

The Bristol Brunel Hand Centre Southmead Hospital

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What we do

We provide a specialist hand surgery service to the Southwest region, covering a population of some two million. We see patients with both emergency and routine hand problems. The service can only be accessed via attending an emergency department or referral from a GP or another doctor.

We see about 20 patients per day, and carry out about 500 operations for hand trauma per month.

We are recognised as a *European Centre for Hand Trauma* by the Federation of European Societies for Surgery of the Hand.

<http://fessh.com/hand-trauma-center-database/>

Staff

The hand surgery department is part of the regional plastic surgery unit, which comprises 20 Consultants, many of whom are experienced and expert at the management of hand injuries. We also have a specialist orthopaedic hand surgeon as part of the team.

Key Surgeons

James Henderson (Departmental lead)

Emily West (Adults and childrens)

George Wheble- (Wing Commander, RAF- limb trauma specialist)

Alasdair Bott- Orthopaedic surgeon, wrist injury specialist

Suzannah Houlton- Specialist Hand Surgeon.

Therapists

We have a large team of specialist hand physiotherapists, who are invaluable to patients recovering from major hand surgery.

James Henney is lead for the Department

Fiona Everton and Gemma Routledge are the other senior member of the team.

Trainees

One of our roles as a major trauma centre and regional centre for hand surgery is the training of surgeons, therapists, nurses and other staff. You may well see and be treated by “junior” doctors. Please bear in mind that although they are not yet consultants, our doctors all have many years of experience and training. Some of them may have over a decade of specialty experience and operate at a very high level.

We have a senior *Interface hand fellow*, a prestigious national post, appointed jointly between Southmead hospital and the Royal United Hospital in Bath. James Henderson is the lead/supervisor of this post.

Emergency Patients

We are part of the regional major trauma centre, and we see a huge range of hand injuries, from minor sporting or domestic injuries to complex and mutilating injuries from industrial, agricultural, motor vehicle or even military /terrorist attack injuries. Major trauma patients arrive by air or land ambulance, and other patients may be referred from emergency departments in the region or via their GP.

Patients with hand injuries come from a wide geographical area, and we appreciate that you may have travelled for hours to see us. Of course, hand injury patients are usually not able to drive themselves, so often rely on friends or family for transport.

Trauma Clinic

We aim to avoid admitting patients to hospital as much as possible, so unless you have an immediately limb-threatening problem, we usually ask for you to attend the *trauma clinic*. The clinic is coordinated by [Debbie Derrick](#), [Donna Walsh](#), [Louise Callaghan](#) and [Sacha King](#) and runs every day.

At your clinic appointment, you will be assessed by a doctor, and a plan will be made for your treatment. You may be able to see a physiotherapist, and to be provided with a splint if necessary.

If you require surgery, then we will schedule an appointment for this. This will mean that you are not left waiting indefinitely for surgery, and hopefully you will not be starved for an operation that is then delayed.

The trauma clinic system means that most patients can avoid being admitted to a hospital bed. This is good because beds are expensive for the NHS, boring for patients who would generally prefer to be at home, and beds are in short supply. By having a system that doesn't rely on patients being admitted to beds, we are able to continue to provide a service when there are no beds available.

Surgery

We have dedicated operating theatres for emergency cases during the daytime, and access to shared resources out of hours.

Your surgery will be carried out as soon as possible, and you will usually be given a precise plan, so that you know when you can eat and drink, and where to come at what time.

Depending on the nature of your injury, you may have general, regional or local **anaesthesia** for your procedure.

The nature of your proposed treatment will be discussed with you at trauma clinic or when you are assessed in the emergency department or ward. You will be asked to sign a *consent form* before surgery, to confirm that you have no further questions and wish to go ahead.

Many patients can go home on the day of surgery as long as they have someone to collect them and to be with them at home.

Rehabilitation

Most patients will require a significant amount of physiotherapy after surgery. This is usually done on an outpatient basis, but you will need to commit to coming to every appointment in order to achieve the best possible result. We are now doing as much as we can remotely by video conferencing.

