

Hampshire Hospitals



NHS Foundation Trust

KNEE ARTHROSCOPY

Trauma & Orthopaedic Directorate

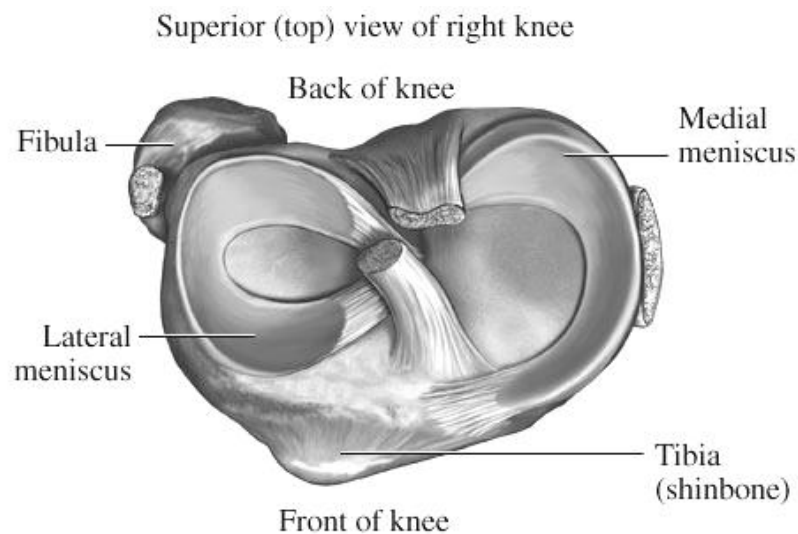


How the Normal Knee Works

The knee is the largest joint in the body, and one of the most easily injured. It is made up of the lower end of the thigh bone (*femur*), the upper end of the shin bone (*tibia*), and the knee cap (*patella*), which slides in a groove on the end of the femur. Four bands of tissue, the anterior and posterior cruciate ligaments, and the medial and lateral collateral ligaments connect the femur and the tibia and provide joint stability. Strong thigh muscles give the knee strength and mobility.

The surfaces where the femur, tibia and patella touch are covered with *articular cartilage*, a smooth substance that cushions the bones and enables them to glide freely. Semi-circular rings of tough fibrous-cartilage tissue called the *menisci* act as shock absorbers and stabilizers

The medial meniscus is on the inside of the knee and the lateral on the outside of the knee.

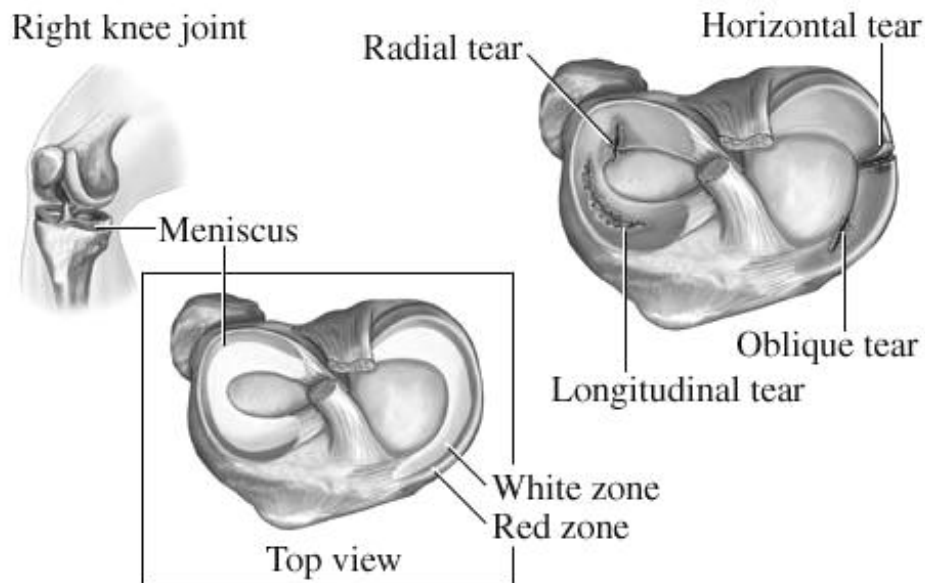


The bones of the knee are surrounded by a thin, smooth tissue capsule lined by a thin synovial membrane which releases a special fluid that lubricates the knee, reducing friction to nearly zero in a healthy knee.

