or cover between the ice pack and your skin, to stop ice burns. Depending on which tissues were addressed during your surgery, place the ice pack to the front, side or top of the elbow for best effect.

## Sleeping

Whilst there is no one answer to the best way to sleep, in the initial stages following your elbow surgery, you may find it helpful to place a pillow or folded towel down the back of your arm (to support your arm) while you rest in bed. This will help to prevent strain on your arm while resting, and should improve your comfort.

You may find it more comfortable to rest in a semi-reclined position, using a reclin-

ing arm chair, or resting in bed with pillows.

## Exercise

In the majority of cases, specific exercises will be commenced from day 1 following your procedure. The type of exercise that you are advised to do will depend on the surgery you have performed. In some cases, exercises will be limited to movement of the hand and wrist. In other cases, supported movements which involve the elbow may be permitted. A Physiotherapist will see you in the Hospital, and advise you as to which exercises (if any) you should do. In some cases, an exercise sheet will be given to you as a reference, to guide your initial rehabilitation. In other cases, if you are not required to perform any elbow exercises immediately, you will not be given an exercise sheet.

Typically, you will complete the exercises that the Hospital Physiotherapist advises, until you see your Surgeon for your Out-patient review. In most cases, your review with your Surgeon will be scheduled for 1-2 weeks following your procedure. As part of your review with your Surgeon, discuss when he/she would like you to commence further Physiotherapy. Then, call to make an appointment. See details at the end of this publication.

It is ok to walk in the days following your surgery, but you should not jog or run. Take your time to ease back into walking for exercise, building back up gradually to the level that you were walking prior to your surgery. Avoid uneven or slippery terrain to avoid a trip or fall.

## Hydrotherapy / Swimming:



You must not commence hydrotherapy or swimming until your wound has healed sufficiently. This is to reduce the risk of infection.

Be guided by your Surgeon or Physiotherapist as to if/when to commence water based exercise(s).

## Driving

Each operation is different, and the length of time that you will be unable to drive will depend on the type and extent of surgery that you have performed. Please discuss directly with your Surgeon and/or Physiotherapist for specific guidance.

Needless to say, you will be required to have good use of both arms to be safe to drive a motor vehicle.

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This publication was produced by Physiotherapists from Glenferrie Sports & Spinal Clinic.

Glenferrie Sports and Spinal Clinic (GF-SSC) provide Orthopaedic inpatient and outpatient Physiotherapy services to Glenferrie Private Hospital. If you are having your surgery at Glenferrie, you will see one of our Physiotherapists on the ward the day of, or the day following, your operation.

Our Physiotherapists work closely with your Surgeons to ensure a safe and timely recovery following your surgery.

Our primary consulting rooms are located within the Hawthorn Aquatic & Leisure Centre, located a short-walk from the Hospital. We have direct access to a state-of-the-art gymnasium, 50 metre swimming pool and a hydrotherapy pool which enables us to provide evidence-based treatment and prescribe post-operative rehabilitation exercise programs tailored to the needs of all patients.

**Please contact** Glenferrie Sports & Spinal Clinic to arrange your post-operative Physiotherapy review appointment and ongoing rehabilitation. In most instances, this appointment should be made following your initial post-operative review with your Surgeon.

**Contact Details:**

PH: (03) 9815 2555

Email: [glenferriessc@me.com.au](mailto:glenferriessc@me.com.au)

**Clinic location:**

Glenferrie Sports & Spinal Clinic

(located within Hawthorn Aquatic & Leisure Centre)

1 Grace Street,

Hawthorn, 3122

**Also consulting at:**

Glenferrie Private Hospital

29 Hilda Crescent

Hawthorn, 3122