Elective patients

Patients who have a hand condition that is not urgent are usually seen in a routine outpatient clinic. You will need to be referred by your GP in order to have an appointment booked. Treatment options can be discussed and a plan agreed upon between you and a specialist surgeon.

We run a specialist clinic with hand physiotherapists present as well as a surgeon, and these specialists are integral to your treatment. Many patients do not require surgery, and can be treated well by other approaches.

Tests

You may well require an X-ray, and you might be sent for this “on arrival” i.e. before you see the clinical team. This provides us with an up to date view of the bones of your hand and makes it easier to diagnose many problems, and to explain and plan treatment with you.

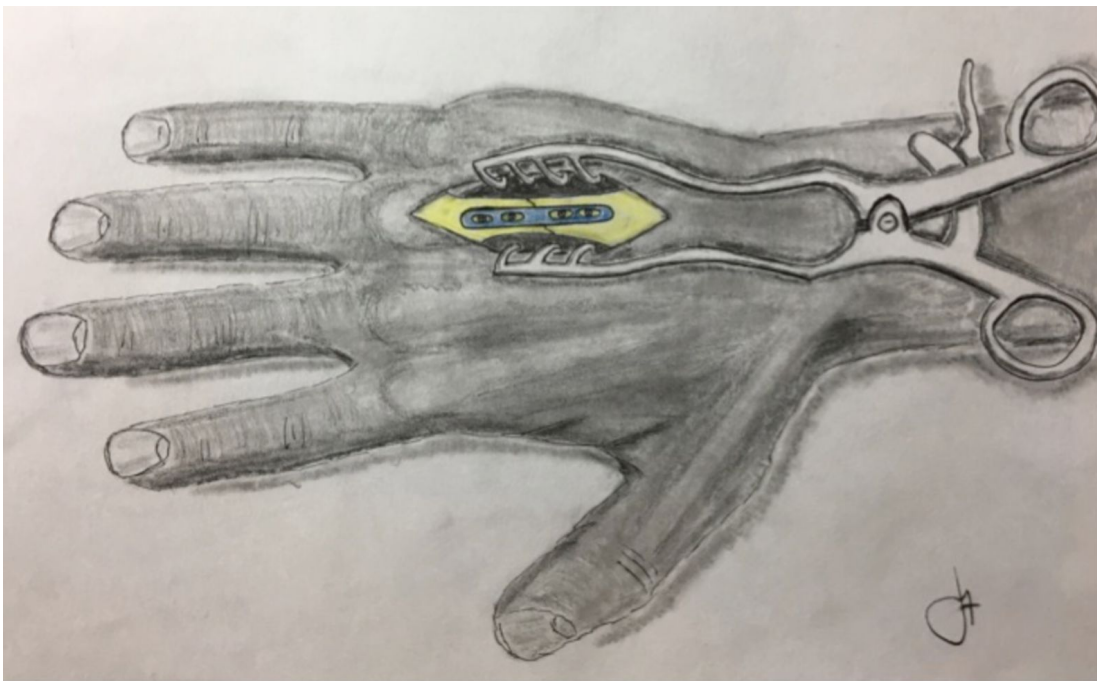
Specific injuries and treatment.

Fractures

Fractures are broken bones. There are 27 bones in the hand, and 31 joints. We see a huge range of fractures in our department, from minor sports or recreational injuries to very severely “mangled” hands from industrial or farmyard machinery.

Many fractures can be treated without surgery, by protecting the hand in a splint or cast whilst the bones heal. Certain types of fracture (such as the “boxer’s” fracture of the little finger knuckle) do not even require splinting.