Knee Problems

Normally, all parts of the knee work together in harmony. But sports injuries, arthritis, or weakening of the tissues with age can cause wear and inflammation, resulting in pain and diminished knee function.

Arthroscopy can be used to **diagnose and / or treat** many of these problems:



- Torn meniscal cartilage.
- Loose fragments of bone or cartilage.
- Damaged joint (articular) surfaces or softening of the articular cartilage known as chondromalacia.
- Inflammation of the synovial membrane, such as rheumatoid or gouty arthritis.
- Abnormal alignment or instability of the kneecap.
- Identify torn ligaments including the anterior and posterior cruciate ligaments.

By providing a clear picture of the knee, arthroscopy can also help the surgeon decide whether other types of surgery would be beneficial (e.g. Knee replacement: total or partial, osteotomy: straightening the leg, or, articular cartilage cell culture)

What is an arthroscopy?

Arthroscopy allows an orthopaedic surgeon to diagnose and treat knee disorders by providing a clear view of the inside of the knee with small incisions, utilising a pencil-sized instrument called an arthroscope. The scope contains fibre optics that transmits an image of your knee through a small camera to a television monitor. The TV image allows the surgeon to thoroughly examine the magnified interior of your knee and determine the source of your problem. During the procedure, the surgeon can also insert surgical instruments through other small incisions in your knee to remove or repair damaged tissues.

Most arthroscopies are performed on patients between the ages of 20 and 60, but patients younger than 10 years and older than 80 years have benefited from the procedure.

Possible Procedures

- **Debridement** This is a tidying up procedure to remove wear and tear debris and loose articular cartilage and to smooth the roughened surfaces
- **Meniscal repair** Occasionally allows the repair of a torn meniscus (see below)
- **Partial menisectomy** Deals with tears of the meniscus (only torn or abnormal tissue is removed and as much as possible is left as it is a very important structure)
- **Micro fracture / Drilling** To try and patch & seal areas of isolated full thickness articular cartilage loss exposing the bone surface – by encouraging formation of scar cartilage
- **Lateral release** To release the tissue down one side the knee to allow the knee cap to glide more accurately.

These will be discussed with you by your surgeon or the pre-assessment staff.

See below

Are there any alternatives?

There are many ways of investigating knee problems but arthroscopy is the only one that gives a direct view of the inside of the knee and at the same time enables some conditions to be treated.

Common knee arthroscopic procedures:

Debridement

Often the lining of the knee joint, the articular cartilage, can become damaged – frayed, thinned and/or develop loose flaps. This is known as “Degenerative Joint Disease”, DJD, and is unfortunately usually the precursor for osteoarthritis.

Smoothing these surfaces – with a shaver, radio-frequency device or something similar – will often improve symptoms, though this may well be temporary. This can usually be done through the same key holes and adds just a few minutes to the surgery. This does not have any specific rehabilitation issues associated with it usually.

Micro-fracture

Sometimes isolated full thickness areas of articular cartilage are damaged within the knee exposing the bone beneath. A good analogy for this is a pot hole in the road. If this is left alone it will get wider and deeper and is the start of osteoarthritis. Like a pot hole the best way to deal with this is to fill it in. Micro-fracture is a technique where the area is prepared and small holes are knocked into the exposed bone to allow the bone to bleed and release the under-lying bone marrow. Within the bone marrow are “stem cells” which in the correct environment and with the correct stimulation will turn into the same, or similar, cells to that area. These hopefully will become cartilage and patch the area over. The cartilage that is formed is scar cartilage, fibro-cartilage, not articular, hyaline, cartilage – but looks identical to the naked eye. It is not as strong or durable as normal cartilage, but is better than

nothing. Good results can protect the area for more than 8-10 years. It is worth doing in isolated relatively small lesions where the rest of the knee is normal.

