Hampshire Hospitals NHS
NHS Foundation Trust

KNEE ARTHROSCOPY

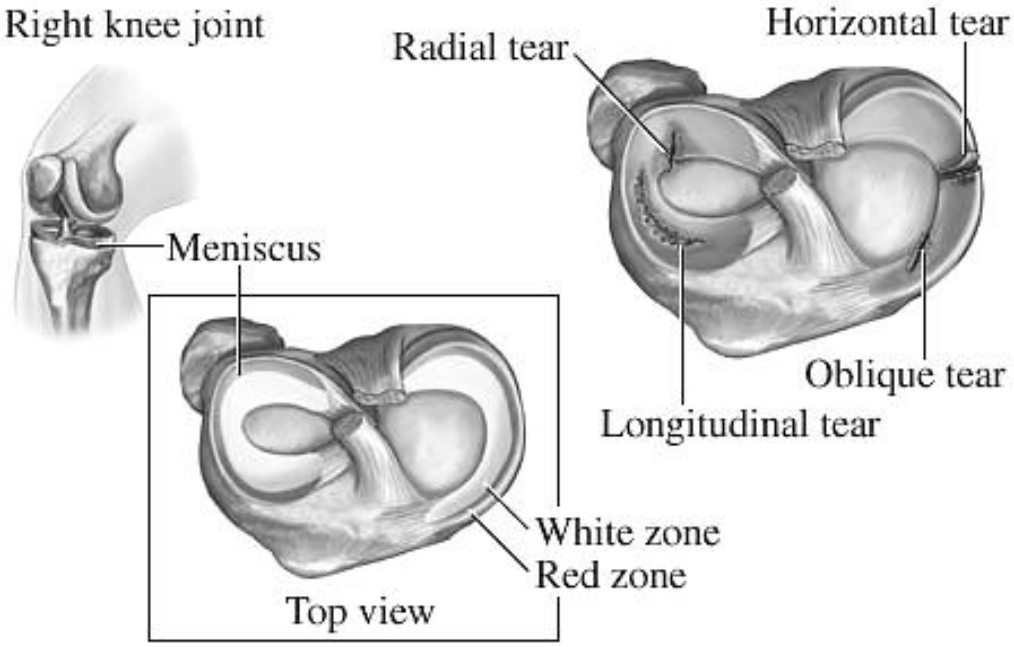
COMMON PROCEDURES:

Trauma & Orthopaedic Directorate

ARTHROSCOPY OF THE KNEE

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)

INTRODUCTION

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.

This procedure involves two separate operations;

- … the first a small key hole one to remove some cartilage to send to a laboratory to be grown;
- … the 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 or tear is the result of wear and tear. Often a trivial action becomes "the straw that breaks the camel's back" and the symptoms suddenly start. However these may, in fact, 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. This is not usually enough to nourish any repair process.

The meniscus is trefoil shape in cross section and the part that is usually damaged is the inner 2/3 – ¾ … which is thinner and has the poorer blood supply and is therefore often not repairable. This means that 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 arthroscopic procedure can again usually be done through the same key holes and does not require and specific rehabilitation regime.

MENISCAL REPAIR: Occasionally the meniscus may be repairable and if this is possible, we strive to achieve this. This is more complicated surgery but can usually be achieved through the key holes. It will have some restrictions attached to it post-operatively – potentially for weeks or months. Techniques and protocols vary and **these will 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. These can usually be removed as arthroscopic (key-hole) surgery and this procedure does not have any specific rehabilitation issues associated.

EUA – Examination under anaesthetic

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

LATERAL RELEASE

This procedure involves releasing the tighter structures on the outside of the kneecap, though the key holes, to try and allow the kneecap to sit straighter and flatter in the centre of the knee. The aim of this procedure is 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 previously as we now know the results are often not 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.

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