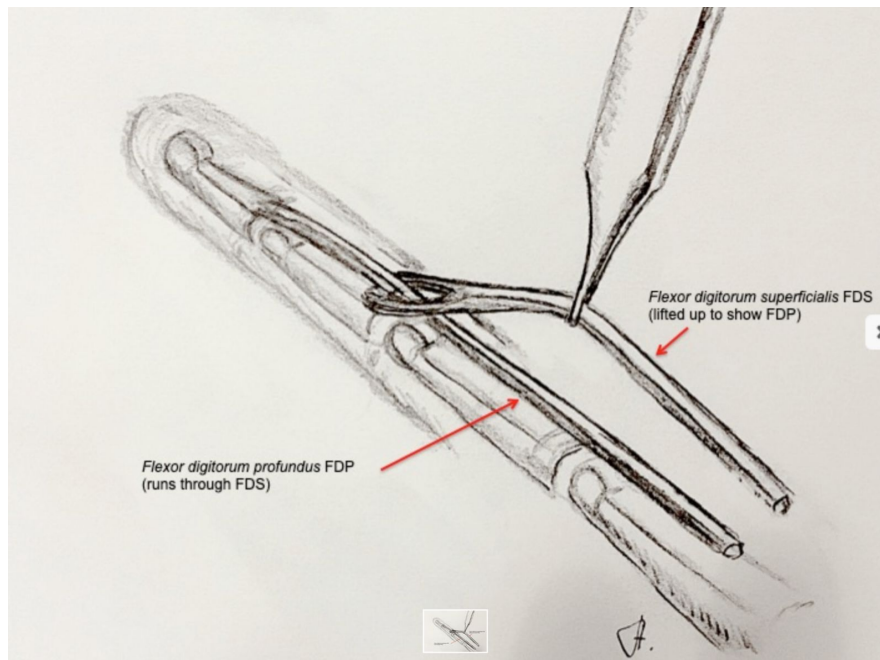
For fractures where the bone fragments are displaced or unstable, then surgery may be required. Sometimes the bones can be manipulated into the correct place (*reduced*) and held there with pins called Kirschner (K) wires, and sometimes it is necessary to perform an *open reduction an internal fixation* (ORIF) whereby an incision is made to access the broken bone, which is then held in the correct place with screws or plates attached to the bone.



The complications of surgery can include infection, bleeding, poor wound healing, malposition or poor healing of broken bones. All hands become very stiff after injury or surgery, and most people will require a significant amount of physiotherapy to overcome this.

Flexor tendon injury

The flexor tendons lie on the palm side of the hand, and run from the forearm to the fingertips. Their function is to allow gripping with the fingers. There are usually two long tendons to each finger, and one to the thumb.



The tendons are very strong, and can often support your bodyweight. They are, however vulnerable to sharp penetrating injuries or can be *avulsed* (pulled off) – a classic example being “rugger jersey” finger when this happens during a rugby tackle as one finger takes the force of two people.

Tendon lacerations are difficult to repair- the tendons run in a tight tunnel in the finger, and the tendons are small. The cut ends of the tendon tend to retract and it may be necessary to make a long incision in the finger in order to find the ends.