The technique has two large drawbacks:

- it does not work in everyone. The results do not vary with sex or race, but, do vary with age: the results are better in younger patients. At best it may work well in 60-85% of patients, giving 80% good pain relief. In about 15% it does not seem to make any difference and in 5% the pain is worse. It is impossible to predict the result other than by age.
- it does not work over night. If the technique is performed, depending where in the knee the lesion is, this may entail a period of time on crutches not being allowed to put your full weight on the knee, unable to drive, and/or, in a splint with your knee straight – often 4-6 weeks. The knee is uncomfortable for about 10 days, then feels reasonable and is uncomfortable again after the crutches / splint are removed for about another 10 days. The discomfort then tends to improve rapidly over the next 3-4 months, if the technique is working, and then tails off improving out to about 9 months. What one is left with in terms of discomfort at 9 months tends to be the end result.

Cartilage transplantation

This technique is relatively new and may prove to be more successful and more long lasting than micro-fracture for areas where there is isolated cartilage loss within the knee. It is still the area of much careful research. It involves two separate operations, the first a small key hole one to remove some cartilage to send to a laboratory to be grown and a second much bigger open operation to re-implant the cartilage. The recovery is much more prolonged than microfracture, but if/when successful grows articular, hyaline, cartilage rather than fibro(scar)-cartilage. As this is still the subject of careful research each case is judged carefully and presently has to have specific NHS funding agreed and is entered into part of a national trial. It is not applicable to most patients. The results that patients notice in good cases are

comparable to good microfracture cases, however the long term results (more than 10 years) are awaited.

Meniscal surgery

The semi-circular, semi-lunar, cartilages – the menisci – within the knee can become damaged and torn. This will usually present symptoms of “locking, catching, giving way and/or instability”. More often than not the damage/tear is the result of wear and tear – it is often a trivial action that “is the straw that breaks the camel’s back” and the symptoms suddenly start. However may be associated with an acute, often sporting, injury. It is often associated with the whole knee swelling up. The menisci only get a blood supply to the outer 1/4 – 1/3, the inner majority getting it’s nutrition from the fluid in the knee to keep it alive but this is not enough to nourish any repair process usually. The meniscus is trefoil shape in cross section and the part that is usually damaged is the inner 2/3 – 3/4: which is thinner and has the poorer blood supply and is therefore often not repairable. As this is the case a meniscal tear often requires the torn part to be smoothed off. This usually does not lose more than 15% of the volume of the meniscus and we strive to preserve as much of it as possible as its function is as the shock absorber and weight distributor of the knee – without it the knee is more likely to wear and develop osteoarthritis. This procedure can again usually be done through the same key holes and does not require and specific rehabilitation regime.

Occasionally the meniscus may be repairable and if this is possible we strive to achieve this. This is more complicated surgery, can usually be achieved through the key holes and will have some restrictions attached to it post-operatively – potentially for weeks or months. Techniques and protocols vary and these need to be discussed with your surgeon both pre- and post- operatively. The success of repair on its own is variable with rates from 50-85%. Should the repair fail this will usually require further surgery to smooth off the torn segment and MRI scans rarely are of use to diagnose a failed repair as they may look abnormal for 4-5 years. (Meniscal repair in association with Cruciate ligament reconstruction has a higher success rate,

probably due to the increased bleeding within the knee associated with this which aids healing. Please see the section on ACL reconstruction.)

Removal of loose bodies

Occasionally pieces of cartilage and/or bone may break off and float around the knee causing the knee to lock and/or give way or the unpleasant sensation of something moving around within the joint. This can usually be removed as key hole surgery and do not have any specific rehabilitation issues associated.

EUA – Examination under anaesthetic

Very occasionally an examination of the joint under anaesthetic when you are completely relaxed is required to assess the stability of the knee and the inside of the knee to be able to plan future procedures, if answers have not been obtained from history, examination, X-rays and/or scans.

Lateral release

This procedure involves releasing the tighter structures on the outside of the knee cap, through the key holes, to try and allow the knee cap to sit straighter and flatter in the centre of the knee to reduce patella-femoral pain, and, possibly to decrease the risk/incidence of patella subluxation (partial dislocation) or dislocation. This is becoming a much rarer procedure than was previously performed as the results we now know are not often as good as once thought. The procedure may be performed as a day case though often requires an overnight stay as a drain taking blood out of the knee is often left in place for a while. The knee is often swollen and uncomfortable for some weeks and months post-op and requires intensive physiotherapy and work on your part to be effective.