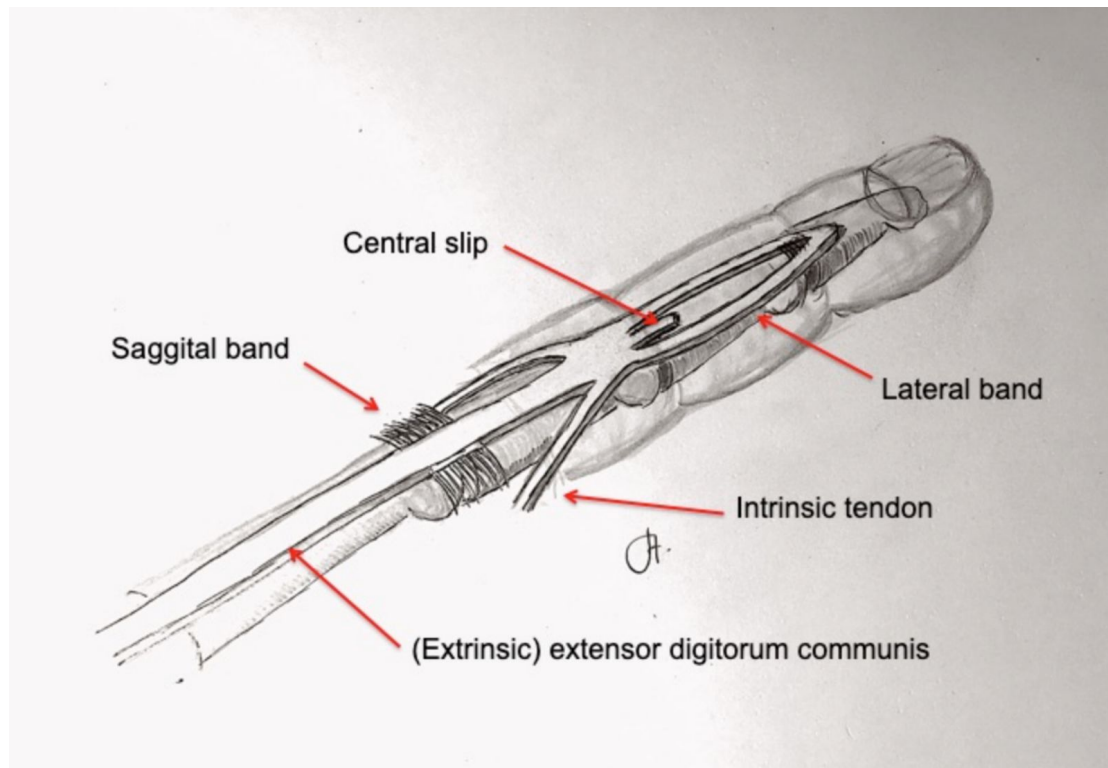
The tendons are repaired with stitches (sutures), which are nothing like as strong as the original tendon until healing has occurred. The healing process takes three months. Research has shown that tendons heal best if they are *mobilised*, which involves carefully exercising the fingers, whilst being careful not to snap the repair...Our dedicated **hand physiotherapists** will design a customized programme of exercises for you to do after your surgery, but it is important that you protect your hand as instructed and elevate it to reduce swelling,



The complications of surgery can include infection, bleeding, poor wound healing, poor movement and rupture of repaired tendons.

Extensor tendon injury

The extensor tendons are on the back of the hand and run from the forearm to the fingertips. There is a complex arrangement of tendons which act to extend (straighten) the fingers, and wrist.

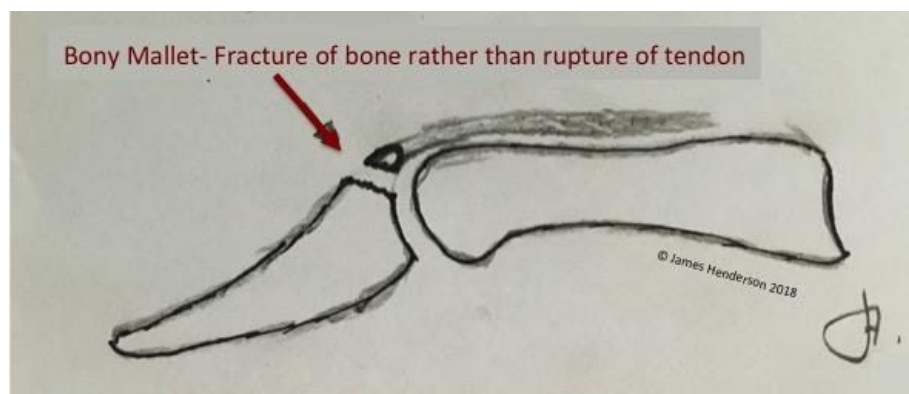
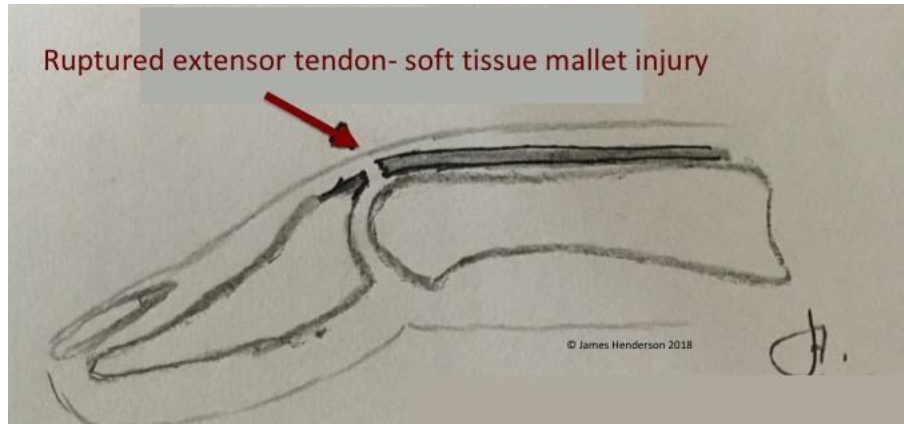


Depending upon which tendon has been injured, it may be relatively simple to repair, but you still require a three month period of splintage and exercises before you can use it normally.

The complications of surgery can include infection, bleeding, poor wound healing, poor movement and rupture of repaired tendons.

Mallet finger

The mallet injury is a rupture of the extensor tendon at the tip-most joint (distal interphalangeal joint) of the finger. It is a common injury sustained by an end-on impact to the digit (e.g. catching a ball, falling, making a bed). Sometimes the tendon snaps (*soft tissue mallet*), and sometimes the tendon pulls a fragment off the end bone of the finger (distal phalanx)- a *bony mallet* injury.

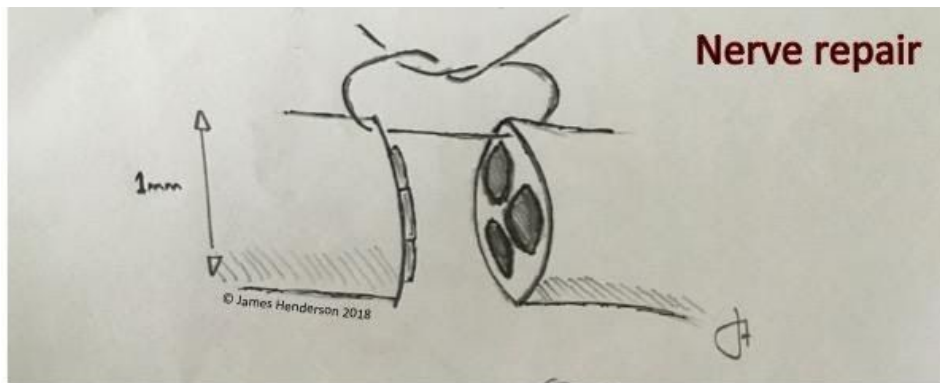


Most mallet injuries including bony mallets can be treated successfully in a splint. The splints are a little inconvenient as the affected joint must be kept held straight for 6-8 weeks whilst it heals. Only rarely do mallet injuries require surgery.

Nerve injury

The hand is richly supplied with nerves which provide the excellent sensation that hands require. Every muscle providing movements within the upper limb is supplied by nerves coming from the spinal cord in the neck, and injury to the large nerves can cause significant disability.

Nerves never recover fully after division (except in the very young) and although we can repair or reconstruct nerves, the function is unlikely to return to completely normal. It can take two years for the final outcome.



For muscle power and movement that is lost following a nerve injury, we can perform *tendon transfer* surgery to restore lost function. Although there are standard techniques for this, we tailor every treatment to the individual patient.

Bite injuries

We see a large number of patients who have been bitten by cats, dogs, horses, squirrels, rats, parrots, spiders, snakes (and one shark bite to date). We also see a lot of human bite injuries as well. Bites have a high chance of becoming infected, and often benefit from being washed out in the operating theatre.