Risks

The surgeon will explain the risks but these are rare (less than 1%).

Knee arthroscopy is one of the safest operations you can have, and certainly the simplest performed on the knee. However, every operation carries risks as well as benefits, and knee arthroscopy is no exception.

The information included below is there to increase your understanding of the risks of the operation. Most major and minor complications are included, but the list is not comprehensive. You can find out more about the risks involved from your surgeon or at your attendance to the Pre-Assessment clinic.

GENERAL RISKS

1. ANAESTHETIC RISKS

A very large majority of knee arthroscopies is performed with the patient fully asleep, under general anaesthetic. Most patients having this type rarely have significant health problems. If these are present however, the operation may be carried out under regional or even local anaesthesia. General anaesthesia is very safe and its complications in knee arthroscopy are extremely rare.

2. BLOOD CLOTS / THROMBOSES

The risk of blood clots either in the calf (deep vein thrombosis/ DVT) or in the lungs (pulmonary embolism P.E) is less than 0.05%. This risk is low as most patients having the surgery are up and about almost immediately. Good early mobility is best way of preventing blood clots.

SURGERY SPECIFIC RISKS

1. INFECTION

The risk of superficial infection is less than 0.1%. This usually manifests itself as a slowly healing red wound, and reliably settles after treatment with antibiotics.

Deep infection inside the knee joint itself is an extremely rare but potentially very serious complication. It can require long treatment with antibiotics and further surgery.

2. FAILURE TO IMPROVE

Failing to relieve all or some of the patients' symptoms can occur with knee arthroscopies. Its likelihood is higher in some procedures done through the key-hole than others. For example, arthroscopic washouts for arthritis of the knee (which are now performed only in exceptional circumstances – particularly with mechanical symptoms) aim to only temporarily relieve some of the patients' symptoms, mainly pain. It will not cure arthritis. Tears of the shock absorber cartilage on the other hand, can be reliably treated with key-hole surgery.

3. BLEEDING

The portals made to introduce the equipment into the knee are very small (only about 1cm long) so significant bleeding is extremely rare. The wounds do not usually require stitches. Bleeding can occur very occasionally into the knee joint itself, sometimes requiring a washout. Patients on blood-thinning medications such as aspirin are more prone to bleeding during and after surgery. If you are taking blood-thinning medications, you will need to inform

our staff in the Pre-Assessment clinic, as these medications may have to be stopped a number of days (7-10) prior to surgery.

4. NUMBNESS AND PAIN AROUND PORTALS

When creating the portals which enable the key-hole surgery, it is possible to inadvertently damage one of the small nerves supplying the skin, causing numbness around the portal. This usually recovers and even if it persists, it is rarely troublesome. The portals themselves can be associated with pain post-operatively. This usually settles on its own without any long-term problems.

CONCLUSION

Knee arthroscopy is a safe and well-proven day-case operation. The risks involved are hugely out-weighed by its likely benefits. This has made this operation one of the commonest performed in the NHS.

Important

Your operation may be cancelled if you have any of the following: - cuts, rashes, abrasions, or skin conditions (Psoriasis, Eczema etc) in-growing toenails, corns, leg ulcers or problems with your teeth or gums.

Symptoms may result in the anaesthetist recommending that the operation should be cancelled e.g. a cold on the day.

What happens before my operation?

Pre-assessment

A few weeks before your operation you will be asked to attend the Pre-assessment Clinic, where a thorough medical assessment will be carried out to make sure you are fit enough to cope with the surgery.

At this clinic, routine pre-operative tests including urine, blood, ECG (heart trace) x-rays may be advised. You will also be screened to ensure that you do not carry MRSA (**M**ethicillin **R**esistant **S**taphylococcus **A**ureus) and MSSA (**M**ethicillin **S**ensitive **S**taphylococcus **A**ureus) on your skin. This appointment will also provide you with an opportunity to speak to your Consultant and / or Registrar. You will also be asked to sign a consent form.

What should I do before my admission?