Flexor sheath infections

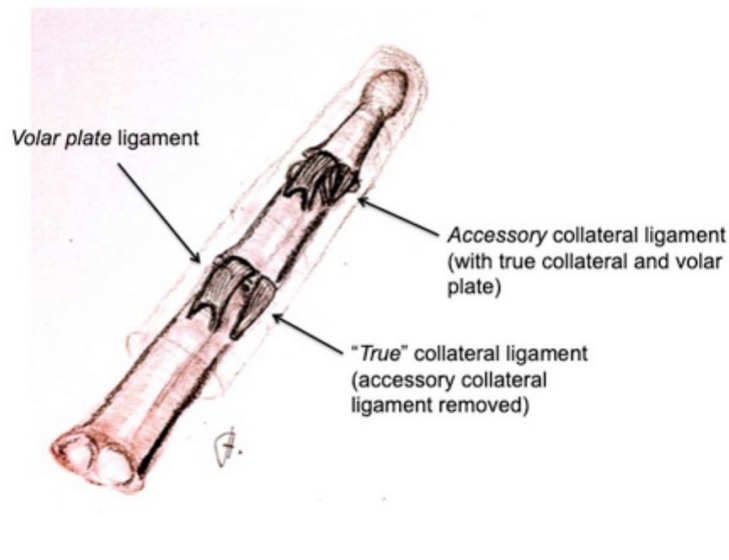
The **flexor tendons** are found within the flexor sheath in the fingers; a specialised tunnel that allows the tendons to glide freely. There is no blood in this space, and so bacteria are able to flourish without the cells of the immune system being able to attack them. Infections in the flexor sheath tend to occur after penetrating injuries like thorns or splinters.

Flexor sheath infection is a medical emergency that requires urgent surgical washout. The diagnosis is made by clinical examination, where the finger will be found to be swollen, painful, held semi flexed, and it will be very painful to allow it to be straightened.

Ligament injury

All joints are stabilised by ligaments, which are strong flexible connections between the bones. Ligaments are commonly injured in sporting or everyday

injuries. Occasionally the ligament is actually stronger than the bone to which it is attached. In this situation, an *avulsion fracture* may occur, whereby a small fragment of bone breaks off, attached to the ligament. Although ligaments are not visible on Xray, a small bone fragment may be seen



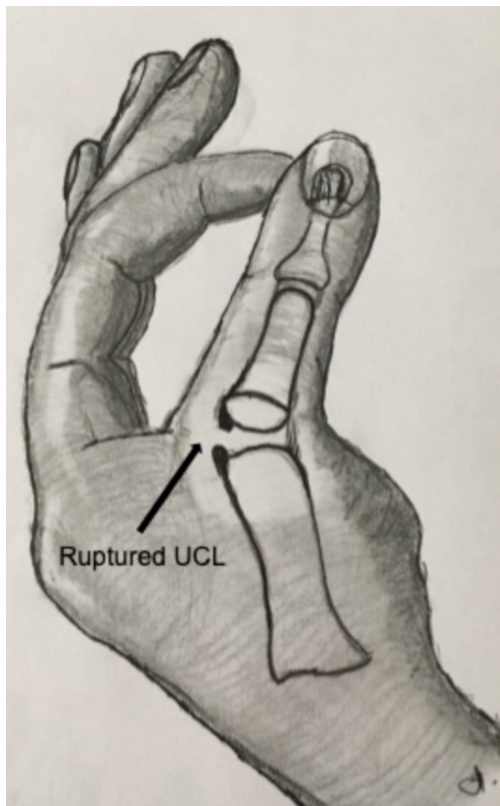
Most ligament injuries or avulsion fractures heal without surgery but need to be protected for three months.

Skiers thumb

The classic “skiers thumb” injury is well known to hand surgeons and emergency department staff, especially those working in cities with dry ski slopes, and even more so when those dry slopes are made of mesh/bristles such as *Dendix* (figure 1), in which a thumb can easily be caught. Newer materials without holes are safer, as well as possibly being better to ski on, and easier to shape into moguls or park/terrain features. Nonetheless, the thumb can be injured on any skiing surface, including snow.