Please arrange for someone to bring you into hospital on the morning of your admission. You will need to make arrangements for your journey home, as you should not drive or use public transport for at least 48 hours. You are advised to contact your insurance company and discuss with your physiotherapist at your first appointment before commencing driving.

If you are using a taxi you will need to be accompanied by a responsible adult.

Note: - You may not be able to drive for a longer period depending on the procedure being performed and your recovery – please check this with the team at your Pre-Admission Appointment.

Most patients go home the same day. You will need a responsible adult to collect you from the ward and stay with you overnight.

If you work you will need to arrange to have time off. This will be usually one or two weeks but may be longer depending on the exact surgical procedure.

What happens on arrival?

You will be welcomed to the ward by a nurse who will check your name and details and show you the layout of the ward

You will be asked to sign / re-sign your consent form

If you are female you will be asked to reconfirm you are not pregnant

Your affected knee will be indicated with an arrow marked on your leg by one of your surgical team

You will be seen and assessed by the anaesthetist

All the tests you had done in the pre-admission clinic will be checked and the results given to you

Anyone with you will be asked to leave as soon as possible, unless there are good reasons for them to accompany you (translation, blind and/or deaf patients etc)

Your operation time will be confirmed as close as possible – this may not be straight away

A time for you to be collected will also be roughly estimated, though this will depend on how you feel after the operation

You will go down to the operating theatres – this may be any of you: walking there yourself accompanied by a member of staff, going down in a chair, or, going on your bed

What should I expect after my arthroscopy?

After returning to the ward you will be asked to rest quietly for a while. A thick bandage will cover your knee this should stay in place until the following day. After the procedure a local anaesthetic will be injected into your knee. Most patients find that their knee is comfortable on return to the ward.

After you have slept off the effects of the anaesthetic you will be offered something to eat and drink. A physiotherapist or nurse will then check that you are safe to get out of bed, walk and you will practise going up and down stairs. You will be taught exercises to carry out at home. You will be given information of how to care for your wound and when to apply your support bandage (Tubigrip).

It may be necessary for you to stay overnight if you feel sick are in pain or live alone. You may also have to stay if you require further physiotherapy.

If you have a lateral release you will follow the above. However you may have a small drain into your knee, as there is an increased risk of bleeding, this will be removed before discharge. The next day the physiotherapist will get you up and show you how to walk possibly using crutches. You will need to achieve a satisfactory range of movement before you can go home and you may have to use crutches

If you have micro fracture or drilling you can expect restrictions to your mobility and knee bend and you may have to use crutches for up to **6 weeks** to allow this to work. This will be discussed with you prior to surgery.

Your Recovery at Home

Recovery from knee arthroscopy is much faster than recovery from traditional open knee surgery.

Still, it is important to follow your surgeon's instructions carefully after you return home.

Swelling

Keep your leg elevated as much as possible for the first few days after surgery. Apply ice as recommended by your physiotherapist to relieve swelling and pain.

Dressing Care

You will leave the hospital with a dressing and bandage covering your knee. You may remove the bandage the following day and apply the support bandage (Tubigrip)

Keep your incisions clean and dry for at least 48 hours. After 48 hours you may only shower until your wounds are healed completely and then you may bath. If you have stitches you will need to arrange to have these removed at your local surgery at about twelve days, if you have steri-strips these should fall off at about ten days. If they come off earlier do not attempt to reapply them just cover the wound with a clean dressing.

Weight Bearing

After most arthroscopic surgery, you can walk without assistance but your physiotherapist may advise you to use crutches. You can gradually put more weight on your leg as your discomfort subsides and as you regain strength in your knee.

Driving

You should not drive for at least 48 hours post-operatively. Most people may start driving at any time after this – though the majority of people do not feel comfortable or safe enough to drive for 5-10 days. Some surgical procedures will mean that you are not able to drive for some weeks – you will be informed of this at the pre-admission clinic, pre and/or postoperatively.

Potential Warning Signs Complication

Contact your GP if you experience any of the following

- Prolonged Fever
- Persistent warmth or redness around the knee
- Persistent or increased pain
- Significant swelling in your knee
- Increasing pain in your calf muscle
- Shortness of breath or chest pain.