The injury is sustained when the skier catches their thumb, and it is bent away from the fingers and palm (abducted) at the metacarpophalangeal joint, the joint where the thumb emerges from the skin of the hand (figure 2). The structure that is damaged is the *ulnar collateral ligament* of the metacarpophalangeal joint, commonly just called UCL by doctors (figure 2). It is usually pulled off the bone, but occasionally it tears

The patient will usually have a lot of bruising and swelling, as well as pain at the site of the ligament on the side of the thumb. The thumb may be unstable at this joint “opening up” if the thumb is pulled away from the fingers/hand in the same way that it was when the injury was sustained. An X-ray is usually performed, as sometimes a bone flake is visible and shows that the UCL has been pulled off the bone.



Treatment

Ligaments will usually heal as long as they are protected, and the torn ends held together whilst they heal. This is usually achieved in a splint for other ligaments. For the UCL, however there can be a problem. The *adductor pollicis* muscle, which lies in the webspace between the thumb and index finger can come between the end of a completely ruptured ligament and the bone (figure 3), and this can prevent the ligament from healing. This is known as a Stener lesion, after the doctor who described this problem in 1962. Surgery is often required to find the ligament and re-attach it to the bone. Depending on the stability of the thumb, x-ray findings, and occasionally other investigations, skiers may be treated in splints or with surgery as necessary.

Surgery can be successfully carried out at least two weeks after injury, and so holiday makers do not need to have surgery in resort, and have time to return for treatment in the UK.

Gamekeeper's thumb.

A gamekeeper's thumb is an injury to the same ligament as a skier's thumb, but one that has occurred gradually over time rather than suddenly. It is supposed to be from the action of repeatedly wringing the necks of rabbits, and was described in 1955 by an orthopaedic surgeon called Campbell. This is rarely seen nowadays, but occasionally a patient will present late with a skier's thumb. In these cases a ligament reconstruction might be required if the UCL has withered away after a long period of being torn and not healing. This can be done using a "spare" tendon from the forearm or lower leg, to replace the missing ligament.

Amputation

It is often possible to replant an amputated digit, although this is often not advised if the replant is likely to remain insensate (numb), painful and stiff, or if the part is so badly injured that surgery is unlikely to succeed.

Storage of an amputated part

We see an interesting range of storage techniques used to store amputated fingers and other parts. Often from other hospitals.

The best way is to store the part in a sterile cotton gauze swab that has been dampened with saline. This should be placed into a plastic bag and sealed. The sealed bag is then placed into a bowl of water, into which a few ice cubes are placed. The aim is to keep the part cool (4 degrees c) but NOT FROZEN as this makes it unuseable. We store parts in the (medical) 'fridge once they arrive.

What to do after hand surgery

Risks of hand surgery

Hands are very complex, and contain many bones, tendons, nerves, arteries and veins. Even a seemingly innocuous injury can cause huge pain disability.

The complications of surgery can include infection, bleeding, poor wound healing, poor movement and rupture of repaired tendons.

All hands become very stiff after injury or surgery, and most people will require a significant amount of physiotherapy to overcome this.

Occasionally patients develop a rare condition *called Complex regional pain syndrome (CRPS)*. This can occur after nerve injury, or without injury to a named nerve. Patients experience severe pain, swelling, discolouration, and temperature changes within the hand. The mainstay of treatment is intensive physiotherapy, supported with medications to reduce the pain.

Emergency first aid

To stop bleeding from any injury, apply pressure with a clean (ideally sterile) swab or similar. Applying additional layers or dressings is not usually helpful. The key is to apply pressure to the exact area of the bleeding (or sometimes above the bleeding such as with a tourniquet). It's important to be sure that there isn't any glass or sharp object within the wound. Hands can be elevated

(held up) which reduces the blood pressure and helps to slow bleeding. Even life threatening bleeding can usually be stopped in this way as long as pressure is applied accurately and for long enough (at least 10 minutes).

Dirty wounds should be washed out thoroughly if not bleeding excessively, and a clean dressing applied.

All rings and bracelets should be removed immediately because the fingers in particular will swell up, making it impossible to remove jewelry and possibly leading to obstruction of blood vessels and loss of digits.

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