Reasonable Expectations after Arthroscopic Surgery

Although arthroscopy can be used to treat many problems, you may have some activity limitations even after recovery. The outcome of your surgery will often be determined by the degree of injury or damage found in your knee. For example, if you damage your knee from jogging and the smooth articular cushion of the weight-bearing portion of the knee has worn away completely, then full recovery may not be possible. You may be advised to find a low-impact alternative form of exercise. Physical exercise and rehabilitation will play an important role in your final outcome. A formal physiotherapy program may also add something to your final result. A return to intense physical activity should only be done under the direction of your physiotherapist and surgeon.

It is reasonable to expect that by six to eight weeks the majority of patients should be able to engage in most of their former physical activities as long as they do not involve significant weight-bearing impact. Twisting manoeuvres may have to be avoided for a longer time. Full recovery from an arthroscopy usually takes three to four months.

If your job involves heavy work, such as a construction labourer, you may require more time to return to your job than if you have a sedentary job.

**If have any problems please don't hesitate to contact the ward on
01256 313681**

Exercises to Strengthen Your Knee

You should exercise your knee regularly for several weeks following surgery to strengthen the muscles of your leg and knee. After discharge you may have at least one appointment with the physiotherapist. Physiotherapy will continue until you have reached the required standard of movement and muscle strength

KNEE ARTHROSCOPY EXERCISES

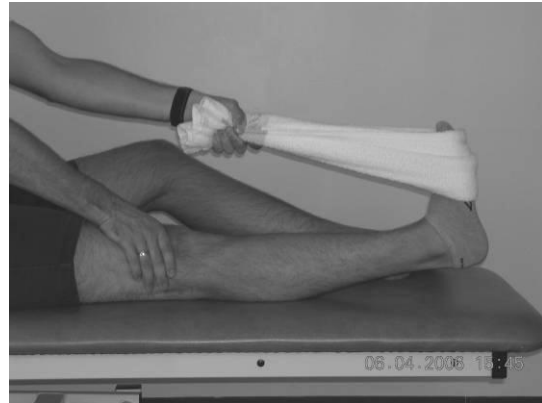
HEEL SLIDE

- **Sitting; Pull heel towards body.**
- **Assist stretch with hands on your shin**
- **Hold for 5 seconds**
- **Bend a little further and hold for another 5 seconds**
- **Relax and return to starting position. Repeat 10 times.**



TOWEL STRETCH

- **Hold on to towel as shown**
- **Use opposite hand to push down on your thigh just above your knee**
- **Hold for 5 seconds**
- **Release towel and tighten thigh muscle so that heel stays in raised position**
- **Repeat 5 times**



KNEE EXTENTION

- **Place a rolled towel under your knee**
- **Keeping the knee in contact with the towel raise your heel from the bed.**
- **Hold for 3 seconds**
- **Repeat 10 times**



QUADS TIGHTENING

- **Sitting with leg straight out in front of you**
- **Tighten your thigh muscle by pushing the back of your knee into the bed**
- **Hold for 5 seconds**
- **Repeat 10 times**



Please carry out exercises 3 times a day or as instructed by your physiotherapist

If you have any questions please contact Orthopaedic physiotherapists on 01256 313531

STAIRS

UP

DOWN

Lead with your good leg going up the stairs



Lead with your operated leg coming down the stairs



TUBIGRIP SUPPORT BANDAGE

You have been supplied with a tubular bandage to help control swelling of your limb.

Please read the following carefully:

- **ELEVATE** and **SUPPORT** your limb **ABOVE** a horizontal position whenever possible
- Apply the bandage in the morning and **remove it at night**.
- Ensure there are no creases in the bandage.
- **DO NOT** turn back the bandage at the edges (leave frayed ends frayed).
- The bandage may be washed in **COOL** water – allow to dry naturally (**DO NOT** tumble dry)
- Wear two layers during the day for the first three days –reducing to one layer for a further four days or as advised by your physiotherapist, or continue if swelling persists.

IMPORTANT

Remove the bandage and contact your GP if you experience any of the following:

- Your toes turn blue or white or become swollen and do not recover when elevated or exercised.
- You have pins & needles, numbness in your foot or have difficulty in moving your toes due to pain

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